Computer algebra independent integration tests

5-Inverse-trig-functions/5.1-Inverse-sine/5.1.5-Inverse-sine-functions

Nasser M. Abbasi

May 23, 2020 Compiled on May 23, 2020 at 10:15am

Contents

Chapter 1

Introduction

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

The number of integrals in this report is [474]. This is test number [144].

1.1 Listing of CAS systems tested

The following systems were tested at this time.

1. Mathematica 12.1 (64 bit) on windows 10.
2. Rubi 4.16.1 in Mathematica 12 on windows 10.
3. Maple 2020 (64 bit) on windows 10.
4. Maxima 5.43 on Linux. (via sagemath 8.9)
5. Fricas 1.3.6 on Linux (via sagemath 9.0)
6. Sympy 1.5 under Python 3.7.3 using Anaconda distribution.
7. Giac/Xcas 1.5 on Linux. (via sagemath 8.9)

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

Sympy was called directly using Python.

1.2 Results

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

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

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

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

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

System	solved	Failed
Rubi	% 99.58 (472)	% 0.42 (2)
Mathematica	% 96.84 (459)	% 3.16 (15)
Maple	% 79.75 (378)	% 20.25 (96)
Maxima	% 17.93 (85)	% 82.07 (389)
Fricas	% 38.4 (182)	% 61.6 (292)
Sympy	% 32.7 (155)	% 67.3 (319)
Giac	% 50.84 (241)	% 49.16 (233)

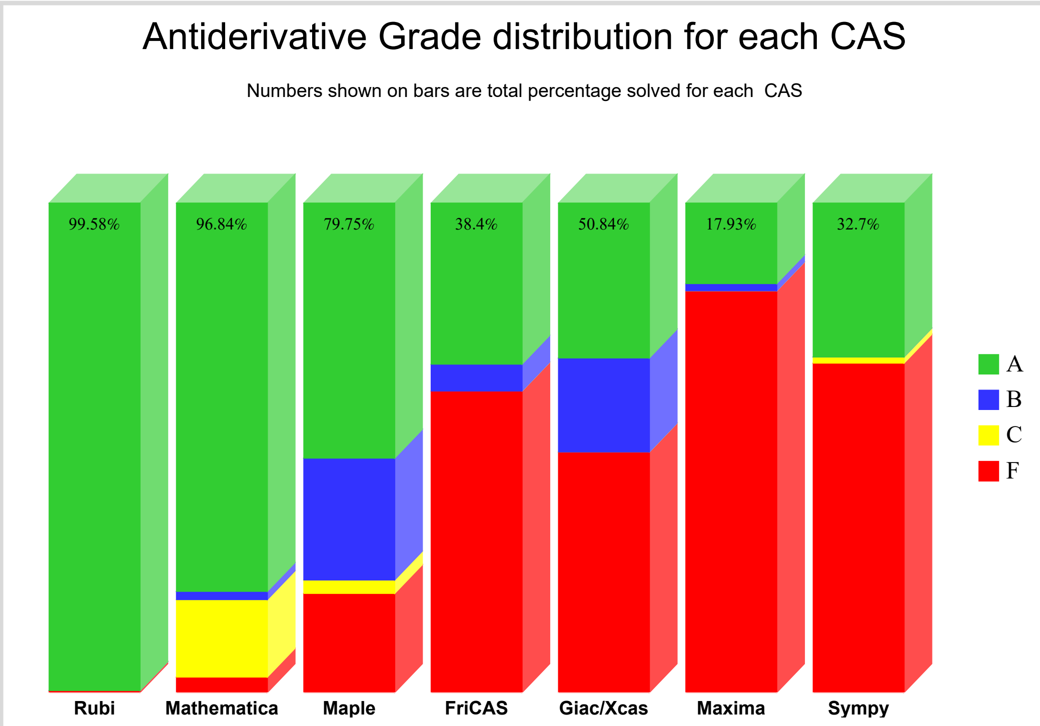
The table below gives additional break down of the grading of quality of the antiderivatives generated by each CAS. The grading is given using the letters A,B,C and F with A being the best quality. The grading is accomplished by comparing the antiderivative generated with the optimal antiderivatives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

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

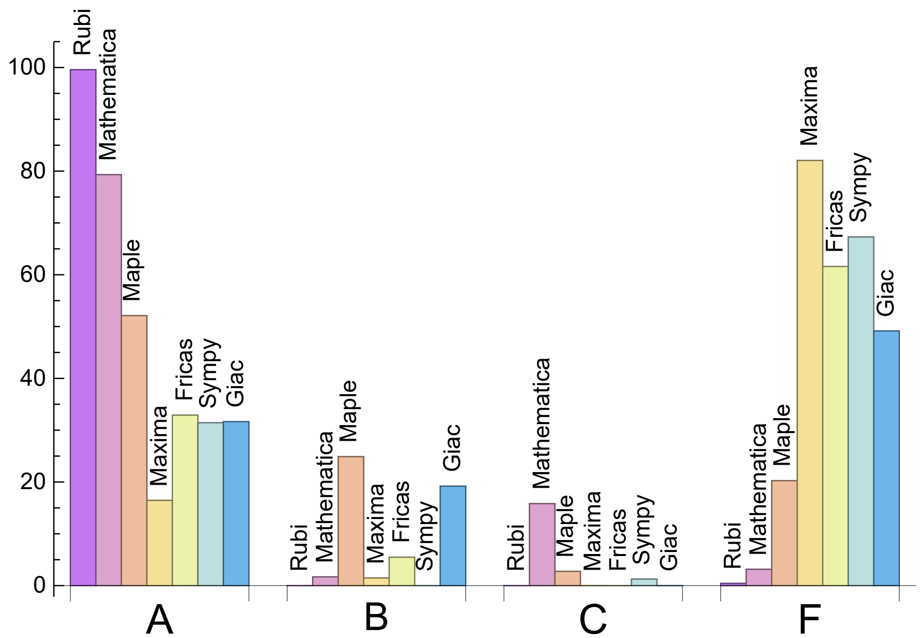
Grading is implemented for all CAS systems. Based on the above, the following table summarizes the grading for this test suite.

System	% A grade	% B grade	% C grade	% F grade
Rubi	99.58	0.	0.	0.42
Mathematica	79.32	1.69	15.82	3.16
Maple	52.11	24.89	2.74	20.25
Maxima	16.46	1.48	0.	82.07
Fricas	32.91	5.49	0.	61.6
Sympy	31.43	0.	1.27	67.3
Giac	31.65	19.2	0.	49.16

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



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



1.3 Performance

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

System	Mean time (sec)	Mean size	Normalized mean	Median size	Normalized median
Rubi	0.45	250.9	0.91	144.	1.
Mathematica	1.24	213.49	0.87	132.	0.86
Maple	0.22	653.87	1.76	196.	1.4
Maxima	1.96	147.38	1.13	50.	1.17
Fricas	2.26	361.46	2.52	150.	2.27
Sympy	5.69	277.14	1.53	65.	1.19
Giac	1.22	599.61	2.77	189.	1.82

1.4 list of integrals that has no closed form antiderivative

{20, 21, 25, 26, 27, 29, 30, 82, 87, 146, 150, 154, 172, 176, 220, 226, 232, 238, 244, 249, 254, 258, 264, 270, 275, 280, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 312, 336, 337, 431, 435, 436, 449, 450, 455, 456, 461, 462}

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

Rubi {}

Mathematica {}

Maple {}

Maxima {}

Fricas {}

Sympy {}

Giac {}

1.6 list of integrals solved by CAS but failed verification

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

Rubi {136}

Mathematica {34, 35, 39, 43, 57, 61, 65, 69, 75, 77, 78, 79, 80, 81, 85, 102, 111, 112, 113, 114, 118, 119, 120, 121, 136, 156, 157, 158, 159, 160, 161, 162, 164, 165, 166, 167, 168, 169, 170, 171, 182, 193, 194, 196, 202, 203, 204, 205, 210, 211, 212, 213, 225, 240, 241, 242, 243, 245, 246, 247, 248, 250, 251, 252, 253, 255, 256, 257, 259, 260, 261, 262, 265, 266, 267, 268, 271, 272, 273, 276, 277, 278, 279, 383, 413, 443, 444, 453, 468}

Maple Verification phase not implemented yet.

Maxima Verification phase not implemented yet.

Fricas Verification phase not implemented yet.

Sympy Verification phase not implemented yet.

Giac Verification phase not implemented yet.

1.7 Timing

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

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

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

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

1.8 Verification

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

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

1.9 Important notes about some of the results

1.9.1 Important note about Maxima results

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

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

The percentage of such failures were not counted for each test file, but for an example, for the Timofeev test file, there were about 30 such integrals out of total 705, or about 4 percent. This pecrentage can be higher or lower depending on the specific input test file.

Such integrals can be indentified by looking at the output of the integration in each section for Maxima. If the output was an exception `ValueError` then this is most likely due to this reason.

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

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

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

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

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

1.9.2 Important note about FriCAS and Giac/XCAS results

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

These will fail With error `Exception raised: NotImplementedError`

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

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

1.9.3 Important note about finding leaf size of antiderivative

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

The other CAS systems (SageMath and Sympy) do not have special buildin function for this purpose at this time. Therefore the leaf size is determined as follows.

For Fricas, Giac and Maxima (all called via sagemath) the following code is used

```
#see https://stackoverflow.com/questions/25202346/how-to-obtain-leaf-count-expression-size-in

def tree(expr):
    if expr.operator() is None:
       return expr
    else:
       return [expr.operator()]+map(tree, expr.operands())

try:
    # 1.35 is a fudge factor since this estimate of leaf count is bit lower than
    #what it should be compared to Mathematica's
    leafCount = round(1.35*len(flatten(tree(anti))))
except Exception as ee:
    leafCount =1
```

For Sympy, called directly from Python, the following code is used

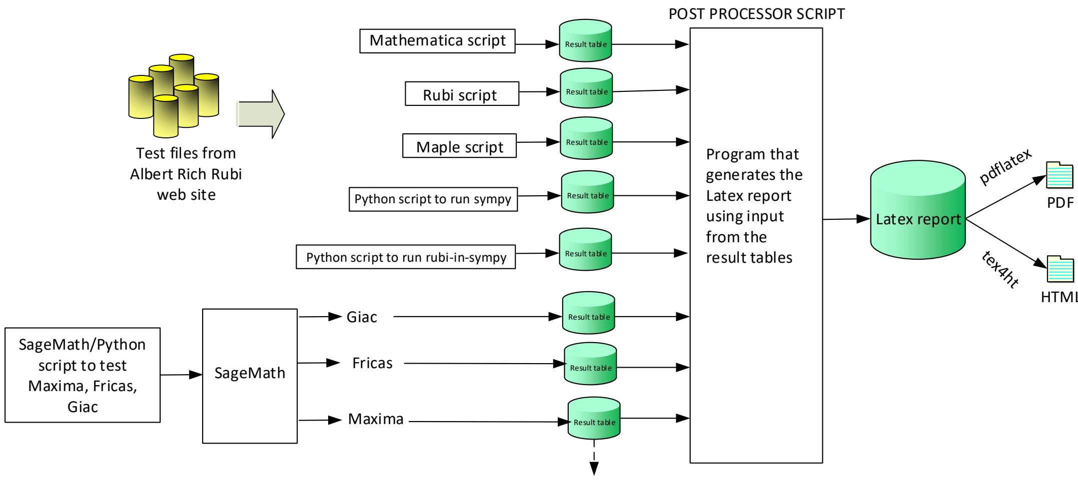
```
try:
  # 1.7 is a fudge factor since it is low side from actual leaf count
  leafCount = round(1.7*count_ops(anti))

  except Exception as ee:
         leafCount =1
```

When these cas systems have a buildin function to find the leaf size of expressions, it will be used instead, and these tests run again.

1.10 Design of the test system

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



One record (line) per one integral result. The line is CSV comma separated. It contains 13 fields. This is description of each record (line)

1. integer, the problem number.
2. integer. 0 or 1 for failed or passed. (this is not the grade field)
3. integer. Leaf size of result.
4. integer. Leaf size of the optimal antiderivative.
5. number. CPU time used to solve this integral. 0 if failed.
6. string. The integral in Latex format
7. string. The input used in CAS own syntx.
8. string. The result (antiderivative) produced by CAS in Latex format
9. string. The optimal antiderivative in Latex format.
10. integer. 0 or 1. Indicates if problem has known antiderivative or not
11. String. The result (antiderivative) in CAS own syntax.
12. String. The grade of the antiderivative. Can be “A”, “B”, “C”, or “F”
13. String. The optimal antiderivative in CAS own syntax.

High level overview of the CAS independent integration test build system

Nasser M. Abbasi
June 22, 2018

Chapter 2

detailed summary tables of results

2.1 List of integrals sorted by grade for each CAS

2.1.1 Rubi

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

B grade: { }

C grade: { }

F grade: { 470, 474}

2.1.2 Mathematica

A grade: { 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 103, 104, 105, 106, 107, 108, 109, 110, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 163, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 206, 207, 208, 209, 212, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 244, 249, 254, 258, 264, 270, 275, 280, 291, 292, 293, 294, 295, 296, 297, 298, 299, 301, 302, 303, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 351, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 374, 375, 376, 377, 378, 379, 380, 381, 382, 384, 385, 386, 387, 388, 389, 390, 391, 392, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 435, 436, 437, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 470, 471, 472, 473, 474 }

B grade: { 85, 205, 210, 211, 213, 373, 383, 469 }

C grade: { 7, 54, 55, 56, 102, 111, 112, 156, 157, 158, 159, 160, 161, 162, 164, 165, 166, 167, 168, 169, 170, 171, 187, 240, 241, 242, 243, 245, 246, 247, 248, 250, 251, 252, 253, 255, 256, 257, 259, 260, 261, 262, 265, 266, 267, 268, 271, 272, 273, 276, 277, 278, 279, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 350, 352, 353, 354, 355, 356, 357, 358, 359, 395, 396, 397 }

F grade: { 28, 83, 84, 263, 269, 274, 300, 304, 393, 394, 398, 432, 433, 434, 438}

2.1.3 Maple

A grade: { 1, 2, 3, 4, 9, 10, 11, 12, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 29, 30, 34, 40, 41, 47, 82, 87, 88, 89, 90, 97, 98, 99, 106, 107, 108, 122, 123, 124, 125, 127, 128, 129, 130, 131, 132, 133, 134, 136, 137, 138, 139, 140, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 163, 164, 165, 166, 167, 172, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 194, 195, 196, 197, 198, 199, 200, 201, 206, 207, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 230, 231, 232, 237, 238, 240, 241, 242, 243, 244, 245, 247, 249, 254, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 275, 280, 282, 288, 290, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 312, 313, 314, 315, 316, 317, 318, 319, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 336, 337, 338, 339, 340, 341, 342, 343, 344, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 357, 358, 359, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 383, 387, 388, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 404, 411, 431, 434, 435, 436, 437, 438, 449, 450, 455, 456, 461, 462, 466, 469, 473, 474 }

B grade: { 5, 6, 7, 8, 14, 15, 31, 32, 33, 36, 37, 38, 39, 42, 43, 44, 45, 46, 48, 52, 57, 58, 59, 60, 62, 63, 64, 66, 67, 68, 70, 71, 72, 75, 76, 77, 79, 80, 81, 91, 92, 93, 94, 95, 96, 100, 101, 102, 103, 104, 105, 109, 110, 111, 112, 113, 115, 116, 117, 120, 121, 126, 158, 159, 160, 161, 162, 168, 169, 170, 171, 193, 202, 203, 204, 205, 208, 209, 210, 211, 212, 213, 214, 227, 228, 229, 233, 234, 235, 236, 239, 246, 248, 250, 251, 252, 253, 255, 256, 257, 271, 272, 273, 274, 276, 277, 278, 279, 284, 286, 320, 321, 322, 335, 356, 386, 432, 433 }

C grade: { 35, 49, 50, 51, 53, 54, 55, 56, 281, 283, 285, 287, 289 }

F grade: { 13, 28, 61, 65, 69, 73, 74, 78, 83, 84, 85, 86, 114, 118, 119, 135, 141, 142, 173, 174, 175, 291, 292, 293, 294, 295, 296, 297, 298, 299, 310, 311, 345, 360, 379, 380, 381, 382, 384, 385, 389, 400, 401, 402, 403, 405, 406, 407, 408, 409, 410, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 451, 452, 453, 454, 457, 458, 459, 460, 463, 464, 465, 467, 468, 470, 471, 472 }

2.1.4 Maxima

A grade: { 1, 2, 3, 4, 12, 20, 21, 29, 87, 88, 89, 90, 97, 98, 99, 108, 125, 146, 172, 176, 181, 220, 244, 249, 254, 258, 264, 270, 275, 280, 312, 336, 337, 340, 341, 342, 343, 344, 346, 347, 348, 349, 350, 351, 361, 362, 363, 365, 366, 367, 368, 369, 370, 371, 372, 373, 375, 376, 377, 378, 388, 399, 400, 404, 411, 431, 435, 436, 437, 449, 450, 455, 456, 461, 462, 466, 470, 473

B grade: { 106, 107, 184, 186, 195, 331, 332 }

C grade: { }

F grade: { 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 19, 22, 23, 24, 25, 26, 27, 28, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 91, 92, 93, 94, 95, 96, 100, 101, 102, 103, 104, 105, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 173, 174, 175, 177, 178, 179, 180, 182, 183, 185, 187, 188, 189, 190, 191, 192, 193, 194, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 245, 246, 247, 248, 250, 251, 252, 253, 255, 256, 257, 259, 260, 261, 262, 263, 265, 266, 267, 268, 269, 271, 272, 273, 274, 276, 277, 278, 279, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 333, 334, 335, 338, 339, 345, 352, 353, 354, 355, 356, 357, 358, 359, 360, 364, 374, 379, 380, 381, 382, 383, 384, 385, 386, 387, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 401, 402, 403, 405, 406, 407, 408, 409, 410, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 432, 433, 434, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 451, 452, 453, 454, 457, 458, 459, 460, 463, 464, 465, 467, 468, 469, 471, 472, 474 }

2.1.5 FriCAS

A grade: { 1, 2, 3, 4, 9, 10, 11, 12, 20, 21, 25, 26, 27, 29, 30, 82, 87, 88, 89, 90, 97, 98, 99, 106, 107, 108, 115, 116, 117, 122, 123, 124, 125, 127, 128, 129, 130, 131, 132, 133, 134, 138, 139, 140, 146, 150, 154, 172, 176, 180, 181, 184, 191, 192, 195, 201, 220, 226, 232, 238, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 312, 313, 314, 315, 320, 321, 322, 327, 328, 329, 330, 331, 332, 336, 337, 340, 341, 342, 343, 344, 346, 347, 348, 349, 350, 351, 361, 362, 363, 365, 366, 367, 368, 369, 370, 371, 372, 375, 376, 377, 378, 386, 387, 388, 390, 391, 392, 399, 400, 401, 402, 403, 404, 408, 409, 410, 411, 415, 416, 431, 435, 436, 437, 439, 440, 441, 442, 449, 450, 451, 452, 453, 454, 455, 456, 461, 462, 463, 464, 465, 466, 470, 471, 472, 473, 474 }

B grade: { 6, 7, 8, 93, 177, 178, 179, 183, 185, 186, 187, 188, 189, 190, 197, 198, 199, 200, 206, 207, 208, 209, 214, 335, 373, 469 }

C grade: { }

F grade: { 5, 13, 14, 15, 16, 17, 18, 19, 22, 23, 24, 28, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 83, 84, 85, 86, 91, 92, 94, 95, 96, 100, 101, 102, 103, 104, 105, 109, 110, 111, 112, 113, 114, 118, 119, 120, 121, 126, 135, 136, 137, 141, 142, 143, 144, 145, 147, 148, 149, 151, 152, 153, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 173, 174, 175, 182, 193, 194, 196, 202, 203, 204, 205, 210, 211, 212, 213, 215, 216, 217, 218, 219, 221, 222, 223, 224, 225, 227, 228, 229, 230, 231, 233, 234, 235, 236, 237, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 310, 311, 316, 317, 318, 319, 323, 324, 325, 326, 333, 334, 338, 339, 345, 352, 353, 354, 355, 356, 357, 358, 359, 360, 364, 374, 379, 380, 381, 382, 383, 384, 385, 389, 393, 394, 395, 396, 397, 398, 405, 406, 407, 412, 413, 414, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 432, 433, 434, 438, 443, 444, 445, 446, 447, 448, 457, 458, 459, 460, 467, 468 }

2.1.6 Sympy

A grade: { 1, 2, 3, 4, 9, 10, 11, 12, 20, 21, 25, 26, 27, 29, 30, 87, 88, 89, 90, 97, 98, 99, 106, 107, 108, 115, 116, 117, 122, 123, 124, 125, 131, 132, 133, 134, 138, 139, 140, 146, 150, 154, 172, 176, 177, 178, 179, 180, 181, 188, 189, 190, 191, 192, 197, 198, 199, 200, 201, 206, 207, 208, 209, 214, 220, 226, 232, 238, 244, 249, 264, 270, 283, 284, 300, 302, 303, 304, 306, 307, 312, 320, 321, 322, 327, 328, 329, 330, 331, 332, 336, 337, 340, 341, 342, 343, 344, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 361, 362, 363, 366, 367, 369, 370, 371, 372, 373, 375, 376, 377, 378, 386, 387, 388, 399, 437, 439, 440, 441, 442, 449, 450, 451, 452, 453, 454, 455, 456, 461, 462, 464, 465, 466, 473, 474 }

B grade: { }

C grade: { 365, 380, 381, 382, 384, 385 }

F grade: { 5, 6, 7, 8, 13, 14, 15, 16, 17, 18, 19, 22, 23, 24, 28, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 91, 92, 93, 94, 95, 96, 100, 101, 102, 103, 104, 105, 109, 110, 111, 112, 113, 114, 118, 119, 120, 121, 126, 127, 128, 129, 130, 135, 136, 137, 141, 142, 143, 144, 145, 147, 148, 149, 151, 152, 153, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 173, 174, 175, 182, 183, 184, 185, 186, 187, 193, 194, 195, 196, 202, 203, 204, 205, 210, 211, 212, 213, 215, 216, 217, 218, 219, 221, 222, 223, 224, 225, 227, 228, 229, 230, 231, 233, 234, 235, 236, 237, 239, 240, 241, 242, 243, 245, 246, 247, 248, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 265, 266, 267, 268, 269, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 301, 305, 308, 309, 310, 311, 313, 314, 315, 316, 317, 318, 319, 323, 324, 325, 326, 333, 334, 335, 338, 339, 345, 360, 364, 368, 374, 379, 383, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 438, 443, 444, 445, 446, 447, 448, 457, 458, 459, 460, 463, 467, 468, 469, 470, 471, 472 }

2.1.7 Giac

A grade: { 2, 3, 4, 11, 12, 16, 17, 18, 19, 20, 21, 25, 26, 27, 29, 30, 82, 87, 124, 125, 127, 131, 132, 133, 134, 138, 139, 140, 143, 144, 145, 146, 148, 149, 150, 151, 152, 153, 154, 163, 164, 165, 176, 177, 178, 179, 180, 181, 192, 216, 217, 218, 219, 220, 226, 232, 238, 240, 242, 244, 249, 254, 258, 259, 260, 261, 262, 263, 264, 270, 275, 280, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 335, 336, 337, 340, 341, 342, 343, 344, 361, 362, 363, 365, 373, 375, 386, 387, 388, 399, 400, 404, 411, 416, 431, 435, 436, 437, 439, 440, 441, 442, 449, 450, 451, 452, 453, 454, 455, 456, 461, 462, 463, 464, 465, 466, 470, 473, 474 }

B grade: { 1, 9, 10, 22, 23, 24, 88, 89, 90, 97, 98, 99, 106, 107, 108, 115, 116, 117, 122, 123, 128, 129, 130, 147, 155, 156, 157, 158, 159, 160, 161, 162, 183, 184, 185, 186, 187, 188, 189, 190, 191, 195, 197, 198, 199, 200, 201, 206, 207, 208, 209, 214, 215, 221, 222, 223, 224, 225, 227, 228, 229, 230, 231, 233, 234, 235, 236, 237, 239, 241, 243, 245, 246, 247, 248, 250, 251, 252, 253, 255, 256, 257, 346, 347, 348, 349, 350, 351, 366, 367, 368 }

C grade: { }

F grade: { 5, 6, 7, 8, 13, 14, 15, 28, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 83, 84, 85, 86, 91, 92, 93, 94, 95, 96, 100, 101, 102, 103, 104, 105, 109, 110, 111, 112, 113, 114, 118, 119, 120, 121, 126, 135, 136, 137, 141, 142, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 182, 193, 194, 196, 202, 203, 204, 205, 210, 211, 212, 213, 265, 266, 267, 268, 269, 271, 272, 273, 274, 276, 277, 278, 279, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 310, 311, 333, 334, 338, 339, 345, 352, 353, 354, 355, 356, 357, 358, 359, 360, 364, 369, 370, 371, 372, 374, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 401, 402, 403, 405, 406, 407, 408, 409, 410, 412, 413, 414, 415, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 432, 433, 434, 438, 443, 444, 445, 446, 447, 448, 457, 458, 459, 460, 467, 468, 469, 471, 472 }

2.2 Detailed conclusion table per each integral for all CAS systems

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

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

Problem 1	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	179	179	165	265	344	447	316	456
normalized size	1	1.	0.92	1.48	1.92	2.5	1.77	2.55
time (sec)	N/A	0.182	0.148	0.006	1.477	2.474	1.858	1.246

Problem 2	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	124	124	121	193	219	302	190	261
normalized size	1	1.	0.98	1.56	1.77	2.44	1.53	2.1
time (sec)	N/A	0.095	0.092	0.005	1.476	2.404	0.871	1.273

Problem 3	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	98	98	92	97	126	176	99	138
normalized size	1	1.	0.94	0.99	1.29	1.8	1.01	1.41
time (sec)	N/A	0.051	0.047	0.005	1.448	2.404	0.362	1.294

Problem 4	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	30	30	30	30	39	73	26	39
normalized size	1	1.	1.	1.	1.3	2.43	0.87	1.3
time (sec)	N/A	0.013	0.01	0.	1.479	2.313	0.145	1.293

Problem 5	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	229	229	214	759	0	0	0	0
normalized size	1	1.	0.93	3.31	0.	0.	0.	0.
time (sec)	N/A	0.303	0.165	0.164	0.	0.	0.	0.

Problem 6	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	85	85	83	191	0	738	0	0
normalized size	1	1.	0.98	2.25	0.	8.68	0.	0.
time (sec)	N/A	0.053	0.15	0.018	0.	2.621	0.	0.

Problem 7	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	135	135	207	301	0	1349	0	0
normalized size	1	1.	1.53	2.23	0.	9.99	0.	0.
time (sec)	N/A	0.085	0.353	0.033	0.	3.975	0.	0.

Problem 8	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	191	191	241	560	0	2233	0	0
normalized size	1	1.	1.26	2.93	0.	11.69	0.	0.
time (sec)	N/A	0.14	0.521	0.008	0.	12.247	0.	0.

Problem 9	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	374	374	355	660	0	956	743	1121
normalized size	1	1.	0.95	1.76	0.	2.56	1.99	3.
time (sec)	N/A	0.712	0.571	0.092	0.	2.486	4.474	1.354

Problem 10	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	242	242	249	420	0	633	454	655
normalized size	1	1.	1.03	1.74	0.	2.62	1.88	2.71
time (sec)	N/A	0.479	0.387	0.065	0.	2.426	2.167	1.29

Problem 11	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	142	142	147	198	0	354	233	342
normalized size	1	1.	1.04	1.39	0.	2.49	1.64	2.41
time (sec)	N/A	0.309	0.364	0.043	0.	2.473	0.949	1.26

Problem 12	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	47	47	47	72	97	159	82	101
normalized size	1	1.	1.	1.53	2.06	3.38	1.74	2.15
time (sec)	N/A	0.061	0.043	0.	1.446	2.36	0.31	1.167

Problem 13	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	347	347	332	0	0	0	0	0
normalized size	1	1.	0.96	0.	0.	0.	0.	0.
time (sec)	N/A	0.509	0.332	1.421	0.	0.	0.	0.

Problem 14	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	309	309	231	646	0	0	0	0
normalized size	1	1.	0.75	2.09	0.	0.	0.	0.
time (sec)	N/A	0.529	0.338	0.393	0.	0.	0.	0.

Problem 15	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	401	401	315	1173	0	0	0	0
normalized size	1	1.	0.79	2.93	0.	0.	0.	0.
time (sec)	N/A	0.636	1.011	0.868	0.	0.	0.	0.

Problem 16	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	393	393	304	327	0	0	0	807
normalized size	1	1.	0.77	0.83	0.	0.	0.	2.05
time (sec)	N/A	1.134	0.75	0.064	0.	0.	0.	1.377

Problem 17	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	244	244	187	206	0	0	0	451
normalized size	1	1.	0.77	0.84	0.	0.	0.	1.85
time (sec)	N/A	0.667	0.439	0.047	0.	0.	0.	1.294

Problem 18	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	115	115	98	103	0	0	0	192
normalized size	1	1.	0.85	0.9	0.	0.	0.	1.67
time (sec)	N/A	0.306	0.186	0.036	0.	0.	0.	1.261

Problem 19	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	53	53	44	48	0	0	0	66
normalized size	1	1.	0.83	0.91	0.	0.	0.	1.25
time (sec)	N/A	0.066	0.025	0.	0.	0.	0.	1.256

Problem 20	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	20	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.031	0.205	1.631	0.	0.	0.	0.

Problem 21	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	20	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.029	0.397	0.89	0.	0.	0.	0.

Problem 22	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-1)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	362	354	290	526	0	0	0	1713
normalized size	1	0.98	0.8	1.45	0.	0.	0.	4.73
time (sec)	N/A	0.546	1.85	0.082	0.	0.	0.	1.539

Problem 23	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-1)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	181	177	149	257	0	0	0	757
normalized size	1	0.98	0.82	1.42	0.	0.	0.	4.18
time (sec)	N/A	0.312	0.686	0.051	0.	0.	0.	1.4

Problem 24	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-1)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	86	82	72	76	0	0	0	259
normalized size	1	0.95	0.84	0.88	0.	0.	0.	3.01
time (sec)	N/A	0.173	0.227	0.	0.	0.	0.	1.338

Problem 25	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	F(-1)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	20	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.029	6.104	3.938	0.	0.	0.	0.

Problem 26	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	F(-1)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	20	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.027	11.997	1.382	0.	0.	0.	0.

Problem 27	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	75	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.196	4.853	0.322	0.	0.	0.	0.

Problem 28	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	154	154	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.086	0.043	0.426	0.	0.	0.	0.

Problem 29	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	20	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.027	0.376	1.492	0.	0.	0.	0.

Problem 30	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	F(-1)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	20	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.027	0.804	0.987	0.	0.	0.	0.

Problem 31	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	669	669	356	1286	0	0	0	0
normalized size	1	1.	0.53	1.92	0.	0.	0.	0.
time (sec)	N/A	0.693	0.444	0.792	0.	0.	0.	0.

Problem 32	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	450	450	237	912	0	0	0	0
normalized size	1	1.	0.53	2.03	0.	0.	0.	0.
time (sec)	N/A	0.523	0.497	0.49	0.	0.	0.	0.

Problem 33	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	238	238	132	491	0	0	0	0
normalized size	1	1.	0.55	2.06	0.	0.	0.	0.
time (sec)	N/A	0.242	0.25	0.356	0.	0.	0.	0.

Problem 34	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	736	736	368	1206	0	0	0	0
normalized size	1	1.	0.5	1.64	0.	0.	0.	0.
time (sec)	N/A	1.876	0.966	0.357	0.	0.	0.	0.

Problem 35	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	860	860	600	1572	0	0	0	0
normalized size	1	1.	0.7	1.83	0.	0.	0.	0.
time (sec)	N/A	2.715	2.65	0.49	0.	0.	0.	0.

Problem 36	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	959	959	463	1734	0	0	0	0
normalized size	1	1.	0.48	1.81	0.	0.	0.	0.
time (sec)	N/A	0.94	1.189	0.766	0.	0.	0.	0.

Problem 37	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	680	680	332	1252	0	0	0	0
normalized size	1	1.	0.49	1.84	0.	0.	0.	0.
time (sec)	N/A	0.733	0.485	0.571	0.	0.	0.	0.

Problem 38	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	370	370	216	698	0	0	0	0
normalized size	1	1.	0.58	1.89	0.	0.	0.	0.
time (sec)	N/A	0.326	0.286	0.42	0.	0.	0.	0.

Problem 39	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	1073	1073	507	2742	0	0	0	0
normalized size	1	1.	0.47	2.56	0.	0.	0.	0.
time (sec)	N/A	2.224	1.462	0.305	0.	0.	0.	0.

Problem 40	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	1281	1281	587	2236	0	0	0	0
normalized size	1	1.	0.46	1.75	0.	0.	0.	0.
time (sec)	N/A	1.134	1.028	0.866	0.	0.	0.	0.

Problem 41	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	940	940	390	1633	0	0	0	0
normalized size	1	1.	0.41	1.74	0.	0.	0.	0.
time (sec)	N/A	0.92	0.729	0.664	0.	0.	0.	0.

Problem 42	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	517	517	251	931	0	0	0	0
normalized size	1	1.	0.49	1.8	0.	0.	0.	0.
time (sec)	N/A	0.394	0.431	0.499	0.	0.	0.	0.

Problem 43	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	1648	1648	787	4685	0	0	0	0
normalized size	1	1.	0.48	2.84	0.	0.	0.	0.
time (sec)	N/A	2.687	2.689	0.419	0.	0.	0.	0.

Problem 44	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	450	450	343	845	0	0	0	0
normalized size	1	1.	0.76	1.88	0.	0.	0.	0.
time (sec)	N/A	0.584	1.066	0.546	0.	0.	0.	0.

Problem 45	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	270	270	266	549	0	0	0	0
normalized size	1	1.	0.99	2.03	0.	0.	0.	0.
time (sec)	N/A	0.433	0.692	0.37	0.	0.	0.	0.

Problem 46	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	126	126	172	236	0	0	0	0
normalized size	1	1.	1.37	1.87	0.	0.	0.	0.
time (sec)	N/A	0.222	0.351	0.236	0.	0.	0.	0.

Problem 47	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	380	380	232	502	0	0	0	0
normalized size	1	1.	0.61	1.32	0.	0.	0.	0.
time (sec)	N/A	0.608	0.217	0.157	0.	0.	0.	0.

Problem 48	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F	F	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	507	507	295	1678	0	0	0	0
normalized size	1	1.	0.58	3.31	0.	0.	0.	0.
time (sec)	N/A	0.71	0.457	0.408	0.	0.	0.	0.

Problem 49	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	315	315	194	1158	0	0	0	0
normalized size	1	1.	0.62	3.68	0.	0.	0.	0.
time (sec)	N/A	0.556	1.039	0.518	0.	0.	0.	0.

Problem 50	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	213	213	156	867	0	0	0	0
normalized size	1	1.	0.73	4.07	0.	0.	0.	0.
time (sec)	N/A	0.428	0.702	0.364	0.	0.	0.	0.

Problem 51	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	144	144	135	443	0	0	0	0
normalized size	1	1.	0.94	3.08	0.	0.	0.	0.
time (sec)	N/A	0.187	0.519	0.244	0.	0.	0.	0.

Problem 52	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	654	654	359	1902	0	0	0	0
normalized size	1	1.	0.55	2.91	0.	0.	0.	0.
time (sec)	N/A	1.16	1.937	0.48	0.	0.	0.	0.

Problem 53	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	528	754	868	6743	0	0	0	0
normalized size	1	1.43	1.64	12.77	0.	0.	0.	0.
time (sec)	N/A	0.753	3.231	0.823	0.	0.	0.	0.

Problem 54	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F(-1)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	410	410	366	5098	0	0	0	0
normalized size	1	1.	0.89	12.43	0.	0.	0.	0.
time (sec)	N/A	0.433	1.278	0.575	0.	0.	0.	0.

Problem 55	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	271	354	285	3765	0	0	0	0
normalized size	1	1.31	1.05	13.89	0.	0.	0.	0.
time (sec)	N/A	0.39	1.022	0.437	0.	0.	0.	0.

Problem 56	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F(-1)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	228	228	208	2236	0	0	0	0
normalized size	1	1.	0.91	9.81	0.	0.	0.	0.
time (sec)	N/A	0.195	0.808	0.309	0.	0.	0.	0.

Problem 57	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	1300	1300	2078	7977	0	0	0	0
normalized size	1	1.	1.6	6.14	0.	0.	0.	0.
time (sec)	N/A	1.767	12.887	0.483	0.	0.	0.	0.

Problem 58	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	1154	1154	696	2947	0	0	0	0
normalized size	1	1.	0.6	2.55	0.	0.	0.	0.
time (sec)	N/A	1.555	1.179	0.784	0.	0.	0.	0.

Problem 59	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	737	737	441	2051	0	0	0	0
normalized size	1	1.	0.6	2.78	0.	0.	0.	0.
time (sec)	N/A	1.027	0.956	0.646	0.	0.	0.	0.

Problem 60	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	396	396	224	1139	0	0	0	0
normalized size	1	1.	0.57	2.88	0.	0.	0.	0.
time (sec)	N/A	0.504	0.278	0.341	0.	0.	0.	0.

Problem 61	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	1442	1442	516	0	0	0	0	0
normalized size	1	1.	0.36	0.	0.	0.	0.	0.
time (sec)	N/A	3.055	1.443	0.549	0.	0.	0.	0.

Problem 62	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	1685	1685	872	4018	0	0	0	0
normalized size	1	1.	0.52	2.38	0.	0.	0.	0.
time (sec)	N/A	2.469	2.481	0.806	0.	0.	0.	0.

Problem 63	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	1108	1108	616	2850	0	0	0	0
normalized size	1	1.	0.56	2.57	0.	0.	0.	0.
time (sec)	N/A	1.524	1.036	0.855	0.	0.	0.	0.

Problem 64	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	621	621	395	1640	0	0	0	0
normalized size	1	1.	0.64	2.64	0.	0.	0.	0.
time (sec)	N/A	0.717	0.622	0.436	0.	0.	0.	0.

Problem 65	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	1992	1992	740	0	0	0	0	0
normalized size	1	1.	0.37	0.	0.	0.	0.	0.
time (sec)	N/A	3.78	2.547	0.565	0.	0.	0.	0.

Problem 66	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	2290	2290	1114	5226	0	0	0	0
normalized size	1	1.	0.49	2.28	0.	0.	0.	0.
time (sec)	N/A	3.287	1.932	0.909	0.	0.	0.	0.

Problem 67	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	1533	1533	742	3750	0	0	0	0
normalized size	1	1.	0.48	2.45	0.	0.	0.	0.
time (sec)	N/A	2.053	1.427	0.702	0.	0.	0.	0.

Problem 68	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	878	878	470	2205	0	0	0	0
normalized size	1	1.	0.54	2.51	0.	0.	0.	0.
time (sec)	N/A	0.941	0.932	0.528	0.	0.	0.	0.

Problem 69	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	2989	2989	1277	0	0	0	0	0
normalized size	1	1.	0.43	0.	0.	0.	0.	0.
time (sec)	N/A	4.941	4.923	0.51	0.	0.	0.	0.

Problem 70	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	692	692	582	1876	0	0	0	0
normalized size	1	1.	0.84	2.71	0.	0.	0.	0.
time (sec)	N/A	0.702	1.478	0.696	0.	0.	0.	0.

Problem 71	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	410	410	400	1181	0	0	0	0
normalized size	1	1.	0.98	2.88	0.	0.	0.	0.
time (sec)	N/A	0.553	1.371	0.387	0.	0.	0.	0.

Problem 72	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	171	207	291	513	0	0	0	0
normalized size	1	1.21	1.7	3.	0.	0.	0.	0.
time (sec)	N/A	0.369	0.596	0.303	0.	0.	0.	0.

Problem 73	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	589	589	357	0	0	0	0	0
normalized size	1	1.	0.61	0.	0.	0.	0.	0.
time (sec)	N/A	1.018	0.391	0.589	0.	0.	0.	0.

Problem 74	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	1113	1113	651	0	0	0	0	0
normalized size	1	1.	0.58	0.	0.	0.	0.	0.
time (sec)	N/A	1.476	0.719	1.546	0.	0.	0.	0.

Problem 75	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	738	738	325	2663	0	0	0	0
normalized size	1	1.	0.44	3.61	0.	0.	0.	0.
time (sec)	N/A	1.191	3.325	0.635	0.	0.	0.	0.

Problem 76	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	513	513	259	1861	0	0	0	0
normalized size	1	1.	0.5	3.63	0.	0.	0.	0.
time (sec)	N/A	0.98	2.235	0.453	0.	0.	0.	0.

Problem 77	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	410	410	237	1047	0	0	0	0
normalized size	1	1.	0.58	2.55	0.	0.	0.	0.
time (sec)	N/A	0.573	1.361	0.312	0.	0.	0.	0.

Problem 78	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	1137	1137	597	0	0	0	0	0
normalized size	1	1.	0.53	0.	0.	0.	0.	0.
time (sec)	N/A	2.	4.967	2.438	0.	0.	0.	0.

Problem 79	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	1589	1589	715	13136	0	0	0	0
normalized size	1	1.	0.45	8.27	0.	0.	0.	0.
time (sec)	N/A	2.112	6.253	0.802	0.	0.	0.	0.

Problem 80	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	1025	1025	711	9710	0	0	0	0
normalized size	1	1.	0.69	9.47	0.	0.	0.	0.
time (sec)	N/A	1.307	6.246	0.454	0.	0.	0.	0.

Problem 81	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	641	641	683	5897	0	0	0	0
normalized size	1	1.	1.07	9.2	0.	0.	0.	0.
time (sec)	N/A	0.784	6.223	0.411	0.	0.	0.	0.

Problem 82	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	F(-2)	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.183	0.148	5.632	0.	0.	0.	0.

Problem 83	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F(-1)	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	634	634	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.871	152.004	8.092	0.	0.	0.	0.

Problem 84	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F(-1)	F	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	514	514	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.753	76.408	6.27	0.	0.	0.	0.

Problem 85	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F(-1)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	390	390	2724	0	0	0	0	0
normalized size	1	1.	6.98	0.	0.	0.	0.	0.
time (sec)	N/A	0.623	9.714	4.362	0.	0.	0.	0.

Problem 86	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	237	237	246	0	0	0	0	0
normalized size	1	1.	1.04	0.	0.	0.	0.	0.
time (sec)	N/A	0.332	0.024	0.165	0.	0.	0.	0.

Problem 87	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.194	0.205	2.396	0.	0.	0.	0.

Problem 88	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	351	351	305	490	778	980	770	1118
normalized size	1	1.	0.87	1.4	2.22	2.79	2.19	3.19
time (sec)	N/A	0.992	0.396	0.019	1.747	1.856	5.158	1.295

Problem 89	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	248	248	211	338	525	668	502	699
normalized size	1	1.	0.85	1.36	2.12	2.69	2.02	2.82
time (sec)	N/A	0.535	0.299	0.006	1.747	1.768	2.954	1.329

Problem 90	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	148	148	138	198	301	378	267	362
normalized size	1	1.	0.93	1.34	2.03	2.55	1.8	2.45
time (sec)	N/A	0.193	0.188	0.006	1.579	1.767	1.318	1.319

Problem 91	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	344	344	282	1578	0	0	0	0
normalized size	1	1.	0.82	4.59	0.	0.	0.	0.
time (sec)	N/A	0.643	0.549	0.367	0.	0.	0.	0.

Problem 92	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	358	358	322	982	0	0	0	0
normalized size	1	1.	0.9	2.74	0.	0.	0.	0.
time (sec)	N/A	0.952	0.469	0.703	0.	0.	0.	0.

Problem 93	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	202	202	263	805	0	2380	0	0
normalized size	1	1.	1.3	3.99	0.	11.78	0.	0.
time (sec)	N/A	0.358	0.547	0.014	0.	40.604	0.	0.

Problem 94	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	257	257	321	1269	0	0	0	0
normalized size	1	1.	1.25	4.94	0.	0.	0.	0.
time (sec)	N/A	0.427	0.773	0.013	0.	0.	0.	0.

Problem 95	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	360	360	418	1804	0	0	0	0
normalized size	1	1.	1.16	5.01	0.	0.	0.	0.
time (sec)	N/A	0.695	1.278	0.019	0.	0.	0.	0.

Problem 96	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	457	457	494	2431	0	0	0	0
normalized size	1	1.	1.08	5.32	0.	0.	0.	0.
time (sec)	N/A	0.966	1.394	0.018	0.	0.	0.	0.

Problem 97	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	512	509	463	705	1257	1509	1263	1962
normalized size	1	0.99	0.9	1.38	2.46	2.95	2.47	3.83
time (sec)	N/A	2.511	0.518	0.017	1.681	4.033	11.043	1.325

Problem 98	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	361	361	307	502	849	1042	821	1218
normalized size	1	1.	0.85	1.39	2.35	2.89	2.27	3.37
time (sec)	N/A	1.215	0.501	0.005	1.656	3.914	5.683	1.306

Problem 99	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	223	223	186	307	500	586	449	664
normalized size	1	1.	0.83	1.38	2.24	2.63	2.01	2.98
time (sec)	N/A	0.448	0.299	0.005	1.673	3.01	2.689	1.265

Problem 100	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	459	459	381	2477	0	0	0	0
normalized size	1	1.	0.83	5.4	0.	0.	0.	0.
time (sec)	N/A	0.787	0.635	0.464	0.	0.	0.	0.

Problem 101	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	460	460	392	1922	0	0	0	0
normalized size	1	1.	0.85	4.18	0.	0.	0.	0.
time (sec)	N/A	0.847	0.969	1.245	0.	0.	0.	0.

Problem 102	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	488	488	996	2706	0	0	0	0
normalized size	1	1.	2.04	5.55	0.	0.	0.	0.
time (sec)	N/A	1.262	6.645	1.641	0.	0.	0.	0.

Problem 103	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	349	349	442	2173	0	0	0	0
normalized size	1	1.	1.27	6.23	0.	0.	0.	0.
time (sec)	N/A	0.617	1.825	0.015	0.	0.	0.	0.

Problem 104	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	470	470	575	3005	0	0	0	0
normalized size	1	1.	1.22	6.39	0.	0.	0.	0.
time (sec)	N/A	0.944	2.935	0.013	0.	0.	0.	0.

Problem 105	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	593	593	682	4077	0	0	0	0
normalized size	1	1.	1.15	6.88	0.	0.	0.	0.
time (sec)	N/A	1.255	2.669	0.014	0.	0.	0.	0.

Problem 106	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	684	684	619	932	1791	2137	1809	2966
normalized size	1	1.	0.9	1.36	2.62	3.12	2.64	4.34
time (sec)	N/A	6.264	0.916	0.016	1.581	3.859	19.189	1.363

Problem 107	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	484	482	380	674	1231	1426	1197	1917
normalized size	1	1.	0.79	1.39	2.54	2.95	2.47	3.96
time (sec)	N/A	2.55	0.906	0.006	1.545	3.465	10.587	1.427

Problem 108	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	308	308	253	428	726	846	658	1041
normalized size	1	1.	0.82	1.39	2.36	2.75	2.14	3.38
time (sec)	N/A	0.948	0.465	0.005	1.493	2.808	6.037	1.19

Problem 109	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	623	623	498	3455	0	0	0	0
normalized size	1	1.	0.8	5.55	0.	0.	0.	0.
time (sec)	N/A	1.136	1.005	0.709	0.	0.	0.	0.

Problem 110	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	617	617	515	2939	0	0	0	0
normalized size	1	1.	0.83	4.76	0.	0.	0.	0.
time (sec)	N/A	1.742	1.431	1.714	0.	0.	0.	0.

Problem 111	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	1016	1016	1556	4548	0	0	0	0
normalized size	1	1.	1.53	4.48	0.	0.	0.	0.
time (sec)	N/A	2.618	6.455	1.173	0.	0.	0.	0.

Problem 112	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	1278	1278	1921	5682	0	0	0	0
normalized size	1	1.	1.5	4.45	0.	0.	0.	0.
time (sec)	N/A	2.859	6.956	2.217	0.	0.	0.	0.

Problem 113	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	935	935	574	3105	0	0	0	0
normalized size	1	1.	0.61	3.32	0.	0.	0.	0.
time (sec)	N/A	2.934	1.603	0.931	0.	0.	0.	0.

Problem 114	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	1678	1678	903	0	0	0	0	0
normalized size	1	1.	0.54	0.	0.	0.	0.	0.
time (sec)	N/A	3.709	4.314	5.037	0.	0.	0.	0.

Problem 115	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	1016	1016	734	2600	0	3374	2992	4925
normalized size	1	1.	0.72	2.56	0.	3.32	2.94	4.85
time (sec)	N/A	1.58	1.036	0.268	0.	4.062	25.742	1.475

Problem 116	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	701	701	534	1633	0	2303	1935	3055
normalized size	1	1.	0.76	2.33	0.	3.29	2.76	4.36
time (sec)	N/A	1.123	0.579	0.177	0.	3.708	12.976	1.391

Problem 117	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	425	425	364	870	0	1289	1059	1613
normalized size	1	1.	0.86	2.05	0.	3.03	2.49	3.8
time (sec)	N/A	0.698	0.332	0.114	0.	3.191	6.114	1.322

Problem 118	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	1067	1067	556	0	0	0	0	0
normalized size	1	1.	0.52	0.	0.	0.	0.	0.
time (sec)	N/A	1.948	0.678	2.546	0.	0.	0.	0.

Problem 119	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	1323	1323	688	0	0	0	0	0
normalized size	1	1.	0.52	0.	0.	0.	0.	0.
time (sec)	N/A	2.473	1.267	3.88	0.	0.	0.	0.

Problem 120	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	520	520	307	1405	0	0	0	0
normalized size	1	1.	0.59	2.7	0.	0.	0.	0.
time (sec)	N/A	1.645	0.47	0.932	0.	0.	0.	0.

Problem 121	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	920	920	526	2594	0	0	0	0
normalized size	1	1.	0.57	2.82	0.	0.	0.	0.
time (sec)	N/A	4.244	0.829	0.903	0.	0.	0.	0.

Problem 122	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	137	137	99	213	0	219	255	383
normalized size	1	1.	0.72	1.55	0.	1.6	1.86	2.8
time (sec)	N/A	0.2	0.088	0.016	0.	2.76	1.859	1.205

Problem 123	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	94	94	77	137	0	173	170	234
normalized size	1	1.	0.82	1.46	0.	1.84	1.81	2.49
time (sec)	N/A	0.118	0.06	0.003	0.	2.816	0.899	1.17

Problem 124	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	80	80	62	79	0	135	104	123
normalized size	1	1.	0.78	0.99	0.	1.69	1.3	1.54
time (sec)	N/A	0.077	0.044	0.003	0.	2.781	0.361	1.157

Problem 125	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	35	35	41	31	41	92	46	41
normalized size	1	1.	1.17	0.89	1.17	2.63	1.31	1.17
time (sec)	N/A	0.016	0.034	0.001	1.463	2.883	0.186	1.176

Problem 126	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	181	181	197	579	0	0	0	0
normalized size	1	1.	1.09	3.2	0.	0.	0.	0.
time (sec)	N/A	0.279	0.016	0.128	0.	0.	0.	0.

Problem 127	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	64	64	66	78	0	554	0	107
normalized size	1	1.	1.03	1.22	0.	8.66	0.	1.67
time (sec)	N/A	0.075	0.05	0.011	0.	3.108	0.	1.215

Problem 128	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	103	103	125	118	0	765	0	328
normalized size	1	1.	1.21	1.15	0.	7.43	0.	3.18
time (sec)	N/A	0.116	0.199	0.007	0.	3.44	0.	1.224

Problem 129	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	144	144	166	227	0	925	0	752
normalized size	1	1.	1.15	1.58	0.	6.42	0.	5.22
time (sec)	N/A	0.18	0.21	0.008	0.	3.608	0.	1.217

Problem 130	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	186	186	194	309	0	1115	0	1501
normalized size	1	1.	1.04	1.66	0.	5.99	0.	8.07
time (sec)	N/A	0.274	0.226	0.007	0.	3.989	0.	1.283

Problem 131	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	343	343	148	435	0	352	366	594
normalized size	1	1.	0.43	1.27	0.	1.03	1.07	1.73
time (sec)	N/A	0.596	0.207	0.084	0.	2.652	4.156	1.254

Problem 132	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	220	220	111	231	0	266	243	366
normalized size	1	1.	0.5	1.05	0.	1.21	1.1	1.66
time (sec)	N/A	0.395	0.155	0.061	0.	2.78	1.811	1.24

Problem 133	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	130	130	83	124	0	190	138	188
normalized size	1	1.	0.64	0.95	0.	1.46	1.06	1.45
time (sec)	N/A	0.249	0.09	0.042	0.	2.818	1.015	1.226

Problem 134	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	47	47	49	48	0	130	63	70
normalized size	1	1.	1.04	1.02	0.	2.77	1.34	1.49
time (sec)	N/A	0.055	0.025	0.031	0.	2.706	0.383	1.175

Problem 135	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	271	271	309	0	0	0	0	0
normalized size	1	1.	1.14	0.	0.	0.	0.	0.
time (sec)	N/A	0.41	0.035	0.84	0.	0.	0.	0.

Problem 136	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	F	F	F
verified	N/A	NO	NO	TBD	TBD	TBD	TBD	TBD
size	230	208	208	333	0	0	0	0
normalized size	1	0.9	0.9	1.45	0.	0.	0.	0.
time (sec)	N/A	0.447	0.13	0.282	0.	0.	0.	0.

Problem 137	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	272	272	314	526	0	0	0	0
normalized size	1	1.	1.15	1.93	0.	0.	0.	0.
time (sec)	N/A	0.585	0.114	0.57	0.	0.	0.	0.

Problem 138	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	371	371	181	344	0	378	432	525
normalized size	1	1.	0.49	0.93	0.	1.02	1.16	1.42
time (sec)	N/A	0.451	0.222	0.063	0.	2.885	4.003	1.212

Problem 139	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	211	211	135	185	0	266	248	274
normalized size	1	1.	0.64	0.88	0.	1.26	1.18	1.3
time (sec)	N/A	0.309	0.142	0.047	0.	2.902	1.59	1.199

Problem 140	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	82	82	74	71	0	170	109	105
normalized size	1	1.	0.9	0.87	0.	2.07	1.33	1.28
time (sec)	N/A	0.081	0.032	0.032	0.	2.799	0.735	1.191

Problem 141	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	365	365	424	0	0	0	0	0
normalized size	1	1.	1.16	0.	0.	0.	0.	0.
time (sec)	N/A	0.451	0.038	0.879	0.	0.	0.	0.

Problem 142	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	316	316	309	0	0	0	0	0
normalized size	1	1.	0.98	0.	0.	0.	0.	0.
time (sec)	N/A	0.634	0.113	0.545	0.	0.	0.	0.

Problem 143	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	60	60	45	49	0	0	0	76
normalized size	1	1.	0.75	0.82	0.	0.	0.	1.27
time (sec)	N/A	0.612	0.156	0.041	0.	0.	0.	1.262

Problem 144	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	30	30	30	27	0	0	0	38
normalized size	1	1.	1.	0.9	0.	0.	0.	1.27
time (sec)	N/A	0.221	0.056	0.031	0.	0.	0.	1.217

Problem 145	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	11	11	11	12	0	0	0	15
normalized size	1	1.	1.	1.09	0.	0.	0.	1.36
time (sec)	N/A	0.022	0.016	0.03	0.	0.	0.	1.199

Problem 146	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	14	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.043	0.221	0.286	0.	0.	0.	0.

Problem 147	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-1)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	84	161	86	149	0	0	0	228
normalized size	1	1.92	1.02	1.77	0.	0.	0.	2.71
time (sec)	N/A	0.228	0.553	0.047	0.	0.	0.	1.214

Problem 148	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-1)	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	55	87	63	72	0	0	0	112
normalized size	1	1.58	1.15	1.31	0.	0.	0.	2.04
time (sec)	N/A	0.14	0.182	0.038	0.	0.	0.	1.193

Problem 149	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-1)	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	41	41	37	38	0	0	0	53
normalized size	1	1.	0.9	0.93	0.	0.	0.	1.29
time (sec)	N/A	0.079	0.071	0.03	0.	0.	0.	1.159

Problem 150	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	F(-1)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	14	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.037	2.835	0.744	0.	0.	0.	0.

Problem 151	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-1)	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	176	263	115	215	0	0	0	367
normalized size	1	1.49	0.65	1.22	0.	0.	0.	2.09
time (sec)	N/A	0.507	0.511	0.058	0.	0.	0.	1.261

Problem 152	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-1)	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	108	151	121	109	0	0	0	188
normalized size	1	1.4	1.12	1.01	0.	0.	0.	1.74
time (sec)	N/A	0.269	0.109	0.04	0.	0.	0.	1.212

Problem 153	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-1)	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	65	65	65	53	0	0	0	77
normalized size	1	1.	1.	0.82	0.	0.	0.	1.18
time (sec)	N/A	0.086	0.068	0.027	0.	0.	0.	1.157

Problem 154	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	F(-1)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	14	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.039	2.492	0.878	0.	0.	0.	0.

Problem 155	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	F(-2)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	535	535	473	748	0	0	0	1235
normalized size	1	1.	0.88	1.4	0.	0.	0.	2.31
time (sec)	N/A	2.233	1.674	0.169	0.	0.	0.	2.393

Problem 156	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F	F(-2)	F	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	269	269	256	369	0	0	0	593
normalized size	1	1.	0.95	1.37	0.	0.	0.	2.2
time (sec)	N/A	0.77	2.963	0.104	0.	0.	0.	1.931

Problem 157	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F	F(-2)	F	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	133	133	129	194	0	0	0	301
normalized size	1	1.	0.97	1.46	0.	0.	0.	2.26
time (sec)	N/A	0.295	0.095	0.07	0.	0.	0.	1.432

Problem 158	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-2)	F	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	343	343	635	577	0	0	0	1856
normalized size	1	1.	1.85	1.68	0.	0.	0.	5.41
time (sec)	N/A	1.043	7.396	0.133	0.	0.	0.	2.317

Problem 159	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-2)	F	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	175	175	313	296	0	0	0	980
normalized size	1	1.	1.79	1.69	0.	0.	0.	5.6
time (sec)	N/A	0.271	3.022	0.081	0.	0.	0.	1.874

Problem 160	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-2)	F(-1)	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	406	406	1083	859	0	0	0	3578
normalized size	1	1.	2.67	2.12	0.	0.	0.	8.81
time (sec)	N/A	1.17	9.42	0.157	0.	0.	0.	3.463

Problem 161	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-2)	F(-1)	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	204	204	432	433	0	0	0	1766
normalized size	1	1.	2.12	2.12	0.	0.	0.	8.66
time (sec)	N/A	0.422	3.205	0.093	0.	0.	0.	2.476

Problem 162	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-2)	F(-1)	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	243	243	551	608	0	0	0	2175
normalized size	1	1.	2.27	2.5	0.	0.	0.	8.95
time (sec)	N/A	0.442	4.997	0.114	0.	0.	0.	3.283

Problem 163	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	440	440	335	339	0	0	0	898
normalized size	1	1.	0.76	0.77	0.	0.	0.	2.04
time (sec)	N/A	1.019	1.112	0.097	0.	0.	0.	2.622

Problem 164	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F	F(-2)	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	211	211	224	164	0	0	0	429
normalized size	1	1.	1.06	0.78	0.	0.	0.	2.03
time (sec)	N/A	0.452	0.64	0.065	0.	0.	0.	2.191

Problem 165	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F	F(-2)	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	105	105	131	87	0	0	0	230
normalized size	1	1.	1.25	0.83	0.	0.	0.	2.19
time (sec)	N/A	0.13	0.096	0.036	0.	0.	0.	1.875

Problem 166	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F	F(-2)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	287	287	287	301	0	0	0	0
normalized size	1	1.	1.	1.05	0.	0.	0.	0.
time (sec)	N/A	0.611	2.241	0.105	0.	0.	0.	0.

Problem 167	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F	F(-2)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	144	144	185	161	0	0	0	0
normalized size	1	1.	1.28	1.12	0.	0.	0.	0.
time (sec)	N/A	0.279	0.293	0.069	0.	0.	0.	0.

Problem 168	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-2)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	384	384	392	681	0	0	0	0
normalized size	1	1.	1.02	1.77	0.	0.	0.	0.
time (sec)	N/A	0.896	2.708	0.133	0.	0.	0.	0.

Problem 169	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-2)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	179	179	238	355	0	0	0	0
normalized size	1	1.	1.33	1.98	0.	0.	0.	0.
time (sec)	N/A	0.279	0.947	0.079	0.	0.	0.	0.

Problem 170	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-2)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	468	468	524	1172	0	0	0	0
normalized size	1	1.	1.12	2.5	0.	0.	0.	0.
time (sec)	N/A	1.064	1.857	0.167	0.	0.	0.	0.

Problem 171	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-2)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	218	218	287	600	0	0	0	0
normalized size	1	1.	1.32	2.75	0.	0.	0.	0.
time (sec)	N/A	0.43	0.801	0.096	0.	0.	0.	0.

Problem 172	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	F(-1)
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	18	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.054	0.467	1.419	0.	0.	0.	0.

Problem 173	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	611	611	419	0	0	0	0	0
normalized size	1	1.	0.69	0.	0.	0.	0.	0.
time (sec)	N/A	1.116	0.504	0.405	0.	0.	0.	0.

Problem 174	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	301	301	269	0	0	0	0	0
normalized size	1	1.	0.89	0.	0.	0.	0.	0.
time (sec)	N/A	0.517	0.22	0.266	0.	0.	0.	0.

Problem 175	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	147	147	129	0	0	0	0	0
normalized size	1	1.	0.88	0.	0.	0.	0.	0.
time (sec)	N/A	0.133	0.108	0.126	0.	0.	0.	0.

Problem 176	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	18	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.058	0.187	0.14	0.	0.	0.	0.

Problem 177	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	106	106	77	99	0	564	527	225
normalized size	1	1.	0.73	0.93	0.	5.32	4.97	2.12
time (sec)	N/A	0.093	0.111	0.011	0.	2.41	6.21	1.351

Problem 178	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	109	109	87	90	0	452	394	204
normalized size	1	1.	0.8	0.83	0.	4.15	3.61	1.87
time (sec)	N/A	0.076	0.079	0.006	0.	2.395	2.816	1.39

Problem 179	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	80	80	64	77	0	321	258	142
normalized size	1	1.	0.8	0.96	0.	4.01	3.22	1.78
time (sec)	N/A	0.071	0.048	0.004	0.	2.208	1.259	1.321

Problem 180	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	70	70	59	64	0	213	148	109
normalized size	1	1.	0.84	0.91	0.	3.04	2.11	1.56
time (sec)	N/A	0.04	0.068	0.004	0.	2.107	0.475	1.183

Problem 181	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	40	40	51	36	47	111	51	47
normalized size	1	1.	1.27	0.9	1.18	2.78	1.27	1.18
time (sec)	N/A	0.024	0.04	0.003	1.423	1.923	0.22	1.157

Problem 182	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	89	89	71	182	0	0	0	0
normalized size	1	1.	0.8	2.04	0.	0.	0.	0.
time (sec)	N/A	0.105	0.059	0.038	0.	0.	0.	0.

Problem 183	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	51	51	46	56	0	238	0	163
normalized size	1	1.	0.9	1.1	0.	4.67	0.	3.2
time (sec)	N/A	0.053	0.027	0.004	0.	2.116	0.	1.282

Problem 184	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	61	61	49	62	162	213	0	301
normalized size	1	1.	0.8	1.02	2.66	3.49	0.	4.93
time (sec)	N/A	0.053	0.054	0.006	1.468	2.153	0.	1.282

Problem 185	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	88	88	77	78	0	462	0	508
normalized size	1	1.	0.88	0.89	0.	5.25	0.	5.77
time (sec)	N/A	0.073	0.076	0.005	0.	2.471	0.	1.679

Problem 186	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	94	94	63	84	355	405	0	576
normalized size	1	1.	0.67	0.89	3.78	4.31	0.	6.13
time (sec)	N/A	0.068	0.061	0.004	1.614	2.298	0.	1.682

Problem 187	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	121	121	68	100	0	705	0	783
normalized size	1	1.	0.56	0.83	0.	5.83	0.	6.47
time (sec)	N/A	0.093	0.039	0.004	0.	3.222	0.	1.819

Problem 188	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	203	203	164	194	0	1207	1268	576
normalized size	1	1.	0.81	0.96	0.	5.95	6.25	2.84
time (sec)	N/A	0.305	0.377	0.035	0.	2.396	13.318	1.284

Problem 189	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	176	176	142	206	0	922	916	474
normalized size	1	1.	0.81	1.17	0.	5.24	5.2	2.69
time (sec)	N/A	0.259	0.202	0.036	0.	2.618	6.923	1.243

Problem 190	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	140	140	112	152	0	651	610	355
normalized size	1	1.	0.8	1.09	0.	4.65	4.36	2.54
time (sec)	N/A	0.207	0.194	0.031	0.	2.483	2.859	1.284

Problem 191	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	105	105	86	146	0	421	335	261
normalized size	1	1.	0.82	1.39	0.	4.01	3.19	2.49
time (sec)	N/A	0.145	0.074	0.03	0.	2.435	1.272	1.267

Problem 192	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	59	59	63	92	0	224	143	150
normalized size	1	1.	1.07	1.56	0.	3.8	2.42	2.54
time (sec)	N/A	0.072	0.083	0.003	0.	2.394	0.462	1.193

Problem 193	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	126	126	170	455	0	0	0	0
normalized size	1	1.	1.35	3.61	0.	0.	0.	0.
time (sec)	N/A	0.183	0.163	0.039	0.	0.	0.	0.

Problem 194	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	116	116	176	251	0	0	0	0
normalized size	1	1.	1.52	2.16	0.	0.	0.	0.
time (sec)	N/A	0.164	0.575	0.069	0.	0.	0.	0.

Problem 195	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	87	87	126	152	319	338	0	666
normalized size	1	1.	1.45	1.75	3.67	3.89	0.	7.66
time (sec)	N/A	0.135	0.234	0.036	1.537	3.012	0.	1.39

Problem 196	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	187	187	246	336	0	0	0	0
normalized size	1	1.	1.32	1.8	0.	0.	0.	0.
time (sec)	N/A	0.246	2.041	0.129	0.	0.	0.	0.

Problem 197	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	338	338	307	383	0	2141	2518	1085
normalized size	1	1.	0.91	1.13	0.	6.33	7.45	3.21
time (sec)	N/A	0.494	0.94	0.041	0.	3.588	26.376	1.355

Problem 198	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	287	287	232	397	0	1597	1828	864
normalized size	1	1.	0.81	1.38	0.	5.56	6.37	3.01
time (sec)	N/A	0.4	0.499	0.043	0.	2.842	14.784	1.324

Problem 199	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	235	235	199	280	0	1107	1173	655
normalized size	1	1.	0.85	1.19	0.	4.71	4.99	2.79
time (sec)	N/A	0.322	0.343	0.038	0.	2.63	7.355	1.332

Problem 200	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	165	165	137	266	0	716	685	479
normalized size	1	1.	0.83	1.61	0.	4.34	4.15	2.9
time (sec)	N/A	0.209	0.216	0.036	0.	2.564	2.996	1.268

Problem 201	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	104	104	96	166	0	370	282	281
normalized size	1	1.	0.92	1.6	0.	3.56	2.71	2.7
time (sec)	N/A	0.114	0.077	0.029	0.	2.391	1.165	1.201

Problem 202	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	169	169	304	828	0	0	0	0
normalized size	1	1.	1.8	4.9	0.	0.	0.	0.
time (sec)	N/A	0.204	0.197	0.043	0.	0.	0.	0.

Problem 203	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	190	190	342	532	0	0	0	0
normalized size	1	1.	1.8	2.8	0.	0.	0.	0.
time (sec)	N/A	0.248	0.788	0.067	0.	0.	0.	0.

Problem 204	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	167	167	248	403	0	0	0	0
normalized size	1	1.	1.49	2.41	0.	0.	0.	0.
time (sec)	N/A	0.251	0.761	0.09	0.	0.	0.	0.

Problem 205	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	F(-1)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	291	291	732	716	0	0	0	0
normalized size	1	1.	2.52	2.46	0.	0.	0.	0.
time (sec)	N/A	0.394	7.691	0.124	0.	0.	0.	0.

Problem 206	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	357	357	287	654	0	2390	2876	1353
normalized size	1	1.	0.8	1.83	0.	6.69	8.06	3.79
time (sec)	N/A	0.64	0.474	0.048	0.	3.216	31.082	1.424

Problem 207	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	289	289	235	440	0	1643	1889	1053
normalized size	1	1.	0.81	1.52	0.	5.69	6.54	3.64
time (sec)	N/A	0.482	0.598	0.038	0.	2.866	13.975	1.394

Problem 208	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	198	198	163	412	0	1045	1027	751
normalized size	1	1.	0.82	2.08	0.	5.28	5.19	3.79
time (sec)	N/A	0.306	0.263	0.04	0.	2.586	6.882	1.34

Problem 209	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	119	119	115	255	0	540	444	444
normalized size	1	1.	0.97	2.14	0.	4.54	3.73	3.73
time (sec)	N/A	0.159	0.13	0.035	0.	2.375	2.546	1.192

Problem 210	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	202	202	439	1295	0	0	0	0
normalized size	1	1.	2.17	6.41	0.	0.	0.	0.
time (sec)	N/A	0.234	0.377	0.045	0.	0.	0.	0.

Problem 211	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	270	270	575	911	0	0	0	0
normalized size	1	1.	2.13	3.37	0.	0.	0.	0.
time (sec)	N/A	0.313	1.756	0.076	0.	0.	0.	0.

Problem 212	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	198	198	385	747	0	0	0	0
normalized size	1	1.	1.94	3.77	0.	0.	0.	0.
time (sec)	N/A	0.32	1.208	0.085	0.	0.	0.	0.

Problem 213	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	439	439	1274	1327	0	0	0	0
normalized size	1	1.	2.9	3.02	0.	0.	0.	0.
time (sec)	N/A	0.576	10.408	0.128	0.	0.	0.	0.

Problem 214	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	164	164	150	367	0	749	663	651
normalized size	1	1.	0.91	2.24	0.	4.57	4.04	3.97
time (sec)	N/A	0.209	0.2	0.038	0.	2.4	5.195	1.219

Problem 215	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	213	209	150	155	0	0	0	549
normalized size	1	0.98	0.7	0.73	0.	0.	0.	2.58
time (sec)	N/A	0.408	0.323	0.038	0.	0.	0.	1.269

Problem 216	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	145	145	109	112	0	0	0	363
normalized size	1	1.	0.75	0.77	0.	0.	0.	2.5
time (sec)	N/A	0.314	0.236	0.034	0.	0.	0.	1.218

Problem 217	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	141	137	102	103	0	0	0	266
normalized size	1	0.97	0.72	0.73	0.	0.	0.	1.89
time (sec)	N/A	0.278	0.19	0.034	0.	0.	0.	1.234

Problem 218	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	69	69	61	60	0	0	0	132
normalized size	1	1.	0.88	0.87	0.	0.	0.	1.91
time (sec)	N/A	0.145	0.085	0.03	0.	0.	0.	1.223

Problem 219	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	57	57	48	52	0	0	0	72
normalized size	1	1.	0.84	0.91	0.	0.	0.	1.26
time (sec)	N/A	0.084	0.08	0.03	0.	0.	0.	1.156

Problem 220	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.064	0.778	0.095	0.	0.	0.	0.

Problem 221	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-1)	F	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	258	254	283	396	0	0	0	1855
normalized size	1	0.98	1.1	1.53	0.	0.	0.	7.19
time (sec)	N/A	0.368	1.163	0.055	0.	0.	0.	1.529

Problem 222	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-1)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	190	190	220	281	0	0	0	1229
normalized size	1	1.	1.16	1.48	0.	0.	0.	6.47
time (sec)	N/A	0.295	0.876	0.039	0.	0.	0.	1.491

Problem 223	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-1)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	186	182	140	266	0	0	0	923
normalized size	1	0.98	0.75	1.43	0.	0.	0.	4.96
time (sec)	N/A	0.265	0.784	0.048	0.	0.	0.	1.464

Problem 224	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-1)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	104	104	99	151	0	0	0	470
normalized size	1	1.	0.95	1.45	0.	0.	0.	4.52
time (sec)	N/A	0.141	0.294	0.033	0.	0.	0.	1.443

Problem 225	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-1)	F	F	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	93	89	182	83	0	0	0	290
normalized size	1	0.96	1.96	0.89	0.	0.	0.	3.12
time (sec)	N/A	0.172	0.287	0.034	0.	0.	0.	1.173

Problem 226	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	F(-1)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.059	2.562	0.088	0.	0.	0.	0.

Problem 227	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	322	318	317	720	0	0	0	4232
normalized size	1	0.99	0.98	2.24	0.	0.	0.	13.14
time (sec)	N/A	0.862	1.479	0.064	0.	0.	0.	2.102

Problem 228	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	249	249	181	506	0	0	0	2928
normalized size	1	1.	0.73	2.03	0.	0.	0.	11.76
time (sec)	N/A	0.66	0.705	0.044	0.	0.	0.	2.014

Problem 229	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	248	306	219	474	0	0	0	2183
normalized size	1	1.23	0.88	1.91	0.	0.	0.	8.8
time (sec)	N/A	0.578	0.799	0.053	0.	0.	0.	1.997

Problem 230	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-1)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	157	157	107	263	0	0	0	1218
normalized size	1	1.	0.68	1.68	0.	0.	0.	7.76
time (sec)	N/A	0.33	0.571	0.035	0.	0.	0.	1.847

Problem 231	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-1)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	127	127	100	158	0	0	0	738
normalized size	1	1.	0.79	1.24	0.	0.	0.	5.81
time (sec)	N/A	0.172	0.621	0.036	0.	0.	0.	1.231

Problem 232	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	F(-1)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.058	1.052	0.102	0.	0.	0.	0.

Problem 233	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	416	412	414	1138	0	0	0	7835
normalized size	1	0.99	1.	2.74	0.	0.	0.	18.83
time (sec)	N/A	0.863	1.642	0.099	0.	0.	0.	2.733

Problem 234	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	346	346	320	782	0	0	0	5392
normalized size	1	1.	0.92	2.26	0.	0.	0.	15.58
time (sec)	N/A	0.681	0.994	0.048	0.	0.	0.	2.585

Problem 235	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	337	333	264	753	0	0	0	4149
normalized size	1	0.99	0.78	2.23	0.	0.	0.	12.31
time (sec)	N/A	0.67	1.102	0.088	0.	0.	0.	2.575

Problem 236	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	208	208	186	399	0	0	0	2275
normalized size	1	1.	0.89	1.92	0.	0.	0.	10.94
time (sec)	N/A	0.331	0.728	0.037	0.	0.	0.	2.295

Problem 237	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-1)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	164	160	134	270	0	0	0	1501
normalized size	1	0.98	0.82	1.65	0.	0.	0.	9.15
time (sec)	N/A	0.268	0.309	0.065	0.	0.	0.	1.295

Problem 238	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	F(-1)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.059	5.787	0.521	0.	0.	0.	0.

Problem 239	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	191	191	156	387	0	0	0	2585
normalized size	1	1.	0.82	2.03	0.	0.	0.	13.53
time (sec)	N/A	0.282	0.414	0.075	0.	0.	0.	1.263

Problem 240	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F	F(-2)	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	288	288	269	374	0	0	0	586
normalized size	1	1.	0.93	1.3	0.	0.	0.	2.03
time (sec)	N/A	0.724	0.185	0.099	0.	0.	0.	2.037

Problem 241	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F	F(-2)	F	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	274	274	269	389	0	0	0	625
normalized size	1	1.	0.98	1.42	0.	0.	0.	2.28
time (sec)	N/A	0.748	0.288	0.103	0.	0.	0.	2.179

Problem 242	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F	F(-2)	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	156	156	154	190	0	0	0	275
normalized size	1	1.	0.99	1.22	0.	0.	0.	1.76
time (sec)	N/A	0.424	0.075	0.074	0.	0.	0.	1.824

Problem 243	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F	F(-2)	F	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	133	133	129	194	0	0	0	301
normalized size	1	1.	0.97	1.46	0.	0.	0.	2.26
time (sec)	N/A	0.273	0.057	0.	0.	0.	0.	1.462

Problem 244	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.083	2.32	0.091	0.	0.	0.	0.

Problem 245	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F	F(-2)	F(-1)	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	380	380	273	582	0	0	0	1890
normalized size	1	1.	0.72	1.53	0.	0.	0.	4.97
time (sec)	N/A	1.124	0.186	0.12	0.	0.	0.	2.274

Problem 246	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-2)	F	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	361	361	268	593	0	0	0	2016
normalized size	1	1.	0.74	1.64	0.	0.	0.	5.58
time (sec)	N/A	1.033	0.272	0.122	0.	0.	0.	2.927

Problem 247	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F	F(-2)	F	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	199	199	137	294	0	0	0	894
normalized size	1	1.	0.69	1.48	0.	0.	0.	4.49
time (sec)	N/A	0.493	0.062	0.088	0.	0.	0.	1.763

Problem 248	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-2)	F	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	175	175	313	296	0	0	0	980
normalized size	1	1.	1.79	1.69	0.	0.	0.	5.6
time (sec)	N/A	0.263	2.906	0.	0.	0.	0.	1.876

Problem 249	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.097	1.925	0.09	0.	0.	0.	0.

Problem 250	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-2)	F(-1)	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	475	475	269	864	0	0	0	3783
normalized size	1	1.	0.57	1.82	0.	0.	0.	7.96
time (sec)	N/A	1.6	0.285	0.142	0.	0.	0.	3.186

Problem 251	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-2)	F(-1)	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	427	427	249	873	0	0	0	3895
normalized size	1	1.	0.58	2.04	0.	0.	0.	9.12
time (sec)	N/A	1.325	0.259	0.145	0.	0.	0.	4.176

Problem 252	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-2)	F(-1)	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	256	256	154	435	0	0	0	1848
normalized size	1	1.	0.6	1.7	0.	0.	0.	7.22
time (sec)	N/A	0.719	0.094	0.095	0.	0.	0.	2.179

Problem 253	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-2)	F(-1)	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	204	204	432	433	0	0	0	1766
normalized size	1	1.	2.12	2.12	0.	0.	0.	8.66
time (sec)	N/A	0.416	1.572	0.	0.	0.	0.	2.478

Problem 254	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.094	1.386	0.089	0.	0.	0.	0.

Problem 255	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-2)	F(-1)	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	518	518	267	1228	0	0	0	5272
normalized size	1	1.	0.52	2.37	0.	0.	0.	10.18
time (sec)	N/A	1.615	0.314	0.172	0.	0.	0.	6.113

Problem 256	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-2)	F(-1)	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	301	301	137	622	0	0	0	2728
normalized size	1	1.	0.46	2.07	0.	0.	0.	9.06
time (sec)	N/A	0.763	0.062	0.116	0.	0.	0.	2.734

Problem 257	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-2)	F(-1)	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	243	243	551	608	0	0	0	2175
normalized size	1	1.	2.27	2.5	0.	0.	0.	8.95
time (sec)	N/A	0.41	2.005	0.	0.	0.	0.	3.281

Problem 258	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.095	1.355	0.195	0.	0.	0.	0.

Problem 259	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F	F(-2)	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	365	365	370	263	0	0	0	694
normalized size	1	1.	1.01	0.72	0.	0.	0.	1.9
time (sec)	N/A	0.916	0.246	0.086	0.	0.	0.	2.502

Problem 260	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F	F(-2)	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	233	233	249	169	0	0	0	441
normalized size	1	1.	1.07	0.73	0.	0.	0.	1.89
time (sec)	N/A	0.517	0.137	0.066	0.	0.	0.	2.278

Problem 261	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F	F(-2)	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	243	243	249	179	0	0	0	473
normalized size	1	1.	1.02	0.74	0.	0.	0.	1.95
time (sec)	N/A	0.567	0.253	0.061	0.	0.	0.	2.357

Problem 262	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F	F(-2)	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	105	105	134	85	0	0	0	204
normalized size	1	1.	1.28	0.81	0.	0.	0.	1.94
time (sec)	N/A	0.235	0.064	0.042	0.	0.	0.	2.13

Problem 263	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	A	F	F(-2)	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	105	105	0	87	0	0	0	230
normalized size	1	1.	0.	0.83	0.	0.	0.	2.19
time (sec)	N/A	0.128	0.032	0.	0.	0.	0.	1.887

Problem 264	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.091	0.071	0.088	0.	0.	0.	0.

Problem 265	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F	F(-2)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	412	412	572	478	0	0	0	0
normalized size	1	1.	1.39	1.16	0.	0.	0.	0.
time (sec)	N/A	0.866	0.649	0.117	0.	0.	0.	0.

Problem 266	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F	F(-2)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	270	270	300	307	0	0	0	0
normalized size	1	1.	1.11	1.14	0.	0.	0.	0.
time (sec)	N/A	0.516	0.31	0.092	0.	0.	0.	0.

Problem 267	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F	F(-2)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	280	280	380	320	0	0	0	0
normalized size	1	1.	1.36	1.14	0.	0.	0.	0.
time (sec)	N/A	0.549	0.388	0.093	0.	0.	0.	0.

Problem 268	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F	F(-2)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	144	144	168	156	0	0	0	0
normalized size	1	1.	1.17	1.08	0.	0.	0.	0.
time (sec)	N/A	0.231	0.148	0.073	0.	0.	0.	0.

Problem 269	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	A	F	F(-2)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	144	144	0	161	0	0	0	0
normalized size	1	1.	0.	1.12	0.	0.	0.	0.
time (sec)	N/A	0.287	0.035	0.	0.	0.	0.	0.

Problem 270	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.105	0.077	0.194	0.	0.	0.	0.

Problem 271	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-2)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	344	344	351	689	0	0	0	0
normalized size	1	1.	1.02	2.	0.	0.	0.	0.
time (sec)	N/A	1.173	2.021	0.117	0.	0.	0.	0.

Problem 272	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-2)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	342	342	411	721	0	0	0	0
normalized size	1	1.	1.2	2.11	0.	0.	0.	0.
time (sec)	N/A	1.054	1.841	0.121	0.	0.	0.	0.

Problem 273	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-2)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	207	207	192	342	0	0	0	0
normalized size	1	1.	0.93	1.65	0.	0.	0.	0.
time (sec)	N/A	0.536	1.18	0.086	0.	0.	0.	0.

Problem 274	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	B	F	F(-2)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	179	179	0	355	0	0	0	0
normalized size	1	1.	0.	1.98	0.	0.	0.	0.
time (sec)	N/A	0.281	0.035	0.	0.	0.	0.	0.

Problem 275	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.102	0.079	0.186	0.	0.	0.	0.

Problem 276	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-2)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	442	442	445	1181	0	0	0	0
normalized size	1	1.	1.01	2.67	0.	0.	0.	0.
time (sec)	N/A	1.137	2.286	0.148	0.	0.	0.	0.

Problem 277	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-2)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	441	441	538	1229	0	0	0	0
normalized size	1	1.	1.22	2.79	0.	0.	0.	0.
time (sec)	N/A	1.198	1.779	0.155	0.	0.	0.	0.

Problem 278	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-2)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	252	252	254	583	0	0	0	0
normalized size	1	1.	1.01	2.31	0.	0.	0.	0.
time (sec)	N/A	0.541	1.003	0.102	0.	0.	0.	0.

Problem 279	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-2)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	218	218	287	600	0	0	0	0
normalized size	1	1.	1.32	2.75	0.	0.	0.	0.
time (sec)	N/A	0.452	0.244	0.	0.	0.	0.	0.

Problem 280	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.102	0.085	0.191	0.	0.	0.	0.

Problem 281	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	156	156	115	228	0	0	0	0
normalized size	1	1.	0.74	1.46	0.	0.	0.	0.
time (sec)	N/A	0.124	0.222	0.027	0.	0.	0.	0.

Problem 282	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	136	136	115	206	0	0	0	0
normalized size	1	1.	0.85	1.51	0.	0.	0.	0.
time (sec)	N/A	0.113	0.161	0.009	0.	0.	0.	0.

Problem 283	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F(-2)	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	117	117	87	194	0	0	156	0
normalized size	1	1.	0.74	1.66	0.	0.	1.33	0.
time (sec)	N/A	0.097	0.048	0.009	0.	0.	39.786	0.

Problem 284	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	99	99	87	172	0	0	104	0
normalized size	1	1.	0.88	1.74	0.	0.	1.05	0.
time (sec)	N/A	0.081	0.032	0.011	0.	0.	2.516	0.

Problem 285	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F(-2)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	81	81	59	149	0	0	0	0
normalized size	1	1.	0.73	1.84	0.	0.	0.	0.
time (sec)	N/A	0.076	0.031	0.008	0.	0.	0.	0.

Problem 286	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	61	61	54	132	0	0	0	0
normalized size	1	1.	0.89	2.16	0.	0.	0.	0.
time (sec)	N/A	0.068	0.024	0.01	0.	0.	0.	0.

Problem 287	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	122	122	56	190	0	0	0	0
normalized size	1	1.	0.46	1.56	0.	0.	0.	0.
time (sec)	N/A	0.105	0.03	0.011	0.	0.	0.	0.

Problem 288	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F(-2)	F	F(-1)	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	102	102	59	169	0	0	0	0
normalized size	1	1.	0.58	1.66	0.	0.	0.	0.
time (sec)	N/A	0.091	0.036	0.014	0.	0.	0.	0.

Problem 289	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F(-2)	F	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	159	159	66	225	0	0	0	0
normalized size	1	1.	0.42	1.42	0.	0.	0.	0.
time (sec)	N/A	0.128	0.044	0.015	0.	0.	0.	0.

Problem 290	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F(-2)	F	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	139	139	66	203	0	0	0	0
normalized size	1	1.	0.47	1.46	0.	0.	0.	0.
time (sec)	N/A	0.114	0.045	0.017	0.	0.	0.	0.

Problem 291	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	130	130	114	0	0	0	0	0
normalized size	1	1.	0.88	0.	0.	0.	0.	0.
time (sec)	N/A	0.205	0.108	0.3	0.	0.	0.	0.

Problem 292	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	130	130	106	0	0	0	0	0
normalized size	1	1.	0.82	0.	0.	0.	0.	0.
time (sec)	N/A	0.206	0.118	0.293	0.	0.	0.	0.

Problem 293	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	130	130	107	0	0	0	0	0
normalized size	1	1.	0.82	0.	0.	0.	0.	0.
time (sec)	N/A	0.206	0.107	0.293	0.	0.	0.	0.

Problem 294	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	130	130	107	0	0	0	0	0
normalized size	1	1.	0.82	0.	0.	0.	0.	0.
time (sec)	N/A	0.197	0.09	0.306	0.	0.	0.	0.

Problem 295	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	128	128	107	0	0	0	0	0
normalized size	1	1.	0.84	0.	0.	0.	0.	0.
time (sec)	N/A	0.193	0.081	0.42	0.	0.	0.	0.

Problem 296	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	126	126	104	0	0	0	0	0
normalized size	1	1.	0.83	0.	0.	0.	0.	0.
time (sec)	N/A	0.201	0.074	0.301	0.	0.	0.	0.

Problem 297	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	130	130	102	0	0	0	0	0
normalized size	1	1.	0.78	0.	0.	0.	0.	0.
time (sec)	N/A	0.213	0.08	0.301	0.	0.	0.	0.

Problem 298	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	130	130	106	0	0	0	0	0
normalized size	1	1.	0.82	0.	0.	0.	0.	0.
time (sec)	N/A	0.217	0.078	0.301	0.	0.	0.	0.

Problem 299	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F(-1)	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	130	130	114	0	0	0	0	0
normalized size	1	1.	0.88	0.	0.	0.	0.	0.
time (sec)	N/A	0.216	0.088	0.299	0.	0.	0.	0.

Problem 300	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	F	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	81	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.197	180.002	0.313	0.	0.	0.	0.

Problem 301	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	F(-2)	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	79	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.184	21.125	0.284	0.	0.	0.	0.

Problem 302	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	79	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.192	40.753	0.299	0.	0.	0.	0.

Problem 303	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	81	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.206	25.512	0.303	0.	0.	0.	0.

Problem 304	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	F	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	83	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.194	180.002	0.314	0.	0.	0.	0.

Problem 305	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	F(-2)	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	79	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.179	14.197	0.286	0.	0.	0.	0.

Problem 306	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	79	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.189	52.354	0.303	0.	0.	0.	0.

Problem 307	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	83	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.206	41.054	0.302	0.	0.	0.	0.

Problem 308	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	F(-2)	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	88	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.187	2.869	1.517	0.	0.	0.	0.

Problem 309	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	F(-2)	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	88	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.179	1.828	1.286	0.	0.	0.	0.

Problem 310	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	183	183	151	0	0	0	0	0
normalized size	1	1.	0.83	0.	0.	0.	0.	0.
time (sec)	N/A	0.199	0.136	1.165	0.	0.	0.	0.

Problem 311	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	89	89	77	0	0	0	0	0
normalized size	1	1.	0.87	0.	0.	0.	0.	0.
time (sec)	N/A	0.062	0.042	1.263	0.	0.	0.	0.

Problem 312	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	24	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.058	1.444	0.767	0.	0.	0.	0.

Problem 313	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	135	135	133	215	0	278	0	219
normalized size	1	1.	0.99	1.59	0.	2.06	0.	1.62
time (sec)	N/A	0.193	0.124	0.085	0.	2.311	0.	1.293

Problem 314	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	111	111	116	179	0	223	0	169
normalized size	1	1.	1.05	1.61	0.	2.01	0.	1.52
time (sec)	N/A	0.127	0.099	0.059	0.	2.386	0.	1.271

Problem 315	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	63	63	64	96	0	153	0	107
normalized size	1	1.	1.02	1.52	0.	2.43	0.	1.7
time (sec)	N/A	0.07	0.06	0.054	0.	2.462	0.	1.206

Problem 316	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	31	31	24	28	0	0	0	36
normalized size	1	1.	0.77	0.9	0.	0.	0.	1.16
time (sec)	N/A	0.122	0.067	0.053	0.	0.	0.	1.209

Problem 317	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	39	39	46	42	0	0	0	59
normalized size	1	1.	1.18	1.08	0.	0.	0.	1.51
time (sec)	N/A	0.114	0.058	0.051	0.	0.	0.	1.271

Problem 318	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-1)	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	73	73	88	61	0	0	0	113
normalized size	1	1.	1.21	0.84	0.	0.	0.	1.55
time (sec)	N/A	0.113	0.27	0.05	0.	0.	0.	1.377

Problem 319	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-1)	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	115	115	117	81	0	0	0	173
normalized size	1	1.	1.02	0.7	0.	0.	0.	1.5
time (sec)	N/A	0.224	0.111	0.053	0.	0.	0.	1.343

Problem 320	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	245	245	272	628	0	574	694	400
normalized size	1	1.	1.11	2.56	0.	2.34	2.83	1.63
time (sec)	N/A	0.325	0.216	0.094	0.	2.506	26.91	1.312

Problem 321	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	199	199	216	515	0	433	568	306
normalized size	1	1.	1.09	2.59	0.	2.18	2.85	1.54
time (sec)	N/A	0.204	0.178	0.083	0.	2.445	13.481	1.265

Problem 322	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	110	110	129	277	0	285	298	190
normalized size	1	1.	1.17	2.52	0.	2.59	2.71	1.73
time (sec)	N/A	0.106	0.068	0.061	0.	2.359	7.822	1.251

Problem 323	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	47	47	37	42	0	0	0	55
normalized size	1	1.	0.79	0.89	0.	0.	0.	1.17
time (sec)	N/A	0.138	0.314	0.052	0.	0.	0.	1.211

Problem 324	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	57	57	70	70	0	0	0	82
normalized size	1	1.	1.23	1.23	0.	0.	0.	1.44
time (sec)	N/A	0.152	0.314	0.051	0.	0.	0.	1.275

Problem 325	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-1)	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	90	90	110	108	0	0	0	136
normalized size	1	1.	1.22	1.2	0.	0.	0.	1.51
time (sec)	N/A	0.284	0.435	0.054	0.	0.	0.	1.307

Problem 326	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-1)	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	155	155	143	148	0	0	0	220
normalized size	1	1.	0.92	0.95	0.	0.	0.	1.42
time (sec)	N/A	0.345	0.443	0.056	0.	0.	0.	1.333

Problem 327	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	19	19	19	20	0	61	60	26
normalized size	1	1.	1.	1.05	0.	3.21	3.16	1.37
time (sec)	N/A	0.075	0.028	0.06	0.	3.096	1.48	1.327

Problem 328	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	15	15	15	14	0	34	26	18
normalized size	1	1.	1.	0.93	0.	2.27	1.73	1.2
time (sec)	N/A	0.071	0.02	0.046	0.	2.435	0.881	1.343

Problem 329	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	15	15	15	14	0	34	24	18
normalized size	1	1.	1.	0.93	0.	2.27	1.6	1.2
time (sec)	N/A	0.041	0.018	0.044	0.	2.611	0.761	1.24

Problem 330	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	11	11	11	12	0	34	22	16
normalized size	1	1.	1.	1.09	0.	3.09	2.	1.45
time (sec)	N/A	0.076	0.033	0.046	0.	2.238	1.046	1.254

Problem 331	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	13	13	13	14	45	32	26	18
normalized size	1	1.	1.	1.08	3.46	2.46	2.	1.38
time (sec)	N/A	0.075	0.014	0.046	2.684	2.141	1.586	1.25

Problem 332	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	15	15	15	14	45	38	29	18
normalized size	1	1.	1.	0.93	3.	2.53	1.93	1.2
time (sec)	N/A	0.07	0.015	0.044	82.645	2.063	2.265	1.299

Problem 333	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	128	128	144	235	0	0	0	0
normalized size	1	1.	1.12	1.84	0.	0.	0.	0.
time (sec)	N/A	0.207	0.572	0.122	0.	0.	0.	0.

Problem 334	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	97	97	114	194	0	0	0	0
normalized size	1	1.	1.18	2.	0.	0.	0.	0.
time (sec)	N/A	0.163	0.355	0.106	0.	0.	0.	0.

Problem 335	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	50	50	66	155	0	232	0	112
normalized size	1	1.	1.32	3.1	0.	4.64	0.	2.24
time (sec)	N/A	0.06	0.096	0.056	0.	2.376	0.	1.282

Problem 336	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.082	0.743	0.176	0.	0.	0.	0.

Problem 337	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	58	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.125	10.941	0.148	0.	0.	0.	0.

Problem 338	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	46	46	46	80	0	0	0	0
normalized size	1	1.	1.	1.74	0.	0.	0.	0.
time (sec)	N/A	0.158	0.101	0.052	0.	0.	0.	0.

Problem 339	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	46	46	54	80	0	0	0	0
normalized size	1	1.	1.17	1.74	0.	0.	0.	0.
time (sec)	N/A	0.084	0.041	0.035	0.	0.	0.	0.

Problem 340	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	84	84	60	71	103	151	90	189
normalized size	1	1.	0.71	0.85	1.23	1.8	1.07	2.25
time (sec)	N/A	0.065	0.055	0.025	1.605	2.332	31.188	1.224

Problem 341	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	82	82	87	95	176	144	85	149
normalized size	1	1.	1.06	1.16	2.15	1.76	1.04	1.82
time (sec)	N/A	0.061	0.032	0.024	1.436	2.282	12.847	1.132

Problem 342	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	62	62	70	62	80	123	65	117
normalized size	1	1.	1.13	1.	1.29	1.98	1.05	1.89
time (sec)	N/A	0.048	0.04	0.012	1.457	2.392	4.022	1.154

Problem 343	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	57	57	62	74	119	116	60	80
normalized size	1	1.	1.09	1.3	2.09	2.04	1.05	1.4
time (sec)	N/A	0.044	0.023	0.013	1.422	2.522	1.15	1.167

Problem 344	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	45	45	43	39	50	86	42	51
normalized size	1	1.	0.96	0.87	1.11	1.91	0.93	1.13
time (sec)	N/A	0.039	0.008	0.002	1.476	2.518	0.249	1.157

Problem 345	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	69	69	64	0	0	0	0	0
normalized size	1	1.	0.93	0.	0.	0.	0.	0.
time (sec)	N/A	0.098	0.034	0.076	0.	0.	0.	0.

Problem 346	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	39	39	44	38	77	151	54	478
normalized size	1	1.	1.13	0.97	1.97	3.87	1.38	12.26
time (sec)	N/A	0.033	0.006	0.01	1.433	2.477	2.018	1.37

Problem 347	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	41	41	46	54	51	92	70	238
normalized size	1	1.	1.12	1.32	1.24	2.24	1.71	5.8
time (sec)	N/A	0.026	0.016	0.013	1.414	2.506	2.385	1.23

Problem 348	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	64	64	69	61	109	200	128	406
normalized size	1	1.	1.08	0.95	1.7	3.12	2.	6.34
time (sec)	N/A	0.047	0.021	0.011	1.433	2.835	6.348	2.003

Problem 349	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	66	66	60	64	82	123	112	462
normalized size	1	1.	0.91	0.97	1.24	1.86	1.7	7.
time (sec)	N/A	0.037	0.035	0.011	1.433	3.075	11.542	1.231

Problem 350	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	89	89	63	84	169	238	201	630
normalized size	1	1.	0.71	0.94	1.9	2.67	2.26	7.08
time (sec)	N/A	0.063	0.02	0.014	1.435	3.495	29.21	4.12

Problem 351	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	91	91	68	72	111	154	170	680
normalized size	1	1.	0.75	0.79	1.22	1.69	1.87	7.47
time (sec)	N/A	0.046	0.047	0.012	1.427	3.696	56.137	1.255

Problem 352	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F(-2)	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	86	86	82	108	0	0	58	0
normalized size	1	1.	0.95	1.26	0.	0.	0.67	0.
time (sec)	N/A	0.05	0.2	0.009	0.	0.	4.859	0.

Problem 353	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F(-2)	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	83	83	93	101	0	0	58	0
normalized size	1	1.	1.12	1.22	0.	0.	0.7	0.
time (sec)	N/A	0.061	0.232	0.007	0.	0.	2.57	0.

Problem 354	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F(-2)	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	61	61	72	88	0	0	58	0
normalized size	1	1.	1.18	1.44	0.	0.	0.95	0.
time (sec)	N/A	0.035	0.144	0.008	0.	0.	1.913	0.

Problem 355	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F(-2)	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	49	49	39	71	0	0	49	0
normalized size	1	1.	0.8	1.45	0.	0.	1.	0.
time (sec)	N/A	0.043	0.005	0.006	0.	0.	1.138	0.

Problem 356	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	34	34	44	66	0	0	49	0
normalized size	1	1.	1.29	1.94	0.	0.	1.44	0.
time (sec)	N/A	0.022	0.052	0.007	0.	0.	1.4	0.

Problem 357	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F(-2)	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	81	81	89	97	0	0	60	0
normalized size	1	1.	1.1	1.2	0.	0.	0.74	0.
time (sec)	N/A	0.058	0.181	0.012	0.	0.	2.02	0.

Problem 358	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F(-2)	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	61	61	72	87	0	0	61	0
normalized size	1	1.	1.18	1.43	0.	0.	1.	0.
time (sec)	N/A	0.034	0.133	0.01	0.	0.	3.445	0.

Problem 359	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F(-2)	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	106	106	100	118	0	0	65	0
normalized size	1	1.	0.94	1.11	0.	0.	0.61	0.
time (sec)	N/A	0.074	0.24	0.013	0.	0.	7.611	0.

Problem 360	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	62	62	58	0	0	0	0	0
normalized size	1	1.	0.94	0.	0.	0.	0.	0.
time (sec)	N/A	0.063	0.036	0.051	0.	0.	0.	0.

Problem 361	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	78	78	64	53	70	113	73	104
normalized size	1	1.	0.82	0.68	0.9	1.45	0.94	1.33
time (sec)	N/A	0.03	0.035	0.011	1.427	2.368	10.533	1.175

Problem 362	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	60	60	47	41	54	97	58	68
normalized size	1	1.	0.78	0.68	0.9	1.62	0.97	1.13
time (sec)	N/A	0.021	0.024	0.003	1.418	2.193	4.151	1.129

Problem 363	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	37	37	34	26	34	78	29	36
normalized size	1	1.	0.92	0.7	0.92	2.11	0.78	0.97
time (sec)	N/A	0.012	0.013	0.004	1.43	2.213	0.365	1.144

Problem 364	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	56	56	53	97	0	0	0	0
normalized size	1	1.	0.95	1.73	0.	0.	0.	0.
time (sec)	N/A	0.061	0.031	0.038	0.	0.	0.	0.

Problem 365	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	C	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	28	28	23	23	30	61	42	54
normalized size	1	1.	0.82	0.82	1.07	2.18	1.5	1.93
time (sec)	N/A	0.013	0.013	0.003	1.411	2.37	4.399	1.208

Problem 366	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	50	50	32	35	46	85	42	100
normalized size	1	1.	0.64	0.7	0.92	1.7	0.84	2.
time (sec)	N/A	0.018	0.029	0.003	1.419	2.292	28.982	1.145

Problem 367	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	68	68	44	47	62	99	58	143
normalized size	1	1.	0.65	0.69	0.91	1.46	0.85	2.1
time (sec)	N/A	0.022	0.025	0.004	1.416	2.257	97.719	1.225

Problem 368	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	86	86	49	59	78	112	0	186
normalized size	1	1.	0.57	0.69	0.91	1.3	0.	2.16
time (sec)	N/A	0.029	0.028	0.005	1.424	2.294	0.	1.139

Problem 369	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	89	89	91	88	169	262	177	0
normalized size	1	1.	1.02	0.99	1.9	2.94	1.99	0.
time (sec)	N/A	0.059	0.071	0.018	1.43	2.595	10.272	0.

Problem 370	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	64	64	59	71	80	117	109	0
normalized size	1	1.	0.92	1.11	1.25	1.83	1.7	0.
time (sec)	N/A	0.038	0.041	0.006	1.419	2.442	5.07	0.

Problem 371	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	64	64	79	68	109	235	109	0
normalized size	1	1.	1.23	1.06	1.7	3.67	1.7	0.
time (sec)	N/A	0.043	0.034	0.005	1.431	2.5	4.795	0.

Problem 372	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	39	39	47	51	49	95	60	0
normalized size	1	1.	1.21	1.31	1.26	2.44	1.54	0.
time (sec)	N/A	0.017	0.028	0.006	1.42	2.367	2.666	0.

Problem 373	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	B	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	31	31	89	37	70	158	34	68
normalized size	1	1.	2.87	1.19	2.26	5.1	1.1	2.19
time (sec)	N/A	0.022	0.089	0.005	1.411	2.488	2.508	1.171

Problem 374	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	67	67	61	141	0	0	0	0
normalized size	1	1.	0.91	2.1	0.	0.	0.	0.
time (sec)	N/A	0.092	0.034	0.004	0.	0.	0.	0.

Problem 375	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	39	39	39	39	50	82	32	51
normalized size	1	1.	1.	1.	1.28	2.1	0.82	1.31
time (sec)	N/A	0.036	0.023	0.003	1.402	2.199	2.596	1.164

Problem 376	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	57	57	65	59	116	120	114	0
normalized size	1	1.	1.14	1.04	2.04	2.11	2.	0.
time (sec)	N/A	0.043	0.031	0.005	1.42	2.259	4.738	0.

Problem 377	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	62	62	60	67	78	126	114	0
normalized size	1	1.	0.97	1.08	1.26	2.03	1.84	0.
time (sec)	N/A	0.047	0.055	0.006	1.435	2.268	5.57	0.

Problem 378	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	82	82	77	79	170	149	182	0
normalized size	1	1.	0.94	0.96	2.07	1.82	2.22	0.
time (sec)	N/A	0.055	0.05	0.004	1.431	2.233	10.475	0.

Problem 379	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	81	81	78	0	0	0	0	0
normalized size	1	1.	0.96	0.	0.	0.	0.	0.
time (sec)	N/A	0.051	0.11	0.087	0.	0.	0.	0.

Problem 380	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	68	68	75	0	0	0	66	0
normalized size	1	1.	1.1	0.	0.	0.	0.97	0.
time (sec)	N/A	0.041	0.058	0.029	0.	0.	19.596	0.

Problem 381	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	69	69	75	0	0	0	60	0
normalized size	1	1.	1.09	0.	0.	0.	0.87	0.
time (sec)	N/A	0.033	0.056	0.015	0.	0.	7.21	0.

Problem 382	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	60	60	60	0	0	0	56	0
normalized size	1	1.	1.	0.	0.	0.	0.93	0.
time (sec)	N/A	0.035	0.033	0.019	0.	0.	3.226	0.

Problem 383	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F	F(-2)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	75	75	157	164	0	0	0	0
normalized size	1	1.	2.09	2.19	0.	0.	0.	0.
time (sec)	N/A	0.104	0.172	0.004	0.	0.	0.	0.

Problem 384	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-1)	F(-2)	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	69	69	68	0	0	0	60	0
normalized size	1	1.	0.99	0.	0.	0.	0.87	0.
time (sec)	N/A	0.043	0.072	0.016	0.	0.	8.225	0.

Problem 385	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	72	72	75	0	0	0	61	0
normalized size	1	1.	1.04	0.	0.	0.	0.85	0.
time (sec)	N/A	0.045	0.053	0.017	0.	0.	23.839	0.

Problem 386	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	129	129	116	258	0	219	204	297
normalized size	1	1.	0.9	2.	0.	1.7	1.58	2.3
time (sec)	N/A	0.155	0.112	0.054	0.	2.297	4.718	1.165

Problem 387	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	115	115	98	191	0	173	133	176
normalized size	1	1.	0.85	1.66	0.	1.5	1.16	1.53
time (sec)	N/A	0.13	0.079	0.016	0.	2.341	1.37	1.134

Problem 388	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	57	57	70	50	61	127	76	66
normalized size	1	1.	1.23	0.88	1.07	2.23	1.33	1.16
time (sec)	N/A	0.061	0.049	0.003	1.537	2.32	0.285	1.144

Problem 389	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	214	214	230	0	0	0	0	0
normalized size	1	1.	1.07	0.	0.	0.	0.	0.
time (sec)	N/A	0.376	0.02	0.135	0.	0.	0.	0.

Problem 390	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	90	90	81	89	0	640	0	0
normalized size	1	1.	0.9	0.99	0.	7.11	0.	0.
time (sec)	N/A	0.092	0.077	0.013	0.	3.035	0.	0.

Problem 391	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	137	137	150	132	0	884	0	0
normalized size	1	1.	1.09	0.96	0.	6.45	0.	0.
time (sec)	N/A	0.135	0.289	0.015	0.	3.515	0.	0.

Problem 392	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	190	190	176	246	0	1102	0	0
normalized size	1	1.	0.93	1.29	0.	5.8	0.	0.
time (sec)	N/A	0.225	0.252	0.016	0.	4.911	0.	0.

Problem 393	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	A	F(-2)	F	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	336	336	0	346	0	0	0	0
normalized size	1	1.	0.	1.03	0.	0.	0.	0.
time (sec)	N/A	0.418	0.753	0.022	0.	0.	0.	0.

Problem 394	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	A	F(-2)	F	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	287	287	0	295	0	0	0	0
normalized size	1	1.	0.	1.03	0.	0.	0.	0.
time (sec)	N/A	0.288	0.573	0.01	0.	0.	0.	0.

Problem 395	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	237	237	155	153	0	0	0	0
normalized size	1	1.	0.65	0.65	0.	0.	0.	0.
time (sec)	N/A	0.223	0.141	0.009	0.	0.	0.	0.

Problem 396	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	126	126	140	114	0	0	0	0
normalized size	1	1.	1.11	0.9	0.	0.	0.	0.
time (sec)	N/A	0.076	0.23	0.01	0.	0.	0.	0.

Problem 397	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	284	284	243	207	0	0	0	0
normalized size	1	1.	0.86	0.73	0.	0.	0.	0.
time (sec)	N/A	0.253	0.397	0.013	0.	0.	0.	0.

Problem 398	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	A	F(-2)	F	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	355	355	0	346	0	0	0	0
normalized size	1	1.	0.	0.97	0.	0.	0.	0.
time (sec)	N/A	0.356	0.798	0.016	0.	0.	0.	0.

Problem 399	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	47	47	41	38	50	105	61	50
normalized size	1	1.	0.87	0.81	1.06	2.23	1.3	1.06
time (sec)	N/A	0.058	0.027	0.003	1.499	2.305	1.04	1.17

Problem 400	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	A	A	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	47	47	47	0	53	132	0	53
normalized size	1	1.	1.	0.	1.13	2.81	0.	1.13
time (sec)	N/A	0.053	0.035	0.066	1.468	2.544	0.	1.15

Problem 401	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	127	127	123	0	0	474	0	0
normalized size	1	1.	0.97	0.	0.	3.73	0.	0.
time (sec)	N/A	0.031	0.104	0.126	0.	2.453	0.	0.

Problem 402	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	110	110	162	0	0	328	0	0
normalized size	1	1.	1.47	0.	0.	2.98	0.	0.
time (sec)	N/A	0.058	0.116	0.102	0.	2.248	0.	0.

Problem 403	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	63	63	63	0	0	205	0	0
normalized size	1	1.	1.	0.	0.	3.25	0.	0.
time (sec)	N/A	0.012	0.014	0.102	0.	2.348	0.	0.

Problem 404	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	43	43	41	45	61	103	0	81
normalized size	1	1.	0.95	1.05	1.42	2.4	0.	1.88
time (sec)	N/A	0.038	0.026	0.008	1.512	2.289	0.	1.14

Problem 405	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	159	159	120	0	0	0	0	0
normalized size	1	1.	0.75	0.	0.	0.	0.	0.
time (sec)	N/A	0.042	0.68	0.057	0.	0.	0.	0.

Problem 406	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	205	205	164	0	0	0	0	0
normalized size	1	1.	0.8	0.	0.	0.	0.	0.
time (sec)	N/A	0.026	1.332	0.058	0.	0.	0.	0.

Problem 407	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	227	227	187	0	0	0	0	0
normalized size	1	1.	0.82	0.	0.	0.	0.	0.
time (sec)	N/A	0.048	0.536	0.057	0.	0.	0.	0.

Problem 408	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	135	135	131	0	0	474	0	0
normalized size	1	1.	0.97	0.	0.	3.51	0.	0.
time (sec)	N/A	0.031	0.111	0.105	0.	2.333	0.	0.

Problem 409	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	115	115	166	0	0	328	0	0
normalized size	1	1.	1.44	0.	0.	2.85	0.	0.
time (sec)	N/A	0.061	0.116	0.103	0.	2.281	0.	0.

Problem 410	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	67	67	67	0	0	205	0	0
normalized size	1	1.	1.	0.	0.	3.06	0.	0.
time (sec)	N/A	0.012	0.02	0.104	0.	2.27	0.	0.

Problem 411	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	45	45	43	45	61	103	0	74
normalized size	1	1.	0.96	1.	1.36	2.29	0.	1.64
time (sec)	N/A	0.039	0.027	0.01	1.513	2.248	0.	1.167

Problem 412	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	168	168	130	0	0	0	0	0
normalized size	1	1.	0.77	0.	0.	0.	0.	0.
time (sec)	N/A	0.023	0.195	0.059	0.	0.	0.	0.

Problem 413	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	216	216	183	0	0	0	0	0
normalized size	1	1.	0.85	0.	0.	0.	0.	0.
time (sec)	N/A	0.025	0.359	0.057	0.	0.	0.	0.

Problem 414	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	240	240	195	0	0	0	0	0
normalized size	1	1.	0.81	0.	0.	0.	0.	0.
time (sec)	N/A	0.047	0.477	0.059	0.	0.	0.	0.

Problem 415	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	40	40	40	0	0	84	0	0
normalized size	1	1.	1.	0.	0.	2.1	0.	0.
time (sec)	N/A	0.006	0.013	0.052	0.	2.262	0.	0.

Problem 416	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	44	44	44	0	0	100	0	77
normalized size	1	1.	1.	0.	0.	2.27	0.	1.75
time (sec)	N/A	0.007	0.015	0.053	0.	1.992	0.	1.211

Problem 417	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	277	277	269	0	0	0	0	0
normalized size	1	1.	0.97	0.	0.	0.	0.	0.
time (sec)	N/A	0.104	0.261	0.069	0.	0.	0.	0.

Problem 418	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	247	247	249	0	0	0	0	0
normalized size	1	1.	1.01	0.	0.	0.	0.	0.
time (sec)	N/A	0.076	0.361	0.059	0.	0.	0.	0.

Problem 419	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	210	210	207	0	0	0	0	0
normalized size	1	1.	0.99	0.	0.	0.	0.	0.
time (sec)	N/A	0.024	0.051	0.06	0.	0.	0.	0.

Problem 420	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	185	185	143	0	0	0	0	0
normalized size	1	1.	0.77	0.	0.	0.	0.	0.
time (sec)	N/A	0.027	0.036	0.059	0.	0.	0.	0.

Problem 421	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	238	238	238	0	0	0	0	0
normalized size	1	1.	1.	0.	0.	0.	0.	0.
time (sec)	N/A	0.036	0.584	0.056	0.	0.	0.	0.

Problem 422	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	261	261	247	0	0	0	0	0
normalized size	1	1.	0.95	0.	0.	0.	0.	0.
time (sec)	N/A	0.066	0.495	0.059	0.	0.	0.	0.

Problem 423	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	317	317	297	0	0	0	0	0
normalized size	1	1.	0.94	0.	0.	0.	0.	0.
time (sec)	N/A	0.065	0.811	0.057	0.	0.	0.	0.

Problem 424	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	299	299	292	0	0	0	0	0
normalized size	1	1.	0.98	0.	0.	0.	0.	0.
time (sec)	N/A	0.132	0.298	0.062	0.	0.	0.	0.

Problem 425	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	267	267	265	0	0	0	0	0
normalized size	1	1.	0.99	0.	0.	0.	0.	0.
time (sec)	N/A	0.098	0.387	0.057	0.	0.	0.	0.

Problem 426	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	228	228	225	0	0	0	0	0
normalized size	1	1.	0.99	0.	0.	0.	0.	0.
time (sec)	N/A	0.037	0.051	0.059	0.	0.	0.	0.

Problem 427	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	201	201	155	0	0	0	0	0
normalized size	1	1.	0.77	0.	0.	0.	0.	0.
time (sec)	N/A	0.03	0.048	0.059	0.	0.	0.	0.

Problem 428	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	256	256	256	0	0	0	0	0
normalized size	1	1.	1.	0.	0.	0.	0.	0.
time (sec)	N/A	0.057	0.436	0.057	0.	0.	0.	0.

Problem 429	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	281	281	270	0	0	0	0	0
normalized size	1	1.	0.96	0.	0.	0.	0.	0.
time (sec)	N/A	0.075	0.781	0.061	0.	0.	0.	0.

Problem 430	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	339	339	319	0	0	0	0	0
normalized size	1	1.	0.94	0.	0.	0.	0.	0.
time (sec)	N/A	0.098	0.905	0.056	0.	0.	0.	0.

Problem 431	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	42	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.047	0.092	0.703	0.	0.	0.	0.

Problem 432	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	B	F	F	F(-1)	F(-2)
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	275	275	0	1232	0	0	0	0
normalized size	1	1.	0.	4.48	0.	0.	0.	0.
time (sec)	N/A	0.224	0.298	0.799	0.	0.	0.	0.

Problem 433	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	B	F	F	F(-1)	F(-2)
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	205	205	0	681	0	0	0	0
normalized size	1	1.	0.	3.32	0.	0.	0.	0.
time (sec)	N/A	0.182	0.691	0.008	0.	0.	0.	0.

Problem 434	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	A	F	F	F(-1)	F(-2)
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	141	141	0	276	0	0	0	0
normalized size	1	1.	0.	1.96	0.	0.	0.	0.
time (sec)	N/A	0.111	1.076	0.006	0.	0.	0.	0.

Problem 435	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	42	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.043	0.099	0.28	0.	0.	0.	0.

Problem 436	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	42	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.043	1.689	0.277	0.	0.	0.	0.

Problem 437	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	22	22	22	18	23	51	17	23
normalized size	1	1.	1.	0.82	1.05	2.32	0.77	1.05
time (sec)	N/A	0.038	0.008	0.009	1.447	2.008	0.829	1.151

Problem 438	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	A	F(-1)	F(-2)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	84	84	0	181	0	0	0	0
normalized size	1	1.	0.	2.15	0.	0.	0.	0.
time (sec)	N/A	0.071	0.972	0.025	0.	0.	0.	0.

Problem 439	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	81	81	50	0	0	130	100	131
normalized size	1	1.	0.62	0.	0.	1.6	1.23	1.62
time (sec)	N/A	0.066	0.122	0.016	0.	2.102	5.038	1.197

Problem 440	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	82	82	50	0	0	107	80	103
normalized size	1	1.	0.61	0.	0.	1.3	0.98	1.26
time (sec)	N/A	0.062	0.114	0.007	0.	2.06	1.819	1.199

Problem 441	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	41	41	30	0	0	89	53	72
normalized size	1	1.	0.73	0.	0.	2.17	1.29	1.76
time (sec)	N/A	0.034	0.038	0.008	0.	2.11	0.606	1.198

Problem 442	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	39	39	31	0	0	68	32	42
normalized size	1	1.	0.79	0.	0.	1.74	0.82	1.08
time (sec)	N/A	0.014	0.023	0.007	0.	1.993	0.214	1.198

Problem 443	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	43	43	75	0	0	0	0	0
normalized size	1	1.	1.74	0.	0.	0.	0.	0.
time (sec)	N/A	0.057	0.05	0.008	0.	0.	0.	0.

Problem 444	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	83	83	54	0	0	0	0	0
normalized size	1	1.	0.65	0.	0.	0.	0.	0.
time (sec)	N/A	0.107	0.094	0.01	0.	0.	0.	0.

Problem 445	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	101	101	67	0	0	0	0	0
normalized size	1	1.	0.66	0.	0.	0.	0.	0.
time (sec)	N/A	0.123	0.078	0.01	0.	0.	0.	0.

Problem 446	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	129	129	84	0	0	0	0	0
normalized size	1	1.	0.65	0.	0.	0.	0.	0.
time (sec)	N/A	0.129	0.085	0.008	0.	0.	0.	0.

Problem 447	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	49	49	36	0	0	0	0	0
normalized size	1	1.	0.73	0.	0.	0.	0.	0.
time (sec)	N/A	0.062	0.026	0.006	0.	0.	0.	0.

Problem 448	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	65	65	48	0	0	0	0	0
normalized size	1	1.	0.74	0.	0.	0.	0.	0.
time (sec)	N/A	0.05	0.032	0.006	0.	0.	0.	0.

Problem 449	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	19	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.038	0.187	0.009	0.	0.	0.	0.

Problem 450	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	21	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.078	1.629	0.007	0.	0.	0.	0.

Problem 451	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	309	309	148	0	0	308	416	451
normalized size	1	1.	0.48	0.	0.	1.	1.35	1.46
time (sec)	N/A	0.527	0.412	0.012	0.	2.231	6.173	1.263

Problem 452	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	205	205	103	0	0	198	243	281
normalized size	1	1.	0.5	0.	0.	0.97	1.19	1.37
time (sec)	N/A	0.364	0.22	0.01	0.	2.019	2.33	1.195

Problem 453	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	A	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	101	101	59	0	0	153	146	146
normalized size	1	1.	0.58	0.	0.	1.51	1.45	1.45
time (sec)	N/A	0.184	0.146	0.007	0.	2.058	0.724	1.266

Problem 454	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	51	51	35	0	0	100	65	58
normalized size	1	1.	0.69	0.	0.	1.96	1.27	1.14
time (sec)	N/A	0.02	0.016	0.007	0.	2.106	0.247	1.189

Problem 455	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	19	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.199	0.115	0.007	0.	0.	0.	0.

Problem 456	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	21	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.264	0.244	0.007	0.	0.	0.	0.

Problem 457	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	381	381	221	0	0	0	0	0
normalized size	1	1.	0.58	0.	0.	0.	0.	0.
time (sec)	N/A	0.673	0.358	0.011	0.	0.	0.	0.

Problem 458	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	265	265	161	0	0	0	0	0
normalized size	1	1.	0.61	0.	0.	0.	0.	0.
time (sec)	N/A	0.474	0.214	0.007	0.	0.	0.	0.

Problem 459	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	123	123	93	0	0	0	0	0
normalized size	1	1.	0.76	0.	0.	0.	0.	0.
time (sec)	N/A	0.273	0.106	0.009	0.	0.	0.	0.

Problem 460	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	69	69	52	0	0	0	0	0
normalized size	1	1.	0.75	0.	0.	0.	0.	0.
time (sec)	N/A	0.052	0.032	0.006	0.	0.	0.	0.

Problem 461	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	21	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.197	0.121	0.008	0.	0.	0.	0.

Problem 462	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.264	0.461	0.01	0.	0.	0.	0.

Problem 463	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	162	162	69	0	0	176	0	193
normalized size	1	1.	0.43	0.	0.	1.09	0.	1.19
time (sec)	N/A	0.43	0.334	0.086	0.	2.078	0.	1.204

Problem 464	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	112	112	51	0	0	132	95	123
normalized size	1	1.	0.46	0.	0.	1.18	0.85	1.1
time (sec)	N/A	0.303	0.15	0.079	0.	2.012	27.392	1.262

Problem 465	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	62	62	31	0	0	88	49	68
normalized size	1	1.	0.5	0.	0.	1.42	0.79	1.1
time (sec)	N/A	0.207	0.073	0.08	0.	2.038	0.542	1.224

Problem 466	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	10	10	10	10	12	26	8	12
normalized size	1	1.	1.	1.	1.2	2.6	0.8	1.2
time (sec)	N/A	0.214	0.015	0.005	1.474	2.18	0.461	1.163

Problem 467	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	45	45	45	0	0	0	0	0
normalized size	1	1.	1.	0.	0.	0.	0.	0.
time (sec)	N/A	0.258	0.068	0.08	0.	0.	0.	0.

Problem 468	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	96	96	84	0	0	0	0	0
normalized size	1	1.	0.88	0.	0.	0.	0.	0.
time (sec)	N/A	0.289	0.17	0.076	0.	0.	0.	0.

Problem 469	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	47	47	140	47	0	305	0	0
normalized size	1	1.	2.98	1.	0.	6.49	0.	0.
time (sec)	N/A	0.033	0.138	0.017	0.	2.524	0.	0.

Problem 470	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	F	A	F	A	A	F	A
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD
size	27	0	28	0	1	5	0	1
normalized size	1	0.	1.04	0.	0.04	0.19	0.	0.04
time (sec)	N/A	0.039	0.527	0.073	1.519	1.706	0.	1.158

Problem 471	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	A	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	38	38	38	0	0	105	0	0
normalized size	1	1.	1.	0.	0.	2.76	0.	0.
time (sec)	N/A	0.067	0.045	0.187	0.	2.277	0.	0.

Problem 472	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	30	30	26	0	0	68	0	0
normalized size	1	1.	0.87	0.	0.	2.27	0.	0.
time (sec)	N/A	0.061	0.023	0.155	0.	1.917	0.	0.

Problem 473	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	16	16	16	17	16	50	12	19
normalized size	1	1.	1.	1.06	1.	3.12	0.75	1.19
time (sec)	N/A	0.028	0.023	0.009	1.46	2.088	0.235	1.142

Problem 474	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	F	A	A	F	A	A	A
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD
size	16	0	16	17	0	50	14	27
normalized size	1	0.	1.	1.06	0.	3.12	0.88	1.69
time (sec)	N/A	0.157	0.093	0.004	0.	1.985	4.306	1.223

2.3 Detailed conclusion table specific for Rubi results

The following table is specific to Rubi. It gives additional statistics for each integral. the column **steps** is the number of steps used by Rubi to obtain the antiderivative. The **rules** column is the number of unique rules used. The **integrand size** column is the leaf size of the integrand. Finally the ratio $\frac{\text{number of rules}}{\text{integrand size}}$ is given. The larger this ratio is, the harder the integral was to solve. In this test, problem number [152] had the largest ratio of [1.2]

Table 2.1: Rubi specific breakdown of results for each integral

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1	A	5	5	1.	16	0.312
2	A	4	4	1.	16	0.25
3	A	4	4	1.	14	0.286
4	A	3	2	1.	8	0.25
5	A	8	5	1.	16	0.312
6	A	3	3	1.	16	0.188
7	A	4	4	1.	16	0.25
8	A	5	5	1.	16	0.312
9	A	18	7	1.	18	0.389
10	A	13	7	1.	18	0.389
11	A	9	7	1.	16	0.438
12	A	3	3	1.	10	0.3
13	A	10	6	1.	18	0.333
14	A	10	7	1.	18	0.389
15	A	13	10	1.	18	0.556
16	A	27	7	1.	18	0.389
17	A	17	6	1.	18	0.333
18	A	11	7	1.	16	0.438
19	A	4	4	1.	10	0.4
20	A	0	0	0.	0	0.
21	A	0	0	0.	0	0.
22	A	19	7	0.98	18	0.389
23	A	11	7	0.98	16	0.438

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
24	A	5	5	0.95	10	0.5
25	A	0	0	0.	0	0.
26	A	0	0	0.	0	0.
27	A	0	0	0.	0	0.
28	A	3	3	1.	16	0.188
29	A	0	0	0.	0	0.
30	A	0	0	0.	0	0.
31	A	16	12	1.	31	0.387
32	A	13	8	1.	31	0.258
33	A	8	6	1.	29	0.207
34	A	22	19	1.	31	0.613
35	A	35	22	1.	31	0.71
36	A	24	17	1.	31	0.548
37	A	20	12	1.	31	0.387
38	A	12	9	1.	29	0.31
39	A	29	23	1.	31	0.742
40	A	30	18	1.	31	0.581
41	A	26	15	1.	31	0.484
42	A	14	10	1.	29	0.345
43	A	37	28	1.	31	0.903
44	A	13	7	1.	31	0.226
45	A	9	7	1.	31	0.226
46	A	6	5	1.	29	0.172
47	A	10	7	1.	31	0.226
48	A	13	10	1.	31	0.323
49	A	11	10	1.	31	0.323
50	A	8	7	1.	31	0.226
51	A	6	6	1.	29	0.207
52	A	20	11	1.	31	0.355
53	A	13	10	1.43	31	0.323
54	A	10	7	1.	31	0.226
55	A	10	7	1.31	31	0.226

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
56	A	6	6	1.	29	0.207
57	A	30	12	1.	31	0.387
58	A	37	16	1.	33	0.485
59	A	23	13	1.	33	0.394
60	A	13	11	1.	31	0.355
61	A	38	23	1.	33	0.697
62	A	56	27	1.	33	0.818
63	A	36	21	1.	33	0.636
64	A	19	15	1.	31	0.484
65	A	50	32	1.	33	0.97
66	A	77	32	1.	33	0.97
67	A	50	24	1.	33	0.727
68	A	25	15	1.	31	0.484
69	A	74	35	1.	33	1.061
70	A	17	10	1.	33	0.303
71	A	11	9	1.	33	0.273
72	A	8	6	1.21	31	0.194
73	A	12	8	1.	33	0.242
74	A	20	12	1.	33	0.364
75	A	23	15	1.	33	0.454
76	A	19	13	1.	33	0.394
77	A	16	11	1.	31	0.355
78	A	28	14	1.	33	0.424
79	A	37	12	1.	33	0.364
80	A	30	18	1.	33	0.546
81	A	21	14	1.	31	0.452
82	A	0	0	0.	0	0.
83	A	15	9	1.	35	0.257
84	A	13	9	1.	35	0.257
85	A	11	8	1.	33	0.242
86	A	9	7	1.	25	0.28
87	A	0	0	0.	0	0.

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
88	A	6	4	1.	21	0.19
89	A	6	5	1.	21	0.238
90	A	5	5	1.	19	0.263
91	A	14	12	1.	21	0.571
92	A	15	13	1.	21	0.619
93	A	7	8	1.	21	0.381
94	A	6	7	1.	21	0.333
95	A	7	7	1.	21	0.333
96	A	8	7	1.	21	0.333
97	A	8	5	0.99	26	0.192
98	A	7	5	1.	26	0.192
99	A	6	5	1.	24	0.208
100	A	15	12	1.	26	0.462
101	A	16	14	1.	26	0.538
102	A	16	14	1.	26	0.538
103	A	6	7	1.	26	0.269
104	A	7	8	1.	26	0.308
105	A	8	8	1.	26	0.308
106	A	9	5	1.	31	0.161
107	A	8	5	1.	31	0.161
108	A	7	5	1.	29	0.172
109	A	16	13	1.	31	0.419
110	A	18	15	1.	31	0.484
111	A	30	18	1.	31	0.581
112	A	29	17	1.	31	0.548
113	A	33	20	1.	23	0.87
114	A	55	25	1.	25	1.
115	A	35	8	1.	28	0.286
116	A	27	8	1.	28	0.286
117	A	20	8	1.	26	0.308
118	A	38	23	1.	28	0.821
119	A	45	25	1.	28	0.893

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
120	A	20	18	1.	33	0.546
121	A	32	25	1.	35	0.714
122	A	6	6	1.	10	0.6
123	A	5	5	1.	10	0.5
124	A	5	5	1.	8	0.625
125	A	3	3	1.	6	0.5
126	A	9	6	1.	10	0.6
127	A	4	4	1.	10	0.4
128	A	5	5	1.	10	0.5
129	A	6	6	1.	10	0.6
130	A	7	7	1.	10	0.7
131	A	19	8	1.	12	0.667
132	A	14	8	1.	12	0.667
133	A	10	8	1.	10	0.8
134	A	4	4	1.	8	0.5
135	A	11	7	1.	12	0.583
136	A	11	8	0.9	12	0.667
137	A	14	11	1.	12	0.917
138	A	18	11	1.	12	0.917
139	A	12	10	1.	10	1.
140	A	5	4	1.	8	0.5
141	A	13	8	1.	12	0.667
142	A	13	9	1.	12	0.75
143	A	14	8	1.	12	0.667
144	A	10	8	1.	10	0.8
145	A	3	3	1.	8	0.375
146	A	0	0	0.	0	0.
147	A	12	7	1.92	12	0.583
148	A	8	7	1.58	10	0.7
149	A	4	4	1.	8	0.5
150	A	0	0	0.	0	0.
151	A	24	12	1.49	12	1.

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
152	A	14	12	1.4	10	1.2
153	A	5	5	1.	8	0.625
154	A	0	0	0.	0	0.
155	A	23	12	1.	18	0.667
156	A	14	10	1.	16	0.625
157	A	8	8	1.	14	0.571
158	A	16	10	1.	16	0.625
159	A	9	9	1.	14	0.643
160	A	18	10	1.	16	0.625
161	A	10	9	1.	14	0.643
162	A	11	9	1.	14	0.643
163	A	20	9	1.	18	0.5
164	A	12	8	1.	16	0.5
165	A	7	7	1.	14	0.5
166	A	16	10	1.	16	0.625
167	A	8	8	1.	14	0.571
168	A	22	15	1.	16	0.938
169	A	9	9	1.	14	0.643
170	A	21	13	1.	16	0.812
171	A	10	9	1.	14	0.643
172	A	0	0	0.	0	0.
173	A	22	9	1.	16	0.562
174	A	14	9	1.	14	0.643
175	A	5	4	1.	12	0.333
176	A	0	0	0.	0	0.
177	A	6	5	1.	21	0.238
178	A	6	5	1.	21	0.238
179	A	6	5	1.	21	0.238
180	A	5	5	1.	19	0.263
181	A	4	3	1.	10	0.3
182	A	7	7	1.	21	0.333
183	A	6	6	1.	21	0.286

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
184	A	4	4	1.	21	0.19
185	A	7	7	1.	21	0.333
186	A	5	5	1.	21	0.238
187	A	8	7	1.	21	0.333
188	A	9	7	1.	23	0.304
189	A	8	6	1.	23	0.261
190	A	7	7	1.	23	0.304
191	A	6	6	1.	21	0.286
192	A	4	4	1.	12	0.333
193	A	8	8	1.	23	0.348
194	A	9	7	1.	23	0.304
195	A	5	5	1.	23	0.217
196	A	11	9	1.	23	0.391
197	A	17	9	1.	23	0.391
198	A	13	7	1.	23	0.304
199	A	12	9	1.	23	0.391
200	A	8	7	1.	21	0.333
201	A	6	4	1.	12	0.333
202	A	9	9	1.	23	0.391
203	A	11	8	1.	23	0.348
204	A	9	9	1.	23	0.391
205	A	16	12	1.	23	0.522
206	A	16	6	1.	23	0.261
207	A	13	8	1.	23	0.348
208	A	9	6	1.	21	0.286
209	A	6	4	1.	12	0.333
210	A	10	9	1.	23	0.391
211	A	13	9	1.	23	0.391
212	A	10	10	1.	23	0.435
213	A	21	12	1.	23	0.522
214	A	8	4	1.	12	0.333
215	A	14	7	0.98	23	0.304

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
216	A	11	7	1.	23	0.304
217	A	11	7	0.97	23	0.304
218	A	8	7	1.	21	0.333
219	A	5	5	1.	12	0.417
220	A	0	0	0.	0	0.
221	A	13	6	0.98	23	0.261
222	A	10	6	1.	23	0.261
223	A	10	6	0.98	23	0.261
224	A	6	6	1.	21	0.286
225	A	6	6	0.96	12	0.5
226	A	0	0	0.	0	0.
227	A	26	9	0.99	23	0.391
228	A	20	9	1.	23	0.391
229	A	18	10	1.23	23	0.435
230	A	11	10	1.	21	0.476
231	A	7	7	1.	12	0.583
232	A	0	0	0.	0	0.
233	A	24	8	0.99	23	0.348
234	A	17	8	1.	23	0.348
235	A	18	10	0.99	23	0.435
236	A	9	9	1.	21	0.429
237	A	8	7	0.98	12	0.583
238	A	0	0	0.	0	0.
239	A	9	7	1.	12	0.583
240	A	16	10	1.	25	0.4
241	A	16	10	1.	25	0.4
242	A	11	10	1.	23	0.435
243	A	8	8	1.	14	0.571
244	A	0	0	0.	0	0.
245	A	27	12	1.	25	0.48
246	A	24	13	1.	25	0.52
247	A	13	12	1.	23	0.522

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
248	A	9	9	1.	14	0.643
249	A	0	0	0.	0	0.
250	A	29	12	1.	25	0.48
251	A	26	13	1.	25	0.52
252	A	14	12	1.	23	0.522
253	A	10	9	1.	14	0.643
254	A	0	0	0.	0	0.
255	A	35	14	1.	25	0.56
256	A	16	12	1.	23	0.522
257	A	11	9	1.	14	0.643
258	A	0	0	0.	0	0.
259	A	20	9	1.	25	0.36
260	A	15	9	1.	25	0.36
261	A	15	9	1.	25	0.36
262	A	10	9	1.	23	0.391
263	A	7	7	1.	14	0.5
264	A	0	0	0.	0	0.
265	A	19	8	1.	25	0.32
266	A	14	8	1.	25	0.32
267	A	14	8	1.	25	0.32
268	A	8	8	1.	23	0.348
269	A	8	8	1.	14	0.571
270	A	0	0	0.	0	0.
271	A	26	11	1.	25	0.44
272	A	24	12	1.	25	0.48
273	A	13	12	1.	23	0.522
274	A	9	9	1.	14	0.643
275	A	0	0	0.	0	0.
276	A	23	10	1.	25	0.4
277	A	24	12	1.	25	0.48
278	A	11	11	1.	23	0.478
279	A	10	9	1.	14	0.643

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
280	A	0	0	0.	0	0.
281	A	7	6	1.	23	0.261
282	A	6	5	1.	23	0.217
283	A	6	6	1.	23	0.261
284	A	5	5	1.	23	0.217
285	A	5	5	1.	23	0.217
286	A	4	4	1.	23	0.174
287	A	6	6	1.	23	0.261
288	A	5	5	1.	23	0.217
289	A	7	6	1.	23	0.261
290	A	6	5	1.	23	0.217
291	A	3	3	1.	25	0.12
292	A	3	3	1.	25	0.12
293	A	3	3	1.	25	0.12
294	A	3	3	1.	25	0.12
295	A	3	3	1.	25	0.12
296	A	3	3	1.	25	0.12
297	A	3	3	1.	25	0.12
298	A	3	3	1.	25	0.12
299	A	3	3	1.	25	0.12
300	A	0	0	0.	0	0.
301	A	0	0	0.	0	0.
302	A	0	0	0.	0	0.
303	A	0	0	0.	0	0.
304	A	0	0	0.	0	0.
305	A	0	0	0.	0	0.
306	A	0	0	0.	0	0.
307	A	0	0	0.	0	0.
308	A	0	0	0.	0	0.
309	A	0	0	0.	0	0.
310	A	3	3	1.	23	0.13
311	A	3	3	1.	21	0.143

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
312	A	0	0	0.	0	0.
313	A	7	6	1.	33	0.182
314	A	6	6	1.	33	0.182
315	A	4	4	1.	31	0.129
316	A	5	4	1.	33	0.121
317	A	6	6	1.	33	0.182
318	A	4	4	1.	33	0.121
319	A	9	9	1.	33	0.273
320	A	15	9	1.	33	0.273
321	A	11	9	1.	33	0.273
322	A	7	6	1.	31	0.194
323	A	6	4	1.	33	0.121
324	A	7	5	1.	33	0.152
325	A	11	8	1.	33	0.242
326	A	18	7	1.	33	0.212
327	A	2	2	1.	33	0.061
328	A	2	2	1.	33	0.061
329	A	2	2	1.	31	0.065
330	A	2	2	1.	33	0.061
331	A	2	2	1.	33	0.061
332	A	2	2	1.	33	0.061
333	A	8	8	1.	33	0.242
334	A	7	7	1.	33	0.212
335	A	3	3	1.	31	0.097
336	A	0	0	0.	0	0.
337	A	0	0	0.	0	0.
338	A	3	5	1.	23	0.217
339	A	3	3	1.	36	0.083
340	A	5	4	1.	14	0.286
341	A	6	5	1.	14	0.357
342	A	5	4	1.	14	0.286
343	A	5	5	1.	14	0.357

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
344	A	4	3	1.	12	0.25
345	A	7	6	1.	14	0.429
346	A	5	5	1.	14	0.357
347	A	3	3	1.	14	0.214
348	A	6	6	1.	14	0.429
349	A	4	4	1.	14	0.286
350	A	7	6	1.	14	0.429
351	A	5	4	1.	14	0.286
352	A	5	4	1.	14	0.286
353	A	7	7	1.	14	0.5
354	A	4	4	1.	14	0.286
355	A	7	6	1.	10	0.6
356	A	3	3	1.	14	0.214
357	A	7	7	1.	14	0.5
358	A	4	4	1.	14	0.286
359	A	8	7	1.	14	0.5
360	A	5	5	1.	10	0.5
361	A	8	6	1.	10	0.6
362	A	7	6	1.	8	0.75
363	A	6	6	1.	6	1.
364	A	5	5	1.	10	0.5
365	A	3	3	1.	10	0.3
366	A	4	4	1.	10	0.4
367	A	5	4	1.	10	0.4
368	A	6	4	1.	10	0.4
369	A	7	6	1.	14	0.429
370	A	4	4	1.	14	0.286
371	A	6	6	1.	14	0.429
372	A	3	3	1.	12	0.25
373	A	6	5	1.	10	0.5
374	A	7	6	1.	14	0.429
375	A	4	3	1.	14	0.214

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
376	A	5	5	1.	14	0.357
377	A	5	4	1.	14	0.286
378	A	6	5	1.	14	0.357
379	A	3	3	1.	14	0.214
380	A	3	3	1.	14	0.214
381	A	3	3	1.	12	0.25
382	A	4	3	1.	10	0.3
383	A	7	6	1.	14	0.429
384	A	3	3	1.	14	0.214
385	A	3	3	1.	14	0.214
386	A	7	7	1.	16	0.438
387	A	7	7	1.	16	0.438
388	A	5	4	1.	14	0.286
389	A	12	7	1.	16	0.438
390	A	5	5	1.	16	0.312
391	A	6	6	1.	16	0.375
392	A	7	7	1.	16	0.438
393	A	8	8	1.	16	0.5
394	A	7	7	1.	16	0.438
395	A	7	6	1.	12	0.5
396	A	4	4	1.	16	0.25
397	A	8	7	1.	16	0.438
398	A	8	8	1.	16	0.5
399	A	4	4	1.	12	0.333
400	A	4	4	1.	14	0.286
401	A	3	2	1.	14	0.143
402	A	5	4	1.	14	0.286
403	A	2	2	1.	14	0.143
404	A	4	3	1.	12	0.25
405	A	1	1	1.	14	0.071
406	A	1	1	1.	14	0.071
407	A	2	2	1.	14	0.143

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
408	A	3	2	1.	16	0.125
409	A	5	4	1.	16	0.25
410	A	2	2	1.	16	0.125
411	A	4	3	1.	14	0.214
412	A	1	1	1.	16	0.062
413	A	1	1	1.	16	0.062
414	A	2	2	1.	16	0.125
415	A	2	2	1.	8	0.25
416	A	2	2	1.	10	0.2
417	A	2	2	1.	16	0.125
418	A	2	2	1.	16	0.125
419	A	1	1	1.	16	0.062
420	A	1	1	1.	16	0.062
421	A	1	1	1.	16	0.062
422	A	2	2	1.	16	0.125
423	A	2	2	1.	16	0.125
424	A	2	2	1.	18	0.111
425	A	2	2	1.	18	0.111
426	A	1	1	1.	18	0.056
427	A	1	1	1.	18	0.056
428	A	1	1	1.	18	0.056
429	A	2	2	1.	18	0.111
430	A	2	2	1.	18	0.111
431	A	0	0	0.	0	0.
432	A	8	8	1.	40	0.2
433	A	7	7	1.	40	0.175
434	A	6	7	1.	38	0.184
435	A	0	0	0.	0	0.
436	A	0	0	0.	0	0.
437	A	3	4	1.	8	0.5
438	A	6	6	1.	10	0.6
439	A	6	4	1.	10	0.4

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
440	A	6	4	1.	10	0.4
441	A	5	4	1.	8	0.5
442	A	2	2	1.	6	0.333
443	A	6	5	1.	10	0.5
444	A	6	4	1.	10	0.4
445	A	12	5	1.	12	0.417
446	A	12	5	1.	12	0.417
447	A	8	5	1.	10	0.5
448	A	7	4	1.	8	0.5
449	A	0	0	0.	0	0.
450	A	0	0	0.	0	0.
451	A	17	7	1.	12	0.583
452	A	13	7	1.	12	0.583
453	A	9	7	1.	10	0.7
454	A	2	2	1.	8	0.25
455	A	0	0	0.	0	0.
456	A	0	0	0.	0	0.
457	A	37	8	1.	14	0.571
458	A	27	8	1.	14	0.571
459	A	17	8	1.	12	0.667
460	A	7	4	1.	10	0.4
461	A	0	0	0.	0	0.
462	A	0	0	0.	0	0.
463	A	7	5	1.	21	0.238
464	A	6	5	1.	21	0.238
465	A	5	5	1.	21	0.238
466	A	4	4	1.	21	0.19
467	A	4	4	1.	21	0.19
468	A	5	5	1.	21	0.238
469	A	6	6	1.	10	0.6
470	F	0	0	N/A	0	N/A
471	A	2	2	1.	26	0.077

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
472	A	2	2	1.	26	0.077
473	A	3	2	1.	28	0.071
474	F	0	0	N/A	0	N/A

Chapter 3

Listing of integrals

3.1 $\int (d+ex)^3 \left(a+b\sin^{-1}(cx)\right) dx$

Optimal. Leaf size=179

$$\frac{(d+ex)^4\left(a+b\sin^{-1}(cx)\right)}{4e}+\frac{b\sqrt{1-c^2x^2}\left(ex\left(26c^2d^2+9e^2\right)+4d\left(19c^2d^2+16e^2\right)\right)}{96c^3}-\frac{b\left(24c^2d^2e^2+8c^4d^4+3e^4\right)\sin^{-1}(c}{32c^4e}$$

```
[Out] (7*b*d*(d + e*x)^2*Sqrt[1 - c^2*x^2])/(48*c) + (b*(d + e*x)^3*Sqrt[1 - c^2*
x^2])/(16*c) + (b*(4*d*(19*c^2*d^2 + 16*e^2) + e*(26*c^2*d^2 + 9*e^2)*x)*Sq
rt[1 - c^2*x^2])/(96*c^3) - (b*(8*c^4*d^4 + 24*c^2*d^2*e^2 + 3*e^4)*ArcSin[
c*x])/(32*c^4*e) + ((d + e*x)^4*(a + b*ArcSin[c*x]))/(4*e)
```

Rubi [A] time = 0.182325, antiderivative size = 179, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312, Rules used = {4743, 743, 833, 780, 216}

$$\frac{(d+ex)^4\left(a+b\sin^{-1}(cx)\right)}{4e}+\frac{b\sqrt{1-c^2x^2}\left(ex\left(26c^2d^2+9e^2\right)+4d\left(19c^2d^2+16e^2\right)\right)}{96c^3}-\frac{b\left(24c^2d^2e^2+8c^4d^4+3e^4\right)\sin^{-1}(c}{32c^4e}$$

Antiderivative was successfully verified.

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

```
[Out] (7*b*d*(d + e*x)^2*Sqrt[1 - c^2*x^2])/(48*c) + (b*(d + e*x)^3*Sqrt[1 - c^2*
x^2])/(16*c) + (b*(4*d*(19*c^2*d^2 + 16*e^2) + e*(26*c^2*d^2 + 9*e^2)*x)*Sq
rt[1 - c^2*x^2])/(96*c^3) - (b*(8*c^4*d^4 + 24*c^2*d^2*e^2 + 3*e^4)*ArcSin[
```

```
c*x])/(32*c^4*e) + ((d + e*x)^4*(a + b*ArcSin[c*x]))/(4*e)
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 743

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^(m - 1)*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 1)), x] + Dist[1/(c
*(m + 2*p + 1)), Int[(d + e*x)^(m - 2)*Simp[c*d^2*(m + 2*p + 1) - a*e^2*(m
- 1) + 2*c*d*e*(m + p)*x, x]*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, m,
 p}, x] && NeQ[c*d^2 + a*e^2, 0] && If[RationalQ[m], GtQ[m, 1], SumSimplerQ
[m, -2]] && NeQ[m + 2*p + 1, 0] && IntQuadraticQ[a, 0, c, d, e, m, p, x]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 216

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

Rubi steps

$$\int (d+ex)^3 \left(a+b\sin^{-1}(cx)\right) dx = \frac{(d+ex)^4 \left(a+b\sin^{-1}(cx)\right)}{4e} - \frac{(bc)\int \frac{(d+ex)^4}{\sqrt{1-c^2x^2}}dx}{4e}$$

$$= \frac{b(d+ex)^3\sqrt{1-c^2x^2}}{16c} + \frac{(d+ex)^4 \left(a+b\sin^{-1}(cx)\right)}{4e} + \frac{b\int \frac{(d+ex)^2(-4c^2d^2-3e^2-7c^2dex)}{\sqrt{1-c^2x^2}}dx}{16ce}$$

$$= \frac{7bd(d+ex)^2\sqrt{1-c^2x^2}}{48c} + \frac{b(d+ex)^3\sqrt{1-c^2x^2}}{16c} + \frac{(d+ex)^4 \left(a+b\sin^{-1}(cx)\right)}{4e} - \frac{b\int \frac{(d}{}}{}$$

$$= \frac{7bd(d+ex)^2\sqrt{1-c^2x^2}}{48c} + \frac{b(d+ex)^3\sqrt{1-c^2x^2}}{16c} + \frac{b\left(4d\left(19c^2d^2+16e^2\right)+e\left(26c^2d^2+\right.\right.}{96c^3}$$

$$= \frac{7bd(d+ex)^2\sqrt{1-c^2x^2}}{48c} + \frac{b(d+ex)^3\sqrt{1-c^2x^2}}{16c} + \frac{b\left(4d\left(19c^2d^2+16e^2\right)+e\left(26c^2d^2+\right.\right.}{96c^3}$$

Mathematica [A] time = 0.1484, size = 165, normalized size = 0.92

$$\frac{24ac^4x\left(6d^2ex+4d^3+4de^2x^2+e^3x^3\right)+bc\sqrt{1-c^2x^2}\left(c^2\left(72d^2ex+96d^3+32de^2x^2+6e^3x^3\right)+e^2(64d+9ex)\right)+3b\sin^{-}}{96c^4}$$

Antiderivative was successfully verified.

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

```
[Out] (24*a*c^4*x*(4*d^3 + 6*d^2*e*x + 4*d*e^2*x^2 + e^3*x^3) + b*c*Sqrt[1 - c^2*
x^2]*(e^2*(64*d + 9*e*x) + c^2*(96*d^3 + 72*d^2*e*x + 32*d*e^2*x^2 + 6*e^3*
x^3)) + 3*b*(-24*c^2*d^2*e - 3*e^3 + 8*c^4*x*(4*d^3 + 6*d^2*e*x + 4*d*e^2*x
^2 + e^3*x^3))*ArcSin[c*x])/(96*c^4)
```

Maple [A] time = 0.006, size = 265, normalized size = 1.5

$$\frac{1}{c}\left(\frac{(ecx+dc)^4 a}{4c^3e} + \frac{b}{c^3}\left(\frac{e^3\arcsin(cx)c^4x^4}{4} + e^2\arcsin(cx)c^4x^3d + \frac{3e\arcsin(cx)c^4x^2d^2}{2} + \arcsin(cx)c^4xd^3 + \frac{c^4d^4\,\mathrm{arc}}{4}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

```
arcsin(c*x)*c^4*d^4-1/4/e*(e^4*(-1/4*c^3*x^3*(-c^2*x^2+1)^(1/2)-3/8*c*x*(-c
^2*x^2+1)^(1/2)+3/8*arcsin(c*x))+4*d*c*e^3*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)
-2/3*(-c^2*x^2+1)^(1/2))+6*c^2*d^2*e^2*(-1/2*c*x*(-c^2*x^2+1)^(1/2)+1/2*arc
sin(c*x))-4*c^3*d^3*e*(-c^2*x^2+1)^(1/2)+c^4*d^4*arcsin(c*x))))
```

Maxima [A] time = 1.47708, size = 344, normalized size = 1.92

$$\frac{1}{4}ae^3x^4 + ade^2x^3 + \frac{3}{2}ad^2ex^2 + \frac{3}{4}\left(2x^2\arcsin(cx) + c\left(\frac{\sqrt{-c^2x^2+1}x}{c^2} - \frac{\arcsin\left(\frac{c^2x}{\sqrt{c^2}}\right)}{\sqrt{c^2}c^2}\right)\right)bd^2e + \frac{1}{3}\left(3x^3\arcsin(cx) + c\left(\frac{\sqrt{-}}{}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*a*e^3*x^4 + a*d*e^2*x^3 + 3/2*a*d^2*e*x^2 + 3/4*(2*x^2*arcsin(c*x) + c*
(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^2)))*b*d^2
*e + 1/3*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x
^2 + 1)/c^4))*b*d*e^2 + 1/32*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3
/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^
4))*c)*b*e^3 + a*d^3*x + (c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*b*d^3/c
```

Fricas [A] time = 2.47397, size = 447, normalized size = 2.5

$$\frac{24\,ac^4e^3x^4 + 96\,ac^4de^2x^3 + 144\,ac^4d^2ex^2 + 96\,ac^4d^3x + 3\left(8\,bc^4e^3x^4 + 32\,bc^4de^2x^3 + 48\,bc^4d^2ex^2 + 32\,bc^4d^3x - 24\,bc^2d^2e\right.}{96\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/96*(24*a*c^4*e^3*x^4 + 96*a*c^4*d*e^2*x^3 + 144*a*c^4*d^2*e*x^2 + 96*a*c^
4*d^3*x + 3*(8*b*c^4*e^3*x^4 + 32*b*c^4*d*e^2*x^3 + 48*b*c^4*d^2*e*x^2 + 32
*b*c^4*d^3*x - 24*b*c^2*d^2*e - 3*b*e^3)*arcsin(c*x) + (6*b*c^3*e^3*x^3 + 3
2*b*c^3*d*e^2*x^2 + 96*b*c^3*d^3 + 64*b*c*d*e^2 + 9*(8*b*c^3*d^2*e + b*c*e^
3)*x)*sqrt(-c^2*x^2 + 1))/c^4
```

Sympy [A] time = 1.85828, size = 316, normalized size = 1.77

$$\begin{cases} ad^3x + \frac{3ad^2ex^2}{2} + ade^2x^3 + \frac{ae^3x^4}{4} + bd^3x\operatorname{asin}(cx) + \frac{3bd^2ex^2\operatorname{asin}(cx)}{2} + bde^2x^3\operatorname{asin}(cx) + \frac{be^3x^4\operatorname{asin}(cx)}{4} + \frac{bd^3\sqrt{-c^2x^2+1}}{c} + \frac{3bd^2e}{} \\ a\left(d^3x + \frac{3d^2ex^2}{2} + de^2x^3 + \frac{e^3x^4}{4}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a*d**3*x + 3*a*d**2*e*x**2/2 + a*d*e**2*x**3 + a*e**3*x**4/4 + b
*d**3*x*asin(c*x) + 3*b*d**2*e*x**2*asin(c*x)/2 + b*d*e**2*x**3*asin(c*x) +
 b*e**3*x**4*asin(c*x)/4 + b*d**3*sqrt(-c**2*x**2 + 1)/c + 3*b*d**2*e*x*sqr
t(-c**2*x**2 + 1)/(4*c) + b*d*e**2*x**2*sqrt(-c**2*x**2 + 1)/(3*c) + b*e**3
*x**3*sqrt(-c**2*x**2 + 1)/(16*c) - 3*b*d**2*e*asin(c*x)/(4*c**2) + 2*b*d*e
**2*sqrt(-c**2*x**2 + 1)/(3*c**3) + 3*b*e**3*x*sqrt(-c**2*x**2 + 1)/(32*c**
3) - 3*b*e**3*asin(c*x)/(32*c**4), Ne(c, 0)), (a*(d**3*x + 3*d**2*e*x**2/2
+ d*e**2*x**3 + e**3*x**4/4), True))
```

Giac [B] time = 1.24641, size = 456, normalized size = 2.55

$$bd^3x\arcsin(cx) + adx^3e^2 + ad^3x + \frac{3\sqrt{-c^2x^2+1}bd^2xe}{4c} + \frac{(c^2x^2-1)bdx\arcsin(cx)e^2}{c^2} + \frac{3(c^2x^2-1)bd^2\arcsin(cx)e}{2c^2} +$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] b*d^3*x*arcsin(c*x) + a*d*x^3*e^2 + a*d^3*x + 3/4*sqrt(-c^2*x^2 + 1)*b*d^2*
x*e/c + (c^2*x^2 - 1)*b*d*x*arcsin(c*x)*e^2/c^2 + 3/2*(c^2*x^2 - 1)*b*d^2*a
rcsin(c*x)*e/c^2 + sqrt(-c^2*x^2 + 1)*b*d^3/c + b*d*x*arcsin(c*x)*e^2/c^2 +
 3/2*(c^2*x^2 - 1)*a*d^2*e/c^2 + 3/4*b*d^2*arcsin(c*x)*e/c^2 - 1/16*(-c^2*x
^2 + 1)^(3/2)*b*x*e^3/c^3 - 1/3*(-c^2*x^2 + 1)^(3/2)*b*d*e^2/c^3 + 1/4*(c^2
*x^2 - 1)^2*b*arcsin(c*x)*e^3/c^4 + 5/32*sqrt(-c^2*x^2 + 1)*b*x*e^3/c^3 + s
qrt(-c^2*x^2 + 1)*b*d*e^2/c^3 + 1/4*(c^2*x^2 - 1)^2*a*e^3/c^4 + 1/2*(c^2*x^
2 - 1)*b*arcsin(c*x)*e^3/c^4 + 1/2*(c^2*x^2 - 1)*a*e^3/c^4 + 5/32*b*arcsin(
c*x)*e^3/c^4
```

3.2 $\int (d+ex)^2 \left(a+b\sin^{-1}(cx)\right) \, dx$

Optimal. Leaf size=124

$$\frac{(d+ex)^3 \left(a+b\sin^{-1}(cx)\right)}{3e}+\frac{b\sqrt{1-c^2x^2}\left(4\left(4c^2d^2+e^2\right)+5c^2dex\right)}{18c^3}-\frac{bd\left(\frac{3e^2}{c^2}+2d^2\right)\sin^{-1}(cx)}{6e}+\frac{b\sqrt{1-c^2x^2}(d+ex)^2}{9c}$$

```
[Out] (b*(d + e*x)^2*Sqrt[1 - c^2*x^2])/(9*c) + (b*(4*(4*c^2*d^2 + e^2) + 5*c^2*d
*e*x)*Sqrt[1 - c^2*x^2])/(18*c^3) - (b*d*(2*d^2 + (3*e^2)/c^2)*ArcSin[c*x])
/(6*e) + ((d + e*x)^3*(a + b*ArcSin[c*x]))/(3*e)
```

Rubi [A] time = 0.0950745, antiderivative size = 124, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {4743, 743, 780, 216}

$$\frac{(d+ex)^3 \left(a+b\sin^{-1}(cx)\right)}{3e}+\frac{b\sqrt{1-c^2x^2}\left(4\left(4c^2d^2+e^2\right)+5c^2dex\right)}{18c^3}-\frac{bd\left(\frac{3e^2}{c^2}+2d^2\right)\sin^{-1}(cx)}{6e}+\frac{b\sqrt{1-c^2x^2}(d+ex)^2}{9c}$$

Antiderivative was successfully verified.

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

```
[Out] (b*(d + e*x)^2*Sqrt[1 - c^2*x^2])/(9*c) + (b*(4*(4*c^2*d^2 + e^2) + 5*c^2*d
*e*x)*Sqrt[1 - c^2*x^2])/(18*c^3) - (b*d*(2*d^2 + (3*e^2)/c^2)*ArcSin[c*x])
/(6*e) + ((d + e*x)^3*(a + b*ArcSin[c*x]))/(3*e)
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 743

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^(m - 1)*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 1)), x] + Dist[1/(c
*(m + 2*p + 1)), Int[(d + e*x)^(m - 2)*Simp[c*d^2*(m + 2*p + 1) - a*e^2*(m
- 1) + 2*c*d*e*(m + p)*x, x]*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, m,
 p}, x] && NeQ[c*d^2 + a*e^2, 0] && If[RationalQ[m], GtQ[m, 1], SumSimplerQ
```

```
[m, -2]] && NeQ[m + 2*p + 1, 0] && IntQuadraticQ[a, 0, c, d, e, m, p, x]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 216

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

Rubi steps

$$\int (d+ex)^2\left(a+b\sin^{-1}(cx)\right)dx = \frac{(d+ex)^3\left(a+b\sin^{-1}(cx)\right)}{3e} - \frac{(bc)\int \frac{(d+ex)^3}{\sqrt{1-c^2x^2}}\,dx}{3e}$$

$$= \frac{b(d+ex)^2\sqrt{1-c^2x^2}}{9c} + \frac{(d+ex)^3\left(a+b\sin^{-1}(cx)\right)}{3e} + \frac{b\int \frac{(d+ex)\left(-3c^2d^2-2e^2-5c^2dex\right)}{\sqrt{1-c^2x^2}}\,dx}{9ce}$$

$$= \frac{b(d+ex)^2\sqrt{1-c^2x^2}}{9c} + \frac{b\left(4\left(4c^2d^2+e^2\right)+5c^2dex\right)\sqrt{1-c^2x^2}}{18c^3} + \frac{(d+ex)^3\left(a+b\sin^{-}\right.}{3e}$$

$$= \frac{b(d+ex)^2\sqrt{1-c^2x^2}}{9c} + \frac{b\left(4\left(4c^2d^2+e^2\right)+5c^2dex\right)\sqrt{1-c^2x^2}}{18c^3} - \frac{bd\left(2d^2+\frac{3e^2}{c^2}\right)\sin^{-1}(}{6e}$$

Mathematica [A] time = 0.0917846, size = 121, normalized size = 0.98

$$\frac{6ac^3x\left(3d^2+3dex+e^2x^2\right)+b\sqrt{1-c^2x^2}\left(c^2\left(18d^2+9dex+2e^2x^2\right)+4e^2\right)+3bc\sin^{-1}(cx)\left(6c^2d^2x+3de\left(2c^2x^2-1\right)+2\right.}{18c^3}$$

Antiderivative was successfully verified.

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

```
[Out] (6*a*c^3*x*(3*d^2 + 3*d*e*x + e^2*x^2) + b*Sqrt[1 - c^2*x^2]*(4*e^2 + c^2*(
18*d^2 + 9*d*e*x + 2*e^2*x^2)) + 3*b*c*(6*c^2*d^2*x + 2*c^2*e^2*x^3 + 3*d*e
*(-1 + 2*c^2*x^2))*ArcSin[c*x])/(18*c^3)
```

Maple [A] time = 0.005, size = 193, normalized size = 1.6

$$\frac{1}{c}\left(\frac{(ecx+dc)^3 a}{3c^2e}+\frac{b}{c^2}\left(\frac{\arcsin(cx)\,e^2c^3x^3}{3}+e\arcsin(cx)\,c^3x^2d+\arcsin(cx)\,c^3xd^2+\frac{c^3d^3\arcsin(cx)}{3e}-\frac{1}{3e}\left(e^3\left(-\frac{c^2x^2}{3}\sqrt{\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [A] time = 1.47568, size = 219, normalized size = 1.77

$$\frac{1}{3}ae^2x^3+adex^2+\frac{1}{2}\left(2x^2\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}x}{c^2}-\frac{\arcsin\left(\frac{c^2x}{\sqrt{c^2}}\right)}{\sqrt{c^2}c^2}\right)\right)bde+\frac{1}{9}\left(3x^3\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}x^2}{c^2}+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/3*a*e^2*x^3 + a*d*e*x^2 + 1/2*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*
x/c^2 - arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^2)))*b*d*e + 1/9*(3*x^3*arcsin
(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*e^2 +
a*d^2*x + (c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*b*d^2/c
```

Fricas [A] time = 2.40436, size = 302, normalized size = 2.44

$$\frac{6ac^3e^2x^3+18ac^3dex^2+18ac^3d^2x+3\left(2bc^3e^2x^3+6bc^3dex^2+6bc^3d^2x-3bcde\right)\arcsin(cx)+\left(2bc^2e^2x^2+9bc^2dex+\right.}{18c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/18*(6*a*c^3*e^2*x^3 + 18*a*c^3*d*e*x^2 + 18*a*c^3*d^2*x + 3*(2*b*c^3*e^2*
x^3 + 6*b*c^3*d*e*x^2 + 6*b*c^3*d^2*x - 3*b*c*d*e)*arcsin(c*x) + (2*b*c^2*e
^2*x^2 + 9*b*c^2*d*e*x + 18*b*c^2*d^2 + 4*b*e^2)*sqrt(-c^2*x^2 + 1))/c^3
```

Sympy [A] time = 0.8709, size = 190, normalized size = 1.53

$$\begin{cases} ad^2x + adex^2 + \frac{ae^2x^3}{3} + bd^2x\operatorname{asin}(cx) + bdex^2\operatorname{asin}(cx) + \frac{be^2x^3\operatorname{asin}(cx)}{3} + \frac{bd^2\sqrt{-c^2x^2+1}}{c} + \frac{bdex\sqrt{-c^2x^2+1}}{2c} + \frac{be^2x^2\sqrt{-c^2x^2+1}}{9c} - \frac{bd \\ a\left(d^2x + dex^2 + \frac{e^2x^3}{3}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a*d**2*x + a*d*e*x**2 + a*e**2*x**3/3 + b*d**2*x*asin(c*x) + b*d
*e*x**2*asin(c*x) + b*e**2*x**3*asin(c*x)/3 + b*d**2*sqrt(-c**2*x**2 + 1)/c
 + b*d*e*x*sqrt(-c**2*x**2 + 1)/(2*c) + b*e**2*x**2*sqrt(-c**2*x**2 + 1)/(9
*c) - b*d*e*asin(c*x)/(2*c**2) + 2*b*e**2*sqrt(-c**2*x**2 + 1)/(9*c**3), Ne
(c, 0)), (a*(d**2*x + d*e*x**2 + e**2*x**3/3), True))
```

Giac [A] time = 1.2733, size = 261, normalized size = 2.1

$$bd^2x\arcsin(cx) + \frac{1}{3}ax^3e^2 + ad^2x + \frac{\sqrt{-c^2x^2+1}bdxe}{2c} + \frac{(c^2x^2-1)bx\arcsin(cx)e^2}{3c^2} + \frac{(c^2x^2-1)bd\arcsin(cx)e}{c^2} + \sqrt{-c$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] b*d^2*x*arcsin(c*x) + 1/3*a*x^3*e^2 + a*d^2*x + 1/2*sqrt(-c^2*x^2 + 1)*b*d*
x*e/c + 1/3*(c^2*x^2 - 1)*b*x*arcsin(c*x)*e^2/c^2 + (c^2*x^2 - 1)*b*d*arcsi
n(c*x)*e/c^2 + sqrt(-c^2*x^2 + 1)*b*d^2/c + 1/3*b*x*arcsin(c*x)*e^2/c^2 + (
c^2*x^2 - 1)*a*d*e/c^2 + 1/2*b*d*arcsin(c*x)*e/c^2 - 1/9*(-c^2*x^2 + 1)^(3/
2)*b*e^2/c^3 + 1/3*sqrt(-c^2*x^2 + 1)*b*e^2/c^3
```

3.3 $\int (d+ex)\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=98

$$\frac{(d+ex)^2\left(a+b\sin^{-1}(cx)\right)}{2e}-\frac{b\left(\frac{e^2}{c^2}+2d^2\right)\sin^{-1}(cx)}{4e}+\frac{b\sqrt{1-c^2x^2}(d+ex)}{4c}+\frac{3bd\sqrt{1-c^2x^2}}{4c}$$

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

Rubi [A] time = 0.0510849, antiderivative size = 98, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4743, 743, 641, 216}

$$\frac{(d+ex)^2\left(a+b\sin^{-1}(cx)\right)}{2e}-\frac{b\left(\frac{e^2}{c^2}+2d^2\right)\sin^{-1}(cx)}{4e}+\frac{b\sqrt{1-c^2x^2}(d+ex)}{4c}+\frac{3bd\sqrt{1-c^2x^2}}{4c}$$

Antiderivative was successfully verified.

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

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

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 743

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^(m - 1)*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 1)), x] + Dist[1/(c
*(m + 2*p + 1)), Int[(d + e*x)^(m - 2)*Simp[c*d^2*(m + 2*p + 1) - a*e^2*(m
- 1) + 2*c*d*e*(m + p)*x, x]*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, m,
 p}, x] && NeQ[c*d^2 + a*e^2, 0] && If[RationalQ[m], GtQ[m, 1], SumSimplerQ
```

```
[m, -2]] && NeQ[m + 2*p + 1, 0] && IntQuadraticQ[a, 0, c, d, e, m, p, x]
```

Rule 641

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

Rule 216

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

Rubi steps

$$\int (d+ex)\left(a+b\sin^{-1}(cx)\right)dx = \frac{(d+ex)^2\left(a+b\sin^{-1}(cx)\right)}{2e} - \frac{(bc)\int \frac{(d+ex)^2}{\sqrt{1-c^2x^2}}\,dx}{2e}$$

$$= \frac{b(d+ex)\sqrt{1-c^2x^2}}{4c} + \frac{(d+ex)^2\left(a+b\sin^{-1}(cx)\right)}{2e} + \frac{b\int \frac{-2c^2d^2-e^2-3c^2dex}{\sqrt{1-c^2x^2}}\,dx}{4ce}$$

$$= \frac{3bd\sqrt{1-c^2x^2}}{4c} + \frac{b(d+ex)\sqrt{1-c^2x^2}}{4c} + \frac{(d+ex)^2\left(a+b\sin^{-1}(cx)\right)}{2e} - \frac{\left(b\left(2c^2d^2+e^2\right)\right)}{4ce}$$

$$= \frac{3bd\sqrt{1-c^2x^2}}{4c} + \frac{b(d+ex)\sqrt{1-c^2x^2}}{4c} - \frac{b\left(2d^2+\frac{e^2}{c^2}\right)\sin^{-1}(cx)}{4e} + \frac{(d+ex)^2\left(a+b\sin^{-1}\right.}{2e}$$

Mathematica [A] time = 0.0465409, size = 92, normalized size = 0.94

$$adx+\frac{1}{2}aex^2+\frac{bd\sqrt{1-c^2x^2}}{c}+\frac{bex\sqrt{1-c^2x^2}}{4c}-\frac{be\sin^{-1}(cx)}{4c^2}+bdx\sin^{-1}(cx)+\frac{1}{2}bex^2\sin^{-1}(cx)$$

Antiderivative was successfully verified.

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

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

Maple [A] time = 0.005, size = 97, normalized size = 1.

$$\frac{1}{c}\left(\frac{a}{c}\left(\frac{x^2c^2e}{2}+dc^2x\right)+\frac{b}{c}\left(\frac{\arcsin(cx)\,c^2x^2e}{2}+\arcsin(cx)\,dc^2x-\frac{e}{2}\left(-\frac{cx}{2}\sqrt{-c^2x^2+1}+\frac{\arcsin(cx)}{2}\right)+dc\sqrt{-c^2x^2+1}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [A] time = 1.44807, size = 126, normalized size = 1.29

$$\frac{1}{2}\,aex^2+\frac{1}{4}\left(2\,x^2\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}x}{c^2}-\frac{\arcsin\left(\frac{c^2x}{\sqrt{c^2}}\right)}{\sqrt{c^2}c^2}\right)\right)be+adx+\frac{\left(cx\arcsin(cx)+\sqrt{-c^2x^2+1}\right)bd}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A] time = 2.40443, size = 176, normalized size = 1.8

$$\frac{2\,ac^2ex^2+4\,ac^2dx+\left(2\,bc^2ex^2+4\,bc^2dx-be\right)\arcsin(cx)+(bcex+4\,bcd)\sqrt{-c^2x^2+1}}{4\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A] time = 0.362445, size = 99, normalized size = 1.01

$$\begin{cases} adx + \frac{aex^2}{2} + bdx\,\mathrm{asin}\,(cx) + \frac{bex^2\,\mathrm{asin}\,(cx)}{2} + \frac{bd\sqrt{-c^2x^2+1}}{c} + \frac{bex\sqrt{-c^2x^2+1}}{4c} - \frac{be\,\mathrm{asin}\,(cx)}{4c^2} & \text{for } c \neq 0 \\ a\left(dx + \frac{ex^2}{2}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a*d*x + a*e*x**2/2 + b*d*x*asin(c*x) + b*e*x**2*asin(c*x)/2 + b*
d*sqrt(-c**2*x**2 + 1)/c + b*e*x*sqrt(-c**2*x**2 + 1)/(4*c) - b*e*asin(c*x)
/(4*c**2), Ne(c, 0)), (a*(d*x + e*x**2/2), True))
```

Giac [A] time = 1.29413, size = 138, normalized size = 1.41

$$bdx\arcsin(cx) + adx + \frac{\sqrt{-c^2x^2+1}bxe}{4\,c} + \frac{\left(c^2x^2-1\right)b\arcsin(cx)\,e}{2\,c^2} + \frac{\sqrt{-c^2x^2+1}bd}{c} + \frac{\left(c^2x^2-1\right)ae}{2\,c^2} + \frac{b\arcsin(cx)\,e}{4\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.4 $\int \left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=30

$$ax+\frac{b\sqrt{1-c^2x^2}}{c}+bx\sin^{-1}(cx)$$

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

Rubi [A] time = 0.0132206, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {4619, 261}

$$ax+\frac{b\sqrt{1-c^2x^2}}{c}+bx\sin^{-1}(cx)$$

Antiderivative was successfully verified.

```
[In] Int[a + b*ArcSin[c*x],x]
```

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

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 261

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

Rubi steps

$$\int \left(a+b\sin^{-1}(cx)\right)dx = ax + b\int \sin^{-1}(cx)\,dx$$
$$= ax + bx\sin^{-1}(cx) - (bc)\int \frac{x}{\sqrt{1-c^2x^2}}\,dx$$
$$= ax + \frac{b\sqrt{1-c^2x^2}}{c} + bx\sin^{-1}(cx)$$

Mathematica [A] time = 0.009533, size = 30, normalized size = 1.

$$ax + \frac{b\sqrt{1-c^2x^2}}{c} + bx\sin^{-1}(cx)$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*ArcSin[c*x],x]
```

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

Maple [A] time = 0., size = 30, normalized size = 1.

$$ax + \frac{b}{c}\left(cx\arcsin(cx) + \sqrt{-c^2x^2+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [A] time = 1.47908, size = 39, normalized size = 1.3

$$ax + \frac{\left(cx\arcsin(cx) + \sqrt{-c^2x^2+1}\right)b}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A] time = 2.31312, size = 73, normalized size = 2.43

$$\frac{bcx\arcsin(cx) + acx + \sqrt{-c^2x^2 + 1}b}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A] time = 0.144854, size = 26, normalized size = 0.87

$$ax + b\left(\begin{cases} x\operatorname{asin}(cx) + \frac{\sqrt{-c^2x^2+1}}{c} & \text{for } c \neq 0 \\ 0 & \text{otherwise} \end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] a*x + b*Piecewise((x*asin(c*x) + sqrt(-c**2*x**2 + 1)/c, Ne(c, 0)), (0, Tru
e))
```

Giac [A] time = 1.29272, size = 39, normalized size = 1.3

$$ax + \frac{\left(cx\arcsin(cx) + \sqrt{-c^2x^2 + 1}\right)b}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.5 $\int \frac{a+b\sin^{-1}(cx)}{d+ex}\,dx$

Optimal. Leaf size=229

$$-\frac{ib\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e}-\frac{ib\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e}+\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e}+\frac{\left(a+b\sin^{-1}(cx)\right)}{}$$

```
[Out] ((-I/2)*(a + b*ArcSin[c*x])^2)/(b*e) + ((a + b*ArcSin[c*x])*Log[1 - (I*e*E^
(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e + ((a + b*ArcSin[c*x])*Log
[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e - (I*b*PolyLog
[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e - (I*b*PolyLog[
2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e
```

Rubi [A] time = 0.302585, antiderivative size = 229, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 5, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312, Rules used = {4741, 4519, 2190, 2279, 2391}

$$-\frac{ib\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e}-\frac{ib\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e}+\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e}+\frac{\left(a+b\sin^{-1}(cx)\right)}{}$$

Antiderivative was successfully verified.

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


```
[Out] ((-I/2)*(a + b*ArcSin[c*x])^2)/(b*e) + ((a + b*ArcSin[c*x])*Log[1 - (I*e*E^
(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e + ((a + b*ArcSin[c*x])*Log
[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e - (I*b*PolyLog
[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e - (I*b*PolyLog[
2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e
```


Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
```

```
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}(cx)}{d+ex}\,dx &= \text{Subst}\left(\int \frac{(a+bx)\cos(x)}{cd+e\sin(x)}\,dx, x, \sin^{-1}(cx)\right)\\
&= -\frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2be} + \text{Subst}\left(\int \frac{e^{ix}(a+bx)}{cd-\sqrt{c^2d^2-e^2}-iee^{ix}}\,dx, x, \sin^{-1}(cx)\right) + \text{Subst}\left(\int \frac{e^{ix}}{cd+\sqrt{c^2}}\right.\\
&= -\frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2be} + \frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e} + \frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{iee^{i\sin}}{cd+\sqrt{c^2}}\right.}{e}\\
&= -\frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2be} + \frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e} + \frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{iee^{i\sin}}{cd+\sqrt{c^2}}\right.}{e}\\
&= -\frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2be} + \frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e} + \frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{iee^{i\sin}}{cd+\sqrt{c^2}}\right.}{e}
\end{aligned}$$

Mathematica [A] time = 0.165063, size = 214, normalized size = 0.93

$$-\frac{i\left(2b^2\text{PolyLog}\left(2,-\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}-cd}\right)+2b^2\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)+\left(a+b\sin^{-1}(cx)\right)\left(a+2ib\log\left(1+\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}-cd}\right)+2ib\right.\right.}{2be}$$

Antiderivative was successfully verified.

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

```
[Out] ((-I/2)*((a + b*ArcSin[c*x])*(a + b*ArcSin[c*x] + (2*I)*b*Log[1 + (I*e*E^(I
*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] + (2*I)*b*Log[1 - (I*e*E^(I*
ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]) + 2*b^2*PolyLog[2, ((-I)*e*E^(I
*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] + 2*b^2*PolyLog[2, (I*e*E^(I
*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]))/(b*e)
```

Maple [B] time = 0.164, size = 759, normalized size = 3.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] a*ln(c*e*x+c*d)/e-1/2*I*b/e*arcsin(c*x)^2+c^2*b/e*d^2*arcsin(c*x)/(c^2*d^2-
e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-
c^2*d^2+e^2)^(1/2)))+c^2*b/e*d^2*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x
+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-
I*c^2*b/e/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2
+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*d^2-I*c^2*b/e/(c^2*d^2-e^2)*dilo
g((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^
2+e^2)^(1/2)))*d^2-b*e*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2
+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-b*e*arcsin
(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(
1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+I*b*e/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x
+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+
I*b*e/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2
)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$b\int \frac{\arctan\left(cx, \sqrt{cx+1}\sqrt{-cx+1}\right)}{ex+d}\,dx + \frac{a\log\left(ex+d\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] b*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(e*x + d), x) + a*lo
g(e*x + d)/e
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b\arcsin\left(cx\right)+a}{ex+d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral((b*arcsin(c*x) + a)/(e*x + d), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a+b\,\mathrm{asin}\left(cx\right)}{d+ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\arcsin\left(cx\right)+a}{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*arcsin(c*x) + a)/(e*x + d), x)
```

3.6 $\int \frac{a+b\sin^{-1}(cx)}{(d+ex)^2}\,dx$

Optimal. Leaf size=85

$$\frac{bc\tan^{-1}\left(\frac{c^2dx+e}{\sqrt{1-c^2x^2}\sqrt{c^2d^2-e^2}}\right)}{e\sqrt{c^2d^2-e^2}}-\frac{a+b\sin^{-1}(cx)}{e(d+ex)}$$

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

Rubi [A] time = 0.0534458, antiderivative size = 85, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {4743, 725, 204}

$$\frac{bc\tan^{-1}\left(\frac{c^2dx+e}{\sqrt{1-c^2x^2}\sqrt{c^2d^2-e^2}}\right)}{e\sqrt{c^2d^2-e^2}}-\frac{a+b\sin^{-1}(cx)}{e(d+ex)}$$

Antiderivative was successfully verified.

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

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

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

Rubi steps

$$
\begin{aligned}
\int \frac{a+b\sin^{-1}(cx)}{(d+ex)^2}\,dx &= -\frac{a+b\sin^{-1}(cx)}{e(d+ex)} + \frac{(bc)\int \frac{1}{(d+ex)\sqrt{1-c^2x^2}}\,dx}{e} \\
&= -\frac{a+b\sin^{-1}(cx)}{e(d+ex)} - \frac{(bc)\,\text{Subst}\left(\int \frac{1}{-c^2d^2+e^2-x^2}\,dx, x, \frac{e+c^2dx}{\sqrt{1-c^2x^2}}\right)}{e} \\
&= -\frac{a+b\sin^{-1}(cx)}{e(d+ex)} + \frac{bc\tan^{-1}\left(\frac{e+c^2dx}{\sqrt{c^2d^2-e^2}\sqrt{1-c^2x^2}}\right)}{e\sqrt{c^2d^2-e^2}}
\end{aligned}
$$

Mathematica [A] time = 0.150491, size = 83, normalized size = 0.98

$$
\frac{\frac{bc\tan^{-1}\left(\frac{c^2dx+e}{\sqrt{1-c^2x^2}\sqrt{c^2d^2-e^2}}\right)}{\sqrt{c^2d^2-e^2}} - \frac{a+b\sin^{-1}(cx)}{d+ex}}{e}
$$

Antiderivative was successfully verified.

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

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

Maple [B] time = 0.018, size = 191, normalized size = 2.3

$$
-\frac{ca}{(ecx+dc)\,e} - \frac{bc\arcsin(cx)}{(ecx+dc)\,e} - \frac{bc}{e^2}\ln\Bigg(\Bigg(-2\,\frac{c^2d^2-e^2}{e^2} + 2\,\frac{dc}{e}\left(cx+\frac{dc}{e}\right) + 2\sqrt{-\frac{c^2d^2-e^2}{e^2}}\sqrt{-\left(cx+\frac{dc}{e}\right)^2 + 2\,\frac{dc}{e}\left(cx+\right.}
$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.62081, size = 738, normalized size = 8.68

$$\left[-\frac{2\,ac^2d^2 - 2\,ae^2 + \sqrt{-c^2d^2 + e^2}(bcex + bcd)\log\left(\frac{2\,c^2dex - c^2d^2 + \left(2\,c^4d^2 - c^2e^2\right)x^2 - 2\,\sqrt{-c^2d^2 + e^2}\left(c^2dx + e\right)\sqrt{-c^2x^2 + 1} + 2\,e^2}{e^2x^2 + 2\,dex + d^2}\right) + 2\,\left(bc^2d^2 - be^2\right.}{2\left(c^2d^3e - de^3 + \left(c^2d^2e^2 - e^4\right)x\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] [-1/2*(2*a*c^2*d^2 - 2*a*e^2 + sqrt(-c^2*d^2 + e^2)*(b*c*e*x + b*c*d)*log((
2*c^2*d*e*x - c^2*d^2 + (2*c^4*d^2 - c^2*e^2)*x^2 - 2*sqrt(-c^2*d^2 + e^2)*
(c^2*d*x + e)*sqrt(-c^2*x^2 + 1) + 2*e^2)/(e^2*x^2 + 2*d*e*x + d^2)) + 2*(b
*c^2*d^2 - b*e^2)*arcsin(c*x))/(c^2*d^3*e - d*e^3 + (c^2*d^2*e^2 - e^4)*x),
 -(a*c^2*d^2 - a*e^2 - sqrt(c^2*d^2 - e^2)*(b*c*e*x + b*c*d)*arctan(sqrt(c^
2*d^2 - e^2)*(c^2*d*x + e)*sqrt(-c^2*x^2 + 1)/(c^2*d^2 - (c^4*d^2 - c^2*e^2
)*x^2 - e^2)) + (b*c^2*d^2 - b*e^2)*arcsin(c*x))/(c^2*d^3*e - d*e^3 + (c^2*
d^2*e^2 - e^4)*x)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a + b\operatorname{asin}{(cx)}}{(d + ex)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{sage}_0 x$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] sage0*x
```

3.7 $\int \frac{a+b\sin^{-1}(cx)}{(d+ex)^3}\,dx$

Optimal. Leaf size=135

$$-\frac{a+b\sin^{-1}(cx)}{2e(d+ex)^2}+\frac{bc\sqrt{1-c^2x^2}}{2\left(c^2d^2-e^2\right)(d+ex)}+\frac{bc^3d\tan^{-1}\left(\frac{c^2dx+e}{\sqrt{1-c^2x^2}\sqrt{c^2d^2-e^2}}\right)}{2e\left(c^2d^2-e^2\right)^{3/2}}$$

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

Rubi [A] time = 0.0852537, antiderivative size = 135, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {4743, 731, 725, 204}

$$-\frac{a+b\sin^{-1}(cx)}{2e(d+ex)^2}+\frac{bc\sqrt{1-c^2x^2}}{2\left(c^2d^2-e^2\right)(d+ex)}+\frac{bc^3d\tan^{-1}\left(\frac{c^2dx+e}{\sqrt{1-c^2x^2}\sqrt{c^2d^2-e^2}}\right)}{2e\left(c^2d^2-e^2\right)^{3/2}}$$

Antiderivative was successfully verified.

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


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


Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 731

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*d^2 + a*e^2)), x] + D
ist[(c*d)/(c*d^2 + a*e^2), Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; F
```

```
reeQ[{a, c, d, e, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[m + 2*p + 3, 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

Rubi steps

$$
\begin{aligned}
\int \frac{a+b\sin^{-1}(cx)}{(d+ex)^3}\,dx &= -\frac{a+b\sin^{-1}(cx)}{2e(d+ex)^2}+\frac{(bc)\int \frac{1}{(d+ex)^2\sqrt{1-c^2x^2}}\,dx}{2e}\\
&= \frac{bc\sqrt{1-c^2x^2}}{2\left(c^2d^2-e^2\right)(d+ex)}-\frac{a+b\sin^{-1}(cx)}{2e(d+ex)^2}+\frac{\left(bc^3d\right)\int \frac{1}{(d+ex)\sqrt{1-c^2x^2}}\,dx}{2e\left(c^2d^2-e^2\right)}\\
&= \frac{bc\sqrt{1-c^2x^2}}{2\left(c^2d^2-e^2\right)(d+ex)}-\frac{a+b\sin^{-1}(cx)}{2e(d+ex)^2}-\frac{\left(bc^3d\right)\mathrm{Subst}\left(\int \frac{1}{-c^2d^2+e^2-x^2}\,dx,x,\frac{e+c^2dx}{\sqrt{1-c^2x^2}}\right)}{2e\left(c^2d^2-e^2\right)}\\
&= \frac{bc\sqrt{1-c^2x^2}}{2\left(c^2d^2-e^2\right)(d+ex)}-\frac{a+b\sin^{-1}(cx)}{2e(d+ex)^2}+\frac{bc^3d\tan^{-1}\left(\frac{e+c^2dx}{\sqrt{c^2d^2-e^2}\sqrt{1-c^2x^2}}\right)}{2e\left(c^2d^2-e^2\right)^{3/2}}
\end{aligned}
$$

Mathematica [C] time = 0.352993, size = 207, normalized size = 1.53

$$
\frac{1}{2}\left(-\frac{a}{e(d+ex)^2}+\frac{bc\sqrt{1-c^2x^2}}{\left(c^2d^2-e^2\right)(d+ex)}-\frac{ibc^3d\left(\log(4)+\log\left(\frac{e^2\sqrt{c^2d^2-e^2}\left(\sqrt{1-c^2x^2}\sqrt{c^2d^2-e^2}+ic^2dx+ie\right)}{bc^3d(d+ex)}\right)\right)}{e(cd-e)(cd+e)\sqrt{c^2d^2-e^2}}-\frac{b\sin^{-1}(cx)}{e(d+ex)^2}\right)
$$

Antiderivative was successfully verified.

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

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

Maple [B] time = 0.033, size = 301, normalized size = 2.2

$$-\frac{c^2a}{2\,(ecx+dc)^2\,e}-\frac{c^2b\arcsin(cx)}{2\,(ecx+dc)^2\,e}+\frac{c^2b}{2\,e\left(c^2d^2-e^2\right)}\sqrt{-\left(cx+\frac{dc}{e}\right)^2+2\,\frac{dc}{e}\left(cx+\frac{dc}{e}\right)-\frac{c^2d^2-e^2}{e^2}}\left(cx+\frac{dc}{e}\right)^{-1}-\frac{bc^3}{2\,e^2\left(c^2d^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 3.97458, size = 1349, normalized size = 9.99

$$\left[-\frac{2\,ac^4d^4-4\,ac^2d^2e^2+2\,ae^4-\left(bc^3de^2x^2+2\,bc^3d^2ex+bc^3d^3\right)\sqrt{-c^2d^2+e^2}\log\left(\frac{2\,c^2dex-c^2d^2+\left(2\,c^4d^2-c^2e^2\right)x^2+2\,\sqrt{-c^2d^2+e^2}\left(c^2dx+e\right.}{e^2x^2+2\,dex+d^2}\right.}{4\left(c^4d^6e-2\,c^2d^4e^3+d^2e^5+\left(c^4d^4e^3-2\,c^2d^2e^5+\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] [-1/4*(2*a*c^4*d^4 - 4*a*c^2*d^2*e^2 + 2*a*e^4 - (b*c^3*d*e^2*x^2 + 2*b*c^3
*d^2*e*x + b*c^3*d^3)*sqrt(-c^2*d^2 + e^2)*log((2*c^2*d*e*x - c^2*d^2 + (2*
c^4*d^2 - c^2*e^2)*x^2 + 2*sqrt(-c^2*d^2 + e^2)*(c^2*d*x + e)*sqrt(-c^2*x^2
 + 1) + 2*e^2)/(e^2*x^2 + 2*d*e*x + d^2)) + 2*(b*c^4*d^4 - 2*b*c^2*d^2*e^2
+ b*e^4)*arcsin(c*x) - 2*(b*c^3*d^3*e - b*c*d*e^3 + (b*c^3*d^2*e^2 - b*c*e^
4)*x)*sqrt(-c^2*x^2 + 1))/(c^4*d^6*e - 2*c^2*d^4*e^3 + d^2*e^5 + (c^4*d^4*e
^3 - 2*c^2*d^2*e^5 + e^7)*x^2 + 2*(c^4*d^5*e^2 - 2*c^2*d^3*e^4 + d*e^6)*x),
 -1/2*(a*c^4*d^4 - 2*a*c^2*d^2*e^2 + a*e^4 - (b*c^3*d*e^2*x^2 + 2*b*c^3*d^2
*e*x + b*c^3*d^3)*sqrt(c^2*d^2 - e^2)*arctan(sqrt(c^2*d^2 - e^2)*(c^2*d*x +
 e)*sqrt(-c^2*x^2 + 1)/(c^2*d^2 - (c^4*d^2 - c^2*e^2)*x^2 - e^2)) + (b*c^4*
d^4 - 2*b*c^2*d^2*e^2 + b*e^4)*arcsin(c*x) - (b*c^3*d^3*e - b*c*d*e^3 + (b*
c^3*d^2*e^2 - b*c*e^4)*x)*sqrt(-c^2*x^2 + 1))/(c^4*d^6*e - 2*c^2*d^4*e^3 +
d^2*e^5 + (c^4*d^4*e^3 - 2*c^2*d^2*e^5 + e^7)*x^2 + 2*(c^4*d^5*e^2 - 2*c^2*
d^3*e^4 + d*e^6)*x)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a + b \operatorname{asin}(cx)}{(d + ex)^3} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \arcsin(cx) + a}{(ex + d)^3} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*arcsin(c*x) + a)/(e*x + d)^3, x)
```

3.8 $\int \frac{a+b\sin^{-1}(cx)}{(d+ex)^4}\,dx$

Optimal. Leaf size=191

$$-\frac{a+b\sin^{-1}(cx)}{3e(d+ex)^3}+\frac{bc^3d\sqrt{1-c^2x^2}}{2\left(c^2d^2-e^2\right)^2(d+ex)}+\frac{bc\sqrt{1-c^2x^2}}{6\left(c^2d^2-e^2\right)(d+ex)^2}+\frac{bc^3\left(2c^2d^2+e^2\right)\tan^{-1}\left(\frac{c^2dx+e}{\sqrt{1-c^2x^2}\sqrt{c^2d^2-e^2}}\right)}{6e\left(c^2d^2-e^2\right)^{5/2}}$$

```
[Out] (b*c*Sqrt[1 - c^2*x^2])/(6*(c^2*d^2 - e^2)*(d + e*x)^2) + (b*c^3*d*Sqrt[1 -
 c^2*x^2])/(2*(c^2*d^2 - e^2)^2*(d + e*x)) - (a + b*ArcSin[c*x])/(3*e*(d +
e*x)^3) + (b*c^3*(2*c^2*d^2 + e^2)*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2
]*Sqrt[1 - c^2*x^2])])/(6*e*(c^2*d^2 - e^2)^(5/2))
```

Rubi [A] time = 0.140214, antiderivative size = 191, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312, Rules used = {4743, 745, 807, 725, 204}

$$-\frac{a+b\sin^{-1}(cx)}{3e(d+ex)^3}+\frac{bc^3d\sqrt{1-c^2x^2}}{2\left(c^2d^2-e^2\right)^2(d+ex)}+\frac{bc\sqrt{1-c^2x^2}}{6\left(c^2d^2-e^2\right)(d+ex)^2}+\frac{bc^3\left(2c^2d^2+e^2\right)\tan^{-1}\left(\frac{c^2dx+e}{\sqrt{1-c^2x^2}\sqrt{c^2d^2-e^2}}\right)}{6e\left(c^2d^2-e^2\right)^{5/2}}$$

Antiderivative was successfully verified.

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


```
[Out] (b*c*Sqrt[1 - c^2*x^2])/(6*(c^2*d^2 - e^2)*(d + e*x)^2) + (b*c^3*d*Sqrt[1 -
 c^2*x^2])/(2*(c^2*d^2 - e^2)^2*(d + e*x)) - (a + b*ArcSin[c*x])/(3*e*(d +
e*x)^3) + (b*c^3*(2*c^2*d^2 + e^2)*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2
]*Sqrt[1 - c^2*x^2])])/(6*e*(c^2*d^2 - e^2)^(5/2))
```


Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 745

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*d^2 + a*e^2)), x] + D
ist[c/((m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)*Simp[d*(m + 1) - e*(
m + 2*p + 3)*x, x]*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, m, p}, x] &&
 NeQ[c*d^2 + a*e^2, 0] && NeQ[m, -1] && ((LtQ[m, -1] && IntQuadraticQ[a, 0,
 c, d, e, m, p, x]) || (SumSimplerQ[m, 1] && IntegerQ[p]) || ILtQ[Simplify[
m + 2*p + 3], 0])
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{(d+ex)^4}\,dx = -\frac{a+b\sin^{-1}(cx)}{3e(d+ex)^3} + \frac{(bc)\int \frac{1}{(d+ex)^3\sqrt{1-c^2x^2}}\,dx}{3e}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{6\left(c^2d^2-e^2\right)(d+ex)^2} - \frac{a+b\sin^{-1}(cx)}{3e(d+ex)^3} - \frac{\left(bc^3\right)\int \frac{-2d+ex}{(d+ex)^2\sqrt{1-c^2x^2}}\,dx}{6e\left(c^2d^2-e^2\right)}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{6\left(c^2d^2-e^2\right)(d+ex)^2} + \frac{bc^3d\sqrt{1-c^2x^2}}{2\left(c^2d^2-e^2\right)^2(d+ex)} - \frac{a+b\sin^{-1}(cx)}{3e(d+ex)^3} + \frac{\left(bc^3\left(2c^2d^2+e^2\right)\right)\int \frac{1}{(d+ex)\sqrt{1-}}}{6e\left(c^2d^2-e^2\right)^2}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{6\left(c^2d^2-e^2\right)(d+ex)^2} + \frac{bc^3d\sqrt{1-c^2x^2}}{2\left(c^2d^2-e^2\right)^2(d+ex)} - \frac{a+b\sin^{-1}(cx)}{3e(d+ex)^3} - \frac{\left(bc^3\left(2c^2d^2+e^2\right)\right)\text{Subst}\left(\int\right.}{6e\left(c^2d^2\right.}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{6\left(c^2d^2-e^2\right)(d+ex)^2} + \frac{bc^3d\sqrt{1-c^2x^2}}{2\left(c^2d^2-e^2\right)^2(d+ex)} - \frac{a+b\sin^{-1}(cx)}{3e(d+ex)^3} + \frac{bc^3\left(2c^2d^2+e^2\right)\tan^{-1}\left(\frac{}{\sqrt{c^2d^2}}\right.}{6e\left(c^2d^2-e^2\right)^{5/2}}$$

Mathematica [A] time = 0.521047, size = 241, normalized size = 1.26

$$\frac{1}{6}\left(-\frac{2a}{e(d+ex)^3} + \frac{b\sqrt{1-c^2x^2}\left(c^3d(4d+3ex)-ce^2\right)}{\left(e^2-c^2d^2\right)^2(d+ex)^2} - \frac{bc^3\left(2c^2d^2+e^2\right)\log\left(\sqrt{1-c^2x^2}\sqrt{e^2-c^2d^2}+c^2dx+e\right)}{e(e-cd)^2(cd+e)^2\sqrt{e^2-c^2d^2}} + \frac{bc^3\left(2c^2d\right.}{e(e-cd)^2}\right.$$

Antiderivative was successfully verified.

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

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

Maple [B] time = 0.008, size = 560, normalized size = 2.9

$$-\frac{ac^3}{3\,(ecx+dc)^3\,e} - \frac{c^3b\arcsin(cx)}{3\,(ecx+dc)^3\,e} + \frac{c^3b}{6\,e^2\left(c^2d^2-e^2\right)}\sqrt{-\left(cx+\frac{dc}{e}\right)^2+2\,\frac{dc}{e}\left(cx+\frac{dc}{e}\right)-\frac{c^2d^2-e^2}{e^2}}\left(cx+\frac{dc}{e}\right)^{-2} + \frac{bc}{2\,e\left(c^2d\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{\left(\left(ce^4x^3 + 3\,cde^3x^2 + 3\,cd^2e^2x + cd^3e\right)\int \frac{e^{\left(\frac{1}{2}\,\log(cx+1)+\frac{1}{2}\,\log(-cx+1)\right)}}{c^4e^4x^7+3\,c^4de^3x^6-3\,c^2d^2e^2x^3-c^2d^3ex^2+\left(3\,c^4d^2e^2-c^2e^4\right)x^5+\left(c^4d^3e-3\,c^2de^3\right)x^4-\left(c^2e^4x^5+3\,c^2de^3x^4-3\,d^2e\right.}}{3\left(e^4x^3 + 3\,de^3x^2 + 3\,d^2e^2x + d^3e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/3*(3*(c*e^4*x^3 + 3*c*d*e^3*x^2 + 3*c*d^2*e^2*x + c*d^3*e)*integrate(1/3
*e^(1/2*log(c*x + 1) + 1/2*log(-c*x + 1))/(c^4*e^4*x^7 + 3*c^4*d*e^3*x^6 -
3*c^2*d^2*e^2*x^3 - c^2*d^3*e*x^2 + (3*c^4*d^2*e^2 - c^2*e^4)*x^5 + (c^4*d^
3*e - 3*c^2*d*e^3)*x^4 + (c^2*e^4*x^5 + 3*c^2*d*e^3*x^4 - 3*d^2*e^2*x - d^3
*e + (3*c^2*d^2*e^2 - e^4)*x^3 + (c^2*d^3*e - 3*d*e^3)*x^2)*e^(log(c*x + 1)
 + log(-c*x + 1))), x) + arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*b/(e^4
*x^3 + 3*d*e^3*x^2 + 3*d^2*e^2*x + d^3*e) - 1/3*a/(e^4*x^3 + 3*d*e^3*x^2 +
3*d^2*e^2*x + d^3*e)
```

Fricas [B] time = 12.2468, size = 2233, normalized size = 11.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] [-1/12*(4*a*c^6*d^6 - 12*a*c^4*d^4*e^2 + 12*a*c^2*d^2*e^4 - 4*a*e^6 + (2*b*
c^5*d^5 + b*c^3*d^3*e^2 + (2*b*c^5*d^2*e^3 + b*c^3*e^5)*x^3 + 3*(2*b*c^5*d^
3*e^2 + b*c^3*d*e^4)*x^2 + 3*(2*b*c^5*d^4*e + b*c^3*d^2*e^3)*x)*sqrt(-c^2*d
^2 + e^2)*log((2*c^2*d*e*x - c^2*d^2 + (2*c^4*d^2 - c^2*e^2)*x^2 - 2*sqrt(-
c^2*d^2 + e^2)*(c^2*d*x + e)*sqrt(-c^2*x^2 + 1) + 2*e^2)/(e^2*x^2 + 2*d*e*x
 + d^2)) + 4*(b*c^6*d^6 - 3*b*c^4*d^4*e^2 + 3*b*c^2*d^2*e^4 - b*e^6)*arcsin
(c*x) - 2*(4*b*c^5*d^5*e - 5*b*c^3*d^3*e^3 + b*c*d*e^5 + 3*(b*c^5*d^3*e^3 -
 b*c^3*d*e^5)*x^2 + (7*b*c^5*d^4*e^2 - 8*b*c^3*d^2*e^4 + b*c*e^6)*x)*sqrt(-
c^2*x^2 + 1))/(c^6*d^9*e - 3*c^4*d^7*e^3 + 3*c^2*d^5*e^5 - d^3*e^7 + (c^6*d
^6*e^4 - 3*c^4*d^4*e^6 + 3*c^2*d^2*e^8 - e^10)*x^3 + 3*(c^6*d^7*e^3 - 3*c^4
*d^5*e^5 + 3*c^2*d^3*e^7 - d*e^9)*x^2 + 3*(c^6*d^8*e^2 - 3*c^4*d^6*e^4 + 3*
c^2*d^4*e^6 - d^2*e^8)*x), -1/6*(2*a*c^6*d^6 - 6*a*c^4*d^4*e^2 + 6*a*c^2*d^
2*e^4 - 2*a*e^6 - (2*b*c^5*d^5 + b*c^3*d^3*e^2 + (2*b*c^5*d^2*e^3 + b*c^3*e
^5)*x^3 + 3*(2*b*c^5*d^3*e^2 + b*c^3*d*e^4)*x^2 + 3*(2*b*c^5*d^4*e + b*c^3*
d^2*e^3)*x)*sqrt(c^2*d^2 - e^2)*arctan(sqrt(c^2*d^2 - e^2)*(c^2*d*x + e)*sq
rt(-c^2*x^2 + 1)/(c^2*d^2 - (c^4*d^2 - c^2*e^2)*x^2 - e^2)) + 2*(b*c^6*d^6
- 3*b*c^4*d^4*e^2 + 3*b*c^2*d^2*e^4 - b*e^6)*arcsin(c*x) - (4*b*c^5*d^5*e -
 5*b*c^3*d^3*e^3 + b*c*d*e^5 + 3*(b*c^5*d^3*e^3 - b*c^3*d*e^5)*x^2 + (7*b*c
^5*d^4*e^2 - 8*b*c^3*d^2*e^4 + b*c*e^6)*x)*sqrt(-c^2*x^2 + 1))/(c^6*d^9*e -
 3*c^4*d^7*e^3 + 3*c^2*d^5*e^5 - d^3*e^7 + (c^6*d^6*e^4 - 3*c^4*d^4*e^6 + 3
*c^2*d^2*e^8 - e^10)*x^3 + 3*(c^6*d^7*e^3 - 3*c^4*d^5*e^5 + 3*c^2*d^3*e^7 -
 d*e^9)*x^2 + 3*(c^6*d^8*e^2 - 3*c^4*d^6*e^4 + 3*c^2*d^4*e^6 - d^2*e^8)*x)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a + b\operatorname{asin}(cx)}{(d + ex)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral((a + b*asin(c*x))/(d + e*x)**4, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\arcsin(cx) + a}{(ex + d)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*arcsin(c*x) + a)/(e*x + d)^4, x)
```

3.9 $\int (d+ex)^3 \left(a+b\sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=374

$$\frac{3bd^2ex\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c}-\frac{3d^2e\left(a+b\sin^{-1}(cx)\right)^2}{4c^2}+\frac{2bd^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+\frac{4bde^2\sqrt{1-c^2x^2}\left(a+b\right.}{3c^3}$$

```
[Out] -2*b^2*d^3*x - (4*b^2*d*e^2*x)/(3*c^2) - (3*b^2*d^2*e*x^2)/4 - (3*b^2*e^3*x
^2)/(32*c^2) - (2*b^2*d*e^2*x^3)/9 - (b^2*e^3*x^4)/32 + (2*b*d^3*Sqrt[1 - c
^2*x^2]*(a + b*ArcSin[c*x]))/c + (4*b*d*e^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin
[c*x]))/(3*c^3) + (3*b*d^2*e*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(2*c)
 + (3*b*e^3*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(16*c^3) + (2*b*d*e^2*
x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(3*c) + (b*e^3*x^3*Sqrt[1 - c^2*
x^2]*(a + b*ArcSin[c*x]))/(8*c) - (d^4*(a + b*ArcSin[c*x])^2)/(4*e) - (3*d^
2*e*(a + b*ArcSin[c*x])^2)/(4*c^2) - (3*e^3*(a + b*ArcSin[c*x])^2)/(32*c^4)
 + ((d + e*x)^4*(a + b*ArcSin[c*x])^2)/(4*e)
```

Rubi [A] time = 0.712387, antiderivative size = 374, normalized size of antiderivative = 1., number of steps used = 18, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.389, Rules used = {4743, 4763, 4641, 4677, 8, 4707, 30}

$$\frac{3bd^2ex\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c}-\frac{3d^2e\left(a+b\sin^{-1}(cx)\right)^2}{4c^2}+\frac{2bd^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+\frac{4bde^2\sqrt{1-c^2x^2}\left(a+b\right.}{3c^3}$$

Antiderivative was successfully verified.

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


```
[Out] -2*b^2*d^3*x - (4*b^2*d*e^2*x)/(3*c^2) - (3*b^2*d^2*e*x^2)/4 - (3*b^2*e^3*x
^2)/(32*c^2) - (2*b^2*d*e^2*x^3)/9 - (b^2*e^3*x^4)/32 + (2*b*d^3*Sqrt[1 - c
^2*x^2]*(a + b*ArcSin[c*x]))/c + (4*b*d*e^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin
[c*x]))/(3*c^3) + (3*b*d^2*e*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(2*c)
 + (3*b*e^3*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(16*c^3) + (2*b*d*e^2*
x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(3*c) + (b*e^3*x^3*Sqrt[1 - c^2*
x^2]*(a + b*ArcSin[c*x]))/(8*c) - (d^4*(a + b*ArcSin[c*x])^2)/(4*e) - (3*d^
2*e*(a + b*ArcSin[c*x])^2)/(4*c^2) - (3*e^3*(a + b*ArcSin[c*x])^2)/(32*c^4)
 + ((d + e*x)^4*(a + b*ArcSin[c*x])^2)/(4*e)
```


Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
```

```
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4677

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

Rule 8

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

Rule 4707

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

Rule 30

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

Rubi steps

$$\int (d+ex)^3 \left(a+b\sin^{-1}(cx)\right)^2 dx = \frac{(d+ex)^4 \left(a+b\sin^{-1}(cx)\right)^2}{4e} - \frac{(bc)\int \frac{(d+ex)^4\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}dx}{2e}$$

$$= \frac{(d+ex)^4 \left(a+b\sin^{-1}(cx)\right)^2}{4e} - \frac{(bc)\int \left(\frac{d^4\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} + \frac{4d^3ex\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} + \frac{6d^2e^2x^2\left(a+b\sin\right.}{\sqrt{1-c^2}}\right.}{2e}$$

$$= \frac{(d+ex)^4 \left(a+b\sin^{-1}(cx)\right)^2}{4e} - \left(2bcd^3\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}dx - \frac{\left(bcd^4\right)\int \frac{a+b\sin^{-1}(cx}{\sqrt{1-c^2x^2}}}{2e}$$

$$= \frac{2bd^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c} + \frac{3bd^2ex\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c} + \frac{2bde^2x^2\sqrt{1-}}{}$$

$$= -2b^2d^3x - \frac{3}{4}b^2d^2ex^2 - \frac{2}{9}b^2de^2x^3 - \frac{1}{32}b^2e^3x^4 + \frac{2bd^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c} + \frac{4b}{}$$

$$= -2b^2d^3x - \frac{4b^2de^2x}{3c^2} - \frac{3}{4}b^2d^2ex^2 - \frac{3b^2e^3x^2}{32c^2} - \frac{2}{9}b^2de^2x^3 - \frac{1}{32}b^2e^3x^4 + \frac{2bd^3\sqrt{1-c^2x^2}\,(}{}$$

Mathematica [A] time = 0.571397, size = 355, normalized size = 0.95

$$\frac{c\left(72a^2c^3x\left(6d^2ex+4d^3+4de^2x^2+e^3x^3\right)+6ab\sqrt{1-c^2x^2}\left(c^2\left(72d^2ex+96d^3+32de^2x^2+6e^3x^3\right)+e^2(64d+9ex)\right)-b^2cx\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] (c*(72*a^2*c^3*x*(4*d^3 + 6*d^2*e*x + 4*d*e^2*x^2 + e^3*x^3) + 6*a*b*Sqrt[1
 - c^2*x^2]*(e^2*(64*d + 9*e*x) + c^2*(96*d^3 + 72*d^2*e*x + 32*d*e^2*x^2 +
 6*e^3*x^3)) - b^2*c*x*(3*e^2*(128*d + 9*e*x) + c^2*(576*d^3 + 216*d^2*e*x
+ 64*d*e^2*x^2 + 9*e^3*x^3))) + 6*b*(3*a*(-24*c^2*d^2*e - 3*e^3 + 8*c^4*x*(
4*d^3 + 6*d^2*e*x + 4*d*e^2*x^2 + e^3*x^3)) + b*c*Sqrt[1 - c^2*x^2]*(e^2*(6
4*d + 9*e*x) + c^2*(96*d^3 + 72*d^2*e*x + 32*d*e^2*x^2 + 6*e^3*x^3)))*ArcSi
n[c*x] + 9*b^2*(-24*c^2*d^2*e - 3*e^3 + 8*c^4*x*(4*d^3 + 6*d^2*e*x + 4*d*e^
2*x^2 + e^3*x^3))*ArcSin[c*x]^2)/(288*c^4)
```

Maple [A] time = 0.092, size = 660, normalized size = 1.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/c*(1/4*(c*e*x+c*d)^4*a^2/c^3/e+b^2/c^3*(1/32*e^3*(8*arcsin(c*x)^2*c^4*x^4
+4*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^3*x^3-16*arcsin(c*x)^2*c^2*x^2-c^4*x^4-
10*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*x+5*arcsin(c*x)^2+5*c^2*x^2-4)+3/4*d^2*
c^2*e*(2*arcsin(c*x)^2*c^2*x^2+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*x-arcsin(
c*x)^2-c^2*x^2)+1/9*d*c*e^2*(9*c^3*x^3*arcsin(c*x)^2+6*arcsin(c*x)*(-c^2*x^
2+1)^(1/2)*c^2*x^2-27*arcsin(c*x)^2*c*x-2*c^3*x^3-42*arcsin(c*x)*(-c^2*x^2+
1)^(1/2)+42*c*x)+c^3*d^3*(arcsin(c*x)^2*c*x-2*c*x+2*arcsin(c*x)*(-c^2*x^2+1
)^(1/2))+1/4*e^3*(2*arcsin(c*x)^2*c^2*x^2+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*
c*x-arcsin(c*x)^2-c^2*x^2)+3*d*c*e^2*(arcsin(c*x)^2*c*x-2*c*x+2*arcsin(c*x)
*(-c^2*x^2+1)^(1/2)))+2*a*b/c^3*(1/4*e^3*arcsin(c*x)*c^4*x^4+e^2*arcsin(c*x
)*c^4*x^3*d+3/2*e*arcsin(c*x)*c^4*x^2*d^2+arcsin(c*x)*c^4*x*d^3+1/4/e*arcsi
n(c*x)*c^4*d^4-1/4/e*(e^4*(-1/4*c^3*x^3*(-c^2*x^2+1)^(1/2)-3/8*c*x*(-c^2*x^
2+1)^(1/2)+3/8*arcsin(c*x))+4*d*c*e^3*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*
(-c^2*x^2+1)^(1/2))+6*c^2*d^2*e^2*(-1/2*c*x*(-c^2*x^2+1)^(1/2)+1/2*arcsin(c
*x))-4*c^3*d^3*e*(-c^2*x^2+1)^(1/2)+c^4*d^4*arcsin(c*x))))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{4}a^2e^3x^4 + a^2de^2x^3 + b^2d^3x\arcsin(cx)^2 + \frac{3}{2}a^2d^2ex^2 + \frac{3}{2}\left(2x^2\arcsin(cx) + c\left(\frac{\sqrt{-c^2x^2+1}\,x}{c^2} - \frac{\arcsin\left(\frac{c^2x}{\sqrt{c^2}}\right)}{\sqrt{c^2}c^2}\right)\right)abd^2e +$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*a^2*e^3*x^4 + a^2*d*e^2*x^3 + b^2*d^3*x*arcsin(c*x)^2 + 3/2*a^2*d^2*e*x
^2 + 3/2*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c^2*x/sq
rt(c^2))/(sqrt(c^2)*c^2)))*a*b*d^2*e + 2/3*(3*x^3*arcsin(c*x) + c*(sqrt(-c^
2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*d*e^2 + 1/16*(8*x^4*arc
sin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*a
rcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^4))*c)*a*b*e^3 - 2*b^2*d^3*(x - sqrt(-c
^2*x^2 + 1)*arcsin(c*x)/c) + a^2*d^3*x + 2*(c*x*arcsin(c*x) + sqrt(-c^2*x^2
```

```
 + 1))*a*b*d^3/c + 1/4*(b^2*e^3*x^4 + 4*b^2*d*e^2*x^3 + 6*b^2*d^2*e*x^2)*ar
ctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + integrate(1/2*(b^2*c*e^3*x^4 +
 4*b^2*c*d*e^2*x^3 + 6*b^2*c*d^2*e*x^2)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan
2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^2*x^2 - 1), x)
```

Fricas [A] time = 2.48604, size = 956, normalized size = 2.56

$$\frac{9\left(8\,a^2-b^2\right)c^4e^3x^4+32\left(9\,a^2-2\,b^2\right)c^4de^2x^3+27\left(8\left(2\,a^2-b^2\right)c^4d^2e-b^2c^2e^3\right)x^2+9\left(8\,b^2c^4e^3x^4+32\,b^2c^4de^2x^3+48\,b^2c^4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/288*(9*(8*a^2 - b^2)*c^4*e^3*x^4 + 32*(9*a^2 - 2*b^2)*c^4*d*e^2*x^3 + 27*
(8*(2*a^2 - b^2)*c^4*d^2*e - b^2*c^2*e^3)*x^2 + 9*(8*b^2*c^4*e^3*x^4 + 32*b
^2*c^4*d*e^2*x^3 + 48*b^2*c^4*d^2*e*x^2 + 32*b^2*c^4*d^3*x - 24*b^2*c^2*d^2
*e - 3*b^2*e^3)*arcsin(c*x)^2 + 96*(3*(a^2 - 2*b^2)*c^4*d^3 - 4*b^2*c^2*d*e
^2)*x + 18*(8*a*b*c^4*e^3*x^4 + 32*a*b*c^4*d*e^2*x^3 + 48*a*b*c^4*d^2*e*x^2
 + 32*a*b*c^4*d^3*x - 24*a*b*c^2*d^2*e - 3*a*b*e^3)*arcsin(c*x) + 6*(6*a*b*
c^3*e^3*x^3 + 32*a*b*c^3*d*e^2*x^2 + 96*a*b*c^3*d^3 + 64*a*b*c*d*e^2 + 9*(8
*a*b*c^3*d^2*e + a*b*c*e^3)*x + (6*b^2*c^3*e^3*x^3 + 32*b^2*c^3*d*e^2*x^2 +
 96*b^2*c^3*d^3 + 64*b^2*c*d*e^2 + 9*(8*b^2*c^3*d^2*e + b^2*c*e^3)*x)*arcsi
n(c*x))*sqrt(-c^2*x^2 + 1))/c^4
```

Sympy [A] time = 4.47399, size = 743, normalized size = 1.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**3*(a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((a**2*d**3*x + 3*a**2*d**2*e*x**2/2 + a**2*d*e**2*x**3 + a**2*e**
3*x**4/4 + 2*a*b*d**3*x*asin(c*x) + 3*a*b*d**2*e*x**2*asin(c*x) + 2*a*b*d*e
**2*x**3*asin(c*x) + a*b*e**3*x**4*asin(c*x)/2 + 2*a*b*d**3*sqrt(-c**2*x**2
 + 1)/c + 3*a*b*d**2*e*x*sqrt(-c**2*x**2 + 1)/(2*c) + 2*a*b*d*e**2*x**2*sqr
t(-c**2*x**2 + 1)/(3*c) + a*b*e**3*x**3*sqrt(-c**2*x**2 + 1)/(8*c) - 3*a*b*
d**2*e*asin(c*x)/(2*c**2) + 4*a*b*d*e**2*sqrt(-c**2*x**2 + 1)/(3*c**3) + 3*
```

```
a*b*e**3*x*sqrt(-c**2*x**2 + 1)/(16*c**3) - 3*a*b*e**3*asin(c*x)/(16*c**4)
+ b**2*d**3*x*asin(c*x)**2 - 2*b**2*d**3*x + 3*b**2*d**2*e*x**2*asin(c*x)**
2/2 - 3*b**2*d**2*e*x**2/4 + b**2*d*e**2*x**3*asin(c*x)**2 - 2*b**2*d*e**2*
x**3/9 + b**2*e**3*x**4*asin(c*x)**2/4 - b**2*e**3*x**4/32 + 2*b**2*d**3*sq
rt(-c**2*x**2 + 1)*asin(c*x)/c + 3*b**2*d**2*e*x*sqrt(-c**2*x**2 + 1)*asin(
c*x)/(2*c) + 2*b**2*d*e**2*x**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(3*c) + b**2
*e**3*x**3*sqrt(-c**2*x**2 + 1)*asin(c*x)/(8*c) - 3*b**2*d**2*e*asin(c*x)**
2/(4*c**2) - 4*b**2*d*e**2*x/(3*c**2) - 3*b**2*e**3*x**2/(32*c**2) + 4*b**2
*d*e**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(3*c**3) + 3*b**2*e**3*x*sqrt(-c**2*
x**2 + 1)*asin(c*x)/(16*c**3) - 3*b**2*e**3*asin(c*x)**2/(32*c**4), Ne(c, 0
)), (a**2*(d**3*x + 3*d**2*e*x**2/2 + d*e**2*x**3 + e**3*x**4/4), True))
```

Giac [B] time = 1.3538, size = 1121, normalized size = 3.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] b^2*d^3*x*arcsin(c*x)^2 + 2*a*b*d^3*x*arcsin(c*x) + a^2*d*x^3*e^2 + 3/2*sqr
t(-c^2*x^2 + 1)*b^2*d^2*x*arcsin(c*x)*e/c + a^2*d^3*x - 2*b^2*d^3*x + (c^2*
x^2 - 1)*b^2*d*x*arcsin(c*x)^2*e^2/c^2 + 3/2*(c^2*x^2 - 1)*b^2*d^2*arcsin(c
*x)^2*e/c^2 + 2*sqrt(-c^2*x^2 + 1)*b^2*d^3*arcsin(c*x)/c + 3/2*sqrt(-c^2*x^
2 + 1)*a*b*d^2*x*e/c + 2*(c^2*x^2 - 1)*a*b*d*x*arcsin(c*x)*e^2/c^2 + b^2*d*
x*arcsin(c*x)^2*e^2/c^2 + 3*(c^2*x^2 - 1)*a*b*d^2*arcsin(c*x)*e/c^2 + 3/4*b
^2*d^2*arcsin(c*x)^2*e/c^2 + 2*sqrt(-c^2*x^2 + 1)*a*b*d^3/c - 2/9*(c^2*x^2
- 1)*b^2*d*x*e^2/c^2 + 2*a*b*d*x*arcsin(c*x)*e^2/c^2 + 3/2*(c^2*x^2 - 1)*a^
2*d^2*e/c^2 - 3/4*(c^2*x^2 - 1)*b^2*d^2*e/c^2 + 3/2*a*b*d^2*arcsin(c*x)*e/c
^2 - 1/8*(-c^2*x^2 + 1)^(3/2)*b^2*x*arcsin(c*x)*e^3/c^3 - 2/3*(-c^2*x^2 + 1
)^(3/2)*b^2*d*arcsin(c*x)*e^2/c^3 + 1/4*(c^2*x^2 - 1)^2*b^2*arcsin(c*x)^2*e
^3/c^4 - 14/9*b^2*d*x*e^2/c^2 - 3/8*b^2*d^2*e/c^2 - 1/8*(-c^2*x^2 + 1)^(3/2
)*a*b*x*e^3/c^3 + 5/16*sqrt(-c^2*x^2 + 1)*b^2*x*arcsin(c*x)*e^3/c^3 - 2/3*(
-c^2*x^2 + 1)^(3/2)*a*b*d*e^2/c^3 + 2*sqrt(-c^2*x^2 + 1)*b^2*d*arcsin(c*x)*
e^2/c^3 + 1/2*(c^2*x^2 - 1)^2*a*b*arcsin(c*x)*e^3/c^4 + 1/2*(c^2*x^2 - 1)*b
^2*arcsin(c*x)^2*e^3/c^4 + 5/16*sqrt(-c^2*x^2 + 1)*a*b*x*e^3/c^3 + 2*sqrt(-
c^2*x^2 + 1)*a*b*d*e^2/c^3 + 1/4*(c^2*x^2 - 1)^2*a^2*e^3/c^4 - 1/32*(c^2*x^
2 - 1)^2*b^2*e^3/c^4 + (c^2*x^2 - 1)*a*b*arcsin(c*x)*e^3/c^4 + 5/32*b^2*arc
sin(c*x)^2*e^3/c^4 + 1/2*(c^2*x^2 - 1)*a^2*e^3/c^4 - 5/32*(c^2*x^2 - 1)*b^2
*e^3/c^4 + 5/16*a*b*arcsin(c*x)*e^3/c^4 - 17/256*b^2*e^3/c^4
```

3.10 $\int (d+ex)^2 \left(a+b\sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=242

$$\frac{2bd^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+\frac{bdex\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}-\frac{de\left(a+b\sin^{-1}(cx)\right)^2}{2c^2}+\frac{4be^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}\right.}{9c^3}$$

```
[Out] -2*b^2*d^2*x - (4*b^2*e^2*x)/(9*c^2) - (b^2*d*e*x^2)/2 - (2*b^2*e^2*x^3)/27
 + (2*b*d^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c + (4*b*e^2*Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x]))/(9*c^3) + (b*d*e*x*Sqrt[1 - c^2*x^2]*(a + b*Arc
Sin[c*x]))/c + (2*b*e^2*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(9*c) -
(d^3*(a + b*ArcSin[c*x])^2)/(3*e) - (d*e*(a + b*ArcSin[c*x])^2)/(2*c^2) + (
(d + e*x)^3*(a + b*ArcSin[c*x])^2)/(3*e)
```

Rubi [A] time = 0.479342, antiderivative size = 242, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.389, Rules used = {4743, 4763, 4641, 4677, 8, 4707, 30}

$$\frac{2bd^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+\frac{bdex\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}-\frac{de\left(a+b\sin^{-1}(cx)\right)^2}{2c^2}+\frac{4be^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}\right.}{9c^3}$$

Antiderivative was successfully verified.

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

```
[Out] -2*b^2*d^2*x - (4*b^2*e^2*x)/(9*c^2) - (b^2*d*e*x^2)/2 - (2*b^2*e^2*x^3)/27
 + (2*b*d^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c + (4*b*e^2*Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x]))/(9*c^3) + (b*d*e*x*Sqrt[1 - c^2*x^2]*(a + b*Arc
Sin[c*x]))/c + (2*b*e^2*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(9*c) -
(d^3*(a + b*ArcSin[c*x])^2)/(3*e) - (d*e*(a + b*ArcSin[c*x])^2)/(2*c^2) + (
(d + e*x)^3*(a + b*ArcSin[c*x])^2)/(3*e)
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4677

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

Rule 8

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

Rule 4707

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

Rule 30

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

Rubi steps

$$\int (d+ex)^2 \left(a+b\sin^{-1}(cx)\right)^2 dx = \frac{(d+ex)^3 \left(a+b\sin^{-1}(cx)\right)^2}{3e} - \frac{(2bc)\int \frac{(d+ex)^3\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}dx}{3e}$$

$$= \frac{(d+ex)^3 \left(a+b\sin^{-1}(cx)\right)^2}{3e} - \frac{(2bc)\int \left(\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} + \frac{3d^2ex\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} + \frac{3de^2x^2\left(a+b\right.}{\sqrt{1-c}}\right.}{3e}$$

$$= \frac{(d+ex)^3 \left(a+b\sin^{-1}(cx)\right)^2}{3e} - \left(2bcd^2\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}dx - \frac{\left(2bcd^3\right)\int \frac{a+b\sin^{-1}(}{\sqrt{1-c^2x^2}}}{3e}$$

$$= \frac{2bd^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c} + \frac{bdex\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c} + \frac{2be^2x^2\sqrt{1-c^2}}{}$$

$$= -2b^2d^2x - \frac{1}{2}b^2dex^2 - \frac{2}{27}b^2e^2x^3 + \frac{2bd^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c} + \frac{4be^2\sqrt{1-c^2x^2}\,(}{9}$$

$$= -2b^2d^2x - \frac{4b^2e^2x}{9c^2} - \frac{1}{2}b^2dex^2 - \frac{2}{27}b^2e^2x^3 + \frac{2bd^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c} + \frac{4be^2\sqrt{}}{}$$

Mathematica [A] time = 0.386684, size = 249, normalized size = 1.03

$$\frac{18a^2c^3x\left(3d^2+3dex+e^2x^2\right)+6ab\sqrt{1-c^2x^2}\left(c^2\left(18d^2+9dex+2e^2x^2\right)+4e^2\right)+6b\sin^{-1}(cx)\left(6ac^3x\left(3d^2+3dex+e^2x^2\right)\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] (18*a^2*c^3*x*(3*d^2 + 3*d*e*x + e^2*x^2) + 6*a*b*Sqrt[1 - c^2*x^2]*(4*e^2
+ c^2*(18*d^2 + 9*d*e*x + 2*e^2*x^2)) - b^2*c*x*(24*e^2 + c^2*(108*d^2 + 27
*d*e*x + 4*e^2*x^2)) + 6*b*(-9*a*c*d*e + 6*a*c^3*x*(3*d^2 + 3*d*e*x + e^2*x
^2) + b*Sqrt[1 - c^2*x^2]*(4*e^2 + c^2*(18*d^2 + 9*d*e*x + 2*e^2*x^2)))*Arc
Sin[c*x] + 9*b^2*c*(6*c^2*d^2*x + 2*c^2*e^2*x^3 + 3*d*e*(-1 + 2*c^2*x^2))*A
rcSin[c*x]^2)/(54*c^3)
```

Maple [A] time = 0.065, size = 420, normalized size = 1.7

$$\frac{1}{c}\left(\frac{(ecx+dc)^3a^2}{3c^2e} + \frac{b^2}{c^2}\left(c^2d^2\left((\arcsin(cx))^2cx - 2cx + 2\arcsin(cx)\sqrt{-c^2x^2+1}\right) + \frac{dce}{2}\left(2(\arcsin(cx))^2c^2x^2 + 2\,\mathrm{arcsi}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/c*(1/3*(c*e*x+c*d)^3*a^2/c^2/e+b^2/c^2*(c^2*d^2*(arcsin(c*x)^2*c*x-2*c*x+
2*arcsin(c*x)*(-c^2*x^2+1)^(1/2))+1/2*d*c*e*(2*arcsin(c*x)^2*c^2*x^2+2*arcs
in(c*x)*(-c^2*x^2+1)^(1/2)*c*x-arcsin(c*x)^2-c^2*x^2)+1/27*e^2*(9*c^3*x^3*a
rcsin(c*x)^2+6*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x^2-27*arcsin(c*x)^2*c*x-
2*c^3*x^3-42*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+42*c*x)+e^2*(arcsin(c*x)^2*c*x-
2*c*x+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)))+2*a*b/c^2*(1/3*arcsin(c*x)*e^2*c^3
*x^3+e*arcsin(c*x)*c^3*x^2*d+arcsin(c*x)*c^3*x*d^2+1/3/e*arcsin(c*x)*c^3*d^
3-1/3/e*(e^3*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-c^2*x^2+1)^(1/2))+3*d*c
*e^2*(-1/2*c*x*(-c^2*x^2+1)^(1/2)+1/2*arcsin(c*x))-3*d^2*c^2*e*(-c^2*x^2+1)
^(1/2)+c^3*d^3*arcsin(c*x))))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{3}a^2e^2x^3 + b^2d^2x\arcsin(cx)^2 + a^2dex^2 + \left(2x^2\arcsin(cx) + c\left(\frac{\sqrt{-c^2x^2+1}x}{c^2} - \frac{\arcsin\left(\frac{c^2x}{\sqrt{c^2}}\right)}{\sqrt{c^2}c^2}\right)\right)abde + \frac{2}{9}\left(3x^3\arcsin(cx\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/3*a^2*e^2*x^3 + b^2*d^2*x*arcsin(c*x)^2 + a^2*d*e*x^2 + (2*x^2*arcsin(c*x
) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^2)))
*a*b*d*e + 2/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(
-c^2*x^2 + 1)/c^4))*a*b*e^2 - 2*b^2*d^2*(x - sqrt(-c^2*x^2 + 1)*arcsin(c*x)
/c) + a^2*d^2*x + 2*(c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*a*b*d^2/c + 1/3*
(b^2*e^2*x^3 + 3*b^2*d*e*x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2
+ integrate(2/3*(b^2*c*e^2*x^3 + 3*b^2*c*d*e*x^2)*sqrt(c*x + 1)*sqrt(-c*x +
 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^2*x^2 - 1), x)
```

Fricas [A] time = 2.42632, size = 633, normalized size = 2.62

$$\frac{2\left(9a^2 - 2b^2\right)c^3e^2x^3 + 27\left(2a^2 - b^2\right)c^3dex^2 + 9\left(2b^2c^3e^2x^3 + 6b^2c^3dex^2 + 6b^2c^3d^2x - 3b^2cde\right)\arcsin(cx)^2 + 6\left(9\left(a^2 -\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/54*(2*(9*a^2 - 2*b^2)*c^3*e^2*x^3 + 27*(2*a^2 - b^2)*c^3*d*e*x^2 + 9*(2*b
^2*c^3*e^2*x^3 + 6*b^2*c^3*d*e*x^2 + 6*b^2*c^3*d^2*x - 3*b^2*c*d*e)*arcsin(
c*x)^2 + 6*(9*(a^2 - 2*b^2)*c^3*d^2 - 4*b^2*c*e^2)*x + 18*(2*a*b*c^3*e^2*x^
3 + 6*a*b*c^3*d*e*x^2 + 6*a*b*c^3*d^2*x - 3*a*b*c*d*e)*arcsin(c*x) + 6*(2*a
*b*c^2*e^2*x^2 + 9*a*b*c^2*d*e*x + 18*a*b*c^2*d^2 + 4*a*b*e^2 + (2*b^2*c^2*
e^2*x^2 + 9*b^2*c^2*d*e*x + 18*b^2*c^2*d^2 + 4*b^2*e^2)*arcsin(c*x))*sqrt(-
c^2*x^2 + 1))/c^3
```

Sympy [A] time = 2.16729, size = 454, normalized size = 1.88

$$\begin{cases} a^2d^2x + a^2dex^2 + \frac{a^2e^2x^3}{3} + 2abd^2x\operatorname{asin}(cx) + 2abdex^2\operatorname{asin}(cx) + \frac{2abe^2x^3\operatorname{asin}(cx)}{3} + \frac{2abd^2\sqrt{-c^2x^2+1}}{c} + \frac{abdex\sqrt{-c^2x^2+1}}{c} + \frac{2abe^2x^2\sqrt{}}{9} \\ a^2\left(d^2x + dex^2 + \frac{e^2x^3}{3}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a**2*d**2*x + a**2*d*e*x**2 + a**2*e**2*x**3/3 + 2*a*b*d**2*x*as
in(c*x) + 2*a*b*d*e*x**2*asin(c*x) + 2*a*b*e**2*x**3*asin(c*x)/3 + 2*a*b*d*
*2*sqrt(-c**2*x**2 + 1)/c + a*b*d*e*x*sqrt(-c**2*x**2 + 1)/c + 2*a*b*e**2*x
**2*sqrt(-c**2*x**2 + 1)/(9*c) - a*b*d*e*asin(c*x)/c**2 + 4*a*b*e**2*sqrt(-
c**2*x**2 + 1)/(9*c**3) + b**2*d**2*x*asin(c*x)**2 - 2*b**2*d**2*x + b**2*d
*e*x**2*asin(c*x)**2 - b**2*d*e*x**2/2 + b**2*e**2*x**3*asin(c*x)**2/3 - 2*
b**2*e**2*x**3/27 + 2*b**2*d**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/c + b**2*d*e
*x*sqrt(-c**2*x**2 + 1)*asin(c*x)/c + 2*b**2*e**2*x**2*sqrt(-c**2*x**2 + 1)
*asin(c*x)/(9*c) - b**2*d*e*asin(c*x)**2/(2*c**2) - 4*b**2*e**2*x/(9*c**2)
+ 4*b**2*e**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(9*c**3), Ne(c, 0)), (a**2*(d*
*2*x + d*e*x**2 + e**2*x**3/3), True))
```

Giac [B] time = 1.28979, size = 655, normalized size = 2.71

$$b^2d^2x\arcsin(cx)^2 + 2\,abd^2x\arcsin(cx) + \frac{1}{3}\,a^2x^3e^2 + \frac{\sqrt{-c^2x^2+1}b^2dx\arcsin(cx)\,e}{c} + a^2d^2x - 2\,b^2d^2x + \frac{\left(c^2x^2-1\right)b^2x\,\mathrm{ar}}{3\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] b^2*d^2*x*arcsin(c*x)^2 + 2*a*b*d^2*x*arcsin(c*x) + 1/3*a^2*x^3*e^2 + sqrt(
-c^2*x^2 + 1)*b^2*d*x*arcsin(c*x)*e/c + a^2*d^2*x - 2*b^2*d^2*x + 1/3*(c^2*
x^2 - 1)*b^2*x*arcsin(c*x)^2*e^2/c^2 + (c^2*x^2 - 1)*b^2*d*arcsin(c*x)^2*e/
c^2 + 2*sqrt(-c^2*x^2 + 1)*b^2*d^2*arcsin(c*x)/c + sqrt(-c^2*x^2 + 1)*a*b*d
*x*e/c + 2/3*(c^2*x^2 - 1)*a*b*x*arcsin(c*x)*e^2/c^2 + 1/3*b^2*x*arcsin(c*x
)^2*e^2/c^2 + 2*(c^2*x^2 - 1)*a*b*d*arcsin(c*x)*e/c^2 + 1/2*b^2*d*arcsin(c*
x)^2*e/c^2 + 2*sqrt(-c^2*x^2 + 1)*a*b*d^2/c - 2/27*(c^2*x^2 - 1)*b^2*x*e^2/
c^2 + 2/3*a*b*x*arcsin(c*x)*e^2/c^2 + (c^2*x^2 - 1)*a^2*d*e/c^2 - 1/2*(c^2*
x^2 - 1)*b^2*d*e/c^2 + a*b*d*arcsin(c*x)*e/c^2 - 2/9*(-c^2*x^2 + 1)^(3/2)*b
^2*arcsin(c*x)*e^2/c^3 - 14/27*b^2*x*e^2/c^2 - 1/4*b^2*d*e/c^2 - 2/9*(-c^2*
x^2 + 1)^(3/2)*a*b*e^2/c^3 + 2/3*sqrt(-c^2*x^2 + 1)*b^2*arcsin(c*x)*e^2/c^3
 + 2/3*sqrt(-c^2*x^2 + 1)*a*b*e^2/c^3
```

3.11 $\int (d+ex)\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=142

$$\frac{2bd\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+\frac{bex\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c}-\frac{e\left(a+b\sin^{-1}(cx)\right)^2}{4c^2}-\frac{d^2\left(a+b\sin^{-1}(cx)\right)^2}{2e}+\frac{(d+ex}{}$$

```
[Out] -2*b^2*d*x - (b^2*e*x^2)/4 + (2*b*d*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/
c + (b*e*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(2*c) - (d^2*(a + b*ArcSi
n[c*x])^2)/(2*e) - (e*(a + b*ArcSin[c*x])^2)/(4*c^2) + ((d + e*x)^2*(a + b*
ArcSin[c*x])^2)/(2*e)
```

Rubi [A] time = 0.309351, antiderivative size = 142, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.438, Rules used = {4743, 4763, 4641, 4677, 8, 4707, 30}

$$\frac{2bd\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+\frac{bex\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c}-\frac{e\left(a+b\sin^{-1}(cx)\right)^2}{4c^2}-\frac{d^2\left(a+b\sin^{-1}(cx)\right)^2}{2e}+\frac{(d+ex}{}$$

Antiderivative was successfully verified.

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

```
[Out] -2*b^2*d*x - (b^2*e*x^2)/4 + (2*b*d*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/
c + (b*e*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(2*c) - (d^2*(a + b*ArcSi
n[c*x])^2)/(2*e) - (e*(a + b*ArcSin[c*x])^2)/(4*c^2) + ((d + e*x)^2*(a + b*
ArcSin[c*x])^2)/(2*e)
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
```

```
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4677

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

Rule 8

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

Rule 4707

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

Rule 30

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

Rubi steps

$$\int (d+ex)\left(a+b\sin^{-1}(cx)\right)^2\,dx = \frac{(d+ex)^2\left(a+b\sin^{-1}(cx)\right)^2}{2e} - \frac{(bc)\int \frac{(d+ex)^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx}{e}$$

$$= \frac{(d+ex)^2\left(a+b\sin^{-1}(cx)\right)^2}{2e} - \frac{(bc)\int \left(\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} + \frac{2dex\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} + \frac{e^2x^2\left(a+b\sin^{-1}(\right.}{\sqrt{1-c^2x^2}}\right.}{e}$$

$$= \frac{(d+ex)^2\left(a+b\sin^{-1}(cx)\right)^2}{2e} - (2bcd)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx - \frac{\left(bcd^2\right)\int \frac{a+b\sin^{-1}(cx)}{\sqrt{1-c^2x^2}}\,d}{e}$$

$$= \frac{2bd\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c} + \frac{bex\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c} - \frac{d^2\left(a+b\sin^{-1}(cx\right.}{2e}$$

$$= -2b^2dx - \frac{1}{4}b^2ex^2 + \frac{2bd\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c} + \frac{bex\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c}$$

Mathematica [A] time = 0.363642, size = 147, normalized size = 1.04

$$\frac{c\left(2a^2cx(2d+ex)+2ab\sqrt{1-c^2x^2}(4d+ex)-b^2cx(8d+ex)\right)+2b\sin^{-1}(cx)\left(4ac^2dx+ae\left(2c^2x^2-1\right)+bc\sqrt{1-c^2x^2}(4d+\right.}{4c^2}$$

Antiderivative was successfully verified.

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

```
[Out] (c*(2*a^2*c*x*(2*d + e*x) - b^2*c*x*(8*d + e*x) + 2*a*b*(4*d + e*x)*Sqrt[1
- c^2*x^2]) + 2*b*(4*a*c^2*d*x + b*c*(4*d + e*x)*Sqrt[1 - c^2*x^2] + a*e*(-
1 + 2*c^2*x^2))*ArcSin[c*x] + b^2*(4*c^2*d*x + e*(-1 + 2*c^2*x^2))*ArcSin[c
*x]^2)/(4*c^2)
```

Maple [A] time = 0.043, size = 198, normalized size = 1.4

$$\frac{1}{c}\left(\frac{a^2}{c}\left(\frac{x^2c^2e}{2}+dc^2x\right)+\frac{b^2}{c}\left(\frac{e}{4}\left(2\left(\arcsin(cx)\right)^2c^2x^2+2\arcsin(cx)\sqrt{-c^2x^2+1}cx-\left(\arcsin(cx)\right)^2-c^2x^2\right)+dc\left((\arcsin\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [F] time = 0., size = 0, normalized size = 0.

$$b^2dx\arcsin(cx)^2+\frac{1}{2}a^2ex^2+\frac{1}{2}\left(2x^2\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}x}{c^2}-\frac{\arcsin\left(\frac{c^2x}{\sqrt{c^2}}\right)}{\sqrt{c^2}c^2}\right)\right)abe+\frac{1}{2}\left(x^2\arctan\left(cx,\sqrt{cx+1}\sqrt{\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] b^2*d*x*arcsin(c*x)^2 + 1/2*a^2*e*x^2 + 1/2*(2*x^2*arcsin(c*x) + c*(sqrt(-c
^2*x^2 + 1)*x/c^2 - arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^2)))*a*b*e + 1/2*(
x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*c*integrate(sqrt(c*x +
 1)*sqrt(-c*x + 1)*x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^2*x^2
- 1), x))*b^2*e - 2*b^2*d*(x - sqrt(-c^2*x^2 + 1)*arcsin(c*x)/c) + a^2*d*x
+ 2*(c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*a*b*d/c
```

Fricas [A] time = 2.47293, size = 354, normalized size = 2.49

$$\frac{\left(2a^2-b^2\right)c^2ex^2+4\left(a^2-2b^2\right)c^2dx+\left(2b^2c^2ex^2+4b^2c^2dx-b^2e\right)\arcsin(cx)^2+2\left(2abc^2ex^2+4abc^2dx-abe\right)\arcsin}{4c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A] time = 0.948566, size = 233, normalized size = 1.64

$$\begin{cases} a^2dx + \frac{a^2ex^2}{2} + 2abdx\operatorname{asin}(cx) + abex^2\operatorname{asin}(cx) + \frac{2abd\sqrt{-c^2x^2+1}}{c} + \frac{abex\sqrt{-c^2x^2+1}}{2c} - \frac{abe\operatorname{asin}(cx)}{2c^2} + b^2dx\operatorname{asin}^2(cx) - 2b^2dx + \\ a^2\left(dx + \frac{ex^2}{2}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a**2*d*x + a**2*e*x**2/2 + 2*a*b*d*x*asin(c*x) + a*b*e*x**2*asin
(c*x) + 2*a*b*d*sqrt(-c**2*x**2 + 1)/c + a*b*e*x*sqrt(-c**2*x**2 + 1)/(2*c)
 - a*b*e*asin(c*x)/(2*c**2) + b**2*d*x*asin(c*x)**2 - 2*b**2*d*x + b**2*e*x
**2*asin(c*x)**2/2 - b**2*e*x**2/4 + 2*b**2*d*sqrt(-c**2*x**2 + 1)*asin(c*x
)/c + b**2*e*x*sqrt(-c**2*x**2 + 1)*asin(c*x)/(2*c) - b**2*e*asin(c*x)**2/(
4*c**2), Ne(c, 0)), (a**2*(d*x + e*x**2/2), True))
```

Giac [A] time = 1.26002, size = 342, normalized size = 2.41

$$b^2dx\arcsin(cx)^2 + 2\,abdx\arcsin(cx) + \frac{\sqrt{-c^2x^2+1}b^2x\arcsin(cx)\,e}{2\,c} + a^2dx - 2\,b^2dx + \frac{\left(c^2x^2-1\right)b^2\arcsin(cx)^2\,e}{2\,c^2} + \frac{2\,\sqrt{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] b^2*d*x*arcsin(c*x)^2 + 2*a*b*d*x*arcsin(c*x) + 1/2*sqrt(-c^2*x^2 + 1)*b^2*
x*arcsin(c*x)*e/c + a^2*d*x - 2*b^2*d*x + 1/2*(c^2*x^2 - 1)*b^2*arcsin(c*x)
^2*e/c^2 + 2*sqrt(-c^2*x^2 + 1)*b^2*d*arcsin(c*x)/c + 1/2*sqrt(-c^2*x^2 + 1
)*a*b*x*e/c + (c^2*x^2 - 1)*a*b*arcsin(c*x)*e/c^2 + 1/4*b^2*arcsin(c*x)^2*e
/c^2 + 2*sqrt(-c^2*x^2 + 1)*a*b*d/c + 1/2*(c^2*x^2 - 1)*a^2*e/c^2 - 1/4*(c^
2*x^2 - 1)*b^2*e/c^2 + 1/2*a*b*arcsin(c*x)*e/c^2 - 1/8*b^2*e/c^2
```

3.12 $\int \left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=47

$$\frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+x\left(a+b\sin^{-1}(cx)\right)^2-2b^2x$$

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

Rubi [A] time = 0.0605806, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.3, Rules used = {4619, 4677, 8}

$$\frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+x\left(a+b\sin^{-1}(cx)\right)^2-2b^2x$$

Antiderivative was successfully verified.

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

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

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4677

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

Rule 8

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

Rubi steps

$$\int \left(a+b\sin^{-1}(cx)\right)^2 dx = x\left(a+b\sin^{-1}(cx)\right)^2 - (2bc)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx$$
$$= \frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c} + x\left(a+b\sin^{-1}(cx)\right)^2 - \left(2b^2\right)\int 1\,dx$$
$$= -2b^2x + \frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c} + x\left(a+b\sin^{-1}(cx)\right)^2$$

Mathematica [A] time = 0.0432173, size = 47, normalized size = 1.

$$\frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c} + x\left(a+b\sin^{-1}(cx)\right)^2 - 2b^2x$$

Antiderivative was successfully verified.

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

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

Maple [A] time = 0., size = 72, normalized size = 1.5

$$\frac{1}{c}\left(a^2cx + b^2\left((\arcsin(cx))^2 cx - 2cx + 2\arcsin(cx)\sqrt{-c^2x^2+1}\right) + 2ab\left(cx\arcsin(cx) + \sqrt{-c^2x^2+1}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [A] time = 1.44626, size = 97, normalized size = 2.06

$$b^2x\arcsin(cx)^2 - 2b^2\left(x - \frac{\sqrt{-c^2x^2+1}\arcsin(cx)}{c}\right) + a^2x + \frac{2\left(cx\arcsin(cx) + \sqrt{-c^2x^2+1}\right)ab}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A] time = 2.36048, size = 159, normalized size = 3.38

$$\frac{b^2cx\arcsin(cx)^2 + 2\,abcx\arcsin(cx) + \left(a^2 - 2\,b^2\right)cx + 2\,\sqrt{-c^2x^2+1}\left(b^2\arcsin(cx) + ab\right)}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A] time = 0.309713, size = 82, normalized size = 1.74

$$\begin{cases} a^2x + 2abx\operatorname{asin}(cx) + \frac{2ab\sqrt{-c^2x^2+1}}{c} + b^2x\operatorname{asin}^2(cx) - 2b^2x + \frac{2b^2\sqrt{-c^2x^2+1}\operatorname{asin}(cx)}{c} & \text{for } c \neq 0 \\ a^2x & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a**2*x + 2*a*b*x*asin(c*x) + 2*a*b*sqrt(-c**2*x**2 + 1)/c + b**2
*x*asin(c*x)**2 - 2*b**2*x + 2*b**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/c, Ne(c,
 0)), (a**2*x, True))
```

Giac [A] time = 1.16719, size = 101, normalized size = 2.15

$$b^2x\arcsin(cx)^2 + 2\,abx\arcsin(cx) + a^2x - 2\,b^2x + \frac{2\,\sqrt{-c^2x^2+1}b^2\arcsin(cx)}{c} + \frac{2\,\sqrt{-c^2x^2+1}ab}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.13 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d+ex}\,dx$

Optimal. Leaf size=347

$$-\frac{2ib\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e}-\frac{2ib\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e}+\frac{2b^2\text{PolyLog}\left(3,\frac{iee^{i}}{cd-}\right.}{e}$$

```
[Out] ((-I/3)*(a + b*ArcSin[c*x])^3)/(b*e) + ((a + b*ArcSin[c*x])^2*Log[1 - (I*e*
E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e + ((a + b*ArcSin[c*x])^2
*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e - ((2*I)*b
*(a + b*ArcSin[c*x])*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2
 - e^2])])/e - ((2*I)*b*(a + b*ArcSin[c*x])*PolyLog[2, (I*e*E^(I*ArcSin[c*x
]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e + (2*b^2*PolyLog[3, (I*e*E^(I*ArcSin[c*
x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e + (2*b^2*PolyLog[3, (I*e*E^(I*ArcSin[c
*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e
```

Rubi [A] time = 0.508978, antiderivative size = 347, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 6, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4741, 4519, 2190, 2531, 2282, 6589}

$$-\frac{2ib\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e}-\frac{2ib\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e}+\frac{2b^2\text{PolyLog}\left(3,\frac{iee^{i}}{cd-}\right.}{e}$$

Antiderivative was successfully verified.

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

```
[Out] ((-I/3)*(a + b*ArcSin[c*x])^3)/(b*e) + ((a + b*ArcSin[c*x])^2*Log[1 - (I*e*
E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e + ((a + b*ArcSin[c*x])^2
*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e - ((2*I)*b
*(a + b*ArcSin[c*x])*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2
 - e^2])])/e - ((2*I)*b*(a + b*ArcSin[c*x])*PolyLog[2, (I*e*E^(I*ArcSin[c*x
]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e + (2*b^2*PolyLog[3, (I*e*E^(I*ArcSin[c*
x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e + (2*b^2*PolyLog[3, (I*e*E^(I*ArcSin[c
*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
```

```
FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d+ex}\,dx = \text{Subst}\left(\int \frac{(a+bx)^2\cos(x)}{cd+e\sin(x)}\,dx, x, \sin^{-1}(cx)\right)$$

$$= -\frac{i\left(a+b\sin^{-1}(cx)\right)^3}{3be} + \text{Subst}\left(\int \frac{e^{ix}(a+bx)^2}{cd-\sqrt{c^2d^2-e^2}-iee^{ix}}\,dx, x, \sin^{-1}(cx)\right) + \text{Subst}\left(\int \frac{}{cd+}\right.$$

$$= -\frac{i\left(a+b\sin^{-1}(cx)\right)^3}{3be} + \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e} + \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\right.}{e}$$

$$= -\frac{i\left(a+b\sin^{-1}(cx)\right)^3}{3be} + \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e} + \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\right.}{e}$$

$$= -\frac{i\left(a+b\sin^{-1}(cx)\right)^3}{3be} + \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e} + \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\right.}{e}$$

$$= -\frac{i\left(a+b\sin^{-1}(cx)\right)^3}{3be} + \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e} + \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\right.}{e}$$

Mathematica [A] time = 0.332467, size = 332, normalized size = 0.96

$$\frac{-6ib\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)-6ib\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)+6b^2\text{PolyLog}\left(3,\frac{iee^{i\sin}}{cd-\sqrt{}}\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] (((-I)*(a + b*ArcSin[c*x])^3)/b + 3*(a + b*ArcSin[c*x])^2*Log[1 + (I*e*E^(I
*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] + 3*(a + b*ArcSin[c*x])^2*Lo
g[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])] - (6*I)*b*(a + b
*ArcSin[c*x])*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2]
)] - (6*I)*b*(a + b*ArcSin[c*x])*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d +
Sqrt[c^2*d^2 - e^2])] + 6*b^2*PolyLog[3, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqr
t[c^2*d^2 - e^2])] + 6*b^2*PolyLog[3, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c
^2*d^2 - e^2])])/(3*e)
```

Maple [F] time = 1.421, size = 0, normalized size = 0.

$$\int \frac{(a + b \arcsin(cx))^2}{ex + d}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^2 \log(ex + d)}{e} + \int \frac{b^2 \arctan\left(cx, \sqrt{cx+1}\sqrt{-cx+1}\right)^2 + 2\,ab \arctan\left(cx, \sqrt{cx+1}\sqrt{-cx+1}\right)}{ex + d}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] a^2*log(e*x + d)/e + integrate((b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x +
1))^2 + 2*a*b*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))/(e*x + d), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b^2 \arcsin(cx)^2 + 2\,ab \arcsin(cx) + a^2}{ex + d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)/(e*x + d), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + b \operatorname{asin}(cx))^2}{d + ex}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

<u>Giac</u> [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b \arcsin(cx) + a)^2}{ex + d}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*arcsin(c*x) + a)^2/(e*x + d), x)
```

3.14 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(d+ex)^2}\,dx$

Optimal. Leaf size=309

$$-\frac{2b^2c\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e\sqrt{c^2d^2-e^2}}+\frac{2b^2c\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e\sqrt{c^2d^2-e^2}}-\frac{2ibc\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e\sqrt{c^2d^2-e^2}}+\frac{2ibc\left(a+\right.}{}$$

```
[Out] -((a + b*ArcSin[c*x])^2/(e*(d + e*x))) - ((2*I)*b*c*(a + b*ArcSin[c*x])*Log
[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/(e*Sqrt[c^2*d^2
- e^2]) + ((2*I)*b*c*(a + b*ArcSin[c*x])*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c
*d + Sqrt[c^2*d^2 - e^2])])/(e*Sqrt[c^2*d^2 - e^2]) - (2*b^2*c*PolyLog[2, (
I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/(e*Sqrt[c^2*d^2 - e^2]
) + (2*b^2*c*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])
])/(e*Sqrt[c^2*d^2 - e^2])
```

Rubi [A] time = 0.528895, antiderivative size = 309, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.389, Rules used = {4743, 4773, 3323, 2264, 2190, 2279, 2391}

$$-\frac{2b^2c\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e\sqrt{c^2d^2-e^2}}+\frac{2b^2c\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e\sqrt{c^2d^2-e^2}}-\frac{2ibc\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e\sqrt{c^2d^2-e^2}}+\frac{2ibc\left(a+\right.}{}$$

Antiderivative was successfully verified.

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


```
[Out] -((a + b*ArcSin[c*x])^2/(e*(d + e*x))) - ((2*I)*b*c*(a + b*ArcSin[c*x])*Log
[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/(e*Sqrt[c^2*d^2
- e^2]) + ((2*I)*b*c*(a + b*ArcSin[c*x])*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c
*d + Sqrt[c^2*d^2 - e^2])])/(e*Sqrt[c^2*d^2 - e^2]) - (2*b^2*c*PolyLog[2, (
I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/(e*Sqrt[c^2*d^2 - e^2]
) + (2*b^2*c*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])
])/(e*Sqrt[c^2*d^2 - e^2])
```


Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
```

```
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rubi steps

$$
\begin{aligned}
\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(d+ex)^2}\,dx &= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{e(d+ex)}+\frac{(2bc)\int \frac{a+b\sin^{-1}(cx)}{(d+ex)\sqrt{1-c^2x^2}}\,dx}{e}\\
&= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{e(d+ex)}+\frac{(2bc)\,\text{Subst}\left(\int \frac{a+bx}{cd+e\sin(x)}\,dx,x,\sin^{-1}(cx)\right)}{e}\\
&= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{e(d+ex)}+\frac{(4bc)\,\text{Subst}\left(\int \frac{e^{ix}(a+bx)}{ie+2cde^{ix}-iee^{2ix}}\,dx,x,\sin^{-1}(cx)\right)}{e}\\
&= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{e(d+ex)}-\frac{(4ibc)\,\text{Subst}\left(\int \frac{e^{ix}(a+bx)}{2cd-2\sqrt{c^2d^2-e^2}-2iee^{ix}}\,dx,x,\sin^{-1}(cx)\right)}{\sqrt{c^2d^2-e^2}}+\frac{(4ibc)\,\text{Subst}\left(\int \cdots\right.}{\cdots}\\
&= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{e(d+ex)}-\frac{2ibc\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e\sqrt{c^2d^2-e^2}}+\frac{2ibc\left(a+b\sin^{-1}(cx)\right)\log\cdots}{e\sqrt{c^2d^2-e\cdots}}\\
&= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{e(d+ex)}-\frac{2ibc\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e\sqrt{c^2d^2-e^2}}+\frac{2ibc\left(a+b\sin^{-1}(cx)\right)\log\cdots}{e\sqrt{c^2d^2-e\cdots}}\\
&= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{e(d+ex)}-\frac{2ibc\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e\sqrt{c^2d^2-e^2}}+\frac{2ibc\left(a+b\sin^{-1}(cx)\right)\log\cdots}{e\sqrt{c^2d^2-e\cdots}}
\end{aligned}
$$

Mathematica [A] time = 0.338029, size = 231, normalized size = 0.75

$$
\frac{-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{d+ex}+\frac{2bc\left(-b\,\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)+b\,\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)-i\left(a+b\sin^{-1}(cx)\right)\left(\log\left(1+\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}-cd}\right)-\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)\right)\right)}{\sqrt{c^2d^2-e^2}}}{e}
$$

Antiderivative was successfully verified.

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

```
[Out] (-((a + b*ArcSin[c*x])^2/(d + e*x)) + (2*b*c*((-I)*(a + b*ArcSin[c*x])*(Log
[1 + (I*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] - Log[1 - (I*e
*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]) - b*PolyLog[2, (I*e*E^(I*
ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])] + b*PolyLog[2, (I*e*E^(I*ArcSin[
```

```
c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]))/Sqrt[c^2*d^2 - e^2])/e
```

Maple [B] time = 0.393, size = 646, normalized size = 2.1

$$-\frac{ca^{2}}{(ecx+dc)\,e}-\frac{cb^{2}\left(\arcsin\left(cx\right)\right)^{2}}{(ecx+dc)\,e}+2\,\frac{cb^{2}\sqrt{-c^{2}d^{2}+e^{2}}\arcsin\left(cx\right)}{e\left(c^{2}d^{2}-e^{2}\right)}\ln\left(\frac{idc+\left(icx+\sqrt{-c^{2}x^{2}+1}\right)e+\sqrt{-c^{2}d^{2}+e^{2}}}{idc+\sqrt{-c^{2}d^{2}+e^{2}}}\right)-2\,\frac{cl}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^{2}\arcsin\left(cx\right)^{2}+2\,ab\arcsin\left(cx\right)+a^{2}}{e^{2}x^{2}+2\,dex+d^{2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)/(e^2*x^2 + 2*d*e*x +
 d^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + b\,\text{asin}\,(cx))^2}{(d + ex)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b\arcsin\,(cx) + a)^2}{(ex + d)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*arcsin(c*x) + a)^2/(e*x + d)^2, x)
```

3.15 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(d+ex)^3}\,dx$

Optimal. Leaf size=401

$$-\frac{b^2c^3d\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e\left(c^2d^2-e^2\right)^{3/2}}+\frac{b^2c^3d\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e\left(c^2d^2-e^2\right)^{3/2}}+\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{\left(c^2d^2-e^2\right)(d+ex)}-\frac{ibc^3d\left(a+b\sin^{-1}\right.}{e\left(c\right.}$$

```
[Out] (b*c*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/((c^2*d^2 - e^2)*(d + e*x)) - (
a + b*ArcSin[c*x])^2/(2*e*(d + e*x)^2) - (I*b*c^3*d*(a + b*ArcSin[c*x])*Log
[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/(e*(c^2*d^2 - e^
2)^(3/2)) + (I*b*c^3*d*(a + b*ArcSin[c*x])*Log[1 - (I*e*E^(I*ArcSin[c*x]))/
(c*d + Sqrt[c^2*d^2 - e^2])])/(e*(c^2*d^2 - e^2)^(3/2)) - (b^2*c^2*Log[d +
e*x])/(e*(c^2*d^2 - e^2)) - (b^2*c^3*d*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(
c*d - Sqrt[c^2*d^2 - e^2])])/(e*(c^2*d^2 - e^2)^(3/2)) + (b^2*c^3*d*PolyLog
[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/(e*(c^2*d^2 - e^2
)^(3/2))
```

Rubi [A] time = 0.635537, antiderivative size = 401, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.556, Rules used = {4743, 4773, 3324, 3323, 2264, 2190, 2279, 2391, 2668, 31}

$$-\frac{b^2c^3d\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e\left(c^2d^2-e^2\right)^{3/2}}+\frac{b^2c^3d\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e\left(c^2d^2-e^2\right)^{3/2}}+\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{\left(c^2d^2-e^2\right)(d+ex)}-\frac{ibc^3d\left(a+b\sin^{-1}\right.}{e\left(c\right.}$$

Antiderivative was successfully verified.

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

```
[Out] (b*c*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/((c^2*d^2 - e^2)*(d + e*x)) - (
a + b*ArcSin[c*x])^2/(2*e*(d + e*x)^2) - (I*b*c^3*d*(a + b*ArcSin[c*x])*Log
[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/(e*(c^2*d^2 - e^
2)^(3/2)) + (I*b*c^3*d*(a + b*ArcSin[c*x])*Log[1 - (I*e*E^(I*ArcSin[c*x]))/
(c*d + Sqrt[c^2*d^2 - e^2])])/(e*(c^2*d^2 - e^2)^(3/2)) - (b^2*c^2*Log[d +
e*x])/(e*(c^2*d^2 - e^2)) - (b^2*c^3*d*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(
c*d - Sqrt[c^2*d^2 - e^2])])/(e*(c^2*d^2 - e^2)^(3/2)) + (b^2*c^3*d*PolyLog
[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/(e*(c^2*d^2 - e^2
)^(3/2))
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3324

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[(b*(c + d*x)^m*Cos[e + f*x])/(f*(a^2 - b^2)*(a + b*Sin[e +
f*x])), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[(b*d*m)/(f*(a^2 - b^2)), Int[((c + d*x)^(m - 1)*Cos[e + f*x])/(a
 + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
```

```
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 2668

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rule 31

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

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(d+ex)^3}\,dx = -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{2e(d+ex)^2}+\frac{(bc)\int \frac{a+b\sin^{-1}(cx)}{(d+ex)^2\sqrt{1-c^2x^2}}\,dx}{e}$$

$$= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{2e(d+ex)^2}+\frac{\left(bc^2\right)\text{Subst}\left(\int \frac{a+bx}{(cd+e\sin(x))^2}\,dx,x,\sin^{-1}(cx)\right)}{e}$$

$$= \frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{\left(c^2d^2-e^2\right)(d+ex)}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{2e(d+ex)^2}-\frac{\left(b^2c^2\right)\text{Subst}\left(\int \frac{\cos(x)}{cd+e\sin(x)}\,dx,x,\sin^{-1}(cx\right.}{c^2d^2-e^2}$$

$$= \frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{\left(c^2d^2-e^2\right)(d+ex)}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{2e(d+ex)^2}-\frac{\left(b^2c^2\right)\text{Subst}\left(\int \frac{1}{cd+x}\,dx,x,cex\right)}{e\left(c^2d^2-e^2\right)}+\frac{\left(2bc^3\right.}{}$$

$$= \frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{\left(c^2d^2-e^2\right)(d+ex)}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{2e(d+ex)^2}-\frac{b^2c^2\log(d+ex)}{e\left(c^2d^2-e^2\right)}-\frac{\left(2ibc^3d\right)\text{Subst}\left(\int \frac{}{2c}\right.}{\left(\right.}$$

$$= \frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{\left(c^2d^2-e^2\right)(d+ex)}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{2e(d+ex)^2}-\frac{ibc^3d\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{iee^{i\sin^{-1}(c}}{cd-\sqrt{c^2d^2-}}\right.}{e\left(c^2d^2-e^2\right)^{3/2}}$$

$$= \frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{\left(c^2d^2-e^2\right)(d+ex)}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{2e(d+ex)^2}-\frac{ibc^3d\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{iee^{i\sin^{-1}(c}}{cd-\sqrt{c^2d^2-}}\right.}{e\left(c^2d^2-e^2\right)^{3/2}}$$

$$= \frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{\left(c^2d^2-e^2\right)(d+ex)}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{2e(d+ex)^2}-\frac{ibc^3d\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{iee^{i\sin^{-1}(c}}{cd-\sqrt{c^2d^2-}}\right.}{e\left(c^2d^2-e^2\right)^{3/2}}$$

Mathematica [A] time = 1.01079, size = 315, normalized size = 0.79

$$\frac{\frac{2bc^3d\left(-b\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)+b\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)-i\left(a+b\sin^{-1}(cx)\right)\left(\log\left(1+\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}-cd}\right)-\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)\right)\right)}{\left(c^2d^2-e^2\right)^{3/2}}+\frac{2bce\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{\left(c^2d^2-e^2\right)(d+ex)}}{2e}$$

Antiderivative was successfully verified.

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

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

```
 e^2) + (2*b*c^3*d*((-I)*(a + b*ArcSin[c*x])*(Log[1 + (I*e*E^(I*ArcSin[c*x]
))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] - Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d +
 Sqrt[c^2*d^2 - e^2])]) - b*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[
c^2*d^2 - e^2])] + b*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2
 - e^2])]))/(c^2*d^2 - e^2)^(3/2))/(2*e)
```

Maple [B] time = 0.868, size = 1173, normalized size = 2.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^2 \arcsin(cx)^2 + 2\,ab \arcsin(cx) + a^2}{e^3x^3 + 3\,de^2x^2 + 3\,d^2ex + d^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)/(e^3*x^3 + 3*d*e^2*x
^2 + 3*d^2*e*x + d^3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + b \operatorname{asin}(cx))^2}{(d + ex)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(e*x+d)**3,x)
```

```
[Out] Integral((a + b*asin(c*x))**2/(d + e*x)**3, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b \arcsin(cx) + a)^2}{(ex + d)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*arcsin(c*x) + a)^2/(e*x + d)^3, x)
```

3.16 $\int \frac{(d+ex)^3}{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=393

$$-\frac{3d^2e\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{2bc^2}+\frac{3de^2\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{4bc^3}-\frac{3de^2\cos\left(\frac{3a}{b}\right)\text{CosInteg}}{4bc}$$

```
[Out] (d^3*Cos[a/b]*CosIntegral[a/b + ArcSin[c*x]])/(b*c) + (3*d*e^2*Cos[a/b]*Cos
Integral[a/b + ArcSin[c*x]])/(4*b*c^3) - (3*d*e^2*Cos[(3*a)/b]*CosIntegral[
(3*a)/b + 3*ArcSin[c*x]])/(4*b*c^3) - (3*d^2*e*CosIntegral[(2*a)/b + 2*ArcS
in[c*x]]*Sin[(2*a)/b])/(2*b*c^2) - (e^3*CosIntegral[(2*a)/b + 2*ArcSin[c*x]
]*Sin[(2*a)/b])/(4*b*c^4) + (e^3*CosIntegral[(4*a)/b + 4*ArcSin[c*x]]*Sin[(
4*a)/b])/(8*b*c^4) + (d^3*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(b*c) +
(3*d*e^2*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(4*b*c^3) + (3*d^2*e*Cos[
(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c*x]])/(2*b*c^2) + (e^3*Cos[(2*a)/b
]*SinIntegral[(2*a)/b + 2*ArcSin[c*x]])/(4*b*c^4) - (3*d*e^2*Sin[(3*a)/b]*S
inIntegral[(3*a)/b + 3*ArcSin[c*x]])/(4*b*c^3) - (e^3*Cos[(4*a)/b]*SinInteg
ral[(4*a)/b + 4*ArcSin[c*x]])/(8*b*c^4)
```

Rubi [A] time = 1.1335, antiderivative size = 393, normalized size of antiderivative = 1., number of steps used = 27, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.389, Rules used = {4747, 6742, 3303, 3299, 3302, 4406, 12}

$$-\frac{3d^2e\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{2bc^2}+\frac{3de^2\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{4bc^3}-\frac{3de^2\cos\left(\frac{3a}{b}\right)\text{CosInteg}}{4bc}$$

Antiderivative was successfully verified.

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


```
[Out] (d^3*Cos[a/b]*CosIntegral[a/b + ArcSin[c*x]])/(b*c) + (3*d*e^2*Cos[a/b]*Cos
Integral[a/b + ArcSin[c*x]])/(4*b*c^3) - (3*d*e^2*Cos[(3*a)/b]*CosIntegral[
(3*a)/b + 3*ArcSin[c*x]])/(4*b*c^3) - (3*d^2*e*CosIntegral[(2*a)/b + 2*ArcS
in[c*x]]*Sin[(2*a)/b])/(2*b*c^2) - (e^3*CosIntegral[(2*a)/b + 2*ArcSin[c*x]
]*Sin[(2*a)/b])/(4*b*c^4) + (e^3*CosIntegral[(4*a)/b + 4*ArcSin[c*x]]*Sin[(
4*a)/b])/(8*b*c^4) + (d^3*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(b*c) +
(3*d*e^2*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(4*b*c^3) + (3*d^2*e*Cos[
(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c*x]])/(2*b*c^2) + (e^3*Cos[(2*a)/b
]*SinIntegral[(2*a)/b + 2*ArcSin[c*x]])/(4*b*c^4) - (3*d*e^2*Sin[(3*a)/b]*S
inIntegral[(3*a)/b + 3*ArcSin[c*x]])/(4*b*c^3) - (e^3*Cos[(4*a)/b]*SinInteg
```

ral[(4*a)/b + 4*ArcSin[c*x]])/(8*b*c^4)

Rule 4747

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_.) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Dist[1/c^(m + 1), Subst[Int[(a + b*x)^n*Cos[x]*(c*d + e*Sin[x])^m
, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[m, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 3303

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

Rule 3299

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

Rule 3302

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

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rubi steps

$$\int \frac{(d+ex)^3}{a+b\sin^{-1}(cx)}\,dx = \frac{\text{Subst}\left(\int \frac{\cos(x)(cd+e\sin(x))^3}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c^4}$$

$$= \frac{\text{Subst}\left(\int \left(\frac{c^3d^3\cos(x)}{a+bx}+\frac{3c^2d^2e\cos(x)\sin(x)}{a+bx}+\frac{3cde^2\cos(x)\sin^2(x)}{a+bx}+\frac{e^3\cos(x)\sin^3(x)}{a+bx}\right)dx, x, \sin^{-1}(cx)\right)}{c^4}$$

$$= \frac{d^3\,\text{Subst}\left(\int \frac{\cos(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c} + \frac{(3d^2e)\,\text{Subst}\left(\int \frac{\cos(x)\sin(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c^2} + \frac{(3de^2)\,\text{Su}}{}$$

$$= \frac{(3d^2e)\,\text{Subst}\left(\int \frac{\sin(2x)}{2(a+bx)}\,dx, x, \sin^{-1}(cx)\right)}{c^2} + \frac{(3de^2)\,\text{Subst}\left(\int \left(\frac{\cos(x)}{4(a+bx)}-\frac{\cos(3x)}{4(a+bx)}\right)dx, x, \sin^{-1}(cx)\right)}{c^3}$$

$$= \frac{d^3\cos\left(\frac{a}{b}\right)\textbf{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc} + \frac{d^3\sin\left(\frac{a}{b}\right)\textbf{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc} + \frac{(3d^2e)\,\text{Subst}\left(\int \frac{\sin(2x)}{a+bx}\,dx, x, \text{si}\right.}{2c^2}$$

$$= \frac{d^3\cos\left(\frac{a}{b}\right)\textbf{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc} + \frac{d^3\sin\left(\frac{a}{b}\right)\textbf{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc} + \frac{\left(3de^2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+\right.}{a+bx}\right.}{4c^3}$$

$$= \frac{d^3\cos\left(\frac{a}{b}\right)\textbf{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc} + \frac{3de^2\cos\left(\frac{a}{b}\right)\textbf{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{4bc^3} - \frac{3de^2\cos\left(\frac{3a}{b}\right)\textbf{Ci}\left(\frac{3a}{b}+3\sin\right.}{4bc^3}$$

Mathematica [A] time = 0.749604, size = 304, normalized size = 0.77

$$\frac{3d^2e\left(\cos\left(\frac{2a}{b}\right)\textbf{Si}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)-\sin\left(\frac{2a}{b}\right)\textbf{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)\right)}{2bc^2} + \frac{3de^2\left(\cos\left(\frac{a}{b}\right)\textbf{CosIntegral}\left(\frac{a}{b}+\sin\right.\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] (d^3*(Cos[a/b]*CosIntegral[a/b + ArcSin[c*x]] + Sin[a/b]*SinIntegral[a/b +
ArcSin[c*x]]))/(b*c) + (3*d*e^2*(Cos[a/b]*CosIntegral[a/b + ArcSin[c*x]] -
Cos[(3*a)/b]*CosIntegral[3*(a/b + ArcSin[c*x])] + Sin[a/b]*SinIntegral[a/b
+ ArcSin[c*x]] - Sin[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c*x])]))/(4*b*c^3
) + (e^3*(-2*CosIntegral[2*(a/b + ArcSin[c*x])]*Sin[(2*a)/b] + CosIntegral[
4*(a/b + ArcSin[c*x])]*Sin[(4*a)/b] + 2*Cos[(2*a)/b]*SinIntegral[2*(a/b + A
rcSin[c*x])] - Cos[(4*a)/b]*SinIntegral[4*(a/b + ArcSin[c*x])]))/(8*b*c^4)
+ (3*d^2*e*(-(CosIntegral[(2*a)/b + 2*ArcSin[c*x]]*Sin[(2*a)/b]) + Cos[(2*a
)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c*x]]))/(2*b*c^2)
```

Maple [A] time = 0.064, size = 327, normalized size = 0.8

$$\frac{1}{8c^4b}\left(8\,\mathrm{Si}\left(\arcsin(cx)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)c^3d^3+8\,\mathrm{Ci}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)c^3d^3+12\,\mathrm{Si}\left(2\arcsin(cx)+2\frac{a}{b}\right)\cos\left(2\frac{a}{b}\right)c^2$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(ex+d)^3}{b\arcsin(cx)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((e*x + d)^3/(b*arcsin(c*x) + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{e^3x^3+3\,de^2x^2+3\,d^2ex+d^3}{b\arcsin(cx)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral((e^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*x + d^3)/(b*arcsin(c*x) + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(d+ex)^3}{a+b\operatorname{asin}(cx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A] time = 1.37742, size = 807, normalized size = 2.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] d^3*cos(a/b)*cos_integral(a/b + arcsin(c*x))/(b*c) - 3*d^2*cos(a/b)*cos_int
egral(2*a/b + 2*arcsin(c*x))*e*sin(a/b)/(b*c^2) + 3*d^2*cos(a/b)^2*e*sin_in
tegral(2*a/b + 2*arcsin(c*x))/(b*c^2) + d^3*sin(a/b)*sin_integral(a/b + arc
sin(c*x))/(b*c) - 3*d*cos(a/b)^3*cos_integral(3*a/b + 3*arcsin(c*x))*e^2/(b
*c^3) - 3*d*cos(a/b)^2*e^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(c*x))/(b*
c^3) + cos(a/b)^3*cos_integral(4*a/b + 4*arcsin(c*x))*e^3*sin(a/b)/(b*c^4)
- cos(a/b)^4*e^3*sin_integral(4*a/b + 4*arcsin(c*x))/(b*c^4) - 3/2*d^2*e*si
n_integral(2*a/b + 2*arcsin(c*x))/(b*c^2) + 9/4*d*cos(a/b)*cos_integral(3*a
/b + 3*arcsin(c*x))*e^2/(b*c^3) + 3/4*d*cos(a/b)*cos_integral(a/b + arcsin(
c*x))*e^2/(b*c^3) + 3/4*d*e^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(c*x))/
(b*c^3) + 3/4*d*e^2*sin(a/b)*sin_integral(a/b + arcsin(c*x))/(b*c^3) - 1/2*
cos(a/b)*cos_integral(4*a/b + 4*arcsin(c*x))*e^3*sin(a/b)/(b*c^4) - 1/2*cos
(a/b)*cos_integral(2*a/b + 2*arcsin(c*x))*e^3*sin(a/b)/(b*c^4) + cos(a/b)^2
*e^3*sin_integral(4*a/b + 4*arcsin(c*x))/(b*c^4) + 1/2*cos(a/b)^2*e^3*sin_i
ntegral(2*a/b + 2*arcsin(c*x))/(b*c^4) - 1/8*e^3*sin_integral(4*a/b + 4*arc
sin(c*x))/(b*c^4) - 1/4*e^3*sin_integral(2*a/b + 2*arcsin(c*x))/(b*c^4)
```

3.17 $\int \frac{(d+ex)^2}{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=244

$$-\frac{de\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{bc^2}+\frac{e^2\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{4bc^3}-\frac{e^2\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+\right.}{4bc^3}$$

```
[Out] (d^2*Cos[a/b]*CosIntegral[a/b + ArcSin[c*x]])/(b*c) + (e^2*Cos[a/b]*CosInte
gral[a/b + ArcSin[c*x]])/(4*b*c^3) - (e^2*Cos[(3*a)/b]*CosIntegral[(3*a)/b
+ 3*ArcSin[c*x]])/(4*b*c^3) - (d*e*CosIntegral[(2*a)/b + 2*ArcSin[c*x]]*Sin
[(2*a)/b])/(b*c^2) + (d^2*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(b*c) +
(e^2*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(4*b*c^3) + (d*e*Cos[(2*a)/b]
*SinIntegral[(2*a)/b + 2*ArcSin[c*x]])/(b*c^2) - (e^2*Sin[(3*a)/b]*SinInteg
ral[(3*a)/b + 3*ArcSin[c*x]])/(4*b*c^3)
```

Rubi [A] time = 0.666748, antiderivative size = 244, normalized size of antiderivative = 1., number of steps used = 17, number of rules used = 6, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4747, 6742, 3303, 3299, 3302, 4406}

$$-\frac{de\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{bc^2}+\frac{e^2\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{4bc^3}-\frac{e^2\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+\right.}{4bc^3}$$

Antiderivative was successfully verified.

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

```
[Out] (d^2*Cos[a/b]*CosIntegral[a/b + ArcSin[c*x]])/(b*c) + (e^2*Cos[a/b]*CosInte
gral[a/b + ArcSin[c*x]])/(4*b*c^3) - (e^2*Cos[(3*a)/b]*CosIntegral[(3*a)/b
+ 3*ArcSin[c*x]])/(4*b*c^3) - (d*e*CosIntegral[(2*a)/b + 2*ArcSin[c*x]]*Sin
[(2*a)/b])/(b*c^2) + (d^2*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(b*c) +
(e^2*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(4*b*c^3) + (d*e*Cos[(2*a)/b]
*SinIntegral[(2*a)/b + 2*ArcSin[c*x]])/(b*c^2) - (e^2*Sin[(3*a)/b]*SinInteg
ral[(3*a)/b + 3*ArcSin[c*x]])/(4*b*c^3)
```

Rule 4747

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_.) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Dist[1/c^(m + 1), Subst[Int[(a + b*x)^n*Cos[x]*(c*d + e*Sin[x])^m
, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[m, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 3303

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

Rule 3299

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

Rule 3302

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

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rubi steps

$$\int \frac{(d+ex)^2}{a+b\sin^{-1}(cx)}\,dx = \frac{\text{Subst}\left(\int \frac{\cos(x)(cd+e\sin(x))^2}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c^3}$$

$$= \frac{\text{Subst}\left(\int \left(\frac{c^2d^2\cos(x)}{a+bx} + \frac{e^2\cos(x)\sin^2(x)}{a+bx} + \frac{cde\sin(2x)}{a+bx}\right)dx, x, \sin^{-1}(cx)\right)}{c^3}$$

$$= \frac{d^2\,\text{Subst}\left(\int \frac{\cos(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c} + \frac{(de)\,\text{Subst}\left(\int \frac{\sin(2x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c^2} + \frac{e^2\,\text{Subst}\left(\int \frac{\cos(x)\,\text{s}}{a+}\right.}{}$$

$$= \frac{e^2\,\text{Subst}\left(\int \left(\frac{\cos(x)}{4(a+bx)} - \frac{\cos(3x)}{4(a+bx)}\right)dx, x, \sin^{-1}(cx)\right)}{c^3} + \frac{\left(d^2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+x\right)}{a+bx}\,dx, x, \sin^{-1}(cx)\right.}{c}$$

$$= \frac{d^2\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc} - \frac{de\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)\sin\left(\frac{2a}{b}\right)}{bc^2} + \frac{d^2\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc}$$

$$= \frac{d^2\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc} - \frac{de\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)\sin\left(\frac{2a}{b}\right)}{bc^2} + \frac{d^2\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc}$$

$$= \frac{d^2\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc} + \frac{e^2\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{4bc^3} - \frac{e^2\cos\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)}{4bc^3}$$

Mathematica [A] time = 0.438909, size = 187, normalized size = 0.77

$$\frac{\cos\left(\frac{a}{b}\right)\left(4c^2d^2+e^2\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right) + 4c^2d^2\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right) - 4cde\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(2\left(\frac{a}{b}+\right.\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] ((4*c^2*d^2 + e^2)*Cos[a/b]*CosIntegral[a/b + ArcSin[c*x]] - e^2*Cos[(3*a)/
b]*CosIntegral[3*(a/b + ArcSin[c*x])] - 4*c*d*e*CosIntegral[2*(a/b + ArcSin
[c*x])]*Sin[(2*a)/b] + 4*c^2*d^2*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]] +
e^2*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]] + 4*c*d*e*Cos[(2*a)/b]*SinInteg
ral[2*(a/b + ArcSin[c*x])] - e^2*Sin[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c
*x])])/(4*b*c^3)
```

Maple [A] time = 0.047, size = 206, normalized size = 0.8

$$\frac{1}{4c^3b}\left(4\,\mathrm{Si}\left(\arcsin(cx)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)c^2d^2+4\,\mathrm{Ci}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)c^2d^2+4\,\mathrm{Si}\left(2\arcsin(cx)+2\frac{a}{b}\right)\cos\left(2\frac{a}{b}\right)c$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(ex+d)^2}{b\arcsin(cx)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((e*x + d)^2/(b*arcsin(c*x) + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{e^2x^2+2\,dex+d^2}{b\arcsin(cx)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral((e^2*x^2 + 2*d*e*x + d^2)/(b*arcsin(c*x) + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(d+ex)^2}{a+b\,\mathrm{asin}\,(cx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A] time = 1.29407, size = 451, normalized size = 1.85

$$\frac{d^2\cos\left(\frac{a}{b}\right)\mathrm{Ci}\left(\frac{a}{b}+\arcsin(cx)\right)}{bc}-\frac{2\,d\cos\left(\frac{a}{b}\right)\mathrm{Ci}\left(\frac{2\,a}{b}+2\,\arcsin(cx)\right)e\sin\left(\frac{a}{b}\right)}{bc^2}+\frac{2\,d\cos\left(\frac{a}{b}\right)^2 e\,\mathrm{Si}\left(\frac{2\,a}{b}+2\,\arcsin(cx)\right)}{bc^2}+$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] d^2*cos(a/b)*cos_integral(a/b + arcsin(c*x))/(b*c) - 2*d*cos(a/b)*cos_integ
ral(2*a/b + 2*arcsin(c*x))*e*sin(a/b)/(b*c^2) + 2*d*cos(a/b)^2*e*sin_integr
al(2*a/b + 2*arcsin(c*x))/(b*c^2) + d^2*sin(a/b)*sin_integral(a/b + arcsin(
c*x))/(b*c) - cos(a/b)^3*cos_integral(3*a/b + 3*arcsin(c*x))*e^2/(b*c^3) -
cos(a/b)^2*e^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(c*x))/(b*c^3) - d*e*s
in_integral(2*a/b + 2*arcsin(c*x))/(b*c^2) + 3/4*cos(a/b)*cos_integral(3*a/
b + 3*arcsin(c*x))*e^2/(b*c^3) + 1/4*cos(a/b)*cos_integral(a/b + arcsin(c*x
))*e^2/(b*c^3) + 1/4*e^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(c*x))/(b*c^
3) + 1/4*e^2*sin(a/b)*sin_integral(a/b + arcsin(c*x))/(b*c^3)
```

3.18 $\int \frac{d+ex}{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=115

$$-\frac{e\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{2bc^2}+\frac{e\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{2bc^2}+\frac{d\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc}$$

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

Rubi [A] time = 0.306474, antiderivative size = 115, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.438, Rules used = {4747, 6742, 3303, 3299, 3302, 4406, 12}

$$-\frac{e\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{2bc^2}+\frac{e\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{2bc^2}+\frac{d\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc}$$

Antiderivative was successfully verified.

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

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

Rule 4747

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_.) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Dist[1/c^(m + 1), Subst[Int[(a + b*x)^n*Cos[x]*(c*d + e*Sin[x])^m
, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[m, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 3303

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

Rule 3299

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

Rule 3302

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

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rubi steps

$$\int \frac{d+ex}{a+b\sin^{-1}(cx)}\,dx = \frac{\text{Subst}\left(\int \frac{\cos(x)(cd+e\sin(x))}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c^2}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{cd\cos(x)}{a+bx} + \frac{e\cos(x)\sin(x)}{a+bx}\right) dx, x, \sin^{-1}(cx)\right)}{c^2}$$
$$= \frac{d\,\text{Subst}\left(\int \frac{\cos(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c} + \frac{e\,\text{Subst}\left(\int \frac{\cos(x)\sin(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c^2}$$
$$= \frac{e\,\text{Subst}\left(\int \frac{\sin(2x)}{2(a+bx)}\,dx, x, \sin^{-1}(cx)\right)}{c^2} + \frac{\left(d\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+x\right)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c} + \frac{(d\sin(}{}$$
$$= \frac{d\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc} + \frac{d\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc} + \frac{e\,\text{Subst}\left(\int \frac{\sin(2x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right.}{2c^2}$$
$$= \frac{d\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc} + \frac{d\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc} + \frac{\left(e\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{2a}{b}+2x\right)}{a+bx}\,d\right.}{2c^2}$$
$$= \frac{d\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc} - \frac{e\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)\sin\left(\frac{2a}{b}\right)}{2bc^2} + \frac{d\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc} +$$

Mathematica [A] time = 0.186046, size = 98, normalized size = 0.85

$$\frac{2cd\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right) - e\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(2\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right) + 2cd\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{2bc^2}$$

Antiderivative was successfully verified.

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

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

Maple [A] time = 0.036, size = 103, normalized size = 0.9

$$\frac{1}{c}\left(-\frac{e}{2\,bc}\left(\text{Ci}\left(2\arcsin(cx)+2\frac{a}{b}\right)\sin\left(2\frac{a}{b}\right) - \text{Si}\left(2\arcsin(cx)+2\frac{a}{b}\right)\cos\left(2\frac{a}{b}\right)\right) + \frac{d}{b}\left(\text{Si}\left(\arcsin(cx)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right) +\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{ex+d}{b \arcsin(cx)+a} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((e*x + d)/(b*arcsin(c*x) + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{ex+d}{b \arcsin(cx)+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral((e*x + d)/(b*arcsin(c*x) + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{d+ex}{a+b \operatorname{asin}(cx)} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A] time = 1.26102, size = 192, normalized size = 1.67

$$\frac{d\cos\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{a}{b}+\arcsin\left(cx\right)\right)}{bc}-\frac{\cos\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{2a}{b}+2\arcsin\left(cx\right)\right)e\sin\left(\frac{a}{b}\right)}{bc^2}+\frac{\cos\left(\frac{a}{b}\right)^2e\operatorname{Si}\left(\frac{2a}{b}+2\arcsin\left(cx\right)\right)}{bc^2}+\frac{d\sin\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.19 $\int \frac{1}{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=53

$$\frac{\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{bc}+\frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{bc}$$

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

Rubi [A] time = 0.0655422, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.4, Rules used = {4623, 3303, 3299, 3302}

$$\frac{\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{bc}+\frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{bc}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^(-1),x]
```

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

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 3303

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

Rule 3299

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

Rule 3302

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

Rubi steps

$$\begin{aligned}\int \frac{1}{a+b\sin^{-1}(cx)}\,dx &= \frac{\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}-\frac{x}{b}\right)}{x}\,dx, x, a+b\sin^{-1}(cx)\right)}{bc}\\ &= \frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\cos\left(\frac{x}{b}\right)}{x}\,dx, x, a+b\sin^{-1}(cx)\right)}{bc} + \frac{\sin\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\sin\left(\frac{x}{b}\right)}{x}\,dx, x, a+b\sin^{-1}(cx)\right)}{bc}\\ &= \frac{\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{bc} + \frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{bc}\end{aligned}$$

Mathematica [A] time = 0.0250106, size = 44, normalized size = 0.83

$$\frac{\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)+\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])^(-1),x]
```

```
[Out] (Cos[a/b]*CosIntegral[a/b + ArcSin[c*x]] + Sin[a/b]*SinIntegral[a/b + ArcSi
n[c*x]])/(b*c)
```

Maple [A] time = 0., size = 48, normalized size = 0.9

$$\frac{1}{c}\left(\frac{1}{b}\text{Si}\left(\arcsin(cx)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)+\frac{1}{b}\text{Ci}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c*(Si(arcsin(c*x)+a/b)*sin(a/b)/b+Ci(arcsin(c*x)+a/b)*cos(a/b)/b)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{b \arcsin(cx) + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate(1/(b*arcsin(c*x) + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{b \arcsin(cx) + a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral(1/(b*arcsin(c*x) + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{a + b \operatorname{asin}(cx)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(c*x)),x)
```

```
[Out] Integral(1/(a + b*asin(c*x)), x)
```

Giac [A] time = 1.25566, size = 66, normalized size = 1.25

$$\frac{\cos\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{a}{b}+\arcsin\left(cx\right)\right)}{bc}+\frac{\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a}{b}+\arcsin\left(cx\right)\right)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] cos(a/b)*cos_integral(a/b + arcsin(c*x))/(b*c) + sin(a/b)*sin_integral(a/b
+ arcsin(c*x))/(b*c)
```

3.20 $\int \frac{1}{(d+ex)\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=20

$$\text{Unintegrable}\left(\frac{1}{(d+ex)\left(a+b\sin^{-1}(cx)\right)},x\right)$$

```
[Out] Unintegrable[1/((d + e*x)*(a + b*ArcSin[c*x])), x]
```

Rubi [A] time = 0.0309113, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(d+ex)\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((d + e*x)*(a + b*ArcSin[c*x])),x]

[Out] Defer[Int][1/((d + e*x)*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{1}{(d+ex)\left(a+b\sin^{-1}(cx)\right)}\,dx=\int \frac{1}{(d+ex)\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Mathematica [A] time = 0.205071, size = 0, normalized size = 0.

$$\int \frac{1}{(d+ex)\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((d + e*x)*(a + b*ArcSin[c*x])),x]
```

```
[Out] Integrate[1/((d + e*x)*(a + b*ArcSin[c*x])), x]
```

Maple [A] time = 1.631, size = 0, normalized size = 0.

$$\int \frac{1}{(ex+d)\,(a+b\arcsin(cx))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x+d)/(a+b*arcsin(c*x)),x)
```

```
[Out] int(1/(e*x+d)/(a+b*arcsin(c*x)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(ex+d)(b\arcsin(cx)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate(1/((e*x + d)*(b*arcsin(c*x) + a)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{aex+ad+(bex+bd)\arcsin(cx)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral(1/(a*e*x + a*d + (b*e*x + b*d)*arcsin(c*x)), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a + b \operatorname{asin}(cx))(d + ex)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)/(a+b*asin(c*x)),x)
```

```
[Out] Integral(1/((a + b*asin(c*x))*(d + e*x)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(ex + d)(b \arcsin(cx) + a)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] integrate(1/((e*x + d)*(b*arcsin(c*x) + a)), x)
```

3.21 $\int \frac{1}{(d+ex)^2\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=20

$$\text{Unintegrable}\left(\frac{1}{(d+ex)^2\left(a+b\sin^{-1}(cx)\right)},x\right)$$

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

Rubi [A] time = 0.0290262, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(d+ex)^2\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((d + e*x)^2*(a + b*ArcSin[c*x])),x]
```

```
[Out] Defer[Int][1/((d + e*x)^2*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{1}{(d+ex)^2\left(a+b\sin^{-1}(cx)\right)}\,dx=\int \frac{1}{(d+ex)^2\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Mathematica [A] time = 0.396921, size = 0, normalized size = 0.

$$\int \frac{1}{(d+ex)^2\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((d + e*x)^2*(a + b*ArcSin[c*x])),x]
```

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

Maple [A] time = 0.89, size = 0, normalized size = 0.

$$\int \frac{1}{\left(ex+d\right)^{2}\left(a+b\arcsin\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x+d)^2/(a+b*arcsin(c*x)),x)
```

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

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(ex+d)^{2}(b\arcsin\left(cx\right)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)^2/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

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

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{ae^{2}x^{2}+2\,adex+ad^{2}+\left(be^{2}x^{2}+2\,bdex+bd^{2}\right)\arcsin\left(cx\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)^2/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

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

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+b\,\mathrm{asin}\,(cx))\,(d+ex)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)**2/(a+b*asin(c*x)),x)
```

```
[Out] Integral(1/((a + b*asin(c*x))*(d + e*x)**2), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(ex+d)^2(b\arcsin{(cx)}+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)^2/(a+b*arcsin(c*x)),x, algorithm="giac")
```

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

3.22 $\int \frac{(d+ex)^2}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=362

$$\frac{2de\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{b^2c^2}+\frac{e^2\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{4b^2c^3}-\frac{3e^2\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3\left(a+b\sin^{-1}\right.}{b}\right.}{4b^2c^3}$$

```
[Out] -((d^2*Sqrt[1 - c^2*x^2])/(b*c*(a + b*ArcSin[c*x]))) - (2*d*e*x*Sqrt[1 - c^
2*x^2])/(b*c*(a + b*ArcSin[c*x])) - (e^2*x^2*Sqrt[1 - c^2*x^2])/(b*c*(a + b
*ArcSin[c*x])) + (2*d*e*Cos[(2*a)/b]*CosIntegral[(2*(a + b*ArcSin[c*x]))/b]
)/(b^2*c^2) + (d^2*CosIntegral[(a + b*ArcSin[c*x])/b]*Sin[a/b])/(b^2*c) + (
e^2*CosIntegral[(a + b*ArcSin[c*x])/b]*Sin[a/b])/(4*b^2*c^3) - (3*e^2*CosIn
tegral[(3*(a + b*ArcSin[c*x]))/b]*Sin[(3*a)/b])/(4*b^2*c^3) - (d^2*Cos[a/b]
*SinIntegral[(a + b*ArcSin[c*x])/b])/(b^2*c) - (e^2*Cos[a/b]*SinIntegral[(a
 + b*ArcSin[c*x])/b])/(4*b^2*c^3) + (2*d*e*Sin[(2*a)/b]*SinIntegral[(2*(a +
 b*ArcSin[c*x]))/b])/(b^2*c^2) + (3*e^2*Cos[(3*a)/b]*SinIntegral[(3*(a + b*
ArcSin[c*x]))/b])/(4*b^2*c^3)
```

Rubi [A] time = 0.545986, antiderivative size = 354, normalized size of antiderivative = 0.98, number of steps used = 19, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.389, Rules used = {4745, 4621, 4723, 3303, 3299, 3302, 4631}

$$\frac{2de\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{b^2c^2}+\frac{e^2\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{4b^2c^3}-\frac{3e^2\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}\right.}{4b^2c^3}$$

Antiderivative was successfully verified.

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

```
[Out] -((d^2*Sqrt[1 - c^2*x^2])/(b*c*(a + b*ArcSin[c*x]))) - (2*d*e*x*Sqrt[1 - c^
2*x^2])/(b*c*(a + b*ArcSin[c*x])) - (e^2*x^2*Sqrt[1 - c^2*x^2])/(b*c*(a + b
*ArcSin[c*x])) + (2*d*e*Cos[(2*a)/b]*CosIntegral[(2*a)/b + 2*ArcSin[c*x]])/
(b^2*c^2) + (d^2*CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b])/(b^2*c) + (e^2*Co
sIntegral[a/b + ArcSin[c*x]]*Sin[a/b])/(4*b^2*c^3) - (3*e^2*CosIntegral[(3*
a)/b + 3*ArcSin[c*x]]*Sin[(3*a)/b])/(4*b^2*c^3) - (d^2*Cos[a/b]*SinIntegral
[a/b + ArcSin[c*x]])/(b^2*c) - (e^2*Cos[a/b]*SinIntegral[a/b + ArcSin[c*x]]
)/(4*b^2*c^3) + (2*d*e*Sin[(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c*x]])/(
b^2*c^2) + (3*e^2*Cos[(3*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c*x]])/(4*b^2
```

```
*c^3)
```

Rule 4745

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_))^(m_.), x_Sy
mbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*ArcSin[c*x])^n, x], x] /; F
reeQ[{a, b, c, d, e}, x] && IGtQ[m, 0] && LtQ[n, -1]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 3303

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

Rule 3299

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

Rule 3302

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

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
```

```
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rubi steps

$$\int \frac{(d+ex)^2}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx = \int \left(\frac{d^2}{\left(a+b\sin^{-1}(cx)\right)^2}+\frac{2dex}{\left(a+b\sin^{-1}(cx)\right)^2}+\frac{e^2x^2}{\left(a+b\sin^{-1}(cx)\right)^2}\right)dx$$

$$= d^2\int \frac{1}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx+(2de)\int \frac{x}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx+e^2\int \frac{x^2}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

$$= -\frac{d^2\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{2dex\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{e^2x^2\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{\left(cd^2\right)\int \frac{x}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(c\right.}}{b}$$

$$= -\frac{d^2\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{2dex\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{e^2x^2\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{d^2\,\text{Subst}\left(\int \frac{\sin(x)}{a+bx}\,dx,x,\right.}{bc}$$

$$= -\frac{d^2\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{2dex\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{e^2x^2\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{2de\cos\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2a}{b}+2\right.}{b^2c^2}$$

$$= -\frac{d^2\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{2dex\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{e^2x^2\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{2de\cos\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2a}{b}+2\right.}{b^2c^2}$$

Mathematica [A] time = 1.84988, size = 290, normalized size = 0.8

$$-\frac{-\sin\left(\frac{a}{b}\right)\left(4c^2d^2+e^2\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)+4c^2d^2\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)+\frac{4bc^2d^2\sqrt{1-c^2x^2}}{a+b\sin^{-1}(cx)}+\frac{8bc^2dex\sqrt{1-c^2x^2}}{a+b\sin^{-1}(cx)}+}{}$$

Antiderivative was successfully verified.

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

```
[Out] -((4*b*c^2*d^2*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x]) + (8*b*c^2*d*e*x*Sqrt
[1 - c^2*x^2])/(a + b*ArcSin[c*x]) + (4*b*c^2*e^2*x^2*Sqrt[1 - c^2*x^2])/(a
 + b*ArcSin[c*x]) - 8*c*d*e*Cos[(2*a)/b]*CosIntegral[2*(a/b + ArcSin[c*x])]
 - (4*c^2*d^2 + e^2)*CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b] + 3*e^2*CosInt
```

```
egral[3*(a/b + ArcSin[c*x])]*Sin[(3*a)/b] + 4*c^2*d^2*Cos[a/b]*SinIntegral[
a/b + ArcSin[c*x]] + e^2*Cos[a/b]*SinIntegral[a/b + ArcSin[c*x]] - 8*c*d*e*
Sin[(2*a)/b]*SinIntegral[2*(a/b + ArcSin[c*x])] - 3*e^2*Cos[(3*a)/b]*SinInt
egral[3*(a/b + ArcSin[c*x])])/(4*b^2*c^3)
```

Maple [A] time = 0.082, size = 526, normalized size = 1.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{e^2x^2 + 2\,dex + d^2}{b^2 \arcsin\left(cx\right)^2 + 2\,ab\arcsin\left(cx\right) + a^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral((e^2*x^2 + 2*d*e*x + d^2)/(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) +
 a^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(d + ex\right)^2}{\left(a + b\,\text{asin}\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [B] time = 1.53935, size = 1713, normalized size = 4.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 4*b*c*d*arcsin(c*x)*cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(c*x))*e/(b^3*c
^3*arcsin(c*x) + a*b^2*c^3) + b*c^2*d^2*arcsin(c*x)*cos_integral(a/b + arcs
in(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 4*b*c*d*arcsin(c*x)*c
os(a/b)*e*sin(a/b)*sin_integral(2*a/b + 2*arcsin(c*x))/(b^3*c^3*arcsin(c*x)
 + a*b^2*c^3) - b*c^2*d^2*arcsin(c*x)*cos(a/b)*sin_integral(a/b + arcsin(c*
x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 4*a*c*d*cos(a/b)^2*cos_integral(2*a
/b + 2*arcsin(c*x))*e/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + a*c^2*d^2*cos_int
egral(a/b + arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 3*b*a
```

```
rcsin(c*x)*cos(a/b)^2*cos_integral(3*a/b + 3*arcsin(c*x))*e^2*sin(a/b)/(b^3
*c^3*arcsin(c*x) + a*b^2*c^3) + 3*b*arcsin(c*x)*cos(a/b)^3*e^2*sin_integral
(3*a/b + 3*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 4*a*c*d*cos(a/b
)*e*sin(a/b)*sin_integral(2*a/b + 2*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b
^2*c^3) - a*c^2*d^2*cos(a/b)*sin_integral(a/b + arcsin(c*x))/(b^3*c^3*arcsi
n(c*x) + a*b^2*c^3) - 2*sqrt(-c^2*x^2 + 1)*b*c^2*d*x*e/(b^3*c^3*arcsin(c*x)
 + a*b^2*c^3) - 2*b*c*d*arcsin(c*x)*cos_integral(2*a/b + 2*arcsin(c*x))*e/(
b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 3*a*cos(a/b)^2*cos_integral(3*a/b + 3*ar
csin(c*x))*e^2*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 3*a*cos(a/b)^3*
e^2*sin_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) -
 sqrt(-c^2*x^2 + 1)*b*c^2*d^2/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 2*a*c*d*c
os_integral(2*a/b + 2*arcsin(c*x))*e/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 3/
4*b*arcsin(c*x)*cos_integral(3*a/b + 3*arcsin(c*x))*e^2*sin(a/b)/(b^3*c^3*a
rcsin(c*x) + a*b^2*c^3) + 1/4*b*arcsin(c*x)*cos_integral(a/b + arcsin(c*x))
*e^2*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 9/4*b*arcsin(c*x)*cos(a/b
)*e^2*sin_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3)
 - 1/4*b*arcsin(c*x)*cos(a/b)*e^2*sin_integral(a/b + arcsin(c*x))/(b^3*c^3*
arcsin(c*x) + a*b^2*c^3) + 3/4*a*cos_integral(3*a/b + 3*arcsin(c*x))*e^2*si
n(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 1/4*a*cos_integral(a/b + arcsin(
c*x))*e^2*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 9/4*a*cos(a/b)*e^2*s
in_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 1/4*
a*cos(a/b)*e^2*sin_integral(a/b + arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2
*c^3) + (-c^2*x^2 + 1)^(3/2)*b*e^2/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - sqrt
(-c^2*x^2 + 1)*b*e^2/(b^3*c^3*arcsin(c*x) + a*b^2*c^3)
```

3.23 $\int \frac{d+ex}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=181

$$\frac{e\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{b^2c^2}+\frac{e\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{b^2c^2}+\frac{d\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{b^2c}-\frac{d\cos\left(\frac{a}{b}\right)}{}$$

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

Rubi [A] time = 0.312024, antiderivative size = 177, normalized size of antiderivative = 0.98, number of steps used = 11, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.438, Rules used = {4745, 4621, 4723, 3303, 3299, 3302, 4631}

$$\frac{e\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{b^2c^2}+\frac{e\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{b^2c^2}+\frac{d\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{b^2c}-$$

Antiderivative was successfully verified.

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

```
[Out] -((d*Sqrt[1 - c^2*x^2])/(b*c*(a + b*ArcSin[c*x]))) - (e*x*Sqrt[1 - c^2*x^2]
)/(b*c*(a + b*ArcSin[c*x])) + (e*Cos[(2*a)/b]*CosIntegral[(2*a)/b + 2*ArcSi
n[c*x]])/(b^2*c^2) + (d*CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b])/(b^2*c) -
(d*Cos[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(b^2*c) + (e*Sin[(2*a)/b]*SinIn
tegral[(2*a)/b + 2*ArcSin[c*x]])/(b^2*c^2)
```

Rule 4745

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_))^(m_.), x_Sy
mbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*ArcSin[c*x])^n, x], x] /; F
reeQ[{a, b, c, d, e}, x] && IGtQ[m, 0] && LtQ[n, -1]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 3303

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

Rule 3299

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

Rule 3302

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

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rubi steps

$$\int \frac{d+ex}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx = \int \left(\frac{d}{\left(a+b\sin^{-1}(cx)\right)^2}+\frac{ex}{\left(a+b\sin^{-1}(cx)\right)^2}\right)dx$$

$$= d\int \frac{1}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx + e\int \frac{x}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

$$= -\frac{d\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)} - \frac{ex\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)} - \frac{(cd)\int \frac{x}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx}{b} + \frac{e\,\mathrm{Subst}\left(\int \frac{\cos(2}{a+b}\right.}{}$$

$$= -\frac{d\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)} - \frac{ex\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)} - \frac{d\,\mathrm{Subst}\left(\int \frac{\sin(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{bc} + \frac{\left(e\cos\left(\frac{2a}{b}\right.\right.}{}$$

$$= -\frac{d\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)} - \frac{ex\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{e\cos\left(\frac{2a}{b}\right)\mathrm{Ci}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{b^2c^2} + \frac{e\sin\left(\frac{2a}{b}\right)\mathrm{Si}}{}$$

$$= -\frac{d\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)} - \frac{ex\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{e\cos\left(\frac{2a}{b}\right)\mathrm{Ci}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{b^2c^2} + \frac{d\mathrm{Ci}\left(\frac{a}{b}+\sin\right.}{}$$

Mathematica [A] time = 0.685827, size = 149, normalized size = 0.82

$$\frac{-\frac{bc\sqrt{1-c^2x^2}(d+ex)}{a+b\sin^{-1}(cx)} + cd\left(\sin\left(\frac{a}{b}\right)\mathrm{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right) - \cos\left(\frac{a}{b}\right)\mathrm{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right) + e\left(\cos\left(\frac{2a}{b}\right)\mathrm{CosIntegral}\left(2\left(\frac{a}{b}\right.\right.\right.}{b^2c^2}$$

Antiderivative was successfully verified.

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

```
[Out] (-((b*c*(d + e*x)*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x])) + e*Log[a + b*Arc
Sin[c*x]] + c*d*(CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b] - Cos[a/b]*SinInte
gral[a/b + ArcSin[c*x]]) + e*(Cos[(2*a)/b]*CosIntegral[2*(a/b + ArcSin[c*x]
)] - Log[a + b*ArcSin[c*x]] + Sin[(2*a)/b]*SinIntegral[2*(a/b + ArcSin[c*x]
)]))/(b^2*c^2)
```

Maple [A] time = 0.051, size = 257, normalized size = 1.4

$$\frac{1}{c}\left(\frac{e}{2c\left(a+b\arcsin(cx)\right)b^2}\left(2\arcsin(cx)\,\mathrm{Si}\left(2\arcsin(cx)+2\frac{a}{b}\right)\sin\left(2\frac{a}{b}\right)b + 2\arcsin(cx)\,\mathrm{Ci}\left(2\arcsin(cx)+2\frac{a}{b}\right)\mathrm{co}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{ex+d}{b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral((e*x + d)/(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{d+ex}{(a+b\,\text{asin}\,(cx))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [B] time = 1.39965, size = 757, normalized size = 4.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 2*b*arcsin(c*x)*cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(c*x))*e/(b^3*c^2*a
rcsin(c*x) + a*b^2*c^2) + b*c*d*arcsin(c*x)*cos_integral(a/b + arcsin(c*x))
*sin(a/b)/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 2*b*arcsin(c*x)*cos(a/b)*e*si
n(a/b)*sin_integral(2*a/b + 2*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2
) - b*c*d*arcsin(c*x)*cos(a/b)*sin_integral(a/b + arcsin(c*x))/(b^3*c^2*arc
sin(c*x) + a*b^2*c^2) + 2*a*cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(c*x))*
e/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + a*c*d*cos_integral(a/b + arcsin(c*x))
*sin(a/b)/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 2*a*cos(a/b)*e*sin(a/b)*sin_i
ntegral(2*a/b + 2*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) - a*c*d*co
s(a/b)*sin_integral(a/b + arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) -
sqrt(-c^2*x^2 + 1)*b*c*x*e/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) - b*arcsin(c*x
)*cos_integral(2*a/b + 2*arcsin(c*x))*e/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) -
 sqrt(-c^2*x^2 + 1)*b*c*d/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) - a*cos_integra
l(2*a/b + 2*arcsin(c*x))*e/(b^3*c^2*arcsin(c*x) + a*b^2*c^2)
```

3.24 $\int \frac{1}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=86

$$\frac{\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{b^2c}-\frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{b^2c}-\frac{\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}$$

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

Rubi [A] time = 0.172826, antiderivative size = 82, normalized size of antiderivative = 0.95, number of steps used = 5, number of rules used = 5, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {4621, 4723, 3303, 3299, 3302}

$$\frac{\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{b^2c}-\frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{b^2c}-\frac{\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}$$

Antiderivative was successfully verified.

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

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

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
```

```
Q[p] || GtQ[d, 0])
```

Rule 3303

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

Rule 3299

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

Rule 3302

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

Rubi steps

$$\begin{aligned}
\int \frac{1}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx &= -\frac{\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{c\int \frac{x}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx}{b}\\
&= -\frac{\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{\text{Subst}\left(\int \frac{\sin(x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{bc}\\
&= -\frac{\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{bc}+\frac{\sin\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+\right.}{a+bx}\right.}{bc}\\
&= -\frac{\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)\sin\left(\frac{a}{b}\right)}{b^2c}-\frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{b^2c}
\end{aligned}$$

Mathematica [A] time = 0.226707, size = 72, normalized size = 0.84

$$\frac{-\frac{b\sqrt{1-c^2x^2}}{a+b\sin^{-1}(cx)}+\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)-\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{b^2c}$$

Antiderivative was successfully verified.

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

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

Maple [A] time = 0., size = 76, normalized size = 0.9

$$\frac{1}{c}\left(-\frac{1}{(a+b\arcsin(cx))\,b}\sqrt{-c^2x^2+1}-\frac{1}{b^2}\left(\operatorname{Si}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)-\operatorname{Ci}\left(\arcsin(cx)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(c*x))^2,x)
```

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

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\operatorname{integral}\left(\frac{1}{b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(1/(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a + b\operatorname{asin}{\left(cx \right)}\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral((a + b*asin(c*x))**(-2), x)
```

Giac [B] time = 1.33835, size = 259, normalized size = 3.01

$$\frac{b \arcsin\left(cx\right) \operatorname{Ci}\left(\frac{a}{b} + \arcsin\left(cx\right)\right) \sin\left(\frac{a}{b}\right)}{b^{3} c \arcsin\left(cx\right) + a b^{2} c} - \frac{b \arcsin\left(cx\right) \cos\left(\frac{a}{b}\right) \operatorname{Si}\left(\frac{a}{b} + \arcsin\left(cx\right)\right)}{b^{3} c \arcsin\left(cx\right) + a b^{2} c} + \frac{a \operatorname{Ci}\left(\frac{a}{b} + \arcsin\left(cx\right)\right) \sin\left(\frac{a}{b}\right)}{b^{3} c \arcsin\left(cx\right) + a b^{2} c} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

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

3.25 $\int \frac{1}{(d+ex)\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=20

$$\text{Unintegrable}\left(\frac{1}{(d+ex)\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

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

Rubi [A] time = 0.028645, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(d+ex)\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((d + e*x)*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] Defer[Int][1/((d + e*x)*(a + b*ArcSin[c*x])^2), x]
```

Rubi steps

$$\int \frac{1}{(d+ex)\left(a+b\sin^{-1}(cx)\right)^2}\,dx=\int \frac{1}{(d+ex)\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Mathematica [A] time = 6.10365, size = 0, normalized size = 0.

$$\int \frac{1}{(d+ex)\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((d + e*x)*(a + b*ArcSin[c*x])^2),x]
```

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

Maple [A] time = 3.938, size = 0, normalized size = 0.

$$\int \frac{1}{(ex+d)\left(a+b\arcsin\left(cx\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x+d)/(a+b*arcsin(c*x))^2,x)
```

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

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{a^{2}ex+a^{2}d+\left(b^{2}ex+b^{2}d\right)\arcsin\left(cx\right)^{2}+2\left(abex+abd\right)\arcsin\left(cx\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

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

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+b\operatorname{asin}(cx))^2(d+ex)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(1/((a + b*asin(c*x))**2*(d + e*x)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(ex+d)(b\arcsin(cx)+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

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

3.26 $\int \frac{1}{(d+ex)^2\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=20

$$\text{Unintegrable}\left(\frac{1}{(d+ex)^2\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

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

Rubi [A] time = 0.0274703, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(d+ex)^2\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((d + e*x)^2*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] Defer[Int][1/((d + e*x)^2*(a + b*ArcSin[c*x])^2), x]
```

Rubi steps

$$\int \frac{1}{(d+ex)^2\left(a+b\sin^{-1}(cx)\right)^2}\,dx=\int \frac{1}{(d+ex)^2\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Mathematica [A] time = 11.9973, size = 0, normalized size = 0.

$$\int \frac{1}{(d+ex)^2\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((d + e*x)^2*(a + b*ArcSin[c*x])^2),x]
```

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

Maple [A] time = 1.382, size = 0, normalized size = 0.

$$\int \frac{1}{\left(ex+d\right)^{2}\left(a+b\arcsin\left(cx\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x+d)^2/(a+b*arcsin(c*x))^2,x)
```

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

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)^2/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{a^2e^2x^2+2\,a^2dex+a^2d^2+\left(b^2e^2x^2+2\,b^2dex+b^2d^2\right)\arcsin\left(cx\right)^2+2\left(abe^2x^2+2\,abdex+abd^2\right)\arcsin\left(cx\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)^2/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

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

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a + b\operatorname{asin}(cx))^2 (d + ex)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)**2/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(1/((a + b*asin(c*x))**2*(d + e*x)**2), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(ex + d)^2 (b\arcsin(cx) + a)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)^2/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

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

3.27 $\int (d+ex)^m \left(a+b\sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=75

$$\frac{(d+ex)^{m+1}\left(a+b\sin^{-1}(cx)\right)^2}{e(m+1)}-\frac{2bc\text{Unintegrable}\left(\frac{(d+ex)^{m+1}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}},x\right)}{e(m+1)}$$

```
[Out] ((d + e*x)^(1 + m)*(a + b*ArcSin[c*x])^2)/(e*(1 + m)) - (2*b*c*Unintegrable
[((d + e*x)^(1 + m)*(a + b*ArcSin[c*x]))/Sqrt[1 - c^2*x^2], x])/(e*(1 + m))
```

Rubi [A] time = 0.196138, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$, Rules used = {}

$$\int (d+ex)^m \left(a+b\sin^{-1}(cx)\right)^2 \, dx$$

Verification is Not applicable to the result.

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

```
[Out] ((d + e*x)^(1 + m)*(a + b*ArcSin[c*x])^2)/(e*(1 + m)) - (2*b*c*Defer[Int][(
(d + e*x)^(1 + m)*(a + b*ArcSin[c*x]))/Sqrt[1 - c^2*x^2], x])/(e*(1 + m))
```

Rubi steps

$$\int (d+ex)^m \left(a+b\sin^{-1}(cx)\right)^2 \, dx = \frac{(d+ex)^{1+m}\left(a+b\sin^{-1}(cx)\right)^2}{e(1+m)}-\frac{(2bc)\int \frac{(d+ex)^{1+m}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} \, dx}{e(1+m)}$$

Mathematica [A] time = 4.85329, size = 0, normalized size = 0.

$$\int (d+ex)^m \left(a+b\sin^{-1}(cx)\right)^2 \, dx$$

Verification is Not applicable to the result.

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

```
[Out] Integrate[(d + e*x)^m*(a + b*ArcSin[c*x])^2, x]
```

Maple [A] time = 0.322, size = 0, normalized size = 0.

$$\int (ex+d)^m (a+b\arcsin(cx))^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((e*x+d)^m*(a+b*arcsin(c*x))^2,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(b^2\arcsin(cx)^2 + 2\,ab\arcsin(cx) + a^2\right)(ex+d)^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*(e*x + d)^m, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int (a+b\,\mathrm{asin}(cx))^2 (d+ex)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral((a + b*asin(c*x))**2*(d + e*x)**m, x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int (b \arcsin(cx) + a)^2 (ex + d)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*arcsin(c*x) + a)^2*(e*x + d)^m, x)
```

3.28 $\int (d+ex)^m \left(a+b\sin^{-1}(cx)\right) dx$

Optimal. Leaf size=154

$$\frac{(d+ex)^{m+1}\left(a+b\sin^{-1}(cx)\right)}{e(m+1)}-\frac{bc\sqrt{1-\frac{c(d+ex)}{cd-e}}\sqrt{1-\frac{c(d+ex)}{cd+e}}(d+ex)^{m+2}F_1\left(m+2;\frac{1}{2},\frac{1}{2};m+3;\frac{c(d+ex)}{cd-e},\frac{c(d+ex)}{cd+e}\right)}{e^2(m+1)(m+2)\sqrt{1-c^2x^2}}$$

```
[Out] -((b*c*(d + e*x)^(2 + m)*Sqrt[1 - (c*(d + e*x))/(c*d - e)]*Sqrt[1 - (c*(d +
 e*x))/(c*d + e)]*AppellF1[2 + m, 1/2, 1/2, 3 + m, (c*(d + e*x))/(c*d - e),
 (c*(d + e*x))/(c*d + e)])/(e^2*(1 + m)*(2 + m)*Sqrt[1 - c^2*x^2])) + ((d +
 e*x)^(1 + m)*(a + b*ArcSin[c*x]))/(e*(1 + m))
```

Rubi [A] time = 0.0856186, antiderivative size = 154, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {4743, 760, 133}

$$\frac{(d+ex)^{m+1}\left(a+b\sin^{-1}(cx)\right)}{e(m+1)}-\frac{bc\sqrt{1-\frac{c(d+ex)}{cd-e}}\sqrt{1-\frac{c(d+ex)}{cd+e}}(d+ex)^{m+2}F_1\left(m+2;\frac{1}{2},\frac{1}{2};m+3;\frac{c(d+ex)}{cd-e},\frac{c(d+ex)}{cd+e}\right)}{e^2(m+1)(m+2)\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^m*(a + b*ArcSin[c*x]),x]
```

```
[Out] -((b*c*(d + e*x)^(2 + m)*Sqrt[1 - (c*(d + e*x))/(c*d - e)]*Sqrt[1 - (c*(d +
 e*x))/(c*d + e)]*AppellF1[2 + m, 1/2, 1/2, 3 + m, (c*(d + e*x))/(c*d - e),
 (c*(d + e*x))/(c*d + e)])/(e^2*(1 + m)*(2 + m)*Sqrt[1 - c^2*x^2])) + ((d +
 e*x)^(1 + m)*(a + b*ArcSin[c*x]))/(e*(1 + m))
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 760

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> With[
{q = Rt[-(a*c), 2]}, Dist[(a + c*x^2)^p/(e*(1 - (d + e*x)/(d + (e*q)/c))^p*
```

```
(1 - (d + e*x)/(d - (e*q)/c))^p), Subst[Int[x^m*Simp[1 - x/(d + (e*q)/c), x
]^p*Simp[1 - x/(d - (e*q)/c), x]^p, x], x, d + e*x], x]] /; FreeQ[{a, c, d,
 e, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] && !IntegerQ[p]
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
& !IntegerQ[m] && !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rubi steps

$$\int (d+ex)^m \left(a+b\sin^{-1}(cx)\right) dx = \frac{(d+ex)^{1+m}\left(a+b\sin^{-1}(cx)\right)}{e(1+m)} - \frac{(bc)\int \frac{(d+ex)^{1+m}}{\sqrt{1-c^2x^2}}\,dx}{e(1+m)}$$

$$= \frac{(d+ex)^{1+m}\left(a+b\sin^{-1}(cx)\right)}{e(1+m)} - \frac{\left(bc\sqrt{1-\frac{d+ex}{d-\frac{e}{c}}}\sqrt{1-\frac{d+ex}{d+\frac{e}{c}}}\right)\text{Subst}\left(\int \frac{x^{1+m}}{\sqrt{1-\frac{cx}{cd-e}}\sqrt{1-\frac{cx}{cd+e}}}\,d\right.}{e^2(1+m)\sqrt{1-c^2x^2}}$$

$$= -\frac{bc(d+ex)^{2+m}\sqrt{1-\frac{c(d+ex)}{cd-e}}\sqrt{1-\frac{c(d+ex)}{cd+e}}F_1\left(2+m;\frac{1}{2},\frac{1}{2};3+m;\frac{c(d+ex)}{cd-e},\frac{c(d+ex)}{cd+e}\right)}{e^2(1+m)(2+m)\sqrt{1-c^2x^2}} + \frac{(d}{}$$

Mathematica [F] time = 0.0431691, size = 0, normalized size = 0.

$$\int (d+ex)^m \left(a+b\sin^{-1}(cx)\right) dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(d + e*x)^m*(a + b*ArcSin[c*x]),x]

[Out] Integrate[(d + e*x)^m*(a + b*ArcSin[c*x]), x]
```

Maple [F] time = 0.426, size = 0, normalized size = 0.

$$\int (ex+d)^m (a+b\arcsin(cx))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^m*(a+b*arcsin(c*x)),x)
```

```
[Out] int((e*x+d)^m*(a+b*arcsin(c*x)),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left((b \arcsin(cx) + a)(ex + d)^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral((b*arcsin(c*x) + a)*(e*x + d)^m, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (a + b \operatorname{asin}(cx)) (d + ex)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**m*(a+b*asin(c*x)),x)
```

```
[Out] Integral((a + b*asin(c*x))*(d + e*x)**m, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (b \arcsin(cx) + a)(ex + d)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*arcsin(c*x) + a)*(e*x + d)^m, x)
```

3.29 $\int \frac{(d+ex)^m}{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=20

$$\text{Unintegrable}\left(\frac{(d+ex)^m}{a+b\sin^{-1}(cx)},x\right)$$

```
[Out] Unintegrable[(d + e*x)^m/(a + b*ArcSin[c*x]), x]
```

Rubi [A] time = 0.0274455, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(d+ex)^m}{a+b\sin^{-1}(cx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(d + e*x)^m/(a + b*ArcSin[c*x]),x]

[Out] Defer[Int][(d + e*x)^m/(a + b*ArcSin[c*x]), x]
```

Rubi steps

$$\int \frac{(d+ex)^m}{a+b\sin^{-1}(cx)}\,dx = \int \frac{(d+ex)^m}{a+b\sin^{-1}(cx)}\,dx$$

Mathematica [A] time = 0.376444, size = 0, normalized size = 0.

$$\int \frac{(d+ex)^m}{a+b\sin^{-1}(cx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(d + e*x)^m/(a + b*ArcSin[c*x]),x]

[Out] Integrate[(d + e*x)^m/(a + b*ArcSin[c*x]), x]
```

Maple [A] time = 1.492, size = 0, normalized size = 0.

$$\int \frac{(ex+d)^m}{a+b\arcsin(cx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^m/(a+b*arcsin(c*x)),x)
```

```
[Out] int((e*x+d)^m/(a+b*arcsin(c*x)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(ex+d)^m}{b\arcsin(cx)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((e*x + d)^m/(b*arcsin(c*x) + a), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(ex+d)^m}{b\arcsin(cx)+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral((e*x + d)^m/(b*arcsin(c*x) + a), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(d+ex)^m}{a+b\operatorname{asin}(cx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(ex+d)^m}{b\arcsin(cx)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((e*x + d)^m/(b*arcsin(c*x) + a), x)
```

3.30 $\int \frac{(d+ex)^m}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=20

$$\text{Unintegrable}\left(\frac{(d+ex)^m}{\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

```
[Out] Unintegrable[(d + e*x)^m/(a + b*ArcSin[c*x])^2, x]
```

Rubi [A] time = 0.0274853, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(d+ex)^m}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

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

[Out] Defer[Int][(d + e*x)^m/(a + b*ArcSin[c*x])^2, x]
```

Rubi steps

$$\int \frac{(d+ex)^m}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx=\int \frac{(d+ex)^m}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Mathematica [A] time = 0.804498, size = 0, normalized size = 0.

$$\int \frac{(d+ex)^m}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

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

```
[Out] Integrate[(d + e*x)^m/(a + b*ArcSin[c*x])^2, x]
```

Maple [A] time = 0.987, size = 0, normalized size = 0.

$$\int \frac{(ex+d)^m}{(a+b\arcsin(cx))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(ex+d)^m}{b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral((e*x + d)^m/(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(d+ex)^m}{(a+b\operatorname{asin}(cx))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(ex+d)^m}{(b\arcsin(cx)+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((e*x + d)^m/(b*arcsin(c*x) + a)^2, x)
```

3.31 $\int (f+gx)^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=669

$$-\frac{f^2g\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{c^2}+\frac{1}{2}f^3x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{f^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{4bc\sqrt{1-c^2x^2}}+\frac{3}{4}$$

```
[Out] (b*f^2*g*x*Sqrt[d - c^2*d*x^2])/(c*Sqrt[1 - c^2*x^2]) + (2*b*g^3*x*Sqrt[d -
 c^2*d*x^2])/(15*c^3*Sqrt[1 - c^2*x^2]) - (b*c*f^3*x^2*Sqrt[d - c^2*d*x^2])
/(4*Sqrt[1 - c^2*x^2]) + (3*b*f*g^2*x^2*Sqrt[d - c^2*d*x^2])/(16*c*Sqrt[1 -
 c^2*x^2]) - (b*c*f^2*g*x^3*Sqrt[d - c^2*d*x^2])/(3*Sqrt[1 - c^2*x^2]) + (b
*g^3*x^3*Sqrt[d - c^2*d*x^2])/(45*c*Sqrt[1 - c^2*x^2]) - (3*b*c*f*g^2*x^4*S
qrt[d - c^2*d*x^2])/(16*Sqrt[1 - c^2*x^2]) - (b*c*g^3*x^5*Sqrt[d - c^2*d*x^
2])/(25*Sqrt[1 - c^2*x^2]) + (f^3*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])
)/2 - (3*f*g^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*c^2) + (3*f*g^
2*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/4 - (f^2*g*(1 - c^2*x^2)*Sqr
t[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/c^2 - (g^3*(1 - c^2*x^2)*Sqrt[d - c^2
*d*x^2]*(a + b*ArcSin[c*x]))/(3*c^4) + (g^3*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*
x^2]*(a + b*ArcSin[c*x]))/(5*c^4) + (f^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[
c*x])^2)/(4*b*c*Sqrt[1 - c^2*x^2]) + (3*f*g^2*Sqrt[d - c^2*d*x^2]*(a + b*Ar
cSin[c*x])^2)/(16*b*c^3*Sqrt[1 - c^2*x^2])
```

Rubi [A] time = 0.69255, antiderivative size = 669, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 12, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.387, Rules used = {4777, 4763, 4647, 4641, 30, 4677, 4697, 4707, 266, 43, 4689, 12}

$$-\frac{f^2g\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{c^2}+\frac{1}{2}f^3x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{f^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{4bc\sqrt{1-c^2x^2}}+\frac{3}{4}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*f^2*g*x*Sqrt[d - c^2*d*x^2])/(c*Sqrt[1 - c^2*x^2]) + (2*b*g^3*x*Sqrt[d -
 c^2*d*x^2])/(15*c^3*Sqrt[1 - c^2*x^2]) - (b*c*f^3*x^2*Sqrt[d - c^2*d*x^2])
/(4*Sqrt[1 - c^2*x^2]) + (3*b*f*g^2*x^2*Sqrt[d - c^2*d*x^2])/(16*c*Sqrt[1 -
 c^2*x^2]) - (b*c*f^2*g*x^3*Sqrt[d - c^2*d*x^2])/(3*Sqrt[1 - c^2*x^2]) + (b
*g^3*x^3*Sqrt[d - c^2*d*x^2])/(45*c*Sqrt[1 - c^2*x^2]) - (3*b*c*f*g^2*x^4*S
qrt[d - c^2*d*x^2])/(16*Sqrt[1 - c^2*x^2]) - (b*c*g^3*x^5*Sqrt[d - c^2*d*x^
2])/(25*Sqrt[1 - c^2*x^2]) + (f^3*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])
)/2 - (3*f*g^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*c^2) + (3*f*g^
```

```
2*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/4 - (f^2*g*(1 - c^2*x^2)*Sqr
t[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/c^2 - (g^3*(1 - c^2*x^2)*Sqrt[d - c^2
*d*x^2]*(a + b*ArcSin[c*x]))/(3*c^4) + (g^3*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*
x^2]*(a + b*ArcSin[c*x]))/(5*c^4) + (f^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[
c*x])^2)/(4*b*c*Sqrt[1 - c^2*x^2]) + (3*f*g^2*Sqrt[d - c^2*d*x^2]*(a + b*Ar
cSin[c*x])^2)/(16*b*c^3*Sqrt[1 - c^2*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 30

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

Rule 4677

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

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

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

Rule 266

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

Rule 43

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

Rule 4689

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[d^p*(a + b*
ArcSin[c*x]), u, x] - Dist[b*c*d^p, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^
```

```
2], x], x], x]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && Intege
rQ[p - 1/2] && (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0]) && NeQ[p, -
2^(-1)] && GtQ[d, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rubi steps

$$\int (f+gx)^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)dx = \frac{\sqrt{d-c^2dx^2}\int (f+gx)^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\sqrt{d-c^2dx^2}\int \left(f^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)+3f^2gx\sqrt{1-c^2x^2}\left(a+b\sin\right.\right.}{}$$

$$= \frac{\left(f^3\sqrt{d-c^2dx^2}\right)\int \sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)dx}{\sqrt{1-c^2x^2}} + \frac{\left(3f^2g\sqrt{d-c^2dx^2}\right)\int}{}$$

$$= \frac{1}{2}f^3x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{3}{4}fg^2x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)$$

$$= \frac{bf^2gx\sqrt{d-c^2dx^2}}{c\sqrt{1-c^2x^2}} - \frac{bcf^3x^2\sqrt{d-c^2dx^2}}{4\sqrt{1-c^2x^2}} - \frac{bcf^2gx^3\sqrt{d-c^2dx^2}}{3\sqrt{1-c^2x^2}} - \frac{3bcfg^2x}{16\sqrt{}}$$

$$= \frac{bf^2gx\sqrt{d-c^2dx^2}}{c\sqrt{1-c^2x^2}} + \frac{2bg^3x\sqrt{d-c^2dx^2}}{15c^3\sqrt{1-c^2x^2}} - \frac{bcf^3x^2\sqrt{d-c^2dx^2}}{4\sqrt{1-c^2x^2}} + \frac{3bfg^2x^2\sqrt{}}{16c\sqrt{1}}$$

Mathematica [A] time = 0.443516, size = 356, normalized size = 0.53

$$\frac{\sqrt{d-c^2dx^2}\left(225a^2\left(4c^3f^3+3cfg^2\right)+30ab\sqrt{1-c^2x^2}\left(6c^4x\left(20f^2gx+10f^3+15fg^2x^2+4g^3x^3\right)-c^2g\left(120f^2+45fgx\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(225*a^2*(4*c^3*f^3 + 3*c*f*g^2) + 30*a*b*Sqrt[1 - c^2
*x^2]*(-16*g^3 - c^2*g*(120*f^2 + 45*f*g*x + 8*g^2*x^2) + 6*c^4*x*(10*f^3 +
```

```
 20*f^2*g*x + 15*f*g^2*x^2 + 4*g^3*x^3)) + b^2*c*x*(480*g^3 + 5*c^2*g*(720*
f^2 + 135*f*g*x + 16*g^2*x^2) - 3*c^4*x*(300*f^3 + 400*f^2*g*x + 225*f*g^2*
x^2 + 48*g^3*x^3)) + 30*b*(15*a*(4*c^3*f^3 + 3*c*f*g^2) + b*Sqrt[1 - c^2*x^
2]*(-16*g^3 - c^2*g*(120*f^2 + 45*f*g*x + 8*g^2*x^2) + 6*c^4*x*(10*f^3 + 20
*f^2*g*x + 15*f*g^2*x^2 + 4*g^3*x^3)))*ArcSin[c*x] + 225*b^2*c*f*(4*c^2*f^2
 + 3*g^2)*ArcSin[c*x]^2))/(3600*b*c^4*Sqrt[1 - c^2*x^2])
```

Maple [B] time = 0.792, size = 1286, normalized size = 1.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] 2/15*b*(-d*(c^2*x^2-1))^(1/2)*g^3/c^4/(c^2*x^2-1)*arcsin(c*x)-4/15*b*(-d*(c
^2*x^2-1))^(1/2)*g^3/(c^2*x^2-1)*arcsin(c*x)*x^4-1/8*b*(-d*(c^2*x^2-1))^(1/
2)*f^3/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)-1/2*b*(-d*(c^2*x^2-1))^(1/2)*f^3/(c
^2*x^2-1)*arcsin(c*x)*x-1/5*a*g^3*x^2*(-c^2*d*x^2+d)^(3/2)/c^2/d+3/8*a*f*g^
2/c^2*x*(-c^2*d*x^2+d)^(1/2)-a*f^2*g/c^2/d*(-c^2*d*x^2+d)^(3/2)-2/15*a*g^3/
d/c^4*(-c^2*d*x^2+d)^(3/2)-3/16*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)
/c^3/(c^2*x^2-1)*arcsin(c*x)^2*f*g^2+3/4*b*(-d*(c^2*x^2-1))^(1/2)*f*g^2*c^2
/(c^2*x^2-1)*arcsin(c*x)*x^5+3/8*b*(-d*(c^2*x^2-1))^(1/2)*f*g^2/c^2/(c^2*x^
2-1)*arcsin(c*x)*x+b*(-d*(c^2*x^2-1))^(1/2)*g*c^2/(c^2*x^2-1)*arcsin(c*x)*x
^4*f^2+1/3*b*(-d*(c^2*x^2-1))^(1/2)*g*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^3*
f^2-b*(-d*(c^2*x^2-1))^(1/2)*g/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x*f^2+3/16*
b*(-d*(c^2*x^2-1))^(1/2)*f*g^2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4-3/16*b*
(-d*(c^2*x^2-1))^(1/2)*f*g^2/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2-3/4*a*f*g
^2*x*(-c^2*d*x^2+d)^(3/2)/c^2/d+3/8*a*f*g^2/c^2*d/(c^2*d)^(1/2)*arctan((c^2
*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+1/25*b*(-d*(c^2*x^2-1))^(1/2)*g^3*c/(c^2*
x^2-1)*(-c^2*x^2+1)^(1/2)*x^5-1/45*b*(-d*(c^2*x^2-1))^(1/2)*g^3/c/(c^2*x^2-
1)*(-c^2*x^2+1)^(1/2)*x^3-2/15*b*(-d*(c^2*x^2-1))^(1/2)*g^3/c^3/(c^2*x^2-1)
*(-c^2*x^2+1)^(1/2)*x-9/8*b*(-d*(c^2*x^2-1))^(1/2)*f*g^2/(c^2*x^2-1)*arcsin
(c*x)*x^3+3/128*b*(-d*(c^2*x^2-1))^(1/2)*f*g^2/c^3/(c^2*x^2-1)*(-c^2*x^2+1)
^(1/2)-2*b*(-d*(c^2*x^2-1))^(1/2)*g/(c^2*x^2-1)*arcsin(c*x)*x^2*f^2+1/4*b*(
-d*(c^2*x^2-1))^(1/2)*f^3*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2-1/4*b*(-d*(c
^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcsin(c*x)^2*f^3+1/5*b*(
-d*(c^2*x^2-1))^(1/2)*g^3*c^2/(c^2*x^2-1)*arcsin(c*x)*x^6-1/15*b*(-d*(c^2*x
^2-1))^(1/2)*g^3/c^2/(c^2*x^2-1)*arcsin(c*x)*x^2+b*(-d*(c^2*x^2-1))^(1/2)*g
/c^2/(c^2*x^2-1)*arcsin(c*x)*f^2+1/2*b*(-d*(c^2*x^2-1))^(1/2)*f^3*c^2/(c^2*
x^2-1)*arcsin(c*x)*x^3+1/2*a*f^3*x*(-c^2*d*x^2+d)^(1/2)+1/2*a*f^3*d/(c^2*d)
^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2),x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(ag^3x^3 + 3\,afg^2x^2 + 3\,af^2gx + af^3 + \left(bg^3x^3 + 3\,bfg^2x^2 + 3\,bf^2gx + bf^3\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2 + d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2),x, algorithm="fr
icas")
```

```
[Out] integral((a*g^3*x^3 + 3*a*f*g^2*x^2 + 3*a*f^2*g*x + a*f^3 + (b*g^3*x^3 + 3*
b*f*g^2*x^2 + 3*b*f^2*g*x + b*f^3)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*asin(c*x))*(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{-c^2dx^2 + d}\left(gx + f\right)^3\left(b\arcsin\left(cx\right) + a\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2),x, algorithm="gi
ac")
```

```
[Out] integrate(sqrt(-c^2*d*x^2 + d)*(g*x + f)^3*(b*arcsin(c*x) + a), x)
```

3.32 $\int (f+gx)^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)dx$

Optimal. Leaf size=450

$$\frac{1}{2}f^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{f^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{4bc\sqrt{1-c^2x^2}}-\frac{2fg\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3c^2}+\frac{1}{4}$$

```
[Out] (2*b*f*g*x*Sqrt[d - c^2*d*x^2])/(3*c*Sqrt[1 - c^2*x^2]) - (b*c*f^2*x^2*Sqrt
[d - c^2*d*x^2])/(4*Sqrt[1 - c^2*x^2]) + (b*g^2*x^2*Sqrt[d - c^2*d*x^2])/(1
6*c*Sqrt[1 - c^2*x^2]) - (2*b*c*f*g*x^3*Sqrt[d - c^2*d*x^2])/(9*Sqrt[1 - c^
2*x^2]) - (b*c*g^2*x^4*Sqrt[d - c^2*d*x^2])/(16*Sqrt[1 - c^2*x^2]) + (f^2*x
*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/2 - (g^2*x*Sqrt[d - c^2*d*x^2]*(a
 + b*ArcSin[c*x]))/(8*c^2) + (g^2*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x
]))/4 - (2*f*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*c^
2) + (f^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(4*b*c*Sqrt[1 - c^2*x^
2]) + (g^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(16*b*c^3*Sqrt[1 - c^
2*x^2])
```

Rubi [A] time = 0.523295, antiderivative size = 450, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 8, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.258, Rules used = {4777, 4763, 4647, 4641, 30, 4677, 4697, 4707}

$$\frac{1}{2}f^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{f^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{4bc\sqrt{1-c^2x^2}}-\frac{2fg\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3c^2}+\frac{1}{4}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```


```
[Out] (2*b*f*g*x*Sqrt[d - c^2*d*x^2])/(3*c*Sqrt[1 - c^2*x^2]) - (b*c*f^2*x^2*Sqrt
[d - c^2*d*x^2])/(4*Sqrt[1 - c^2*x^2]) + (b*g^2*x^2*Sqrt[d - c^2*d*x^2])/(1
6*c*Sqrt[1 - c^2*x^2]) - (2*b*c*f*g*x^3*Sqrt[d - c^2*d*x^2])/(9*Sqrt[1 - c^
2*x^2]) - (b*c*g^2*x^4*Sqrt[d - c^2*d*x^2])/(16*Sqrt[1 - c^2*x^2]) + (f^2*x
*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/2 - (g^2*x*Sqrt[d - c^2*d*x^2]*(a
 + b*ArcSin[c*x]))/(8*c^2) + (g^2*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x
]))/4 - (2*f*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*c^
2) + (f^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(4*b*c*Sqrt[1 - c^2*x^
2]) + (g^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(16*b*c^3*Sqrt[1 - c^
2*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 30

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

Rule 4677

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

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

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

Rubi steps

$$\int (f+gx)^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)dx = \frac{\sqrt{d-c^2dx^2}\int (f+gx)^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\sqrt{d-c^2dx^2}\int \left(f^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)+2fgx\sqrt{1-c^2x^2}\left(a+b\sin\right.\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(f^2\sqrt{d-c^2dx^2}\right)\int \sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)dx}{\sqrt{1-c^2x^2}} + \frac{\left(2fg\sqrt{d-c^2dx^2}\right)\int}{}$$

$$= \frac{1}{2}f^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}g^2x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)$$

$$= \frac{2bfgx\sqrt{d-c^2dx^2}}{3c\sqrt{1-c^2x^2}}-\frac{bcf^2x^2\sqrt{d-c^2dx^2}}{4\sqrt{1-c^2x^2}}-\frac{2bcfgx^3\sqrt{d-c^2dx^2}}{9\sqrt{1-c^2x^2}}-\frac{bcg^2x^4}{16\sqrt{}}$$

$$= \frac{2bfgx\sqrt{d-c^2dx^2}}{3c\sqrt{1-c^2x^2}}-\frac{bcf^2x^2\sqrt{d-c^2dx^2}}{4\sqrt{1-c^2x^2}}+\frac{bg^2x^2\sqrt{d-c^2dx^2}}{16c\sqrt{1-c^2x^2}}-\frac{2bcfgx^3}{9\sqrt{1-}}$$

Mathematica [A] time = 0.497068, size = 237, normalized size = 0.53

$$\frac{\sqrt{d-c^2dx^2}\left(72f^2x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)-\frac{96fg\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{c^2}+36g^2x^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)+\frac{9g^2\left(-2cx\right.}{}\right.}{144\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(-36*b*c*f^2*x^2 - 9*b*c*g^2*x^4 - (32*b*f*g*x*(-3 + c
^2*x^2))/c + 72*f^2*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) + 36*g^2*x^3*Sq
rt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) - (96*f*g*(1 - c^2*x^2)^(3/2)*(a + b*Ar
cSin[c*x]))/c^2 + (36*f^2*(a + b*ArcSin[c*x])^2)/(b*c) + (9*g^2*(b*c^2*x^2
- 2*c*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) + (a + b*ArcSin[c*x])^2/b))/c
^3))/(144*Sqrt[1 - c^2*x^2])
```

Maple [B] time = 0.49, size = 912, normalized size = 2.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] -1/4*a*g^2*x*(-c^2*d*x^2+d)^(3/2)/c^2/d+1/8*a*g^2/c^2*x*(-c^2*d*x^2+d)^(1/2
)+1/8*a*g^2/c^2*d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2)
)-2/3*a*f*g/c^2/d*(-c^2*d*x^2+d)^(3/2)+1/2*a*f^2*x*(-c^2*d*x^2+d)^(1/2)+1/2
*a*f^2*d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+2/9*b*(
-d*(c^2*x^2-1))^(1/2)*f*g*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^3-2/3*b*(-d*(c
^2*x^2-1))^(1/2)*f*g/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-1/4*b*(-d*(c^2*x^2-
1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcsin(c*x)^2*f^2-1/16*b*(-d*(c^
2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/(c^2*x^2-1)*arcsin(c*x)^2*g^2+1/4*b*
(-d*(c^2*x^2-1))^(1/2)*g^2*c^2/(c^2*x^2-1)*arcsin(c*x)*x^5-3/8*b*(-d*(c^2*x
^2-1))^(1/2)*g^2/(c^2*x^2-1)*arcsin(c*x)*x^3+1/8*b*(-d*(c^2*x^2-1))^(1/2)*g
^2/c^2/(c^2*x^2-1)*arcsin(c*x)*x+1/128*b*(-d*(c^2*x^2-1))^(1/2)*g^2/c^3/(c^
2*x^2-1)*(-c^2*x^2+1)^(1/2)+2/3*b*(-d*(c^2*x^2-1))^(1/2)*f*g/c^2/(c^2*x^2-1
)*arcsin(c*x)+1/2*b*(-d*(c^2*x^2-1))^(1/2)*f^2*c^2/(c^2*x^2-1)*arcsin(c*x)*
```

```
x^3-1/2*b*(-d*(c^2*x^2-1))^(1/2)*f^2/(c^2*x^2-1)*arcsin(c*x)*x-1/8*b*(-d*(c
^2*x^2-1))^(1/2)*f^2/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)+1/16*b*(-d*(c^2*x^2-1
))^(1/2)*g^2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4-1/16*b*(-d*(c^2*x^2-1))^(
1/2)*g^2/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2+2/3*b*(-d*(c^2*x^2-1))^(1/2)*
f*g*c^2/(c^2*x^2-1)*arcsin(c*x)*x^4-4/3*b*(-d*(c^2*x^2-1))^(1/2)*f*g/(c^2*x
^2-1)*arcsin(c*x)*x^2+1/4*b*(-d*(c^2*x^2-1))^(1/2)*f^2*c/(c^2*x^2-1)*(-c^2*
x^2+1)^(1/2)*x^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2),x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\sqrt{-c^2dx^2+d}\left(ag^2x^2+2\,afgx+af^2+\left(bg^2x^2+2\,bfgx+bf^2\right)\arcsin\left(cx\right)\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2),x, algorithm="fr
icas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(a*g^2*x^2 + 2*a*f*g*x + a*f^2 + (b*g^2*x^2 +
 2*b*f*g*x + b*f^2)*arcsin(c*x)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*asin(c*x))*(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{-c^2dx^2+d}\left(gx+f\right)^2(b\arcsin\left(cx\right)+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2),x, algorithm="gi
ac")
```

```
[Out] integrate(sqrt(-c^2*d*x^2 + d)*(g*x + f)^2*(b*arcsin(c*x) + a), x)
```

3.33 $\int (f+gx)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=238

$$\frac{1}{2}fx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{f\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{4bc\sqrt{1-c^2x^2}}-\frac{g\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3c^2}-\frac{bcfx^2}{4\surd}$$

```
[Out] (b*g*x*Sqrt[d - c^2*d*x^2])/(3*c*Sqrt[1 - c^2*x^2]) - (b*c*f*x^2*Sqrt[d - c
^2*d*x^2])/(4*Sqrt[1 - c^2*x^2]) - (b*c*g*x^3*Sqrt[d - c^2*d*x^2])/(9*Sqrt[
1 - c^2*x^2]) + (f*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/2 - (g*(1 - c
^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*c^2) + (f*Sqrt[d - c^2*
d*x^2]*(a + b*ArcSin[c*x])^2)/(4*b*c*Sqrt[1 - c^2*x^2])
```

Rubi [A] time = 0.24215, antiderivative size = 238, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {4777, 4763, 4647, 4641, 30, 4677}

$$\frac{1}{2}fx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{f\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{4bc\sqrt{1-c^2x^2}}-\frac{g\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3c^2}-\frac{bcfx^2}{4\surd}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*g*x*Sqrt[d - c^2*d*x^2])/(3*c*Sqrt[1 - c^2*x^2]) - (b*c*f*x^2*Sqrt[d - c
^2*d*x^2])/(4*Sqrt[1 - c^2*x^2]) - (b*c*g*x^3*Sqrt[d - c^2*d*x^2])/(9*Sqrt[
1 - c^2*x^2]) + (f*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/2 - (g*(1 - c
^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*c^2) + (f*Sqrt[d - c^2*
d*x^2]*(a + b*ArcSin[c*x])^2)/(4*b*c*Sqrt[1 - c^2*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 30

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

Rule 4677

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

Rubi steps

$$\int (f+gx)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)\,dx = \frac{\sqrt{d-c^2dx^2}\int (f+gx)\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\,dx}{\sqrt{1-c^2x^2}}$$
$$= \frac{\sqrt{d-c^2dx^2}\int \left(f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)+gx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx\right.\right.}{\sqrt{1-c^2x^2}}$$
$$= \frac{\left(f\sqrt{d-c^2dx^2}\right)\int \sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\,dx}{\sqrt{1-c^2x^2}} + \frac{\left(g\sqrt{d-c^2dx^2}\right)\int x\sqrt{1}}{\sqrt{1}}$$
$$= \frac{1}{2}fx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right) - \frac{g\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(c\right.}{3c^2}$$
$$= \frac{bgx\sqrt{d-c^2dx^2}}{3c\sqrt{1-c^2x^2}} - \frac{bcfx^2\sqrt{d-c^2dx^2}}{4\sqrt{1-c^2x^2}} - \frac{bcgx^3\sqrt{d-c^2dx^2}}{9\sqrt{1-c^2x^2}} + \frac{1}{2}fx\sqrt{d-c^2dx}$$

Mathematica [A] time = 0.249715, size = 132, normalized size = 0.55

$$\frac{\sqrt{d-c^2dx^2}\left(18fx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)-\frac{12g\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{c^2}+\frac{9f\left(a+b\sin^{-1}(cx)\right)^2}{bc}-\frac{4bgx\left(c^2x^2-3\right)}{c}-9bcfx^2\right)}{36\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(-9*b*c*f*x^2 - (4*b*g*x*(-3 + c^2*x^2))/c + 18*f*x*Sq
rt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) - (12*g*(1 - c^2*x^2)^(3/2)*(a + b*ArcS
in[c*x]))/c^2 + (9*f*(a + b*ArcSin[c*x])^2)/(b*c)))/(36*Sqrt[1 - c^2*x^2])
```

Maple [B] time = 0.356, size = 491, normalized size = 2.1

$$-\frac{ag}{3c^2d}\left(-c^2dx^2+d\right)^{\frac{3}{2}}+\frac{afx}{2}\sqrt{-c^2dx^2+d}+\frac{afd}{2}\arctan\left(x\sqrt{c^2d}\frac{1}{\sqrt{-c^2dx^2+d}}\right)\frac{1}{\sqrt{c^2d}}+\frac{bgcx^3}{9c^2x^2-9}\sqrt{-d\left(c^2x^2-1\right)}\sqrt{-c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] -1/3*a*g/c^2/d*(-c^2*d*x^2+d)^(3/2)+1/2*a*f*x*(-c^2*d*x^2+d)^(1/2)+1/2*a*f*
d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+1/9*b*(-d*(c^2
*x^2-1))^(1/2)*g*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^3-1/3*b*(-d*(c^2*x^2-1)
)^(1/2)*g/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+1/4*b*(-d*(c^2*x^2-1))^(1/2)*f
*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2+1/3*b*(-d*(c^2*x^2-1))^(1/2)*g*c^2/(c
^2*x^2-1)*arcsin(c*x)*x^4-2/3*b*(-d*(c^2*x^2-1))^(1/2)*g/(c^2*x^2-1)*arcsin
(c*x)*x^2+1/2*b*(-d*(c^2*x^2-1))^(1/2)*f*c^2/(c^2*x^2-1)*arcsin(c*x)*x^3-1/
2*b*(-d*(c^2*x^2-1))^(1/2)*f/(c^2*x^2-1)*arcsin(c*x)*x-1/8*b*(-d*(c^2*x^2-1
))^(1/2)*f/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)-1/4*b*(-d*(c^2*x^2-1))^(1/2)*(-
c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcsin(c*x)^2*f+1/3*b*(-d*(c^2*x^2-1))^(1/2)
*g/c^2/(c^2*x^2-1)*arcsin(c*x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2),x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\sqrt{-c^2dx^2+d}\left(agx+af+\left(bgx+bf\right)\arcsin\left(cx\right)\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2),x, algorithm="fric
as")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(a*g*x + a*f + (b*g*x + b*f)*arcsin(c*x)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))*(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{-c^2dx^2 + d}\left(gx + f\right)(b \arcsin{(cx)} + a)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2),x, algorithm="giac
")
```

```
[Out] integrate(sqrt(-c^2*d*x^2 + d)*(g*x + f)*(b*arcsin(c*x) + a), x)
```

3.34 $\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{f+gx}\,dx$

Optimal. Leaf size=736

$$\frac{b\sqrt{d-c^2dx^2}\sqrt{c^2f^2-g^2}\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{g^2\sqrt{1-c^2x^2}}-\frac{b\sqrt{d-c^2dx^2}\sqrt{c^2f^2-g^2}\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{g^2\sqrt{1-c^2x^2}}-\frac{\sqrt{d-c^2dx^2}\left(1-\right.}{2bc\sqrt{1}}$$

```
[Out] (a*Sqrt[d - c^2*d*x^2])/g - (b*c*x*Sqrt[d - c^2*d*x^2])/(g*Sqrt[1 - c^2*x^2
]) + (b*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/g + (c*x*Sqrt[d - c^2*d*x^2]*(a +
b*ArcSin[c*x])^2)/(2*b*g*Sqrt[1 - c^2*x^2]) - ((1 - (c^2*f^2)/g^2)*Sqrt[d -
 c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c*(f + g*x)*Sqrt[1 - c^2*x^2]) + (S
qrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c*(f + g*x
)) - (a*Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]*ArcTan[(g + c^2*f*x)/(Sqrt[
c^2*f^2 - g^2]*Sqrt[1 - c^2*x^2])])/(g^2*Sqrt[1 - c^2*x^2]) + (I*b*Sqrt[c^2
*f^2 - g^2]*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)
/(c*f - Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) - (I*b*Sqrt[c^2*f^2
- g^2]*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f
 + Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) + (b*Sqrt[c^2*f^2 - g^2]*
Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2
- g^2])])/(g^2*Sqrt[1 - c^2*x^2]) - (b*Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x
^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^2*S
qrt[1 - c^2*x^2])
```

Rubi [A] time = 1.87639, antiderivative size = 736, normalized size of antiderivative = 1., number of steps used = 22, number of rules used = 19, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.613, Rules used = {4777, 4765, 683, 4757, 6742, 725, 204, 1654, 12, 4799, 4797, 4677, 8, 4773, 3323, 2264, 2190, 2279, 2391}

$$\frac{b\sqrt{d-c^2dx^2}\sqrt{c^2f^2-g^2}\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{g^2\sqrt{1-c^2x^2}}-\frac{b\sqrt{d-c^2dx^2}\sqrt{c^2f^2-g^2}\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{g^2\sqrt{1-c^2x^2}}-\frac{\sqrt{d-c^2dx^2}\left(1-\right.}{2bc\sqrt{1}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(f + g*x),x]
```

```
[Out] (a*Sqrt[d - c^2*d*x^2])/g - (b*c*x*Sqrt[d - c^2*d*x^2])/(g*Sqrt[1 - c^2*x^2
]) + (b*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/g + (c*x*Sqrt[d - c^2*d*x^2]*(a +
b*ArcSin[c*x])^2)/(2*b*g*Sqrt[1 - c^2*x^2]) - ((1 - (c^2*f^2)/g^2)*Sqrt[d -
```

```
c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c*(f + g*x)*Sqrt[1 - c^2*x^2]) + (S
qrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c*(f + g*x
)) - (a*Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]*ArcTan[(g + c^2*f*x)/(Sqrt[
c^2*f^2 - g^2]*Sqrt[1 - c^2*x^2])])/(g^2*Sqrt[1 - c^2*x^2]) + (I*b*Sqrt[c^2
*f^2 - g^2]*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)
/(c*f - Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) - (I*b*Sqrt[c^2*f^2
- g^2]*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f
 + Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) + (b*Sqrt[c^2*f^2 - g^2]*
Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2
- g^2])])/(g^2*Sqrt[1 - c^2*x^2]) - (b*Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x
^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^2*S
qrt[1 - c^2*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4765

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

Rule 683

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[2*c*d - b*e, 0] &
& IGtQ[p, 0] &&  !(EqQ[m, 3] && NeQ[p, 1])
```

Rule 4757

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.) + (g_.)*(x_) + (h_.)*(x
_)^2)^(p_.))/((d_) + (e_.)*(x_))^2, x_Symbol] :> With[{u = IntHide[(f + g*x
 + h*x^2)^p/(d + e*x)^2, x]}, Dist[(a + b*ArcSin[c*x])^n, u, x] - Dist[b*c*
n, Int[SimplifyIntegrand[(u*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2],
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, h}, x] && IGtQ[n, 0] && IGtQ[p,
```

```
0] && EqQ[e*g - 2*d*h, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

Rule 1654

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :
> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[(f*(d + e*x
)^(m + q - 1)*(a + c*x^2)^(p + 1))/(c*e^(q - 1)*(m + q + 2*p + 1)), x] + Di
st[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + c*x^2)^p*ExpandToSum[c
*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1)*(d + e*x)^q - f*(d + e*x)
^(q - 2)*(a*e^2*(m + q - 1) - c*d^2*(m + q + 2*p + 1) - 2*c*d*e*(m + q + p)
*x), x], x], x] /; GtQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, c, d,
 e, m, p}, x] && PolyQ[Pq, x] && NeQ[c*d^2 + a*e^2, 0] &&  !(EqQ[d, 0] && T
rue) &&  !(IGtQ[m, 0] && RationalQ[a, c, d, e] && (IntegerQ[p] || ILtQ[p +
1/2, 0]))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4799

```
Int[(ArcSin[(c_.)*(x_)]*(b_.) + (a_))^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p
_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p, RFx*(a + b*ArcSin[c*x])
^n, x], x] /; FreeQ[{a, b, c, d, e}, x] && RationalFunctionQ[RFx, x] && IGt
Q[n, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 4797

```
Int[ArcSin[(c_.)*(x_)]^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p_), x_Symbol] :
> With[{u = ExpandIntegrand[(d + e*x^2)^p*ArcSin[c*x]^n, RFx, x]}, Int[u, x
] /; SumQ[u]] /; FreeQ[{c, d, e}, x] && RationalFunctionQ[RFx, x] && IGtQ[n
, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 4677

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

Rule 8

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

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rubi steps

$$\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{f+gx}\,dx = \frac{\sqrt{d-c^2dx^2}\int \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{f+gx}\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc(f+gx)} - \frac{\sqrt{d-c^2dx^2}\int \frac{\left(-g-2c^2fx-c^2gx^2\right)\left(a+b\sin^{-1}(cx\right.}{(f+gx)^2}}{2bc\sqrt{1-c^2x^2}}$$

$$= \frac{cx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bg\sqrt{1-c^2x^2}} - \frac{\left(1-\frac{c^2f^2}{g^2}\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc(f+gx)\sqrt{1-c^2x^2}} + \frac{\sqrt{1}}{}$$

$$= \frac{cx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bg\sqrt{1-c^2x^2}} - \frac{\left(1-\frac{c^2f^2}{g^2}\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc(f+gx)\sqrt{1-c^2x^2}} + \frac{\sqrt{1}}{}$$

$$= \frac{cx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bg\sqrt{1-c^2x^2}} - \frac{\left(1-\frac{c^2f^2}{g^2}\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc(f+gx)\sqrt{1-c^2x^2}} + \frac{\sqrt{1}}{}$$

$$= \frac{a\sqrt{d-c^2dx^2}}{g} + \frac{cx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bg\sqrt{1-c^2x^2}} - \frac{\left(1-\frac{c^2f^2}{g^2}\right)\sqrt{d-c^2dx^2}\left(a+b\sin\right.}{2bc(f+gx)\sqrt{1-c^2x^2}}$$

$$= \frac{a\sqrt{d-c^2dx^2}}{g} + \frac{cx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bg\sqrt{1-c^2x^2}} - \frac{\left(1-\frac{c^2f^2}{g^2}\right)\sqrt{d-c^2dx^2}\left(a+b\sin\right.}{2bc(f+gx)\sqrt{1-c^2x^2}}$$

$$= \frac{a\sqrt{d-c^2dx^2}}{g} + \frac{b\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{g} + \frac{cx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bg\sqrt{1-c^2x^2}} - \frac{\left(1-\right.}{}$$

$$= \frac{a\sqrt{d-c^2dx^2}}{g} - \frac{bcx\sqrt{d-c^2dx^2}}{g\sqrt{1-c^2x^2}} + \frac{b\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{g} + \frac{cx\sqrt{d-c^2dx^2}\left(a+b\sin\right.}{2bg\sqrt{1-c^2x^2}}$$

$$= \frac{a\sqrt{d-c^2dx^2}}{g} - \frac{bcx\sqrt{d-c^2dx^2}}{g\sqrt{1-c^2x^2}} + \frac{b\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{g} + \frac{cx\sqrt{d-c^2dx^2}\left(a+b\sin\right.}{2bg\sqrt{1-c^2x^2}}$$

$$= \frac{a\sqrt{d-c^2dx^2}}{g} - \frac{bcx\sqrt{d-c^2dx^2}}{g\sqrt{1-c^2x^2}} + \frac{b\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{g} + \frac{cx\sqrt{d-c^2dx^2}\left(a+b\sin\right.}{2bg\sqrt{1-c^2x^2}}$$

$$= \frac{a\sqrt{d-c^2dx^2}}{g} - \frac{bcx\sqrt{d-c^2dx^2}}{g\sqrt{1-c^2x^2}} + \frac{b\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{g} + \frac{cx\sqrt{d-c^2dx^2}\left(a+b\sin\right.}{2bg\sqrt{1-c^2x^2}}$$

$$= \frac{a\sqrt{d-c^2dx^2}}{g} - \frac{bcx\sqrt{d-c^2dx^2}}{g\sqrt{1-c^2x^2}} + \frac{b\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{g} + \frac{cx\sqrt{d-c^2dx^2}\left(a+b\sin\right.}{2bg\sqrt{1-c^2x^2}}$$

Mathematica [A] time = 0.965958, size = 368, normalized size = 0.5

$$\frac{\sqrt{d-c^2dx^2}\left(-2bc(f+gx)\left(-i\sqrt{c^2f^2-g^2}\left(-ib\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)+ib\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)+\left(a+b\sin^{-1}(cx)\right)\right.\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(f + g*x),x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*((c^2*f^2 - g^2)*(a + b*ArcSin[c*x])^2 + c^2*g*x*(f +
g*x)*(a + b*ArcSin[c*x])^2 + g^2*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2 - 2*b*
c*(f + g*x)*(b*c*g*x - g*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) - I*Sqrt[c^2
*f^2 - g^2]*((a + b*ArcSin[c*x])*(Log[1 + (I*E^(I*ArcSin[c*x])*g)/(-(c*f) +
 Sqrt[c^2*f^2 - g^2])] - Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^
2 - g^2])]) - I*b*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 -
g^2])] + I*b*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])
]))))/(2*b*c*g^2*(f + g*x)*Sqrt[1 - c^2*x^2])
```

Maple [A] time = 0.357, size = 1206, normalized size = 1.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(g*x+f),x)
```

```
[Out] a/g*(-d*c^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2)+a/g^2*
c^2*d*f/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-d*c^2*(x+f/g)^2+2*c^2*d*f/g*
(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))+a/g^3*d/(-d*(c^2*f^2-g^2)/g^2)^(1/2)*ln
((-2*d*(c^2*f^2-g^2)/g^2+2*c^2*d*f/g*(x+f/g)+2*(-d*(c^2*f^2-g^2)/g^2)^(1/2)
*(-d*c^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))/(x+f/g))
*c^2*f^2-a/g*d/(-d*(c^2*f^2-g^2)/g^2)^(1/2)*ln((-2*d*(c^2*f^2-g^2)/g^2+2*c^
2*d*f/g*(x+f/g)+2*(-d*(c^2*f^2-g^2)/g^2)^(1/2)*(-d*c^2*(x+f/g)^2+2*c^2*d*f/
g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))/(x+f/g))-1/2*b*(-d*(c^2*x^2-1))^(1/2)
*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*arcsin(c*x)^2*f*c/g^2+b*(-d*(c^2*x^2-1))^(1
/2)/(c^2*x^2-1)/g*arcsin(c*x)*x^2*c^2+b*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)/
g*(-c^2*x^2+1)^(1/2)*x*c-b*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)/g*arcsin(c*x)
-b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-
1)/g^2*arcsin(c*x)*ln((-I*c*f-(I*c*x+(-c^2*x^2+1)^(1/2))*g+(-c^2*f^2+g^2)^(
1/2))/(-I*c*f+(-c^2*f^2+g^2)^(1/2)))+b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1)
```

```
)^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)/g^2*arcsin(c*x)*ln((I*c*f+(I*c*x+(-c
^2*x^2+1)^(1/2))*g+(-c^2*f^2+g^2)^(1/2))/(I*c*f+(-c^2*f^2+g^2)^(1/2)))+I*b*
(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)/
g^2*dilog(-I/(-I*c*f+(-c^2*f^2+g^2)^(1/2))*c*f-1/(-I*c*f+(-c^2*f^2+g^2)^(1/
2))*(I*c*x+(-c^2*x^2+1)^(1/2))*g+1/(-I*c*f+(-c^2*f^2+g^2)^(1/2))*(-c^2*f^2+
g^2)^(1/2))-I*b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1
/2)/(c^2*x^2-1)/g^2*dilog(I/(I*c*f+(-c^2*f^2+g^2)^(1/2))*c*f+1/(I*c*f+(-c^2
*f^2+g^2)^(1/2))*(I*c*x+(-c^2*x^2+1)^(1/2))*g+1/(I*c*f+(-c^2*f^2+g^2)^(1/2)
)*(-c^2*f^2+g^2)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(g*x+f),x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}(b\arcsin{(cx)}+a)}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(g*x+f),x, algorithm="fric
as")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(g*x + f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\sqrt{-d(cx-1)(cx+1)}\,(a+b\operatorname{asin}{(cx)})}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))*(-c**2*d*x**2+d)**(1/2)/(g*x+f),x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))/(f + g*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-c^2dx^2+d}(b\arcsin{(cx)}+a)}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(g*x+f),x, algorithm="giac
")
```

```
[Out] integrate(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(g*x + f), x)
```

3.35 $\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{(f+gx)^2}\,dx$

Optimal. Leaf size=860

$$-\frac{bf^2\sqrt{d-c^2dx^2}\sin^{-1}(cx)^2c^3}{2g^2\left(c^2f^2-g^2\right)\sqrt{1-c^2x^2}}-\frac{af^2\sqrt{d-c^2dx^2}\sin^{-1}(cx)c^3}{g^2\left(c^2f^2-g^2\right)\sqrt{1-c^2x^2}}+\frac{af\sqrt{d-c^2dx^2}\tan^{-1}\left(\frac{fxc^2+g}{\sqrt{c^2f^2-g^2}\sqrt{1-c^2x^2}}\right)c^2}{g^2\sqrt{c^2f^2-g^2}\sqrt{1-c^2x^2}}-\frac{ibf\sqrt{d-c^2dx}}{g}$$

```
[Out] -((a*Sqrt[d - c^2*d*x^2])/(g*(f + g*x))) - (b*Sqrt[d - c^2*d*x^2]*ArcSin[c*
x])/(g*(f + g*x)) - (a*c^3*f^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(g^2*(c^2*f
^2 - g^2)*Sqrt[1 - c^2*x^2]) - (b*c^3*f^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2
)/(2*g^2*(c^2*f^2 - g^2)*Sqrt[1 - c^2*x^2]) + ((g + c^2*f*x)^2*Sqrt[d - c^2
*d*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c*(c^2*f^2 - g^2)*(f + g*x)^2*Sqrt[1 -
c^2*x^2]) + (Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(
2*b*c*(f + g*x)^2) + (a*c^2*f*Sqrt[d - c^2*d*x^2]*ArcTan[(g + c^2*f*x)/(Sqr
t[c^2*f^2 - g^2]*Sqrt[1 - c^2*x^2])])/(g^2*Sqrt[c^2*f^2 - g^2]*Sqrt[1 - c^2
*x^2]) - (I*b*c^2*f*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[
c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[c^2*f^2 - g^2]*Sqrt[1 - c^
2*x^2]) + (I*b*c^2*f*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin
[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[c^2*f^2 - g^2]*Sqrt[1 - c
^2*x^2]) + (b*c*Sqrt[d - c^2*d*x^2]*Log[f + g*x])/(g^2*Sqrt[1 - c^2*x^2]) -
 (b*c^2*f*Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqr
t[c^2*f^2 - g^2])])/(g^2*Sqrt[c^2*f^2 - g^2]*Sqrt[1 - c^2*x^2]) + (b*c^2*f*
Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2
- g^2])])/(g^2*Sqrt[c^2*f^2 - g^2]*Sqrt[1 - c^2*x^2])
```

Rubi [A] time = 2.71488, antiderivative size = 860, normalized size of antiderivative = 1., number of steps used = 35, number of rules used = 22, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.71, Rules used = {4777, 4765, 37, 4755, 12, 1651, 844, 216, 725, 204, 4799, 4797, 4641, 4773, 3324, 3323, 2264, 2190, 2279, 2391, 2668, 31}

$$-\frac{bf^2\sqrt{d-c^2dx^2}\sin^{-1}(cx)^2c^3}{2g^2\left(c^2f^2-g^2\right)\sqrt{1-c^2x^2}}-\frac{af^2\sqrt{d-c^2dx^2}\sin^{-1}(cx)c^3}{g^2\left(c^2f^2-g^2\right)\sqrt{1-c^2x^2}}+\frac{af\sqrt{d-c^2dx^2}\tan^{-1}\left(\frac{fxc^2+g}{\sqrt{c^2f^2-g^2}\sqrt{1-c^2x^2}}\right)c^2}{g^2\sqrt{c^2f^2-g^2}\sqrt{1-c^2x^2}}-\frac{ibf\sqrt{d-c^2dx}}{g}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(f + g*x)^2,x]
```

```
[Out] -((a*Sqrt[d - c^2*d*x^2])/(g*(f + g*x))) - (b*Sqrt[d - c^2*d*x^2]*ArcSin[c*
x])/(g*(f + g*x)) - (a*c^3*f^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(g^2*(c^2*f
```

```
^2 - g^2)*Sqrt[1 - c^2*x^2]) - (b*c^3*f^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2
)/(2*g^2*(c^2*f^2 - g^2)*Sqrt[1 - c^2*x^2]) + ((g + c^2*f*x)^2*Sqrt[d - c^2
*d*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c*(c^2*f^2 - g^2)*(f + g*x)^2*Sqrt[1 -
c^2*x^2]) + (Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(
2*b*c*(f + g*x)^2) + (a*c^2*f*Sqrt[d - c^2*d*x^2]*ArcTan[(g + c^2*f*x)/(Sqr
t[c^2*f^2 - g^2]*Sqrt[1 - c^2*x^2])]])/(g^2*Sqrt[c^2*f^2 - g^2]*Sqrt[1 - c^2
*x^2]) - (I*b*c^2*f*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[
c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])]])/(g^2*Sqrt[c^2*f^2 - g^2]*Sqrt[1 - c^
2*x^2]) + (I*b*c^2*f*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin
[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]])/(g^2*Sqrt[c^2*f^2 - g^2]*Sqrt[1 - c
^2*x^2]) + (b*c*Sqrt[d - c^2*d*x^2]*Log[f + g*x])/(g^2*Sqrt[1 - c^2*x^2]) -
 (b*c^2*f*Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqr
t[c^2*f^2 - g^2])]])/(g^2*Sqrt[c^2*f^2 - g^2]*Sqrt[1 - c^2*x^2]) + (b*c^2*f*
Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2
- g^2])]])/(g^2*Sqrt[c^2*f^2 - g^2]*Sqrt[1 - c^2*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4765

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

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 4755

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_))^(m_)*((f_.)
 + (g_.)*(x_))^(p_.), x_Symbol] :> With[{u = IntHide[(f + g*x)^p*(d + e*x)^
m, x]}, Dist[(a + b*ArcSin[c*x])^n, u, x] - Dist[b*c*n, Int[SimplifyIntegra
```

```
nd[(u*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e, f, g}, x] && IGtQ[n, 0] && IGtQ[p, 0] && ILtQ[m, 0] && LtQ[
m + p + 1, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1651

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :>
 With[{Q = PolynomialQuotient[Pq, d + e*x, x], R = PolynomialRemainder[Pq,
d + e*x, x]}, Simp[(e*R*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*
d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)
*(a + c*x^2)^p*ExpandToSum[(m + 1)*(c*d^2 + a*e^2)*Q + c*d*R*(m + 1) - c*e*
R*(m + 2*p + 3)*x, x], x], x]] /; FreeQ[{a, c, d, e, p}, x] && PolyQ[Pq, x]
 && NeQ[c*d^2 + a*e^2, 0] && LtQ[m, -1]
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rule 216

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

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

Rule 4799

```
Int[(ArcSin[(c_.)*(x_)]*(b_.) + (a_))^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p
_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p, RFx*(a + b*ArcSin[c*x])
^n, x], x] /; FreeQ[{a, b, c, d, e}, x] && RationalFunctionQ[RFx, x] && IGt
Q[n, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 4797

```
Int[ArcSin[(c_.)*(x_)]^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p_), x_Symbol] :
> With[{u = ExpandIntegrand[(d + e*x^2)^p*ArcSin[c*x]^n, RFx, x]}, Int[u, x
] /; SumQ[u]] /; FreeQ[{c, d, e}, x] && RationalFunctionQ[RFx, x] && IGtQ[n
, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3324

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[(b*(c + d*x)^m*Cos[e + f*x])/(f*(a^2 - b^2)*(a + b*Sin[e +
f*x])), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[(b*d*m)/(f*(a^2 - b^2)), Int[((c + d*x)^(m - 1)*Cos[e + f*x])/(a
 + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 2668

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rule 31

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

Rubi steps

$$\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{(f+gx)^2}\,dx = \frac{\sqrt{d-c^2dx^2}\int \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{(f+gx)^2}\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc(f+gx)^2} - \frac{\sqrt{d-c^2dx^2}\int \frac{\left(-2g-2c^2fx\right)\left(a+b\sin^{-1}(cx)\right)^2}{(f+gx)^3}\,dx}{2bc\sqrt{1-c^2x^2}}$$

$$= \frac{\left(g+c^2fx\right)^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\left(c^2f^2-g^2\right)(f+gx)^2\sqrt{1-c^2x^2}} + \frac{\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right. \cdots}{2bc(f+gx)^2}$$

$$= \frac{\left(g+c^2fx\right)^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\left(c^2f^2-g^2\right)(f+gx)^2\sqrt{1-c^2x^2}} + \frac{\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right. \cdots}{2bc(f+gx)^2}$$

$$= \frac{\left(g+c^2fx\right)^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\left(c^2f^2-g^2\right)(f+gx)^2\sqrt{1-c^2x^2}} + \frac{\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right. \cdots}{2bc(f+gx)^2}$$

$$= \frac{\left(g+c^2fx\right)^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\left(c^2f^2-g^2\right)(f+gx)^2\sqrt{1-c^2x^2}} + \frac{\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right. \cdots}{2bc(f+gx)^2}$$

$$= -\frac{a\sqrt{d-c^2dx^2}}{g(f+gx)} + \frac{\left(g+c^2fx\right)^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\left(c^2f^2-g^2\right)(f+gx)^2\sqrt{1-c^2x^2}} + \frac{\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2} \cdots}{2bc(f+\cdots}$$

$$= -\frac{a\sqrt{d-c^2dx^2}}{g(f+gx)} + \frac{\left(g+c^2fx\right)^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\left(c^2f^2-g^2\right)(f+gx)^2\sqrt{1-c^2x^2}} + \frac{\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2} \cdots}{2bc(f+\cdots}$$

$$= -\frac{a\sqrt{d-c^2dx^2}}{g(f+gx)} - \frac{ac^3f^2\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{g^2\left(c^2f^2-g^2\right)\sqrt{1-c^2x^2}} - \frac{bc^3f^2\sqrt{d-c^2dx^2}\sin^{-1}(cx)^2}{2g^2\left(c^2f^2-g^2\right)\sqrt{1-c^2x^2}} + \cdots$$

$$= -\frac{a\sqrt{d-c^2dx^2}}{g(f+gx)} - \frac{b\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{g(f+gx)} - \frac{ac^3f^2\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{g^2\left(c^2f^2-g^2\right)\sqrt{1-c^2x^2}} - \frac{bc^3f^2\sqrt{d-\cdots}}{2g^2\left(c^2f^2\cdots\right.}$$

$$= -\frac{a\sqrt{d-c^2dx^2}}{g(f+gx)} - \frac{b\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{g(f+gx)} - \frac{ac^3f^2\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{g^2\left(c^2f^2-g^2\right)\sqrt{1-c^2x^2}} - \frac{bc^3f^2\sqrt{d-\cdots}}{2g^2\left(c^2f^2\cdots\right.}$$

$$= -\frac{a\sqrt{d-c^2dx^2}}{g(f+gx)} - \frac{b\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{g(f+gx)} - \frac{ac^3f^2\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{g^2\left(c^2f^2-g^2\right)\sqrt{1-c^2x^2}} - \frac{bc^3f^2\sqrt{d-\cdots}}{2g^2\left(c^2f^2\cdots\right.}$$

$$= -\frac{a\sqrt{d-c^2dx^2}}{\cdots} - \frac{b\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{\cdots} - \frac{ac^3f^2\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{\cdots} - \frac{bc^3f^2\sqrt{d-\cdots}}{\cdots}$$

Mathematica [A] time = 2.6496, size = 600, normalized size = 0.7

$$\sqrt{d-c^2dx^2}\left(\frac{2bc^2\left(\frac{cf\left(b\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)-b\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)+i\left(a+b\sin^{-1}(cx)\right)\left(\log\left(1+\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}-cf}\right)-\log\left(1-\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)\right)\right)}{\sqrt{c^2f^2-g^2}}-\frac{g\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx\right.}{cf+cgx}\right.}{g^2}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(f + g*x)^2,x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(((c^2*f^2 - g^2)*(a + b*ArcSin[c*x])^2)/(g^2*(f + g*x
)^2) - (2*c^2*f*(a + b*ArcSin[c*x])^2)/(g^2*(f + g*x)) + ((1 - c^2*x^2)*(a
+ b*ArcSin[c*x])^2)/(f + g*x)^2 + (4*b*c^3*f*((-I)*(a + b*ArcSin[c*x])*(Log
[1 + (I*E^(I*ArcSin[c*x])*g)/(-(c*f) + Sqrt[c^2*f^2 - g^2])] - Log[1 - (I*E
^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]) - b*PolyLog[2, (I*E^(I*Ar
cSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])] + b*PolyLog[2, (I*E^(I*ArcSin[c*
x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]))/(g^2*Sqrt[c^2*f^2 - g^2]) + (2*b*c^2*
(-((g*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(c*f + c*g*x)) + b*Log[f + g*x
] + (c*f*(I*(a + b*ArcSin[c*x])*(Log[1 + (I*E^(I*ArcSin[c*x])*g)/(-(c*f) +
Sqrt[c^2*f^2 - g^2])] - Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2
 - g^2])]) + b*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2
])] - b*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]))/S
qrt[c^2*f^2 - g^2]))/g^2))/(2*b*c*Sqrt[1 - c^2*x^2])
```

Maple [C] time = 0.49, size = 1572, normalized size = 1.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(g*x+f)^2,x)
```

```
[Out] a/d/(c^2*f^2-g^2)/(x+f/g)*(-d*c^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-
g^2)/g^2)^(3/2)-a/g*c^2*f/(c^2*f^2-g^2)*(-d*c^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/
g)-d*(c^2*f^2-g^2)/g^2)^(1/2)-a/g^2*c^4*f^2/(c^2*f^2-g^2)*d/(c^2*d)^(1/2)*a
rctan((c^2*d)^(1/2)*x/(-d*c^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)
```

```
/g^2)^(1/2))-a/g^3*c^4*f^3/(c^2*f^2-g^2)*d/(-d*(c^2*f^2-g^2)/g^2)^(1/2)*ln(
(-2*d*(c^2*f^2-g^2)/g^2+2*c^2*d*f/g*(x+f/g)+2*(-d*(c^2*f^2-g^2)/g^2)^(1/2)*
(-d*c^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))/(x+f/g))+
a/g*c^2*f/(c^2*f^2-g^2)*d/(-d*(c^2*f^2-g^2)/g^2)^(1/2)*ln((-2*d*(c^2*f^2-g^
2)/g^2+2*c^2*d*f/g*(x+f/g)+2*(-d*(c^2*f^2-g^2)/g^2)^(1/2)*(-d*c^2*(x+f/g)^2
+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))/(x+f/g))+a*c^2/(c^2*f^2-g^
2)*(-d*c^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2)*x+a*c^2
/(c^2*f^2-g^2)*d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-d*c^2*(x+f/g)^2+2*c
^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))+b*(1/2*(-d*(c^2*x^2-1))^(1/2)*
(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*arcsin(c*x)^2*c/g^2-(-d*(c^2*x^2-1))^(1/2)*(
I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*arcsin(c*x)*(c^2*f*x+g-I*(-c^2*x^2+1)^(
1/2)*c*f)/(c^2*x^2-1)/g^2/(g*x+f)+(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)
*(arcsin(c*x)*ln((-I*c*f-(I*c*x+(-c^2*x^2+1)^(1/2))*g+(-c^2*f^2+g^2)^(1/2))
/(-I*c*f+(-c^2*f^2+g^2)^(1/2)))*(-c^2*f^2+g^2)^(1/2)*c*f-arcsin(c*x)*ln((I*
c*f+(I*c*x+(-c^2*x^2+1)^(1/2))*g+(-c^2*f^2+g^2)^(1/2))/(I*c*f+(-c^2*f^2+g^2
)^(1/2)))*(-c^2*f^2+g^2)^(1/2)*c*f-ln((I*c*x+(-c^2*x^2+1)^(1/2))^2*g+2*I*c*
f*(I*c*x+(-c^2*x^2+1)^(1/2))-g)*c^2*f^2-2*Im(arcsin(c*x))*c^2*f^2+2*ln(exp(
I*Re(arcsin(c*x))))*c^2*f^2-I*dilog(-I/(-I*c*f+(-c^2*f^2+g^2)^(1/2))*c*f-1/
(-I*c*f+(-c^2*f^2+g^2)^(1/2))*(I*c*x+(-c^2*x^2+1)^(1/2))*g+1/(-I*c*f+(-c^2*
f^2+g^2)^(1/2))*(-c^2*f^2+g^2)^(1/2))*(-c^2*f^2+g^2)^(1/2)*c*f+I*dilog(I/(I
*c*f+(-c^2*f^2+g^2)^(1/2))*c*f+1/(I*c*f+(-c^2*f^2+g^2)^(1/2))*(I*c*x+(-c^2*
x^2+1)^(1/2))*g+1/(I*c*f+(-c^2*f^2+g^2)^(1/2))*(-c^2*f^2+g^2)^(1/2))*(-c^2*
f^2+g^2)^(1/2)*c*f+ln((I*c*x+(-c^2*x^2+1)^(1/2))^2*g+2*I*c*f*(I*c*x+(-c^2*x
^2+1)^(1/2))-g)*g^2+2*Im(arcsin(c*x))*g^2-2*ln(exp(I*Re(arcsin(c*x))))*g^2)
*c/(c^2*x^2-1)/g^2/(c^2*f^2-g^2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(g*x+f)^2,x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}(b\arcsin(cx)+a)}{g^2x^2+2\,fgx+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(g*x+f)^2,x, algorithm="fr
icas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(g^2*x^2 + 2*f*g*x + f^2)
, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-d\,(cx-1)\,(cx+1)}\,(a+b\,\mathrm{asin}\,(cx))}{\left(f+gx\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))*(-c**2*d*x**2+d)**(1/2)/(g*x+f)**2,x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))/(f + g*x)**2, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-c^2dx^2+d}(b\arcsin\,(cx)+a)}{\left(gx+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(g*x+f)^2,x, algorithm="gi
ac")
```

```
[Out] integrate(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(g*x + f)^2, x)
```

3.36 $\int (f+gx)^3 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right) dx$

Optimal. Leaf size=959

$$\frac{bc^3dg^3\sqrt{d-c^2dx^2}x^7}{49\sqrt{1-c^2x^2}}+\frac{bc^3dfg^2\sqrt{d-c^2dx^2}x^6}{12\sqrt{1-c^2x^2}}-\frac{8bcdg^3\sqrt{d-c^2dx^2}x^5}{175\sqrt{1-c^2x^2}}+\frac{3bc^3df^2g\sqrt{d-c^2dx^2}x^5}{25\sqrt{1-c^2x^2}}+\frac{bc^3df^3\sqrt{d-c^2dx^2}x^4}{16\sqrt{1-c^2x^2}}-$$

```
[Out] (3*b*d*f^2*g*x*Sqrt[d - c^2*d*x^2])/(5*c*Sqrt[1 - c^2*x^2]) + (2*b*d*g^3*x*
Sqrt[d - c^2*d*x^2])/(35*c^3*Sqrt[1 - c^2*x^2]) - (5*b*c*d*f^3*x^2*Sqrt[d -
 c^2*d*x^2])/(16*Sqrt[1 - c^2*x^2]) + (3*b*d*f*g^2*x^2*Sqrt[d - c^2*d*x^2])
/(32*c*Sqrt[1 - c^2*x^2]) - (2*b*c*d*f^2*g*x^3*Sqrt[d - c^2*d*x^2])/(5*Sqrt
[1 - c^2*x^2]) + (b*d*g^3*x^3*Sqrt[d - c^2*d*x^2])/(105*c*Sqrt[1 - c^2*x^2]
) + (b*c^3*d*f^3*x^4*Sqrt[d - c^2*d*x^2])/(16*Sqrt[1 - c^2*x^2]) - (7*b*c*d
*f*g^2*x^4*Sqrt[d - c^2*d*x^2])/(32*Sqrt[1 - c^2*x^2]) + (3*b*c^3*d*f^2*g*x
^5*Sqrt[d - c^2*d*x^2])/(25*Sqrt[1 - c^2*x^2]) - (8*b*c*d*g^3*x^5*Sqrt[d -
c^2*d*x^2])/(175*Sqrt[1 - c^2*x^2]) + (b*c^3*d*f*g^2*x^6*Sqrt[d - c^2*d*x^2
])/(12*Sqrt[1 - c^2*x^2]) + (b*c^3*d*g^3*x^7*Sqrt[d - c^2*d*x^2])/(49*Sqrt[
1 - c^2*x^2]) + (3*d*f^3*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/8 - (3*
d*f*g^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(16*c^2) + (3*d*f*g^2*x^
3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/8 + (d*f^3*x*(1 - c^2*x^2)*Sqrt[
d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/4 + (d*f*g^2*x^3*(1 - c^2*x^2)*Sqrt[d -
 c^2*d*x^2]*(a + b*ArcSin[c*x]))/2 - (3*d*f^2*g*(1 - c^2*x^2)^2*Sqrt[d - c^
2*d*x^2]*(a + b*ArcSin[c*x]))/(5*c^2) - (d*g^3*(1 - c^2*x^2)^2*Sqrt[d - c^2
*d*x^2]*(a + b*ArcSin[c*x]))/(5*c^4) + (d*g^3*(1 - c^2*x^2)^3*Sqrt[d - c^2*
d*x^2]*(a + b*ArcSin[c*x]))/(7*c^4) + (3*d*f^3*Sqrt[d - c^2*d*x^2]*(a + b*A
rcSin[c*x])^2)/(16*b*c*Sqrt[1 - c^2*x^2]) + (3*d*f*g^2*Sqrt[d - c^2*d*x^2]*
(a + b*ArcSin[c*x])^2)/(32*b*c^3*Sqrt[1 - c^2*x^2])
```

Rubi [A] time = 0.939859, antiderivative size = 959, normalized size of antiderivative = 1., number of steps used = 24, number of rules used = 17, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.548, Rules used = {4777, 4763, 4649, 4647, 4641, 30, 14, 4677, 194, 4699, 4697, 4707, 266, 43, 4689, 12, 373}

$$\frac{bc^3dg^3\sqrt{d-c^2dx^2}x^7}{49\sqrt{1-c^2x^2}}+\frac{bc^3dfg^2\sqrt{d-c^2dx^2}x^6}{12\sqrt{1-c^2x^2}}-\frac{8bcdg^3\sqrt{d-c^2dx^2}x^5}{175\sqrt{1-c^2x^2}}+\frac{3bc^3df^2g\sqrt{d-c^2dx^2}x^5}{25\sqrt{1-c^2x^2}}+\frac{bc^3df^3\sqrt{d-c^2dx^2}x^4}{16\sqrt{1-c^2x^2}}-$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (3*b*d*f^2*g*x*Sqrt[d - c^2*d*x^2])/(5*c*Sqrt[1 - c^2*x^2]) + (2*b*d*g^3*x*
Sqrt[d - c^2*d*x^2])/(35*c^3*Sqrt[1 - c^2*x^2]) - (5*b*c*d*f^3*x^2*Sqrt[d -
 c^2*d*x^2])/(16*Sqrt[1 - c^2*x^2]) + (3*b*d*f*g^2*x^2*Sqrt[d - c^2*d*x^2])
/(32*c*Sqrt[1 - c^2*x^2]) - (2*b*c*d*f^2*g*x^3*Sqrt[d - c^2*d*x^2])/(5*Sqrt
[1 - c^2*x^2]) + (b*d*g^3*x^3*Sqrt[d - c^2*d*x^2])/(105*c*Sqrt[1 - c^2*x^2]
) + (b*c^3*d*f^3*x^4*Sqrt[d - c^2*d*x^2])/(16*Sqrt[1 - c^2*x^2]) - (7*b*c*d
*f*g^2*x^4*Sqrt[d - c^2*d*x^2])/(32*Sqrt[1 - c^2*x^2]) + (3*b*c^3*d*f^2*g*x
^5*Sqrt[d - c^2*d*x^2])/(25*Sqrt[1 - c^2*x^2]) - (8*b*c*d*g^3*x^5*Sqrt[d -
c^2*d*x^2])/(175*Sqrt[1 - c^2*x^2]) + (b*c^3*d*f*g^2*x^6*Sqrt[d - c^2*d*x^2
])/(12*Sqrt[1 - c^2*x^2]) + (b*c^3*d*g^3*x^7*Sqrt[d - c^2*d*x^2])/(49*Sqrt[
1 - c^2*x^2]) + (3*d*f^3*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/8 - (3*
d*f*g^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(16*c^2) + (3*d*f*g^2*x^
3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/8 + (d*f^3*x*(1 - c^2*x^2)*Sqrt[
d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/4 + (d*f*g^2*x^3*(1 - c^2*x^2)*Sqrt[d -
 c^2*d*x^2]*(a + b*ArcSin[c*x]))/2 - (3*d*f^2*g*(1 - c^2*x^2)^2*Sqrt[d - c^
2*d*x^2]*(a + b*ArcSin[c*x]))/(5*c^2) - (d*g^3*(1 - c^2*x^2)^2*Sqrt[d - c^2
*d*x^2]*(a + b*ArcSin[c*x]))/(5*c^4) + (d*g^3*(1 - c^2*x^2)^3*Sqrt[d - c^2*
d*x^2]*(a + b*ArcSin[c*x]))/(7*c^4) + (3*d*f^3*Sqrt[d - c^2*d*x^2]*(a + b*A
rcSin[c*x])^2)/(16*b*c*Sqrt[1 - c^2*x^2]) + (3*d*f*g^2*Sqrt[d - c^2*d*x^2]*
(a + b*ArcSin[c*x])^2)/(32*b*c^3*Sqrt[1 - c^2*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
```

```
GtQ[p, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 30

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

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 4677

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

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

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

Rule 266

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

Rule 43

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

Rule 4689

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
```

```
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[d^p*(a + b*
ArcSin[c*x]), u, x] - Dist[b*c*d^p, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^
2], x], x], x]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && Intege
rQ[p - 1/2] && (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0]) && NeQ[p, -
2^(-1)] && GtQ[d, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 373

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.), x_Symbol
] :> Int[ExpandIntegrand[(a + b*x^n)^p*(c + d*x^n)^q, x], x] /; FreeQ[{a, b
, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[p, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int (f+gx)^3 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right) dx = \frac{\left(d\sqrt{d-c^2dx^2}\right)\int (f+gx)^3 \left(1-c^2x^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right) dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d\sqrt{d-c^2dx^2}\right)\int \left(f^3\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)+3f^2gx\left(1-c^2x^2\right)^{3}\right.}{}$$

$$= \frac{\left(df^3\sqrt{d-c^2dx^2}\right)\int \left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right) dx}{\sqrt{1-c^2x^2}} + \frac{\left(3df^2g\sqrt{d-c^2}\right.}{}$$

$$= \frac{1}{4}df^3x\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right) + \frac{1}{2}dfg^2x^3\left(1-c^2x^2\right)\sqrt{d}$$

$$= \frac{3}{8}df^3x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right) + \frac{3}{8}dfg^2x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(\right.$$

$$= \frac{3bdf^2gx\sqrt{d-c^2dx^2}}{5c\sqrt{1-c^2x^2}} - \frac{5bcdf^3x^2\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}} - \frac{2bcdf^2gx^3\sqrt{d-c^2dx^2}}{5\sqrt{1-c^2x^2}} +$$

$$= \frac{3bdf^2gx\sqrt{d-c^2dx^2}}{5c\sqrt{1-c^2x^2}} + \frac{2bdg^3x\sqrt{d-c^2dx^2}}{35c^3\sqrt{1-c^2x^2}} - \frac{5bcdf^3x^2\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}} + \frac{3b}{}$$

Mathematica [A] time = 1.18939, size = 463, normalized size = 0.48

$$\frac{d\sqrt{d-c^2dx^2}\left(11025a^2cf\left(2c^2f^2+g^2\right)-210ab\sqrt{1-c^2x^2}\left(4c^6x^3\left(84f^2gx+35f^3+70fg^2x^2+20g^3x^3\right)-2c^4x\left(336f^2gx\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d*Sqrt[d - c^2*d*x^2]*(11025*a^2*c*f*(2*c^2*f^2 + g^2) - 210*a*b*Sqrt[1 -
c^2*x^2]*(32*g^3 + c^2*g*(336*f^2 + 105*f*g*x + 16*g^2*x^2) + 4*c^6*x^3*(35
*f^3 + 84*f^2*g*x + 70*f*g^2*x^2 + 20*g^3*x^3) - 2*c^4*x*(175*f^3 + 336*f^2
*g*x + 245*f*g^2*x^2 + 64*g^3*x^3)) + b^2*c*x*(6720*g^3 + 35*c^2*g*(2016*f^
2 + 315*f*g*x + 32*g^2*x^2) - 21*c^4*x*(1750*f^3 + 2240*f^2*g*x + 1225*f*g^
2*x^2 + 256*g^3*x^3) + 2*c^6*x^3*(3675*f^3 + 7056*f^2*g*x + 4900*f*g^2*x^2
+ 1200*g^3*x^3)) - 210*b*(-105*a*c*f*(2*c^2*f^2 + g^2) + b*Sqrt[1 - c^2*x^2
]*(32*g^3 + c^2*g*(336*f^2 + 105*f*g*x + 16*g^2*x^2) + 4*c^6*x^3*(35*f^3 +
84*f^2*g*x + 70*f*g^2*x^2 + 20*g^3*x^3) - 2*c^4*x*(175*f^3 + 336*f^2*g*x +
245*f*g^2*x^2 + 64*g^3*x^3)))*ArcSin[c*x] + 11025*b^2*c*f*(2*c^2*f^2 + g^2)
*ArcSin[c*x]^2))/(117600*b*c^4*Sqrt[1 - c^2*x^2])
```

Maple [B] time = 0.766, size = 1734, normalized size = 1.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] -1/7*b*(-d*(c^2*x^2-1))^(1/2)*g^3*d*c^4/(c^2*x^2-1)*arcsin(c*x)*x^8+13/35*b
*(-d*(c^2*x^2-1))^(1/2)*g^3*d*c^2/(c^2*x^2-1)*arcsin(c*x)*x^6-1/35*b*(-d*(c
^2*x^2-1))^(1/2)*g^3*d/c^2/(c^2*x^2-1)*arcsin(c*x)*x^2+3/5*b*(-d*(c^2*x^2-1
))^(1/2)*g*d/c^2/(c^2*x^2-1)*arcsin(c*x)*f^2-1/4*b*(-d*(c^2*x^2-1))^(1/2)*f
^3*d*c^4/(c^2*x^2-1)*arcsin(c*x)*x^5+7/8*b*(-d*(c^2*x^2-1))^(1/2)*f^3*d*c^2
/(c^2*x^2-1)*arcsin(c*x)*x^3-17/16*b*(-d*(c^2*x^2-1))^(1/2)*f*g^2*d/(c^2*x^
2-1)*arcsin(c*x)*x^3-9/5*b*(-d*(c^2*x^2-1))^(1/2)*g*d/(c^2*x^2-1)*arcsin(c*
x)*x^2*f^2+3/8*a*f^3*d*x*(-c^2*d*x^2+d)^(1/2)+3/8*a*f^3*d^2/(c^2*d)^(1/2)*a
rctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-2/35*a*g^3/d/c^4*(-c^2*d*x^2+d)
^(5/2)-1/7*a*g^3*x^2*(-c^2*d*x^2+d)^(5/2)/c^2/d+1/8*a*f*g^2/c^2*x*(-c^2*d*x
^2+d)^(3/2)-3/5*a*f^2*g/c^2/d*(-c^2*d*x^2+d)^(5/2)+1/4*a*f^3*x*(-c^2*d*x^2+
d)^(3/2)-3/32*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/(c^2*x^2-1)*a
```

```
rcsin(c*x)^2*f*d*g^2-1/2*b*(-d*(c^2*x^2-1))^(1/2)*f*g^2*d*c^4/(c^2*x^2-1)*a
rcsin(c*x)*x^7+11/8*b*(-d*(c^2*x^2-1))^(1/2)*f*g^2*d*c^2/(c^2*x^2-1)*arcsin
(c*x)*x^5+3/16*b*(-d*(c^2*x^2-1))^(1/2)*f*g^2*d/c^2/(c^2*x^2-1)*arcsin(c*x)
*x-3/5*b*(-d*(c^2*x^2-1))^(1/2)*g*d*c^4/(c^2*x^2-1)*arcsin(c*x)*x^6*f^2+9/5
*b*(-d*(c^2*x^2-1))^(1/2)*g*d*c^2/(c^2*x^2-1)*arcsin(c*x)*x^4*f^2+7/32*b*(-
d*(c^2*x^2-1))^(1/2)*f*g^2*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4-3/32*b*(-
d*(c^2*x^2-1))^(1/2)*f*g^2*d/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2-3/25*b*(-
d*(c^2*x^2-1))^(1/2)*g*d*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^5*f^2+2/5*b*(
-d*(c^2*x^2-1))^(1/2)*g*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^3*f^2-3/5*b*(-
d*(c^2*x^2-1))^(1/2)*g*d/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x*f^2-1/12*b*(-d*
(c^2*x^2-1))^(1/2)*f*g^2*d*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^6-1/2*a*f*g
^2*x*(-c^2*d*x^2+d)^(5/2)/c^2/d+3/16*a*f*g^2/c^2*d*x*(-c^2*d*x^2+d)^(1/2)-1
/49*b*(-d*(c^2*x^2-1))^(1/2)*g^3*d*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^7+8
/175*b*(-d*(c^2*x^2-1))^(1/2)*g^3*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^5-1/
105*b*(-d*(c^2*x^2-1))^(1/2)*g^3*d/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^3-2/3
5*b*(-d*(c^2*x^2-1))^(1/2)*g^3*d/c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-7/768
*b*(-d*(c^2*x^2-1))^(1/2)*f*g^2*d/c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)-1/16*b
*(-d*(c^2*x^2-1))^(1/2)*f^3*d*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4+5/16*b
*(-d*(c^2*x^2-1))^(1/2)*f^3*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2-3/16*b*(
-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcsin(c*x)^2*f^3*d+
3/16*a*f*g^2/c^2*d^2/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1
/2))-9/35*b*(-d*(c^2*x^2-1))^(1/2)*g^3*d/(c^2*x^2-1)*arcsin(c*x)*x^4-5/8*b*
(-d*(c^2*x^2-1))^(1/2)*f^3*d/(c^2*x^2-1)*arcsin(c*x)*x+2/35*b*(-d*(c^2*x^2-
1))^(1/2)*g^3*d/c^4/(c^2*x^2-1)*arcsin(c*x)-17/128*b*(-d*(c^2*x^2-1))^(1/2)
*f^3*d/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\Big(-\big(ac^2dg^3x^5 + 3\,ac^2dfg^2x^4 - 3\,adf^2gx - adf^3 + \big(3\,ac^2df^2g - adg^3\big)x^3 + \big(ac^2df^3 - 3\,adfg^2\big)x^2 + \big(bc^2dg^3x^5 + 3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="fr
icas")
```

```
[Out] integral(-(a*c^2*d*g^3*x^5 + 3*a*c^2*d*f*g^2*x^4 - 3*a*d*f^2*g*x - a*d*f^3
+ (3*a*c^2*d*f^2*g - a*d*g^3)*x^3 + (a*c^2*d*f^3 - 3*a*d*f*g^2)*x^2 + (b*c^
2*d*g^3*x^5 + 3*b*c^2*d*f*g^2*x^4 - 3*b*d*f^2*g*x - b*d*f^3 + (3*b*c^2*d*f^
2*g - b*d*g^3)*x^3 + (b*c^2*d*f^3 - 3*b*d*f*g^2)*x^2)*arcsin(c*x))*sqrt(-c^
2*d*x^2 + d), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(-c^2dx^2+d\right)^{\frac{3}{2}}\left(gx+f\right)^3\left(b\arcsin\left(cx\right)+a\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="gi
ac")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(3/2)*(g*x + f)^3*(b*arcsin(c*x) + a), x)
```

3.37 $\int (f+gx)^2 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right) dx$

Optimal. Leaf size=680

$$\frac{3}{8}df^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}df^2x\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{3df^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{16bc\sqrt{1-c^2x^2}}$$

```
[Out] (2*b*d*f*g*x*Sqrt[d - c^2*d*x^2])/(5*c*Sqrt[1 - c^2*x^2]) - (5*b*c*d*f^2*x^
2*Sqrt[d - c^2*d*x^2])/(16*Sqrt[1 - c^2*x^2]) + (b*d*g^2*x^2*Sqrt[d - c^2*d
*x^2])/(32*c*Sqrt[1 - c^2*x^2]) - (4*b*c*d*f*g*x^3*Sqrt[d - c^2*d*x^2])/(15
*Sqrt[1 - c^2*x^2]) + (b*c^3*d*f^2*x^4*Sqrt[d - c^2*d*x^2])/(16*Sqrt[1 - c^
2*x^2]) - (7*b*c*d*g^2*x^4*Sqrt[d - c^2*d*x^2])/(96*Sqrt[1 - c^2*x^2]) + (2
*b*c^3*d*f*g*x^5*Sqrt[d - c^2*d*x^2])/(25*Sqrt[1 - c^2*x^2]) + (b*c^3*d*g^2
*x^6*Sqrt[d - c^2*d*x^2])/(36*Sqrt[1 - c^2*x^2]) + (3*d*f^2*x*Sqrt[d - c^2*
d*x^2]*(a + b*ArcSin[c*x]))/8 - (d*g^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[
c*x]))/(16*c^2) + (d*g^2*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/8 + (
d*f^2*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/4 + (d*g^2*x
^3*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/6 - (2*d*f*g*(1 -
 c^2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(5*c^2) + (3*d*f^2*Sqr
t[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(16*b*c*Sqrt[1 - c^2*x^2]) + (d*g^2
*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(32*b*c^3*Sqrt[1 - c^2*x^2])
```

Rubi [A] time = 0.732672, antiderivative size = 680, normalized size of antiderivative = 1., number of steps used = 20, number of rules used = 12, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.387, Rules used = {4777, 4763, 4649, 4647, 4641, 30, 14, 4677, 194, 4699, 4697, 4707}

$$\frac{3}{8}df^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}df^2x\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{3df^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{16bc\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```


```
[Out] (2*b*d*f*g*x*Sqrt[d - c^2*d*x^2])/(5*c*Sqrt[1 - c^2*x^2]) - (5*b*c*d*f^2*x^
2*Sqrt[d - c^2*d*x^2])/(16*Sqrt[1 - c^2*x^2]) + (b*d*g^2*x^2*Sqrt[d - c^2*d
*x^2])/(32*c*Sqrt[1 - c^2*x^2]) - (4*b*c*d*f*g*x^3*Sqrt[d - c^2*d*x^2])/(15
*Sqrt[1 - c^2*x^2]) + (b*c^3*d*f^2*x^4*Sqrt[d - c^2*d*x^2])/(16*Sqrt[1 - c^
2*x^2]) - (7*b*c*d*g^2*x^4*Sqrt[d - c^2*d*x^2])/(96*Sqrt[1 - c^2*x^2]) + (2
*b*c^3*d*f*g*x^5*Sqrt[d - c^2*d*x^2])/(25*Sqrt[1 - c^2*x^2]) + (b*c^3*d*g^2
*x^6*Sqrt[d - c^2*d*x^2])/(36*Sqrt[1 - c^2*x^2]) + (3*d*f^2*x*Sqrt[d - c^2*
```

```
d*x^2]*(a + b*ArcSin[c*x]))/8 - (d*g^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[
c*x]))/(16*c^2) + (d*g^2*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/8 + (
d*f^2*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/4 + (d*g^2*x
^3*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/6 - (2*d*f*g*(1 -
 c^2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(5*c^2) + (3*d*f^2*Sqr
t[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(16*b*c*Sqrt[1 - c^2*x^2]) + (d*g^2
*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(32*b*c^3*Sqrt[1 - c^2*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 30

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

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 4677

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

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
```

```
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

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

Rubi steps

$$\int (f+gx)^2 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right) dx = \frac{\left(d\sqrt{d-c^2dx^2}\right)\int (f+gx)^2 \left(1-c^2x^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right) dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d\sqrt{d-c^2dx^2}\right)\int \left(f^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)+2fgx\left(1-c^2x^2\right)\right.}{\sqrt{1-c^2x}}$$

$$= \frac{\left(df^2\sqrt{d-c^2dx^2}\right)\int \left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right) dx}{\sqrt{1-c^2x^2}} + \frac{\left(2dfg\sqrt{d-c\right.}}{}$$

$$= \frac{1}{4}df^2x\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{6}dg^2x^3\left(1-c^2x^2\right)\sqrt{a}$$

$$= \frac{3}{8}df^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{8}dg^2x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(\right.$$

$$= \frac{2bdfgx\sqrt{d-c^2dx^2}}{5c\sqrt{1-c^2x^2}} - \frac{5bcdf^2x^2\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}} - \frac{4bcdfgx^3\sqrt{d-c^2dx^2}}{15\sqrt{1-c^2x^2}} +$$

$$= \frac{2bdfgx\sqrt{d-c^2dx^2}}{5c\sqrt{1-c^2x^2}} - \frac{5bcdf^2x^2\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}} + \frac{bdg^2x^2\sqrt{d-c^2dx^2}}{32c\sqrt{1-c^2x^2}} - 4b$$

Mathematica [A] time = 0.485129, size = 332, normalized size = 0.49

$$\frac{d\sqrt{d-c^2dx^2}\left(225a^2\left(6c^2f^2+g^2\right)-30abc\sqrt{1-c^2x^2}\left(30c^2f^2x\left(2c^2x^2-5\right)+96fg\left(c^2x^2-1\right)^2+5g^2x\left(8c^4x^4-14c^2x^2+3\right)\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d*Sqrt[d - c^2*d*x^2]*(225*a^2*(6*c^2*f^2 + g^2) + b^2*c^2*x*(450*c^2*f^2*
x*(-5 + c^2*x^2) + 192*f*g*(15 - 10*c^2*x^2 + 3*c^4*x^4) + 25*g^2*x*(9 - 21
*c^2*x^2 + 8*c^4*x^4)) - 30*a*b*c*Sqrt[1 - c^2*x^2]*(96*f*g*(-1 + c^2*x^2)^
2 + 30*c^2*f^2*x*(-5 + 2*c^2*x^2) + 5*g^2*x*(3 - 14*c^2*x^2 + 8*c^4*x^4)) +
 30*b*(15*a*(6*c^2*f^2 + g^2) - b*c*Sqrt[1 - c^2*x^2]*(96*f*g*(-1 + c^2*x^2
)^2 + 30*c^2*f^2*x*(-5 + 2*c^2*x^2) + 5*g^2*x*(3 - 14*c^2*x^2 + 8*c^4*x^4))
)*ArcSin[c*x] + 225*b^2*(6*c^2*f^2 + g^2)*ArcSin[c*x]^2))/(7200*b*c^3*Sqrt[
1 - c^2*x^2])
```

Maple [B] time = 0.571, size = 1252, normalized size = 1.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] 7/8*b*(-d*(c^2*x^2-1))^(1/2)*d*c^2/(c^2*x^2-1)*arcsin(c*x)*x^3*f^2-6/5*b*(-
d*(c^2*x^2-1))^(1/2)*f*g*d/(c^2*x^2-1)*arcsin(c*x)*x^2-1/16*b*(-d*(c^2*x^2-
1))^(1/2)*d*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4*f^2+5/16*b*(-d*(c^2*x^2-
1))^(1/2)*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2*f^2-1/36*b*(-d*(c^2*x^2-1)
)^(1/2)*g^2*d*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^6+7/96*b*(-d*(c^2*x^2-1)
)^(1/2)*g^2*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4-1/32*b*(-d*(c^2*x^2-1))^
(1/2)*g^2*d/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2-3/16*b*(-d*(c^2*x^2-1))^(1
/2)*(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcsin(c*x)^2*d*f^2-1/32*b*(-d*(c^2*x^
2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/(c^2*x^2-1)*arcsin(c*x)^2*d*g^2-1/6*b*(-
d*(c^2*x^2-1))^(1/2)*g^2*d*c^4/(c^2*x^2-1)*arcsin(c*x)*x^7+11/24*b*(-d*(c^2
*x^2-1))^(1/2)*g^2*d*c^2/(c^2*x^2-1)*arcsin(c*x)*x^5+1/16*b*(-d*(c^2*x^2-1)
)^(1/2)*g^2*d/c^2/(c^2*x^2-1)*arcsin(c*x)*x+2/5*b*(-d*(c^2*x^2-1))^(1/2)*f*
g*d/c^2/(c^2*x^2-1)*arcsin(c*x)-1/4*b*(-d*(c^2*x^2-1))^(1/2)*d*c^4/(c^2*x^2
-1)*arcsin(c*x)*x^5*f^2+1/4*a*f^2*x*(-c^2*d*x^2+d)^(3/2)+3/8*a*f^2*d*x*(-c^
2*d*x^2+d)^(1/2)+3/8*a*f^2*d^2/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d
```

```
*x^2+d)^(1/2))+1/16*a*g^2/c^2*d^2/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^
2*d*x^2+d)^(1/2))-2/5*a*f*g/c^2/d*(-c^2*d*x^2+d)^(5/2)-1/6*a*g^2*x*(-c^2*d*
x^2+d)^(5/2)/c^2/d+1/16*a*g^2/c^2*d*x*(-c^2*d*x^2+d)^(1/2)+1/24*a*g^2/c^2*x
*(-c^2*d*x^2+d)^(3/2)-17/48*b*(-d*(c^2*x^2-1))^(1/2)*g^2*d/(c^2*x^2-1)*arcs
in(c*x)*x^3-7/2304*b*(-d*(c^2*x^2-1))^(1/2)*g^2*d/c^3/(c^2*x^2-1)*(-c^2*x^2
+1)^(1/2)-17/128*b*(-d*(c^2*x^2-1))^(1/2)*d/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2
)*f^2-5/8*b*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)*arcsin(c*x)*x*f^2+6/5*b*(-
d*(c^2*x^2-1))^(1/2)*f*g*d*c^2/(c^2*x^2-1)*arcsin(c*x)*x^4-2/5*b*(-d*(c^2*x
^2-1))^(1/2)*f*g*d*c^4/(c^2*x^2-1)*arcsin(c*x)*x^6-2/25*b*(-d*(c^2*x^2-1))^
(1/2)*f*g*d*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^5+4/15*b*(-d*(c^2*x^2-1))^
(1/2)*f*g*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^3-2/5*b*(-d*(c^2*x^2-1))^(1/
2)*f*g*d/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\Big(-\Big(ac^2dg^2x^4 + 2\,ac^2dfgx^3 - 2\,adfgx - adf^2 + \big(ac^2df^2 - adg^2\big)x^2 + \big(bc^2dg^2x^4 + 2\,bc^2dfgx^3 - 2\,bdfgx - bdf^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="fr
icas")
```

```
[Out] integral(-(a*c^2*d*g^2*x^4 + 2*a*c^2*d*f*g*x^3 - 2*a*d*f*g*x - a*d*f^2 + (a
*c^2*d*f^2 - a*d*g^2)*x^2 + (b*c^2*d*g^2*x^4 + 2*b*c^2*d*f*g*x^3 - 2*b*d*f*
g*x - b*d*f^2 + (b*c^2*d*f^2 - b*d*g^2)*x^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 +
 d), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(-c^2dx^2+d\right)^{\frac{3}{2}}\left(gx+f\right)^2\left(b\arcsin\left(cx\right)+a\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="gi
ac")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(3/2)*(g*x + f)^2*(b*arcsin(c*x) + a), x)
```

3.38 $\int (f+gx)\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=370

$$\frac{3}{8}dfx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}dfx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{3df\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{16bc\sqrt{1-c^2x^2}}$$

```
[Out] (b*d*g*x*Sqrt[d - c^2*d*x^2])/(5*c*Sqrt[1 - c^2*x^2]) - (5*b*c*d*f*x^2*Sqrt
[d - c^2*d*x^2])/(16*Sqrt[1 - c^2*x^2]) - (2*b*c*d*g*x^3*Sqrt[d - c^2*d*x^2
])/(15*Sqrt[1 - c^2*x^2]) + (b*c^3*d*f*x^4*Sqrt[d - c^2*d*x^2])/(16*Sqrt[1
- c^2*x^2]) + (b*c^3*d*g*x^5*Sqrt[d - c^2*d*x^2])/(25*Sqrt[1 - c^2*x^2]) +
(3*d*f*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/8 + (d*f*x*(1 - c^2*x^2)*
Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/4 - (d*g*(1 - c^2*x^2)^2*Sqrt[d -
c^2*d*x^2]*(a + b*ArcSin[c*x]))/(5*c^2) + (3*d*f*Sqrt[d - c^2*d*x^2]*(a + b
*ArcSin[c*x])^2)/(16*b*c*Sqrt[1 - c^2*x^2])
```

Rubi [A] time = 0.326304, antiderivative size = 370, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.31, Rules used = {4777, 4763, 4649, 4647, 4641, 30, 14, 4677, 194}

$$\frac{3}{8}dfx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}dfx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{3df\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{16bc\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*d*g*x*Sqrt[d - c^2*d*x^2])/(5*c*Sqrt[1 - c^2*x^2]) - (5*b*c*d*f*x^2*Sqrt
[d - c^2*d*x^2])/(16*Sqrt[1 - c^2*x^2]) - (2*b*c*d*g*x^3*Sqrt[d - c^2*d*x^2
])/(15*Sqrt[1 - c^2*x^2]) + (b*c^3*d*f*x^4*Sqrt[d - c^2*d*x^2])/(16*Sqrt[1
- c^2*x^2]) + (b*c^3*d*g*x^5*Sqrt[d - c^2*d*x^2])/(25*Sqrt[1 - c^2*x^2]) +
(3*d*f*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/8 + (d*f*x*(1 - c^2*x^2)*
Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/4 - (d*g*(1 - c^2*x^2)^2*Sqrt[d -
c^2*d*x^2]*(a + b*ArcSin[c*x]))/(5*c^2) + (3*d*f*Sqrt[d - c^2*d*x^2]*(a + b
*ArcSin[c*x])^2)/(16*b*c*Sqrt[1 - c^2*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
```

```
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 30

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

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 4677

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

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rubi steps

$$\int (f+gx)\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)dx=\frac{\left(d\sqrt{d-c^2dx^2}\right)\int (f+gx)\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)dx}{\sqrt{1-c^2x^2}}$$

$$=\frac{\left(d\sqrt{d-c^2dx^2}\right)\int \left(f\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)+gx\left(1-c^2x^2\right)^{3/2}\left(a\right.\right.}{\sqrt{1-c^2x^2}}$$

$$=\frac{\left(df\sqrt{d-c^2dx^2}\right)\int \left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)dx}{\sqrt{1-c^2x^2}}+\frac{\left(dg\sqrt{d-c^2dx^2}\right)}{}$$

$$=\frac{1}{4}dfx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)-\frac{dg\left(1-c^2x^2\right)^2\sqrt{d-c^2d}}{5c^2}$$

$$=\frac{3}{8}dfx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}dfx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\right.$$

$$=\frac{bdgx\sqrt{d-c^2dx^2}}{5c\sqrt{1-c^2x^2}}-\frac{5bcdfx^2\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}}-\frac{2bcdgx^3\sqrt{d-c^2dx^2}}{15\sqrt{1-c^2x^2}}+\frac{bc^3df}{16}$$

Mathematica [A] time = 0.28579, size = 216, normalized size = 0.58

$$\frac{d\sqrt{d-c^2dx^2}\left(225a^2cf-30ab\sqrt{1-c^2x^2}\left(5c^2fx\left(2c^2x^2-5\right)+8g\left(c^2x^2-1\right)^2\right)+30b\sin^{-1}(cx)\left(15acf+b\sqrt{1-c^2x^2}\left(5c^2\right.\right.\right.}{1200bc^2\sqrt{1-}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d*Sqrt[d - c^2*d*x^2]*(225*a^2*c*f - 30*a*b*Sqrt[1 - c^2*x^2]*(8*g*(-1 + c
^2*x^2)^2 + 5*c^2*f*x*(-5 + 2*c^2*x^2)) + b^2*c*x*(75*c^2*f*x*(-5 + c^2*x^2
) + 16*g*(15 - 10*c^2*x^2 + 3*c^4*x^4)) + 30*b*(15*a*c*f + b*Sqrt[1 - c^2*x
^2]*(5*c^2*f*x*(5 - 2*c^2*x^2) - 8*g*(-1 + c^2*x^2)^2))*ArcSin[c*x] + 225*b
^2*c*f*ArcSin[c*x]^2))/(1200*b*c^2*Sqrt[1 - c^2*x^2])
```

Maple [B] time = 0.42, size = 698, normalized size = 1.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] -1/5*a*g/c^2/d*(-c^2*d*x^2+d)^(5/2)+1/4*a*f*x*(-c^2*d*x^2+d)^(3/2)+3/8*a*f*
d*x*(-c^2*d*x^2+d)^(1/2)+3/8*a*f*d^2/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(
-c^2*d*x^2+d)^(1/2))-1/5*b*(-d*(c^2*x^2-1))^(1/2)*g*d*c^4/(c^2*x^2-1)*arcsi
n(c*x)*x^6+3/5*b*(-d*(c^2*x^2-1))^(1/2)*g*d*c^2/(c^2*x^2-1)*arcsin(c*x)*x^4
-3/5*b*(-d*(c^2*x^2-1))^(1/2)*g*d/(c^2*x^2-1)*arcsin(c*x)*x^2-1/4*b*(-d*(c^
2*x^2-1))^(1/2)*f*d*c^4/(c^2*x^2-1)*arcsin(c*x)*x^5+7/8*b*(-d*(c^2*x^2-1))^
(1/2)*f*d*c^2/(c^2*x^2-1)*arcsin(c*x)*x^3-17/128*b*(-d*(c^2*x^2-1))^(1/2)*f
*d/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)-5/8*b*(-d*(c^2*x^2-1))^(1/2)*f*d/(c^2*x
^2-1)*arcsin(c*x)*x-1/25*b*(-d*(c^2*x^2-1))^(1/2)*g*d*c^3/(c^2*x^2-1)*(-c^2
*x^2+1)^(1/2)*x^5+2/15*b*(-d*(c^2*x^2-1))^(1/2)*g*d*c/(c^2*x^2-1)*(-c^2*x^2
+1)^(1/2)*x^3-1/5*b*(-d*(c^2*x^2-1))^(1/2)*g*d/c/(c^2*x^2-1)*(-c^2*x^2+1)^(
1/2)*x-1/16*b*(-d*(c^2*x^2-1))^(1/2)*f*d*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)
*x^4+5/16*b*(-d*(c^2*x^2-1))^(1/2)*f*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2
-3/16*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcsin(c*x)
^2*f*d+1/5*b*(-d*(c^2*x^2-1))^(1/2)*g*d/c^2/(c^2*x^2-1)*arcsin(c*x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\left(ac^2dgx^3 + ac^2dfx^2 - adgx - adf + \left(bc^2dgx^3 + bc^2dfx^2 - bdgx - bdf\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2 + d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="fric
as")
```

```
[Out] integral(-(a*c^2*d*g*x^3 + a*c^2*d*f*x^2 - a*d*g*x - a*d*f + (b*c^2*d*g*x^3
 + b*c^2*d*f*x^2 - b*d*g*x - b*d*f)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(-c^2dx^2 + d\right)^{\frac{3}{2}}\left(gx + f\right)\left(b\arcsin\left(cx\right) + a\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="giac
")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(3/2)*(g*x + f)*(b*arcsin(c*x) + a), x)
```

3.39 $\int \frac{(d-c^2dx^2)^{3/2}(a+b\sin^{-1}(cx))}{f+gx}\,dx$

Optimal. Leaf size=1073

$$\frac{bdx^3\sqrt{d-c^2dx^2}c^3}{9g\sqrt{1-c^2x^2}}-\frac{bdfx^2\sqrt{d-c^2dx^2}c^3}{4g^2\sqrt{1-c^2x^2}}+\frac{dfx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)c^2}{2g^2}-\frac{d(cf-g)(cf+g)x\sqrt{d-c^2dx^2}\left(a+b\right.}{2bg^3\sqrt{1-c^2x^2}}$$

```
[Out] -((a*d*(c*f - g)*(c*f + g)*Sqrt[d - c^2*d*x^2])/g^3) - (b*c*d*x*Sqrt[d - c^
2*d*x^2])/(3*g*Sqrt[1 - c^2*x^2]) + (b*c*d*(c*f - g)*(c*f + g)*x*Sqrt[d - c
^2*d*x^2])/(g^3*Sqrt[1 - c^2*x^2]) - (b*c^3*d*f*x^2*Sqrt[d - c^2*d*x^2])/(4
*g^2*Sqrt[1 - c^2*x^2]) + (b*c^3*d*x^3*Sqrt[d - c^2*d*x^2])/(9*g*Sqrt[1 - c
^2*x^2]) - (b*d*(c*f - g)*(c*f + g)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/g^3 +
(c^2*d*f*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(2*g^2) + (d*(1 - c^2*x
^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*g) + (c*d*f*Sqrt[d - c^2*d*
x^2]*(a + b*ArcSin[c*x])^2)/(4*b*g^2*Sqrt[1 - c^2*x^2]) - (c*d*(c*f - g)*(c
*f + g)*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*g^3*Sqrt[1 - c^2*
x^2]) - (d*(c^2*f^2 - g^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(2*
b*c*g^4*(f + g*x)*Sqrt[1 - c^2*x^2]) - (d*(c*f - g)*(c*f + g)*Sqrt[1 - c^2*
x^2]*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c*g^2*(f + g*x)) + (a*
d*(c^2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]*ArcTan[(g + c^2*f*x)/(Sqrt[c^2*
f^2 - g^2]*Sqrt[1 - c^2*x^2])])/(g^4*Sqrt[1 - c^2*x^2]) - (I*b*d*(c^2*f^2 -
 g^2)^(3/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)
/(c*f - Sqrt[c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) + (I*b*d*(c^2*f^2 -
g^2)^(3/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/
(c*f + Sqrt[c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) - (b*d*(c^2*f^2 - g^2
)^(3/2)*Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[
c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) + (b*d*(c^2*f^2 - g^2)^(3/2)*Sqrt
[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^
2])])/(g^4*Sqrt[1 - c^2*x^2])
```

Rubi [A] time = 2.22419, antiderivative size = 1073, normalized size of antiderivative = 1., number of steps used = 29, number of rules used = 23, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.742, Rules used = {4777, 4767, 4647, 4641, 30, 4677, 4765, 683, 4757, 6742, 725, 204, 1654, 12, 4799, 4797, 8, 4773, 3323, 2264, 2190, 2279, 2391}

$$\frac{bdx^3\sqrt{d-c^2dx^2}c^3}{9g\sqrt{1-c^2x^2}}-\frac{bdfx^2\sqrt{d-c^2dx^2}c^3}{4g^2\sqrt{1-c^2x^2}}+\frac{dfx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)c^2}{2g^2}-\frac{d(cf-g)(cf+g)x\sqrt{d-c^2dx^2}\left(a+b\right.}{2bg^3\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(f + g*x),x]
```

```
[Out] -((a*d*(c*f - g)*(c*f + g)*Sqrt[d - c^2*d*x^2])/g^3) - (b*c*d*x*Sqrt[d - c^
2*d*x^2])/(3*g*Sqrt[1 - c^2*x^2]) + (b*c*d*(c*f - g)*(c*f + g)*x*Sqrt[d - c
^2*d*x^2])/(g^3*Sqrt[1 - c^2*x^2]) - (b*c^3*d*f*x^2*Sqrt[d - c^2*d*x^2])/(4
*g^2*Sqrt[1 - c^2*x^2]) + (b*c^3*d*x^3*Sqrt[d - c^2*d*x^2])/(9*g*Sqrt[1 - c
^2*x^2]) - (b*d*(c*f - g)*(c*f + g)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/g^3 +
(c^2*d*f*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(2*g^2) + (d*(1 - c^2*x
^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*g) + (c*d*f*Sqrt[d - c^2*d*
x^2]*(a + b*ArcSin[c*x])^2)/(4*b*g^2*Sqrt[1 - c^2*x^2]) - (c*d*(c*f - g)*(c
*f + g)*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*g^3*Sqrt[1 - c^2*
x^2]) - (d*(c^2*f^2 - g^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(2*
b*c*g^4*(f + g*x)*Sqrt[1 - c^2*x^2]) - (d*(c*f - g)*(c*f + g)*Sqrt[1 - c^2*
x^2]*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c*g^2*(f + g*x)) + (a*
d*(c^2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]*ArcTan[(g + c^2*f*x)/(Sqrt[c^2*
f^2 - g^2]*Sqrt[1 - c^2*x^2])])/(g^4*Sqrt[1 - c^2*x^2]) - (I*b*d*(c^2*f^2 -
 g^2)^(3/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)
/(c*f - Sqrt[c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) + (I*b*d*(c^2*f^2 -
g^2)^(3/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/
(c*f + Sqrt[c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) - (b*d*(c^2*f^2 - g^2
)^(3/2)*Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[
c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) + (b*d*(c^2*f^2 - g^2)^(3/2)*Sqrt
[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^
2])])/(g^4*Sqrt[1 - c^2*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[Sqrt[d + e*x^2]*(a
 + b*ArcSin[c*x])^n, (f + g*x)^m*(d + e*x^2)^(p - 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && IGtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
```

```
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 30

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

Rule 4677

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

Rule 4765

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

Rule 683

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[2*c*d - b*e, 0] &
& IGtQ[p, 0] &&  !(EqQ[m, 3] && NeQ[p, 1])
```

Rule 4757

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.) + (g_.)*(x_) + (h_.)*(x
_)^2)^(p_.))/((d_) + (e_.)*(x_))^2, x_Symbol] :> With[{u = IntHide[(f + g*x
 + h*x^2)^p/(d + e*x)^2, x]}, Dist[(a + b*ArcSin[c*x])^n, u, x] - Dist[b*c*
n, Int[SimplifyIntegrand[(u*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2],
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, h}, x] && IGtQ[n, 0] && IGtQ[p,
 0] && EqQ[e*g - 2*d*h, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

Rule 1654

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :
> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[(f*(d + e*x
)^(m + q - 1)*(a + c*x^2)^(p + 1))/(c*e^(q - 1)*(m + q + 2*p + 1)), x] + Di
st[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + c*x^2)^p*ExpandToSum[c
*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1)*(d + e*x)^q - f*(d + e*x)
^(q - 2)*(a*e^2*(m + q - 1) - c*d^2*(m + q + 2*p + 1) - 2*c*d*e*(m + q + p)
*x), x], x], x] /; GtQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, c, d,
 e, m, p}, x] && PolyQ[Pq, x] && NeQ[c*d^2 + a*e^2, 0] &&  !(EqQ[d, 0] && T
rue) &&  !(IGtQ[m, 0] && RationalQ[a, c, d, e] && (IntegerQ[p] || ILtQ[p +
1/2, 0]))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4799

```
Int[(ArcSin[(c_.)*(x_)]*(b_.) + (a_))^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p
_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p, RFx*(a + b*ArcSin[c*x])
^n, x], x] /; FreeQ[{a, b, c, d, e}, x] && RationalFunctionQ[RFx, x] && IGt
Q[n, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 4797

```
Int[ArcSin[(c_.)*(x_)]^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p_), x_Symbol] :
> With[{u = ExpandIntegrand[(d + e*x^2)^p*ArcSin[c*x]^n, RFx, x]}, Int[u, x
] /; SumQ[u]] /; FreeQ[{c, d, e}, x] && RationalFunctionQ[RFx, x] && IGtQ[n
, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 8

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

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
```

```
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{f+gx}\,dx = \frac{\left(d\sqrt{d-c^2dx^2}\right)\int \frac{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{f+gx}\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d\sqrt{d-c^2dx^2}\right)\int\left(\frac{c^2f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{g^2} - \frac{c^2x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{g} + \frac{\left(-c^2f^2+g^2\right)\sqrt{1-}}{g^2}\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d\left(1-\frac{c^2f^2}{g^2}\right)\sqrt{d-c^2dx^2}\right)\int \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{f+gx}\,dx}{\sqrt{1-c^2x^2}} + \frac{\left(c^2df\sqrt{d-c^2dx^2}\right)\int\sqrt{1-}}{g^2\sqrt{1-}}$$

$$= \frac{c^2dfx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2g^2} + \frac{d\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3g}$$

$$= -\frac{bcdx\sqrt{d-c^2dx^2}}{3g\sqrt{1-c^2x^2}} - \frac{bc^3dfx^2\sqrt{d-c^2dx^2}}{4g^2\sqrt{1-c^2x^2}} + \frac{bc^3dx^3\sqrt{d-c^2dx^2}}{9g\sqrt{1-c^2x^2}} + \frac{c^2dfx\sqrt{d-c^2}}{}$$

$$= -\frac{bcdx\sqrt{d-c^2dx^2}}{3g\sqrt{1-c^2x^2}} - \frac{bc^3dfx^2\sqrt{d-c^2dx^2}}{4g^2\sqrt{1-c^2x^2}} + \frac{bc^3dx^3\sqrt{d-c^2dx^2}}{9g\sqrt{1-c^2x^2}} + \frac{c^2dfx\sqrt{d-c^2}}{}$$

$$= -\frac{bcdx\sqrt{d-c^2dx^2}}{3g\sqrt{1-c^2x^2}} - \frac{bc^3dfx^2\sqrt{d-c^2dx^2}}{4g^2\sqrt{1-c^2x^2}} + \frac{bc^3dx^3\sqrt{d-c^2dx^2}}{9g\sqrt{1-c^2x^2}} + \frac{c^2dfx\sqrt{d-c^2}}{}$$

$$= -\frac{ad(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3} - \frac{bcdx\sqrt{d-c^2dx^2}}{3g\sqrt{1-c^2x^2}} - \frac{bc^3dfx^2\sqrt{d-c^2dx^2}}{4g^2\sqrt{1-c^2x^2}} + \frac{bc}{}$$

$$= -\frac{ad(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3} - \frac{bcdx\sqrt{d-c^2dx^2}}{3g\sqrt{1-c^2x^2}} - \frac{bc^3dfx^2\sqrt{d-c^2dx^2}}{4g^2\sqrt{1-c^2x^2}} + \frac{bc}{}$$

$$= -\frac{ad(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3} - \frac{bcdx\sqrt{d-c^2dx^2}}{3g\sqrt{1-c^2x^2}} - \frac{bc^3dfx^2\sqrt{d-c^2dx^2}}{4g^2\sqrt{1-c^2x^2}} + \frac{bc}{}$$

$$= -\frac{ad(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3} - \frac{bcdx\sqrt{d-c^2dx^2}}{3g\sqrt{1-c^2x^2}} - \frac{bcd\left(1-\frac{c^2f^2}{g^2}\right)x\sqrt{d-c^2dx}}{g\sqrt{1-c^2x^2}}$$

$$= -\frac{ad(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3} - \frac{bcdx\sqrt{d-c^2dx^2}}{3g\sqrt{1-c^2x^2}} - \frac{bcd\left(1-\frac{c^2f^2}{g^2}\right)x\sqrt{d-c^2dx}}{g\sqrt{1-c^2x^2}}$$

$$= -\frac{ad(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3} - \frac{bcdx\sqrt{d-c^2dx^2}}{3g\sqrt{1-c^2x^2}} - \frac{bcd\left(1-\frac{c^2f^2}{g^2}\right)x\sqrt{d-c^2dx}}{g\sqrt{1-c^2x^2}}$$

Mathematica [A] time = 1.46182, size = 507, normalized size = 0.47

$$\frac{d\sqrt{d-c^2dx^2}\left(-\frac{18\left(c^2f^2-g^2\right)\left(-2bc(f+gx)\left(-i\sqrt{c^2f^2-g^2}\left(-ib\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)+ib\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)+\left(a+b\sin^{-1}(cx)\right)\left(\log\left(1+\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}-cf}\right)-\right.\right.\right.\right.}{bcg^2(f+gx)}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(f + g*x),x]
```

```
[Out] (d*Sqrt[d - c^2*d*x^2]*(-9*b*c^3*f*x^2 + 4*b*c*g*x*(-3 + c^2*x^2) + 18*c^2*
f*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) + 12*g*(1 - c^2*x^2)^(3/2)*(a + b
*ArcSin[c*x]) + (9*c*f*(a + b*ArcSin[c*x])^2)/b + (18*(c^2*f^2 - g^2)*(-1 +
 c^2*x^2)*(a + b*ArcSin[c*x])^2)/(b*c*(f + g*x)) - (18*(c^2*f^2 - g^2)*((c^
2*f^2 - g^2)*(a + b*ArcSin[c*x])^2 + c^2*g*x*(f + g*x)*(a + b*ArcSin[c*x])^
2 - 2*b*c*(f + g*x)*(b*c*g*x - g*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) - I*
Sqrt[c^2*f^2 - g^2]*((a + b*ArcSin[c*x])*(Log[1 + (I*E^(I*ArcSin[c*x])*g)/(
-(c*f) + Sqrt[c^2*f^2 - g^2])] - Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqr
t[c^2*f^2 - g^2])]) - I*b*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^
2*f^2 - g^2])] + I*b*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2
 - g^2])]))))/(b*c*g^2*(f + g*x))))/(36*g^2*Sqrt[1 - c^2*x^2])
```

Maple [B] time = 0.305, size = 2742, normalized size = 2.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/(g*x+f),x)
```

```
[Out] b*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)/g^3*arcsin(c*x)*c^2*f^2-1/8*b*(-d*(c
^2*x^2-1))^(1/2)*f*d*c/(c^2*x^2-1)/g^2*(-c^2*x^2+1)^(1/2)-1/9*b*(-d*(c^2*x^
2-1))^(1/2)*d/(c^2*x^2-1)/g*(-c^2*x^2+1)^(1/2)*x^3*c^3+4/3*b*(-d*(c^2*x^2-1
))^(1/2)*d/(c^2*x^2-1)/g*(-c^2*x^2+1)^(1/2)*x*c-1/3*b*(-d*(c^2*x^2-1))^(1/2
)*d/(c^2*x^2-1)/g*arcsin(c*x)*x^4*c^4+5/3*b*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x
^2-1)/g*arcsin(c*x)*x^2*c^2-I*b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)
*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)/g^2*d*dilog(I/(I*c*f+(-c^2*f^2+g^2)^(1/2))*
c*f+1/(I*c*f+(-c^2*f^2+g^2)^(1/2))*(I*c*x+(-c^2*x^2+1)^(1/2))*g+1/(I*c*f+(-
c^2*f^2+g^2)^(1/2))*(-c^2*f^2+g^2)^(1/2))-a/g*d^2/(-d*(c^2*f^2-g^2)/g^2)^(1
```

/2)*ln((-2*d*(c^2*f^2-g^2)/g^2+2*c^2*d*f/g*(x+f/g)+2*(-d*(c^2*f^2-g^2)/g^2)
^(1/2)*(-d*c^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))/(x
+f/g))+1/2*a/g^2*c^2*d*f*(-d*c^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g
^2)/g^2)^(1/2)*x+3/2*a/g^2*c^2*d^2*f/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(
-d*c^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))-a/g^4*d^2*
c^4*f^3/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-d*c^2*(x+f/g)^2+2*c^2*d*f/g*
(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))-a/g^5*d^2/(-d*(c^2*f^2-g^2)/g^2)^(1/2)*
ln((-2*d*(c^2*f^2-g^2)/g^2+2*c^2*d*f/g*(x+f/g)+2*(-d*(c^2*f^2-g^2)/g^2)^(1/
2)*(-d*c^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))/(x+f/g
))*c^4*f^4+2*a/g^3*d^2/(-d*(c^2*f^2-g^2)/g^2)^(1/2)*ln((-2*d*(c^2*f^2-g^2)/
g^2+2*c^2*d*f/g*(x+f/g)+2*(-d*(c^2*f^2-g^2)/g^2)^(1/2)*(-d*c^2*(x+f/g)^2+2*
c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))/(x+f/g))*c^2*f^2-a/g^3*d*(-d*
c^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2)*c^2*f^2-4/3*b*
(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)/g*arcsin(c*x)+1/3*a/g*(-d*c^2*(x+f/g)^
2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(3/2)+I*b*(-c^2*f^2+g^2)^(1/2)*(
-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)/g^4*d*dilog(I/(I*c*f+(
-c^2*f^2+g^2)^(1/2))*c*f+1/(I*c*f+(-c^2*f^2+g^2)^(1/2))*(I*c*x+(-c^2*x^2+1)
^(1/2))*g+1/(I*c*f+(-c^2*f^2+g^2)^(1/2))*(-c^2*f^2+g^2)^(1/2))*c^2*f^2+a/g*
d*(-d*c^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2)-I*b*(-c^
2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)/g^4*
d*dilog(-I/(-I*c*f+(-c^2*f^2+g^2)^(1/2))*c*f-1/(-I*c*f+(-c^2*f^2+g^2)^(1/2)
)*(I*c*x+(-c^2*x^2+1)^(1/2))*g+1/(-I*c*f+(-c^2*f^2+g^2)^(1/2))*(-c^2*f^2+g^
2)^(1/2))*c^2*f^2+b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1
)^(1/2)/(c^2*x^2-1)/g^4*d*arcsin(c*x)*ln((-I*c*f-(I*c*x+(-c^2*x^2+1)^(1/2))
*g+(-c^2*f^2+g^2)^(1/2))/(-I*c*f+(-c^2*f^2+g^2)^(1/2)))*c^2*f^2-b*(-c^2*f^2
+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)/g^4*d*arc
sin(c*x)*ln((I*c*f+(I*c*x+(-c^2*x^2+1)^(1/2))*g+(-c^2*f^2+g^2)^(1/2))/(I*c*
f+(-c^2*f^2+g^2)^(1/2)))*c^2*f^2+I*b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^
(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)/g^2*d*dilog(-I/(-I*c*f+(-c^2*f^2+g^2)^
(1/2))*c*f-1/(-I*c*f+(-c^2*f^2+g^2)^(1/2))*(I*c*x+(-c^2*x^2+1)^(1/2))*g+1/(
-I*c*f+(-c^2*f^2+g^2)^(1/2))*(-c^2*f^2+g^2)^(1/2))-1/2*b*(-d*(c^2*x^2-1))^(
1/2)*f*d*c^2/(c^2*x^2-1)/g^2*arcsin(c*x)*x-b*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*
x^2-1)/g^3*arcsin(c*x)*x^2*c^4*f^2+1/2*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1
)^(1/2)/(c^2*x^2-1)*arcsin(c*x)^2*f^3*d*c^3/g^4-3/4*b*(-d*(c^2*x^2-1))^(1/2
)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*arcsin(c*x)^2*f*d*c/g^2+1/2*b*(-d*(c^2*x^2
-1))^(1/2)*f*d*c^4/(c^2*x^2-1)/g^2*arcsin(c*x)*x^3+1/4*b*(-d*(c^2*x^2-1))^(
1/2)*f*d*c^3/(c^2*x^2-1)/g^2*(-c^2*x^2+1)^(1/2)*x^2-b*(-d*(c^2*x^2-1))^(1/2
)*d/(c^2*x^2-1)/g^3*(-c^2*x^2+1)^(1/2)*x*c^3*f^2-b*(-c^2*f^2+g^2)^(1/2)*(-d
*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)/g^2*d*arcsin(c*x)*ln((-I
*c*f-(I*c*x+(-c^2*x^2+1)^(1/2))*g+(-c^2*f^2+g^2)^(1/2))/(-I*c*f+(-c^2*f^2+g
^2)^(1/2)))+b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2
)/(c^2*x^2-1)/g^2*d*arcsin(c*x)*ln((I*c*f+(I*c*x+(-c^2*x^2+1)^(1/2))*g+(-c^
2*f^2+g^2)^(1/2))/(I*c*f+(-c^2*f^2+g^2)^(1/2)))

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/(g*x+f),x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\left(ac^2dx^2-ad+\left(bc^2dx^2-bd\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2+d}}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/(g*x+f),x, algorithm="fric
as")
```

```
[Out] integral(-(a*c^2*d*x^2 - a*d + (b*c^2*d*x^2 - b*d)*arcsin(c*x))*sqrt(-c^2*d
*x^2 + d)/(g*x + f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(-d\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}\left(a+b\operatorname{asin}\left(cx\right)\right)}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))/(g*x+f),x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))/(f + g*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(-c^2dx^2+d\right)^{\frac{3}{2}}(b\arcsin\left(cx\right)+a)}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/(g*x+f),x, algorithm="giac
")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(3/2)*(b*arcsin(c*x) + a)/(g*x + f), x)
```

3.40 $\int (f+gx)^3 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right) dx$

Optimal. Leaf size=1281

result too large to display

```
[Out] (3*b*d^2*f^2*g*x*Sqrt[d - c^2*d*x^2])/(7*c*Sqrt[1 - c^2*x^2]) + (2*b*d^2*g^
3*x*Sqrt[d - c^2*d*x^2])/(63*c^3*Sqrt[1 - c^2*x^2]) - (25*b*c*d^2*f^3*x^2*S
qrt[d - c^2*d*x^2])/(96*Sqrt[1 - c^2*x^2]) + (15*b*d^2*f*g^2*x^2*Sqrt[d - c
^2*d*x^2])/(256*c*Sqrt[1 - c^2*x^2]) - (3*b*c*d^2*f^2*g*x^3*Sqrt[d - c^2*d*
x^2])/(7*Sqrt[1 - c^2*x^2]) + (b*d^2*g^3*x^3*Sqrt[d - c^2*d*x^2])/(189*c*Sq
rt[1 - c^2*x^2]) + (5*b*c^3*d^2*f^3*x^4*Sqrt[d - c^2*d*x^2])/(96*Sqrt[1 - c
^2*x^2]) - (59*b*c*d^2*f*g^2*x^4*Sqrt[d - c^2*d*x^2])/(256*Sqrt[1 - c^2*x^2
]) + (9*b*c^3*d^2*f^2*g*x^5*Sqrt[d - c^2*d*x^2])/(35*Sqrt[1 - c^2*x^2]) - (
b*c*d^2*g^3*x^5*Sqrt[d - c^2*d*x^2])/(21*Sqrt[1 - c^2*x^2]) + (17*b*c^3*d^2
*f*g^2*x^6*Sqrt[d - c^2*d*x^2])/(96*Sqrt[1 - c^2*x^2]) - (3*b*c^5*d^2*f^2*g
*x^7*Sqrt[d - c^2*d*x^2])/(49*Sqrt[1 - c^2*x^2]) + (19*b*c^3*d^2*g^3*x^7*Sq
rt[d - c^2*d*x^2])/(441*Sqrt[1 - c^2*x^2]) - (3*b*c^5*d^2*f*g^2*x^8*Sqrt[d
- c^2*d*x^2])/(64*Sqrt[1 - c^2*x^2]) - (b*c^5*d^2*g^3*x^9*Sqrt[d - c^2*d*x^
2])/(81*Sqrt[1 - c^2*x^2]) + (b*d^2*f^3*(1 - c^2*x^2)^(5/2)*Sqrt[d - c^2*d*
x^2])/(36*c) + (5*d^2*f^3*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/16 - (
15*d^2*f*g^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(128*c^2) + (15*d^2
*f*g^2*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/64 + (5*d^2*f^3*x*(1 -
c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/24 + (5*d^2*f*g^2*x^3*(1
- c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/16 + (d^2*f^3*x*(1 - c^
2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/6 + (3*d^2*f*g^2*x^3*(1 -
 c^2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/8 - (3*d^2*f^2*g*(1 -
c^2*x^2)^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(7*c^2) - (d^2*g^3*(1 -
 c^2*x^2)^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(7*c^4) + (d^2*g^3*(1
- c^2*x^2)^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(9*c^4) + (5*d^2*f^3*
Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(32*b*c*Sqrt[1 - c^2*x^2]) + (15
*d^2*f*g^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(256*b*c^3*Sqrt[1 - c
^2*x^2])
```

Rubi [A] time = 1.13378, antiderivative size = 1281, normalized size of antiderivative = 1., number of steps used = 30, number of rules used = 18, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.581, Rules used = {4777, 4763, 4649, 4647, 4641, 30, 14, 261, 4677, 194, 4699, 4697, 4707, 266, 43, 4689, 12, 373}

$$-\frac{bc^5d^2g^3\sqrt{d-c^2dx^2}x^9}{81\sqrt{1-c^2x^2}}-\frac{3bc^5d^2fg^2\sqrt{d-c^2dx^2}x^8}{64\sqrt{1-c^2x^2}}+\frac{19bc^3d^2g^3\sqrt{d-c^2dx^2}x^7}{441\sqrt{1-c^2x^2}}-\frac{3bc^5d^2f^2g\sqrt{d-c^2dx^2}x^7}{49\sqrt{1-c^2x^2}}+\frac{17bc^3d^2fg^2\sqrt{}}{96\sqrt{1-}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (3*b*d^2*f^2*g*x*Sqrt[d - c^2*d*x^2])/(7*c*Sqrt[1 - c^2*x^2]) + (2*b*d^2*g^
3*x*Sqrt[d - c^2*d*x^2])/(63*c^3*Sqrt[1 - c^2*x^2]) - (25*b*c*d^2*f^3*x^2*S
qrt[d - c^2*d*x^2])/(96*Sqrt[1 - c^2*x^2]) + (15*b*d^2*f*g^2*x^2*Sqrt[d - c
^2*d*x^2])/(256*c*Sqrt[1 - c^2*x^2]) - (3*b*c*d^2*f^2*g*x^3*Sqrt[d - c^2*d*
x^2])/(7*Sqrt[1 - c^2*x^2]) + (b*d^2*g^3*x^3*Sqrt[d - c^2*d*x^2])/(189*c*Sq
rt[1 - c^2*x^2]) + (5*b*c^3*d^2*f^3*x^4*Sqrt[d - c^2*d*x^2])/(96*Sqrt[1 - c
^2*x^2]) - (59*b*c*d^2*f*g^2*x^4*Sqrt[d - c^2*d*x^2])/(256*Sqrt[1 - c^2*x^2
]) + (9*b*c^3*d^2*f^2*g*x^5*Sqrt[d - c^2*d*x^2])/(35*Sqrt[1 - c^2*x^2]) - (
b*c*d^2*g^3*x^5*Sqrt[d - c^2*d*x^2])/(21*Sqrt[1 - c^2*x^2]) + (17*b*c^3*d^2
*f*g^2*x^6*Sqrt[d - c^2*d*x^2])/(96*Sqrt[1 - c^2*x^2]) - (3*b*c^5*d^2*f^2*g
*x^7*Sqrt[d - c^2*d*x^2])/(49*Sqrt[1 - c^2*x^2]) + (19*b*c^3*d^2*g^3*x^7*Sq
rt[d - c^2*d*x^2])/(441*Sqrt[1 - c^2*x^2]) - (3*b*c^5*d^2*f*g^2*x^8*Sqrt[d
- c^2*d*x^2])/(64*Sqrt[1 - c^2*x^2]) - (b*c^5*d^2*g^3*x^9*Sqrt[d - c^2*d*x^
2])/(81*Sqrt[1 - c^2*x^2]) + (b*d^2*f^3*(1 - c^2*x^2)^(5/2)*Sqrt[d - c^2*d*
x^2])/(36*c) + (5*d^2*f^3*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/16 - (
15*d^2*f*g^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(128*c^2) + (15*d^2
*f*g^2*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/64 + (5*d^2*f^3*x*(1 -
c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/24 + (5*d^2*f*g^2*x^3*(1
- c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/16 + (d^2*f^3*x*(1 - c^
2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/6 + (3*d^2*f*g^2*x^3*(1 -
 c^2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/8 - (3*d^2*f^2*g*(1 -
c^2*x^2)^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(7*c^2) - (d^2*g^3*(1 -
 c^2*x^2)^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(7*c^4) + (d^2*g^3*(1
- c^2*x^2)^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(9*c^4) + (5*d^2*f^3*
Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(32*b*c*Sqrt[1 - c^2*x^2]) + (15
*d^2*f*g^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(256*b*c^3*Sqrt[1 - c
^2*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
```

```
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 30

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

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 261

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

Rule 4677

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

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

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

Rule 266

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

Rule 43

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

Rule 4689

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[d^p*(a + b*
ArcSin[c*x]), u, x] - Dist[b*c*d^p, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^
2], x], x], x]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && Intege
rQ[p - 1/2] && (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0]) && NeQ[p, -
2^(-1)] && GtQ[d, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 373

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.), x_Symbol
] :> Int[ExpandIntegrand[(a + b*x^n)^p*(c + d*x^n)^q, x], x] /; FreeQ[{a, b
, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[p, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int (f+gx)^3 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right) dx = \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int (f+gx)^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int \left(f^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)+3f^2gx\left(1-c^2x\right.\right.}{}$$

$$= \frac{\left(d^2f^3\sqrt{d-c^2dx^2}\right)\int \left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)dx}{\sqrt{1-c^2x^2}} + \frac{\left(3d^2f^2g\sqrt{d-\right.}{}$$

$$= \frac{1}{6}d^2f^3x\left(1-c^2x^2\right)^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{3}{8}d^2fg^2x^3\left(1-c^2x\right.$$

$$= \frac{bd^2f^3\left(1-c^2x^2\right)^{5/2}\sqrt{d-c^2dx^2}}{36c}+\frac{5}{24}d^2f^3x\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+\right.$$

$$= \frac{3bd^2f^2gx\sqrt{d-c^2dx^2}}{7c\sqrt{1-c^2x^2}}-\frac{3bcd^2f^2gx^3\sqrt{d-c^2dx^2}}{7\sqrt{1-c^2x^2}}+\frac{9bc^3d^2f^2gx^5\sqrt{d-c}}{35\sqrt{1-c^2x^2}}$$

$$= \frac{3bd^2f^2gx\sqrt{d-c^2dx^2}}{7c\sqrt{1-c^2x^2}}+\frac{2bd^2g^3x\sqrt{d-c^2dx^2}}{63c^3\sqrt{1-c^2x^2}}-\frac{25bcd^2f^3x^2\sqrt{d-c^2dx^2}}{96\sqrt{1-c^2x^2}}$$

$$= \frac{3bd^2f^2gx\sqrt{d-c^2dx^2}}{7c\sqrt{1-c^2x^2}}+\frac{2bd^2g^3x\sqrt{d-c^2dx^2}}{63c^3\sqrt{1-c^2x^2}}-\frac{25bcd^2f^3x^2\sqrt{d-c^2dx^2}}{96\sqrt{1-c^2x^2}}$$

Mathematica [A] time = 1.02849, size = 587, normalized size = 0.46

$$\frac{d^2\sqrt{d-c^2dx^2}\left(99225a^2\left(8c^3f^3+3cfg^2\right)+630ab\sqrt{1-c^2x^2}\left(16c^8x^5\left(216f^2gx+84f^3+189fg^2x^2+56g^3x^3\right)-8c^6x^3\left(12\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d^2*Sqrt[d - c^2*d*x^2]*(99225*a^2*(8*c^3*f^3 + 3*c*f*g^2) + 630*a*b*Sqrt[
1 - c^2*x^2]*(-256*g^3 - c^2*g*(3456*f^2 + 945*f*g*x + 128*g^2*x^2) + 16*c^
8*x^5*(84*f^3 + 216*f^2*g*x + 189*f*g^2*x^2 + 56*g^3*x^3) - 8*c^6*x^3*(546*
f^3 + 1296*f^2*g*x + 1071*f*g^2*x^2 + 304*g^3*x^3) + 6*c^4*x*(924*f^3 + 172
8*f^2*g*x + 1239*f*g^2*x^2 + 320*g^3*x^3)) + b^2*c*x*(161280*g^3 + 105*c^2*
g*(20736*f^2 + 2835*f*g*x + 256*g^2*x^2) - 945*c^4*x*(1848*f^3 + 2304*f^2*g
```

```
*x + 1239*f*g^2*x^2 + 256*g^3*x^3) + 72*c^6*x^3*(9555*f^3 + 18144*f^2*g*x +
 12495*f*g^2*x^2 + 3040*g^3*x^3) - 20*c^8*x^5*(7056*f^3 + 15552*f^2*g*x + 1
1907*f*g^2*x^2 + 3136*g^3*x^3)) + 630*b*(315*a*(8*c^3*f^3 + 3*c*f*g^2) + b*
Sqrt[1 - c^2*x^2]*(-256*g^3 - c^2*g*(3456*f^2 + 945*f*g*x + 128*g^2*x^2) +
16*c^8*x^5*(84*f^3 + 216*f^2*g*x + 189*f*g^2*x^2 + 56*g^3*x^3) - 8*c^6*x^3*
(546*f^3 + 1296*f^2*g*x + 1071*f*g^2*x^2 + 304*g^3*x^3) + 6*c^4*x*(924*f^3
+ 1728*f^2*g*x + 1239*f*g^2*x^2 + 320*g^3*x^3)))*ArcSin[c*x] + 99225*b^2*c*
f*(8*c^2*f^2 + 3*g^2)*ArcSin[c*x]^2))/(5080320*b*c^4*Sqrt[1 - c^2*x^2])
```

Maple [A] time = 0.866, size = 2236, normalized size = 1.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/6*a*f^3*x*(-c^2*d*x^2+d)^(5/2)-12/7*b*(-d*(c^2*x^2-1))^(1/2)*g*d^2/(c^2*x
^2-1)*arcsin(c*x)*x^2*f^2-133/128*b*(-d*(c^2*x^2-1))^(1/2)*f*d^2/(c^2*x^2-1
)*arcsin(c*x)*x^3*g^2-359/24576*b*(-d*(c^2*x^2-1))^(1/2)*f*d^2/c^3/(c^2*x^2
-1)*(-c^2*x^2+1)^(1/2)*g^2+1/36*b*(-d*(c^2*x^2-1))^(1/2)*f^3*d^2*c^5/(c^2*x
^2-1)*(-c^2*x^2+1)^(1/2)*x^6+1/81*b*(-d*(c^2*x^2-1))^(1/2)*g^3*d^2*c^5/(c^2
*x^2-1)*(-c^2*x^2+1)^(1/2)*x^9-19/441*b*(-d*(c^2*x^2-1))^(1/2)*g^3*d^2*c^3/
(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^7+1/21*b*(-d*(c^2*x^2-1))^(1/2)*g^3*d^2*c/
(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^5-1/189*b*(-d*(c^2*x^2-1))^(1/2)*g^3*d^2/c
/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^3-2/63*b*(-d*(c^2*x^2-1))^(1/2)*g^3*d^2/c
^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-13/96*b*(-d*(c^2*x^2-1))^(1/2)*f^3*d^2*
c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4+11/32*b*(-d*(c^2*x^2-1))^(1/2)*f^3*d
^2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2+3/7*b*(-d*(c^2*x^2-1))^(1/2)*g*d^2/
c^2/(c^2*x^2-1)*arcsin(c*x)*f^2+1/6*b*(-d*(c^2*x^2-1))^(1/2)*f^3*d^2*c^6/(c
^2*x^2-1)*arcsin(c*x)*x^7-5/32*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/
c/(c^2*x^2-1)*arcsin(c*x)^2*f^3*d^2+1/9*b*(-d*(c^2*x^2-1))^(1/2)*g^3*d^2*c^
6/(c^2*x^2-1)*arcsin(c*x)*x^10-26/63*b*(-d*(c^2*x^2-1))^(1/2)*g^3*d^2*c^4/(
c^2*x^2-1)*arcsin(c*x)*x^8+34/63*b*(-d*(c^2*x^2-1))^(1/2)*g^3*d^2*c^2/(c^2*
x^2-1)*arcsin(c*x)*x^6-1/63*b*(-d*(c^2*x^2-1))^(1/2)*g^3*d^2/c^2/(c^2*x^2-1
)*arcsin(c*x)*x^2+2/63*b*(-d*(c^2*x^2-1))^(1/2)*g^3*d^2/c^4/(c^2*x^2-1)*arc
sin(c*x)-299/2304*b*(-d*(c^2*x^2-1))^(1/2)*f^3*d^2/c/(c^2*x^2-1)*(-c^2*x^2+
1)^(1/2)-16/63*b*(-d*(c^2*x^2-1))^(1/2)*g^3*d^2/(c^2*x^2-1)*arcsin(c*x)*x^4
-11/16*b*(-d*(c^2*x^2-1))^(1/2)*f^3*d^2/(c^2*x^2-1)*arcsin(c*x)*x-3/8*a*f*g
^2*x*(-c^2*d*x^2+d)^(7/2)/c^2/d+5/64*a*f*g^2/c^2*d*x*(-c^2*d*x^2+d)^(3/2)+1
5/128*a*f*g^2/c^2*d^2*x*(-c^2*d*x^2+d)^(1/2)+15/128*a*f*g^2/c^2*d^3/(c^2*d)
^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-2/63*a*g^3/d/c^4*(-c^2*
```

```
d*x^2+d)^(7/2)+5/16*a*f^3*d^2*x*(-c^2*d*x^2+d)^(1/2)+5/16*a*f^3*d^3/(c^2*d)
^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+5/24*a*f^3*d*x*(-c^2*d*
x^2+d)^(3/2)-17/24*b*(-d*(c^2*x^2-1))^(1/2)*f^3*d^2*c^4/(c^2*x^2-1)*arcsin(
c*x)*x^5+59/48*b*(-d*(c^2*x^2-1))^(1/2)*f^3*d^2*c^2/(c^2*x^2-1)*arcsin(c*x)
*x^3+127/64*b*(-d*(c^2*x^2-1))^(1/2)*f*d^2*c^2/(c^2*x^2-1)*arcsin(c*x)*x^5*
g^2+59/256*b*(-d*(c^2*x^2-1))^(1/2)*f*d^2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*
x^4*g^2-15/256*b*(-d*(c^2*x^2-1))^(1/2)*f*d^2/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1
/2)*x^2*g^2+3/49*b*(-d*(c^2*x^2-1))^(1/2)*g*d^2*c^5/(c^2*x^2-1)*(-c^2*x^2+1
)^(1/2)*x^7*f^2-9/35*b*(-d*(c^2*x^2-1))^(1/2)*g*d^2*c^3/(c^2*x^2-1)*(-c^2*x
^2+1)^(1/2)*x^5*f^2+3/7*b*(-d*(c^2*x^2-1))^(1/2)*g*d^2*c/(c^2*x^2-1)*(-c^2*
x^2+1)^(1/2)*x^3*f^2-3/7*b*(-d*(c^2*x^2-1))^(1/2)*g*d^2/c/(c^2*x^2-1)*(-c^2
*x^2+1)^(1/2)*x*f^2+3/64*b*(-d*(c^2*x^2-1))^(1/2)*f*g^2*d^2*c^5/(c^2*x^2-1)
*(-c^2*x^2+1)^(1/2)*x^8-17/96*b*(-d*(c^2*x^2-1))^(1/2)*f*g^2*d^2*c^3/(c^2*x
^2-1)*(-c^2*x^2+1)^(1/2)*x^6+15/128*b*(-d*(c^2*x^2-1))^(1/2)*f*d^2/c^2/(c^2
*x^2-1)*arcsin(c*x)*x*g^2+3/7*b*(-d*(c^2*x^2-1))^(1/2)*g*d^2*c^6/(c^2*x^2-1
)*arcsin(c*x)*x^8*f^2-12/7*b*(-d*(c^2*x^2-1))^(1/2)*g*d^2*c^4/(c^2*x^2-1)*a
rcsin(c*x)*x^6*f^2+18/7*b*(-d*(c^2*x^2-1))^(1/2)*g*d^2*c^2/(c^2*x^2-1)*arcs
in(c*x)*x^4*f^2+3/8*b*(-d*(c^2*x^2-1))^(1/2)*f*g^2*d^2*c^6/(c^2*x^2-1)*arcs
in(c*x)*x^9-23/16*b*(-d*(c^2*x^2-1))^(1/2)*f*g^2*d^2*c^4/(c^2*x^2-1)*arcsin
(c*x)*x^7-15/256*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/(c^2*x^2-1
)*arcsin(c*x)^2*f*d^2*g^2-1/9*a*g^3*x^2*(-c^2*d*x^2+d)^(7/2)/c^2/d+1/16*a*f
*g^2/c^2*x*(-c^2*d*x^2+d)^(5/2)-3/7*a*f^2*g*(-c^2*d*x^2+d)^(7/2)/c^2/d
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(ac^4d^2g^3x^7 + 3\,ac^4d^2fg^2x^6 + 3\,ad^2f^2gx + ad^2f^3 + \left(3\,ac^4d^2f^2g - 2\,ac^2d^2g^3\right)x^5 + \left(ac^4d^2f^3 - 6\,ac^2d^2fg^2\right)x^4 - \right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="fr
icas")
```

```
[Out] integral((a*c^4*d^2*g^3*x^7 + 3*a*c^4*d^2*f*g^2*x^6 + 3*a*d^2*f^2*g*x + a*d
^2*f^3 + (3*a*c^4*d^2*f^2*g - 2*a*c^2*d^2*g^3)*x^5 + (a*c^4*d^2*f^3 - 6*a*c
^2*d^2*f*g^2)*x^4 - (6*a*c^2*d^2*f^2*g - a*d^2*g^3)*x^3 - (2*a*c^2*d^2*f^3
- 3*a*d^2*f*g^2)*x^2 + (b*c^4*d^2*g^3*x^7 + 3*b*c^4*d^2*f*g^2*x^6 + 3*b*d^2
*f^2*g*x + b*d^2*f^3 + (3*b*c^4*d^2*f^2*g - 2*b*c^2*d^2*g^3)*x^5 + (b*c^4*d
^2*f^3 - 6*b*c^2*d^2*f*g^2)*x^4 - (6*b*c^2*d^2*f^2*g - b*d^2*g^3)*x^3 - (2*
b*c^2*d^2*f^3 - 3*b*d^2*f*g^2)*x^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(-c^2dx^2+d\right)^{\frac{5}{2}}\left(gx+f\right)^3\left(b\arcsin\left(cx\right)+a\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="gi
ac")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(5/2)*(g*x + f)^3*(b*arcsin(c*x) + a), x)
```

3.41 $\int (f+gx)^2 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=940

$$-\frac{bc^5d^2g^2\sqrt{d-c^2dx^2}x^8}{64\sqrt{1-c^2x^2}}-\frac{2bc^5d^2fg\sqrt{d-c^2dx^2}x^7}{49\sqrt{1-c^2x^2}}+\frac{17bc^3d^2g^2\sqrt{d-c^2dx^2}x^6}{288\sqrt{1-c^2x^2}}+\frac{6bc^3d^2fg\sqrt{d-c^2dx^2}x^5}{35\sqrt{1-c^2x^2}}+\frac{5bc^3d^2f^2\sqrt{d-}}{96\sqrt{1-c}}$$

```
[Out] (2*b*d^2*f*g*x*Sqrt[d - c^2*d*x^2])/(7*c*Sqrt[1 - c^2*x^2]) - (25*b*c*d^2*f
^2*x^2*Sqrt[d - c^2*d*x^2])/(96*Sqrt[1 - c^2*x^2]) + (5*b*d^2*g^2*x^2*Sqrt[
d - c^2*d*x^2])/(256*c*Sqrt[1 - c^2*x^2]) - (2*b*c*d^2*f*g*x^3*Sqrt[d - c^2
*d*x^2])/(7*Sqrt[1 - c^2*x^2]) + (5*b*c^3*d^2*f^2*x^4*Sqrt[d - c^2*d*x^2])/
(96*Sqrt[1 - c^2*x^2]) - (59*b*c*d^2*g^2*x^4*Sqrt[d - c^2*d*x^2])/(768*Sqrt
[1 - c^2*x^2]) + (6*b*c^3*d^2*f*g*x^5*Sqrt[d - c^2*d*x^2])/(35*Sqrt[1 - c^2
*x^2]) + (17*b*c^3*d^2*g^2*x^6*Sqrt[d - c^2*d*x^2])/(288*Sqrt[1 - c^2*x^2])
 - (2*b*c^5*d^2*f*g*x^7*Sqrt[d - c^2*d*x^2])/(49*Sqrt[1 - c^2*x^2]) - (b*c^
5*d^2*g^2*x^8*Sqrt[d - c^2*d*x^2])/(64*Sqrt[1 - c^2*x^2]) + (b*d^2*f^2*(1 -
 c^2*x^2)^(5/2)*Sqrt[d - c^2*d*x^2])/(36*c) + (5*d^2*f^2*x*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x]))/16 - (5*d^2*g^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSi
n[c*x]))/(128*c^2) + (5*d^2*g^2*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])
)/64 + (5*d^2*f^2*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/
24 + (5*d^2*g^2*x^3*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/
48 + (d^2*f^2*x*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/6
+ (d^2*g^2*x^3*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/8 -
 (2*d^2*f*g*(1 - c^2*x^2)^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(7*c^2
) + (5*d^2*f^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(32*b*c*Sqrt[1 -
c^2*x^2]) + (5*d^2*g^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(256*b*c^
3*Sqrt[1 - c^2*x^2])
```

Rubi [A] time = 0.919956, antiderivative size = 940, normalized size of antiderivative = 1., number of steps used = 26, number of rules used = 15, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.484, Rules used = {4777, 4763, 4649, 4647, 4641, 30, 14, 261, 4677, 194, 4699, 4697, 4707, 266, 43}

$$-\frac{bc^5d^2g^2\sqrt{d-c^2dx^2}x^8}{64\sqrt{1-c^2x^2}}-\frac{2bc^5d^2fg\sqrt{d-c^2dx^2}x^7}{49\sqrt{1-c^2x^2}}+\frac{17bc^3d^2g^2\sqrt{d-c^2dx^2}x^6}{288\sqrt{1-c^2x^2}}+\frac{6bc^3d^2fg\sqrt{d-c^2dx^2}x^5}{35\sqrt{1-c^2x^2}}+\frac{5bc^3d^2f^2\sqrt{d-}}{96\sqrt{1-c}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (2*b*d^2*f*g*x*Sqrt[d - c^2*d*x^2])/(7*c*Sqrt[1 - c^2*x^2]) - (25*b*c*d^2*f
^2*x^2*Sqrt[d - c^2*d*x^2])/(96*Sqrt[1 - c^2*x^2]) + (5*b*d^2*g^2*x^2*Sqrt[
d - c^2*d*x^2])/(256*c*Sqrt[1 - c^2*x^2]) - (2*b*c*d^2*f*g*x^3*Sqrt[d - c^2
*d*x^2])/(7*Sqrt[1 - c^2*x^2]) + (5*b*c^3*d^2*f^2*x^4*Sqrt[d - c^2*d*x^2])/
(96*Sqrt[1 - c^2*x^2]) - (59*b*c*d^2*g^2*x^4*Sqrt[d - c^2*d*x^2])/(768*Sqrt
[1 - c^2*x^2]) + (6*b*c^3*d^2*f*g*x^5*Sqrt[d - c^2*d*x^2])/(35*Sqrt[1 - c^2
*x^2]) + (17*b*c^3*d^2*g^2*x^6*Sqrt[d - c^2*d*x^2])/(288*Sqrt[1 - c^2*x^2])
 - (2*b*c^5*d^2*f*g*x^7*Sqrt[d - c^2*d*x^2])/(49*Sqrt[1 - c^2*x^2]) - (b*c^
5*d^2*g^2*x^8*Sqrt[d - c^2*d*x^2])/(64*Sqrt[1 - c^2*x^2]) + (b*d^2*f^2*(1 -
 c^2*x^2)^(5/2)*Sqrt[d - c^2*d*x^2])/(36*c) + (5*d^2*f^2*x*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x]))/16 - (5*d^2*g^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSi
n[c*x]))/(128*c^2) + (5*d^2*g^2*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])
)/64 + (5*d^2*f^2*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/
24 + (5*d^2*g^2*x^3*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/
48 + (d^2*f^2*x*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/6
+ (d^2*g^2*x^3*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/8 -
 (2*d^2*f*g*(1 - c^2*x^2)^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(7*c^2
) + (5*d^2*f^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(32*b*c*Sqrt[1 -
c^2*x^2]) + (5*d^2*g^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(256*b*c^
3*Sqrt[1 - c^2*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
```

```
GtQ[p, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 30

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

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 261

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

Rule 4677

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

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

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

Rule 266

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

Rule 43

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

```
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\int (f+gx)^2 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right) dx = \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int (f+gx)^2 \left(1-c^2x^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right) dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int \left(f^2\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)+2fgx\left(1-c^2x^2\right.\right.}{\sqrt{1-c^2x}}$$

$$= \frac{\left(d^2f^2\sqrt{d-c^2dx^2}\right)\int \left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right) dx}{\sqrt{1-c^2x^2}} + \frac{\left(2d^2fg\sqrt{d-\right.}{}$$

$$= \frac{1}{6}d^2f^2x\left(1-c^2x^2\right)^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{8}d^2g^2x^3\left(1-c^2x^2\right)$$

$$= \frac{bd^2f^2\left(1-c^2x^2\right)^{5/2}\sqrt{d-c^2dx^2}}{36c}+\frac{5}{24}d^2f^2x\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+\right.$$

$$= \frac{2bd^2fgx\sqrt{d-c^2dx^2}}{7c\sqrt{1-c^2x^2}}-\frac{2bcd^2fgx^3\sqrt{d-c^2dx^2}}{7\sqrt{1-c^2x^2}}+\frac{6bc^3d^2fgx^5\sqrt{d-c^2dx}}{35\sqrt{1-c^2x^2}}$$

$$= \frac{2bd^2fgx\sqrt{d-c^2dx^2}}{7c\sqrt{1-c^2x^2}}-\frac{25bcd^2f^2x^2\sqrt{d-c^2dx^2}}{96\sqrt{1-c^2x^2}}-\frac{2bcd^2fgx^3\sqrt{d-c^2dx}}{7\sqrt{1-c^2x^2}}$$

$$= \frac{2bd^2fgx\sqrt{d-c^2dx^2}}{7c\sqrt{1-c^2x^2}}-\frac{25bcd^2f^2x^2\sqrt{d-c^2dx^2}}{96\sqrt{1-c^2x^2}}+\frac{5bd^2g^2x^2\sqrt{d-c^2dx^2}}{256c\sqrt{1-c^2x^2}}$$

Mathematica [A] time = 0.729484, size = 390, normalized size = 0.41

$$\frac{d^2\sqrt{d-c^2dx^2}\left(11025a^2\left(8c^2f^2+g^2\right)+210abc\sqrt{1-c^2x^2}\left(56c^2f^2x\left(8c^4x^4-26c^2x^2+33\right)+768fg\left(c^2x^2-1\right)^3+7g^2x\left(4\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d^2*Sqrt[d - c^2*d*x^2]*(11025*a^2*(8*c^2*f^2 + g^2) + b^2*c^2*x*(-1960*c^
2*f^2*x*(99 - 39*c^2*x^2 + 8*c^4*x^4) - 4608*f*g*(-35 + 35*c^2*x^2 - 21*c^4
*x^4 + 5*c^6*x^6) - 245*g^2*x*(-45 + 177*c^2*x^2 - 136*c^4*x^4 + 36*c^6*x^6
```

```
)) + 210*a*b*c*Sqrt[1 - c^2*x^2]*(768*f*g*(-1 + c^2*x^2)^3 + 56*c^2*f^2*x*(
33 - 26*c^2*x^2 + 8*c^4*x^4) + 7*g^2*x*(-15 + 118*c^2*x^2 - 136*c^4*x^4 + 4
8*c^6*x^6)) + 210*b*(105*a*(8*c^2*f^2 + g^2) + b*c*Sqrt[1 - c^2*x^2]*(768*f
*g*(-1 + c^2*x^2)^3 + 56*c^2*f^2*x*(33 - 26*c^2*x^2 + 8*c^4*x^4) + 7*g^2*x*
(-15 + 118*c^2*x^2 - 136*c^4*x^4 + 48*c^6*x^6)))*ArcSin[c*x] + 11025*b^2*(8
*c^2*f^2 + g^2)*ArcSin[c*x]^2))/(564480*b*c^3*Sqrt[1 - c^2*x^2])
```

Maple [A] time = 0.664, size = 1633, normalized size = 1.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] -8/7*b*(-d*(c^2*x^2-1))^(1/2)*f*g*d^2/(c^2*x^2-1)*arcsin(c*x)*x^2+1/6*b*(-d
*(c^2*x^2-1))^(1/2)*d^2*c^6/(c^2*x^2-1)*arcsin(c*x)*x^7*f^2-5/32*b*(-d*(c^2
*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcsin(c*x)^2*d^2*f^2-5/256
*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/(c^2*x^2-1)*arcsin(c*x)^2*
d^2*g^2-17/24*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^4/(c^2*x^2-1)*arcsin(c*x)*x^5*
f^2+127/192*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^2/(c^2*x^2-1)*arcsin(c*x)*x^5*g^
2+59/48*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^2/(c^2*x^2-1)*arcsin(c*x)*x^3*f^2+5/
128*b*(-d*(c^2*x^2-1))^(1/2)*d^2/c^2/(c^2*x^2-1)*arcsin(c*x)*x*g^2+2/7*b*(-
d*(c^2*x^2-1))^(1/2)*f*g*d^2/c^2/(c^2*x^2-1)*arcsin(c*x)-2/7*a*f*g*(-c^2*d*
x^2+d)^(7/2)/c^2/d-1/8*a*g^2*x*(-c^2*d*x^2+d)^(7/2)/c^2/d+5/192*a*g^2/c^2*d
*x*(-c^2*d*x^2+d)^(3/2)+5/128*a*g^2/c^2*d^2*x*(-c^2*d*x^2+d)^(1/2)+5/128*a*
g^2/c^2*d^3/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+1/8*
b*(-d*(c^2*x^2-1))^(1/2)*g^2*d^2*c^6/(c^2*x^2-1)*arcsin(c*x)*x^9-23/48*b*(-
d*(c^2*x^2-1))^(1/2)*g^2*d^2*c^4/(c^2*x^2-1)*arcsin(c*x)*x^7-13/96*b*(-d*(c
^2*x^2-1))^(1/2)*d^2*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4*f^2+59/768*b*(-
d*(c^2*x^2-1))^(1/2)*d^2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4*g^2+11/32*b*(
-d*(c^2*x^2-1))^(1/2)*d^2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2*f^2-5/256*b*
(-d*(c^2*x^2-1))^(1/2)*d^2/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2*g^2+1/64*b*
(-d*(c^2*x^2-1))^(1/2)*g^2*d^2*c^5/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^8-17/28
8*b*(-d*(c^2*x^2-1))^(1/2)*g^2*d^2*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^6+1
/36*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^5/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^6*f^2
+1/48*a*g^2/c^2*x*(-c^2*d*x^2+d)^(5/2)+1/6*a*f^2*x*(-c^2*d*x^2+d)^(5/2)+2/7
*b*(-d*(c^2*x^2-1))^(1/2)*f*g*d^2*c^6/(c^2*x^2-1)*arcsin(c*x)*x^8-8/7*b*(-d
*(c^2*x^2-1))^(1/2)*f*g*d^2*c^4/(c^2*x^2-1)*arcsin(c*x)*x^6+12/7*b*(-d*(c^2
*x^2-1))^(1/2)*f*g*d^2*c^2/(c^2*x^2-1)*arcsin(c*x)*x^4+2/49*b*(-d*(c^2*x^2-
1))^(1/2)*f*g*d^2*c^5/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^7-6/35*b*(-d*(c^2*x^
2-1))^(1/2)*f*g*d^2*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^5+2/7*b*(-d*(c^2*x
```

```
^2-1))^(1/2)*f*g*d^2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^3-2/7*b*(-d*(c^2*x^
2-1))^(1/2)*f*g*d^2/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+5/16*a*f^2*d^2*x*(-c
^2*d*x^2+d)^(1/2)+5/16*a*f^2*d^3/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2
*d*x^2+d)^(1/2))+5/24*a*f^2*d*x*(-c^2*d*x^2+d)^(3/2)-299/2304*b*(-d*(c^2*x^
2-1))^(1/2)*d^2/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*f^2-359/73728*b*(-d*(c^2*x
^2-1))^(1/2)*d^2/c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*g^2-133/384*b*(-d*(c^2*
x^2-1))^(1/2)*d^2/(c^2*x^2-1)*arcsin(c*x)*x^3*g^2-11/16*b*(-d*(c^2*x^2-1))^
(1/2)*d^2/(c^2*x^2-1)*arcsin(c*x)*x*f^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\Big(\big(ac^4d^2g^2x^6 + 2\,ac^4d^2fgx^5 - 4\,ac^2d^2fgx^3 + 2\,ad^2fgx + ad^2f^2 + \big(ac^4d^2f^2 - 2\,ac^2d^2g^2\big)x^4 - \big(2\,ac^2d^2f^2 - ad^2g^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="fr
icas")
```

```
[Out] integral((a*c^4*d^2*g^2*x^6 + 2*a*c^4*d^2*f*g*x^5 - 4*a*c^2*d^2*f*g*x^3 + 2
*a*d^2*f*g*x + a*d^2*f^2 + (a*c^4*d^2*f^2 - 2*a*c^2*d^2*g^2)*x^4 - (2*a*c^2
*d^2*f^2 - a*d^2*g^2)*x^2 + (b*c^4*d^2*g^2*x^6 + 2*b*c^4*d^2*f*g*x^5 - 4*b*
c^2*d^2*f*g*x^3 + 2*b*d^2*f*g*x + b*d^2*f^2 + (b*c^4*d^2*f^2 - 2*b*c^2*d^2*
g^2)*x^4 - (2*b*c^2*d^2*f^2 - b*d^2*g^2)*x^2)*arcsin(c*x))*sqrt(-c^2*d*x^2
+ d), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(-c^2dx^2+d\right)^{\frac{5}{2}}\left(gx+f\right)^2\left(b\arcsin\left(cx\right)+a\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="gi
ac")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(5/2)*(g*x + f)^2*(b*arcsin(c*x) + a), x)
```

3.42 $\int (f+gx)\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=517

$$\frac{1}{6}d^2fx\left(1-c^2x^2\right)^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{5}{16}d^2fx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{5}{24}d^2fx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}$$

```
[Out] (b*d^2*g*x*Sqrt[d - c^2*d*x^2])/(7*c*Sqrt[1 - c^2*x^2]) - (25*b*c*d^2*f*x^2
*Sqrt[d - c^2*d*x^2])/(96*Sqrt[1 - c^2*x^2]) - (b*c*d^2*g*x^3*Sqrt[d - c^2*
d*x^2])/(7*Sqrt[1 - c^2*x^2]) + (5*b*c^3*d^2*f*x^4*Sqrt[d - c^2*d*x^2])/(96
*Sqrt[1 - c^2*x^2]) + (3*b*c^3*d^2*g*x^5*Sqrt[d - c^2*d*x^2])/(35*Sqrt[1 -
c^2*x^2]) - (b*c^5*d^2*g*x^7*Sqrt[d - c^2*d*x^2])/(49*Sqrt[1 - c^2*x^2]) +
(b*d^2*f*(1 - c^2*x^2)^(5/2)*Sqrt[d - c^2*d*x^2])/(36*c) + (5*d^2*f*x*Sqrt[
d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/16 + (5*d^2*f*x*(1 - c^2*x^2)*Sqrt[d -
c^2*d*x^2]*(a + b*ArcSin[c*x]))/24 + (d^2*f*x*(1 - c^2*x^2)^2*Sqrt[d - c^2*
d*x^2]*(a + b*ArcSin[c*x]))/6 - (d^2*g*(1 - c^2*x^2)^3*Sqrt[d - c^2*d*x^2]*
(a + b*ArcSin[c*x]))/(7*c^2) + (5*d^2*f*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c
*x])^2)/(32*b*c*Sqrt[1 - c^2*x^2])
```

Rubi [A] time = 0.394001, antiderivative size = 517, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.345, Rules used = {4777, 4763, 4649, 4647, 4641, 30, 14, 261, 4677, 194}

$$\frac{1}{6}d^2fx\left(1-c^2x^2\right)^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{5}{16}d^2fx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{5}{24}d^2fx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*d^2*g*x*Sqrt[d - c^2*d*x^2])/(7*c*Sqrt[1 - c^2*x^2]) - (25*b*c*d^2*f*x^2
*Sqrt[d - c^2*d*x^2])/(96*Sqrt[1 - c^2*x^2]) - (b*c*d^2*g*x^3*Sqrt[d - c^2*
d*x^2])/(7*Sqrt[1 - c^2*x^2]) + (5*b*c^3*d^2*f*x^4*Sqrt[d - c^2*d*x^2])/(96
*Sqrt[1 - c^2*x^2]) + (3*b*c^3*d^2*g*x^5*Sqrt[d - c^2*d*x^2])/(35*Sqrt[1 -
c^2*x^2]) - (b*c^5*d^2*g*x^7*Sqrt[d - c^2*d*x^2])/(49*Sqrt[1 - c^2*x^2]) +
(b*d^2*f*(1 - c^2*x^2)^(5/2)*Sqrt[d - c^2*d*x^2])/(36*c) + (5*d^2*f*x*Sqrt[
d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/16 + (5*d^2*f*x*(1 - c^2*x^2)*Sqrt[d -
c^2*d*x^2]*(a + b*ArcSin[c*x]))/24 + (d^2*f*x*(1 - c^2*x^2)^2*Sqrt[d - c^2*
d*x^2]*(a + b*ArcSin[c*x]))/6 - (d^2*g*(1 - c^2*x^2)^3*Sqrt[d - c^2*d*x^2]*
(a + b*ArcSin[c*x]))/(7*c^2) + (5*d^2*f*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c
```

```
*x])^2)/(32*b*c*Sqrt[1 - c^2*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 30

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

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 261

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

Rule 4677

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

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rubi steps

$$\int (f+gx)\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)\,dx = \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int (f+gx)\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int \left(f\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)+gx\left(1-c^2x^2\right)^{5/2}\left(a\right.\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d^2f\sqrt{d-c^2dx^2}\right)\int \left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)\,dx}{\sqrt{1-c^2x^2}} + \frac{\left(d^2g\sqrt{d-c^2dx^2}\right.}{}$$

$$= \frac{1}{6}d^2fx\left(1-c^2x^2\right)^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right) - \frac{d^2g\left(1-c^2x^2\right)^3\sqrt{d-c}}{7c}$$

$$= \frac{bd^2f\left(1-c^2x^2\right)^{5/2}\sqrt{d-c^2dx^2}}{36c} + \frac{5}{24}d^2fx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin\right.$$

$$= \frac{bd^2gx\sqrt{d-c^2dx^2}}{7c\sqrt{1-c^2x^2}} - \frac{bcd^2gx^3\sqrt{d-c^2dx^2}}{7\sqrt{1-c^2x^2}} + \frac{3bc^3d^2gx^5\sqrt{d-c^2dx^2}}{35\sqrt{1-c^2x^2}} - \frac{bc^5d}{4}$$

$$= \frac{bd^2gx\sqrt{d-c^2dx^2}}{7c\sqrt{1-c^2x^2}} - \frac{25bcd^2fx^2\sqrt{d-c^2dx^2}}{96\sqrt{1-c^2x^2}} - \frac{bcd^2gx^3\sqrt{d-c^2dx^2}}{7\sqrt{1-c^2x^2}} + \frac{5bc^3}{}$$

Mathematica [A] time = 0.431027, size = 251, normalized size = 0.49

$$\frac{d^2\sqrt{d-c^2dx^2}\left(11025a^2cf+210ab\sqrt{1-c^2x^2}\left(7c^2fx\left(8c^4x^4-26c^2x^2+33\right)+48g\left(c^2x^2-1\right)^3\right)+210b\sin^{-1}(cx)\left(105acf+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d^2*Sqrt[d - c^2*d*x^2]*(11025*a^2*c*f + 210*a*b*Sqrt[1 - c^2*x^2]*(48*g*(
-1 + c^2*x^2)^3 + 7*c^2*f*x*(33 - 26*c^2*x^2 + 8*c^4*x^4)) + b^2*c*x*(-245*
c^2*f*x*(99 - 39*c^2*x^2 + 8*c^4*x^4) - 288*g*(-35 + 35*c^2*x^2 - 21*c^4*x^
4 + 5*c^6*x^6)) + 210*b*(105*a*c*f + b*Sqrt[1 - c^2*x^2]*(48*g*(-1 + c^2*x^
2)^3 + 7*c^2*f*x*(33 - 26*c^2*x^2 + 8*c^4*x^4)))*ArcSin[c*x] + 11025*b^2*c*
f*ArcSin[c*x]^2))/(70560*b*c^2*Sqrt[1 - c^2*x^2])
```

Maple [B] time = 0.499, size = 931, normalized size = 1.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] -1/7*a*g*(-c^2*d*x^2+d)^(7/2)/c^2/d+1/6*a*f*x*(-c^2*d*x^2+d)^(5/2)+5/24*a*f
*d*x*(-c^2*d*x^2+d)^(3/2)+5/16*a*f*d^2*x*(-c^2*d*x^2+d)^(1/2)+5/16*a*f*d^3/
(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+1/7*b*(-d*(c^2*x
^2-1))^(1/2)*g*d^2/c^2/(c^2*x^2-1)*arcsin(c*x)+11/32*b*(-d*(c^2*x^2-1))^(1/
2)*f*d^2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2-5/32*b*(-d*(c^2*x^2-1))^(1/2)
*(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcsin(c*x)^2*f*d^2+1/49*b*(-d*(c^2*x^2-1
))^(1/2)*g*d^2*c^5/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^7-3/35*b*(-d*(c^2*x^2-1
))^(1/2)*g*d^2*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^5+1/7*b*(-d*(c^2*x^2-1)
)^(1/2)*g*d^2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^3-1/7*b*(-d*(c^2*x^2-1))^(
1/2)*g*d^2/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+1/36*b*(-d*(c^2*x^2-1))^(1/2)
*f*d^2*c^5/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^6-13/96*b*(-d*(c^2*x^2-1))^(1/2
)*f*d^2*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4+1/7*b*(-d*(c^2*x^2-1))^(1/2)
*g*d^2*c^6/(c^2*x^2-1)*arcsin(c*x)*x^8-4/7*b*(-d*(c^2*x^2-1))^(1/2)*g*d^2*c
^4/(c^2*x^2-1)*arcsin(c*x)*x^6+6/7*b*(-d*(c^2*x^2-1))^(1/2)*g*d^2*c^2/(c^2*
x^2-1)*arcsin(c*x)*x^4-4/7*b*(-d*(c^2*x^2-1))^(1/2)*g*d^2/(c^2*x^2-1)*arcsi
n(c*x)*x^2+1/6*b*(-d*(c^2*x^2-1))^(1/2)*f*d^2*c^6/(c^2*x^2-1)*arcsin(c*x)*x
^7-17/24*b*(-d*(c^2*x^2-1))^(1/2)*f*d^2*c^4/(c^2*x^2-1)*arcsin(c*x)*x^5+59/
48*b*(-d*(c^2*x^2-1))^(1/2)*f*d^2*c^2/(c^2*x^2-1)*arcsin(c*x)*x^3-11/16*b*(
-d*(c^2*x^2-1))^(1/2)*f*d^2/(c^2*x^2-1)*arcsin(c*x)*x-299/2304*b*(-d*(c^2*x
^2-1))^(1/2)*f*d^2/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(ac^4d^2gx^5 + ac^4d^2fx^4 - 2\,ac^2d^2gx^3 - 2\,ac^2d^2fx^2 + ad^2gx + ad^2f + \left(bc^4d^2gx^5 + bc^4d^2fx^4 - 2\,bc^2d^2gx^3 - 2\,bc^2\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="fric
as")
```

```
[Out] integral((a*c^4*d^2*g*x^5 + a*c^4*d^2*f*x^4 - 2*a*c^2*d^2*g*x^3 - 2*a*c^2*d
^2*f*x^2 + a*d^2*g*x + a*d^2*f + (b*c^4*d^2*g*x^5 + b*c^4*d^2*f*x^4 - 2*b*c
^2*d^2*g*x^3 - 2*b*c^2*d^2*f*x^2 + b*d^2*g*x + b*d^2*f)*arcsin(c*x))*sqrt(-
c^2*d*x^2 + d), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(-c^2dx^2 + d\right)^{\frac{5}{2}}\left(gx + f\right)\left(b \arcsin\left(cx\right) + a\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="giac
")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(5/2)*(g*x + f)*(b*arcsin(c*x) + a), x)
```

3.43 $\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{f+gx}\,dx$

Optimal. Leaf size=1648

result too large to display

```
[Out] (a*d^2*(c^2*f^2 - g^2)^2*Sqrt[d - c^2*d*x^2])/g^5 + (2*b*c*d^2*x*Sqrt[d - c
^2*d*x^2])/(15*g*Sqrt[1 - c^2*x^2]) + (b*c*d^2*(c^2*f^2 - 2*g^2)*x*Sqrt[d -
 c^2*d*x^2])/(3*g^3*Sqrt[1 - c^2*x^2]) - (b*c*d^2*(c^2*f^2 - g^2)^2*x*Sqrt[
d - c^2*d*x^2])/(g^5*Sqrt[1 - c^2*x^2]) - (b*c^3*d^2*f*x^2*Sqrt[d - c^2*d*x
^2])/(16*g^2*Sqrt[1 - c^2*x^2]) + (b*c^3*d^2*f*(c^2*f^2 - 2*g^2)*x^2*Sqrt[d
 - c^2*d*x^2])/(4*g^4*Sqrt[1 - c^2*x^2]) + (b*c^3*d^2*x^3*Sqrt[d - c^2*d*x^
2])/(45*g*Sqrt[1 - c^2*x^2]) - (b*c^3*d^2*(c^2*f^2 - 2*g^2)*x^3*Sqrt[d - c^
2*d*x^2])/(9*g^3*Sqrt[1 - c^2*x^2]) + (b*c^5*d^2*f*x^4*Sqrt[d - c^2*d*x^2])
/(16*g^2*Sqrt[1 - c^2*x^2]) - (b*c^5*d^2*x^5*Sqrt[d - c^2*d*x^2])/(25*g*Sqr
t[1 - c^2*x^2]) + (b*d^2*(c^2*f^2 - g^2)^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])
/g^5 + (c^2*d^2*f*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*g^2) - (c^2
*d^2*f*(c^2*f^2 - 2*g^2)*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(2*g^4)
 - (c^4*d^2*f*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(4*g^2) - (d^2*(
1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*g) - (d^2*(c^2*f^2
 - 2*g^2)*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*g^3) +
(d^2*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(5*g) - (c*d^
2*f*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(16*b*g^2*Sqrt[1 - c^2*x^2])
 - (c*d^2*f*(c^2*f^2 - 2*g^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(4
*b*g^4*Sqrt[1 - c^2*x^2]) + (c*d^2*(c^2*f^2 - g^2)^2*x*Sqrt[d - c^2*d*x^2]*
(a + b*ArcSin[c*x])^2)/(2*b*g^5*Sqrt[1 - c^2*x^2]) + (d^2*(c^2*f^2 - g^2)^3
*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c*g^6*(f + g*x)*Sqrt[1 - c
^2*x^2]) + (d^2*(c^2*f^2 - g^2)^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]*(a
+ b*ArcSin[c*x])^2)/(2*b*c*g^4*(f + g*x)) - (a*d^2*(c^2*f^2 - g^2)^(5/2)*Sq
rt[d - c^2*d*x^2]*ArcTan[(g + c^2*f*x)/(Sqrt[c^2*f^2 - g^2]*Sqrt[1 - c^2*x^
2])])/(g^6*Sqrt[1 - c^2*x^2]) + (I*b*d^2*(c^2*f^2 - g^2)^(5/2)*Sqrt[d - c^2
*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g
^2])])/(g^6*Sqrt[1 - c^2*x^2]) - (I*b*d^2*(c^2*f^2 - g^2)^(5/2)*Sqrt[d - c^
2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 -
g^2])])/(g^6*Sqrt[1 - c^2*x^2]) + (b*d^2*(c^2*f^2 - g^2)^(5/2)*Sqrt[d - c^2
*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(g
^6*Sqrt[1 - c^2*x^2]) - (b*d^2*(c^2*f^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*Po
lyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1
- c^2*x^2])
```

Rubi [A] time = 2.68744, antiderivative size = 1648, normalized size of antiderivative =

1., number of steps used = 37, number of rules used = 28, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.903, Rules used = {4777, 4767, 4647, 4641, 30, 4677, 4697, 4707, 266, 43, 4689, 12, 4765, 683, 4757, 6742, 725, 204, 1654, 4799, 4797, 8, 4773, 3323, 2264, 2190, 2279, 2391}

$$-\frac{bd^2x^5\sqrt{d-c^2dx^2}c^5}{25g\sqrt{1-c^2x^2}}+\frac{bd^2fx^4\sqrt{d-c^2dx^2}c^5}{16g^2\sqrt{1-c^2x^2}}-\frac{d^2fx^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)c^4}{4g^2}-\frac{bd^2\left(c^2f^2-2g^2\right)x^3\sqrt{d-c^2dx^2}c^3}{9g^3\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(f + g*x),x]
```

```
[Out] (a*d^2*(c^2*f^2 - g^2)^2*Sqrt[d - c^2*d*x^2])/g^5 + (2*b*c*d^2*x*Sqrt[d - c
^2*d*x^2])/(15*g*Sqrt[1 - c^2*x^2]) + (b*c*d^2*(c^2*f^2 - 2*g^2)*x*Sqrt[d -
 c^2*d*x^2])/(3*g^3*Sqrt[1 - c^2*x^2]) - (b*c*d^2*(c^2*f^2 - g^2)^2*x*Sqrt[
d - c^2*d*x^2])/(g^5*Sqrt[1 - c^2*x^2]) - (b*c^3*d^2*f*x^2*Sqrt[d - c^2*d*x
^2])/(16*g^2*Sqrt[1 - c^2*x^2]) + (b*c^3*d^2*f*(c^2*f^2 - 2*g^2)*x^2*Sqrt[d
 - c^2*d*x^2])/(4*g^4*Sqrt[1 - c^2*x^2]) + (b*c^3*d^2*x^3*Sqrt[d - c^2*d*x^
2])/(45*g*Sqrt[1 - c^2*x^2]) - (b*c^3*d^2*(c^2*f^2 - 2*g^2)*x^3*Sqrt[d - c^
2*d*x^2])/(9*g^3*Sqrt[1 - c^2*x^2]) + (b*c^5*d^2*f*x^4*Sqrt[d - c^2*d*x^2])
/(16*g^2*Sqrt[1 - c^2*x^2]) - (b*c^5*d^2*x^5*Sqrt[d - c^2*d*x^2])/(25*g*Sqr
t[1 - c^2*x^2]) + (b*d^2*(c^2*f^2 - g^2)^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])
/g^5 + (c^2*d^2*f*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*g^2) - (c^2
*d^2*f*(c^2*f^2 - 2*g^2)*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(2*g^4)
 - (c^4*d^2*f*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(4*g^2) - (d^2*(
1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*g) - (d^2*(c^2*f^2
 - 2*g^2)*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*g^3) +
(d^2*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(5*g) - (c*d^
2*f*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(16*b*g^2*Sqrt[1 - c^2*x^2])
 - (c*d^2*f*(c^2*f^2 - 2*g^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(4
*b*g^4*Sqrt[1 - c^2*x^2]) + (c*d^2*(c^2*f^2 - g^2)^2*x*Sqrt[d - c^2*d*x^2]*
(a + b*ArcSin[c*x])^2)/(2*b*g^5*Sqrt[1 - c^2*x^2]) + (d^2*(c^2*f^2 - g^2)^3
*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c*g^6*(f + g*x)*Sqrt[1 - c
^2*x^2]) + (d^2*(c^2*f^2 - g^2)^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]*(a
+ b*ArcSin[c*x])^2)/(2*b*c*g^4*(f + g*x)) - (a*d^2*(c^2*f^2 - g^2)^(5/2)*Sq
rt[d - c^2*d*x^2]*ArcTan[(g + c^2*f*x)/(Sqrt[c^2*f^2 - g^2]*Sqrt[1 - c^2*x^
2])])/(g^6*Sqrt[1 - c^2*x^2]) + (I*b*d^2*(c^2*f^2 - g^2)^(5/2)*Sqrt[d - c^2
*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g
^2])])/(g^6*Sqrt[1 - c^2*x^2]) - (I*b*d^2*(c^2*f^2 - g^2)^(5/2)*Sqrt[d - c^
2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 -
g^2])])/(g^6*Sqrt[1 - c^2*x^2]) + (b*d^2*(c^2*f^2 - g^2)^(5/2)*Sqrt[d - c^2
*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(g
^6*Sqrt[1 - c^2*x^2]) - (b*d^2*(c^2*f^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*Po
lyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1
```

```
- c^2*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[Sqrt[d + e*x^2]*(a
 + b*ArcSin[c*x])^n, (f + g*x)^m*(d + e*x^2)^(p - 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && IGtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 30

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

Rule 4677

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

```
, 0] && NeQ[p, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

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

Rule 266

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

Rule 43

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

Rule 4689

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[d^p*(a + b*
ArcSin[c*x]), u, x] - Dist[b*c*d^p, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^
2], x], x], x]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && Intege
rQ[p - 1/2] && (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0]) && NeQ[p, -
2^(-1)] && GtQ[d, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4765

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

Rule 683

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[2*c*d - b*e, 0] &
& IGtQ[p, 0] &&  !(EqQ[m, 3] && NeQ[p, 1])
```

Rule 4757

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.) + (g_.)*(x_) + (h_.)*(x
_)^2)^(p_.))/((d_) + (e_.)*(x_))^2, x_Symbol] :> With[{u = IntHide[(f + g*x
 + h*x^2)^p/(d + e*x)^2, x]}, Dist[(a + b*ArcSin[c*x])^n, u, x] - Dist[b*c*
n, Int[SimplifyIntegrand[(u*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2],
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, h}, x] && IGtQ[n, 0] && IGtQ[p,
 0] && EqQ[e*g - 2*d*h, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

a, 0] || LtQ[b, 0])

Rule 1654

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :
> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[(f*(d + e*x
)^(m + q - 1)*(a + c*x^2)^(p + 1))/(c*e^(q - 1)*(m + q + 2*p + 1)), x] + Di
st[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + c*x^2)^p*ExpandToSum[c
*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1)*(d + e*x)^q - f*(d + e*x)
^(q - 2)*(a*e^2*(m + q - 1) - c*d^2*(m + q + 2*p + 1) - 2*c*d*e*(m + q + p)
*x), x], x], x] /; GtQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, c, d,
 e, m, p}, x] && PolyQ[Pq, x] && NeQ[c*d^2 + a*e^2, 0] &&  !(EqQ[d, 0] && T
rue) &&  !(IGtQ[m, 0] && RationalQ[a, c, d, e] && (IntegerQ[p] || ILtQ[p +
1/2, 0]))
```

Rule 4799

```
Int[(ArcSin[(c_.)*(x_)]*(b_.) + (a_))^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p
_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p, RFx*(a + b*ArcSin[c*x])
^n, x], x] /; FreeQ[{a, b, c, d, e}, x] && RationalFunctionQ[RFx, x] && IGt
Q[n, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 4797

```
Int[ArcSin[(c_.)*(x_)]^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p_), x_Symbol] :
> With[{u = ExpandIntegrand[(d + e*x^2)^p*ArcSin[c*x]^n, RFx, x]}, Int[u, x
] /; SumQ[u]] /; FreeQ[{c, d, e}, x] && RationalFunctionQ[RFx, x] && IGtQ[n
, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 8

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

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
```

```
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{f+gx}\,dx = \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int \frac{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{f+gx}\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int \left(-\frac{c^2f\left(c^2f^2-2g^2\right)\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{g^4} + \frac{c^2\left(c^2f^2-2g^2\right)x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}\right.}{g^3}\right.}{}$$

$$= -\frac{\left(c^4d^2f\sqrt{d-c^2dx^2}\right)\int x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\,dx}{g^2\sqrt{1-c^2x^2}} + \frac{\left(c^4d^2\sqrt{d-c^2dx^2}\right)\int x}{}$$

$$= -\frac{c^2d^2f\left(c^2f^2-2g^2\right)x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2g^4} - \frac{c^4d^2fx^3\sqrt{d-c^2dx^2}\left(a+b\,\mathrm{s}\right.}{4g^2}$$

$$= \frac{bcd^2\left(c^2f^2-2g^2\right)x\sqrt{d-c^2dx^2}}{3g^3\sqrt{1-c^2x^2}} + \frac{bc^3d^2f\left(c^2f^2-2g^2\right)x^2\sqrt{d-c^2dx^2}}{4g^4\sqrt{1-c^2x^2}} - \frac{bc^3d^2\left(c^2f\right.}{}$$

$$= \frac{2bcd^2x\sqrt{d-c^2dx^2}}{15g\sqrt{1-c^2x^2}} + \frac{bcd^2\left(c^2f^2-2g^2\right)x\sqrt{d-c^2dx^2}}{3g^3\sqrt{1-c^2x^2}} - \frac{bc^3d^2fx^2\sqrt{d-c^2dx^2}}{16g^2\sqrt{1-c^2x^2}} + \frac{b}{}$$

$$= \frac{2bcd^2x\sqrt{d-c^2dx^2}}{15g\sqrt{1-c^2x^2}} + \frac{bcd^2\left(c^2f^2-2g^2\right)x\sqrt{d-c^2dx^2}}{3g^3\sqrt{1-c^2x^2}} - \frac{bc^3d^2fx^2\sqrt{d-c^2dx^2}}{16g^2\sqrt{1-c^2x^2}} + \frac{b}{}$$

$$= \frac{ad^2\left(c^2f^2-g^2\right)^2\sqrt{d-c^2dx^2}}{g^5} + \frac{2bcd^2x\sqrt{d-c^2dx^2}}{15g\sqrt{1-c^2x^2}} + \frac{bcd^2\left(c^2f^2-2g^2\right)x\sqrt{d-c^2d}}{3g^3\sqrt{1-c^2x^2}}$$

$$= \frac{ad^2\left(c^2f^2-g^2\right)^2\sqrt{d-c^2dx^2}}{g^5} + \frac{2bcd^2x\sqrt{d-c^2dx^2}}{15g\sqrt{1-c^2x^2}} + \frac{bcd^2\left(c^2f^2-2g^2\right)x\sqrt{d-c^2d}}{3g^3\sqrt{1-c^2x^2}}$$

$$= \frac{ad^2\left(c^2f^2-g^2\right)^2\sqrt{d-c^2dx^2}}{g^5} + \frac{2bcd^2x\sqrt{d-c^2dx^2}}{15g\sqrt{1-c^2x^2}} + \frac{bcd^2\left(c^2f^2-2g^2\right)x\sqrt{d-c^2d}}{3g^3\sqrt{1-c^2x^2}}$$

$$= \frac{ad^2\left(c^2f^2-g^2\right)^2\sqrt{d-c^2dx^2}}{g^5} + \frac{2bcd^2x\sqrt{d-c^2dx^2}}{15g\sqrt{1-c^2x^2}} + \frac{bcd^2\left(c^2f^2-2g^2\right)x\sqrt{d-c^2d}}{3g^3\sqrt{1-c^2x^2}}$$

$$= \frac{ad^2\left(c^2f^2-g^2\right)^2\sqrt{d-c^2dx^2}}{g^5} + \frac{2bcd^2x\sqrt{d-c^2dx^2}}{15g\sqrt{1-c^2x^2}} + \frac{bcd^2\left(c^2f^2-2g^2\right)x\sqrt{d-c^2d}}{3g^3\sqrt{1-c^2x^2}}$$

$$= \frac{ad^2\left(c^2f^2-g^2\right)^2\sqrt{d-c^2dx^2}}{g^5} + \frac{2bcd^2x\sqrt{d-c^2dx^2}}{15g\sqrt{1-c^2x^2}} + \frac{bcd^2\left(c^2f^2-2g^2\right)x\sqrt{d-c^2d}}{3g^3\sqrt{1-c^2x^2}}$$

Mathematica [A] time = 2.68865, size = 787, normalized size = 0.48

$$-\frac{d^2\sqrt{d-c^2dx^2}\left(-\frac{1800\left(g^2-c^2f^2\right)^2\left(-2bc\left(-i\sqrt{c^2f^2-g^2}\left(-ib\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)+ib\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)+\left(a+b\sin^{-1}(cx)\right)\left(\log\left(1+\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}-cf}\right)\right.\right.\right.\right.}{bcg^2}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(f + g*x),x]
```

```
[Out] -(d^2*Sqrt[d - c^2*d*x^2]*(-900*b*c^3*f*(c^2*f^2 - 2*g^2)*x^2 - 225*b*c^5*f
*g^2*x^4 + 144*b*c^5*g^3*x^5 + 400*b*c*g*(c^2*f^2 - 2*g^2)*x*(-3 + c^2*x^2)
 + 1800*c^2*f*(c^2*f^2 - 2*g^2)*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) + 9
00*c^4*f*g^2*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) - 720*c^4*g^3*x^4*Sq
rt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) + 1200*g*(c^2*f^2 - 2*g^2)*(1 - c^2*x^2
)^(3/2)*(a + b*ArcSin[c*x]) + (900*c*f*(c^2*f^2 - 2*g^2)*(a + b*ArcSin[c*x]
)^2)/b + (1800*(-(c^2*f^2) + g^2)^2*(-1 + c^2*x^2)*(a + b*ArcSin[c*x])^2)/(
b*c*(f + g*x)) - 80*g^3*(6*b*c*x + b*c^3*x^3 - 6*Sqrt[1 - c^2*x^2]*(a + b*A
rcSin[c*x]) - 3*c^2*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])) + 225*c*f*g^
2*(b*c^2*x^2 - 2*c*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) + (a + b*ArcSin[
c*x])^2/b) - (1800*(-(c^2*f^2) + g^2)^2*(c^2*g*x*(a + b*ArcSin[c*x])^2 + ((
c^2*f^2 - g^2)*(a + b*ArcSin[c*x])^2)/(f + g*x) - 2*b*c*(b*c*g*x - g*Sqrt[1
 - c^2*x^2]*(a + b*ArcSin[c*x]) - I*Sqrt[c^2*f^2 - g^2]*((a + b*ArcSin[c*x]
)*(Log[1 + (I*E^(I*ArcSin[c*x])*g)/(-(c*f) + Sqrt[c^2*f^2 - g^2])] - Log[1
- (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]) - I*b*PolyLog[2, (I
*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])] + I*b*PolyLog[2, (I*E^(I
*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]))))/(b*c*g^2)))/(3600*g^4*Sqr
t[1 - c^2*x^2])
```

Maple [B] time = 0.419, size = 4685, normalized size = 2.8

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/(g*x+f),x)
```

```
[Out] -I*b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d^2/(c^
2*x^2-1)/g^6*dilog(I/(I*c*f+(-c^2*f^2+g^2)^(1/2))*c*f+1/(I*c*f+(-c^2*f^2+g^
```

2)^(1/2))*(I*c*x+(-c^2*x^2+1)^(1/2))*g+1/(I*c*f+(-c^2*f^2+g^2)^(1/2))*(-c^2
*f^2+g^2)^(1/2))*c^4*f^4-2*I*b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*
(-c^2*x^2+1)^(1/2)*d^2/(c^2*x^2-1)/g^4*dilog(-I/(-I*c*f+(-c^2*f^2+g^2)^(1/2
))*c*f-1/(-I*c*f+(-c^2*f^2+g^2)^(1/2))*(I*c*x+(-c^2*x^2+1)^(1/2))*g+1/(-I*c
*f+(-c^2*f^2+g^2)^(1/2))*(-c^2*f^2+g^2)^(1/2))*c^2*f^2+2*I*b*(-c^2*f^2+g^2)
^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d^2/(c^2*x^2-1)/g^4*dilog(
I/(I*c*f+(-c^2*f^2+g^2)^(1/2))*c*f+1/(I*c*f+(-c^2*f^2+g^2)^(1/2))*(I*c*x+(-
c^2*x^2+1)^(1/2))*g+1/(I*c*f+(-c^2*f^2+g^2)^(1/2))*(-c^2*f^2+g^2)^(1/2))*c^
2*f^2-b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d^2/
(c^2*x^2-1)/g^6*arcsin(c*x)*ln((-I*c*f-(I*c*x+(-c^2*x^2+1)^(1/2))*g+(-c^2*f
^2+g^2)^(1/2))/(-I*c*f+(-c^2*f^2+g^2)^(1/2)))*c^4*f^4+1/5*a/g*(-d*c^2*(x+f/
g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(5/2)+1/3*a/g*d*(-d*c^2*(x+f/
g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(3/2)+a/g*d^2*(-d*c^2*(x+f/g)
^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2)-a/g*d^3/(-d*(c^2*f^2-g^2)
/g^2)^(1/2)*ln((-2*d*(c^2*f^2-g^2)/g^2+2*c^2*d*f/g*(x+f/g)+2*(-d*(c^2*f^2-g
^2)/g^2)^(1/2)*(-d*c^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(
1/2))/(x+f/g))+a/g^6*d^3*c^6*f^5/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-d*c
^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))+a/g^7*d^3/(-d*
(c^2*f^2-g^2)/g^2)^(1/2)*ln((-2*d*(c^2*f^2-g^2)/g^2+2*c^2*d*f/g*(x+f/g)+2*(
-d*(c^2*f^2-g^2)/g^2)^(1/2)*(-d*c^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^
2-g^2)/g^2)^(1/2))/(x+f/g))*c^6*f^6-3*a/g^5*d^3/(-d*(c^2*f^2-g^2)/g^2)^(1/2
)*ln((-2*d*(c^2*f^2-g^2)/g^2+2*c^2*d*f/g*(x+f/g)+2*(-d*(c^2*f^2-g^2)/g^2)^(
1/2)*(-d*c^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))/(x+f
/g))*c^4*f^4+3*a/g^3*d^3/(-d*(c^2*f^2-g^2)/g^2)^(1/2)*ln((-2*d*(c^2*f^2-g^2
)/g^2+2*c^2*d*f/g*(x+f/g)+2*(-d*(c^2*f^2-g^2)/g^2)^(1/2)*(-d*c^2*(x+f/g)^2+
2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))/(x+f/g))*c^2*f^2+15/8*a/g^2
*c^2*d^3*f/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-d*c^2*(x+f/g)^2+2*c^2*d*f
/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))-1/2*a/g^4*d^2*c^4*f^3*(-d*c^2*(x+f/g
)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2)*x-5/2*a/g^4*d^3*c^4*f^3/
(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-d*c^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-
d*(c^2*f^2-g^2)/g^2)^(1/2))+1/4*a/g^2*c^2*d*f*(-d*c^2*(x+f/g)^2+2*c^2*d*f/g
(x+f/g)-d(c^2*f^2-g^2)/g^2)^(3/2)*x+7/8*a/g^2*c^2*d^2*f*(-d*c^2*(x+f/g)^2
+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2)*x-14/15*b*(-d*(c^2*x^2-1))^
(1/2)*d^2/(c^2*x^2-1)/g*arcsin(c*x)*x^4*c^4+34/15*b*(-d*(c^2*x^2-1))^(1/2)*
d^2/(c^2*x^2-1)/g*arcsin(c*x)*x^2*c^2+7/3*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2
*x^2-1)/g^3*arcsin(c*x)*c^2*f^2-b*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)/g^
5*arcsin(c*x)*c^4*f^4+1/25*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)/g*(-c^2
*x^2+1)^(1/2)*x^5*c^5-33/128*b*(-d*(c^2*x^2-1))^(1/2)*f*d^2*c/(c^2*x^2-1)/g
^2*(-c^2*x^2+1)^(1/2)-11/45*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)/g*(-c^
2*x^2+1)^(1/2)*x^3*c^3+23/15*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)/g*(-c
^2*x^2+1)^(1/2)*x*c+1/8*b*(-d*(c^2*x^2-1))^(1/2)*f^3*d^2*c^3/(c^2*x^2-1)/g^
4*(-c^2*x^2+1)^(1/2)+1/5*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)/g*arcsin(
c*x)*x^6*c^6-1/3*a/g^3*d*(-d*c^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g
^2)/g^2)^(3/2)*c^2*f^2+a/g^5*d^2*(-d*c^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c
^2*f^2-g^2)/g^2)^(1/2)*c^4*f^4-2*a/g^3*d^2*(-d*c^2*(x+f/g)^2+2*c^2*d*f/g*(x

```
+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2)*c^2*f^2-23/15*b*(-d*(c^2*x^2-1))^(1/2)*d^2
/(c^2*x^2-1)/g*arcsin(c*x)+b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-
c^2*x^2+1)^(1/2)*d^2/(c^2*x^2-1)/g^6*arcsin(c*x)*ln((I*c*f+(I*c*x+(-c^2*x^2
+1)^(1/2))*g+(-c^2*f^2+g^2)^(1/2))/(I*c*f+(-c^2*f^2+g^2)^(1/2)))*c^4*f^4+2*
b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d^2/(c^2*x
^2-1)/g^4*arcsin(c*x)*ln((-I*c*f-(I*c*x+(-c^2*x^2+1)^(1/2))*g+(-c^2*f^2+g^2
)^(1/2))/(-I*c*f+(-c^2*f^2+g^2)^(1/2)))*c^2*f^2-2*b*(-c^2*f^2+g^2)^(1/2)*(-
d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d^2/(c^2*x^2-1)/g^4*arcsin(c*x)*ln(
(I*c*f+(I*c*x+(-c^2*x^2+1)^(1/2))*g+(-c^2*f^2+g^2)^(1/2))/(I*c*f+(-c^2*f^2+
g^2)^(1/2)))*c^2*f^2+I*b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*
x^2+1)^(1/2)*d^2/(c^2*x^2-1)/g^6*dilog(-I/(-I*c*f+(-c^2*f^2+g^2)^(1/2))*c*f
-1/(-I*c*f+(-c^2*f^2+g^2)^(1/2))*(I*c*x+(-c^2*x^2+1)^(1/2))*g+1/(-I*c*f+(-c
^2*f^2+g^2)^(1/2))*(-c^2*f^2+g^2)^(1/2))*c^4*f^4+9/16*b*(-d*(c^2*x^2-1))^(1
/2)*f*d^2*c^3/(c^2*x^2-1)/g^2*(-c^2*x^2+1)^(1/2)*x^2+1/9*b*(-d*(c^2*x^2-1))
^(1/2)*d^2/(c^2*x^2-1)/g^3*(-c^2*x^2+1)^(1/2)*x^3*c^5*f^2-7/3*b*(-d*(c^2*x^
2-1))^(1/2)*d^2/(c^2*x^2-1)/g^3*(-c^2*x^2+1)^(1/2)*x*c^3*f^2-1/4*b*(-d*(c^2
*x^2-1))^(1/2)*f^3*d^2*c^5/(c^2*x^2-1)/g^4*(-c^2*x^2+1)^(1/2)*x^2+b*(-c^2*f
^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d^2/(c^2*x^2-1)/g^2
*arcsin(c*x)*ln((I*c*f+(I*c*x+(-c^2*x^2+1)^(1/2))*g+(-c^2*f^2+g^2)^(1/2))/(
I*c*f+(-c^2*f^2+g^2)^(1/2)))+b*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)/g^5*(
-c^2*x^2+1)^(1/2)*x*c^5*f^4-b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(
-c^2*x^2+1)^(1/2)*d^2/(c^2*x^2-1)/g^2*arcsin(c*x)*ln((-I*c*f-(I*c*x+(-c^2*x
^2+1)^(1/2))*g+(-c^2*f^2+g^2)^(1/2))/(-I*c*f+(-c^2*f^2+g^2)^(1/2)))-1/16*b*
(-d*(c^2*x^2-1))^(1/2)*f*d^2*c^5/(c^2*x^2-1)/g^2*(-c^2*x^2+1)^(1/2)*x^4-1/2
*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*arcsin(c*x)^2*f^5*
d^2*c^5/g^6+5/4*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*arc
sin(c*x)^2*f^3*d^2*c^3/g^4-15/16*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2
)/(c^2*x^2-1)*arcsin(c*x)^2*f*d^2*c/g^2+I*b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x
^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d^2/(c^2*x^2-1)/g^2*dilog(-I/(-I*c*f+(-c^2*
f^2+g^2)^(1/2))*c*f-1/(-I*c*f+(-c^2*f^2+g^2)^(1/2))*(I*c*x+(-c^2*x^2+1)^(1/
2))*g+1/(-I*c*f+(-c^2*f^2+g^2)^(1/2))*(-c^2*f^2+g^2)^(1/2))+1/2*b*(-d*(c^2*
x^2-1))^(1/2)*f^3*d^2*c^4/(c^2*x^2-1)/g^4*arcsin(c*x)*x+b*(-d*(c^2*x^2-1))^
(1/2)*d^2/(c^2*x^2-1)/g^5*arcsin(c*x)*x^2*c^6*f^4-1/4*b*(-d*(c^2*x^2-1))^(1
/2)*f*d^2*c^6/(c^2*x^2-1)/g^2*arcsin(c*x)*x^5+11/8*b*(-d*(c^2*x^2-1))^(1/2)
*f*d^2*c^4/(c^2*x^2-1)/g^2*arcsin(c*x)*x^3-9/8*b*(-d*(c^2*x^2-1))^(1/2)*f*d
^2*c^2/(c^2*x^2-1)/g^2*arcsin(c*x)*x+1/3*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*
x^2-1)/g^3*arcsin(c*x)*x^4*c^6*f^2-8/3*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^
2-1)/g^3*arcsin(c*x)*x^2*c^4*f^2-1/2*b*(-d*(c^2*x^2-1))^(1/2)*f^3*d^2*c^6/(
c^2*x^2-1)/g^4*arcsin(c*x)*x^3-I*b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1
/2)*(-c^2*x^2+1)^(1/2)*d^2/(c^2*x^2-1)/g^2*dilog(I/(I*c*f+(-c^2*f^2+g^2)^(1
/2))*c*f+1/(I*c*f+(-c^2*f^2+g^2)^(1/2))*(I*c*x+(-c^2*x^2+1)^(1/2))*g+1/(I*c
*f+(-c^2*f^2+g^2)^(1/2))*(-c^2*f^2+g^2)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/(g*x+f),x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(ac^{4}d^{2}x^{4} - 2\,ac^{2}d^{2}x^{2} + ad^{2} + \left(bc^{4}d^{2}x^{4} - 2\,bc^{2}d^{2}x^{2} + bd^{2}\right)\arcsin\left(cx\right)\right)\sqrt{-c^{2}dx^{2} + d}}{gx + f}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/(g*x+f),x, algorithm="fric
as")
```

```
[Out] integral((a*c^4*d^2*x^4 - 2*a*c^2*d^2*x^2 + a*d^2 + (b*c^4*d^2*x^4 - 2*b*c^
2*d^2*x^2 + b*d^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/(g*x + f), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))/(g*x+f),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(-c^{2}dx^{2} + d\right)^{\frac{5}{2}}\left(b\arcsin\left(cx\right) + a\right)}{gx + f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/(g*x+f),x, algorithm="giac
")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(5/2)*(b*arcsin(c*x) + a)/(g*x + f), x)
```

3.44 $\int \frac{(f+gx)^3\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=450

$$-\frac{3f^2g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c^2\sqrt{d-c^2dx^2}}+\frac{f^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\sqrt{d-c^2dx^2}}+\frac{3fg^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{4bc^3\sqrt{d-c^2dx^2}}-\frac{3fg^2x\left(1-c^2\right.}{2c^2}$$

```
[Out] (3*b*f^2*g*x*Sqrt[1 - c^2*x^2])/(c*Sqrt[d - c^2*d*x^2]) + (2*b*g^3*x*Sqrt[1
 - c^2*x^2])/(3*c^3*Sqrt[d - c^2*d*x^2]) + (3*b*f*g^2*x^2*Sqrt[1 - c^2*x^2]
)/(4*c*Sqrt[d - c^2*d*x^2]) + (b*g^3*x^3*Sqrt[1 - c^2*x^2])/(9*c*Sqrt[d - c
^2*d*x^2]) - (3*f^2*g*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(c^2*Sqrt[d - c^2*
d*x^2]) - (2*g^3*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(3*c^4*Sqrt[d - c^2*d*x
^2]) - (3*f*g^2*x*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(2*c^2*Sqrt[d - c^2*d*
x^2]) - (g^3*x^2*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(3*c^2*Sqrt[d - c^2*d*x
^2]) + (f^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c*Sqrt[d - c^2*d*
x^2]) + (3*f*g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(4*b*c^3*Sqrt[d -
 c^2*d*x^2])
```

Rubi [A] time = 0.583574, antiderivative size = 450, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.226, Rules used = {4777, 4763, 4641, 4677, 8, 4707, 30}

$$-\frac{3f^2g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c^2\sqrt{d-c^2dx^2}}+\frac{f^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\sqrt{d-c^2dx^2}}+\frac{3fg^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{4bc^3\sqrt{d-c^2dx^2}}-\frac{3fg^2x\left(1-c^2\right.}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^3*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```


```
[Out] (3*b*f^2*g*x*Sqrt[1 - c^2*x^2])/(c*Sqrt[d - c^2*d*x^2]) + (2*b*g^3*x*Sqrt[1
 - c^2*x^2])/(3*c^3*Sqrt[d - c^2*d*x^2]) + (3*b*f*g^2*x^2*Sqrt[1 - c^2*x^2]
)/(4*c*Sqrt[d - c^2*d*x^2]) + (b*g^3*x^3*Sqrt[1 - c^2*x^2])/(9*c*Sqrt[d - c
^2*d*x^2]) - (3*f^2*g*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(c^2*Sqrt[d - c^2*
d*x^2]) - (2*g^3*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(3*c^4*Sqrt[d - c^2*d*x
^2]) - (3*f*g^2*x*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(2*c^2*Sqrt[d - c^2*d*
x^2]) - (g^3*x^2*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(3*c^2*Sqrt[d - c^2*d*x
^2]) + (f^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c*Sqrt[d - c^2*d*
x^2]) + (3*f*g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(4*b*c^3*Sqrt[d -
 c^2*d*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4677

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

Rule 8

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

Rule 4707

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

Rule 30

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

Rubi steps

$$\int \frac{(f+gx)^3\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)^3\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{f^3\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} + \frac{3f^2gx\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} + \frac{3fg^2x^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} + \frac{g^3x^3\left(a+b\sin^{-1}(cx\right.}{\sqrt{1-c^2x^2}}\right.}{\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(f^3\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}} + \frac{\left(3f^2g\sqrt{1-c^2x^2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}} + \frac{\left(3fg^2\sqrt{1-\right.}{}$$

$$= -\frac{3f^2g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c^2\sqrt{d-c^2dx^2}} - \frac{3fg^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{2c^2\sqrt{d-c^2dx^2}} - \frac{g^3x^2\left(1-c\right.}{3c}$$

$$= \frac{3bf^2gx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}} + \frac{3bfg^2x^2\sqrt{1-c^2x^2}}{4c\sqrt{d-c^2dx^2}} + \frac{bg^3x^3\sqrt{1-c^2x^2}}{9c\sqrt{d-c^2dx^2}} - \frac{3f^2g\left(1-c^2x^2\right)\left(a+b\,\mathrm{si}\right.}{c^2\sqrt{d-c^2dx^2}}$$

$$= \frac{3bf^2gx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}} + \frac{2bg^3x\sqrt{1-c^2x^2}}{3c^3\sqrt{d-c^2dx^2}} + \frac{3bfg^2x^2\sqrt{1-c^2x^2}}{4c\sqrt{d-c^2dx^2}} + \frac{bg^3x^3\sqrt{1-c^2x^2}}{9c\sqrt{d-c^2dx^2}} - \frac{3f^2g}{}$$

Mathematica [A] time = 1.06612, size = 343, normalized size = 0.76

$$\frac{-\sqrt{d}g\left(c^2x^2-1\right)\left(-12a\sqrt{1-c^2x^2}\left(c^2\left(18f^2+9fgx+2g^2x^2\right)+4g^2\right)+8bcx\left(c^2\left(27f^2+g^2x^2\right)+6g^2\right)-27bcfg\cos\left(2\sin^{\cdot}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^3*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (-18*b*c*Sqrt[d]*f*(2*c^2*f^2 + 3*g^2)*(-1 + c^2*x^2)*ArcSin[c*x]^2 - 36*a*
c*f*(2*c^2*f^2 + 3*g^2)*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]*ArcTan[(c*x*S
qrt[d - c^2*d*x^2])/(Sqrt[d]*(-1 + c^2*x^2))] - Sqrt[d]*g*(-1 + c^2*x^2)*(8
*b*c*x*(6*g^2 + c^2*(27*f^2 + g^2*x^2)) - 12*a*Sqrt[1 - c^2*x^2]*(4*g^2 + c
^2*(18*f^2 + 9*f*g*x + 2*g^2*x^2)) - 27*b*c*f*g*Cos[2*ArcSin[c*x]]) + 6*b*S
```

```
qrt[d]*g*(-1 + c^2*x^2)*ArcSin[c*x]*(4*Sqrt[1 - c^2*x^2]*(2*g^2 + c^2*(9*f^
2 + g^2*x^2)) + 9*c*f*g*Sin[2*ArcSin[c*x]]))/(72*c^4*Sqrt[d]*Sqrt[1 - c^2*x
^2]*Sqrt[d - c^2*d*x^2])
```

Maple [B] time = 0.546, size = 845, normalized size = 1.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] -1/3*a*g^3*x^2/c^2/d*(-c^2*d*x^2+d)^(1/2)-2/3*a*g^3/d/c^4*(-c^2*d*x^2+d)^(1
/2)-3/2*a*f*g^2*x/c^2/d*(-c^2*d*x^2+d)^(1/2)+3/2*a*f*g^2/c^2/(c^2*d)^(1/2)*
arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-3*a*f^2*g/c^2/d*(-c^2*d*x^2+d)
^(1/2)+a*f^3/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-1/2
*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/d/(c^2*x^2-1)*arcsin(c*x)^2*
f^3-1/3*b*(-d*(c^2*x^2-1))^(1/2)*g^3/d/(c^2*x^2-1)*arcsin(c*x)*x^4-1/3*b*(-
d*(c^2*x^2-1))^(1/2)*g^3/c^2/d/(c^2*x^2-1)*arcsin(c*x)*x^2+3*b*(-d*(c^2*x^2
-1))^(1/2)*g/c^2/d/(c^2*x^2-1)*arcsin(c*x)*f^2-3/2*b*(-d*(c^2*x^2-1))^(1/2)
*f*g^2/d/(c^2*x^2-1)*arcsin(c*x)*x^3+3/2*b*(-d*(c^2*x^2-1))^(1/2)*f*g^2/c^2
/d/(c^2*x^2-1)*arcsin(c*x)*x+3/8*b*(-d*(c^2*x^2-1))^(1/2)*f*g^2/c^3/d/(c^2*
x^2-1)*(-c^2*x^2+1)^(1/2)-3*b*(-d*(c^2*x^2-1))^(1/2)*g/d/(c^2*x^2-1)*arcsin
(c*x)*x^2*f^2-3/4*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d/(c^2*x^
2-1)*arcsin(c*x)^2*f*g^2-1/9*b*(-d*(c^2*x^2-1))^(1/2)*g^3/c/d/(c^2*x^2-1)*(
-c^2*x^2+1)^(1/2)*x^3-2/3*b*(-d*(c^2*x^2-1))^(1/2)*g^3/c^3/d/(c^2*x^2-1)*(-
c^2*x^2+1)^(1/2)*x+2/3*b*(-d*(c^2*x^2-1))^(1/2)*g^3/c^4/d/(c^2*x^2-1)*arcsi
n(c*x)-3/4*b*(-d*(c^2*x^2-1))^(1/2)*f*g^2/c/d/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2
)*x^2-3*b*(-d*(c^2*x^2-1))^(1/2)*g/c/d/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x*f^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\left(ag^{3}x^{3}+3\,afg^{2}x^{2}+3\,af^{2}gx+af^{3}+\left(bg^{3}x^{3}+3\,bfg^{2}x^{2}+3\,bf^{2}gx+bf^{3}\right)\arcsin\left(cx\right)\right)\sqrt{-c^{2}dx^{2}+d}}{c^{2}dx^{2}-d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="fr
icas")
```

```
[Out] integral(-(a*g^3*x^3 + 3*a*f*g^2*x^2 + 3*a*f^2*g*x + a*f^3 + (b*g^3*x^3 + 3
*b*f*g^2*x^2 + 3*b*f^2*g*x + b*f^3)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/(c^2*
d*x^2 - d), x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Exception raised: TypeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(gx+f\right)^{3}\left(b\arcsin\left(cx\right)+a\right)}{\sqrt{-c^{2}dx^{2}+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="gi
ac")
```

```
[Out] integrate((g*x + f)^3*(b*arcsin(c*x) + a)/sqrt(-c^2*d*x^2 + d), x)
```

3.45 $\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=270

$$\frac{f^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\sqrt{d-c^2dx^2}}-\frac{2fg\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c^2\sqrt{d-c^2dx^2}}+\frac{g^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{4bc^3\sqrt{d-c^2dx^2}}-\frac{g^2x\left(1-c^2x^2\right)\left(a\right.}{2c^2\sqrt{d-}}$$

```
[Out] (2*b*f*g*x*Sqrt[1 - c^2*x^2])/(c*Sqrt[d - c^2*d*x^2]) + (b*g^2*x^2*Sqrt[1 -
 c^2*x^2])/(4*c*Sqrt[d - c^2*d*x^2]) - (2*f*g*(1 - c^2*x^2)*(a + b*ArcSin[c
*x]))/(c^2*Sqrt[d - c^2*d*x^2]) - (g^2*x*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))
/(2*c^2*Sqrt[d - c^2*d*x^2]) + (f^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2
)/(2*b*c*Sqrt[d - c^2*d*x^2]) + (g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^
2)/(4*b*c^3*Sqrt[d - c^2*d*x^2])
```

Rubi [A] time = 0.433264, antiderivative size = 270, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.226, Rules used = {4777, 4763, 4641, 4677, 8, 4707, 30}

$$\frac{f^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\sqrt{d-c^2dx^2}}-\frac{2fg\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c^2\sqrt{d-c^2dx^2}}+\frac{g^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{4bc^3\sqrt{d-c^2dx^2}}-\frac{g^2x\left(1-c^2x^2\right)\left(a\right.}{2c^2\sqrt{d-}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^2*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (2*b*f*g*x*Sqrt[1 - c^2*x^2])/(c*Sqrt[d - c^2*d*x^2]) + (b*g^2*x^2*Sqrt[1 -
 c^2*x^2])/(4*c*Sqrt[d - c^2*d*x^2]) - (2*f*g*(1 - c^2*x^2)*(a + b*ArcSin[c
*x]))/(c^2*Sqrt[d - c^2*d*x^2]) - (g^2*x*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))
/(2*c^2*Sqrt[d - c^2*d*x^2]) + (f^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2
)/(2*b*c*Sqrt[d - c^2*d*x^2]) + (g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^
2)/(4*b*c^3*Sqrt[d - c^2*d*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] && !GtQ[d, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4677

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

Rule 8

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

Rule 4707

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

Rule 30

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

Rubi steps

$$\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{f^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}+\frac{2fgx\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}+\frac{g^2x^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\right)dx}{\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(f^2\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}} + \frac{\left(2fg\sqrt{1-c^2x^2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}} + \frac{\left(g^2\sqrt{1-c^2\cdots\right.}{}$$

$$= -\frac{2fg\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c^2\sqrt{d-c^2dx^2}} - \frac{g^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{2c^2\sqrt{d-c^2dx^2}} + \frac{f^2\sqrt{1-c^2x^2}\cdots}{2bc\cdots}$$

$$= \frac{2bfgx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}} + \frac{bg^2x^2\sqrt{1-c^2x^2}}{4c\sqrt{d-c^2dx^2}} - \frac{2fg\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c^2\sqrt{d-c^2dx^2}} - \frac{g^2x\left(1-c^2\cdots\right.}{2c\cdots}$$

Mathematica [A] time = 0.692357, size = 266, normalized size = 0.99

$$\frac{\sqrt{d}g\left(c^2x^2-1\right)\left(4c\left(a\sqrt{1-c^2x^2}(4f+gx)-4bcfx\right)+bg\cos\left(2\sin^{-1}(cx)\right)\right)-4a\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}\left(2c^2f^2+g^2\right)\tan^{-1}\cdots}{8c^3\sqrt{d}\sqrt{1-\cdots}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^2*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (-2*b*Sqrt[d]*(2*c^2*f^2 + g^2)*(-1 + c^2*x^2)*ArcSin[c*x]^2 - 4*a*(2*c^2*f
^2 + g^2)*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]*ArcTan[(c*x*Sqrt[d - c^2*d*
x^2])/(Sqrt[d]*(-1 + c^2*x^2))] + Sqrt[d]*g*(-1 + c^2*x^2)*(4*c*(-4*b*c*f*x
 + a*(4*f + g*x)*Sqrt[1 - c^2*x^2]) + b*g*Cos[2*ArcSin[c*x]]) + 2*b*Sqrt[d]
*g*(-1 + c^2*x^2)*ArcSin[c*x]*(8*c*f*Sqrt[1 - c^2*x^2] + g*Sin[2*ArcSin[c*x
]]))/(8*c^3*Sqrt[d]*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2])
```

Maple [B] time = 0.37, size = 549, normalized size = 2.

$$-\frac{ag^2x}{2c^2d}\sqrt{-c^2dx^2+d}+\frac{ag^2}{2c^2}\arctan\left(x\sqrt{c^2d}\frac{1}{\sqrt{-c^2dx^2+d}}\right)\frac{1}{\sqrt{c^2d}}-2\frac{afg\sqrt{-c^2dx^2+d}}{c^2d}+af^2\arctan\left(x\sqrt{c^2d}\frac{1}{\sqrt{-c^2dx^2+\cdots}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] -1/2*a*g^2*x/c^2/d*(-c^2*d*x^2+d)^(1/2)+1/2*a*g^2/c^2/(c^2*d)^(1/2)*arctan(
(c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-2*a*f*g/c^2/d*(-c^2*d*x^2+d)^(1/2)+a*
f^2/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+2*b*(-d*(c^2
*x^2-1))^(1/2)*f*g/c^2/d/(c^2*x^2-1)*arcsin(c*x)-1/4*b*(-d*(c^2*x^2-1))^(1/
2)*g^2/c/d/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2-2*b*(-d*(c^2*x^2-1))^(1/2)*f*
g/d/(c^2*x^2-1)*arcsin(c*x)*x^2-2*b*(-d*(c^2*x^2-1))^(1/2)*f*g/c/d/(c^2*x^2
-1)*(-c^2*x^2+1)^(1/2)*x-1/2*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/
d/(c^2*x^2-1)*arcsin(c*x)^2*f^2-1/4*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(
1/2)/c^3/d/(c^2*x^2-1)*arcsin(c*x)^2*g^2-1/2*b*(-d*(c^2*x^2-1))^(1/2)*g^2/d
/(c^2*x^2-1)*arcsin(c*x)*x^3+1/2*b*(-d*(c^2*x^2-1))^(1/2)*g^2/c^2/d/(c^2*x^
2-1)*arcsin(c*x)*x+1/8*b*(-d*(c^2*x^2-1))^(1/2)*g^2/c^3/d/(c^2*x^2-1)*(-c^2
*x^2+1)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\left(ag^2x^2+2\,afgx+af^2+\left(bg^2x^2+2\,bfgx+bf^2\right)\arcsin\left(cx\right)\right)}{c^2dx^2-d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="fr
icas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(a*g^2*x^2 + 2*a*f*g*x + a*f^2 + (b*g^2*x^2
+ 2*b*f*g*x + b*f^2)*arcsin(c*x))/(c^2*d*x^2 - d), x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Exception raised: TypeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(gx+f\right)^2 (b \arcsin(cx)+a)}{\sqrt{-c^2dx^2+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="gi
ac")
```

```
[Out] integrate((g*x + f)^2*(b*arcsin(c*x) + a)/sqrt(-c^2*d*x^2 + d), x)
```

3.46 $\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=126

$$\frac{f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\sqrt{d-c^2dx^2}}-\frac{g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c^2\sqrt{d-c^2dx^2}}+\frac{bgx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}}$$

```
[Out] (b*g*x*Sqrt[1 - c^2*x^2])/(c*Sqrt[d - c^2*d*x^2]) - (g*(1 - c^2*x^2)*(a + b
*ArcSin[c*x]))/(c^2*Sqrt[d - c^2*d*x^2]) + (f*Sqrt[1 - c^2*x^2]*(a + b*ArcS
in[c*x])^2)/(2*b*c*Sqrt[d - c^2*d*x^2])
```

Rubi [A] time = 0.222273, antiderivative size = 126, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {4777, 4763, 4641, 4677, 8}

$$\frac{f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\sqrt{d-c^2dx^2}}-\frac{g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c^2\sqrt{d-c^2dx^2}}+\frac{bgx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (b*g*x*Sqrt[1 - c^2*x^2])/(c*Sqrt[d - c^2*d*x^2]) - (g*(1 - c^2*x^2)*(a + b
*ArcSin[c*x]))/(c^2*Sqrt[d - c^2*d*x^2]) + (f*Sqrt[1 - c^2*x^2]*(a + b*ArcS
in[c*x])^2)/(2*b*c*Sqrt[d - c^2*d*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
```

```
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4677

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

Rule 8

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

Rubi steps

$$
\begin{aligned}
\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx &= \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}} \\
&= \frac{\sqrt{1-c^2x^2}\int \left(\frac{f\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}+\frac{gx\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\right)dx}{\sqrt{d-c^2dx^2}} \\
&= \frac{\left(f\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}+\frac{\left(g\sqrt{1-c^2x^2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}} \\
&= -\frac{g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c^2\sqrt{d-c^2dx^2}}+\frac{f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\sqrt{d-c^2dx^2}}+\frac{\left(bg\sqrt{1-c^2x^2}\right)\int 1}{c\sqrt{d-c^2dx^2}} \\
&= \frac{bgx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}}-\frac{g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c^2\sqrt{d-c^2dx^2}}+\frac{f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\sqrt{d-c^2dx^2}}
\end{aligned}
$$

Mathematica [A] time = 0.350742, size = 172, normalized size = 1.37

$$\frac{2\sqrt{d}g\left(ac^2x^2-a+bcx\sqrt{1-c^2x^2}\right)-2acf\sqrt{d-c^2dx^2}\tan^{-1}\left(\frac{cx\sqrt{d-c^2dx^2}}{\sqrt{d}(c^2x^2-1)}\right)+bc\sqrt{d}f\sqrt{1-c^2x^2}\sin^{-1}(cx)^2+2b\sqrt{d}g\left(c^2x^2-1\right)}{2c^2\sqrt{d}\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (2*Sqrt[d]*g*(-a + a*c^2*x^2 + b*c*x*Sqrt[1 - c^2*x^2]) + 2*b*Sqrt[d]*g*(-1
 + c^2*x^2)*ArcSin[c*x] + b*c*Sqrt[d]*f*Sqrt[1 - c^2*x^2]*ArcSin[c*x]^2 - 2
*a*c*f*Sqrt[d - c^2*d*x^2]*ArcTan[(c*x*Sqrt[d - c^2*d*x^2])/(Sqrt[d]*(-1 +
c^2*x^2))])/(2*c^2*Sqrt[d]*Sqrt[d - c^2*d*x^2])
```

Maple [B] time = 0.236, size = 236, normalized size = 1.9

$$-\frac{ag}{c^2d}\sqrt{-c^2dx^2+d}+af\arctan\left(x\sqrt{c^2d}\frac{1}{\sqrt{-c^2dx^2+d}}\right)\frac{1}{\sqrt{c^2d}}-\frac{b\left(\arcsin\left(cx\right)\right)^2f}{2\,dc\left(c^2x^2-1\right)}\sqrt{-d\left(c^2x^2-1\right)}\sqrt{-c^2x^2+1}-\frac{bg\arcsin(}{d\left(c^2x^2-\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] -a*g/c^2/d*(-c^2*d*x^2+d)^(1/2)+a*f/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-
c^2*d*x^2+d)^(1/2))-1/2*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/d/(c^
2*x^2-1)*arcsin(c*x)^2*f-b*(-d*(c^2*x^2-1))^(1/2)*g/d/(c^2*x^2-1)*arcsin(c*
x)*x^2-b*(-d*(c^2*x^2-1))^(1/2)*g/c/d/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+b*(-
d*(c^2*x^2-1))^(1/2)*g/c^2/d/(c^2*x^2-1)*arcsin(c*x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\left(agx+af+\left(bgx+bf\right)\arcsin\left(cx\right)\right)}{c^2dx^2-d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="fric
as")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(a*g*x + a*f + (b*g*x + b*f)*arcsin(c*x))/(c
^2*d*x^2 - d), x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Exception raised: TypeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(gx+f\right)\left(b\arcsin\left(cx\right)+a\right)}{\sqrt{-c^2dx^2+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac
")
```

```
[Out] integrate((g*x + f)*(b*arcsin(c*x) + a)/sqrt(-c^2*d*x^2 + d), x)
```

3.47 $\int \frac{a+b\sin^{-1}(cx)}{(f+gx)\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=380

$$-\frac{b\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{d-c^2dx^2}\sqrt{c^2f^2-g^2}}+\frac{b\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{\sqrt{d-c^2dx^2}\sqrt{c^2f^2-g^2}}-\frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{ige}{cf-}\right.}{\sqrt{d-c^2dx^2}\sqrt{c^2f^2-g^2}}$$

```
[Out] ((-I)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 - (I*E^(I*ArcSin[c*x])*g)
/(c*f - Sqrt[c^2*f^2 - g^2])])/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]) +
(I*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c
*f + Sqrt[c^2*f^2 - g^2])])/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]) - (b*
Sqrt[1 - c^2*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 -
g^2])])/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]) + (b*Sqrt[1 - c^2*x^2]*Po
lyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(Sqrt[c^2*f^
2 - g^2]*Sqrt[d - c^2*d*x^2])
```

Rubi [A] time = 0.608353, antiderivative size = 380, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.226, Rules used = {4777, 4773, 3323, 2264, 2190, 2279, 2391}

$$-\frac{b\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{d-c^2dx^2}\sqrt{c^2f^2-g^2}}+\frac{b\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{\sqrt{d-c^2dx^2}\sqrt{c^2f^2-g^2}}-\frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{ige}{cf-}\right.}{\sqrt{d-c^2dx^2}\sqrt{c^2f^2-g^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/((f + g*x)*Sqrt[d - c^2*d*x^2]),x]
```


```
[Out] ((-I)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 - (I*E^(I*ArcSin[c*x])*g)
/(c*f - Sqrt[c^2*f^2 - g^2])])/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]) +
(I*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c
*f + Sqrt[c^2*f^2 - g^2])])/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]) - (b*
Sqrt[1 - c^2*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 -
g^2])])/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]) + (b*Sqrt[1 - c^2*x^2]*Po
lyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(Sqrt[c^2*f^
2 - g^2]*Sqrt[d - c^2*d*x^2])
```


Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{(f+gx)\sqrt{d-c^2dx^2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{a+b\sin^{-1}(cx)}{(f+gx)\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}$$
$$= \frac{\sqrt{1-c^2x^2}\,\text{Subst}\left(\int \frac{a+bx}{cf+g\sin(x)}\,dx, x, \sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}$$
$$= \frac{\left(2\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int \frac{e^{ix}(a+bx)}{2ce^{ix}f+ig-ie^{2ix}g}\,dx, x, \sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}$$
$$= -\frac{\left(2ig\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int \frac{e^{ix}(a+bx)}{2cf-2ie^{ix}g-2\sqrt{c^2f^2-g^2}}\,dx, x, \sin^{-1}(cx)\right)}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}} + \frac{\left(2ig\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int \right.}{\sqrt{c^2f^2}}$$
$$= -\frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}} + \frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\log\left(1-\right.}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}}$$
$$= -\frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}} + \frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\log\left(1-\right.}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}}$$
$$= -\frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}} + \frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\log\left(1-\right.}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}}$$

Mathematica [A] time = 0.217422, size = 232, normalized size = 0.61

$$\frac{\sqrt{1-c^2x^2}\left(-b\text{PolyLog}\left(2,-\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}-cf}\right)+b\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)-i\left(a+b\sin^{-1}(cx)\right)\left(\log\left(1+\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}-cf}\right)-\log\left(\right.\right.\right.}{\sqrt{d-c^2dx^2}\sqrt{c^2f^2-g^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/((f + g*x)*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*((-I)*(a + b*ArcSin[c*x])*(Log[1 + (I*E^(I*ArcSin[c*x])*
g)/(-(c*f) + Sqrt[c^2*f^2 - g^2])] - Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f +
 Sqrt[c^2*f^2 - g^2])]) - b*PolyLog[2, ((-I)*E^(I*ArcSin[c*x])*g)/(-(c*f) +
 Sqrt[c^2*f^2 - g^2])] + b*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c
^2*f^2 - g^2])]))/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2])
```

Maple [A] time = 0.157, size = 502, normalized size = 1.3

$$-\frac{a}{g}\ln\left(\left(-2\,\frac{d\left(c^2f^2-g^2\right)}{g^2}+2\,\frac{c^2fd}{g}\left(x+\frac{f}{g}\right)+2\,\sqrt{-\frac{d\left(c^2f^2-g^2\right)}{g^2}}\sqrt{-dc^2\left(x+\frac{f}{g}\right)^2+2\,\frac{c^2fd}{g}\left(x+\frac{f}{g}\right)-\frac{d\left(c^2f^2-g^2\right)}{g^2}}\right)\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(g*x+f)/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] -a/g/(-d*(c^2*f^2-g^2)/g^2)^(1/2)*ln((-2*d*(c^2*f^2-g^2)/g^2+2*c^2*d*f/g*(x
+f/g)+2*(-d*(c^2*f^2-g^2)/g^2)^(1/2)*(-d*c^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-
d*(c^2*f^2-g^2)/g^2)^(1/2))/(x+f/g))-I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*f^2+g
^2)^(1/2)*(-c^2*x^2+1)^(1/2)*(I*arcsin(c*x)*ln((-I*c*f-(I*c*x+(-c^2*x^2+1)^
(1/2))*g+(-c^2*f^2+g^2)^(1/2))/(-I*c*f+(-c^2*f^2+g^2)^(1/2)))-I*arcsin(c*x)
*ln((I*c*f+(I*c*x+(-c^2*x^2+1)^(1/2))*g+(-c^2*f^2+g^2)^(1/2))/(I*c*f+(-c^2*
f^2+g^2)^(1/2)))+dilog((-I*c*f-(I*c*x+(-c^2*x^2+1)^(1/2))*g+(-c^2*f^2+g^2)^
(1/2))/(-I*c*f+(-c^2*f^2+g^2)^(1/2)))-dilog((I*c*f+(I*c*x+(-c^2*x^2+1)^(1/2
))*g+(-c^2*f^2+g^2)^(1/2))/(I*c*f+(-c^2*f^2+g^2)^(1/2))))/d/(c^2*x^2-1)/(c^
2*f^2-g^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\arcsin\left(cx\right)+a}{\sqrt{-c^2dx^2+d}\left(gx+f\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(g*x+f)/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxi
ma")
```

```
[Out] integrate((b*arcsin(c*x) + a)/(sqrt(-c^2*d*x^2 + d)*(g*x + f)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2+d}(b\arcsin{(cx)}+a)}{c^2dgx^3+c^2dfx^2-dgx-df},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(g*x+f)/(-c^2*d*x^2+d)^(1/2),x, algorithm="fric
as")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(c^2*d*g*x^3 + c^2*d*f*x
^2 - d*g*x - d*f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a+b\operatorname{asin}{(cx)}}{\sqrt{-d(cx-1)(cx+1)}\,(f+gx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(g*x+f)/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral((a + b*asin(c*x))/(sqrt(-d*(c*x - 1)*(c*x + 1))*(f + g*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\arcsin{(cx)}+a}{\sqrt{-c^2dx^2+d}(gx+f)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(g*x+f)/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac
")
```

```
[Out] integrate((b*arcsin(c*x) + a)/(sqrt(-c^2*d*x^2 + d)*(g*x + f)), x)
```

3.48 $\int \frac{a+b\sin^{-1}(cx)}{(f+gx)^2\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=507

$$-\frac{bc^2f\sqrt{1-c^2x^2}\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{d-c^2dx^2}\left(c^2f^2-g^2\right)^{3/2}}+\frac{bc^2f\sqrt{1-c^2x^2}\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{\sqrt{d-c^2dx^2}\left(c^2f^2-g^2\right)^{3/2}}+\frac{g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}\left(c^2f^2-g^2\right)(f+gx}$$

```
[Out] (g*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/((c^2*f^2 - g^2)*(f + g*x)*Sqrt[d - c
^2*d*x^2]) - (I*c^2*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 - (I*E^(I
*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)^(3/2)*Sqrt[
d - c^2*d*x^2]) + (I*c^2*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 - (I
*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)^(3/2)*
Sqrt[d - c^2*d*x^2]) - (b*c*Sqrt[1 - c^2*x^2]*Log[f + g*x])/((c^2*f^2 - g^2
)*Sqrt[d - c^2*d*x^2]) - (b*c^2*f*Sqrt[1 - c^2*x^2]*PolyLog[2, (I*E^(I*ArcS
in[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)^(3/2)*Sqrt[d - c
^2*d*x^2]) + (b*c^2*f*Sqrt[1 - c^2*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/
(c*f + Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2])
```

Rubi [A] time = 0.709962, antiderivative size = 507, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.323, Rules used = {4777, 4773, 3324, 3323, 2264, 2190, 2279, 2391, 2668, 31}

$$-\frac{bc^2f\sqrt{1-c^2x^2}\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{d-c^2dx^2}\left(c^2f^2-g^2\right)^{3/2}}+\frac{bc^2f\sqrt{1-c^2x^2}\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{\sqrt{d-c^2dx^2}\left(c^2f^2-g^2\right)^{3/2}}+\frac{g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}\left(c^2f^2-g^2\right)(f+gx}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/((f + g*x)^2*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] (g*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/((c^2*f^2 - g^2)*(f + g*x)*Sqrt[d - c
^2*d*x^2]) - (I*c^2*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 - (I*E^(I
*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)^(3/2)*Sqrt[
d - c^2*d*x^2]) + (I*c^2*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 - (I
*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)^(3/2)*
Sqrt[d - c^2*d*x^2]) - (b*c*Sqrt[1 - c^2*x^2]*Log[f + g*x])/((c^2*f^2 - g^2
)*Sqrt[d - c^2*d*x^2]) - (b*c^2*f*Sqrt[1 - c^2*x^2]*PolyLog[2, (I*E^(I*ArcS
in[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)^(3/2)*Sqrt[d - c
^2*d*x^2]) + (b*c^2*f*Sqrt[1 - c^2*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/
```

```
(c*f + Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3324

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[(b*(c + d*x)^m*Cos[e + f*x])/(f*(a^2 - b^2)*(a + b*Sin[e +
f*x])), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[(b*d*m)/(f*(a^2 - b^2)), Int[((c + d*x)^(m - 1)*Cos[e + f*x])/(a
 + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 2668

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rule 31

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

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{(f+gx)^2\sqrt{d-c^2dx^2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{a+b\sin^{-1}(cx)}{(f+gx)^2\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(c\sqrt{1-c^2x^2}\right)\operatorname{Subst}\left(\int \frac{a+bx}{(cf+g\sin(x))^2}\,dx, x, \sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}$$

$$= \frac{g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{\left(c^2f^2-g^2\right)(f+gx)\sqrt{d-c^2dx^2}} + \frac{\left(c^2f\sqrt{1-c^2x^2}\right)\operatorname{Subst}\left(\int \frac{a+bx}{cf+g\sin(x)}\,dx, x, \sin^{-1}(cx)\right)}{\left(c^2f^2-g^2\right)\sqrt{d-c^2dx^2}} - $$

$$= \frac{g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{\left(c^2f^2-g^2\right)(f+gx)\sqrt{d-c^2dx^2}} - \frac{\left(bc\sqrt{1-c^2x^2}\right)\operatorname{Subst}\left(\int \frac{1}{cf+x}\,dx, x, cgx\right)}{\left(c^2f^2-g^2\right)\sqrt{d-c^2dx^2}} + \frac{\left(2c^2f\sqrt{1-c^2\right.}{}$$

$$= \frac{g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{\left(c^2f^2-g^2\right)(f+gx)\sqrt{d-c^2dx^2}} - \frac{bc\sqrt{1-c^2x^2}\log(f+gx)}{\left(c^2f^2-g^2\right)\sqrt{d-c^2dx^2}} - \frac{\left(2ic^2fg\sqrt{1-c^2x^2}\right)\operatorname{Subst}\left(\int\right.}{\left(c^2f^2-g\right.}$$

$$= \frac{g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{\left(c^2f^2-g^2\right)(f+gx)\sqrt{d-c^2dx^2}} - \frac{ic^2f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{\left(c^2f^2-g^2\right)^{3/2}\sqrt{d-c^2dx^2}} + $$

$$= \frac{g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{\left(c^2f^2-g^2\right)(f+gx)\sqrt{d-c^2dx^2}} - \frac{ic^2f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{\left(c^2f^2-g^2\right)^{3/2}\sqrt{d-c^2dx^2}} + $$

$$= \frac{g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{\left(c^2f^2-g^2\right)(f+gx)\sqrt{d-c^2dx^2}} - \frac{ic^2f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{\left(c^2f^2-g^2\right)^{3/2}\sqrt{d-c^2dx^2}} + $$

Mathematica [A] time = 0.457289, size = 295, normalized size = 0.58

$$\frac{c\sqrt{1-c^2x^2}\left(\frac{cf\left(-b\operatorname{PolyLog}\left(2,-\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}-cf}\right)+b\operatorname{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)-i\left(a+b\sin^{-1}(cx)\right)\left(\log\left(1+\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}-cf}\right)-\log\left(1-\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)\right)\right)}{\sqrt{c^2f^2-g^2}}+\frac{g\sqrt{1-c^2x^2}\left(a\right.}{cf+}\right.}{\sqrt{d-c^2dx^2}\left(c^2f^2-g^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/((f + g*x)^2*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] (c*Sqrt[1 - c^2*x^2]*((g*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(c*f + c*g*
x) - b*Log[f + g*x] + (c*f*((-I)*(a + b*ArcSin[c*x])*(Log[1 + (I*E^(I*ArcSi
n[c*x])*g)/(-(c*f) + Sqrt[c^2*f^2 - g^2])] - Log[1 - (I*E^(I*ArcSin[c*x])*g
)/(c*f + Sqrt[c^2*f^2 - g^2])]) - b*PolyLog[2, ((-I)*E^(I*ArcSin[c*x])*g)/(
-(c*f) + Sqrt[c^2*f^2 - g^2])] + b*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f
+ Sqrt[c^2*f^2 - g^2])]))/Sqrt[c^2*f^2 - g^2]))/((c^2*f^2 - g^2)*Sqrt[d - c
^2*d*x^2])
```

Maple [B] time = 0.408, size = 1678, normalized size = 3.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(g*x+f)^2/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] a/d/(c^2*f^2-g^2)/(x+f/g)*(-d*c^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-
g^2)/g^2)^(1/2)-a/g*c^2*f/(c^2*f^2-g^2)/(-d*(c^2*f^2-g^2)/g^2)^(1/2)*ln((-2
*d*(c^2*f^2-g^2)/g^2+2*c^2*d*f/g*(x+f/g)+2*(-d*(c^2*f^2-g^2)/g^2)^(1/2)*(-d
*c^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))/(x+f/g))+b*(
-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/d/(c^2*x^2-1)/(c^2*f^2-g^2)/(g*x+f)*(-c^2
*x^2+1)*x*c^2*f+b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/d/(c^2*x^2-1)/(c^2*f^2
-g^2)/(g*x+f)*x^3*c^4*f-I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d/(c^
2*x^2-1)/(c^2*f^2-g^2)^2*c^2*(-c^2*f^2+g^2)^(1/2)*dilog((-I*c*f-(I*c*x+(-c^
2*x^2+1)^(1/2))*g+(-c^2*f^2+g^2)^(1/2))/(-I*c*f+(-c^2*f^2+g^2)^(1/2)))*f+b*
(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/d/(c^2*x^2-1)/(c^2*f^2-g^2)/(g*x+f)*x^2*
c^2*g+I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d/(c^2*x^2-1)/(c^2*f^2-
g^2)^2*c^2*(-c^2*f^2+g^2)^(1/2)*dilog((I*c*f+(I*c*x+(-c^2*x^2+1)^(1/2))*g+(
-c^2*f^2+g^2)^(1/2))/(I*c*f+(-c^2*f^2+g^2)^(1/2)))*f-b*(-d*(c^2*x^2-1))^(1/
2)*arcsin(c*x)/d/(c^2*x^2-1)/(c^2*f^2-g^2)/(g*x+f)*x*c^2*f-b*(-d*(c^2*x^2-1
))^(1/2)*arcsin(c*x)/d/(c^2*x^2-1)/(c^2*f^2-g^2)/(g*x+f)*g+b*(-d*(c^2*x^2-1
))^(1/2)*(-c^2*x^2+1)^(1/2)/d/(c^2*x^2-1)/(c^2*f^2-g^2)^2*c^2*(-c^2*f^2+g^2
)^(1/2)*f*arcsin(c*x)*ln((-I*c*f-(I*c*x+(-c^2*x^2+1)^(1/2))*g+(-c^2*f^2+g^2
)^(1/2))/(-I*c*f+(-c^2*f^2+g^2)^(1/2)))-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+
1)^(1/2)/d/(c^2*x^2-1)/(c^2*f^2-g^2)^2*c^2*(-c^2*f^2+g^2)^(1/2)*f*arcsin(c*
x)*ln((I*c*f+(I*c*x+(-c^2*x^2+1)^(1/2))*g+(-c^2*f^2+g^2)^(1/2))/(I*c*f+(-c^
2*f^2+g^2)^(1/2)))+I*b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/d/(c^2*x^2-1)/(c^
2*f^2-g^2)/(g*x+f)*(-c^2*x^2+1)^(1/2)*c*f+I*b*(-d*(c^2*x^2-1))^(1/2)*arcsin
(c*x)/d/(c^2*x^2-1)/(c^2*f^2-g^2)/(g*x+f)*(-c^2*x^2+1)^(1/2)*x*c*g+b*(-d*(c
^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d/(c^2*x^2-1)/(c^2*f^2-g^2)^2*c^3*ln((I
*c*x+(-c^2*x^2+1)^(1/2))^2*g+2*I*c*f*(I*c*x+(-c^2*x^2+1)^(1/2))-g)*f^2-2*b*
(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d/(c^2*x^2-1)/(c^2*f^2-g^2)^2*c^3
```

```
*ln(I*c*x+(-c^2*x^2+1)^(1/2))*f^2-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/
2)/d/(c^2*x^2-1)/(c^2*f^2-g^2)^2*c*ln((I*c*x+(-c^2*x^2+1)^(1/2))^2*g+2*I*c*
f*(I*c*x+(-c^2*x^2+1)^(1/2))-g)*g^2+2*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)
^(1/2)/d/(c^2*x^2-1)/(c^2*f^2-g^2)^2*c*ln(I*c*x+(-c^2*x^2+1)^(1/2))*g^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \arcsin(cx) + a}{\sqrt{-c^2dx^2 + d}\left(gx + f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(g*x+f)^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="ma
xima")
```

```
[Out] integrate((b*arcsin(c*x) + a)/(sqrt(-c^2*d*x^2 + d)*(g*x + f)^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2 + d}(b \arcsin(cx) + a)}{c^2dg^2x^4 + 2\,c^2dfgx^3 - 2\,dfgx - df^2 + \left(c^2df^2 - dg^2\right)x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(g*x+f)^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="fr
icas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(c^2*d*g^2*x^4 + 2*c^2*d
*f*g*x^3 - 2*d*f*g*x - d*f^2 + (c^2*d*f^2 - d*g^2)*x^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a + b \operatorname{asin}(cx)}{\sqrt{-d(cx - 1)(cx + 1)}\left(f + gx\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(g*x+f)**2/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral((a + b*asin(c*x))/(sqrt(-d*(c*x - 1)*(c*x + 1))*(f + g*x)**2), x)
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(g*x+f)^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="gi
ac")
```

```
[Out] Exception raised: TypeError
```

3.49 $\int \frac{(f+gx)^3\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=315

$$\frac{\left(c^2fx\left(c^2f^2+3g^2\right)+g\left(3c^2f^2+g^2\right)\right)\left(a+b\sin^{-1}(cx)\right)}{c^4d\sqrt{d-c^2dx^2}}-\frac{3fg^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc^3d\sqrt{d-c^2dx^2}}+\frac{g^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(c\right.}{c^4d\sqrt{d-c^2dx^2}}$$

```
[Out] -((b*g^3*x*Sqrt[1 - c^2*x^2])/(c^3*d*Sqrt[d - c^2*d*x^2])) + ((g*(3*c^2*f^2
 + g^2) + c^2*f*(c^2*f^2 + 3*g^2)*x)*(a + b*ArcSin[c*x]))/(c^4*d*Sqrt[d - c
^2*d*x^2]) + (g^3*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(c^4*d*Sqrt[d - c^2*d*
x^2]) - (3*f*g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c^3*d*Sqrt[d
 - c^2*d*x^2]) + (b*(c*f + g)^3*Sqrt[1 - c^2*x^2]*Log[1 - c*x])/(2*c^4*d*Sq
rt[d - c^2*d*x^2]) + (b*(c*f - g)^3*Sqrt[1 - c^2*x^2]*Log[1 + c*x])/(2*c^4*
d*Sqrt[d - c^2*d*x^2])
```

Rubi [A] time = 0.555683, antiderivative size = 315, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 10, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.323, Rules used = {4777, 4775, 637, 4761, 12, 633, 31, 4641, 4677, 8}

$$\frac{\left(c^2fx\left(c^2f^2+3g^2\right)+g\left(3c^2f^2+g^2\right)\right)\left(a+b\sin^{-1}(cx)\right)}{c^4d\sqrt{d-c^2dx^2}}-\frac{3fg^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc^3d\sqrt{d-c^2dx^2}}+\frac{g^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(c\right.}{c^4d\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^3*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(3/2),x]
```


```
[Out] -((b*g^3*x*Sqrt[1 - c^2*x^2])/(c^3*d*Sqrt[d - c^2*d*x^2])) + ((g*(3*c^2*f^2
 + g^2) + c^2*f*(c^2*f^2 + 3*g^2)*x)*(a + b*ArcSin[c*x]))/(c^4*d*Sqrt[d - c
^2*d*x^2]) + (g^3*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(c^4*d*Sqrt[d - c^2*d*
x^2]) - (3*f*g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c^3*d*Sqrt[d
 - c^2*d*x^2]) + (b*(c*f + g)^3*Sqrt[1 - c^2*x^2]*Log[1 - c*x])/(2*c^4*d*Sq
rt[d - c^2*d*x^2]) + (b*(c*f - g)^3*Sqrt[1 - c^2*x^2]*Log[1 + c*x])/(2*c^4*
d*Sqrt[d - c^2*d*x^2])
```


Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
```

```
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4775

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 637

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2)^(3/2), x_Symbol] :> Simp[(-(a
*e) + c*d*x)/(a*c*Sqrt[a + c*x^2]), x] /; FreeQ[{a, c, d, e}, x]
```

Rule 4761

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 633

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

Rule 31

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

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4677

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

Rule 8

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

Rubi steps

$$\int \frac{(f+gx)^3\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{3/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)^3\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}\,dx}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{\left(c^2f^3+3fg^2+g\left(3c^2f^2+g^2\right)x\right)\left(a+b\sin^{-1}(cx)\right)}{c^2\left(1-c^2x^2\right)^{3/2}} - \frac{3fg^2\left(a+b\sin^{-1}(cx)\right)}{c^2\sqrt{1-c^2x^2}} - \frac{g^3x\left(a+b\sin^{-1}(cx)\right)}{c^2\sqrt{1-c^2x^2}}\right)}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \frac{\left(c^2f^3+3fg^2+g\left(3c^2f^2+g^2\right)x\right)\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}\,dx}{c^2d\sqrt{d-c^2dx^2}} - \frac{\left(3fg^2\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{\sqrt{1-c^2x^2}}\,d}{c^2d\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(g\left(3c^2f^2+g^2\right)+c^2f\left(c^2f^2+3g^2\right)x\right)\left(a+b\sin^{-1}(cx)\right)}{c^4d\sqrt{d-c^2dx^2}} + \frac{g^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(c\right.}{c^4d\sqrt{d-c^2dx^2}}$$

$$= -\frac{bg^3x\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} + \frac{\left(g\left(3c^2f^2+g^2\right)+c^2f\left(c^2f^2+3g^2\right)x\right)\left(a+b\sin^{-1}(cx)\right)}{c^4d\sqrt{d-c^2dx^2}} + \frac{g^3\left(1-\right.}{}$$

$$= -\frac{bg^3x\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} + \frac{\left(g\left(3c^2f^2+g^2\right)+c^2f\left(c^2f^2+3g^2\right)x\right)\left(a+b\sin^{-1}(cx)\right)}{c^4d\sqrt{d-c^2dx^2}} + \frac{g^3\left(1-\right.}{}$$

$$= -\frac{bg^3x\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} + \frac{\left(g\left(3c^2f^2+g^2\right)+c^2f\left(c^2f^2+3g^2\right)x\right)\left(a+b\sin^{-1}(cx)\right)}{c^4d\sqrt{d-c^2dx^2}} + \frac{g^3\left(1-\right.}{}$$

Mathematica [A] time = 1.03947, size = 194, normalized size = 0.62

$$\frac{\sqrt{1-c^2x^2}\left(2g^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)-\frac{3cfg^2\left(a+b\sin^{-1}(cx)\right)^2}{b}+(cf-g)^3\left(2b\log\left(\sin\left(\frac{1}{4}\left(2\sin^{-1}(cx)+\pi\right)\right)\right)-\cot\left(\frac{1}{4}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^3*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*(-2*b*c*g^3*x + 2*g^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*
x]) - (3*c*f*g^2*(a + b*ArcSin[c*x])^2)/b + (c*f - g)^3*(-((a + b*ArcSin[c*
x])*Cot[(Pi + 2*ArcSin[c*x])/4]) + 2*b*Log[Sin[(Pi + 2*ArcSin[c*x])/4]]) +
(c*f + g)^3*(2*b*Log[Cos[(Pi + 2*ArcSin[c*x])/4]] + (a + b*ArcSin[c*x])*Tan
[(Pi + 2*ArcSin[c*x])/4])))/(2*c^4*d*Sqrt[d - c^2*d*x^2])
```

Maple [C] time = 0.518, size = 1158, normalized size = 3.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] -a*g^3*x^2/c^2/d/(-c^2*d*x^2+d)^(1/2)+2*a*g^3/d/c^4/(-c^2*d*x^2+d)^(1/2)+3*
a*f*g^2*x/c^2/d/(-c^2*d*x^2+d)^(1/2)-3*a*f*g^2/c^2/d/(c^2*d)^(1/2)*arctan((
c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+3*a*f^2*g/c^2/d/(-c^2*d*x^2+d)^(1/2)+a
*f^3/d*x/(-c^2*d*x^2+d)^(1/2)-2*b*(-d*(c^2*x^2-1))^(1/2)*g^3/c^4/d^2/(c^2*x
^2-1)*arcsin(c*x)+3*I*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^3/d^2/(
c^2*x^2-1)*f*arcsin(c*x)*g^2-3*b*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^2-1)
*arcsin(c*x)*x*f*g^2-3*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^2/d^2/
(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*f^2*g-3*b*(-d*(c^2*x^2-1))^(1/2)
*(-c^2*x^2+1)^(1/2)/c^3/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*f*g^
2+3*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)
+I)/c^2/d^2/(c^2*x^2-1)*f^2*g-3*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)
*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)/c^3/d^2/(c^2*x^2-1)*f*g^2+b*(-d*(c^2*x^2-1)
)^(1/2)*g^3/c^3/d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+3/2*b*(-d*(c^2*x^2-1))
^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d^2/(c^2*x^2-1)*arcsin(c*x)^2*f*g^2+b*(-d*(c^
2*x^2-1))^(1/2)*g^3/c^2/d^2/(c^2*x^2-1)*arcsin(c*x)*x^2-b*(-d*(c^2*x^2-1))^
(1/2)/d^2/(c^2*x^2-1)*arcsin(c*x)*x*f^3-3*b*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2/
(c^2*x^2-1)*arcsin(c*x)*f^2*g-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c
```

```
/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*f^3-b*(-d*(c^2*x^2-1))^(1/2
)*(-c^2*x^2+1)^(1/2)/c^4/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*g^3
-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)
/c/d^2/(c^2*x^2-1)*f^3+b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*ln(I*c*x
+(-c^2*x^2+1)^(1/2)+I)/c^4/d^2/(c^2*x^2-1)*g^3+I*b*(-c^2*x^2+1)^(1/2)*(-d*(
c^2*x^2-1))^(1/2)/c/d^2/(c^2*x^2-1)*f^3*arcsin(c*x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(ag^3x^3+3\,afg^2x^2+3\,af^2gx+af^3+\left(bg^3x^3+3\,bfg^2x^2+3\,bf^2gx+bf^3\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2+d}}{c^4d^2x^4-2\,c^2d^2x^2+d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="fr
icas")
```

```
[Out] integral((a*g^3*x^3 + 3*a*f*g^2*x^2 + 3*a*f^2*g*x + a*f^3 + (b*g^3*x^3 + 3*
b*f*g^2*x^2 + 3*b*f^2*g*x + b*f^3)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/(c^4*d
^2*x^4 - 2*c^2*d^2*x^2 + d^2), x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Exception raised: TypeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^3(b\arcsin(cx)+a)}{(-c^2dx^2+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="gi
ac")
```

```
[Out] integrate((g*x + f)^3*(b*arcsin(c*x) + a)/(-c^2*d*x^2 + d)^(3/2), x)
```

3.50 $\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=213

$$\frac{\left(x\left(c^2f^2+g^2\right)+2fg\right)\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}}-\frac{g^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc^3d\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x^2}(cf-g)^2\log(cx+1)}{2c^3d\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x}}{2c}$$

```
[Out] ((2*f*g + (c^2*f^2 + g^2)*x)*(a + b*ArcSin[c*x]))/(c^2*d*Sqrt[d - c^2*d*x^2
]) - (g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c^3*d*Sqrt[d - c^2*
d*x^2]) + (b*(c*f + g)^2*Sqrt[1 - c^2*x^2]*Log[1 - c*x])/(2*c^3*d*Sqrt[d -
c^2*d*x^2]) + (b*(c*f - g)^2*Sqrt[1 - c^2*x^2]*Log[1 + c*x])/(2*c^3*d*Sqrt[
d - c^2*d*x^2])
```

Rubi [A] time = 0.428221, antiderivative size = 213, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.226, Rules used = {4777, 4775, 637, 4761, 633, 31, 4641}

$$\frac{\left(x\left(c^2f^2+g^2\right)+2fg\right)\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}}-\frac{g^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc^3d\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x^2}(cf-g)^2\log(cx+1)}{2c^3d\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x}}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^2*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] ((2*f*g + (c^2*f^2 + g^2)*x)*(a + b*ArcSin[c*x]))/(c^2*d*Sqrt[d - c^2*d*x^2
]) - (g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c^3*d*Sqrt[d - c^2*
d*x^2]) + (b*(c*f + g)^2*Sqrt[1 - c^2*x^2]*Log[1 - c*x])/(2*c^3*d*Sqrt[d -
c^2*d*x^2]) + (b*(c*f - g)^2*Sqrt[1 - c^2*x^2]*Log[1 + c*x])/(2*c^3*d*Sqrt[
d - c^2*d*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4775

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 637

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2)^(3/2), x_Symbol] :> Simp[(-(a
*e) + c*d*x)/(a*c*Sqrt[a + c*x^2]), x] /; FreeQ[{a, c, d, e}, x]
```

Rule 4761

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rule 633

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

Rule 31

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

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{3/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}\,dx}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{\left(c^2f^2+g^2+2c^2fgx\right)\left(a+b\sin^{-1}(cx)\right)}{c^2\left(1-c^2x^2\right)^{3/2}} - \frac{g^2\left(a+b\sin^{-1}(cx)\right)}{c^2\sqrt{1-c^2x^2}}\right)dx}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \frac{\left(c^2f^2+g^2+2c^2fgx\right)\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}\,dx}{c^2d\sqrt{d-c^2dx^2}} - \frac{\left(g^2\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{\sqrt{1-c^2x^2}}\,dx}{c^2d\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(2fg+\left(c^2f^2+g^2\right)x\right)\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}} - \frac{g^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc^3d\sqrt{d-c^2dx^2}} - \frac{\left(b\sqrt{1-c\right.}{}$$

$$= \frac{\left(2fg+\left(c^2f^2+g^2\right)x\right)\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}} - \frac{g^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc^3d\sqrt{d-c^2dx^2}} - \frac{\left(b(cf-g\right.}{}$$

$$= \frac{\left(2fg+\left(c^2f^2+g^2\right)x\right)\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}} - \frac{g^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc^3d\sqrt{d-c^2dx^2}} + \frac{b(cf+g}{2}$$

Mathematica [A] time = 0.702019, size = 156, normalized size = 0.73

$$\frac{\sqrt{1-c^2x^2}\left((g-cf)^2\left(2b\log\left(\sin\left(\frac{1}{4}\left(2\sin^{-1}(cx)+\pi\right)\right)\right)-\cot\left(\frac{1}{4}\left(2\sin^{-1}(cx)+\pi\right)\right)\left(a+b\sin^{-1}(cx)\right)\right)+(cf+g)^2\left(\tan\left(\right.\right.\right.}{2c^3d\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^2*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*(-((g^2*(a + b*ArcSin[c*x])^2)/b) + (-(c*f) + g)^2*(-((a
 + b*ArcSin[c*x])*Cot[(Pi + 2*ArcSin[c*x])/4]) + 2*b*Log[Sin[(Pi + 2*ArcSin
[c*x])/4]]) + (c*f + g)^2*(2*b*Log[Cos[(Pi + 2*ArcSin[c*x])/4]] + (a + b*Ar
cSin[c*x])*Tan[(Pi + 2*ArcSin[c*x])/4])))/(2*c^3*d*Sqrt[d - c^2*d*x^2])
```

Maple [C] time = 0.364, size = 867, normalized size = 4.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] a*g^2*x/c^2/d/(-c^2*d*x^2+d)^(1/2)-a*g^2/c^2/d/(c^2*d)^(1/2)*arctan((c^2*d)
^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+2*a*f*g/c^2/d/(-c^2*d*x^2+d)^(1/2)+a*f^2/d*x
/(-c^2*d*x^2+d)^(1/2)+1/2*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d
^2/(c^2*x^2-1)*g^2*arcsin(c*x)^2+I*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1
/2)/c^3/d^2/(c^2*x^2-1)*arcsin(c*x)*g^2+I*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2
-1))^(1/2)/c/d^2/(c^2*x^2-1)*arcsin(c*x)*f^2-2*b*(-d*(c^2*x^2-1))^(1/2)*arc
sin(c*x)/c^2/d^2/(c^2*x^2-1)*(-c^2*x^2+1)*f*g-2*b*(-d*(c^2*x^2-1))^(1/2)*ar
csin(c*x)/d^2/(c^2*x^2-1)*x^2*f*g-b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/d^2/
(c^2*x^2-1)*x*f^2-b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/c^2/d^2/(c^2*x^2-1)*
x*g^2-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/d^2/(c^2*x^2-1)*ln(I*c*
x+(-c^2*x^2+1)^(1/2)-I)*f^2-2*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c
^2/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*f*g-b*(-d*(c^2*x^2-1))^(1
/2)*(-c^2*x^2+1)^(1/2)/c^3/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*g
^2-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/d^2/(c^2*x^2-1)*ln(I*c*x+(
-c^2*x^2+1)^(1/2)+I)*f^2+2*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^2/
d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)*f*g-b*(-d*(c^2*x^2-1))^(1/2)
*(-c^2*x^2+1)^(1/2)/c^3/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)*g^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}\left(ag^2x^2+2\,afgx+af^2+\left(bg^2x^2+2\,bfgx+bf^2\right)\arcsin\left(cx\right)\right)}{c^4d^2x^4-2\,c^2d^2x^2+d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="fr
icas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(a*g^2*x^2 + 2*a*f*g*x + a*f^2 + (b*g^2*x^2 +
 2*b*f*g*x + b*f^2)*arcsin(c*x))/(c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + b \operatorname{asin}(cx)) \left(f + gx\right)^2}{\left(-d (cx - 1)(cx + 1)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x)**2/(-d*(c*x - 1)*(c*x + 1))**(3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(gx + f\right)^2 (b \arcsin(cx) + a)}{\left(-c^2 dx^2 + d\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="gi
ac")
```

```
[Out] integrate((g*x + f)^2*(b*arcsin(c*x) + a)/(-c^2*d*x^2 + d)^(3/2), x)
```

3.51 $\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=144

$$\frac{\left(c^2fx+g\right)\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x^2}(cf+g)\log(1-cx)}{2c^2d\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x^2}(cf-g)\log(cx+1)}{2c^2d\sqrt{d-c^2dx^2}}$$

```
[Out] ((g + c^2*f*x)*(a + b*ArcSin[c*x]))/(c^2*d*Sqrt[d - c^2*d*x^2]) + (b*(c*f +
 g)*Sqrt[1 - c^2*x^2]*Log[1 - c*x])/(2*c^2*d*Sqrt[d - c^2*d*x^2]) + (b*(c*f
 - g)*Sqrt[1 - c^2*x^2]*Log[1 + c*x])/(2*c^2*d*Sqrt[d - c^2*d*x^2])
```

Rubi [A] time = 0.186609, antiderivative size = 144, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {4777, 637, 4761, 12, 633, 31}

$$\frac{\left(c^2fx+g\right)\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x^2}(cf+g)\log(1-cx)}{2c^2d\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x^2}(cf-g)\log(cx+1)}{2c^2d\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] ((g + c^2*f*x)*(a + b*ArcSin[c*x]))/(c^2*d*Sqrt[d - c^2*d*x^2]) + (b*(c*f +
 g)*Sqrt[1 - c^2*x^2]*Log[1 - c*x])/(2*c^2*d*Sqrt[d - c^2*d*x^2]) + (b*(c*f
 - g)*Sqrt[1 - c^2*x^2]*Log[1 + c*x])/(2*c^2*d*Sqrt[d - c^2*d*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 637

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2)^(3/2), x_Symbol] :> Simp[(-(a
*e) + c*d*x)/(a*c*Sqrt[a + c*x^2]), x] /; FreeQ[{a, c, d, e}, x]
```

Rule 4761

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 633

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

Rule 31

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

Rubi steps

$$\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{3/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}\,dx}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(g+c^2fx\right)\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}} - \frac{\left(bc\sqrt{1-c^2x^2}\right)\int \frac{g+c^2fx}{c^2\left(1-c^2x^2\right)}\,dx}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(g+c^2fx\right)\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}} - \frac{\left(b\sqrt{1-c^2x^2}\right)\int \frac{g+c^2fx}{1-c^2x^2}\,dx}{cd\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(g+c^2fx\right)\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}} - \frac{\left(b(cf-g)\sqrt{1-c^2x^2}\right)\int \frac{1}{-c-c^2x}\,dx}{2d\sqrt{d-c^2dx^2}} - \frac{\left(b(cf+g)\sqrt{1-c\right.}{2d\sqrt{d-}}$$

$$= \frac{\left(g+c^2fx\right)\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}} + \frac{b(cf+g)\sqrt{1-c^2x^2}\log(1-cx)}{2c^2d\sqrt{d-c^2dx^2}} + \frac{b(cf-g)\sqrt{1-c^2x^2}}{2c^2d\sqrt{d-c}}$$

Mathematica [A] time = 0.518545, size = 135, normalized size = 0.94

$$\frac{\sqrt{1-c^2x^2}\left((cf-g)\left(2b\log\left(\sin\left(\frac{1}{4}\left(2\sin^{-1}(cx)+\pi\right)\right)\right)-\cot\left(\frac{1}{4}\left(2\sin^{-1}(cx)+\pi\right)\right)\left(a+b\sin^{-1}(cx)\right)\right)+(cf+g)\left(\tan\left(\frac{1}{4}\right.\right.\right.}{2c^2d\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*((c*f - g)*(-((a + b*ArcSin[c*x])*Cot[(Pi + 2*ArcSin[c*x
])/4]) + 2*b*Log[Sin[(Pi + 2*ArcSin[c*x])/4]]) + (c*f + g)*(2*b*Log[Cos[(Pi
 + 2*ArcSin[c*x])/4]] + (a + b*ArcSin[c*x])*Tan[(Pi + 2*ArcSin[c*x])/4])))/
(2*c^2*d*Sqrt[d - c^2*d*x^2])
```

Maple [C] time = 0.244, size = 443, normalized size = 3.1

$$\frac{ag}{c^2d}\frac{1}{\sqrt{-c^2dx^2+d}} + \frac{afx}{d}\frac{1}{\sqrt{-c^2dx^2+d}} + \frac{ibf\arcsin(cx)}{cd^2\left(c^2x^2-1\right)}\sqrt{-d\left(c^2x^2-1\right)}\sqrt{-c^2x^2+1} - \frac{bx\arcsin(cx)f}{d^2\left(c^2x^2-1\right)}\sqrt{-d\left(c^2x^2-1\right)} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] a*g/c^2/d/(-c^2*d*x^2+d)^(1/2)+a*f/d*x/(-c^2*d*x^2+d)^(1/2)+I*b*(-d*(c^2*x^
2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/d^2/(c^2*x^2-1)*f*arcsin(c*x)-b*(-d*(c^2*x
^2-1))^(1/2)/d^2/(c^2*x^2-1)*arcsin(c*x)*x*f-b*(-d*(c^2*x^2-1))^(1/2)/c^2/d
^2/(c^2*x^2-1)*arcsin(c*x)*g-b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*ln
(I*c*x+(-c^2*x^2+1)^(1/2)+I)/c/d^2/(c^2*x^2-1)*f+b*(-c^2*x^2+1)^(1/2)*(-d*(
c^2*x^2-1))^(1/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)/c^2/d^2/(c^2*x^2-1)*g-b*(-
c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^
2+1)^(1/2)-I)*f-b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^
2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*g
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{bcf\sqrt{\frac{1}{c^4d}}\log\left(x^2-\frac{1}{c^2}\right)}{2\,d}+\frac{bfx\arcsin\left(cx\right)}{\sqrt{-c^2dx^2+d}d}+\frac{afx}{\sqrt{-c^2dx^2+d}d}+\frac{\frac{1}{2}\left(\sqrt{cx+1}\sqrt{-cx+1}c^3d^2\left(\frac{2\,x}{c^2d^2}-\frac{\log(cx+1)}{c^3d^2}+\frac{\log(cx-1)}{c^3d^2}\right)+2\ \cdots\right.}{\sqrt{cx+1}\sqrt{-cx+1}c^2d^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxi
ma")
```

```
[Out] -1/2*b*c*f*sqrt(1/(c^4*d))*log(x^2 - 1/c^2)/d + b*f*x*arcsin(c*x)/(sqrt(-c^
2*d*x^2 + d)*d) + a*f*x/(sqrt(-c^2*d*x^2 + d)*d) + (sqrt(c*x + 1)*sqrt(-c*x
 + 1)*c^3*d^2*integrate(x^2/(c^4*d^2*x^4 - c^2*d^2*x^2 + (c^2*d^2*x^2 - d^2
)*e^(log(c*x + 1) + log(-c*x + 1))), x) + arctan2(c*x, sqrt(c*x + 1)*sqrt(-
c*x + 1)))*b*g/(sqrt(c*x + 1)*sqrt(-c*x + 1)*c^2*d^(3/2)) + a*g/(sqrt(-c^2*
d*x^2 + d)*c^2*d)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}\left(agx+af+\left(bgx+bf\right)\arcsin\left(cx\right)\right)}{c^4d^2x^4-2\,c^2d^2x^2+d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="fric
as")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(a*g*x + a*f + (b*g*x + b*f)*arcsin(c*x))/(c^
4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + b \operatorname{asin}(cx))\left(f + gx\right)}{(-d\,(cx-1)\,(cx+1))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x)/(-d*(c*x - 1)*(c*x + 1))**(3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(gx + f\right)(b \arcsin(cx) + a)}{\left(-c^2dx^2 + d\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac
")
```

```
[Out] integrate((g*x + f)*(b*arcsin(c*x) + a)/(-c^2*d*x^2 + d)^(3/2), x)
```

3.52 $\int \frac{a+b\sin^{-1}(cx)}{(f+gx)\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=654

$$\frac{bg^2\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{d\sqrt{d-c^2dx^2}\left(c^2f^2-g^2\right)^{3/2}}-\frac{bg^2\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{d\sqrt{d-c^2dx^2}\left(c^2f^2-g^2\right)^{3/2}}+\frac{ig^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\log\left(1\right.}{d\sqrt{d-c^2dx^2}\left(c^2f^2-g^2\right)}$$

```
[Out] -(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Cot[Pi/4 + ArcSin[c*x]/2])/(2*d*(c*
f - g)*Sqrt[d - c^2*d*x^2]) + (I*g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*
Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(d*(c^2*f^2 -
 g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) - (I*g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c
*x])*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(d*(c^2*
f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) + (b*Sqrt[1 - c^2*x^2]*Log[Cos[Pi/4 +
 ArcSin[c*x]/2]])/(d*(c*f + g)*Sqrt[d - c^2*d*x^2]) + (b*Sqrt[1 - c^2*x^2]*
Log[Sin[Pi/4 + ArcSin[c*x]/2]])/(d*(c*f - g)*Sqrt[d - c^2*d*x^2]) + (b*g^2*
Sqrt[1 - c^2*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 -
g^2])])/(d*(c^2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) - (b*g^2*Sqrt[1 - c^2
*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(d*(
c^2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) + (Sqrt[1 - c^2*x^2]*(a + b*ArcSi
n[c*x])*Tan[Pi/4 + ArcSin[c*x]/2])/(2*d*(c*f + g)*Sqrt[d - c^2*d*x^2])
```

Rubi [A] time = 1.15985, antiderivative size = 654, normalized size of antiderivative = 1., number of steps used = 20, number of rules used = 11, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.355, Rules used = {4777, 4775, 4773, 3318, 4184, 3475, 3323, 2264, 2190, 2279, 2391}

$$\frac{bg^2\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{d\sqrt{d-c^2dx^2}\left(c^2f^2-g^2\right)^{3/2}}-\frac{bg^2\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{d\sqrt{d-c^2dx^2}\left(c^2f^2-g^2\right)^{3/2}}+\frac{ig^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\log\left(1\right.}{d\sqrt{d-c^2dx^2}\left(c^2f^2-g^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/((f + g*x)*(d - c^2*d*x^2)^(3/2)),x]
```

```
[Out] -(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Cot[Pi/4 + ArcSin[c*x]/2])/(2*d*(c*
f - g)*Sqrt[d - c^2*d*x^2]) + (I*g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*
Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(d*(c^2*f^2 -
 g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) - (I*g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c
*x])*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(d*(c^2*
```

```
f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) + (b*Sqrt[1 - c^2*x^2]*Log[Cos[Pi/4 +
 ArcSin[c*x]/2]])/(d*(c*f + g)*Sqrt[d - c^2*d*x^2]) + (b*Sqrt[1 - c^2*x^2]*
Log[Sin[Pi/4 + ArcSin[c*x]/2]])/(d*(c*f - g)*Sqrt[d - c^2*d*x^2]) + (b*g^2*
Sqrt[1 - c^2*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 -
g^2])]])/(d*(c^2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) - (b*g^2*Sqrt[1 - c^2
*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]])/(d*(
c^2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) + (Sqrt[1 - c^2*x^2]*(a + b*ArcSi
n[c*x])*Tan[Pi/4 + ArcSin[c*x]/2])/(2*d*(c*f + g)*Sqrt[d - c^2*d*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4775

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3318

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

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
```

```
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3475

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

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{(f+gx)\left(d-c^2dx^2\right)^{3/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{a+b\sin^{-1}(cx)}{(f+gx)\left(1-c^2x^2\right)^{3/2}}\,dx}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(-\frac{c\left(a+b\sin^{-1}(cx)\right)}{2(cf+g)(-1+cx)\sqrt{1-c^2x^2}} + \frac{c\left(a+b\sin^{-1}(cx)\right)}{2(cf-g)(1+cx)\sqrt{1-c^2x^2}} + \frac{g^2\left(a+b\sin^{-1}(cx)\right)}{(-cf+g)(cf+g)(f+gx)\sqrt{1-c^2x^2}}\right) dx}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(c\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{(1+cx)\sqrt{1-c^2x^2}}\,dx}{2d(cf-g)\sqrt{d-c^2dx^2}} - \frac{\left(c\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{(-1+cx)\sqrt{1-c^2x^2}}\,dx}{2d(cf+g)\sqrt{d-c^2dx^2}} + \frac{\left(g^2\sqrt{1-c^2x^2}\right)\int \cdots}{d(-cf+g)(cf+\cdots}$$

$$= \frac{\left(c\sqrt{1-c^2x^2}\right)\operatorname{Subst}\left(\int \frac{a+bx}{c+c\sin(x)}\,dx, x, \sin^{-1}(cx)\right)}{2d(cf-g)\sqrt{d-c^2dx^2}} - \frac{\left(c\sqrt{1-c^2x^2}\right)\operatorname{Subst}\left(\int \frac{a+bx}{-c+c\sin(x)}\,dx \cdots\right.}{2d(cf+g)\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\operatorname{Subst}\left(\int (a+bx)\csc^2\left(\frac{\pi}{4}+\frac{x}{2}\right)dx, x, \sin^{-1}(cx)\right)}{4d(cf-g)\sqrt{d-c^2dx^2}} + \frac{\sqrt{1-c^2x^2}\operatorname{Subst}\left(\int (a+b\cdots\right.}{4d(cf+\cdots}$$

$$= -\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\cot\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(cx)\right)}{2d(cf-g)\sqrt{d-c^2dx^2}} + \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\tan\left(\cdots\right.}{2d(cf+g)\sqrt{d-c^2d\cdots}}$$

$$= -\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\cot\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(cx)\right)}{2d(cf-g)\sqrt{d-c^2dx^2}} + \frac{ig^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\log\cdots}{d\left(c^2f^2-g^2\right)^{3/2}\sqrt{d-\cdots}}$$

$$= -\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\cot\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(cx)\right)}{2d(cf-g)\sqrt{d-c^2dx^2}} + \frac{ig^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\log\cdots}{d\left(c^2f^2-g^2\right)^{3/2}\sqrt{d-\cdots}}$$

$$= -\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\cot\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(cx)\right)}{2d(cf-g)\sqrt{d-c^2dx^2}} + \frac{ig^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\log\cdots}{d\left(c^2f^2-g^2\right)^{3/2}\sqrt{d-\cdots}}$$

Mathematica [A] time = 1.93717, size = 359, normalized size = 0.55

$$\frac{\sqrt{1-c^2x^2}\left(\frac{2g^2\left(b\text{PolyLog}\left(2,-\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}-cf}\right)-b\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)+i\left(a+b\sin^{-1}(cx)\right)\left(\log\left(1+\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}-cf}\right)-\log\left(1-\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)\right)\right)}{(cf-g)(cf+g)\sqrt{c^2f^2-g^2}} + \frac{2b\log\left(\sin\left(\cdots\right.\right.}{\cdots}\right.}{2d\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/((f + g*x)*(d - c^2*d*x^2)^(3/2)),x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*((-((a + b*ArcSin[c*x])*Cot[(Pi + 2*ArcSin[c*x])/4]) + 2
*b*Log[Sin[(Pi + 2*ArcSin[c*x])/4]])/(c*f - g) + (2*g^2*(I*(a + b*ArcSin[c*
x])*(Log[1 + (I*E^(I*ArcSin[c*x])*g)/(-(c*f) + Sqrt[c^2*f^2 - g^2])] - Log[
1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]) + b*PolyLog[2, ((
-I)*E^(I*ArcSin[c*x])*g)/(-(c*f) + Sqrt[c^2*f^2 - g^2])] - b*PolyLog[2, (I*
E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]))/((c*f - g)*(c*f + g)*Sq
rt[c^2*f^2 - g^2]) + (2*b*Log[Cos[(Pi + 2*ArcSin[c*x])/4]] + (a + b*ArcSin[
c*x])*Tan[(Pi + 2*ArcSin[c*x])/4])/(c*f + g)))/(2*d*Sqrt[d - c^2*d*x^2])
```

Maple [B] time = 0.48, size = 1902, normalized size = 2.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(g*x+f)/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] -a*g/d/(c^2*f^2-g^2)/(-d*c^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/
g^2)^(1/2)+a*f/(c^2*f^2-g^2)/d/(-d*c^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2
*f^2-g^2)/g^2)^(1/2)*c^2*x+a*g/d/(c^2*f^2-g^2)/(-d*(c^2*f^2-g^2)/g^2)^(1/2)
*ln((-2*d*(c^2*f^2-g^2)/g^2+2*c^2*d*f/g*(x+f/g)+2*(-d*(c^2*f^2-g^2)/g^2)^(1
/2)*(-d*c^2*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))/(x+f/
g))-I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)/(c^2*f^2-
g^2)^2*(-c^2*f^2+g^2)^(1/2)*dilog((I*c*f+(I*c*x+(-c^2*x^2+1)^(1/2))*g+(-c^2
*f^2+g^2)^(1/2))/(I*c*f+(-c^2*f^2+g^2)^(1/2)))*g^2-b*(-d*(c^2*x^2-1))^(1/2)
*arcsin(c*x)/d^2/(c^2*x^2-1)/(c^2*f^2-g^2)*x*c^2*f+b*(-d*(c^2*x^2-1))^(1/2)
*arcsin(c*x)/d^2/(c^2*x^2-1)/(c^2*f^2-g^2)*g-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2
*x^2+1)^(1/2)/d^2/(c^2*x^2-1)/(c^2*f^2-g^2)^2*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I
)*c^3*f^3-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)/(c^2*
f^2-g^2)^2*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*c^3*f^3+2*b*(-d*(c^2*x^2-1))^(1/2
)*(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)/(c^2*f^2-g^2)^2*ln(I*c*x+(-c^2*x^2+1)^
(1/2))*c^3*f^3-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)/
(c^2*f^2-g^2)^2*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)*c^2*f^2*g+b*(-d*(c^2*x^2-1))
^(1/2)*(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)/(c^2*f^2-g^2)^2*ln(I*c*x+(-c^2*x^
2+1)^(1/2)-I)*c^2*f^2*g+b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^2/(c^
2*x^2-1)/(c^2*f^2-g^2)^2*arcsin(c*x)*(-c^2*f^2+g^2)^(1/2)*ln((I*c*f+(I*c*x+
(-c^2*x^2+1)^(1/2))*g+(-c^2*f^2+g^2)^(1/2))/(I*c*f+(-c^2*f^2+g^2)^(1/2)))*g
^2-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)/(c^2*f^2-g^2
```

```
)^2*arcsin(c*x)*(-c^2*f^2+g^2)^(1/2)*ln((I*c*f+(I*c*x+(-c^2*x^2+1)^(1/2))*g
-(-c^2*f^2+g^2)^(1/2))/(I*c*f-(-c^2*f^2+g^2)^(1/2)))*g^2+I*b*(-d*(c^2*x^2-1
))^(1/2)*(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)/(c^2*f^2-g^2)^2*(-c^2*f^2+g^2)^
(1/2)*dilog((I*c*f+(I*c*x+(-c^2*x^2+1)^(1/2))*g-(-c^2*f^2+g^2)^(1/2))/(I*c*
f-(-c^2*f^2+g^2)^(1/2)))*g^2-I*b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/d^2/(c^
2*x^2-1)/(c^2*f^2-g^2)*(-c^2*x^2+1)^(1/2)*c*f+b*(-d*(c^2*x^2-1))^(1/2)*(-c^
2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)/(c^2*f^2-g^2)^2*ln(I*c*x+(-c^2*x^2+1)^(1/2)+
I)*c*f*g^2+b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)/(c^2
*f^2-g^2)^2*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*c*f*g^2-2*b*(-d*(c^2*x^2-1))^(1/
2)*(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)/(c^2*f^2-g^2)^2*ln(I*c*x+(-c^2*x^2+1)
^(1/2))*c*f*g^2+b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)
/(c^2*f^2-g^2)^2*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)*g^3-b*(-d*(c^2*x^2-1))^(1/2
)*(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)/(c^2*f^2-g^2)^2*ln(I*c*x+(-c^2*x^2+1)^
(1/2)-I)*g^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \arcsin(cx) + a}{\left(-c^2dx^2 + d\right)^{\frac{3}{2}}\left(gx + f\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(g*x+f)/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxi
ma")
```

```
[Out] integrate((b*arcsin(c*x) + a)/((-c^2*d*x^2 + d)^(3/2)*(g*x + f)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\sqrt{-c^2dx^2 + d}(b \arcsin(cx) + a)}{c^4d^2gx^5 + c^4d^2fx^4 - 2\,c^2d^2gx^3 - 2\,c^2d^2fx^2 + d^2gx + d^2f}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(g*x+f)/(-c^2*d*x^2+d)^(3/2),x, algorithm="fric
as")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(c^4*d^2*g*x^5 + c^4*d^2*
f*x^4 - 2*c^2*d^2*g*x^3 - 2*c^2*d^2*f*x^2 + d^2*g*x + d^2*f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a + b\operatorname{asin}(cx)}{(-d(cx-1)(cx+1))^{\frac{3}{2}}(f+gx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(g*x+f)/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c*x))/((-d*(c*x - 1)*(c*x + 1))**(3/2)*(f + g*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\arcsin(cx) + a}{(-c^2dx^2 + d)^{\frac{3}{2}}(gx+f)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(g*x+f)/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac
")
```

```
[Out] integrate((b*arcsin(c*x) + a)/((-c^2*d*x^2 + d)^(3/2)*(g*x + f)), x)
```

3.53 $\int \frac{(f+gx)^4\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=528

$$\frac{fg\left(1-c^2x^2\right)\left(2c^2f^2-5g^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c^4d^2\sqrt{d-c^2dx^2}}+\frac{(f+gx)\left(2c^2fx\left(c^2f^2-2g^2\right)+g\left(c^2f^2-3g^2\right)\right)\left(a+b\sin^{-1}(cx)\right)}{3c^4d^2\sqrt{d-c^2dx^2}}+\frac{(f+\cdots}{\cdots}$$

```
[Out] -(b*(f + g*x)^2*(c^2*f^2 + g^2 + 2*c^2*f*g*x))/(6*c^3*d^2*Sqrt[1 - c^2*x^2]
*Sqrt[d - c^2*d*x^2]) - (b*f*g^3*x*Sqrt[1 - c^2*x^2])/(3*c^3*d^2*Sqrt[d - c
^2*d*x^2]) - (b*g^4*Sqrt[1 - c^2*x^2]*ArcSin[c*x]^2)/(2*c^5*d^2*Sqrt[d - c^
2*d*x^2]) + ((f + g*x)*(g*(c^2*f^2 - 3*g^2) + 2*c^2*f*(c^2*f^2 - 2*g^2)*x)*
(a + b*ArcSin[c*x]))/(3*c^4*d^2*Sqrt[d - c^2*d*x^2]) + ((g + c^2*f*x)*(f +
g*x)^3*(a + b*ArcSin[c*x]))/(3*c^2*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]) +
 (f*g*(2*c^2*f^2 - 5*g^2)*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(3*c^4*d^2*Sqr
t[d - c^2*d*x^2]) + (g^4*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*(a + b*ArcSin[c*x]))
/(c^5*d^2*Sqrt[d - c^2*d*x^2]) + (b*(c*f - 2*g)*(c*f + g)^3*Sqrt[1 - c^2*x^
2]*Log[1 - c*x])/(3*c^5*d^2*Sqrt[d - c^2*d*x^2]) + (b*(c*f - g)^3*(c*f + 2*
g)*Sqrt[1 - c^2*x^2]*Log[1 + c*x])/(3*c^5*d^2*Sqrt[d - c^2*d*x^2])
```

Rubi [A] time = 0.752741, antiderivative size = 754, normalized size of antiderivative = 1.43, number of steps used = 13, number of rules used = 10, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.323, Rules used = {4777, 739, 819, 641, 216, 4761, 774, 633, 31, 4641}

$$\frac{fg\left(1-c^2x^2\right)\left(2c^2f^2-5g^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c^4d^2\sqrt{d-c^2dx^2}}+\frac{(f+gx)\left(2c^2fx\left(c^2f^2-2g^2\right)+g\left(c^2f^2-3g^2\right)\right)\left(a+b\sin^{-1}(cx)\right)}{3c^4d^2\sqrt{d-c^2dx^2}}+\frac{(f+\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^4*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] -(b*(f + g*x)^2*(c^2*f^2 + g^2 + 2*c^2*f*g*x))/(6*c^3*d^2*Sqrt[1 - c^2*x^2]
*Sqrt[d - c^2*d*x^2]) - (2*b*f*g^3*x*Sqrt[1 - c^2*x^2])/(3*c^3*d^2*Sqrt[d -
 c^2*d*x^2]) - (b*f*g*(2*c^2*f^2 - 5*g^2)*x*Sqrt[1 - c^2*x^2])/(3*c^3*d^2*S
qrt[d - c^2*d*x^2]) + (2*b*f*g*(c^2*f^2 - 2*g^2)*x*Sqrt[1 - c^2*x^2])/(3*c^
3*d^2*Sqrt[d - c^2*d*x^2]) - (b*g^4*Sqrt[1 - c^2*x^2]*ArcSin[c*x]^2)/(2*c^5
*d^2*Sqrt[d - c^2*d*x^2]) + ((f + g*x)*(g*(c^2*f^2 - 3*g^2) + 2*c^2*f*(c^2*
f^2 - 2*g^2)*x)*(a + b*ArcSin[c*x]))/(3*c^4*d^2*Sqrt[d - c^2*d*x^2]) + ((g
+ c^2*f*x)*(f + g*x)^3*(a + b*ArcSin[c*x]))/(3*c^2*d^2*(1 - c^2*x^2)*Sqrt[d
 - c^2*d*x^2]) + (f*g*(2*c^2*f^2 - 5*g^2)*(1 - c^2*x^2)*(a + b*ArcSin[c*x])
```

```
)/(3*c^4*d^2*Sqrt[d - c^2*d*x^2]) + (g^4*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*(a +
 b*ArcSin[c*x]))/(c^5*d^2*Sqrt[d - c^2*d*x^2]) + (b*(2*c*f - 3*g)*(c*f + g)
^3*Sqrt[1 - c^2*x^2]*Log[1 - c*x])/(6*c^5*d^2*Sqrt[d - c^2*d*x^2]) - (b*g*(
c*f + g)^3*Sqrt[1 - c^2*x^2]*Log[1 - c*x])/(6*c^5*d^2*Sqrt[d - c^2*d*x^2])
+ (b*(c*f - g)^3*g*Sqrt[1 - c^2*x^2]*Log[1 + c*x])/(6*c^5*d^2*Sqrt[d - c^2*
d*x^2]) + (b*(c*f - g)^3*(2*c*f + 3*g)*Sqrt[1 - c^2*x^2]*Log[1 + c*x])/(6*c
^5*d^2*Sqrt[d - c^2*d*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 739

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
((d + e*x)^(m - 1)*(a*e - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] +
 Dist[1/((p + 1)*(-2*a*c)), Int[(d + e*x)^(m - 2)*Simp[a*e^2*(m - 1) - c*d^
2*(2*p + 3) - d*c*e*(m + 2*p + 2)*x, x]*(a + c*x^2)^(p + 1), x], x] /; Free
Q[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && I
ntQuadraticQ[a, 0, c, d, e, m, p, x]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 641

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

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
```

```
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 4761

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rule 774

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2), x_Sym
bol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + c*(e*f + d*g)*x
)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g}, x]
```

Rule 633

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

Rule 31

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

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{(f+gx)^4\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{5/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)^4\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{5/2}}\,dx}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{(f+gx)\left(g\left(c^2f^2-3g^2\right)+2c^2f\left(c^2f^2-2g^2\right)x\right)\left(a+b\sin^{-1}(cx)\right)}{3c^4d^2\sqrt{d-c^2dx^2}} + \frac{\left(g+c^2fx\right)(f+g}{3c^2d^2\left(1-c^2\right.}$$

$$= -\frac{bfg\left(2c^2f^2-5g^2\right)x\sqrt{1-c^2x^2}}{3c^3d^2\sqrt{d-c^2dx^2}} + \frac{(f+gx)\left(g\left(c^2f^2-3g^2\right)+2c^2f\left(c^2f^2-2g^2\right)x\right)(a}{3c^4d^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{b(f+gx)^2\left(c^2f^2+g^2+2c^2fgx\right)}{6c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{bfg\left(2c^2f^2-5g^2\right)x\sqrt{1-c^2x^2}}{3c^3d^2\sqrt{d-c^2dx^2}} + \frac{2bfg\left(c^2f^2-2\right.}{3c^3d^2\sqrt{d}}$$

$$= -\frac{b(f+gx)^2\left(c^2f^2+g^2+2c^2fgx\right)}{6c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{2bfg^3x\sqrt{1-c^2x^2}}{3c^3d^2\sqrt{d-c^2dx^2}} - \frac{bfg\left(2c^2f^2-5g^2\right)x\sqrt{1-c^2}}{3c^3d^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{b(f+gx)^2\left(c^2f^2+g^2+2c^2fgx\right)}{6c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{2bfg^3x\sqrt{1-c^2x^2}}{3c^3d^2\sqrt{d-c^2dx^2}} - \frac{bfg\left(2c^2f^2-5g^2\right)x\sqrt{1-c^2}}{3c^3d^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{b(f+gx)^2\left(c^2f^2+g^2+2c^2fgx\right)}{6c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{2bfg^3x\sqrt{1-c^2x^2}}{3c^3d^2\sqrt{d-c^2dx^2}} - \frac{bfg\left(2c^2f^2-5g^2\right)x\sqrt{1-c^2}}{3c^3d^2\sqrt{d-c^2dx^2}}$$

Mathematica [A] time = 3.23103, size = 868, normalized size = 1.64

$$\frac{b\left(4cx\sin^{-1}(cx)+\frac{\frac{2cx\sin^{-1}(cx)}{\sqrt{1-c^2x^2}}-1}{\sqrt{1-c^2x^2}}+4\sqrt{1-c^2x^2}\log\left(\sqrt{1-c^2x^2}\right)\right)f^4}{6cd^2\sqrt{d\left(1-c^2x^2\right)}} + \frac{bg\left(8\sin^{-1}(cx)+\cos\left(3\sin^{-1}(cx)\right)\left(\log\left(\cos\left(\frac{1}{2}\sin^{-1}\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^4*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] Sqrt[-(d*(-1 + c^2*x^2))]*((4*a*c^2*f^3*g + 4*a*f*g^3 + a*c^4*f^4*x + 6*a*c
^2*f^2*g^2*x + a*g^4*x)/(3*c^4*d^3*(-1 + c^2*x^2)^2) - (2*a*(-6*f*g^3 + c^4
*f^4*x - 3*c^2*f^2*g^2*x - 2*g^4*x))/(3*c^4*d^3*(-1 + c^2*x^2))) - (a*g^4*A
rcTan[(c*x*Sqrt[-(d*(-1 + c^2*x^2))])/(Sqrt[d]*(-1 + c^2*x^2))])/(c^5*d^(5/
```

```
2)) + (b*f^2*g^2*(-2*c*x*ArcSin[c*x] + (-1 + (2*c*x*ArcSin[c*x])/Sqrt[1 - c
^2*x^2])/Sqrt[1 - c^2*x^2] - 2*Sqrt[1 - c^2*x^2]*Log[Sqrt[1 - c^2*x^2]]))/(
c^3*d^2*Sqrt[d*(1 - c^2*x^2)]) + (b*f^4*(4*c*x*ArcSin[c*x] + (-1 + (2*c*x*A
rcSin[c*x])/Sqrt[1 - c^2*x^2])/Sqrt[1 - c^2*x^2] + 4*Sqrt[1 - c^2*x^2]*Log[
Sqrt[1 - c^2*x^2]]))/(6*c*d^2*Sqrt[d*(1 - c^2*x^2)]) + (b*f^3*g*(8*ArcSin[c
*x] + 3*Sqrt[1 - c^2*x^2]*(Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] - L
og[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]) + Cos[3*ArcSin[c*x]]*(Log[Cos[
ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] - Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[
c*x]/2]]) - 2*Sin[2*ArcSin[c*x]]))/(6*c^2*d*(d*(1 - c^2*x^2))^(3/2)) - (b*f
*g^3*(4*ArcSin[c*x] + 12*ArcSin[c*x]*Cos[2*ArcSin[c*x]] + 5*Cos[3*ArcSin[c*
x]]*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] + 15*Sqrt[1 - c^2*x^2]*(Lo
g[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] - Log[Cos[ArcSin[c*x]/2] + Sin[A
rcSin[c*x]/2]]) - 5*Cos[3*ArcSin[c*x]]*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[
c*x]/2]] + 2*Sin[2*ArcSin[c*x]]))/(6*c^4*d*(d*(1 - c^2*x^2))^(3/2)) + (b*g^
4*(Sqrt[1 - c^2*x^2]*(3*ArcSin[c*x]^2 - 8*Log[Sqrt[1 - c^2*x^2]]) - (1 + (2
*ArcSin[c*x]*Sin[3*ArcSin[c*x]])/Sqrt[1 - c^2*x^2])/Sqrt[1 - c^2*x^2]))/(6*
c^5*d^2*Sqrt[d*(1 - c^2*x^2)])
```

Maple [C] time = 0.823, size = 6743, normalized size = 12.8

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\left(ag^4x^4 + 4\,afg^3x^3 + 6\,af^2g^2x^2 + 4\,af^3gx + af^4 + \left(bg^4x^4 + 4\,bfg^3x^3 + 6\,bf^2g^2x^2 + 4\,bf^3gx + bf^4\right)\arcsin\left(c\right.\right.}{c^6d^3x^6 - 3\,c^4d^3x^4 + 3\,c^2d^3x^2 - d^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="fr
icas")
```

```
[Out] integral(-(a*g^4*x^4 + 4*a*f*g^3*x^3 + 6*a*f^2*g^2*x^2 + 4*a*f^3*g*x + a*f^
4 + (b*g^4*x^4 + 4*b*f*g^3*x^3 + 6*b*f^2*g^2*x^2 + 4*b*f^3*g*x + b*f^4)*arc
sin(c*x))*sqrt(-c^2*d*x^2 + d)/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x^2
 - d^3), x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**4*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Exception raised: TypeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(gx+f\right)^4\left(b\arcsin\left(cx\right)+a\right)}{\left(-c^2dx^2+d\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="gi
ac")
```

```
[Out] integrate((g*x + f)^4*(b*arcsin(c*x) + a)/(-c^2*d*x^2 + d)^(5/2), x)
```

3.54 $\int \frac{(f+gx)^3\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=410

$$\frac{2(cf+g)(cf-g)\left(c^2fx+g\right)\left(a+b\sin^{-1}(cx)\right)}{3c^4d^2\sqrt{d-c^2dx^2}}+\frac{(f+gx)^2\left(c^2fx+g\right)\left(a+b\sin^{-1}(cx)\right)}{3c^2d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}-\frac{b(f+gx)\left(c^2f^2+2c^2fgx+g\right.}{6c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}$$

```
[Out] -(b*(f + g*x)*(c^2*f^2 + g^2 + 2*c^2*f*g*x))/(6*c^3*d^2*Sqrt[1 - c^2*x^2]*S
qrt[d - c^2*d*x^2]) + (2*(c*f - g)*(c*f + g)*(g + c^2*f*x)*(a + b*ArcSin[c*
x]))/(3*c^4*d^2*Sqrt[d - c^2*d*x^2]) + ((g + c^2*f*x)*(f + g*x)^2*(a + b*Ar
cSin[c*x]))/(3*c^2*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]) + (b*(c*f - g)*(c
*f + g)^2*Sqrt[1 - c^2*x^2]*Log[1 - c*x])/(3*c^4*d^2*Sqrt[d - c^2*d*x^2]) -
 (b*g*(c*f + g)^2*Sqrt[1 - c^2*x^2]*Log[1 - c*x])/(12*c^4*d^2*Sqrt[d - c^2*
d*x^2]) + (b*(c*f - g)^2*g*Sqrt[1 - c^2*x^2]*Log[1 + c*x])/(12*c^4*d^2*Sqrt
[d - c^2*d*x^2]) + (b*(c*f - g)^2*(c*f + g)*Sqrt[1 - c^2*x^2]*Log[1 + c*x])
/(3*c^4*d^2*Sqrt[d - c^2*d*x^2])
```

Rubi [A] time = 0.43268, antiderivative size = 410, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.226, Rules used = {4777, 723, 637, 4761, 819, 633, 31}

$$\frac{2(cf+g)(cf-g)\left(c^2fx+g\right)\left(a+b\sin^{-1}(cx)\right)}{3c^4d^2\sqrt{d-c^2dx^2}}+\frac{(f+gx)^2\left(c^2fx+g\right)\left(a+b\sin^{-1}(cx)\right)}{3c^2d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}-\frac{b(f+gx)\left(c^2f^2+2c^2fgx+g\right.}{6c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^3*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```


```
[Out] -(b*(f + g*x)*(c^2*f^2 + g^2 + 2*c^2*f*g*x))/(6*c^3*d^2*Sqrt[1 - c^2*x^2]*S
qrt[d - c^2*d*x^2]) + (2*(c*f - g)*(c*f + g)*(g + c^2*f*x)*(a + b*ArcSin[c*
x]))/(3*c^4*d^2*Sqrt[d - c^2*d*x^2]) + ((g + c^2*f*x)*(f + g*x)^2*(a + b*Ar
cSin[c*x]))/(3*c^2*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]) + (b*(c*f - g)*(c
*f + g)^2*Sqrt[1 - c^2*x^2]*Log[1 - c*x])/(3*c^4*d^2*Sqrt[d - c^2*d*x^2]) -
 (b*g*(c*f + g)^2*Sqrt[1 - c^2*x^2]*Log[1 - c*x])/(12*c^4*d^2*Sqrt[d - c^2*
d*x^2]) + (b*(c*f - g)^2*g*Sqrt[1 - c^2*x^2]*Log[1 + c*x])/(12*c^4*d^2*Sqrt
[d - c^2*d*x^2]) + (b*(c*f - g)^2*(c*f + g)*Sqrt[1 - c^2*x^2]*Log[1 + c*x])
/(3*c^4*d^2*Sqrt[d - c^2*d*x^2])
```


Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 723

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
((d + e*x)^(m - 1)*(a*e - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] +
 Dist[((2*p + 3)*(c*d^2 + a*e^2))/(2*a*c*(p + 1)), Int[(d + e*x)^(m - 2)*(a
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0
] && EqQ[m + 2*p + 2, 0] && LtQ[p, -1]
```

Rule 637

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2)^(3/2), x_Symbol] :> Simp[(-(a
*e) + c*d*x)/(a*c*Sqrt[a + c*x^2]), x] /; FreeQ[{a, c, d, e}, x]
```

Rule 4761

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 633

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

```
-(a*c)]
```

Rule 31

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

Rubi steps

$$\int \frac{(f+gx)^3\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{5/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)^3\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{5/2}}\,dx}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{2(cf-g)(cf+g)\left(g+c^2fx\right)\left(a+b\sin^{-1}(cx)\right)}{3c^4d^2\sqrt{d-c^2dx^2}} + \frac{\left(g+c^2fx\right)(f+gx)^2\left(a+b\sin^{-1}(c\right.}{3c^2d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}$$

$$= \frac{2(cf-g)(cf+g)\left(g+c^2fx\right)\left(a+b\sin^{-1}(cx)\right)}{3c^4d^2\sqrt{d-c^2dx^2}} + \frac{\left(g+c^2fx\right)(f+gx)^2\left(a+b\sin^{-1}(c\right.}{3c^2d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}$$

$$= -\frac{b(f+gx)\left(c^2f^2+g^2+2c^2fgx\right)}{6c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{2(cf-g)(cf+g)\left(g+c^2fx\right)\left(a+b\sin^{-1}(cx)\right)}{3c^4d^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{b(f+gx)\left(c^2f^2+g^2+2c^2fgx\right)}{6c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{2(cf-g)(cf+g)\left(g+c^2fx\right)\left(a+b\sin^{-1}(cx)\right)}{3c^4d^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{b(f+gx)\left(c^2f^2+g^2+2c^2fgx\right)}{6c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{2(cf-g)(cf+g)\left(g+c^2fx\right)\left(a+b\sin^{-1}(cx)\right)}{3c^4d^2\sqrt{d-c^2dx^2}}$$

Mathematica [C] time = 1.27782, size = 366, normalized size = 0.89

$$\frac{\sqrt{d-c^2dx^2}\left(-\sqrt{-c^2}\left(-6ac^2f^2g+4ac^6f^3x^3-6ac^4f^3x-6ac^4fg^2x^3-6ac^2g^3x^2+4ag^3-bcf\left(1-c^2x^2\right)^{3/2}\left(2c^2f^2-3g^2\right)\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^3*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(I*b*c*g*(3*c^2*f^2 - 5*g^2)*(1 - c^2*x^2)^(3/2)*Ellip
ticF[I*ArcSinh[Sqrt[-c^2]*x], 1] - Sqrt[-c^2]*(-6*a*c^2*f^2*g + 4*a*g^3 - 6
*a*c^4*f^3*x - 6*a*c^2*g^3*x^2 + 4*a*c^6*f^3*x^3 - 6*a*c^4*f*g^2*x^3 + b*c^
3*f^3*Sqrt[1 - c^2*x^2] + 3*b*c*f*g^2*Sqrt[1 - c^2*x^2] + 3*b*c^3*f^2*g*x*S
qrt[1 - c^2*x^2] + b*c*g^3*x*Sqrt[1 - c^2*x^2] + 2*b*(2*g^3 + 2*c^6*f^3*x^3
 - 3*c^2*g*(f^2 + g^2*x^2) - 3*c^4*f*x*(f^2 + g^2*x^2))*ArcSin[c*x] - b*c*f
*(2*c^2*f^2 - 3*g^2)*(1 - c^2*x^2)^(3/2)*Log[-1 + c^2*x^2])))/(6*c^4*Sqrt[-
c^2]*d^3*(-1 + c^2*x^2)^2)
```

Maple [C] time = 0.575, size = 5098, normalized size = 12.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="ma
xima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\left(ag^3x^3 + 3\,afg^2x^2 + 3\,af^2gx + af^3 + \left(bg^3x^3 + 3\,bfg^2x^2 + 3\,bf^2gx + bf^3\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2 + d}}{c^6d^3x^6 - 3\,c^4d^3x^4 + 3\,c^2d^3x^2 - d^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="fr
icas")
```

```
[Out] integral(-(a*g^3*x^3 + 3*a*f*g^2*x^2 + 3*a*f^2*g*x + a*f^3 + (b*g^3*x^3 + 3
*b*f*g^2*x^2 + 3*b*f^2*g*x + b*f^3)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/(c^6*
d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3), x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Exception raised: TypeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(gx+f\right)^{3}\left(b \arcsin\left(cx\right)+a\right)}{\left(-c^{2}dx^{2}+d\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="gi
ac")
```

```
[Out] integrate((g*x + f)^3*(b*arcsin(c*x) + a)/(-c^2*d*x^2 + d)^(5/2), x)
```

3.55 $\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=271

$$\frac{x(f+gx)^2\left(a+b\sin^{-1}(cx)\right)}{3d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}+\frac{2f\left(c^2fx+g\right)\left(a+b\sin^{-1}(cx)\right)}{3c^2d^2\sqrt{d-c^2dx^2}}-\frac{bx\left(x\left(c^2f^2+g^2\right)+2fg\right)}{6cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x^2}(2cf-g)(cf+}{6c^3d^2\sqrt{d-c^2d}}$$

```
[Out] -(b*x*(2*f*g + (c^2*f^2 + g^2)*x))/(6*c*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*
d*x^2]) + (2*f*(g + c^2*f*x)*(a + b*ArcSin[c*x]))/(3*c^2*d^2*Sqrt[d - c^2*d
*x^2]) + (x*(f + g*x)^2*(a + b*ArcSin[c*x]))/(3*d^2*(1 - c^2*x^2)*Sqrt[d -
c^2*d*x^2]) + (b*(2*c*f - g)*(c*f + g)*Sqrt[1 - c^2*x^2]*Log[1 - c*x])/(6*c
^3*d^2*Sqrt[d - c^2*d*x^2]) + (b*(c*f - g)*(2*c*f + g)*Sqrt[1 - c^2*x^2]*Lo
g[1 + c*x])/(6*c^3*d^2*Sqrt[d - c^2*d*x^2])
```

Rubi [A] time = 0.390261, antiderivative size = 354, normalized size of antiderivative = 1.31, number of steps used = 10, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.226, Rules used = {4777, 729, 637, 4761, 819, 633, 31}

$$\frac{x(f+gx)^2\left(a+b\sin^{-1}(cx)\right)}{3d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}+\frac{2f\left(c^2fx+g\right)\left(a+b\sin^{-1}(cx)\right)}{3c^2d^2\sqrt{d-c^2dx^2}}-\frac{b(f+gx)^2}{6cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{bf\sqrt{1-c^2x^2}(cf+g)\log(1}{3c^2d^2\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^2*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] -(b*(f + g*x)^2)/(6*c*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) + (2*f*(g
+ c^2*f*x)*(a + b*ArcSin[c*x]))/(3*c^2*d^2*Sqrt[d - c^2*d*x^2]) + (x*(f + g
*x)^2*(a + b*ArcSin[c*x]))/(3*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]) + (b*f
*(c*f + g)*Sqrt[1 - c^2*x^2]*Log[1 - c*x])/(3*c^2*d^2*Sqrt[d - c^2*d*x^2])
- (b*g*(c*f + g)*Sqrt[1 - c^2*x^2]*Log[1 - c*x])/(6*c^3*d^2*Sqrt[d - c^2*d*
x^2]) + (b*f*(c*f - g)*Sqrt[1 - c^2*x^2]*Log[1 + c*x])/(3*c^2*d^2*Sqrt[d -
c^2*d*x^2]) + (b*(c*f - g)*g*Sqrt[1 - c^2*x^2]*Log[1 + c*x])/(6*c^3*d^2*Sqr
t[d - c^2*d*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
```

```
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 729

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> -Simp
[((d + e*x)^m*(2*c*x)*(a + c*x^2)^(p + 1))/(4*a*c*(p + 1)), x] - Dist[(m*(2
*c*d))/(4*a*c*(p + 1)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^(p + 1), x], x] /
; FreeQ[{a, c, d, e, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[m + 2*p + 3,
 0] && LtQ[p, -1]
```

Rule 637

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2)^(3/2), x_Symbol] :> Simp[(-(a
*e) + c*d*x)/(a*c*Sqrt[a + c*x^2]), x] /; FreeQ[{a, c, d, e}, x]
```

Rule 4761

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 633

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

Rule 31

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

Rubi steps

$$\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{5/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{5/2}}\,dx}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{2f\left(g+c^2fx\right)\left(a+b\sin^{-1}(cx)\right)}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{x(f+gx)^2\left(a+b\sin^{-1}(cx)\right)}{3d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}} - \frac{\left(bc\sqrt{1-c^2x^2}\right)\int\Bigg(\frac{x}{3(}}{d^2\sqrt{}}$$

$$= \frac{2f\left(g+c^2fx\right)\left(a+b\sin^{-1}(cx)\right)}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{x(f+gx)^2\left(a+b\sin^{-1}(cx)\right)}{3d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}} - \frac{\left(bc\sqrt{1-c^2x^2}\right)\int\frac{x(f}{(1-}}{3d^2\sqrt{d-c^2d}}$$

$$= -\frac{b(f+gx)^2}{6cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{2f\left(g+c^2fx\right)\left(a+b\sin^{-1}(cx)\right)}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{x(f+gx)^2\left(a+b\sin\right.}{3d^2\left(1-c^2x^2\right)\sqrt{d-}}$$

$$= -\frac{b(f+gx)^2}{6cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{2f\left(g+c^2fx\right)\left(a+b\sin^{-1}(cx)\right)}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{x(f+gx)^2\left(a+b\sin\right.}{3d^2\left(1-c^2x^2\right)\sqrt{d-}}$$

$$= -\frac{b(f+gx)^2}{6cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{2f\left(g+c^2fx\right)\left(a+b\sin^{-1}(cx)\right)}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{x(f+gx)^2\left(a+b\sin\right.}{3d^2\left(1-c^2x^2\right)\sqrt{d-}}$$

Mathematica [C] time = 1.02236, size = 285, normalized size = 1.05

$$\frac{c\sqrt{d-c^2dx^2}\left(-\sqrt{-c^2}\left(4ac^5f^2x^3-6ac^3f^2x-2ac^3g^2x^3-4acfg-b\left(1-c^2x^2\right)^{3/2}\left(2c^2f^2-g^2\right)\log\left(c^2x^2-1\right)+2bc\sin^{-1}(cx\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^2*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (c*Sqrt[d - c^2*d*x^2]*((2*I)*b*c^2*f*g*(1 - c^2*x^2)^(3/2)*EllipticF[I*Arc
Sinh[Sqrt[-c^2]*x], 1] - Sqrt[-c^2]*(-4*a*c*f*g - 6*a*c^3*f^2*x + 4*a*c^5*f
^2*x^3 - 2*a*c^3*g^2*x^3 + b*c^2*f^2*Sqrt[1 - c^2*x^2] + b*g^2*Sqrt[1 - c^2
*x^2] + 2*b*c^2*f*g*x*Sqrt[1 - c^2*x^2] + 2*b*c*(-2*f*g - c^2*g^2*x^3 + c^2
```

```
*f^2*x*(-3 + 2*c^2*x^2))*ArcSin[c*x] - b*(2*c^2*f^2 - g^2)*(1 - c^2*x^2)^(3
/2)*Log[-1 + c^2*x^2])))/(6*(-c^2)^(5/2)*d^3*(-1 + c^2*x^2)^2)
```

Maple [C] time = 0.437, size = 3765, normalized size = 13.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] 1/3*a*f^2/d*x/(-c^2*d*x^2+d)^(3/2)-8/3*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*
x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*arcsin(c*x)*x^6*f*g+16/3*b*(-d*(c^2*x^2-1)
)^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*arcsin(c*x)*(-c^2*x^2+1)*x^
2*f*g-2*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)/c^
2*arcsin(c*x)*(-c^2*x^2+1)*x*g^2+8*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-
10*c^4*x^4+11*c^2*x^2-4)*c^2*arcsin(c*x)*x^4*f*g+I*b*(-d*(c^2*x^2-1))^(1/2)
/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)/c^2*(-c^2*x^2+1)*x*g^2+1/3*b*(-c^2
*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)/c^2/d^3
/(c^2*x^2-1)*f*g-1/3*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*ln(I*c*x+(
-c^2*x^2+1)^(1/2)-I)/c^2/d^3/(c^2*x^2-1)*f*g-8/3*I*b*(-d*(c^2*x^2-1))^(1/2)
/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)/c*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*f
^2+4/3*I*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/c/d^3/(c^2
*x^2-1)*f^2-2/3*I*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/c
^3/d^3/(c^2*x^2-1)*g^2+1/3*a*g^2/c^2/d*x/(-c^2*d*x^2+d)^(3/2)-1/3*a*g^2/c^2
/d^2*x/(-c^2*d*x^2+d)^(1/2)+2/3*a*f*g/c^2/d/(-c^2*d*x^2+d)^(3/2)-8/3*b*(-d*
(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^2*arcsin(c*x)*
(-c^2*x^2+1)*x^4*f*g+4/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x
^4+11*c^2*x^2-4)*c^4*(-c^2*x^2+1)*x^6*f*g-2*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/
(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^3*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^4*
f^2-10/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)
*c^2*(-c^2*x^2+1)*x^4*f*g+14/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10
*c^4*x^4+11*c^2*x^2-4)*c*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^2*f^2-7/3*I*b*(-d
*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)/c*arcsin(c*x)*(
-c^2*x^2+1)^(1/2)*x^2*g^2+I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*
x^4+11*c^2*x^2-4)*c*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^4*g^2+4/3*I*b*(-d*(c^2
*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^6*x^8*f*g+2/3*I*b*
(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*(-c^2*x^
2+1)*x^5*f^2-5/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^
2*x^2-4)*c^2*(-c^2*x^2+1)*x^3*f^2+16/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^
6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^2*x^4*f*g-14/3*I*b*(-d*(c^2*x^2-1))^(1/2)/
d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*x^6*f*g+2*I*b*(-d*(c^2*x^2-1))^
```

```
(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*(-c^2*x^2+1)*x^2*f*g+4/3*I*b*
(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)/c^3*arcsin(c
*x)*(-c^2*x^2+1)^(1/2)*g^2+2/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10
*c^4*x^4+11*c^2*x^2-4)*c^2*(-c^2*x^2+1)*x^5*g^2-8/3*b*(-d*(c^2*x^2-1))^(1/2
)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)/c^2*arcsin(c*x)*(-c^2*x^2+1)*f*g+
4/3*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)/c*(-c^
2*x^2+1)^(1/2)*x*f*g-2*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+1
1*c^2*x^2-4)*c^2*arcsin(c*x)*(-c^2*x^2+1)*x^5*g^2-b*(-d*(c^2*x^2-1))^(1/2)/
d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c*(-c^2*x^2+1)^(1/2)*x^3*f*g-I*b*(-
d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*x*f^2-2*I*b*(-
d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*x^2*f*g+2/3*I*
b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*x^7*g^
2-1/2*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c*(-
c^2*x^2+1)^(1/2)*x^2*f^2-1/2*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4
*x^4+11*c^2*x^2-4)/c*(-c^2*x^2+1)^(1/2)*x^2*g^2+2*b*(-d*(c^2*x^2-1))^(1/2)/
d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)/c^2*arcsin(c*x)*x*g^2-2/3*b*(-c^2*x
^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)/c/d^3/(c^
2*x^2-1)*f^2+1/3*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*ln(I*c*x+(-c^2
*x^2+1)^(1/2)+I)/c^3/d^3/(c^2*x^2-1)*g^2-2/3*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*
x^2-1))^(1/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)/c/d^3/(c^2*x^2-1)*f^2+1/3*b*(-
c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)/c^3/
d^3/(c^2*x^2-1)*g^2+I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11
*c^2*x^2-4)*(-c^2*x^2+1)*x*f^2-6*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10
*c^4*x^4+11*c^2*x^2-4)*arcsin(c*x)*x^2*f*g-2*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(
3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*arcsin(c*x)*x^7*g^2-2*b*(-d*(c^2*x^2
-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*arcsin(c*x)*x^5*f^2+
7*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^2*arcs
in(c*x)*x^5*g^2-22/3*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*
c^2*x^2-4)*arcsin(c*x)*x^3*g^2-4*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10
*c^4*x^4+11*c^2*x^2-4)*arcsin(c*x)*x*f^2+2/3*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(
3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)/c*(-c^2*x^2+1)^(1/2)*f^2+2/3*b*(-d*(c^2*
x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)/c^3*(-c^2*x^2+1)^(1/2
)*g^2+8/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4
)*x^3*g^2-7/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x
^2-4)*c^2*x^5*g^2+8/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+
11*c^2*x^2-4)*c^2*x^3*f^2+2/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*
c^4*x^4+11*c^2*x^2-4)*c^6*x^7*f^2-7/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6
*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*x^5*f^2+17/3*b*(-d*(c^2*x^2-1))^(1/2)/d^3
/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^2*arcsin(c*x)*x^3*f^2+4*b*(-d*(c^2*x
^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*arcsin(c*x)*(-c^2*x^2+
1)*x^3*g^2-I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-
4)/c^2*x*g^2-5/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^
2*x^2-4)*(-c^2*x^2+1)*x^3*g^2+2/3*a*f^2/d^2*x/(-c^2*d*x^2+d)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{6}\,bcf^2\left(\frac{1}{c^4d^{\frac{5}{2}}x^2 - c^2d^{\frac{5}{2}}} + \frac{2\,\log\left(cx+1\right)}{c^2d^{\frac{5}{2}}} + \frac{2\,\log\left(cx-1\right)}{c^2d^{\frac{5}{2}}}\right) + \frac{1}{3}\,bf^2\left(\frac{2\,x}{\sqrt{-c^2dx^2+d}d^2} + \frac{x}{\left(-c^2dx^2+d\right)^{\frac{3}{2}}d}\right)\arcsin\left(cx\right) + \frac{1}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="ma
xima")
```

```
[Out] 1/6*b*c*f^2*(1/(c^4*d^(5/2)*x^2 - c^2*d^(5/2)) + 2*log(c*x + 1)/(c^2*d^(5/2
)) + 2*log(c*x - 1)/(c^2*d^(5/2))) + 1/3*b*f^2*(2*x/(sqrt(-c^2*d*x^2 + d)*d
^2) + x/((-c^2*d*x^2 + d)^(3/2)*d))*arcsin(c*x) + 1/3*a*f^2*(2*x/(sqrt(-c^2
*d*x^2 + d)*d^2) + x/((-c^2*d*x^2 + d)^(3/2)*d)) - 1/3*a*g^2*(x/(sqrt(-c^2*
d*x^2 + d)*c^2*d^2) - x/((-c^2*d*x^2 + d)^(3/2)*c^2*d)) - sqrt(d)*integrate
((b*g^2*x^2 + 2*b*f*g*x)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x
 + 1)*sqrt(-c*x + 1))/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3),
x) + 2/3*a*f*g/((-c^2*d*x^2 + d)^(3/2)*c^2*d)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\left(ag^2x^2 + 2\,afgx + af^2 + \left(bg^2x^2 + 2\,bfgx + bf^2\right)\arcsin\left(cx\right)\right)}{c^6d^3x^6 - 3\,c^4d^3x^4 + 3\,c^2d^3x^2 - d^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="fr
icas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(a*g^2*x^2 + 2*a*f*g*x + a*f^2 + (b*g^2*x^2
+ 2*b*f*g*x + b*f^2)*arcsin(c*x))/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*
x^2 - d^3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a + b\,\mathrm{asin}\left(cx\right)\right)\left(f + gx\right)^2}{\left(-d\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x)**2/(-d*(c*x - 1)*(c*x + 1))**(5/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^2 (b \arcsin(cx) + a)}{(-c^2dx^2 + d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="gi
ac")
```

```
[Out] integrate((g*x + f)^2*(b*arcsin(c*x) + a)/(-c^2*d*x^2 + d)^(5/2), x)
```

3.56 $\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=228

$$\frac{\left(c^2fx+g\right)\left(a+b\sin^{-1}(cx)\right)}{3c^2d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}+\frac{2fx\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{d-c^2dx^2}}-\frac{b(f+gx)}{6cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{bf\sqrt{1-c^2x^2}\log\left(1-c^2x^2\right)}{3cd^2\sqrt{d-c^2dx^2}}-\frac{bg\sqrt{}}{6}$$

```
[Out] -(b*(f + g*x))/(6*c*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) + (2*f*x*(a
+ b*ArcSin[c*x]))/(3*d^2*Sqrt[d - c^2*d*x^2]) + ((g + c^2*f*x)*(a + b*ArcSi
n[c*x]))/(3*c^2*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]) - (b*g*Sqrt[1 - c^2*
x^2]*ArcTanh[c*x])/(6*c^2*d^2*Sqrt[d - c^2*d*x^2]) + (b*f*Sqrt[1 - c^2*x^2]
*Log[1 - c^2*x^2])/(3*c*d^2*Sqrt[d - c^2*d*x^2])
```

Rubi [A] time = 0.194799, antiderivative size = 228, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {4777, 639, 191, 4761, 206, 260}

$$\frac{\left(c^2fx+g\right)\left(a+b\sin^{-1}(cx)\right)}{3c^2d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}+\frac{2fx\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{d-c^2dx^2}}-\frac{b(f+gx)}{6cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{bf\sqrt{1-c^2x^2}\log\left(1-c^2x^2\right)}{3cd^2\sqrt{d-c^2dx^2}}-\frac{bg\sqrt{}}{6}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```


```
[Out] -(b*(f + g*x))/(6*c*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) + (2*f*x*(a
+ b*ArcSin[c*x]))/(3*d^2*Sqrt[d - c^2*d*x^2]) + ((g + c^2*f*x)*(a + b*ArcSi
n[c*x]))/(3*c^2*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]) - (b*g*Sqrt[1 - c^2*
x^2]*ArcTanh[c*x])/(6*c^2*d^2*Sqrt[d - c^2*d*x^2]) + (b*f*Sqrt[1 - c^2*x^2]
*Log[1 - c^2*x^2])/(3*c*d^2*Sqrt[d - c^2*d*x^2])
```


Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 4761

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rule 206

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

Rule 260

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

Rubi steps

$$\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{5/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{5/2}}\,dx}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{2fx\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{d-c^2dx^2}} + \frac{\left(g+c^2fx\right)\left(a+b\sin^{-1}(cx)\right)}{3c^2d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}} - \frac{\left(bc\sqrt{1-c^2x^2}\right)\int\left(\frac{g+c^2fx}{3c^2\left(1-c^2x^2\right)^2}\right.}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{2fx\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{d-c^2dx^2}} + \frac{\left(g+c^2fx\right)\left(a+b\sin^{-1}(cx)\right)}{3c^2d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}} - \frac{\left(b\sqrt{1-c^2x^2}\right)\int \frac{g+c^2fx}{\left(1-c^2x^2\right)^2}\,dx}{3cd^2\sqrt{d-c^2dx^2}} -$$

$$= -\frac{b(f+gx)}{6cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{2fx\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{d-c^2dx^2}} + \frac{\left(g+c^2fx\right)\left(a+b\sin^{-1}(cx)\right)}{3c^2d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}$$

$$= -\frac{b(f+gx)}{6cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{2fx\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{d-c^2dx^2}} + \frac{\left(g+c^2fx\right)\left(a+b\sin^{-1}(cx)\right)}{3c^2d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}$$

Mathematica [C] time = 0.808149, size = 208, normalized size = 0.91

$$-\frac{\sqrt{d-c^2dx^2}\left(\sqrt{-c^2}\left(-4ac^4fx^3+6ac^2fx+2ag+2b\sin^{-1}(cx)\left(c^2fx\left(3-2c^2x^2\right)+g\right)-bcf\sqrt{1-c^2x^2}+2bcf\left(1-c^2x^2\right)\right.\right.}{6\left(-c^2\right)^{3/2}d^3\left(c^2x^2-1\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] -(Sqrt[d - c^2*d*x^2]*(I*b*c*g*(1 - c^2*x^2)^(3/2)*EllipticF[I*ArcSinh[Sqrt
[-c^2]*x], 1] + Sqrt[-c^2]*(2*a*g + 6*a*c^2*f*x - 4*a*c^4*f*x^3 - b*c*f*Sqr
t[1 - c^2*x^2] - b*c*g*x*Sqrt[1 - c^2*x^2] + 2*b*(g + c^2*f*x*(3 - 2*c^2*x^
2))*ArcSin[c*x] + 2*b*c*f*(1 - c^2*x^2)^(3/2)*Log[-1 + c^2*x^2])))/(6*(-c^2
)^(3/2)*d^3*(-1 + c^2*x^2)^2)
```

Maple [C] time = 0.309, size = 2236, normalized size = 9.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] -4/3*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^2*a
rcsin(c*x)*(-c^2*x^2+1)*x^4*g-8/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6
-10*c^4*x^4+11*c^2*x^2-4)/c*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*f+2/3*I*b*(-d*(c
^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*(-c^2*x^2+1)*x
^6*g+2/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)
*c^4*(-c^2*x^2+1)*x^5*f-5/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^
4*x^4+11*c^2*x^2-4)*c^2*(-c^2*x^2+1)*x^4*g-5/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d
^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^2*(-c^2*x^2+1)*x^3*f+I*b*(-d*(c^2*
x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*(-c^2*x^2+1)*x*f-4/3*
b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*arcsin
(c*x)*x^6*g-1/6*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^2/d^3/(c^2*x^
2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*g-2/3*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2
-1))^(1/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)/c/d^3/(c^2*x^2-1)*f+1/6*b*(-c^2*x
^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)/c^2/d^3/(
c^2*x^2-1)*g-1/2*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*
x^2-4)*c*(-c^2*x^2+1)^(1/2)*x^2*f-2/3*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))
^(1/2)/c/d^3/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*f-1/2*b*(-d*(c^2*x^
2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c*(-c^2*x^2+1)^(1/2)*x^
3*g+17/3*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c
^2*arcsin(c*x)*x^3*f-7/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x
^4+11*c^2*x^2-4)*c^4*x^5*f+8/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10
*c^4*x^4+11*c^2*x^2-4)*c^2*x^4*g+2/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*
x^6-10*c^4*x^4+11*c^2*x^2-4)*c^6*x^8*g+2/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(
3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^6*x^7*f+8/3*b*(-d*(c^2*x^2-1))^(1/2)/d
^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*arcsin(c*x)*(-c^2*x^2+1)*x^2*g-4/3*b
*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)/c^2*arcsin(
c*x)*(-c^2*x^2+1)*g+2/3*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+
11*c^2*x^2-4)/c*(-c^2*x^2+1)^(1/2)*x*g+8/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(
3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^2*x^3*f-7/3*I*b*(-d*(c^2*x^2-1))^(1/2)
/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*x^6*g-2*b*(-d*(c^2*x^2-1))^(1/
2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*arcsin(c*x)*x^5*f+4*b*(-d*(c
^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^2*arcsin(c*x)*x^
4*g+I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*(-c^
2*x^2+1)*x^2*g+2/3*a*f/d^2*x/(-c^2*d*x^2+d)^(1/2)+1/3*a*f/d*x/(-c^2*d*x^2+d
)^(3/2)+1/3*a*g/c^2/d/(-c^2*d*x^2+d)^(3/2)+2/3*b*(-d*(c^2*x^2-1))^(1/2)/d^3
/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)/c*(-c^2*x^2+1)^(1/2)*f-3*b*(-d*(c^2*x^
2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*arcsin(c*x)*x^2*g-4*b*(
-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*arcsin(c*x)*x
*f-I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*x^2*g
-I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*x*f-2*I
*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^3*arcsi
n(c*x)*(-c^2*x^2+1)^(1/2)*x^4*f+14/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*
```

```
x^6-10*c^4*x^4+11*c^2*x^2-4)*c*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^2*f+4/3*I*b
*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/d^3/(c^2*x^2-1)*f*arcsin(c*x)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxi
ma")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\left(agx+af+\left(bgx+bf\right)\arcsin\left(cx\right)\right)}{c^6d^3x^6-3\,c^4d^3x^4+3\,c^2d^3x^2-d^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="fric
as")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(a*g*x + a*f + (b*g*x + b*f)*arcsin(c*x))/(c
^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a+b\operatorname{asin}\left(cx\right)\right)\left(f+gx\right)}{\left(-d\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x)/(-d*(c*x - 1)*(c*x + 1))**(5/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)(b\arcsin(cx)+a)}{(-c^2dx^2+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac
")
```

```
[Out] integrate((g*x + f)*(b*arcsin(c*x) + a)/(-c^2*d*x^2 + d)^(5/2), x)
```

3.57 $\int \frac{a+b\sin^{-1}(cx)}{(f+gx)\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=1300

result too large to display

```
[Out] -((c*f - 2*g)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Cot[Pi/4 + ArcSin[c*x]/
2])/(4*d^2*(c*f - g)^2*Sqrt[d - c^2*d*x^2]) - (Sqrt[1 - c^2*x^2]*(a + b*Arc
Sin[c*x])*Cot[Pi/4 + ArcSin[c*x]/2])/(12*d^2*(c*f - g)*Sqrt[d - c^2*d*x^2])
 - (b*Sqrt[1 - c^2*x^2]*Csc[Pi/4 + ArcSin[c*x]/2]^2)/(24*d^2*(c*f - g)*Sqrt
[d - c^2*d*x^2]) - (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Cot[Pi/4 + ArcSin
[c*x]/2]*Csc[Pi/4 + ArcSin[c*x]/2]^2)/(24*d^2*(c*f - g)*Sqrt[d - c^2*d*x^2]
) - (I*g^4*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 - (I*E^(I*ArcSin[c*x
])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(d^2*(c*f - g)^2*(c*f + g)^2*Sqrt[c^2*f
^2 - g^2]*Sqrt[d - c^2*d*x^2]) + (I*g^4*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x
])*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(d^2*(c*f
- g)^2*(c*f + g)^2*Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]) + (b*Sqrt[1 - c
^2*x^2]*Log[Cos[Pi/4 + ArcSin[c*x]/2]])/(6*d^2*(c*f + g)*Sqrt[d - c^2*d*x^2
]) + (b*(c*f + 2*g)*Sqrt[1 - c^2*x^2]*Log[Cos[Pi/4 + ArcSin[c*x]/2]])/(2*d^
2*(c*f + g)^2*Sqrt[d - c^2*d*x^2]) + (b*(c*f - 2*g)*Sqrt[1 - c^2*x^2]*Log[S
in[Pi/4 + ArcSin[c*x]/2]])/(2*d^2*(c*f - g)^2*Sqrt[d - c^2*d*x^2]) + (b*Sqr
t[1 - c^2*x^2]*Log[Sin[Pi/4 + ArcSin[c*x]/2]])/(6*d^2*(c*f - g)*Sqrt[d - c^
2*d*x^2]) - (b*g^4*Sqrt[1 - c^2*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*
f - Sqrt[c^2*f^2 - g^2])])/(d^2*(c*f - g)^2*(c*f + g)^2*Sqrt[c^2*f^2 - g^2]
*Sqrt[d - c^2*d*x^2]) + (b*g^4*Sqrt[1 - c^2*x^2]*PolyLog[2, (I*E^(I*ArcSin[
c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(d^2*(c*f - g)^2*(c*f + g)^2*Sqrt[c^
2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]) - (b*Sqrt[1 - c^2*x^2]*Sec[Pi/4 + ArcSin[
c*x]/2]^2)/(24*d^2*(c*f + g)*Sqrt[d - c^2*d*x^2]) + (Sqrt[1 - c^2*x^2]*(a +
 b*ArcSin[c*x])*Tan[Pi/4 + ArcSin[c*x]/2])/(12*d^2*(c*f + g)*Sqrt[d - c^2*d
*x^2]) + ((c*f + 2*g)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Tan[Pi/4 + ArcS
in[c*x]/2])/(4*d^2*(c*f + g)^2*Sqrt[d - c^2*d*x^2]) + (Sqrt[1 - c^2*x^2]*(a
 + b*ArcSin[c*x])*Sec[Pi/4 + ArcSin[c*x]/2]^2*Tan[Pi/4 + ArcSin[c*x]/2])/(2
4*d^2*(c*f + g)*Sqrt[d - c^2*d*x^2])
```

Rubi [A] time = 1.76735, antiderivative size = 1300, normalized size of antiderivative = 1., number of steps used = 30, number of rules used = 12, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.387, Rules used = {4777, 4775, 4773, 3318, 4185, 4184, 3475, 3323, 2264, 2190, 2279, 2391}

$$-\frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)g^4}{d^2(cf-g)^2(cf+g)^2\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}}+\frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)g^4}{d^2(cf-g)^2(cf+g)^2\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}}-\frac{b\sqrt{1-}}{d^2(cf-}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/((f + g*x)*(d - c^2*d*x^2)^(5/2)),x]
```

```
[Out] -((c*f - 2*g)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Cot[Pi/4 + ArcSin[c*x]/
2])/(4*d^2*(c*f - g)^2*Sqrt[d - c^2*d*x^2]) - (Sqrt[1 - c^2*x^2]*(a + b*Arc
Sin[c*x])*Cot[Pi/4 + ArcSin[c*x]/2])/(12*d^2*(c*f - g)*Sqrt[d - c^2*d*x^2])
 - (b*Sqrt[1 - c^2*x^2]*Csc[Pi/4 + ArcSin[c*x]/2]^2)/(24*d^2*(c*f - g)*Sqrt
[d - c^2*d*x^2]) - (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Cot[Pi/4 + ArcSin
[c*x]/2]*Csc[Pi/4 + ArcSin[c*x]/2]^2)/(24*d^2*(c*f - g)*Sqrt[d - c^2*d*x^2]
) - (I*g^4*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 - (I*E^(I*ArcSin[c*x
])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(d^2*(c*f - g)^2*(c*f + g)^2*Sqrt[c^2*f
^2 - g^2]*Sqrt[d - c^2*d*x^2]) + (I*g^4*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x
])*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(d^2*(c*f
- g)^2*(c*f + g)^2*Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]) + (b*Sqrt[1 - c
^2*x^2]*Log[Cos[Pi/4 + ArcSin[c*x]/2]])/(6*d^2*(c*f + g)*Sqrt[d - c^2*d*x^2
]) + (b*(c*f + 2*g)*Sqrt[1 - c^2*x^2]*Log[Cos[Pi/4 + ArcSin[c*x]/2]])/(2*d^
2*(c*f + g)^2*Sqrt[d - c^2*d*x^2]) + (b*(c*f - 2*g)*Sqrt[1 - c^2*x^2]*Log[S
in[Pi/4 + ArcSin[c*x]/2]])/(2*d^2*(c*f - g)^2*Sqrt[d - c^2*d*x^2]) + (b*Sqr
t[1 - c^2*x^2]*Log[Sin[Pi/4 + ArcSin[c*x]/2]])/(6*d^2*(c*f - g)*Sqrt[d - c^
2*d*x^2]) - (b*g^4*Sqrt[1 - c^2*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*
f - Sqrt[c^2*f^2 - g^2])])/(d^2*(c*f - g)^2*(c*f + g)^2*Sqrt[c^2*f^2 - g^2]
*Sqrt[d - c^2*d*x^2]) + (b*g^4*Sqrt[1 - c^2*x^2]*PolyLog[2, (I*E^(I*ArcSin[
c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(d^2*(c*f - g)^2*(c*f + g)^2*Sqrt[c^
2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]) - (b*Sqrt[1 - c^2*x^2]*Sec[Pi/4 + ArcSin[
c*x]/2]^2)/(24*d^2*(c*f + g)*Sqrt[d - c^2*d*x^2]) + (Sqrt[1 - c^2*x^2]*(a +
 b*ArcSin[c*x])*Tan[Pi/4 + ArcSin[c*x]/2])/(12*d^2*(c*f + g)*Sqrt[d - c^2*d
*x^2]) + ((c*f + 2*g)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Tan[Pi/4 + ArcS
in[c*x]/2])/(4*d^2*(c*f + g)^2*Sqrt[d - c^2*d*x^2]) + (Sqrt[1 - c^2*x^2]*(a
 + b*ArcSin[c*x])*Sec[Pi/4 + ArcSin[c*x]/2]^2*Tan[Pi/4 + ArcSin[c*x]/2])/(2
4*d^2*(c*f + g)*Sqrt[d - c^2*d*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4775

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
```

```
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3318

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

Rule 4185

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

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3475

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

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{(f+gx)\left(d-c^2dx^2\right)^{5/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{a+b\sin^{-1}(cx)}{(f+gx)\left(1-c^2x^2\right)^{5/2}}\,dx}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{c\left(a+b\sin^{-1}(cx)\right)}{4(cf+g)(-1+cx)^2\sqrt{1-c^2x^2}} - \frac{c(cf+2g)\left(a+b\sin^{-1}(cx)\right)}{4(cf+g)^2(-1+cx)\sqrt{1-c^2x^2}} + \frac{c\left(a+b\sin^{-1}(cx)\right)}{4(cf-g)(1+cx)^2\sqrt{1-c^2x^2}} + \frac{c(cf-2g}{4(cf-g)}\right.}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(c(cf-2g)\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{(1+cx)\sqrt{1-c^2x^2}}\,dx}{4d^2(cf-g)^2\sqrt{d-c^2dx^2}} + \frac{\left(c\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{(1+cx)^2\sqrt{1-c^2x^2}}\,dx}{4d^2(cf-g)\sqrt{d-c^2dx^2}} + \frac{\left(g^4\sqrt{1-\right.}{d^2(cf-g}$$

$$= \frac{\left(c(cf-2g)\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int \frac{a+bx}{c+c\sin(x)}\,dx, x, \sin^{-1}(cx)\right)}{4d^2(cf-g)^2\sqrt{d-c^2dx^2}} + \frac{\left(c^2\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int \frac{}{(c}\right.}{4d^2(cf-g)}$$

$$= \frac{\left((cf-2g)\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int (a+bx)\csc^2\left(\frac{\pi}{4}+\frac{x}{2}\right)dx, x, \sin^{-1}(cx)\right)}{8d^2(cf-g)^2\sqrt{d-c^2dx^2}} + \frac{\sqrt{1-c^2x^2}\,\text{Sub}}{}$$

$$= -\frac{(cf-2g)\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\cot\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(cx)\right)}{4d^2(cf-g)^2\sqrt{d-c^2dx^2}} - \frac{b\sqrt{1-c^2x^2}\csc^2\left(\frac{\pi}{4}+\frac{1}{2}\right.}{24d^2(cf-g)\sqrt{d-c}}$$

$$= -\frac{(cf-2g)\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\cot\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(cx)\right)}{4d^2(cf-g)^2\sqrt{d-c^2dx^2}} - \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(c\right.}{12d^2(cf-g}$$

$$= -\frac{(cf-2g)\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\cot\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(cx)\right)}{4d^2(cf-g)^2\sqrt{d-c^2dx^2}} - \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(c\right.}{12d^2(cf-g}$$

$$= -\frac{(cf-2g)\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\cot\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(cx)\right)}{4d^2(cf-g)^2\sqrt{d-c^2dx^2}} - \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(c\right.}{12d^2(cf-g}$$

<u>Mathematica</u> [A] time = 12.8867, size = 2078, normalized size = 1.6

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/((f + g*x)*(d - c^2*d*x^2)^(5/2)),x]
```

```
[Out] Sqrt[-(d*(-1 + c^2*x^2))]*((a*g - a*c^2*f*x)/(3*d^3*(-(c^2*f^2) + g^2)*(-1
+ c^2*x^2)^2) + (-3*a*g^3 - 2*a*c^4*f^3*x + 5*a*c^2*f*g^2*x)/(3*d^3*(-(c^2*
f^2) + g^2)^2*(-1 + c^2*x^2))) + (a*g^4*Log[f + g*x])/(d^(5/2)*(-(c*f) + g)
^2*(c*f + g)^2*Sqrt[-(c^2*f^2) + g^2]) - (a*g^4*Log[d*g + c^2*d*f*x + Sqrt[
d]*Sqrt[-(c^2*f^2) + g^2]*Sqrt[-(d*(-1 + c^2*x^2))]]])/(d^(5/2)*(-(c*f) + g)
^2*(c*f + g)^2*Sqrt[-(c^2*f^2) + g^2]) + (b*((g*(-(c^2*f^2) + 7*g^2)*(1 - c
^2*x^2)^(3/2)*ArcSin[c*x])/(6*(-(c^2*f^2) + g^2)^2*(d*(1 - c^2*x^2))^(3/2))
 + ((4*c*f + 7*g)*(1 - c^2*x^2)^(3/2)*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c
*x]/2]])/(6*(c*f + g)^2*(d*(1 - c^2*x^2))^(3/2)) + ((4*c*f - 7*g)*(1 - c^2*
x^2)^(3/2)*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]])/(6*(c*f - g)^2*(d*
(1 - c^2*x^2))^(3/2)) + (g^4*(1 - c^2*x^2)^(3/2)*((Pi*ArcTan[(g + c*f*Tan[A
rcSin[c*x]/2])/Sqrt[c^2*f^2 - g^2]])/Sqrt[c^2*f^2 - g^2] + (2*(Pi/2 - ArcSi
n[c*x])*ArcTanh[((c*f + g)*Cot[(Pi/2 - ArcSin[c*x])/2])/Sqrt[-(c^2*f^2) + g
^2]] - 2*ArcCos[-((c*f)/g)]*ArcTanh[((-(c*f) + g)*Tan[(Pi/2 - ArcSin[c*x])/
2])/Sqrt[-(c^2*f^2) + g^2]] + (ArcCos[-((c*f)/g)] - (2*I)*(ArcTanh[((c*f +
g)*Cot[(Pi/2 - ArcSin[c*x])/2])/Sqrt[-(c^2*f^2) + g^2]] - ArcTanh[((-(c*f)
+ g)*Tan[(Pi/2 - ArcSin[c*x])/2])/Sqrt[-(c^2*f^2) + g^2]]))*Log[Sqrt[-(c^2*
f^2) + g^2]/(Sqrt[2]*E^((I/2)*(Pi/2 - ArcSin[c*x]))*Sqrt[g]*Sqrt[c*f + c*g*
x])] + (ArcCos[-((c*f)/g)] + (2*I)*(ArcTanh[((c*f + g)*Cot[(Pi/2 - ArcSin[c
*x])/2])/Sqrt[-(c^2*f^2) + g^2]] - ArcTanh[((-(c*f) + g)*Tan[(Pi/2 - ArcSin
[c*x])/2])/Sqrt[-(c^2*f^2) + g^2]]))*Log[(E^((I/2)*(Pi/2 - ArcSin[c*x]))*Sq
rt[-(c^2*f^2) + g^2])/(Sqrt[2]*Sqrt[g]*Sqrt[c*f + c*g*x])] - (ArcCos[-((c*f
)/g)] + (2*I)*ArcTanh[((-(c*f) + g)*Tan[(Pi/2 - ArcSin[c*x])/2])/Sqrt[-(c^2
*f^2) + g^2]])*Log[1 - ((c*f - I*Sqrt[-(c^2*f^2) + g^2])*(c*f + g - Sqrt[-(
c^2*f^2) + g^2]*Tan[(Pi/2 - ArcSin[c*x])/2]))/(g*(c*f + g + Sqrt[-(c^2*f^2)
 + g^2]*Tan[(Pi/2 - ArcSin[c*x])/2]))] + (-ArcCos[-((c*f)/g)] + (2*I)*ArcTa
nh[((-(c*f) + g)*Tan[(Pi/2 - ArcSin[c*x])/2])/Sqrt[-(c^2*f^2) + g^2]])*Log[
1 - ((c*f + I*Sqrt[-(c^2*f^2) + g^2])*(c*f + g - Sqrt[-(c^2*f^2) + g^2]*Tan
[(Pi/2 - ArcSin[c*x])/2]))/(g*(c*f + g + Sqrt[-(c^2*f^2) + g^2]*Tan[(Pi/2 -
 ArcSin[c*x])/2]))] + I*(PolyLog[2, ((c*f - I*Sqrt[-(c^2*f^2) + g^2])*(c*f
+ g - Sqrt[-(c^2*f^2) + g^2]*Tan[(Pi/2 - ArcSin[c*x])/2]))/(g*(c*f + g + Sq
rt[-(c^2*f^2) + g^2]*Tan[(Pi/2 - ArcSin[c*x])/2]))] - PolyLog[2, ((c*f + I*
Sqrt[-(c^2*f^2) + g^2])*(c*f + g - Sqrt[-(c^2*f^2) + g^2]*Tan[(Pi/2 - ArcSi
n[c*x])/2]))/(g*(c*f + g + Sqrt[-(c^2*f^2) + g^2]*Tan[(Pi/2 - ArcSin[c*x])/
2]))]))/Sqrt[-(c^2*f^2) + g^2]))/((-(c*f) + g)^2*(c*f + g)^2*(d*(1 - c^2*x^
2))^(3/2)) + ((1 - c^2*x^2)^(3/2)*(-1 + ArcSin[c*x]))/(12*(c*f + g)*(d*(1 -
 c^2*x^2))^(3/2)*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^2) + ((1 - c^2*x
^2)^(3/2)*ArcSin[c*x]*Sin[ArcSin[c*x]/2])/(6*(c*f + g)*(d*(1 - c^2*x^2))^(3
/2)*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^3) + ((1 - c^2*x^2)^(3/2)*Arc
Sin[c*x]*Sin[ArcSin[c*x]/2])/(6*(c*f - g)*(d*(1 - c^2*x^2))^(3/2)*(Cos[ArcS
in[c*x]/2] + Sin[ArcSin[c*x]/2])^3) + ((1 - c^2*x^2)^(3/2)*(-1 - ArcSin[c*x
]))/(12*(c*f - g)*(d*(1 - c^2*x^2))^(3/2)*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[
c*x]/2])^2) + ((1 - c^2*x^2)^(3/2)*(4*c*f*ArcSin[c*x]*Sin[ArcSin[c*x]/2] -
7*g*ArcSin[c*x]*Sin[ArcSin[c*x]/2]))/(6*(c*f - g)^2*(d*(1 - c^2*x^2))^(3/2)
*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])) + ((1 - c^2*x^2)^(3/2)*(4*c*f*A
```

```
rcSin[c*x]*Sin[ArcSin[c*x]/2] + 7*g*ArcSin[c*x]*Sin[ArcSin[c*x]/2]))/(6*(c*
f + g)^2*(d*(1 - c^2*x^2))^(3/2)*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]))
))/d
```

Maple [B] time = 0.483, size = 7977, normalized size = 6.1

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(g*x+f)/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \arcsin(cx) + a}{\left(-c^2dx^2 + d\right)^{\frac{5}{2}}\left(gx + f\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(g*x+f)/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxi
ma")
```

```
[Out] integrate((b*arcsin(c*x) + a)/((-c^2*d*x^2 + d)^(5/2)*(g*x + f)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2 + d}\,(b \arcsin(cx) + a)}{c^6d^3gx^7 + c^6d^3fx^6 - 3\,c^4d^3gx^5 - 3\,c^4d^3fx^4 + 3\,c^2d^3gx^3 + 3\,c^2d^3fx^2 - d^3gx - d^3f}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(g*x+f)/(-c^2*d*x^2+d)^(5/2),x, algorithm="fric
as")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(c^6*d^3*g*x^7 + c^6*d^3
*f*x^6 - 3*c^4*d^3*g*x^5 - 3*c^4*d^3*f*x^4 + 3*c^2*d^3*g*x^3 + 3*c^2*d^3*f*
x^2 - d^3*g*x - d^3*f), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(g*x+f)/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \arcsin (cx) + a}{\left(-c^2dx^2 + d\right)^{\frac{5}{2}}\left(gx + f\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(g*x+f)/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac
")
```

```
[Out] integrate((b*arcsin(c*x) + a)/((-c^2*d*x^2 + d)^(5/2)*(g*x + f)), x)
```

3.58 $\int (f+gx)^3 \sqrt{d-c^2dx^2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=1154

result too large to display

```
[Out] (4*b^2*f^2*g*Sqrt[d - c^2*d*x^2])/(3*c^2) + (52*b^2*g^3*Sqrt[d - c^2*d*x^2]
)/(225*c^4) - (b^2*f^3*x*Sqrt[d - c^2*d*x^2])/4 + (3*b^2*f*g^2*x*Sqrt[d - c
^2*d*x^2])/(64*c^2) - (3*b^2*f*g^2*x^3*Sqrt[d - c^2*d*x^2])/32 + (4*a*b*g^3
*x*Sqrt[d - c^2*d*x^2])/(15*c^3*Sqrt[1 - c^2*x^2]) + (2*b^2*f^2*g*(1 - c^2*
x^2)*Sqrt[d - c^2*d*x^2])/(9*c^2) + (26*b^2*g^3*(1 - c^2*x^2)*Sqrt[d - c^2*
d*x^2])/(675*c^4) - (2*b^2*g^3*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2])/(125*c^
4) + (b^2*f^3*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(4*c*Sqrt[1 - c^2*x^2]) - (3
*b^2*f*g^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(64*c^3*Sqrt[1 - c^2*x^2]) + (4
*b^2*g^3*x*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(15*c^3*Sqrt[1 - c^2*x^2]) + (2
*b*f^2*g*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(c*Sqrt[1 - c^2*x^2]) -
 (b*c*f^3*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(2*Sqrt[1 - c^2*x^2]
) + (3*b*f*g^2*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*c*Sqrt[1 - c
^2*x^2]) - (2*b*c*f^2*g*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*Sqr
t[1 - c^2*x^2]) + (2*b*g^3*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(45
*c*Sqrt[1 - c^2*x^2]) - (3*b*c*f*g^2*x^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[
c*x]))/(8*Sqrt[1 - c^2*x^2]) - (2*b*c*g^3*x^5*Sqrt[d - c^2*d*x^2]*(a + b*Ar
cSin[c*x]))/(25*Sqrt[1 - c^2*x^2]) - (2*g^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcS
in[c*x])^2)/(15*c^4) + (f^3*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/2
- (3*f*g^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(8*c^2) - (g^3*x^2*
Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(15*c^2) + (3*f*g^2*x^3*Sqrt[d -
 c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/4 + (g^3*x^4*Sqrt[d - c^2*d*x^2]*(a + b*
ArcSin[c*x])^2)/5 - (f^2*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[
c*x])^2)/c^2 + (f^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(6*b*c*Sqrt[
1 - c^2*x^2]) + (f*g^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(8*b*c^3*
Sqrt[1 - c^2*x^2])
```

Rubi [A] time = 1.5548, antiderivative size = 1154, normalized size of antiderivative = 1., number of steps used = 37, number of rules used = 16, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.485, Rules used = {4777, 4763, 4647, 4641, 4627, 321, 216, 4677, 4645, 444, 43, 4697, 4707, 4619, 261, 266}

$$-\frac{2bcg^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)x^5}{25\sqrt{1-c^2x^2}}+\frac{1}{5}g^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2x^4-\frac{3bcfg^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)x^4}{8\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (4*b^2*f^2*g*Sqrt[d - c^2*d*x^2])/(3*c^2) + (52*b^2*g^3*Sqrt[d - c^2*d*x^2]
)/(225*c^4) - (b^2*f^3*x*Sqrt[d - c^2*d*x^2])/4 + (3*b^2*f*g^2*x*Sqrt[d - c
^2*d*x^2])/(64*c^2) - (3*b^2*f*g^2*x^3*Sqrt[d - c^2*d*x^2])/32 + (4*a*b*g^3
*x*Sqrt[d - c^2*d*x^2])/(15*c^3*Sqrt[1 - c^2*x^2]) + (2*b^2*f^2*g*(1 - c^2*
x^2)*Sqrt[d - c^2*d*x^2])/(9*c^2) + (26*b^2*g^3*(1 - c^2*x^2)*Sqrt[d - c^2*
d*x^2])/(675*c^4) - (2*b^2*g^3*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2])/(125*c^
4) + (b^2*f^3*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(4*c*Sqrt[1 - c^2*x^2]) - (3
*b^2*f*g^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(64*c^3*Sqrt[1 - c^2*x^2]) + (4
*b^2*g^3*x*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(15*c^3*Sqrt[1 - c^2*x^2]) + (2
*b*f^2*g*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(c*Sqrt[1 - c^2*x^2]) -
 (b*c*f^3*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(2*Sqrt[1 - c^2*x^2]
) + (3*b*f*g^2*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*c*Sqrt[1 - c
^2*x^2]) - (2*b*c*f^2*g*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*Sqr
t[1 - c^2*x^2]) + (2*b*g^3*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(45
*c*Sqrt[1 - c^2*x^2]) - (3*b*c*f*g^2*x^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[
c*x]))/(8*Sqrt[1 - c^2*x^2]) - (2*b*c*g^3*x^5*Sqrt[d - c^2*d*x^2]*(a + b*Ar
cSin[c*x]))/(25*Sqrt[1 - c^2*x^2]) - (2*g^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcS
in[c*x])^2)/(15*c^4) + (f^3*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/2
- (3*f*g^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(8*c^2) - (g^3*x^2*
Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(15*c^2) + (3*f*g^2*x^3*Sqrt[d -
 c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/4 + (g^3*x^4*Sqrt[d - c^2*d*x^2]*(a + b*
ArcSin[c*x])^2)/5 - (f^2*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[
c*x])^2)/c^2 + (f^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(6*b*c*Sqrt[
1 - c^2*x^2]) + (f*g^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(8*b*c^3*
Sqrt[1 - c^2*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 321

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

Rule 216

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

Rule 4677

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

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 444

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 43

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

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

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

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 261

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

Rule 266

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

Rubi steps

$$\int (f+gx)^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx = \frac{\sqrt{d-c^2dx^2}\int (f+gx)^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\sqrt{d-c^2dx^2}\int \left(f^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2+3f^2gx\sqrt{1-c^2x^2}\left(a+b\,\mathrm{si}\right.\right.}{}$$

$$= \frac{\left(f^3\sqrt{d-c^2dx^2}\right)\int \sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}}+\frac{\left(3f^2g\sqrt{d-c^2dx^2}\right)\int}{}$$

$$= \frac{1}{2}f^3x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2+\frac{3}{4}fg^2x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right.$$

$$= \frac{2bf^2gx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{1-c^2x^2}}-\frac{bcf^3x^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right.}{2\sqrt{1-c^2x^2}}$$

$$= -\frac{1}{4}b^2f^3x\sqrt{d-c^2dx^2}-\frac{3}{32}b^2fg^2x^3\sqrt{d-c^2dx^2}+\frac{2bf^2gx\sqrt{d-c^2dx^2}\left(a+b\right.}{c\sqrt{1-c^2x^2}}$$

$$= -\frac{1}{4}b^2f^3x\sqrt{d-c^2dx^2}+\frac{3b^2fg^2x\sqrt{d-c^2dx^2}}{64c^2}-\frac{3}{32}b^2fg^2x^3\sqrt{d-c^2dx^2}+\frac{4a}{}$$

$$= \frac{4b^2f^2g\sqrt{d-c^2dx^2}}{3c^2}-\frac{2b^2g^3\sqrt{d-c^2dx^2}}{25c^4}-\frac{1}{4}b^2f^3x\sqrt{d-c^2dx^2}+\frac{3b^2fg^2x\sqrt{}}{64}$$

$$= \frac{4b^2f^2g\sqrt{d-c^2dx^2}}{3c^2}+\frac{52b^2g^3\sqrt{d-c^2dx^2}}{225c^4}-\frac{1}{4}b^2f^3x\sqrt{d-c^2dx^2}+\frac{3b^2fg^2x}{6}$$

Mathematica [A] time = 1.1789, size = 696, normalized size = 0.6

$$\sqrt{d-c^2dx^2}\left(-\frac{fg^2\left(-3b^2\left(cx\left(2acx+b\sqrt{1-c^2x^2}\right)+b\left(2c^2x^2-1\right)\sin^{-1}(cx)\right)+6bcx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2-2\left(a+b\sin^{-1}(cx)\right)^3\right)}{16bc^3}-\frac{f^2g\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right.}{c^2}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*((f^3*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/2 + (
3*f*g^2*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/4 + (g^3*x^4*Sqrt[1 -
c^2*x^2]*(a + b*ArcSin[c*x])^2)/5 - (f^2*g*(1 - c^2*x^2)^(3/2)*(a + b*ArcSi
n[c*x])^2)/c^2 + (f^3*(a + b*ArcSin[c*x])^3)/(6*b*c) - (2*b*g^3*(15*a*c^5*x
^5 + b*Sqrt[1 - c^2*x^2]*(8 + 4*c^2*x^2 + 3*c^4*x^4) + 15*b*c^5*x^5*ArcSin[
c*x]))/(375*c^4) - (2*b*f^2*g*(b*Sqrt[1 - c^2*x^2]*(-7 + c^2*x^2) + 3*a*c*x
*(-3 + c^2*x^2) + 3*b*c*x*(-3 + c^2*x^2)*ArcSin[c*x]))/(9*c^2) - (b*f^3*(c*
x*(2*a*c*x + b*Sqrt[1 - c^2*x^2]) + b*(-1 + 2*c^2*x^2)*ArcSin[c*x]))/(4*c)
- (3*b*f*g^2*(8*a*c^4*x^4 + b*c*x*Sqrt[1 - c^2*x^2]*(3 + 2*c^2*x^2) + b*(-3
 + 8*c^4*x^4)*ArcSin[c*x]))/(64*c^3) - (f*g^2*(6*b*c*x*Sqrt[1 - c^2*x^2]*(a
 + b*ArcSin[c*x])^2 - 2*(a + b*ArcSin[c*x])^3 - 3*b^2*(c*x*(2*a*c*x + b*Sqr
t[1 - c^2*x^2]) + b*(-1 + 2*c^2*x^2)*ArcSin[c*x])))/(16*b*c^3) - (g^3*(9*c^
2*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2 - 2*b*(b*Sqrt[1 - c^2*x^2]*(2
 + c^2*x^2) + 3*c^3*x^3*(a + b*ArcSin[c*x])) + 18*(Sqrt[1 - c^2*x^2]*(a + b
*ArcSin[c*x])^2 - 2*b*(a*c*x + b*Sqrt[1 - c^2*x^2] + b*c*x*ArcSin[c*x]))))/
(135*c^4)))/Sqrt[1 - c^2*x^2]
```

Maple [B] time = 0.784, size = 2947, normalized size = 2.6

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] -856/3375*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3/c^4/(c^2*x^2-1)+1/4*b^2*(-d*(c^2*x
^2-1))^(1/2)*f^3/(c^2*x^2-1)*x+32/3375*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3/(c^2*
x^2-1)*x^4-3/4*a^2*f*g^2*x*(-c^2*d*x^2+d)^(3/2)/c^2/d+3/8*a^2*f*g^2/c^2*d/(
c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+4/15*a*b*(-d*(c^2
*x^2-1))^(1/2)*g^3/c^4/(c^2*x^2-1)*arcsin(c*x)-8/15*a*b*(-d*(c^2*x^2-1))^(1
/2)*g^3/(c^2*x^2-1)*arcsin(c*x)*x^4-1/4*a*b*(-d*(c^2*x^2-1))^(1/2)*f^3/c/(c
^2*x^2-1)*(-c^2*x^2+1)^(1/2)-a*b*(-d*(c^2*x^2-1))^(1/2)*f^3/(c^2*x^2-1)*arc
sin(c*x)*x-1/4*b^2*(-d*(c^2*x^2-1))^(1/2)*f^3/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1
/2)*arcsin(c*x)-1/6*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/(c^2*x^
2-1)*arcsin(c*x)^3*f^3+1/5*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3*c^2/(c^2*x^2-1)*a
rcsin(c*x)^2*x^6+3/8*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g^2/c^2/(c^2*x^2-1)*arcsi
n(c*x)^2*x+b^2*(-d*(c^2*x^2-1))^(1/2)*g*c^2/(c^2*x^2-1)*arcsin(c*x)^2*x^4*f
^2+1/2*b^2*(-d*(c^2*x^2-1))^(1/2)*f^3*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcs
in(c*x)*x^2-2/45*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3/c/(c^2*x^2-1)*(-c^2*x^2+1)^
(1/2)*arcsin(c*x)*x^3-4/15*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3/c^3/(c^2*x^2-1)*(
-c^2*x^2+1)^(1/2)*arcsin(c*x)*x+3/64*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g^2/c^3/(
c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)+2/25*b^2*(-d*(c^2*x^2-1))^(1/2)*g
```

^3*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^5-1/2*a*b*(-d*(c^2*x^2-1)
)^(1/2)*(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcsin(c*x)^2*f^3+2/5*a*b*(-d*(c^2
*x^2-1))^(1/2)*g^3*c^2/(c^2*x^2-1)*arcsin(c*x)*x^6-2/15*a*b*(-d*(c^2*x^2-1)
)^(1/2)*g^3/c^2/(c^2*x^2-1)*arcsin(c*x)*x^2+2*a*b*(-d*(c^2*x^2-1))^(1/2)*g/
c^2/(c^2*x^2-1)*arcsin(c*x)*f^2+a*b*(-d*(c^2*x^2-1))^(1/2)*f^3*c^2/(c^2*x^2
-1)*arcsin(c*x)*x^3+2/25*a*b*(-d*(c^2*x^2-1))^(1/2)*g^3*c/(c^2*x^2-1)*(-c^2
*x^2+1)^(1/2)*x^5-2/45*a*b*(-d*(c^2*x^2-1))^(1/2)*g^3/c/(c^2*x^2-1)*(-c^2*x
^2+1)^(1/2)*x^3-4/15*a*b*(-d*(c^2*x^2-1))^(1/2)*g^3/c^3/(c^2*x^2-1)*(-c^2*x
^2+1)^(1/2)*x-9/4*a*b*(-d*(c^2*x^2-1))^(1/2)*f*g^2/(c^2*x^2-1)*arcsin(c*x)*
x^3+3/64*a*b*(-d*(c^2*x^2-1))^(1/2)*f*g^2/c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2
)-4*a*b*(-d*(c^2*x^2-1))^(1/2)*g/(c^2*x^2-1)*arcsin(c*x)*x^2*f^2+1/2*a*b*(-
d*(c^2*x^2-1))^(1/2)*f^3*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2-1/8*b^2*(-d*(
c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/(c^2*x^2-1)*arcsin(c*x)^3*f*g^2+3/
4*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g^2*c^2/(c^2*x^2-1)*arcsin(c*x)^2*x^5+1/2*a^
2*f^3*x*(-c^2*d*x^2+d)^(1/2)-2/15*a^2*g^3/d/c^4*(-c^2*d*x^2+d)^(3/2)+1/2*a^
2*f^3*d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-1/15*b^2
(-d(c^2*x^2-1))^(1/2)*g^3/c^2/(c^2*x^2-1)*arcsin(c*x)^2*x^2-3/32*b^2*(-d*
(c^2*x^2-1))^(1/2)*f*g^2*c^2/(c^2*x^2-1)*x^5-3/64*b^2*(-d*(c^2*x^2-1))^(1/2
)*f*g^2/c^2/(c^2*x^2-1)*x-2/9*b^2*(-d*(c^2*x^2-1))^(1/2)*g*c^2/(c^2*x^2-1)*
x^4*f^2+b^2*(-d*(c^2*x^2-1))^(1/2)*g/c^2/(c^2*x^2-1)*arcsin(c*x)^2*f^2-9/8*
b^2*(-d*(c^2*x^2-1))^(1/2)*f*g^2/(c^2*x^2-1)*arcsin(c*x)^2*x^3-2*b^2*(-d*(c
^2*x^2-1))^(1/2)*g/(c^2*x^2-1)*arcsin(c*x)^2*x^2*f^2+1/2*b^2*(-d*(c^2*x^2-1
))^(1/2)*f^3*c^2/(c^2*x^2-1)*arcsin(c*x)^2*x^3-3/8*b^2*(-d*(c^2*x^2-1))^(1/
2)*f*g^2/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^2+2/3*b^2*(-d*(c^2*
x^2-1))^(1/2)*g*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^3*f^2-2*b^2*
(-d*(c^2*x^2-1))^(1/2)*g/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x*f^2
-1/5*a^2*g^3*x^2*(-c^2*d*x^2+d)^(3/2)/c^2/d+3/8*a^2*f*g^2/c^2*x*(-c^2*d*x^2
+d)^(1/2)-a^2*f^2*g/c^2/d*(-c^2*d*x^2+d)^(3/2)-1/2*b^2*(-d*(c^2*x^2-1))^(1/
2)*f^3/(c^2*x^2-1)*arcsin(c*x)^2*x-2/125*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3*c^2
/(c^2*x^2-1)*x^6+878/3375*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3/c^2/(c^2*x^2-1)*x^
2+2/15*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3/c^4/(c^2*x^2-1)*arcsin(c*x)^2-4/15*b^
2*(-d*(c^2*x^2-1))^(1/2)*g^3/(c^2*x^2-1)*arcsin(c*x)^2*x^4+9/64*b^2*(-d*(c^
2*x^2-1))^(1/2)*f*g^2/(c^2*x^2-1)*x^3+16/9*b^2*(-d*(c^2*x^2-1))^(1/2)*g/(c^
2*x^2-1)*x^2*f^2-14/9*b^2*(-d*(c^2*x^2-1))^(1/2)*g/c^2/(c^2*x^2-1)*f^2-1/4*
b^2*(-d*(c^2*x^2-1))^(1/2)*f^3*c^2/(c^2*x^2-1)*x^3+3/8*a*b*(-d*(c^2*x^2-1))
^(1/2)*f*g^2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4-3/8*a*b*(-d*(c^2*x^2-1))^
(1/2)*f*g^2/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2+2/3*a*b*(-d*(c^2*x^2-1))^(
1/2)*g*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^3*f^2-2*a*b*(-d*(c^2*x^2-1))^(1/2
)*g/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x*f^2-3/8*a*b*(-d*(c^2*x^2-1))^(1/2)*(
-c^2*x^2+1)^(1/2)/c^3/(c^2*x^2-1)*arcsin(c*x)^2*f*g^2+3/2*a*b*(-d*(c^2*x^2-
1))^(1/2)*f*g^2*c^2/(c^2*x^2-1)*arcsin(c*x)*x^5+3/4*a*b*(-d*(c^2*x^2-1))^(1
/2)*f*g^2/c^2/(c^2*x^2-1)*arcsin(c*x)*x+2*a*b*(-d*(c^2*x^2-1))^(1/2)*g*c^2/
(c^2*x^2-1)*arcsin(c*x)*x^4*f^2+3/8*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g^2*c/(c^2
x^2-1)(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^4

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(a^2g^3x^3 + 3\,a^2fg^2x^2 + 3\,a^2f^2gx + a^2f^3 + \left(b^2g^3x^3 + 3\,b^2fg^2x^2 + 3\,b^2f^2gx + b^2f^3\right)\arcsin\left(cx\right)^2 + 2\left(abg^3x^3 + \right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2),x, algorithm="
fricas")
```

```
[Out] integral((a^2*g^3*x^3 + 3*a^2*f*g^2*x^2 + 3*a^2*f^2*g*x + a^2*f^3 + (b^2*g^
3*x^3 + 3*b^2*f*g^2*x^2 + 3*b^2*f^2*g*x + b^2*f^3)*arcsin(c*x)^2 + 2*(a*b*g
^3*x^3 + 3*a*b*f*g^2*x^2 + 3*a*b*f^2*g*x + a*b*f^3)*arcsin(c*x))*sqrt(-c^2*
d*x^2 + d), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*asin(c*x))**2*(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{-c^2dx^2+d}\left(gx+f\right)^3(b\arcsin\left(cx\right)+a)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2),x, algorithm="
giac")
```

```
[Out] integrate(sqrt(-c^2*d*x^2 + d)*(g*x + f)^3*(b*arcsin(c*x) + a)^2, x)
```

3.59 $\int (f+gx)^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=737

$$-\frac{bcf^2x^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{1-c^2x^2}}+\frac{1}{2}f^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2+\frac{f^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{6bc\sqrt{1-c^2x^2}}-\frac{4bcfg}{}$$

```
[Out] (8*b^2*f*g*Sqrt[d - c^2*d*x^2])/(9*c^2) - (b^2*f^2*x*Sqrt[d - c^2*d*x^2])/4
 + (b^2*g^2*x*Sqrt[d - c^2*d*x^2])/(64*c^2) - (b^2*g^2*x^3*Sqrt[d - c^2*d*x
^2])/32 + (4*b^2*f*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(27*c^2) + (b^2*f^2
*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(4*c*Sqrt[1 - c^2*x^2]) - (b^2*g^2*Sqrt[d
 - c^2*d*x^2]*ArcSin[c*x])/(64*c^3*Sqrt[1 - c^2*x^2]) + (4*b*f*g*x*Sqrt[d -
 c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*c*Sqrt[1 - c^2*x^2]) - (b*c*f^2*x^2*Sqr
t[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(2*Sqrt[1 - c^2*x^2]) + (b*g^2*x^2*Sq
rt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*c*Sqrt[1 - c^2*x^2]) - (4*b*c*f*g
*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(9*Sqrt[1 - c^2*x^2]) - (b*c*
g^2*x^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*Sqrt[1 - c^2*x^2]) + (f
^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/2 - (g^2*x*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x])^2)/(8*c^2) + (g^2*x^3*Sqrt[d - c^2*d*x^2]*(a + b*Ar
cSin[c*x])^2)/4 - (2*f*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*
x])^2)/(3*c^2) + (f^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(6*b*c*Sqr
t[1 - c^2*x^2]) + (g^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(24*b*c^3
*Sqrt[1 - c^2*x^2])
```

Rubi [A] time = 1.02713, antiderivative size = 737, normalized size of antiderivative = 1., number of steps used = 23, number of rules used = 13, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.394, Rules used = {4777, 4763, 4647, 4641, 4627, 321, 216, 4677, 4645, 444, 43, 4697, 4707}

$$-\frac{bcf^2x^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{1-c^2x^2}}+\frac{1}{2}f^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2+\frac{f^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{6bc\sqrt{1-c^2x^2}}-\frac{4bcfg}{}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (8*b^2*f*g*Sqrt[d - c^2*d*x^2])/(9*c^2) - (b^2*f^2*x*Sqrt[d - c^2*d*x^2])/4
 + (b^2*g^2*x*Sqrt[d - c^2*d*x^2])/(64*c^2) - (b^2*g^2*x^3*Sqrt[d - c^2*d*x
^2])/32 + (4*b^2*f*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(27*c^2) + (b^2*f^2
*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(4*c*Sqrt[1 - c^2*x^2]) - (b^2*g^2*Sqrt[d
 - c^2*d*x^2]*ArcSin[c*x])/(64*c^3*Sqrt[1 - c^2*x^2]) + (4*b*f*g*x*Sqrt[d -
```

```
c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*c*Sqrt[1 - c^2*x^2]) - (b*c*f^2*x^2*Sqr
t[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(2*Sqrt[1 - c^2*x^2]) + (b*g^2*x^2*Sq
rt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*c*Sqrt[1 - c^2*x^2]) - (4*b*c*f*g
*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(9*Sqrt[1 - c^2*x^2]) - (b*c*
g^2*x^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*Sqrt[1 - c^2*x^2]) + (f
^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/2 - (g^2*x*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x])^2)/(8*c^2) + (g^2*x^3*Sqrt[d - c^2*d*x^2]*(a + b*Ar
cSin[c*x])^2)/4 - (2*f*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*
x])^2)/(3*c^2) + (f^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(6*b*c*Sqr
t[1 - c^2*x^2]) + (g^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(24*b*c^3
*Sqrt[1 - c^2*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 321

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

Rule 216

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

Rule 4677

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

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 444

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
```

```
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

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

Rubi steps

$$\int (f+gx)^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx = \frac{\sqrt{d-c^2dx^2}\int (f+gx)^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\sqrt{d-c^2dx^2}\int \left(f^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2 + 2fgx\sqrt{1-c^2x^2}\left(a+b\,\mathrm{s}\right.\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(f^2\sqrt{d-c^2dx^2}\right)\int \sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}} + \frac{\left(2fg\sqrt{d-c^2dx^2}\right)}{}$$

$$= \frac{1}{2}f^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2 + \frac{1}{4}g^2x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)$$

$$= \frac{4bfgx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3c\sqrt{1-c^2x^2}} - \frac{bcf^2x^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx\right.}{2\sqrt{1-c^2x^2}}$$

$$= -\frac{1}{4}b^2f^2x\sqrt{d-c^2dx^2} - \frac{1}{32}b^2g^2x^3\sqrt{d-c^2dx^2} + \frac{4bfgx\sqrt{d-c^2dx^2}\left(a+b\right.}{3c\sqrt{1-c^2x^2}}$$

$$= -\frac{1}{4}b^2f^2x\sqrt{d-c^2dx^2} + \frac{b^2g^2x\sqrt{d-c^2dx^2}}{64c^2} - \frac{1}{32}b^2g^2x^3\sqrt{d-c^2dx^2} + \frac{b^2f^2}{}$$

$$= \frac{8b^2fg\sqrt{d-c^2dx^2}}{9c^2} - \frac{1}{4}b^2f^2x\sqrt{d-c^2dx^2} + \frac{b^2g^2x\sqrt{d-c^2dx^2}}{64c^2} - \frac{1}{32}b^2g^2x^3$$

Mathematica [A] time = 0.955986, size = 441, normalized size = 0.6

$$\frac{\sqrt{d-c^2dx^2}\left(-\frac{g^2\left(-3b^2\left(cx\left(2acx+b\sqrt{1-c^2x^2}\right)+b\left(2c^2x^2-1\right)\sin^{-1}(cx)\right)+6bcx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2-2\left(a+b\sin^{-1}(cx)\right)^3\right)}{48bc^3} + \frac{1}{2}f^2x\sqrt{1-c^2x^2}\left(a+b\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*((f^2*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/2 + (
g^2*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/4 - (2*f*g*(1 - c^2*x^2)^(
3/2)*(a + b*ArcSin[c*x])^2)/(3*c^2) + (f^2*(a + b*ArcSin[c*x])^3)/(6*b*c) -
 (4*b*f*g*(b*Sqrt[1 - c^2*x^2]*(-7 + c^2*x^2) + 3*a*c*x*(-3 + c^2*x^2) + 3*
```

```
b*c*x*(-3 + c^2*x^2)*ArcSin[c*x]))/(27*c^2) - (b*f^2*(c*x*(2*a*c*x + b*Sqrt
[1 - c^2*x^2]) + b*(-1 + 2*c^2*x^2)*ArcSin[c*x]))/(4*c) - (b*g^2*(8*a*c^4*x
^4 + b*c*x*Sqrt[1 - c^2*x^2]*(3 + 2*c^2*x^2) + b*(-3 + 8*c^4*x^4)*ArcSin[c*
x]))/(64*c^3) - (g^2*(6*b*c*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2 - 2*(
a + b*ArcSin[c*x])^3 - 3*b^2*(c*x*(2*a*c*x + b*Sqrt[1 - c^2*x^2]) + b*(-1 +
 2*c^2*x^2)*ArcSin[c*x])))/(48*b*c^3)))/Sqrt[1 - c^2*x^2]
```

Maple [B] time = 0.646, size = 2051, normalized size = 2.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] 4/3*a*b*(-d*(c^2*x^2-1))^(1/2)*f*g*c^2/(c^2*x^2-1)*arcsin(c*x)*x^4+1/8*a^2*
g^2/c^2*d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+4/3*a*
b*(-d*(c^2*x^2-1))^(1/2)*f*g/c^2/(c^2*x^2-1)*arcsin(c*x)+a*b*(-d*(c^2*x^2-1
))^(1/2)*f^2*c^2/(c^2*x^2-1)*arcsin(c*x)*x^3-1/2*a*b*(-d*(c^2*x^2-1))^(1/2)
*(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcsin(c*x)^2*f^2-1/8*a*b*(-d*(c^2*x^2-1)
)^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/(c^2*x^2-1)*arcsin(c*x)^2*g^2+1/4*a*b*(-d*(c
^2*x^2-1))^(1/2)*g^2/c^2/(c^2*x^2-1)*arcsin(c*x)*x+2/3*b^2*(-d*(c^2*x^2-1))
^(1/2)*f*g*c^2/(c^2*x^2-1)*arcsin(c*x)^2*x^4+1/8*b^2*(-d*(c^2*x^2-1))^(1/2)
*g^2*c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^4-1/8*b^2*(-d*(c^2*x^2-
1))^(1/2)*g^2/c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^2+1/2*b^2*(-d*
(c^2*x^2-1))^(1/2)*f^2*c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^2+1/2
*a*b*(-d*(c^2*x^2-1))^(1/2)*g^2*c^2/(c^2*x^2-1)*arcsin(c*x)*x^5+1/8*a*b*(-d
*(c^2*x^2-1))^(1/2)*g^2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4-1/8*a*b*(-d*(c
^2*x^2-1))^(1/2)*g^2/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2-8/3*a*b*(-d*(c^2*
x^2-1))^(1/2)*f*g/(c^2*x^2-1)*arcsin(c*x)*x^2+1/2*a*b*(-d*(c^2*x^2-1))^(1/2
)*f^2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2-4/3*b^2*(-d*(c^2*x^2-1))^(1/2)*f
*g/c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x+4/9*b^2*(-d*(c^2*x^2-1))^
(1/2)*f*g*c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^3+4/9*a*b*(-d*(c^2
*x^2-1))^(1/2)*f*g*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^3-4/3*a*b*(-d*(c^2*x^
2-1))^(1/2)*f*g/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-2/3*a^2*f*g/c^2/d*(-c^2*
d*x^2+d)^(3/2)-1/4*a^2*g^2*x*(-c^2*d*x^2+d)^(3/2)/c^2/d-28/27*b^2*(-d*(c^2*
x^2-1))^(1/2)*f*g/c^2/(c^2*x^2-1)-3/8*b^2*(-d*(c^2*x^2-1))^(1/2)*g^2/(c^2*x
^2-1)*arcsin(c*x)^2*x^3+32/27*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g/(c^2*x^2-1)*x^
2-1/2*b^2*(-d*(c^2*x^2-1))^(1/2)*f^2/(c^2*x^2-1)*arcsin(c*x)^2*x-1/32*b^2*(
-d*(c^2*x^2-1))^(1/2)*g^2*c^2/(c^2*x^2-1)*x^5-1/64*b^2*(-d*(c^2*x^2-1))^(1/
2)*g^2/c^2/(c^2*x^2-1)*x-1/4*b^2*(-d*(c^2*x^2-1))^(1/2)*f^2*c^2/(c^2*x^2-1)
*x^3+1/64*a*b*(-d*(c^2*x^2-1))^(1/2)*g^2/c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)
```

```
-a*b*(-d*(c^2*x^2-1))^(1/2)*f^2/(c^2*x^2-1)*arcsin(c*x)*x-1/4*a*b*(-d*(c^2*
x^2-1))^(1/2)*f^2/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)-3/4*a*b*(-d*(c^2*x^2-1))
^(1/2)*g^2/(c^2*x^2-1)*arcsin(c*x)*x^3-4/3*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g/(
c^2*x^2-1)*arcsin(c*x)^2*x^2-1/6*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1
/2)/c/(c^2*x^2-1)*arcsin(c*x)^3*f^2-1/24*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x
^2+1)^(1/2)/c^3/(c^2*x^2-1)*arcsin(c*x)^3*g^2+1/4*b^2*(-d*(c^2*x^2-1))^(1/2
)*g^2*c^2/(c^2*x^2-1)*arcsin(c*x)^2*x^5+1/8*b^2*(-d*(c^2*x^2-1))^(1/2)*g^2/
c^2/(c^2*x^2-1)*arcsin(c*x)^2*x+1/64*b^2*(-d*(c^2*x^2-1))^(1/2)*g^2/c^3/(c^
2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)-1/4*b^2*(-d*(c^2*x^2-1))^(1/2)*f^2/
c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)-4/27*b^2*(-d*(c^2*x^2-1))^(1/2
)*f*g*c^2/(c^2*x^2-1)*x^4+2/3*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g/c^2/(c^2*x^2-1
)*arcsin(c*x)^2+1/2*b^2*(-d*(c^2*x^2-1))^(1/2)*f^2*c^2/(c^2*x^2-1)*arcsin(c
*x)^2*x^3+1/8*a^2*g^2/c^2*x*(-c^2*d*x^2+d)^(1/2)+1/4*b^2*(-d*(c^2*x^2-1))^(
1/2)*f^2/(c^2*x^2-1)*x+3/64*b^2*(-d*(c^2*x^2-1))^(1/2)*g^2/(c^2*x^2-1)*x^3+
1/2*a^2*f^2*d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+1/
2*a^2*f^2*x*(-c^2*d*x^2+d)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\left(a^2g^2x^2 + 2\,a^2fgx + a^2f^2 + \left(b^2g^2x^2 + 2\,b^2fgx + b^2f^2\right)\arcsin\left(cx\right)^2 + 2\left(abg^2x^2 + 2\,abfgx + abf^2\right)\arcsin\left(cx\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2),x, algorithm="
fricas")
```

```
[Out] integral((a^2*g^2*x^2 + 2*a^2*f*g*x + a^2*f^2 + (b^2*g^2*x^2 + 2*b^2*f*g*x
+ b^2*f^2)*arcsin(c*x)^2 + 2*(a*b*g^2*x^2 + 2*a*b*f*g*x + a*b*f^2)*arcsin(c
```

```
*x))*sqrt(-c^2*d*x^2 + d), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*asin(c*x))**2*(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{-c^2dx^2+d}\left(gx+f\right)^2(b\arcsin\left(cx\right)+a)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2),x, algorithm="
giac")
```

```
[Out] integrate(sqrt(-c^2*d*x^2 + d)*(g*x + f)^2*(b*arcsin(c*x) + a)^2, x)
```

3.60 $\int (f+gx)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=396

$$-\frac{bcfx^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{1-c^2x^2}}+\frac{1}{2}fx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2+\frac{f\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{6bc\sqrt{1-c^2x^2}}-\frac{2bcgx^3\sqrt{}}{}$$

```
[Out] (4*b^2*g*Sqrt[d - c^2*d*x^2])/(9*c^2) - (b^2*f*x*Sqrt[d - c^2*d*x^2])/4 + (
2*b^2*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(27*c^2) + (b^2*f*Sqrt[d - c^2*d
*x^2]*ArcSin[c*x])/(4*c*Sqrt[1 - c^2*x^2]) + (2*b*g*x*Sqrt[d - c^2*d*x^2]*(
a + b*ArcSin[c*x]))/(3*c*Sqrt[1 - c^2*x^2]) - (b*c*f*x^2*Sqrt[d - c^2*d*x^2
]*(a + b*ArcSin[c*x]))/(2*Sqrt[1 - c^2*x^2]) - (2*b*c*g*x^3*Sqrt[d - c^2*d*
x^2]*(a + b*ArcSin[c*x]))/(9*Sqrt[1 - c^2*x^2]) + (f*x*Sqrt[d - c^2*d*x^2]*
(a + b*ArcSin[c*x])^2)/2 - (g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcS
in[c*x])^2)/(3*c^2) + (f*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(6*b*c*
Sqrt[1 - c^2*x^2])
```

Rubi [A] time = 0.503808, antiderivative size = 396, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 11, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.355, Rules used = {4777, 4763, 4647, 4641, 4627, 321, 216, 4677, 4645, 444, 43}

$$-\frac{bcfx^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{1-c^2x^2}}+\frac{1}{2}fx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2+\frac{f\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{6bc\sqrt{1-c^2x^2}}-\frac{2bcgx^3\sqrt{}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2,x]
```


```
[Out] (4*b^2*g*Sqrt[d - c^2*d*x^2])/(9*c^2) - (b^2*f*x*Sqrt[d - c^2*d*x^2])/4 + (
2*b^2*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(27*c^2) + (b^2*f*Sqrt[d - c^2*d
*x^2]*ArcSin[c*x])/(4*c*Sqrt[1 - c^2*x^2]) + (2*b*g*x*Sqrt[d - c^2*d*x^2]*(
a + b*ArcSin[c*x]))/(3*c*Sqrt[1 - c^2*x^2]) - (b*c*f*x^2*Sqrt[d - c^2*d*x^2
]*(a + b*ArcSin[c*x]))/(2*Sqrt[1 - c^2*x^2]) - (2*b*c*g*x^3*Sqrt[d - c^2*d*
x^2]*(a + b*ArcSin[c*x]))/(9*Sqrt[1 - c^2*x^2]) + (f*x*Sqrt[d - c^2*d*x^2]*
(a + b*ArcSin[c*x])^2)/2 - (g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcS
in[c*x])^2)/(3*c^2) + (f*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(6*b*c*
Sqrt[1 - c^2*x^2])
```


Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 321

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

Rule 216

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

Rule 4677

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

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 444

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 43

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

Rubi steps

$$\int (f+gx)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx = \frac{\sqrt{d-c^2dx^2}\int (f+gx)\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\sqrt{d-c^2dx^2}\int \left(f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2+gx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(c\right.\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(f\sqrt{d-c^2dx^2}\right)\int \sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}} + \frac{\left(g\sqrt{d-c^2dx^2}\right)\int x\sqrt{1}}{\sqrt{}}$$

$$= \frac{1}{2}fx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2 - \frac{g\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(c\right.}{3c^2}$$

$$= \frac{2bgx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3c\sqrt{1-c^2x^2}} - \frac{bcfx^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{1-c^2x^2}} -$$

$$= -\frac{1}{4}b^2fx\sqrt{d-c^2dx^2} + \frac{2bgx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3c\sqrt{1-c^2x^2}} - \frac{bcfx^2\sqrt{d-c^2d}}{2\sqrt{}}$$

$$= -\frac{1}{4}b^2fx\sqrt{d-c^2dx^2} + \frac{b^2f\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{4c\sqrt{1-c^2x^2}} + \frac{2bgx\sqrt{d-c^2dx^2}\left(a+b\,\mathrm{s}\right.}{3c\sqrt{1-c^2x^2}}$$

$$= \frac{4b^2g\sqrt{d-c^2dx^2}}{9c^2} - \frac{1}{4}b^2fx\sqrt{d-c^2dx^2} + \frac{2b^2g\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}{27c^2} + \frac{b^2f}{}$$

Mathematica [A] time = 0.278158, size = 224, normalized size = 0.57

$$\frac{\sqrt{d-c^2dx^2}\left(-27b^2cf\left(cx\left(2acx+b\sqrt{1-c^2x^2}\right)+b\left(2c^2x^2-1\right)\sin^{-1}(cx)\right)+8b^2g\left(-3c^3x^3\left(a+b\sin^{-1}(cx)\right)+9cx\left(a+b\,\mathrm{si}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(54*b*c^2*f*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2
- 36*b*g*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2 + 18*c*f*(a + b*ArcSin[c
*x])^3 - 27*b^2*c*f*(c*x*(2*a*c*x + b*Sqrt[1 - c^2*x^2]) + b*(-1 + 2*c^2*x^
2)*ArcSin[c*x]) + 8*b^2*g*(-(b*Sqrt[1 - c^2*x^2]*(-7 + c^2*x^2)) + 9*c*x*(a
 + b*ArcSin[c*x]) - 3*c^3*x^3*(a + b*ArcSin[c*x]))))/(108*b*c^2*Sqrt[1 - c^
```

```
2*x^2])
```

Maple [B] time = 0.341, size = 1139, normalized size = 2.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] 1/4*b^2*(-d*(c^2*x^2-1))^(1/2)*f/(c^2*x^2-1)*x-14/27*b^2*(-d*(c^2*x^2-1))^(
1/2)*g/c^2/(c^2*x^2-1)+16/27*b^2*(-d*(c^2*x^2-1))^(1/2)*g/(c^2*x^2-1)*x^2+2
/9*b^2*(-d*(c^2*x^2-1))^(1/2)*g*c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2
)*x^3+2/9*a*b*(-d*(c^2*x^2-1))^(1/2)*g*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^3
-2/3*a*b*(-d*(c^2*x^2-1))^(1/2)*g/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+1/2*b^
2*(-d*(c^2*x^2-1))^(1/2)*f*c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^2
-2/3*b^2*(-d*(c^2*x^2-1))^(1/2)*g/c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1
/2)*x+1/2*a*b*(-d*(c^2*x^2-1))^(1/2)*f*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2
-1/2*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcsin(c*x
)^2*f+2/3*a*b*(-d*(c^2*x^2-1))^(1/2)*g*c^2/(c^2*x^2-1)*arcsin(c*x)*x^4+a*b*
(-d*(c^2*x^2-1))^(1/2)*f*c^2/(c^2*x^2-1)*arcsin(c*x)*x^3+2/3*a*b*(-d*(c^2*x
^2-1))^(1/2)*g/c^2/(c^2*x^2-1)*arcsin(c*x)-4/3*a*b*(-d*(c^2*x^2-1))^(1/2)*g
/(c^2*x^2-1)*arcsin(c*x)*x^2-a*b*(-d*(c^2*x^2-1))^(1/2)*f/(c^2*x^2-1)*arcsi
n(c*x)*x-1/4*a*b*(-d*(c^2*x^2-1))^(1/2)*f/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)+
1/3*b^2*(-d*(c^2*x^2-1))^(1/2)*g*c^2/(c^2*x^2-1)*arcsin(c*x)^2*x^4+1/2*b^2*
(-d*(c^2*x^2-1))^(1/2)*f*c^2/(c^2*x^2-1)*arcsin(c*x)^2*x^3-1/6*b^2*(-d*(c^2
*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcsin(c*x)^3*f-1/4*b^2*(-d
*(c^2*x^2-1))^(1/2)*f/c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)-2/3*b^2*
(-d*(c^2*x^2-1))^(1/2)*g/(c^2*x^2-1)*arcsin(c*x)^2*x^2-1/2*b^2*(-d*(c^2*x^2
-1))^(1/2)*f/(c^2*x^2-1)*arcsin(c*x)^2*x-2/27*b^2*(-d*(c^2*x^2-1))^(1/2)*g*
c^2/(c^2*x^2-1)*x^4+1/3*b^2*(-d*(c^2*x^2-1))^(1/2)*g/c^2/(c^2*x^2-1)*arcsin
(c*x)^2-1/4*b^2*(-d*(c^2*x^2-1))^(1/2)*f*c^2/(c^2*x^2-1)*x^3+1/2*a^2*f*x*(-
c^2*d*x^2+d)^(1/2)+1/2*a^2*f*d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d
*x^2+d)^(1/2))-1/3*a^2*g/c^2/d*(-c^2*d*x^2+d)^(3/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2),x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\sqrt{-c^2dx^2+d}\left(a^2gx+a^2f+\left(b^2gx+b^2f\right)\arcsin\left(cx\right)^2+2\left(abgx+abf\right)\arcsin\left(cx\right)\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2),x, algorithm="fr
icas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(a^2*g*x + a^2*f + (b^2*g*x + b^2*f)*arcsin(c
*x)^2 + 2*(a*b*g*x + a*b*f)*arcsin(c*x)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))**2*(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\sqrt{-c^2dx^2+d}\left(gx+f\right)\left(b\arcsin\left(cx\right)+a\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2),x, algorithm="gi
ac")
```

```
[Out] integrate(sqrt(-c^2*d*x^2 + d)*(g*x + f)*(b*arcsin(c*x) + a)^2, x)
```

3.61 $\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{f+gx}\,dx$

Optimal. Leaf size=1442

result too large to display

```
[Out] (a^2*Sqrt[d - c^2*d*x^2])/g - (2*b^2*Sqrt[d - c^2*d*x^2])/g - (2*a*b*c*x*Sq
rt[d - c^2*d*x^2])/(g*Sqrt[1 - c^2*x^2]) + (2*a*b*Sqrt[d - c^2*d*x^2]*ArcSi
n[c*x])/g - (2*b^2*c*x*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(g*Sqrt[1 - c^2*x^2
]) + (b^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2)/g + (c*x*Sqrt[d - c^2*d*x^2]*(
a + b*ArcSin[c*x])^3)/(3*b*g*Sqrt[1 - c^2*x^2]) - ((1 - (c^2*f^2)/g^2)*Sqrt
[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c*(f + g*x)*Sqrt[1 - c^2*x^2])
+ (Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c*(f +
 g*x)) - (a^2*Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]*ArcTan[(g + c^2*f*x)/
(Sqrt[c^2*f^2 - g^2]*Sqrt[1 - c^2*x^2])])/(g^2*Sqrt[1 - c^2*x^2]) + ((2*I)*
a*b*Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*Arc
Sin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) + (I*b^2
*Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcS
in[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) - ((2*I)*
a*b*Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*Arc
Sin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) - (I*b^2
*Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcS
in[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) + (2*a*b*
Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/
(c*f - Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) + (2*b^2*Sqrt[c^2*f^2
 - g^2]*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/
(c*f - Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) - (2*a*b*Sqrt[c^2*f^2
 - g^2]*Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[
c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) - (2*b^2*Sqrt[c^2*f^2 - g^2]*Sqrt
[d - c^2*d*x^2]*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[
c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) + ((2*I)*b^2*Sqrt[c^2*f^2 - g^2]*
Sqrt[d - c^2*d*x^2]*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2
- g^2])])/(g^2*Sqrt[1 - c^2*x^2]) - ((2*I)*b^2*Sqrt[c^2*f^2 - g^2]*Sqrt[d -
 c^2*d*x^2]*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]
)/(g^2*Sqrt[1 - c^2*x^2])
```

Rubi [A] time = 3.05467, antiderivative size = 1442, normalized size of antiderivative = 1., number of steps used = 38, number of rules used = 23, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.697, Rules used = {4777, 4765, 683, 4757, 4799, 1654, 12, 725, 204, 4797, 4677, 8, 4773,

3323, 2264, 2190, 2279, 2391, 4619, 261, 2531, 2282, 6589}

$$\frac{\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(f+gx)}+\frac{cx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bg\sqrt{1-c^2x^2}}-\frac{\left(1-\frac{c^2f^2}{g^2}\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(f+gx)\sqrt{1-c^2x^2}}+$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(f + g*x),x]
```

```
[Out] (a^2*Sqrt[d - c^2*d*x^2])/g - (2*b^2*Sqrt[d - c^2*d*x^2])/g - (2*a*b*c*x*Sq
rt[d - c^2*d*x^2])/(g*Sqrt[1 - c^2*x^2]) + (2*a*b*Sqrt[d - c^2*d*x^2]*ArcSi
n[c*x])/g - (2*b^2*c*x*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(g*Sqrt[1 - c^2*x^2
]) + (b^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2)/g + (c*x*Sqrt[d - c^2*d*x^2]*(
a + b*ArcSin[c*x])^3)/(3*b*g*Sqrt[1 - c^2*x^2]) - ((1 - (c^2*f^2)/g^2)*Sqrt
[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c*(f + g*x)*Sqrt[1 - c^2*x^2])
+ (Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c*(f +
 g*x)) - (a^2*Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]*ArcTan[(g + c^2*f*x)/
(Sqrt[c^2*f^2 - g^2]*Sqrt[1 - c^2*x^2])])/(g^2*Sqrt[1 - c^2*x^2]) + ((2*I)*
a*b*Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*Arc
Sin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) + (I*b^2
*Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcS
in[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) - ((2*I)*
a*b*Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*Arc
Sin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) - (I*b^2
*Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcS
in[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) + (2*a*b*
Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/
(c*f - Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) + (2*b^2*Sqrt[c^2*f^2
 - g^2]*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/
(c*f - Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) - (2*a*b*Sqrt[c^2*f^2
 - g^2]*Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[
c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) - (2*b^2*Sqrt[c^2*f^2 - g^2]*Sqrt
[d - c^2*d*x^2]*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[
c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) + ((2*I)*b^2*Sqrt[c^2*f^2 - g^2]*
Sqrt[d - c^2*d*x^2]*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2
- g^2])])/(g^2*Sqrt[1 - c^2*x^2]) - ((2*I)*b^2*Sqrt[c^2*f^2 - g^2]*Sqrt[d -
 c^2*d*x^2]*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]
)/(g^2*Sqrt[1 - c^2*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
```

```
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4765

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

Rule 683

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[2*c*d - b*e, 0] &
& IGtQ[p, 0] &&  !(EqQ[m, 3] && NeQ[p, 1])
```

Rule 4757

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.) + (g_.)*(x_) + (h_.)*(x
_)^2)^(p_.))/((d_) + (e_.)*(x_))^2, x_Symbol] :> With[{u = IntHide[(f + g*x
 + h*x^2)^p/(d + e*x)^2, x]}, Dist[(a + b*ArcSin[c*x])^n, u, x] - Dist[b*c*
n, Int[SimplifyIntegrand[(u*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2],
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, h}, x] && IGtQ[n, 0] && IGtQ[p,
 0] && EqQ[e*g - 2*d*h, 0]
```

Rule 4799

```
Int[(ArcSin[(c_.)*(x_)]*(b_.) + (a_))^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p
_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p, RFx*(a + b*ArcSin[c*x])
^n, x], x] /; FreeQ[{a, b, c, d, e}, x] && RationalFunctionQ[RFx, x] && IGt
Q[n, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 1654

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :
> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[(f*(d + e*x
)^(m + q - 1)*(a + c*x^2)^(p + 1))/(c*e^(q - 1)*(m + q + 2*p + 1)), x] + Di
st[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + c*x^2)^p*ExpandToSum[c
*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1)*(d + e*x)^q - f*(d + e*x)
^(q - 2)*(a*e^2*(m + q - 1) - c*d^2*(m + q + 2*p + 1) - 2*c*d*e*(m + q + p)
*x), x], x], x] /; GtQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, c, d,
 e, m, p}, x] && PolyQ[Pq, x] && NeQ[c*d^2 + a*e^2, 0] &&  !(EqQ[d, 0] && T
```

```
rue) &&  !(IGtQ[m, 0] && RationalQ[a, c, d, e] && (IntegerQ[p] || ILtQ[p +
1/2, 0]))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

Rule 4797

```
Int[ArcSin[(c_.)*(x_)]^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p_), x_Symbol] :
> With[{u = ExpandIntegrand[(d + e*x^2)^p*ArcSin[c*x]^n, RFx, x]}, Int[u, x
] /; SumQ[u]] /; FreeQ[{c, d, e}, x] && RationalFunctionQ[RFx, x] && IGtQ[n
, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 4677

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

Rule 8

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

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
```

```
d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 261

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

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{f+gx}\,dx = \frac{\sqrt{d-c^2dx^2}\int \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{f+gx}\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(f+gx)} - \frac{\sqrt{d-c^2dx^2}\int \frac{\left(-g-2c^2fx-c^2gx^2\right)\left(a+b\sin^{-1}(c\right.}{(f+gx)^2}}{3bc\sqrt{1-c^2x^2}}$$

$$= \frac{cx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bg\sqrt{1-c^2x^2}} - \frac{\left(1-\frac{c^2f^2}{g^2}\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(f+gx)\sqrt{1-c^2x^2}} + \frac{\sqrt{}}{}$$

$$= \frac{cx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bg\sqrt{1-c^2x^2}} - \frac{\left(1-\frac{c^2f^2}{g^2}\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(f+gx)\sqrt{1-c^2x^2}} + \frac{\sqrt{}}{}$$

$$= \frac{cx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bg\sqrt{1-c^2x^2}} - \frac{\left(1-\frac{c^2f^2}{g^2}\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(f+gx)\sqrt{1-c^2x^2}} + \frac{\sqrt{}}{}$$

$$= \frac{a^2\sqrt{d-c^2dx^2}}{g} + \frac{cx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bg\sqrt{1-c^2x^2}} - \frac{\left(1-\frac{c^2f^2}{g^2}\right)\sqrt{d-c^2dx^2}\left(a+b\right.}{3bc(f+gx)\sqrt{1-c^2}}$$

$$= \frac{a^2\sqrt{d-c^2dx^2}}{g} + \frac{cx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bg\sqrt{1-c^2x^2}} - \frac{\left(1-\frac{c^2f^2}{g^2}\right)\sqrt{d-c^2dx^2}\left(a+b\right.}{3bc(f+gx)\sqrt{1-c^2}}$$

$$= \frac{a^2\sqrt{d-c^2dx^2}}{g} + \frac{2ab\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{g} + \frac{b^2\sqrt{d-c^2dx^2}\sin^{-1}(cx)^2}{g} + \frac{cx\sqrt{d-}}{}$$

$$= \frac{a^2\sqrt{d-c^2dx^2}}{g} - \frac{2abcx\sqrt{d-c^2dx^2}}{g\sqrt{1-c^2x^2}} + \frac{2ab\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{g} - \frac{2b^2cx\sqrt{d-c^2dx}}{g\sqrt{1-c}}$$

$$= \frac{a^2\sqrt{d-c^2dx^2}}{g} - \frac{2b^2\sqrt{d-c^2dx^2}}{g} - \frac{2abcx\sqrt{d-c^2dx^2}}{g\sqrt{1-c^2x^2}} + \frac{2ab\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{g}$$

$$= \frac{a^2\sqrt{d-c^2dx^2}}{g} - \frac{2b^2\sqrt{d-c^2dx^2}}{g} - \frac{2abcx\sqrt{d-c^2dx^2}}{g\sqrt{1-c^2x^2}} + \frac{2ab\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{g}$$

$$= \frac{a^2\sqrt{d-c^2dx^2}}{g} - \frac{2b^2\sqrt{d-c^2dx^2}}{g} - \frac{2abcx\sqrt{d-c^2dx^2}}{g\sqrt{1-c^2x^2}} + \frac{2ab\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{g}$$

$$= \frac{a^2\sqrt{d-c^2dx^2}}{} - \frac{2b^2\sqrt{d-c^2dx^2}}{} - \frac{2abcx\sqrt{d-c^2dx^2}}{} + \frac{2ab\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{}$$

Mathematica [A] time = 1.44346, size = 516, normalized size = 0.36

$$\frac{\sqrt{d-c^2dx^2}\left(3bc(f+gx)\left(i\sqrt{c^2f^2-g^2}\left(-2ib\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)+2ib\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(\right.\right.\right.\right.}{}$$

Warning: Unable to verify antiderivative.

[In] Integrate[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(f + g*x),x]

[Out] (Sqrt[d - c^2*d*x^2]*((c^2*f^2 - g^2)*(a + b*ArcSin[c*x])^3 + c^2*g*x*(f + g*x)*(a + b*ArcSin[c*x])^3 + g^2*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^3 + 3*b*c*(f + g*x)*(g*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2 - 2*b*g*(a*c*x + b*Sqrt[1 - c^2*x^2] + b*c*x*ArcSin[c*x]) + I*Sqrt[c^2*f^2 - g^2]*((a + b*ArcSin[c*x])^2*Log[1 + (I*E^(I*ArcSin[c*x])*g)/(-(c*f) + Sqrt[c^2*f^2 - g^2])] - (a + b*ArcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])] - (2*I)*b*(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])] + (2*I)*b*(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])] + 2*b^2*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])] - 2*b^2*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]))))/(3*b*c*g^2*(f + g*x)*Sqrt[1 - c^2*x^2])

Maple [F] time = 0.549, size = 0, normalized size = 0.

$$\int \frac{(a+b\arcsin(cx))^2}{gx+f}\sqrt{-c^2dx^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/(g*x+f),x)

[Out] int((a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/(g*x+f),x)

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/(g*x+f),x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/(g*x+f),x, algorithm="fr
icas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)
/(g*x + f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\sqrt{-d\,(cx-1)\,(cx+1)}\,(a+b\,\text{asin}\,(cx))^2}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2*(-c**2*d*x**2+d)**(1/2)/(g*x+f),x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**2/(f + g*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\sqrt{-c^2dx^2+d}(b\arcsin(cx)+a)^2}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/(g*x+f),x, algorithm="gi
ac")
```

```
[Out] integrate(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)^2/(g*x + f), x)
```

3.62 $\int (f+gx)^3 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right)^2 dx$

Optimal. Leaf size=1685

result too large to display

```
[Out] (16*b^2*d*f^2*g*Sqrt[d - c^2*d*x^2])/(25*c^2) + (304*b^2*d*g^3*Sqrt[d - c^2
*d*x^2])/(3675*c^4) - (15*b^2*d*f^3*x*Sqrt[d - c^2*d*x^2])/64 - (7*b^2*d*f*
g^2*x*Sqrt[d - c^2*d*x^2])/(384*c^2) - (43*b^2*d*f*g^2*x^3*Sqrt[d - c^2*d*x
^2])/576 + (b^2*c^2*d*f*g^2*x^5*Sqrt[d - c^2*d*x^2])/36 + (4*a*b*d*g^3*x*Sq
rt[d - c^2*d*x^2])/(35*c^3*Sqrt[1 - c^2*x^2]) + (8*b^2*d*f^2*g*(1 - c^2*x^2
)*Sqrt[d - c^2*d*x^2])/(75*c^2) + (152*b^2*d*g^3*(1 - c^2*x^2)*Sqrt[d - c^2
*d*x^2])/(11025*c^4) - (b^2*d*f^3*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/32 +
 (6*b^2*d*f^2*g*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2])/(125*c^2) + (38*b^2*d*
g^3*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2])/(6125*c^4) - (2*b^2*d*g^3*(1 - c^2
*x^2)^3*Sqrt[d - c^2*d*x^2])/(343*c^4) + (9*b^2*d*f^3*Sqrt[d - c^2*d*x^2]*A
rcSin[c*x])/(64*c*Sqrt[1 - c^2*x^2]) + (7*b^2*d*f*g^2*Sqrt[d - c^2*d*x^2]*A
rcSin[c*x])/(384*c^3*Sqrt[1 - c^2*x^2]) + (4*b^2*d*g^3*x*Sqrt[d - c^2*d*x^2
]*ArcSin[c*x])/(35*c^3*Sqrt[1 - c^2*x^2]) + (6*b*d*f^2*g*x*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x]))/(5*c*Sqrt[1 - c^2*x^2]) - (3*b*c*d*f^3*x^2*Sqrt[d
- c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*Sqrt[1 - c^2*x^2]) + (3*b*d*f*g^2*x^2*
Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(16*c*Sqrt[1 - c^2*x^2]) - (4*b*c*
d*f^2*g*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(5*Sqrt[1 - c^2*x^2])
+ (2*b*d*g^3*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(105*c*Sqrt[1 - c
^2*x^2]) - (7*b*c*d*f*g^2*x^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(16*
Sqrt[1 - c^2*x^2]) + (6*b*c^3*d*f^2*g*x^5*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin
[c*x]))/(25*Sqrt[1 - c^2*x^2]) - (16*b*c*d*g^3*x^5*Sqrt[d - c^2*d*x^2]*(a +
 b*ArcSin[c*x]))/(175*Sqrt[1 - c^2*x^2]) + (b*c^3*d*f*g^2*x^6*Sqrt[d - c^2*
d*x^2]*(a + b*ArcSin[c*x]))/(6*Sqrt[1 - c^2*x^2]) + (2*b*c^3*d*g^3*x^7*Sqrt
[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(49*Sqrt[1 - c^2*x^2]) + (b*d*f^3*(1 -
 c^2*x^2)^(3/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*c) - (2*d*g^3*S
qrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(35*c^4) + (3*d*f^3*x*Sqrt[d - c^
2*d*x^2]*(a + b*ArcSin[c*x])^2)/8 - (3*d*f*g^2*x*Sqrt[d - c^2*d*x^2]*(a + b
*ArcSin[c*x])^2)/(16*c^2) - (d*g^3*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*
x])^2)/(35*c^2) + (3*d*f*g^2*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)
/8 + (3*d*g^3*x^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/35 + (d*f^3*x*
(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/4 + (d*f*g^2*x^3*(
1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/2 + (d*g^3*x^4*(1 -
 c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/7 - (3*d*f^2*g*(1 - c^
2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(5*c^2) + (d*f^3*Sqrt[d
 - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(8*b*c*Sqrt[1 - c^2*x^2]) + (d*f*g^2*S
qrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(16*b*c^3*Sqrt[1 - c^2*x^2])
```

Rubi [A] time = 2.46911, antiderivative size = 1685, normalized size of antiderivative = 1., number of steps used = 56, number of rules used = 27, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.818, Rules used = {4777, 4763, 4649, 4647, 4641, 4627, 321, 216, 4677, 195, 194, 4645, 12, 1247, 698, 4699, 4697, 4707, 14, 4687, 459, 4619, 261, 266, 43, 446, 77}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (16*b^2*d*f^2*g*Sqrt[d - c^2*d*x^2])/(25*c^2) + (304*b^2*d*g^3*Sqrt[d - c^2
*d*x^2])/(3675*c^4) - (15*b^2*d*f^3*x*Sqrt[d - c^2*d*x^2])/64 - (7*b^2*d*f*
g^2*x*Sqrt[d - c^2*d*x^2])/(384*c^2) - (43*b^2*d*f*g^2*x^3*Sqrt[d - c^2*d*x
^2])/576 + (b^2*c^2*d*f*g^2*x^5*Sqrt[d - c^2*d*x^2])/36 + (4*a*b*d*g^3*x*Sq
rt[d - c^2*d*x^2])/(35*c^3*Sqrt[1 - c^2*x^2]) + (8*b^2*d*f^2*g*(1 - c^2*x^2
)*Sqrt[d - c^2*d*x^2])/(75*c^2) + (152*b^2*d*g^3*(1 - c^2*x^2)*Sqrt[d - c^2
*d*x^2])/(11025*c^4) - (b^2*d*f^3*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/32 +
 (6*b^2*d*f^2*g*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2])/(125*c^2) + (38*b^2*d*
g^3*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2])/(6125*c^4) - (2*b^2*d*g^3*(1 - c^2
*x^2)^3*Sqrt[d - c^2*d*x^2])/(343*c^4) + (9*b^2*d*f^3*Sqrt[d - c^2*d*x^2]*A
rcSin[c*x])/(64*c*Sqrt[1 - c^2*x^2]) + (7*b^2*d*f*g^2*Sqrt[d - c^2*d*x^2]*A
rcSin[c*x])/(384*c^3*Sqrt[1 - c^2*x^2]) + (4*b^2*d*g^3*x*Sqrt[d - c^2*d*x^2
]*ArcSin[c*x])/(35*c^3*Sqrt[1 - c^2*x^2]) + (6*b*d*f^2*g*x*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x]))/(5*c*Sqrt[1 - c^2*x^2]) - (3*b*c*d*f^3*x^2*Sqrt[d
- c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*Sqrt[1 - c^2*x^2]) + (3*b*d*f*g^2*x^2*
Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(16*c*Sqrt[1 - c^2*x^2]) - (4*b*c*
d*f^2*g*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(5*Sqrt[1 - c^2*x^2])
+ (2*b*d*g^3*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(105*c*Sqrt[1 - c
^2*x^2]) - (7*b*c*d*f*g^2*x^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(16*
Sqrt[1 - c^2*x^2]) + (6*b*c^3*d*f^2*g*x^5*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin
[c*x]))/(25*Sqrt[1 - c^2*x^2]) - (16*b*c*d*g^3*x^5*Sqrt[d - c^2*d*x^2]*(a +
 b*ArcSin[c*x]))/(175*Sqrt[1 - c^2*x^2]) + (b*c^3*d*f*g^2*x^6*Sqrt[d - c^2*
d*x^2]*(a + b*ArcSin[c*x]))/(6*Sqrt[1 - c^2*x^2]) + (2*b*c^3*d*g^3*x^7*Sqrt
[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(49*Sqrt[1 - c^2*x^2]) + (b*d*f^3*(1 -
 c^2*x^2)^(3/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*c) - (2*d*g^3*S
qrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(35*c^4) + (3*d*f^3*x*Sqrt[d - c^
2*d*x^2]*(a + b*ArcSin[c*x])^2)/8 - (3*d*f*g^2*x*Sqrt[d - c^2*d*x^2]*(a + b
*ArcSin[c*x])^2)/(16*c^2) - (d*g^3*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*
x])^2)/(35*c^2) + (3*d*f*g^2*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)
/8 + (3*d*g^3*x^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/35 + (d*f^3*x*
(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/4 + (d*f*g^2*x^3*(
1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/2 + (d*g^3*x^4*(1 -
 c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/7 - (3*d*f^2*g*(1 - c^
```

```
2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(5*c^2) + (d*f^3*Sqrt[d
 - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(8*b*c*Sqrt[1 - c^2*x^2]) + (d*f*g^2*S
qrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(16*b*c^3*Sqrt[1 - c^2*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 321

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

Rule 216

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

Rule 4677

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

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
```

```
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1247

```
Int[(x_)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(
p_.), x_Symbol] :> Dist[1/2, Subst[Int[(d + e*x)^q*(a + b*x + c*x^2)^p, x],
 x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x]
```

Rule 698

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

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

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rule 459

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

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 261

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

Rule 266

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

Rule 43

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

Rule 446

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p
*(c + d*x)^q, x], x, x^n], x] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[
b*c - a*d, 0] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int (f+gx)^3 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx = \frac{\left(d\sqrt{d-c^2dx^2}\right) \int (f+gx)^3 \left(1-c^2x^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d\sqrt{d-c^2dx^2}\right) \int \left(f^3 \left(1-c^2x^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right)^2 + 3f^2gx \left(1-c^2x^2\right.\right.}{}$$

$$= \frac{\left(df^3\sqrt{d-c^2dx^2}\right) \int \left(1-c^2x^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx}{\sqrt{1-c^2x^2}} + \frac{\left(3df^2g\sqrt{d-\right.}{}$$

$$= \frac{1}{4} df^3 x \left(1-c^2x^2\right) \sqrt{d-c^2dx^2} \left(a+b\sin^{-1}(cx)\right)^2 + \frac{1}{2} dfg^2x^3 \left(1-c^2x^2\right)$$

$$= \frac{6bdf^2gx\sqrt{d-c^2dx^2} \left(a+b\sin^{-1}(cx)\right)}{5c\sqrt{1-c^2x^2}} - \frac{4bcdf^2gx^3\sqrt{d-c^2dx^2} \left(a+b\,\mathrm{s}\right.}{5\sqrt{1-c^2x^2}}$$

$$= -\frac{1}{32} b^2df^3x \left(1-c^2x^2\right) \sqrt{d-c^2dx^2} + \frac{6bdf^2gx\sqrt{d-c^2dx^2} \left(a+b\sin^{-1}(\right.}{5c\sqrt{1-c^2x^2}}$$

$$= -\frac{15}{64} b^2df^3x\sqrt{d-c^2dx^2} - \frac{3}{64} b^2dfg^2x^3\sqrt{d-c^2dx^2} + \frac{1}{36} b^2c^2dfg^2x^5\sqrt{d}$$

$$= -\frac{15}{64} b^2df^3x\sqrt{d-c^2dx^2} + \frac{3b^2dfg^2x\sqrt{d-c^2dx^2}}{128c^2} - \frac{43}{576} b^2dfg^2x^3\sqrt{d-c}$$

$$= \frac{16b^2df^2g\sqrt{d-c^2dx^2}}{25c^2} - \frac{62b^2dg^3\sqrt{d-c^2dx^2}}{1225c^4} - \frac{15}{64} b^2df^3x\sqrt{d-c^2dx^2} -$$

$$= \frac{16b^2df^2g\sqrt{d-c^2dx^2}}{25c^2} + \frac{304b^2dg^3\sqrt{d-c^2dx^2}}{3675c^4} - \frac{15}{64} b^2df^3x\sqrt{d-c^2dx^2}$$

Mathematica [A] time = 2.48067, size = 872, normalized size = 0.52

$$\frac{d\sqrt{d-c^2dx^2} \left(3087000cf \left(2c^2f^2+g^2\right) a^3 - 88200b\sqrt{1-c^2x^2} \left(4x^3 \left(35f^3+84gxf^2+70g^2x^2f+20g^3x^3\right) c^6 - 2x \left(175f^3 +\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (d*Sqrt[d - c^2*d*x^2]*(3087000*a^3*c*f*(2*c^2*f^2 + g^2) - 88200*a^2*b*Sqr
t[1 - c^2*x^2]*(32*g^3 + c^2*g*(336*f^2 + 105*f*g*x + 16*g^2*x^2) + 4*c^6*x
^3*(35*f^3 + 84*f^2*g*x + 70*f*g^2*x^2 + 20*g^3*x^3) - 2*c^4*x*(175*f^3 + 3
36*f^2*g*x + 245*f*g^2*x^2 + 64*g^3*x^3)) + 840*a*b^2*c*x*(6720*g^3 + 35*c^
2*g*(2016*f^2 + 315*f*g*x + 32*g^2*x^2) - 21*c^4*x*(1750*f^3 + 2240*f^2*g*x
 + 1225*f*g^2*x^2 + 256*g^3*x^3) + 2*c^6*x^3*(3675*f^3 + 7056*f^2*g*x + 490
0*f*g^2*x^2 + 1200*g^3*x^3)) + b^3*Sqrt[1 - c^2*x^2]*(4785152*g^3 + c^2*g*(
39250176*f^2 - 900375*f*g*x - 429824*g^2*x^2) + 4*c^6*x^3*(385875*f^3 + 592
704*f^2*g*x + 343000*f*g^2*x^2 + 72000*g^3*x^3) - 2*c^4*x*(6559875*f^3 + 50
05056*f^2*g*x + 1843625*f*g^2*x^2 + 278784*g^3*x^3)) + 105*b*(88200*a^2*c*f
*(2*c^2*f^2 + g^2) - 1680*a*b*Sqrt[1 - c^2*x^2]*(32*g^3 + c^2*g*(336*f^2 +
105*f*g*x + 16*g^2*x^2) + 4*c^6*x^3*(35*f^3 + 84*f^2*g*x + 70*f*g^2*x^2 + 2
0*g^3*x^3) - 2*c^4*x*(175*f^3 + 336*f^2*g*x + 245*f*g^2*x^2 + 64*g^3*x^3))
+ b^2*c*(35*g^2*(245*f + 1536*g*x) + 70*c^2*(1785*f^3 + 8064*f^2*g*x + 1260
*f*g^2*x^2 + 128*g^3*x^3) - 168*c^4*x^2*(1750*f^3 + 2240*f^2*g*x + 1225*f*g
^2*x^2 + 256*g^3*x^3) + 16*c^6*x^4*(3675*f^3 + 7056*f^2*g*x + 4900*f*g^2*x^
2 + 1200*g^3*x^3)))*ArcSin[c*x] - 88200*b^2*(-105*a*c*f*(2*c^2*f^2 + g^2) +
 b*Sqrt[1 - c^2*x^2]*(32*g^3 + c^2*g*(336*f^2 + 105*f*g*x + 16*g^2*x^2) + 4
*c^6*x^3*(35*f^3 + 84*f^2*g*x + 70*f*g^2*x^2 + 20*g^3*x^3) - 2*c^4*x*(175*f
^3 + 336*f^2*g*x + 245*f*g^2*x^2 + 64*g^3*x^3)))*ArcSin[c*x]^2 + 3087000*b^
3*c*f*(2*c^2*f^2 + g^2)*ArcSin[c*x]^3))/(49392000*b*c^4*Sqrt[1 - c^2*x^2])
```

Maple [B] time = 0.806, size = 4018, normalized size = 2.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] -18/35*a*b*(-d*(c^2*x^2-1))^(1/2)*g^3*d/(c^2*x^2-1)*arcsin(c*x)*x^4-5/4*a*b
*(-d*(c^2*x^2-1))^(1/2)*f^3*d/(c^2*x^2-1)*arcsin(c*x)*x+4/35*a*b*(-d*(c^2*x
^2-1))^(1/2)*g^3*d/c^4/(c^2*x^2-1)*arcsin(c*x)+1/4*a^2*f^3*x*(-c^2*d*x^2+d)
^(3/2)-3/8*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcs
in(c*x)^2*f^3*d-2/105*a*b*(-d*(c^2*x^2-1))^(1/2)*g^3*d/c/(c^2*x^2-1)*(-c^2*
x^2+1)^(1/2)*x^3-4/35*a*b*(-d*(c^2*x^2-1))^(1/2)*g^3*d/c^3/(c^2*x^2-1)*(-c^
2*x^2+1)^(1/2)*x-2/49*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3*d*c^3/(c^2*x^2-1)*arcs
in(c*x)*(-c^2*x^2+1)^(1/2)*x^7+16/175*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3*d*c/(c
^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^5-2/105*b^2*(-d*(c^2*x^2-1))^(1/
2)*g^3*d/c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^3-4/35*b^2*(-d*(c^2
*x^2-1))^(1/2)*g^3*d/c^3/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x+5/8*b
^2*(-d*(c^2*x^2-1))^(1/2)*f^3*d*c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2
```

)*x^2-7/384*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g^2*d/c^3/(c^2*x^2-1)*arcsin(c*x)*
(-c^2*x^2+1)^(1/2)-1/8*b^2*(-d*(c^2*x^2-1))^(1/2)*f^3*d*c^3/(c^2*x^2-1)*arc
sin(c*x)*(-c^2*x^2+1)^(1/2)*x^4-1/2*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g^2*d*c^4/
(c^2*x^2-1)*arcsin(c*x)^2*x^7+11/8*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g^2*d*c^2/(
c^2*x^2-1)*arcsin(c*x)^2*x^5+3/16*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g^2*d/c^2/(c
^2*x^2-1)*arcsin(c*x)^2*x-3/5*b^2*(-d*(c^2*x^2-1))^(1/2)*g*d*c^4/(c^2*x^2-1
)*arcsin(c*x)^2*x^6*f^2+9/5*b^2*(-d*(c^2*x^2-1))^(1/2)*g*d*c^2/(c^2*x^2-1)*
arcsin(c*x)^2*x^4*f^2-1/16*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^
3/(c^2*x^2-1)*arcsin(c*x)^3*f*d*g^2+16/175*a*b*(-d*(c^2*x^2-1))^(1/2)*g^3*d
*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^5-7/384*a*b*(-d*(c^2*x^2-1))^(1/2)*f*g^
2*d/c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)-1/8*a*b*(-d*(c^2*x^2-1))^(1/2)*f^3*d
*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4+5/8*a*b*(-d*(c^2*x^2-1))^(1/2)*f^3*
d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2-2/49*a*b*(-d*(c^2*x^2-1))^(1/2)*g^3*
d*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^7-17/8*a*b*(-d*(c^2*x^2-1))^(1/2)*f*
g^2*d/(c^2*x^2-1)*arcsin(c*x)*x^3-18/5*a*b*(-d*(c^2*x^2-1))^(1/2)*g*d/(c^2*
x^2-1)*arcsin(c*x)*x^2*f^2+3/8*a^2*f^3*d^2/(c^2*d)^(1/2)*arctan((c^2*d)^(1/
2)*x/(-c^2*d*x^2+d)^(1/2))+3/8*a^2*f^3*d*x*(-c^2*d*x^2+d)^(1/2)+3/16*a^2*f*
g^2/c^2*d*x*(-c^2*d*x^2+d)^(1/2)+3/16*a^2*f*g^2/c^2*d^2/(c^2*d)^(1/2)*arcta
n((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-1/2*a^2*f*g^2*x*(-c^2*d*x^2+d)^(5/2
)/c^2/d+2/343*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3*d*c^4/(c^2*x^2-1)*x^8-734/4287
5*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3*d*c^2/(c^2*x^2-1)*x^6+40742/385875*b^2*(-d
*(c^2*x^2-1))^(1/2)*g^3*d/c^2/(c^2*x^2-1)*x^2+2/35*b^2*(-d*(c^2*x^2-1))^(1/
2)*g^3*d/c^4/(c^2*x^2-1)*arcsin(c*x)^2-298/375*b^2*(-d*(c^2*x^2-1))^(1/2)*g
*d/c^2/(c^2*x^2-1)*f^2+1/32*b^2*(-d*(c^2*x^2-1))^(1/2)*f^3*d*c^4/(c^2*x^2-1
)*x^5-19/64*b^2*(-d*(c^2*x^2-1))^(1/2)*f^3*d*c^2/(c^2*x^2-1)*x^3-9/35*b^2*(
-d*(c^2*x^2-1))^(1/2)*g^3*d/(c^2*x^2-1)*arcsin(c*x)^2*x^4+65/1152*b^2*(-d*(
c^2*x^2-1))^(1/2)*f*g^2*d/(c^2*x^2-1)*x^3+374/375*b^2*(-d*(c^2*x^2-1))^(1/2
)*g*d/(c^2*x^2-1)*x^2*f^2-5/8*b^2*(-d*(c^2*x^2-1))^(1/2)*f^3*d/(c^2*x^2-1)*
arcsin(c*x)^2*x-6/5*b^2*(-d*(c^2*x^2-1))^(1/2)*g*d/c/(c^2*x^2-1)*arcsin(c*x
)*(-c^2*x^2+1)^(1/2)*x*f^2-1/6*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g^2*d*c^3/(c^2*
x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^6+11/4*a*b*(-d*(c^2*x^2-1))^(1/2)*f
*g^2*d*c^2/(c^2*x^2-1)*arcsin(c*x)*x^5+3/8*a*b*(-d*(c^2*x^2-1))^(1/2)*f*g^2
*d/c^2/(c^2*x^2-1)*arcsin(c*x)*x-6/5*a*b*(-d*(c^2*x^2-1))^(1/2)*g*d*c^4/(c^
2*x^2-1)*arcsin(c*x)*x^6*f^2+18/5*a*b*(-d*(c^2*x^2-1))^(1/2)*g*d*c^2/(c^2*x
^2-1)*arcsin(c*x)*x^4*f^2-3/16*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2
)/c^3/(c^2*x^2-1)*arcsin(c*x)^2*f*d*g^2-1/6*a*b*(-d*(c^2*x^2-1))^(1/2)*f*g^
2*d*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^6+7/16*a*b*(-d*(c^2*x^2-1))^(1/2)*
f*g^2*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4-3/16*a*b*(-d*(c^2*x^2-1))^(1/2
)*f*g^2*d/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2-6/25*a*b*(-d*(c^2*x^2-1))^(1
/2)*g*d*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^5*f^2+4/5*a*b*(-d*(c^2*x^2-1))
^(1/2)*g*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^3*f^2-6/5*a*b*(-d*(c^2*x^2-1)
)^(1/2)*g*d/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x*f^2-a*b*(-d*(c^2*x^2-1))^(1/
2)*f*g^2*d*c^4/(c^2*x^2-1)*arcsin(c*x)*x^7-17/64*a*b*(-d*(c^2*x^2-1))^(1/2)
*f^3*d/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)-1/4*b^2*(-d*(c^2*x^2-1))^(1/2)*f^3*
d*c^4/(c^2*x^2-1)*arcsin(c*x)^2*x^5+7/8*b^2*(-d*(c^2*x^2-1))^(1/2)*f^3*d*c^

```
2/(c^2*x^2-1)*arcsin(c*x)^2*x^3-17/16*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g^2*d/(c
^2*x^2-1)*arcsin(c*x)^2*x^3-17/64*b^2*(-d*(c^2*x^2-1))^(1/2)*f^3*d/c/(c^2*x
^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)-9/5*b^2*(-d*(c^2*x^2-1))^(1/2)*g*d/(c^
2*x^2-1)*arcsin(c*x)^2*x^2*f^2-1/8*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^
(1/2)/c/(c^2*x^2-1)*arcsin(c*x)^3*f^3*d-1/7*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3*
d*c^4/(c^2*x^2-1)*arcsin(c*x)^2*x^8+13/35*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3*d*
c^2/(c^2*x^2-1)*arcsin(c*x)^2*x^6-1/35*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3*d/c^2
/(c^2*x^2-1)*arcsin(c*x)^2*x^2+1/36*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g^2*d*c^4/
(c^2*x^2-1)*x^7-59/576*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g^2*d*c^2/(c^2*x^2-1)*x
^5+7/384*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g^2*d/c^2/(c^2*x^2-1)*x+6/125*b^2*(-d
*(c^2*x^2-1))^(1/2)*g*d*c^4/(c^2*x^2-1)*x^6*f^2-94/375*b^2*(-d*(c^2*x^2-1))
^(1/2)*g*d*c^2/(c^2*x^2-1)*x^4*f^2+3/5*b^2*(-d*(c^2*x^2-1))^(1/2)*g*d/c^2/(
c^2*x^2-1)*arcsin(c*x)^2*f^2-2/35*a^2*g^3/d/c^4*(-c^2*d*x^2+d)^(5/2)+7/16*b
^2*(-d*(c^2*x^2-1))^(1/2)*f*g^2*d*c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1
/2)*x^4-3/16*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g^2*d/c/(c^2*x^2-1)*arcsin(c*x)*(
-c^2*x^2+1)^(1/2)*x^2-6/25*b^2*(-d*(c^2*x^2-1))^(1/2)*g*d*c^3/(c^2*x^2-1)*a
rcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^5*f^2+4/5*b^2*(-d*(c^2*x^2-1))^(1/2)*g*d*c/
(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^3*f^2-1/7*a^2*g^3*x^2*(-c^2*d*
x^2+d)^(5/2)/c^2/d+1/8*a^2*f*g^2/c^2*x*(-c^2*d*x^2+d)^(3/2)-3/5*a^2*f^2*g/c
^2/d*(-c^2*d*x^2+d)^(5/2)+998/385875*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3*d/(c^2*
x^2-1)*x^4+17/64*b^2*(-d*(c^2*x^2-1))^(1/2)*f^3*d/(c^2*x^2-1)*x-37384/38587
5*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3*d/c^4/(c^2*x^2-1)-2/7*a*b*(-d*(c^2*x^2-1))
^(1/2)*g^3*d*c^4/(c^2*x^2-1)*arcsin(c*x)*x^8+26/35*a*b*(-d*(c^2*x^2-1))^(1/
2)*g^3*d*c^2/(c^2*x^2-1)*arcsin(c*x)*x^6-2/35*a*b*(-d*(c^2*x^2-1))^(1/2)*g^
3*d/c^2/(c^2*x^2-1)*arcsin(c*x)*x^2+6/5*a*b*(-d*(c^2*x^2-1))^(1/2)*g*d/c^2/
(c^2*x^2-1)*arcsin(c*x)*f^2-1/2*a*b*(-d*(c^2*x^2-1))^(1/2)*f^3*d*c^4/(c^2*x
^2-1)*arcsin(c*x)*x^5+7/4*a*b*(-d*(c^2*x^2-1))^(1/2)*f^3*d*c^2/(c^2*x^2-1)*
arcsin(c*x)*x^3
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\left(a^2c^2dg^3x^5 + 3\,a^2c^2dfg^2x^4 - 3\,a^2df^2gx - a^2df^3 + \left(3\,a^2c^2df^2g - a^2dg^3\right)x^3 + \left(a^2c^2df^3 - 3\,a^2dfg^2\right)x^2 + \left(b^2c^2d\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="
fricas")
```

```
[Out] integral(-(a^2*c^2*d*g^3*x^5 + 3*a^2*c^2*d*f*g^2*x^4 - 3*a^2*d*f^2*g*x - a^
2*d*f^3 + (3*a^2*c^2*d*f^2*g - a^2*d*g^3)*x^3 + (a^2*c^2*d*f^3 - 3*a^2*d*f*
g^2)*x^2 + (b^2*c^2*d*g^3*x^5 + 3*b^2*c^2*d*f*g^2*x^4 - 3*b^2*d*f^2*g*x - b
^2*d*f^3 + (3*b^2*c^2*d*f^2*g - b^2*d*g^3)*x^3 + (b^2*c^2*d*f^3 - 3*b^2*d*f
*g^2)*x^2)*arcsin(c*x)^2 + 2*(a*b*c^2*d*g^3*x^5 + 3*a*b*c^2*d*f*g^2*x^4 - 3
*a*b*d*f^2*g*x - a*b*d*f^3 + (3*a*b*c^2*d*f^2*g - a*b*d*g^3)*x^3 + (a*b*c^2
*d*f^3 - 3*a*b*d*f*g^2)*x^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(-c^2dx^2 + d\right)^{\frac{3}{2}} \left(gx + f\right)^3 (b \arcsin(cx) + a)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="
giac")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(3/2)*(g*x + f)^3*(b*arcsin(c*x) + a)^2, x)
```

3.63 $\int (f+gx)^2 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=1108

result too large to display

```
[Out] (32*b^2*d*f*g*Sqrt[d - c^2*d*x^2])/(75*c^2) - (15*b^2*d*f^2*x*Sqrt[d - c^2*
d*x^2])/64 - (7*b^2*d*g^2*x*Sqrt[d - c^2*d*x^2])/(1152*c^2) - (43*b^2*d*g^2
*x^3*Sqrt[d - c^2*d*x^2])/1728 + (b^2*c^2*d*g^2*x^5*Sqrt[d - c^2*d*x^2])/10
8 + (16*b^2*d*f*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(225*c^2) - (b^2*d*f^2
*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/32 + (4*b^2*d*f*g*(1 - c^2*x^2)^2*Sqr
t[d - c^2*d*x^2])/(125*c^2) + (9*b^2*d*f^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])
/(64*c*Sqrt[1 - c^2*x^2]) + (7*b^2*d*g^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(
1152*c^3*Sqrt[1 - c^2*x^2]) + (4*b*d*f*g*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSi
n[c*x]))/(5*c*Sqrt[1 - c^2*x^2]) - (3*b*c*d*f^2*x^2*Sqrt[d - c^2*d*x^2]*(a
+ b*ArcSin[c*x]))/(8*Sqrt[1 - c^2*x^2]) + (b*d*g^2*x^2*Sqrt[d - c^2*d*x^2]*
(a + b*ArcSin[c*x]))/(16*c*Sqrt[1 - c^2*x^2]) - (8*b*c*d*f*g*x^3*Sqrt[d - c
^2*d*x^2]*(a + b*ArcSin[c*x]))/(15*Sqrt[1 - c^2*x^2]) - (7*b*c*d*g^2*x^4*Sq
rt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(48*Sqrt[1 - c^2*x^2]) + (4*b*c^3*d*
f*g*x^5*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(25*Sqrt[1 - c^2*x^2]) + (
b*c^3*d*g^2*x^6*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(18*Sqrt[1 - c^2*x
^2]) + (b*d*f^2*(1 - c^2*x^2)^(3/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])
)/(8*c) + (3*d*f^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/8 - (d*g^2*
x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(16*c^2) + (d*g^2*x^3*Sqrt[d -
 c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/8 + (d*f^2*x*(1 - c^2*x^2)*Sqrt[d - c^2*
d*x^2]*(a + b*ArcSin[c*x])^2)/4 + (d*g^2*x^3*(1 - c^2*x^2)*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x])^2)/6 - (2*d*f*g*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2]
*(a + b*ArcSin[c*x])^2)/(5*c^2) + (d*f^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[
c*x])^3)/(8*b*c*Sqrt[1 - c^2*x^2]) + (d*g^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcS
in[c*x])^3)/(48*b*c^3*Sqrt[1 - c^2*x^2])
```

Rubi [A] time = 1.52367, antiderivative size = 1108, normalized size of antiderivative = 1., number of steps used = 36, number of rules used = 21, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.636, Rules used = {4777, 4763, 4649, 4647, 4641, 4627, 321, 216, 4677, 195, 194, 4645, 12, 1247, 698, 4699, 4697, 4707, 14, 4687, 459}

$$\frac{bc^3dg^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)x^6}{18\sqrt{1-c^2x^2}}+\frac{4bc^3dfg\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)x^5}{25\sqrt{1-c^2x^2}}+\frac{1}{108}b^2c^2dg^2\sqrt{d-c^2dx^2}x^5-\frac{7bcdg^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (32*b^2*d*f*g*Sqrt[d - c^2*d*x^2])/(75*c^2) - (15*b^2*d*f^2*x*Sqrt[d - c^2*
d*x^2])/64 - (7*b^2*d*g^2*x*Sqrt[d - c^2*d*x^2])/(1152*c^2) - (43*b^2*d*g^2
*x^3*Sqrt[d - c^2*d*x^2])/1728 + (b^2*c^2*d*g^2*x^5*Sqrt[d - c^2*d*x^2])/10
8 + (16*b^2*d*f*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(225*c^2) - (b^2*d*f^2
*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/32 + (4*b^2*d*f*g*(1 - c^2*x^2)^2*Sqr
t[d - c^2*d*x^2])/(125*c^2) + (9*b^2*d*f^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])
/(64*c*Sqrt[1 - c^2*x^2]) + (7*b^2*d*g^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(
1152*c^3*Sqrt[1 - c^2*x^2]) + (4*b*d*f*g*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSi
n[c*x]))/(5*c*Sqrt[1 - c^2*x^2]) - (3*b*c*d*f^2*x^2*Sqrt[d - c^2*d*x^2]*(a
+ b*ArcSin[c*x]))/(8*Sqrt[1 - c^2*x^2]) + (b*d*g^2*x^2*Sqrt[d - c^2*d*x^2]*
(a + b*ArcSin[c*x]))/(16*c*Sqrt[1 - c^2*x^2]) - (8*b*c*d*f*g*x^3*Sqrt[d - c
^2*d*x^2]*(a + b*ArcSin[c*x]))/(15*Sqrt[1 - c^2*x^2]) - (7*b*c*d*g^2*x^4*Sq
rt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(48*Sqrt[1 - c^2*x^2]) + (4*b*c^3*d*
f*g*x^5*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(25*Sqrt[1 - c^2*x^2]) + (
b*c^3*d*g^2*x^6*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(18*Sqrt[1 - c^2*x
^2]) + (b*d*f^2*(1 - c^2*x^2)^(3/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])
)/(8*c) + (3*d*f^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/8 - (d*g^2*
x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(16*c^2) + (d*g^2*x^3*Sqrt[d -
 c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/8 + (d*f^2*x*(1 - c^2*x^2)*Sqrt[d - c^2*
d*x^2]*(a + b*ArcSin[c*x])^2)/4 + (d*g^2*x^3*(1 - c^2*x^2)*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x])^2)/6 - (2*d*f*g*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2]
*(a + b*ArcSin[c*x])^2)/(5*c^2) + (d*f^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[
c*x])^3)/(8*b*c*Sqrt[1 - c^2*x^2]) + (d*g^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcS
in[c*x])^3)/(48*b*c^3*Sqrt[1 - c^2*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 321

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

Rule 216

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

Rule 4677

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

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1247

```
Int[(x_)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(
p_.), x_Symbol] :> Dist[1/2, Subst[Int[(d + e*x)^q*(a + b*x + c*x^2)^p, x],
 x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x]
```

Rule 698

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
```

```
&& IntegerQ[m]))
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

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

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
```

```
IGtQ[p, 0]
```

Rule 459

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

Rubi steps

$$\int (f+gx)^2 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx = \frac{\left(d\sqrt{d-c^2dx^2}\right)\int (f+gx)^2 \left(1-c^2x^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d\sqrt{d-c^2dx^2}\right)\int \left(f^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2 + 2fgx\left(1-c^2x^2\right)\right.}{\sqrt{1-c^2}}$$

$$= \frac{\left(df^2\sqrt{d-c^2dx^2}\right)\int \left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2 \, dx}{\sqrt{1-c^2x^2}} + \frac{\left(2dfg\sqrt{d-c\right.}{}$$

$$= \frac{1}{4}df^2x\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2 + \frac{1}{6}dg^2x^3\left(1-c^2x^2\right)\sqrt{}$$

$$= \frac{4bdfgx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{5c\sqrt{1-c^2x^2}} - \frac{8bcdfgx^3\sqrt{d-c^2dx^2}\left(a+b\sin\right.}{15\sqrt{1-c^2x^2}}$$

$$= -\frac{1}{32}b^2df^2x\left(1-c^2x^2\right)\sqrt{d-c^2dx^2} + \frac{4bdfgx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(c\right.}{5c\sqrt{1-c^2x^2}}$$

$$= -\frac{15}{64}b^2df^2x\sqrt{d-c^2dx^2} - \frac{1}{64}b^2dg^2x^3\sqrt{d-c^2dx^2} + \frac{1}{108}b^2c^2dg^2x^5\sqrt{d-}$$

$$= -\frac{15}{64}b^2df^2x\sqrt{d-c^2dx^2} + \frac{b^2dg^2x\sqrt{d-c^2dx^2}}{128c^2} - \frac{43b^2dg^2x^3\sqrt{d-c^2dx^2}}{1728}$$

$$= \frac{32b^2dfg\sqrt{d-c^2dx^2}}{75c^2} - \frac{15}{64}b^2df^2x\sqrt{d-c^2dx^2} - \frac{7b^2dg^2x\sqrt{d-c^2dx^2}}{1152c^2} -$$

$$= \frac{32b^2dfg\sqrt{d-c^2dx^2}}{75c^2} - \frac{15}{64}b^2df^2x\sqrt{d-c^2dx^2} - \frac{7b^2dg^2x\sqrt{d-c^2dx^2}}{1152c^2} -$$

Mathematica [A] time = 1.03594, size = 616, normalized size = 0.56

$$\frac{d\sqrt{d-c^2dx^2}\left(15b\sin^{-1}(cx)\left(1800a^2\left(6c^2f^2+g^2\right)-240abc\sqrt{1-c^2x^2}\left(30c^2f^2x\left(2c^2x^2-5\right)+96fg\left(c^2x^2-1\right)^2+5g^2x\left(8\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (d*Sqrt[d - c^2*d*x^2]*(9000*a^3*(6*c^2*f^2 + g^2) + 120*a*b^2*c^2*x*(450*c
^2*f^2*x*(-5 + c^2*x^2) + 192*f*g*(15 - 10*c^2*x^2 + 3*c^4*x^4) + 25*g^2*x*
(9 - 21*c^2*x^2 + 8*c^4*x^4)) - 1800*a^2*b*c*Sqrt[1 - c^2*x^2]*(96*f*g*(-1
+ c^2*x^2)^2 + 30*c^2*f^2*x*(-5 + 2*c^2*x^2) + 5*g^2*x*(3 - 14*c^2*x^2 + 8*
c^4*x^4)) + b^3*c*Sqrt[1 - c^2*x^2]*(6750*c^2*f^2*x*(-17 + 2*c^2*x^2) + 153
6*f*g*(149 - 38*c^2*x^2 + 9*c^4*x^4) + 125*g^2*x*(-21 - 86*c^2*x^2 + 32*c^4
*x^4)) + 15*b*(1800*a^2*(6*c^2*f^2 + g^2) + b^2*(175*g^2 + 90*c^2*(85*f^2 +
 256*f*g*x + 20*g^2*x^2) - 120*c^4*x^2*(150*f^2 + 128*f*g*x + 35*g^2*x^2) +
 16*c^6*x^4*(225*f^2 + 288*f*g*x + 100*g^2*x^2)) - 240*a*b*c*Sqrt[1 - c^2*x
^2]*(96*f*g*(-1 + c^2*x^2)^2 + 30*c^2*f^2*x*(-5 + 2*c^2*x^2) + 5*g^2*x*(3 -
 14*c^2*x^2 + 8*c^4*x^4)))*ArcSin[c*x] + 1800*b^2*(15*a*(6*c^2*f^2 + g^2) -
 b*c*Sqrt[1 - c^2*x^2]*(96*f*g*(-1 + c^2*x^2)^2 + 30*c^2*f^2*x*(-5 + 2*c^2*
x^2) + 5*g^2*x*(3 - 14*c^2*x^2 + 8*c^4*x^4)))*ArcSin[c*x]^2 + 9000*b^3*(6*c
^2*f^2 + g^2)*ArcSin[c*x]^3))/(432000*b*c^3*Sqrt[1 - c^2*x^2])
```

Maple [B] time = 0.855, size = 2850, normalized size = 2.6

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] -596/1125*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g*d/c^2/(c^2*x^2-1)-17/48*b^2*(-d*(c
^2*x^2-1))^(1/2)*g^2*d/(c^2*x^2-1)*arcsin(c*x)^2*x^3+748/1125*b^2*(-d*(c^2*
x^2-1))^(1/2)*f*g*d/(c^2*x^2-1)*x^2-5/8*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x
^2-1)*arcsin(c*x)^2*x*f^2+1/108*b^2*(-d*(c^2*x^2-1))^(1/2)*g^2*d*c^4/(c^2*x
^2-1)*x^7-59/1728*b^2*(-d*(c^2*x^2-1))^(1/2)*g^2*d*c^2/(c^2*x^2-1)*x^5+7/11
52*b^2*(-d*(c^2*x^2-1))^(1/2)*g^2*d/c^2/(c^2*x^2-1)*x+1/32*b^2*(-d*(c^2*x^2
-1))^(1/2)*d*c^4/(c^2*x^2-1)*x^5*f^2-19/64*b^2*(-d*(c^2*x^2-1))^(1/2)*d*c^2
/(c^2*x^2-1)*x^3*f^2+1/4*a^2*f^2*x*(-c^2*d*x^2+d)^(3/2)+1/24*a^2*g^2/c^2*x*
(-c^2*d*x^2+d)^(3/2)-17/64*b^2*(-d*(c^2*x^2-1))^(1/2)*d/c/(c^2*x^2-1)*arcsi
```

n(c*x)*(-c^2*x^2+1)^(1/2)*f^2-7/1152*b^2*(-d*(c^2*x^2-1))^(1/2)*g^2*d/c^3/(
c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)-17/24*a*b*(-d*(c^2*x^2-1))^(1/2)*
g^2*d/(c^2*x^2-1)*arcsin(c*x)*x^3-7/1152*a*b*(-d*(c^2*x^2-1))^(1/2)*g^2*d/c
^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)-5/4*a*b*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2
-1)*arcsin(c*x)*x*f^2-17/64*a*b*(-d*(c^2*x^2-1))^(1/2)*d/c/(c^2*x^2-1)*(-c^
2*x^2+1)^(1/2)*f^2-4/5*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g*d/c/(c^2*x^2-1)*arcsi
n(c*x)*(-c^2*x^2+1)^(1/2)*x-4/25*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g*d*c^3/(c^2*
x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^5+8/15*b^2*(-d*(c^2*x^2-1))^(1/2)*f
*g*d*c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^3-4/25*a*b*(-d*(c^2*x^2
-1))^(1/2)*f*g*d*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^5+8/15*a*b*(-d*(c^2*x
^2-1))^(1/2)*f*g*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^3-4/5*a*b*(-d*(c^2*x^
2-1))^(1/2)*f*g*d/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-4/5*a*b*(-d*(c^2*x^2-1
))^(1/2)*f*g*d*c^4/(c^2*x^2-1)*arcsin(c*x)*x^6+12/5*a*b*(-d*(c^2*x^2-1))^(1
/2)*f*g*d*c^2/(c^2*x^2-1)*arcsin(c*x)*x^4-1/8*a*b*(-d*(c^2*x^2-1))^(1/2)*d*
c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4*f^2+5/8*a*b*(-d*(c^2*x^2-1))^(1/2)*d
*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2*f^2-3/8*a*b*(-d*(c^2*x^2-1))^(1/2)*(-
c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcsin(c*x)^2*d*f^2-1/16*a*b*(-d*(c^2*x^2-1)
)^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/(c^2*x^2-1)*arcsin(c*x)^2*d*g^2-1/3*a*b*(-d*
(c^2*x^2-1))^(1/2)*g^2*d*c^4/(c^2*x^2-1)*arcsin(c*x)*x^7+11/12*a*b*(-d*(c^2
*x^2-1))^(1/2)*g^2*d*c^2/(c^2*x^2-1)*arcsin(c*x)*x^5+1/8*a*b*(-d*(c^2*x^2-1
))^(1/2)*g^2*d/c^2/(c^2*x^2-1)*arcsin(c*x)*x+4/5*a*b*(-d*(c^2*x^2-1))^(1/2)
*f*g*d/c^2/(c^2*x^2-1)*arcsin(c*x)-1/2*a*b*(-d*(c^2*x^2-1))^(1/2)*d*c^4/(c^
2*x^2-1)*arcsin(c*x)*x^5*f^2+7/4*a*b*(-d*(c^2*x^2-1))^(1/2)*d*c^2/(c^2*x^2-
1)*arcsin(c*x)*x^3*f^2+5/8*b^2*(-d*(c^2*x^2-1))^(1/2)*d*c/(c^2*x^2-1)*arcsi
n(c*x)*(-c^2*x^2+1)^(1/2)*x^2*f^2-1/18*b^2*(-d*(c^2*x^2-1))^(1/2)*g^2*d*c^3
/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^6+7/48*b^2*(-d*(c^2*x^2-1))^(
1/2)*g^2*d*c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^4-1/16*b^2*(-d*(c
^2*x^2-1))^(1/2)*g^2*d/c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^2-1/8
b^2(-d*(c^2*x^2-1))^(1/2)*d*c^3/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2
)*x^4*f^2-2/5*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g*d*c^4/(c^2*x^2-1)*arcsin(c*x)^
2*x^6+6/5*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g*d*c^2/(c^2*x^2-1)*arcsin(c*x)^2*x^
4+3/8*a^2*f^2*d*x*(-c^2*d*x^2+d)^(1/2)-1/6*a^2*g^2*x*(-c^2*d*x^2+d)^(5/2)/c
^2/d+1/16*a^2*g^2/c^2*d*x*(-c^2*d*x^2+d)^(1/2)+1/16*a^2*g^2/c^2*d^2/(c^2*d)
^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-2/5*a^2*f*g/c^2/d*(-c^2
*d*x^2+d)^(5/2)+65/3456*b^2*(-d*(c^2*x^2-1))^(1/2)*g^2*d/(c^2*x^2-1)*x^3+17
/64*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)*x*f^2-1/18*a*b*(-d*(c^2*x^2-1)
)^(1/2)*g^2*d*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^6+7/48*a*b*(-d*(c^2*x^2-
1))^(1/2)*g^2*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4-1/16*a*b*(-d*(c^2*x^2-
1))^(1/2)*g^2*d/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2-12/5*a*b*(-d*(c^2*x^2-
1))^(1/2)*f*g*d/(c^2*x^2-1)*arcsin(c*x)*x^2-188/1125*b^2*(-d*(c^2*x^2-1))^(
1/2)*f*g*d*c^2/(c^2*x^2-1)*x^4+2/5*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g*d/c^2/(c^
2*x^2-1)*arcsin(c*x)^2-1/4*b^2*(-d*(c^2*x^2-1))^(1/2)*d*c^4/(c^2*x^2-1)*arc
sin(c*x)^2*x^5*f^2+7/8*b^2*(-d*(c^2*x^2-1))^(1/2)*d*c^2/(c^2*x^2-1)*arcsin(
c*x)^2*x^3*f^2-6/5*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g*d/(c^2*x^2-1)*arcsin(c*x)
^2*x^2-1/8*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcs

```
in(c*x)^3*d*f^2-1/48*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/(c^2
*x^2-1)*arcsin(c*x)^3*d*g^2-1/6*b^2*(-d*(c^2*x^2-1))^(1/2)*g^2*d*c^4/(c^2*x
^2-1)*arcsin(c*x)^2*x^7+11/24*b^2*(-d*(c^2*x^2-1))^(1/2)*g^2*d*c^2/(c^2*x^2
-1)*arcsin(c*x)^2*x^5+1/16*b^2*(-d*(c^2*x^2-1))^(1/2)*g^2*d/c^2/(c^2*x^2-1)
*arcsin(c*x)^2*x+4/125*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g*d*c^4/(c^2*x^2-1)*x^6
+3/8*a^2*f^2*d^2/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

integral $\left(-\left(a^2c^2dg^2x^4 + 2\,a^2c^2dfgx^3 - 2\,a^2dfgx - a^2df^2 + \left(a^2c^2df^2 - a^2dg^2\right)x^2 + \left(b^2c^2dg^2x^4 + 2\,b^2c^2dfgx^3 - 2\,b^2dfg\right.\right.\right.$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="
fricas")
```

```
[Out] integral(-(a^2*c^2*d*g^2*x^4 + 2*a^2*c^2*d*f*g*x^3 - 2*a^2*d*f*g*x - a^2*d*
f^2 + (a^2*c^2*d*f^2 - a^2*d*g^2)*x^2 + (b^2*c^2*d*g^2*x^4 + 2*b^2*c^2*d*f*
g*x^3 - 2*b^2*d*f*g*x - b^2*d*f^2 + (b^2*c^2*d*f^2 - b^2*d*g^2)*x^2)*arcsin
(c*x)^2 + 2*(a*b*c^2*d*g^2*x^4 + 2*a*b*c^2*d*f*g*x^3 - 2*a*b*d*f*g*x - a*b*
d*f^2 + (a*b*c^2*d*f^2 - a*b*d*g^2)*x^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d),
 x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(-c^2dx^2+d\right)^{\frac{3}{2}}\left(gx+f\right)^2\left(b\arcsin\left(cx\right)+a\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="
giac")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(3/2)*(g*x + f)^2*(b*arcsin(c*x) + a)^2, x)
```

3.64 $\int (f+gx)\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=621

$$-\frac{3bcdfx^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{8\sqrt{1-c^2x^2}}+\frac{3}{8}dfx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2+\frac{1}{4}dfx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}\right.$$

```
[Out] (16*b^2*d*g*Sqrt[d - c^2*d*x^2])/(75*c^2) - (15*b^2*d*f*x*Sqrt[d - c^2*d*x^
2])/64 + (8*b^2*d*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(225*c^2) - (b^2*d*f
*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/32 + (2*b^2*d*g*(1 - c^2*x^2)^2*Sqrt[
d - c^2*d*x^2])/(125*c^2) + (9*b^2*d*f*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(64
*c*Sqrt[1 - c^2*x^2]) + (2*b*d*g*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))
/(5*c*Sqrt[1 - c^2*x^2]) - (3*b*c*d*f*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin
[c*x]))/(8*Sqrt[1 - c^2*x^2]) - (4*b*c*d*g*x^3*Sqrt[d - c^2*d*x^2]*(a + b*A
rcSin[c*x]))/(15*Sqrt[1 - c^2*x^2]) + (2*b*c^3*d*g*x^5*Sqrt[d - c^2*d*x^2]*
(a + b*ArcSin[c*x]))/(25*Sqrt[1 - c^2*x^2]) + (b*d*f*(1 - c^2*x^2)^(3/2)*Sq
rt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*c) + (3*d*f*x*Sqrt[d - c^2*d*x^2]
*(a + b*ArcSin[c*x])^2)/8 + (d*f*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b
*ArcSin[c*x])^2)/4 - (d*g*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin
[c*x])^2)/(5*c^2) + (d*f*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(8*b*c*
Sqrt[1 - c^2*x^2])
```

Rubi [A] time = 0.716891, antiderivative size = 621, normalized size of antiderivative = 1., number of steps used = 19, number of rules used = 15, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.484, Rules used = {4777, 4763, 4649, 4647, 4641, 4627, 321, 216, 4677, 195, 194, 4645, 12, 1247, 698}

$$-\frac{3bcdfx^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{8\sqrt{1-c^2x^2}}+\frac{3}{8}dfx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2+\frac{1}{4}dfx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}\right.$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```


```
[Out] (16*b^2*d*g*Sqrt[d - c^2*d*x^2])/(75*c^2) - (15*b^2*d*f*x*Sqrt[d - c^2*d*x^
2])/64 + (8*b^2*d*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(225*c^2) - (b^2*d*f
*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/32 + (2*b^2*d*g*(1 - c^2*x^2)^2*Sqrt[
d - c^2*d*x^2])/(125*c^2) + (9*b^2*d*f*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(64
*c*Sqrt[1 - c^2*x^2]) + (2*b*d*g*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))
/(5*c*Sqrt[1 - c^2*x^2]) - (3*b*c*d*f*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin
```

```
[c*x]))/(8*Sqrt[1 - c^2*x^2]) - (4*b*c*d*g*x^3*Sqrt[d - c^2*d*x^2]*(a + b*A
rcSin[c*x]))/(15*Sqrt[1 - c^2*x^2]) + (2*b*c^3*d*g*x^5*Sqrt[d - c^2*d*x^2]*
(a + b*ArcSin[c*x]))/(25*Sqrt[1 - c^2*x^2]) + (b*d*f*(1 - c^2*x^2)^(3/2)*Sq
rt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*c) + (3*d*f*x*Sqrt[d - c^2*d*x^2]
*(a + b*ArcSin[c*x])^2)/8 + (d*f*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b
*ArcSin[c*x])^2)/4 - (d*g*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin
[c*x])^2)/(5*c^2) + (d*f*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(8*b*c*
Sqrt[1 - c^2*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 321

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

Rule 216

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

Rule 4677

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

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1247

```
Int[(x_)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(
p_.), x_Symbol] :> Dist[1/2, Subst[Int[(d + e*x)^q*(a + b*x + c*x^2)^p, x],
 x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x]
```

Rule 698

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rubi steps

$$\int (f+gx)\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx = \frac{\left(d\sqrt{d-c^2dx^2}\right)\int (f+gx)\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d\sqrt{d-c^2dx^2}\right)\int \left(f\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2+gx\left(1-c^2x^2\right)^{3/2}\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(df\sqrt{d-c^2dx^2}\right)\int \left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}} + \frac{\left(dg\sqrt{d-c^2dx\right.}{}$$

$$= \frac{1}{4}dfx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2 - \frac{dg\left(1-c^2x^2\right)^2\sqrt{d-c}{}$$

$$= \frac{2bdgx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{5c\sqrt{1-c^2x^2}} - \frac{4bcdgx^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}\right.}{15\sqrt{1-c^2x^2}}$$

$$= -\frac{1}{32}b^2dfx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2} + \frac{2bdgx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right.}{5c\sqrt{1-c^2x^2}}$$

$$= -\frac{15}{64}b^2dfx\sqrt{d-c^2dx^2} - \frac{1}{32}b^2dfx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2} + \frac{2bdgx\sqrt{d-}{}$$

$$= -\frac{15}{64}b^2dfx\sqrt{d-c^2dx^2} - \frac{1}{32}b^2dfx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2} + \frac{9b^2df\sqrt{d-}{64c}$$

$$= \frac{16b^2dg\sqrt{d-c^2dx^2}}{75c^2} - \frac{15}{64}b^2dfx\sqrt{d-c^2dx^2} + \frac{8b^2dg\left(1-c^2x^2\right)\sqrt{d-c^2}{225c^2}$$

Mathematica [A] time = 0.621907, size = 395, normalized size = 0.64

$$\frac{d\sqrt{d-c^2dx^2}\left(15b\sin^{-1}(cx)\left(1800a^2cf-240ab\sqrt{1-c^2x^2}\left(5c^2fx\left(2c^2x^2-5\right)+8g\left(c^2x^2-1\right)^2\right)+b^2c\left(75f\left(8c^4x^4-40c^2\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (d*Sqrt[d - c^2*d*x^2]*(9000*a^3*c*f - 1800*a^2*b*Sqrt[1 - c^2*x^2]*(8*g*(-
1 + c^2*x^2)^2 + 5*c^2*f*x*(-5 + 2*c^2*x^2)) + 120*a*b^2*c*x*(75*c^2*f*x*(-
5 + c^2*x^2) + 16*g*(15 - 10*c^2*x^2 + 3*c^4*x^4)) + b^3*Sqrt[1 - c^2*x^2]*
```

```
(1125*c^2*f*x*(-17 + 2*c^2*x^2) + 128*g*(149 - 38*c^2*x^2 + 9*c^4*x^4)) + 1
5*b*(1800*a^2*c*f - 240*a*b*Sqrt[1 - c^2*x^2]*(8*g*(-1 + c^2*x^2)^2 + 5*c^2
*f*x*(-5 + 2*c^2*x^2)) + b^2*c*(128*g*x*(15 - 10*c^2*x^2 + 3*c^4*x^4) + 75*
f*(17 - 40*c^2*x^2 + 8*c^4*x^4)))*ArcSin[c*x] + 1800*b^2*(15*a*c*f + b*Sqrt
[1 - c^2*x^2]*(5*c^2*f*x*(5 - 2*c^2*x^2) - 8*g*(-1 + c^2*x^2)^2))*ArcSin[c*
x]^2 + 9000*b^3*c*f*ArcSin[c*x]^3))/(72000*b*c^2*Sqrt[1 - c^2*x^2])
```

Maple [B] time = 0.436, size = 1640, normalized size = 2.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 5/8*a*b*(-d*(c^2*x^2-1))^(1/2)*f*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2-3/8
*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcsin(c*x)^2*
f*d-2/5*a*b*(-d*(c^2*x^2-1))^(1/2)*g*d*c^4/(c^2*x^2-1)*arcsin(c*x)*x^6+1/5*
b^2*(-d*(c^2*x^2-1))^(1/2)*g*d/c^2/(c^2*x^2-1)*arcsin(c*x)^2+1/32*b^2*(-d*(
c^2*x^2-1))^(1/2)*f*d*c^4/(c^2*x^2-1)*x^5-19/64*b^2*(-d*(c^2*x^2-1))^(1/2)*
f*d*c^2/(c^2*x^2-1)*x^3-5/8*b^2*(-d*(c^2*x^2-1))^(1/2)*f*d/(c^2*x^2-1)*arcs
in(c*x)^2*x-1/8*a*b*(-d*(c^2*x^2-1))^(1/2)*f*d*c^3/(c^2*x^2-1)*(-c^2*x^2+1)
^(1/2)*x^4+4/15*b^2*(-d*(c^2*x^2-1))^(1/2)*g*d*c/(c^2*x^2-1)*arcsin(c*x)*(-
c^2*x^2+1)^(1/2)*x^3-2/5*b^2*(-d*(c^2*x^2-1))^(1/2)*g*d/c/(c^2*x^2-1)*arcsi
n(c*x)*(-c^2*x^2+1)^(1/2)*x-1/8*b^2*(-d*(c^2*x^2-1))^(1/2)*f*d*c^3/(c^2*x^2
-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^4+6/5*a*b*(-d*(c^2*x^2-1))^(1/2)*g*d*c
^2/(c^2*x^2-1)*arcsin(c*x)*x^4-1/2*a*b*(-d*(c^2*x^2-1))^(1/2)*f*d*c^4/(c^2*
x^2-1)*arcsin(c*x)*x^5+7/4*a*b*(-d*(c^2*x^2-1))^(1/2)*f*d*c^2/(c^2*x^2-1)*a
rcsin(c*x)*x^3+2/5*a*b*(-d*(c^2*x^2-1))^(1/2)*g*d/c^2/(c^2*x^2-1)*arcsin(c*
x)-6/5*a*b*(-d*(c^2*x^2-1))^(1/2)*g*d/(c^2*x^2-1)*arcsin(c*x)*x^2-17/64*a*b
*(-d*(c^2*x^2-1))^(1/2)*f*d/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)+7/8*b^2*(-d*(c
^2*x^2-1))^(1/2)*f*d*c^2/(c^2*x^2-1)*arcsin(c*x)^2*x^3-5/4*a*b*(-d*(c^2*x^2
-1))^(1/2)*f*d/(c^2*x^2-1)*arcsin(c*x)*x-17/64*b^2*(-d*(c^2*x^2-1))^(1/2)*f
*d/c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)-1/8*b^2*(-d*(c^2*x^2-1))^(1
/2)*(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcsin(c*x)^3*f*d-1/5*b^2*(-d*(c^2*x^2
-1))^(1/2)*g*d*c^4/(c^2*x^2-1)*arcsin(c*x)^2*x^6+3/5*b^2*(-d*(c^2*x^2-1))^(
1/2)*g*d*c^2/(c^2*x^2-1)*arcsin(c*x)^2*x^4-1/4*b^2*(-d*(c^2*x^2-1))^(1/2)*f
*d*c^4/(c^2*x^2-1)*arcsin(c*x)^2*x^5+1/4*a^2*f*x*(-c^2*d*x^2+d)^(3/2)-298/1
125*b^2*(-d*(c^2*x^2-1))^(1/2)*g*d/c^2/(c^2*x^2-1)+374/1125*b^2*(-d*(c^2*x^
2-1))^(1/2)*g*d/(c^2*x^2-1)*x^2+17/64*b^2*(-d*(c^2*x^2-1))^(1/2)*f*d/(c^2*x
^2-1)*x+5/8*b^2*(-d*(c^2*x^2-1))^(1/2)*f*d*c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*
x^2+1)^(1/2)*x^2-2/25*b^2*(-d*(c^2*x^2-1))^(1/2)*g*d*c^3/(c^2*x^2-1)*arcsin
```

```
(c*x)*(-c^2*x^2+1)^(1/2)*x^5-2/25*a*b*(-d*(c^2*x^2-1))^(1/2)*g*d*c^3/(c^2*x
^2-1)*(-c^2*x^2+1)^(1/2)*x^5+4/15*a*b*(-d*(c^2*x^2-1))^(1/2)*g*d*c/(c^2*x^2
-1)*(-c^2*x^2+1)^(1/2)*x^3-2/5*a*b*(-d*(c^2*x^2-1))^(1/2)*g*d/c/(c^2*x^2-1)
*(-c^2*x^2+1)^(1/2)*x-3/5*b^2*(-d*(c^2*x^2-1))^(1/2)*g*d/(c^2*x^2-1)*arcsin
(c*x)^2*x^2+2/125*b^2*(-d*(c^2*x^2-1))^(1/2)*g*d*c^4/(c^2*x^2-1)*x^6-94/112
5*b^2*(-d*(c^2*x^2-1))^(1/2)*g*d*c^2/(c^2*x^2-1)*x^4+3/8*a^2*f*d*x*(-c^2*d*
x^2+d)^(1/2)+3/8*a^2*f*d^2/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2
+d)^(1/2))-1/5*a^2*g/c^2/d*(-c^2*d*x^2+d)^(5/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\left(a^2c^2dgx^3 + a^2c^2dfx^2 - a^2dgx - a^2df + \left(b^2c^2dgx^3 + b^2c^2dfx^2 - b^2dgx - b^2df\right)\arcsin\left(cx\right)^2 + 2\left(abc^2dgx^3\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="fr
icas")
```

```
[Out] integral(-(a^2*c^2*d*g*x^3 + a^2*c^2*d*f*x^2 - a^2*d*g*x - a^2*d*f + (b^2*c
^2*d*g*x^3 + b^2*c^2*d*f*x^2 - b^2*d*g*x - b^2*d*f)*arcsin(c*x)^2 + 2*(a*b*
c^2*d*g*x^3 + a*b*c^2*d*f*x^2 - a*b*d*g*x - a*b*d*f)*arcsin(c*x))*sqrt(-c^2
*d*x^2 + d), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(-c^2dx^2+d\right)^{\frac{3}{2}}\left(gx+f\right)\left(b\arcsin\left(cx\right)+a\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="gi
ac")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(3/2)*(g*x + f)*(b*arcsin(c*x) + a)^2, x)
```

3.65 $\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{f+gx}\,dx$

Optimal. Leaf size=1992

result too large to display

```
[Out] (-4*b^2*d*Sqrt[d - c^2*d*x^2])/(9*g) - (a^2*d*(c*f - g)*(c*f + g)*Sqrt[d -
c^2*d*x^2])/g^3 + (2*b^2*d*(c*f - g)*(c*f + g)*Sqrt[d - c^2*d*x^2])/g^3 - (
b^2*c^2*d*f*x*Sqrt[d - c^2*d*x^2])/(4*g^2) + (2*a*b*c*d*(c*f - g)*(c*f + g)
*x*Sqrt[d - c^2*d*x^2])/(g^3*Sqrt[1 - c^2*x^2]) - (2*b^2*d*(1 - c^2*x^2)*Sq
rt[d - c^2*d*x^2])/(27*g) - (2*a*b*d*(c*f - g)*(c*f + g)*Sqrt[d - c^2*d*x^2
]*ArcSin[c*x])/g^3 + (b^2*c*d*f*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(4*g^2*Sqr
t[1 - c^2*x^2]) + (2*b^2*c*d*(c*f - g)*(c*f + g)*x*Sqrt[d - c^2*d*x^2]*ArcS
in[c*x])/(g^3*Sqrt[1 - c^2*x^2]) - (b^2*d*(c*f - g)*(c*f + g)*Sqrt[d - c^2*
d*x^2]*ArcSin[c*x]^2)/g^3 - (2*b*c*d*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*
x]))/(3*g*Sqrt[1 - c^2*x^2]) - (b*c^3*d*f*x^2*Sqrt[d - c^2*d*x^2]*(a + b*Ar
cSin[c*x]))/(2*g^2*Sqrt[1 - c^2*x^2]) + (2*b*c^3*d*x^3*Sqrt[d - c^2*d*x^2]*
(a + b*ArcSin[c*x]))/(9*g*Sqrt[1 - c^2*x^2]) + (c^2*d*f*x*Sqrt[d - c^2*d*x^
2]*(a + b*ArcSin[c*x])^2)/(2*g^2) + (d*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a
 + b*ArcSin[c*x])^2)/(3*g) + (c*d*f*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])
^3)/(6*b*g^2*Sqrt[1 - c^2*x^2]) - (c*d*(c*f - g)*(c*f + g)*x*Sqrt[d - c^2*d
*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*g^3*Sqrt[1 - c^2*x^2]) - (d*(c^2*f^2 - g^
2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c*g^4*(f + g*x)*Sqrt[1
 - c^2*x^2]) - (d*(c*f - g)*(c*f + g)*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]
*(a + b*ArcSin[c*x])^3)/(3*b*c*g^2*(f + g*x)) + (a^2*d*(c^2*f^2 - g^2)^(3/2
)*Sqrt[d - c^2*d*x^2]*ArcTan[(g + c^2*f*x)/(Sqrt[c^2*f^2 - g^2]*Sqrt[1 - c^
2*x^2])])/(g^4*Sqrt[1 - c^2*x^2]) - ((2*I)*a*b*d*(c^2*f^2 - g^2)^(3/2)*Sqrt
[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2
*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) - (I*b^2*d*(c^2*f^2 - g^2)^(3/2)*Sqr
t[d - c^2*d*x^2]*ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[
c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) + ((2*I)*a*b*d*(c^2*f^2 - g^2)^(3
/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f +
Sqrt[c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) + (I*b^2*d*(c^2*f^2 - g^2)^(
3/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f
 + Sqrt[c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) - (2*a*b*d*(c^2*f^2 - g^2
)^(3/2)*Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[
c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) - (2*b^2*d*(c^2*f^2 - g^2)^(3/2)*
Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - S
qrt[c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) + (2*a*b*d*(c^2*f^2 - g^2)^(3
/2)*Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*
f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) + (2*b^2*d*(c^2*f^2 - g^2)^(3/2)*Sqrt
[d - c^2*d*x^2]*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[
c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) - ((2*I)*b^2*d*(c^2*f^2 - g^2)^(3
```

```
/2)*Sqrt[d - c^2*d*x^2]*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*
f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) + ((2*I)*b^2*d*(c^2*f^2 - g^2)^(3/2)*
Sqrt[d - c^2*d*x^2]*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2
- g^2])])/(g^4*Sqrt[1 - c^2*x^2])
```

Rubi [A] time = 3.77995, antiderivative size = 1992, normalized size of antiderivative = 1., number of steps used = 50, number of rules used = 32, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.97, Rules used = {4777, 4767, 4647, 4641, 4627, 321, 216, 4677, 4645, 444, 43, 4765, 683, 4757, 4799, 1654, 12, 725, 204, 4797, 8, 4773, 3323, 2264, 2190, 2279, 2391, 4619, 261, 2531, 2282, 6589}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/(f + g*x),x]
```

```
[Out] (-4*b^2*d*Sqrt[d - c^2*d*x^2])/(9*g) - (a^2*d*(c*f - g)*(c*f + g)*Sqrt[d -
c^2*d*x^2])/g^3 + (2*b^2*d*(c*f - g)*(c*f + g)*Sqrt[d - c^2*d*x^2])/g^3 - (
b^2*c^2*d*f*x*Sqrt[d - c^2*d*x^2])/(4*g^2) + (2*a*b*c*d*(c*f - g)*(c*f + g)
*x*Sqrt[d - c^2*d*x^2])/(g^3*Sqrt[1 - c^2*x^2]) - (2*b^2*d*(1 - c^2*x^2)*Sq
rt[d - c^2*d*x^2])/(27*g) - (2*a*b*d*(c*f - g)*(c*f + g)*Sqrt[d - c^2*d*x^2
]*ArcSin[c*x])/g^3 + (b^2*c*d*f*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(4*g^2*Sqr
t[1 - c^2*x^2]) + (2*b^2*c*d*(c*f - g)*(c*f + g)*x*Sqrt[d - c^2*d*x^2]*ArcS
in[c*x])/(g^3*Sqrt[1 - c^2*x^2]) - (b^2*d*(c*f - g)*(c*f + g)*Sqrt[d - c^2*
d*x^2]*ArcSin[c*x]^2)/g^3 - (2*b*c*d*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*
x]))/(3*g*Sqrt[1 - c^2*x^2]) - (b*c^3*d*f*x^2*Sqrt[d - c^2*d*x^2]*(a + b*Ar
cSin[c*x]))/(2*g^2*Sqrt[1 - c^2*x^2]) + (2*b*c^3*d*x^3*Sqrt[d - c^2*d*x^2]*
(a + b*ArcSin[c*x]))/(9*g*Sqrt[1 - c^2*x^2]) + (c^2*d*f*x*Sqrt[d - c^2*d*x^
2]*(a + b*ArcSin[c*x])^2)/(2*g^2) + (d*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a
 + b*ArcSin[c*x])^2)/(3*g) + (c*d*f*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])
^3)/(6*b*g^2*Sqrt[1 - c^2*x^2]) - (c*d*(c*f - g)*(c*f + g)*x*Sqrt[d - c^2*d
*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*g^3*Sqrt[1 - c^2*x^2]) - (d*(c^2*f^2 - g^
2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c*g^4*(f + g*x)*Sqrt[1
 - c^2*x^2]) - (d*(c*f - g)*(c*f + g)*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]
*(a + b*ArcSin[c*x])^3)/(3*b*c*g^2*(f + g*x)) + (a^2*d*(c^2*f^2 - g^2)^(3/2
)*Sqrt[d - c^2*d*x^2]*ArcTan[(g + c^2*f*x)/(Sqrt[c^2*f^2 - g^2]*Sqrt[1 - c^
2*x^2])])/(g^4*Sqrt[1 - c^2*x^2]) - ((2*I)*a*b*d*(c^2*f^2 - g^2)^(3/2)*Sqrt
[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2
*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) - (I*b^2*d*(c^2*f^2 - g^2)^(3/2)*Sqr
t[d - c^2*d*x^2]*ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[
c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) + ((2*I)*a*b*d*(c^2*f^2 - g^2)^(3
```

```
/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f +
Sqrt[c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) + (I*b^2*d*(c^2*f^2 - g^2)^(
3/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f
 + Sqrt[c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) - (2*a*b*d*(c^2*f^2 - g^2
)^(3/2)*Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[
c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) - (2*b^2*d*(c^2*f^2 - g^2)^(3/2)*
Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - S
qrt[c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) + (2*a*b*d*(c^2*f^2 - g^2)^(3
/2)*Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*
f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) + (2*b^2*d*(c^2*f^2 - g^2)^(3/2)*Sqrt
[d - c^2*d*x^2]*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[
c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) - ((2*I)*b^2*d*(c^2*f^2 - g^2)^(3
/2)*Sqrt[d - c^2*d*x^2]*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*
f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) + ((2*I)*b^2*d*(c^2*f^2 - g^2)^(3/2)*
Sqrt[d - c^2*d*x^2]*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2
- g^2])])/(g^4*Sqrt[1 - c^2*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[Sqrt[d + e*x^2]*(a
 + b*ArcSin[c*x])^n, (f + g*x)^m*(d + e*x^2)^(p - 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && IGtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
```

```
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 321

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

Rule 216

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

Rule 4677

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

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 444

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
```

```
1, 0]
```

Rule 43

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

Rule 4765

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

Rule 683

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[2*c*d - b*e, 0] &
& IGtQ[p, 0] &&  !(EqQ[m, 3] && NeQ[p, 1])
```

Rule 4757

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.) + (g_.)*(x_) + (h_.)*(x
_)^2)^(p_.))/((d_) + (e_.)*(x_))^2, x_Symbol] :> With[{u = IntHide[(f + g*x
 + h*x^2)^p/(d + e*x)^2, x]}, Dist[(a + b*ArcSin[c*x])^n, u, x] - Dist[b*c*
n, Int[SimplifyIntegrand[(u*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2],
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, h}, x] && IGtQ[n, 0] && IGtQ[p,
 0] && EqQ[e*g - 2*d*h, 0]
```

Rule 4799

```
Int[(ArcSin[(c_.)*(x_)]*(b_.) + (a_))^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p
_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p, RFx*(a + b*ArcSin[c*x])
^n, x], x] /; FreeQ[{a, b, c, d, e}, x] && RationalFunctionQ[RFx, x] && IGt
Q[n, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 1654

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :
> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[(f*(d + e*x
```

```
)^(m + q - 1)*(a + c*x^2)^(p + 1))/(c*e^(q - 1)*(m + q + 2*p + 1)), x] + Di
st[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + c*x^2)^p*ExpandToSum[c
*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1)*(d + e*x)^q - f*(d + e*x)
^(q - 2)*(a*e^2*(m + q - 1) - c*d^2*(m + q + 2*p + 1) - 2*c*d*e*(m + q + p)
*x), x], x], x] /; GtQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, c, d,
 e, m, p}, x] && PolyQ[Pq, x] && NeQ[c*d^2 + a*e^2, 0] &&  !(EqQ[d, 0] && T
rue) &&  !(IGtQ[m, 0] && RationalQ[a, c, d, e] && (IntegerQ[p] || ILtQ[p +
1/2, 0]))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

Rule 4797

```
Int[ArcSin[(c_.)*(x_)]^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p_), x_Symbol] :
> With[{u = ExpandIntegrand[(d + e*x^2)^p*ArcSin[c*x]^n, RFx, x]}, Int[u, x
] /; SumQ[u]] /; FreeQ[{c, d, e}, x] && RationalFunctionQ[RFx, x] && IGtQ[n
, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 8

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

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 261

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

```
NeQ[p, -1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{f+gx}\,dx = \frac{\left(d\sqrt{d-c^2dx^2}\right)\int \frac{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{f+gx}\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d\sqrt{d-c^2dx^2}\right)\int\left(\frac{c^2f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{g^2} - \frac{c^2x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{g} + \frac{\left(-c^2f^2+g^2\right)}{}\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d\left(1-\frac{c^2f^2}{g^2}\right)\sqrt{d-c^2dx^2}\right)\int \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{f+gx}\,dx}{\sqrt{1-c^2x^2}} + \frac{\left(c^2df\sqrt{d-c^2dx^2}\right)\int \sqrt{1}}{g^2\sqrt{}}$$

$$= \frac{c^2dfx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2g^2} + \frac{d\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx\right.}{3g}$$

$$= -\frac{2bcdx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3g\sqrt{1-c^2x^2}} - \frac{bc^3dfx^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2g^2\sqrt{1-c^2x^2}} +$$

$$= -\frac{b^2c^2dfx\sqrt{d-c^2dx^2}}{4g^2} - \frac{2bcdx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3g\sqrt{1-c^2x^2}} - \frac{bc^3dfx^2\sqrt{d-c^2}}{2g^2\sqrt{}}$$

$$= -\frac{b^2c^2dfx\sqrt{d-c^2dx^2}}{4g^2} + \frac{b^2cdf\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{4g^2\sqrt{1-c^2x^2}} - \frac{2bcdx\sqrt{d-c^2dx^2}\left(a+b\right.}{3g\sqrt{1-c^2x^2}}$$

$$= -\frac{4b^2d\sqrt{d-c^2dx^2}}{9g} - \frac{a^2d(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3} - \frac{b^2c^2dfx\sqrt{d-c^2dx^2}}{4g^2} -$$

$$= -\frac{4b^2d\sqrt{d-c^2dx^2}}{9g} - \frac{a^2d(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3} - \frac{b^2c^2dfx\sqrt{d-c^2dx^2}}{4g^2} -$$

$$= -\frac{4b^2d\sqrt{d-c^2dx^2}}{9g} - \frac{a^2d(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3} - \frac{b^2c^2dfx\sqrt{d-c^2dx^2}}{4g^2} -$$

$$= -\frac{4b^2d\sqrt{d-c^2dx^2}}{9g} - \frac{a^2d(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3} - \frac{b^2c^2dfx\sqrt{d-c^2dx^2}}{4g^2} -$$

$$= -\frac{4b^2d\sqrt{d-c^2dx^2}}{9g} - \frac{a^2d(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3} + \frac{2b^2d(cf-g)(cf+g)\sqrt{}}{g^3}$$

$$= -\frac{4b^2d\sqrt{d-c^2dx^2}}{9g} - \frac{a^2d(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3} + \frac{2b^2d(cf-g)(cf+g)\sqrt{}}{g^3}$$

Mathematica [A] time = 2.54716, size = 740, normalized size = 0.37

$$\frac{d\sqrt{d-c^2dx^2}\left(-\frac{36\left(c^2f^2-g^2\right)\left(3bc(f+gx)\left(i\sqrt{c^2f^2-g^2}\left(-2ib\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)+2ib\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)+2b^2\text{PolyL}\cdots\right.\right.\right.}{\cdots}\right.}{\cdots}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/(f + g*x),x]
```

```
[Out] (d*Sqrt[d - c^2*d*x^2]*(54*c^2*f*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2
+ 36*g*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2 + (18*c*f*(a + b*ArcSin[c*
x])^3)/b + (36*(c^2*f^2 - g^2)*(-1 + c^2*x^2)*(a + b*ArcSin[c*x])^3)/(b*c*(
f + g*x)) - 27*b*c*f*(c*x*(2*a*c*x + b*Sqrt[1 - c^2*x^2]) + b*(-1 + 2*c^2*x
^2)*ArcSin[c*x]) - 8*b*g*(-(b*Sqrt[1 - c^2*x^2]*(-7 + c^2*x^2)) + 9*c*x*(a
+ b*ArcSin[c*x]) - 3*c^3*x^3*(a + b*ArcSin[c*x])) - (36*(c^2*f^2 - g^2)*((c
^2*f^2 - g^2)*(a + b*ArcSin[c*x])^3 + c^2*g*x*(f + g*x)*(a + b*ArcSin[c*x])
^3 + 3*b*c*(f + g*x)*(g*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2 - 2*b*g*(a*
c*x + b*Sqrt[1 - c^2*x^2] + b*c*x*ArcSin[c*x]) + I*Sqrt[c^2*f^2 - g^2]*((a
+ b*ArcSin[c*x])^2*Log[1 + (I*E^(I*ArcSin[c*x])*g)/(-(c*f) + Sqrt[c^2*f^2 -
 g^2])] - (a + b*ArcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt
[c^2*f^2 - g^2])] - (2*I)*b*(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c
*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])] + (2*I)*b*(a + b*ArcSin[c*x])*PolyLog[
2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])] + 2*b^2*PolyLog[3,
(I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])] - 2*b^2*PolyLog[3, (I*
E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]))))/(b*c*g^2*(f + g*x))))
/(108*g^2*Sqrt[1 - c^2*x^2])
```

Maple [F] time = 0.565, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\arcsin(cx)\right)^2}{gx+f}\left(-c^2dx^2+d\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/(g*x+f),x)
```

```
[Out] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/(g*x+f),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/(g*x+f),x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\left(a^2c^2dx^2 - a^2d + \left(b^2c^2dx^2 - b^2d\right)\arcsin\left(cx\right)^2 + 2\left(abc^2dx^2 - abd\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2 + d}}{gx + f}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/(g*x+f),x, algorithm="fr
icas")
```

```
[Out] integral(-(a^2*c^2*d*x^2 - a^2*d + (b^2*c^2*d*x^2 - b^2*d)*arcsin(c*x)^2 +
2*(a*b*c^2*d*x^2 - a*b*d)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/(g*x + f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(-d\left(cx - 1\right)\left(cx + 1\right)\right)^{\frac{3}{2}}\left(a + b\operatorname{asin}\left(cx\right)\right)^2}{f + gx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))**2/(g*x+f),x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))**2/(f + g*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(-c^2dx^2+d\right)^{\frac{3}{2}}(b\arcsin(cx)+a)^2}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/(g*x+f),x, algorithm="gi
ac")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(3/2)*(b*arcsin(c*x) + a)^2/(g*x + f), x)
```

3.66 $\int (f+gx)^3 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=2290

result too large to display

```
[Out] (96*b^2*d^2*f^2*g*Sqrt[d - c^2*d*x^2])/(245*c^2) + (160*b^2*d^2*g^3*Sqrt[d
- c^2*d*x^2])/(3969*c^4) - (245*b^2*d^2*f^3*x*Sqrt[d - c^2*d*x^2])/1152 - (
359*b^2*d^2*f*g^2*x*Sqrt[d - c^2*d*x^2])/(12288*c^2) - (1079*b^2*d^2*f*g^2*
x^3*Sqrt[d - c^2*d*x^2])/18432 + (209*b^2*c^2*d^2*f*g^2*x^5*Sqrt[d - c^2*d*
x^2])/4608 - (3*b^2*c^4*d^2*f*g^2*x^7*Sqrt[d - c^2*d*x^2])/256 + (4*a*b*d^2
*g^3*x*Sqrt[d - c^2*d*x^2])/(63*c^3*Sqrt[1 - c^2*x^2]) + (16*b^2*d^2*f^2*g*
(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(245*c^2) + (80*b^2*d^2*g^3*(1 - c^2*x^2
)*Sqrt[d - c^2*d*x^2])/(11907*c^4) - (65*b^2*d^2*f^3*x*(1 - c^2*x^2)*Sqrt[d
 - c^2*d*x^2])/1728 + (36*b^2*d^2*f^2*g*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2]
)/(1225*c^2) + (4*b^2*d^2*g^3*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2])/(1323*c^
4) - (b^2*d^2*f^3*x*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2])/108 + (6*b^2*d^2*f
^2*g*(1 - c^2*x^2)^3*Sqrt[d - c^2*d*x^2])/(343*c^2) + (50*b^2*d^2*g^3*(1 -
c^2*x^2)^3*Sqrt[d - c^2*d*x^2])/(27783*c^4) - (2*b^2*d^2*g^3*(1 - c^2*x^2)^
4*Sqrt[d - c^2*d*x^2])/(729*c^4) + (115*b^2*d^2*f^3*Sqrt[d - c^2*d*x^2]*Arc
Sin[c*x])/(1152*c*Sqrt[1 - c^2*x^2]) + (359*b^2*d^2*f*g^2*Sqrt[d - c^2*d*x^
2]*ArcSin[c*x])/(12288*c^3*Sqrt[1 - c^2*x^2]) + (4*b^2*d^2*g^3*x*Sqrt[d - c
^2*d*x^2]*ArcSin[c*x])/(63*c^3*Sqrt[1 - c^2*x^2]) + (6*b*d^2*f^2*g*x*Sqrt[d
 - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(7*c*Sqrt[1 - c^2*x^2]) - (5*b*c*d^2*f^3
*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(16*Sqrt[1 - c^2*x^2]) + (15*
b*d^2*f*g^2*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(128*c*Sqrt[1 - c^
2*x^2]) - (6*b*c*d^2*f^2*g*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(7*
Sqrt[1 - c^2*x^2]) + (2*b*d^2*g^3*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x
]))/(189*c*Sqrt[1 - c^2*x^2]) - (59*b*c*d^2*f*g^2*x^4*Sqrt[d - c^2*d*x^2]*(
a + b*ArcSin[c*x]))/(128*Sqrt[1 - c^2*x^2]) + (18*b*c^3*d^2*f^2*g*x^5*Sqrt[
d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(35*Sqrt[1 - c^2*x^2]) - (2*b*c*d^2*g^3
*x^5*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(21*Sqrt[1 - c^2*x^2]) + (17*
b*c^3*d^2*f*g^2*x^6*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(48*Sqrt[1 - c
^2*x^2]) - (6*b*c^5*d^2*f^2*g*x^7*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/
(49*Sqrt[1 - c^2*x^2]) + (38*b*c^3*d^2*g^3*x^7*Sqrt[d - c^2*d*x^2]*(a + b*A
rcSin[c*x]))/(441*Sqrt[1 - c^2*x^2]) - (3*b*c^5*d^2*f*g^2*x^8*Sqrt[d - c^2*
d*x^2]*(a + b*ArcSin[c*x]))/(32*Sqrt[1 - c^2*x^2]) - (2*b*c^5*d^2*g^3*x^9*S
qrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(81*Sqrt[1 - c^2*x^2]) + (5*b*d^2*f
^3*(1 - c^2*x^2)^(3/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(48*c) + (b
*d^2*f^3*(1 - c^2*x^2)^(5/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(18*c
) - (2*d^2*g^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(63*c^4) + (5*d^2
*f^3*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/16 - (15*d^2*f*g^2*x*Sqrt
[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(128*c^2) - (d^2*g^3*x^2*Sqrt[d - c^
2*d*x^2]*(a + b*ArcSin[c*x])^2)/(63*c^2) + (15*d^2*f*g^2*x^3*Sqrt[d - c^2*d
```

```
*x^2]*(a + b*ArcSin[c*x])^2)/64 + (d^2*g^3*x^4*Sqrt[d - c^2*d*x^2]*(a + b*A
rcSin[c*x])^2)/21 + (5*d^2*f^3*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*A
rcSin[c*x])^2)/24 + (5*d^2*f*g^2*x^3*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a +
 b*ArcSin[c*x])^2)/16 + (5*d^2*g^3*x^4*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a
 + b*ArcSin[c*x])^2)/63 + (d^2*f^3*x*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a
 + b*ArcSin[c*x])^2)/6 + (3*d^2*f*g^2*x^3*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^
2]*(a + b*ArcSin[c*x])^2)/8 + (d^2*g^3*x^4*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x])^2)/9 - (3*d^2*f^2*g*(1 - c^2*x^2)^3*Sqrt[d - c^2*d*
x^2]*(a + b*ArcSin[c*x])^2)/(7*c^2) + (5*d^2*f^3*Sqrt[d - c^2*d*x^2]*(a + b
*ArcSin[c*x])^3)/(48*b*c*Sqrt[1 - c^2*x^2]) + (5*d^2*f*g^2*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x])^3)/(128*b*c^3*Sqrt[1 - c^2*x^2])
```

Rubi [A] time = 3.28675, antiderivative size = 2290, normalized size of antiderivative = 1., number of steps used = 77, number of rules used = 32, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.97, Rules used = {4777, 4763, 4649, 4647, 4641, 4627, 321, 216, 4677, 195, 194, 4645, 12, 1799, 1850, 4699, 4697, 4707, 14, 4687, 459, 266, 43, 1267, 4619, 261, 446, 77, 270, 1251, 897, 1153}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (96*b^2*d^2*f^2*g*Sqrt[d - c^2*d*x^2])/(245*c^2) + (160*b^2*d^2*g^3*Sqrt[d
 - c^2*d*x^2])/(3969*c^4) - (245*b^2*d^2*f^3*x*Sqrt[d - c^2*d*x^2])/1152 - (
359*b^2*d^2*f*g^2*x*Sqrt[d - c^2*d*x^2])/(12288*c^2) - (1079*b^2*d^2*f*g^2*
x^3*Sqrt[d - c^2*d*x^2])/18432 + (209*b^2*c^2*d^2*f*g^2*x^5*Sqrt[d - c^2*d*
x^2])/4608 - (3*b^2*c^4*d^2*f*g^2*x^7*Sqrt[d - c^2*d*x^2])/256 + (4*a*b*d^2
*g^3*x*Sqrt[d - c^2*d*x^2])/(63*c^3*Sqrt[1 - c^2*x^2]) + (16*b^2*d^2*f^2*g*
(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(245*c^2) + (80*b^2*d^2*g^3*(1 - c^2*x^2
)*Sqrt[d - c^2*d*x^2])/(11907*c^4) - (65*b^2*d^2*f^3*x*(1 - c^2*x^2)*Sqrt[d
 - c^2*d*x^2])/1728 + (36*b^2*d^2*f^2*g*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2]
)/(1225*c^2) + (4*b^2*d^2*g^3*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2])/(1323*c^
4) - (b^2*d^2*f^3*x*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2])/108 + (6*b^2*d^2*f
^2*g*(1 - c^2*x^2)^3*Sqrt[d - c^2*d*x^2])/(343*c^2) + (50*b^2*d^2*g^3*(1 -
c^2*x^2)^3*Sqrt[d - c^2*d*x^2])/(27783*c^4) - (2*b^2*d^2*g^3*(1 - c^2*x^2)^
4*Sqrt[d - c^2*d*x^2])/(729*c^4) + (115*b^2*d^2*f^3*Sqrt[d - c^2*d*x^2]*Arc
Sin[c*x])/(1152*c*Sqrt[1 - c^2*x^2]) + (359*b^2*d^2*f*g^2*Sqrt[d - c^2*d*x^
2]*ArcSin[c*x])/(12288*c^3*Sqrt[1 - c^2*x^2]) + (4*b^2*d^2*g^3*x*Sqrt[d - c
^2*d*x^2]*ArcSin[c*x])/(63*c^3*Sqrt[1 - c^2*x^2]) + (6*b*d^2*f^2*g*x*Sqrt[d
 - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(7*c*Sqrt[1 - c^2*x^2]) - (5*b*c*d^2*f^3
```

```
*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(16*Sqrt[1 - c^2*x^2]) + (15*
b*d^2*f*g^2*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(128*c*Sqrt[1 - c^
2*x^2]) - (6*b*c*d^2*f^2*g*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(7*
Sqrt[1 - c^2*x^2]) + (2*b*d^2*g^3*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x
]))/(189*c*Sqrt[1 - c^2*x^2]) - (59*b*c*d^2*f*g^2*x^4*Sqrt[d - c^2*d*x^2]*(
a + b*ArcSin[c*x]))/(128*Sqrt[1 - c^2*x^2]) + (18*b*c^3*d^2*f^2*g*x^5*Sqrt[
d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(35*Sqrt[1 - c^2*x^2]) - (2*b*c*d^2*g^3
*x^5*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(21*Sqrt[1 - c^2*x^2]) + (17*
b*c^3*d^2*f*g^2*x^6*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(48*Sqrt[1 - c
^2*x^2]) - (6*b*c^5*d^2*f^2*g*x^7*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/
(49*Sqrt[1 - c^2*x^2]) + (38*b*c^3*d^2*g^3*x^7*Sqrt[d - c^2*d*x^2]*(a + b*A
rcSin[c*x]))/(441*Sqrt[1 - c^2*x^2]) - (3*b*c^5*d^2*f*g^2*x^8*Sqrt[d - c^2*
d*x^2]*(a + b*ArcSin[c*x]))/(32*Sqrt[1 - c^2*x^2]) - (2*b*c^5*d^2*g^3*x^9*S
qrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(81*Sqrt[1 - c^2*x^2]) + (5*b*d^2*f
^3*(1 - c^2*x^2)^(3/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(48*c) + (b
*d^2*f^3*(1 - c^2*x^2)^(5/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(18*c
) - (2*d^2*g^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(63*c^4) + (5*d^2
*f^3*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/16 - (15*d^2*f*g^2*x*Sqrt
[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(128*c^2) - (d^2*g^3*x^2*Sqrt[d - c^
2*d*x^2]*(a + b*ArcSin[c*x])^2)/(63*c^2) + (15*d^2*f*g^2*x^3*Sqrt[d - c^2*d
*x^2]*(a + b*ArcSin[c*x])^2)/64 + (d^2*g^3*x^4*Sqrt[d - c^2*d*x^2]*(a + b*A
rcSin[c*x])^2)/21 + (5*d^2*f^3*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*A
rcSin[c*x])^2)/24 + (5*d^2*f*g^2*x^3*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a +
 b*ArcSin[c*x])^2)/16 + (5*d^2*g^3*x^4*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a
 + b*ArcSin[c*x])^2)/63 + (d^2*f^3*x*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a
 + b*ArcSin[c*x])^2)/6 + (3*d^2*f*g^2*x^3*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^
2]*(a + b*ArcSin[c*x])^2)/8 + (d^2*g^3*x^4*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x])^2)/9 - (3*d^2*f^2*g*(1 - c^2*x^2)^3*Sqrt[d - c^2*d*
x^2]*(a + b*ArcSin[c*x])^2)/(7*c^2) + (5*d^2*f^3*Sqrt[d - c^2*d*x^2]*(a + b
*ArcSin[c*x])^3)/(48*b*c*Sqrt[1 - c^2*x^2]) + (5*d^2*f*g^2*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x])^3)/(128*b*c^3*Sqrt[1 - c^2*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
```

```
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 321

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

Rule 216

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

Rule 4677

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

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1799

```
Int[(Pq_)*(x_)^(m_.)*((a_) + (b_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/2, Su
bst[Int[x^((m - 1)/2)*SubstFor[x^2, Pq, x]*(a + b*x)^p, x], x, x^2], x] /;
FreeQ[{a, b, p}, x] && PolyQ[Pq, x^2] && IntegerQ[(m - 1)/2]
```

Rule 1850

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_.), x_Symbol] :> Int[ExpandIntegrand
[Pq*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, n}, x] && PolyQ[Pq, x] && (IGtQ[p
, 0] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

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

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
```

```
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rule 459

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

Rule 266

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

Rule 43

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

Rule 1267

```
Int[((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (
c_.)*(x_)^4)^(p_.), x_Symbol] :> Simp[(c^p*(f*x)^(m + 4*p - 1)*(d + e*x^2)^
(q + 1))/(e*f^(4*p - 1)*(m + 4*p + 2*q + 1)), x] + Dist[1/(e*(m + 4*p + 2*q
 + 1)), Int[(f*x)^m*(d + e*x^2)^q*ExpandToSum[e*(m + 4*p + 2*q + 1)*((a + b
*x^2 + c*x^4)^p - c^p*x^(4*p)) - d*c^p*(m + 4*p - 1)*x^(4*p - 2), x], x], x
] /; FreeQ[{a, b, c, d, e, f, m, q}, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[p, 0
] &&  !IntegerQ[q] && NeQ[m + 4*p + 2*q + 1, 0]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 261

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

```
NeQ[p, -1]
```

Rule 446

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p
*(c + d*x)^q, x], x, x^n], x] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[
b*c - a*d, 0] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 270

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

Rule 1251

```
Int[(x_)^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_
)^4)^(p_.), x_Symbol] :> Dist[1/2, Subst[Int[x^((m - 1)/2)*(d + e*x)^q*(a +
 b*x + c*x^2)^p, x], x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x] && Inte
gerQ[(m - 1)/2]
```

Rule 897

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_.) + (b_.)*(x_)
 + (c_.)*(x_)^2)^(p_.), x_Symbol] :> With[{q = Denominator[m]}, Dist[q/e, S
ubst[Int[x^(q*(m + 1) - 1)*((e*f - d*g)/e + (g*x^q)/e)^n*((c*d^2 - b*d*e +
a*e^2)/e^2 - ((2*c*d - b*e)*x^q)/e^2 + (c*x^(2*q))/e^2)^p, x], x, (d + e*x)
^(1/q)], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ
[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegersQ[n, p] && Fra
ctionQ[m]
```

Rule 1153

```
Int[((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.),
 x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^q*(a + b*x^2 + c*x^4)^p, x],
```

```
x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e
 + a*e^2, 0] && IGtQ[p, 0] && IGtQ[q, -2]
```

Rubi steps

$$\int (f+gx)^3 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx = \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int (f+gx)^3 \left(1-c^2x^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int \left(f^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2+3f^2gx\left(1-c^2\right.\right.}{}$$

$$= \frac{\left(d^2f^3\sqrt{d-c^2dx^2}\right)\int \left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2 \, dx}{\sqrt{1-c^2x^2}} + \frac{\left(3d^2f^2g\sqrt{\right.}{}$$

$$= \frac{1}{6}d^2f^3x\left(1-c^2x^2\right)^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2 + \frac{3}{8}d^2fg^2x^3\left(1-c^2\right.$$

$$= \frac{6bd^2f^2gx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{7c\sqrt{1-c^2x^2}} - \frac{6bcd^2f^2gx^3\sqrt{d-c^2dx^2}\left(a+\right.}{7\sqrt{1-c^2x^2}}$$

$$= -\frac{1}{108}b^2d^2f^3x\left(1-c^2x^2\right)^2\sqrt{d-c^2dx^2} + \frac{6bd^2f^2gx\sqrt{d-c^2dx^2}\left(a+b\,\mathrm{s}\right.}{7c\sqrt{1-c^2x^2}}$$

$$= -\frac{3}{256}b^2c^4d^2fg^2x^7\sqrt{d-c^2dx^2} - \frac{65b^2d^2f^3x\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}{1728} -$$

$$= -\frac{245b^2d^2f^3x\sqrt{d-c^2dx^2}}{1152} - \frac{15}{512}b^2d^2fg^2x^3\sqrt{d-c^2dx^2} + \frac{209b^2c^2d^2f}{4}$$

$$= \frac{96b^2d^2f^2g\sqrt{d-c^2dx^2}}{245c^2} - \frac{245b^2d^2f^3x\sqrt{d-c^2dx^2}}{1152} + \frac{15b^2d^2fg^2x\sqrt{d-}}{1024c^2}$$

$$= \frac{96b^2d^2f^2g\sqrt{d-c^2dx^2}}{245c^2} - \frac{134b^2d^2g^3\sqrt{d-c^2dx^2}}{3969c^4} - \frac{245b^2d^2f^3x\sqrt{d-c}}{1152}$$

$$= \frac{96b^2d^2f^2g\sqrt{d-c^2dx^2}}{245c^2} + \frac{160b^2d^2g^3\sqrt{d-c^2dx^2}}{3969c^4} - \frac{245b^2d^2f^3x\sqrt{d-c}}{1152}$$

Mathematica [A] time = 1.93246, size = 1114, normalized size = 0.49

$$\frac{d^2\sqrt{d-c^2dx^2}\left(333396000\left(8c^3f^3+3cg^2f\right)a^3+3175200b\sqrt{1-c^2x^2}\left(16x^5\left(84f^3+216gxf^2+189g^2x^2f+56g^3x^3\right)c^8-8\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (d^2*Sqrt[d - c^2*d*x^2]*(333396000*a^3*(8*c^3*f^3 + 3*c*f*g^2) + 3175200*a
^2*b*Sqrt[1 - c^2*x^2]*(-256*g^3 - c^2*g*(3456*f^2 + 945*f*g*x + 128*g^2*x^
2) + 16*c^8*x^5*(84*f^3 + 216*f^2*g*x + 189*f*g^2*x^2 + 56*g^3*x^3) - 8*c^6
*x^3*(546*f^3 + 1296*f^2*g*x + 1071*f*g^2*x^2 + 304*g^3*x^3) + 6*c^4*x*(924
*f^3 + 1728*f^2*g*x + 1239*f*g^2*x^2 + 320*g^3*x^3)) - 10080*a*b^2*c*x*(-16
1280*g^3 - 105*c^2*g*(20736*f^2 + 2835*f*g*x + 256*g^2*x^2) + 945*c^4*x*(18
48*f^3 + 2304*f^2*g*x + 1239*f*g^2*x^2 + 256*g^3*x^3) - 72*c^6*x^3*(9555*f^
3 + 18144*f^2*g*x + 12495*f*g^2*x^2 + 3040*g^3*x^3) + 20*c^8*x^5*(7056*f^3
+ 15552*f^2*g*x + 11907*f*g^2*x^2 + 3136*g^3*x^3)) - b^3*Sqrt[1 - c^2*x^2]*
(-1257472000*g^3 + c^2*g*(-12905422848*f^2 + 748057275*f*g*x + 184115200*g^
2*x^2) + 400*c^8*x^5*(592704*f^3 + 1119744*f^2*g*x + 750141*f*g^2*x^2 + 175
616*g^3*x^3) - 8*c^6*x^3*(179663400*f^3 + 262020096*f^2*g*x + 145166175*f*g
^2*x^2 + 29363200*g^3*x^3) + 6*c^4*x*(1107615600*f^3 + 753463296*f^2*g*x +
249815475*f*g^2*x^2 + 34304000*g^3*x^3)) + 315*b*(3175200*a^2*(8*c^3*f^3 +
3*c*f*g^2) + 20160*a*b*Sqrt[1 - c^2*x^2]*(-256*g^3 - c^2*g*(3456*f^2 + 945*
f*g*x + 128*g^2*x^2) + 16*c^8*x^5*(84*f^3 + 216*f^2*g*x + 189*f*g^2*x^2 + 5
6*g^3*x^3) - 8*c^6*x^3*(546*f^3 + 1296*f^2*g*x + 1071*f*g^2*x^2 + 304*g^3*x
^3) + 6*c^4*x*(924*f^3 + 1728*f^2*g*x + 1239*f*g^2*x^2 + 320*g^3*x^3)) + b^
2*c*(315*g^2*(7539*f + 16384*g*x) - 30240*c^4*x^2*(1848*f^3 + 2304*f^2*g*x
+ 1239*f*g^2*x^2 + 256*g^3*x^3) + 3360*c^2*(6279*f^3 + 20736*f^2*g*x + 2835
*f*g^2*x^2 + 256*g^3*x^3) + 2304*c^6*x^4*(9555*f^3 + 18144*f^2*g*x + 12495*
f*g^2*x^2 + 3040*g^3*x^3) - 640*c^8*x^6*(7056*f^3 + 15552*f^2*g*x + 11907*f
*g^2*x^2 + 3136*g^3*x^3)))*ArcSin[c*x] + 3175200*b^2*(315*a*(8*c^3*f^3 + 3*
c*f*g^2) + b*Sqrt[1 - c^2*x^2]*(-256*g^3 - c^2*g*(3456*f^2 + 945*f*g*x + 12
8*g^2*x^2) + 16*c^8*x^5*(84*f^3 + 216*f^2*g*x + 189*f*g^2*x^2 + 56*g^3*x^3)
 - 8*c^6*x^3*(546*f^3 + 1296*f^2*g*x + 1071*f*g^2*x^2 + 304*g^3*x^3) + 6*c^
4*x*(924*f^3 + 1728*f^2*g*x + 1239*f*g^2*x^2 + 320*g^3*x^3)))*ArcSin[c*x]^2
 + 333396000*b^3*c*f*(8*c^2*f^2 + 3*g^2)*ArcSin[c*x]^3))/(25604812800*b*c^4
*Sqrt[1 - c^2*x^2])
```

Maple [B] time = 0.909, size = 5226, normalized size = 2.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(a^2c^4d^2g^3x^7 + 3\,a^2c^4d^2fg^2x^6 + 3\,a^2d^2f^2gx + a^2d^2f^3 + \left(3\,a^2c^4d^2f^2g - 2\,a^2c^2d^2g^3\right)x^5 + \left(a^2c^4d^2f^3 - 6\,a^2c^2d^2f\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="
fricas")
```

```
[Out] integral((a^2*c^4*d^2*g^3*x^7 + 3*a^2*c^4*d^2*f*g^2*x^6 + 3*a^2*d^2*f^2*g*x
 + a^2*d^2*f^3 + (3*a^2*c^4*d^2*f^2*g - 2*a^2*c^2*d^2*g^3)*x^5 + (a^2*c^4*d
^2*f^3 - 6*a^2*c^2*d^2*f*g^2)*x^4 - (6*a^2*c^2*d^2*f^2*g - a^2*d^2*g^3)*x^3
 - (2*a^2*c^2*d^2*f^3 - 3*a^2*d^2*f*g^2)*x^2 + (b^2*c^4*d^2*g^3*x^7 + 3*b^2
*c^4*d^2*f*g^2*x^6 + 3*b^2*d^2*f^2*g*x + b^2*d^2*f^3 + (3*b^2*c^4*d^2*f^2*g
 - 2*b^2*c^2*d^2*g^3)*x^5 + (b^2*c^4*d^2*f^3 - 6*b^2*c^2*d^2*f*g^2)*x^4 - (
6*b^2*c^2*d^2*f^2*g - b^2*d^2*g^3)*x^3 - (2*b^2*c^2*d^2*f^3 - 3*b^2*d^2*f*g
^2)*x^2)*arcsin(c*x)^2 + 2*(a*b*c^4*d^2*g^3*x^7 + 3*a*b*c^4*d^2*f*g^2*x^6 +
 3*a*b*d^2*f^2*g*x + a*b*d^2*f^3 + (3*a*b*c^4*d^2*f^2*g - 2*a*b*c^2*d^2*g^3
)*x^5 + (a*b*c^4*d^2*f^3 - 6*a*b*c^2*d^2*f*g^2)*x^4 - (6*a*b*c^2*d^2*f^2*g
- a*b*d^2*g^3)*x^3 - (2*a*b*c^2*d^2*f^3 - 3*a*b*d^2*f*g^2)*x^2)*arcsin(c*x)
)*sqrt(-c^2*d*x^2 + d), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(-c^2dx^2+d\right)^{\frac{5}{2}}\left(gx+f\right)^3\left(b\arcsin\left(cx\right)+a\right)^2dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="
giac")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(5/2)*(g*x + f)^3*(b*arcsin(c*x) + a)^2, x)
```

3.67 $\int (f+gx)^2 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=1533

result too large to display

```
[Out] (64*b^2*d^2*f*g*Sqrt[d - c^2*d*x^2])/(245*c^2) - (245*b^2*d^2*f^2*x*Sqrt[d
- c^2*d*x^2])/1152 - (359*b^2*d^2*g^2*x*Sqrt[d - c^2*d*x^2])/(36864*c^2) -
(1079*b^2*d^2*g^2*x^3*Sqrt[d - c^2*d*x^2])/55296 + (209*b^2*c^2*d^2*g^2*x^5
*Sqrt[d - c^2*d*x^2])/13824 - (b^2*c^4*d^2*g^2*x^7*Sqrt[d - c^2*d*x^2])/256
 + (32*b^2*d^2*f*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(735*c^2) - (65*b^2*d
^2*f^2*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/1728 + (24*b^2*d^2*f*g*(1 - c^2
*x^2)^2*Sqrt[d - c^2*d*x^2])/(1225*c^2) - (b^2*d^2*f^2*x*(1 - c^2*x^2)^2*Sq
rt[d - c^2*d*x^2])/108 + (4*b^2*d^2*f*g*(1 - c^2*x^2)^3*Sqrt[d - c^2*d*x^2]
)/(343*c^2) + (115*b^2*d^2*f^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(1152*c*Sqr
t[1 - c^2*x^2]) + (359*b^2*d^2*g^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(36864*
c^3*Sqrt[1 - c^2*x^2]) + (4*b*d^2*f*g*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c
*x]))/(7*c*Sqrt[1 - c^2*x^2]) - (5*b*c*d^2*f^2*x^2*Sqrt[d - c^2*d*x^2]*(a +
 b*ArcSin[c*x]))/(16*Sqrt[1 - c^2*x^2]) + (5*b*d^2*g^2*x^2*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x]))/(128*c*Sqrt[1 - c^2*x^2]) - (4*b*c*d^2*f*g*x^3*Sqr
t[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(7*Sqrt[1 - c^2*x^2]) - (59*b*c*d^2*g
^2*x^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(384*Sqrt[1 - c^2*x^2]) + (
12*b*c^3*d^2*f*g*x^5*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(35*Sqrt[1 -
c^2*x^2]) + (17*b*c^3*d^2*g^2*x^6*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/
(144*Sqrt[1 - c^2*x^2]) - (4*b*c^5*d^2*f*g*x^7*Sqrt[d - c^2*d*x^2]*(a + b*A
rcSin[c*x]))/(49*Sqrt[1 - c^2*x^2]) - (b*c^5*d^2*g^2*x^8*Sqrt[d - c^2*d*x^2
]*(a + b*ArcSin[c*x]))/(32*Sqrt[1 - c^2*x^2]) + (5*b*d^2*f^2*(1 - c^2*x^2)^
(3/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(48*c) + (b*d^2*f^2*(1 - c^2
*x^2)^(5/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(18*c) + (5*d^2*f^2*x*
Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/16 - (5*d^2*g^2*x*Sqrt[d - c^2*d
*x^2]*(a + b*ArcSin[c*x])^2)/(128*c^2) + (5*d^2*g^2*x^3*Sqrt[d - c^2*d*x^2]
*(a + b*ArcSin[c*x])^2)/64 + (5*d^2*f^2*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]
*(a + b*ArcSin[c*x])^2)/24 + (5*d^2*g^2*x^3*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^
2]*(a + b*ArcSin[c*x])^2)/48 + (d^2*f^2*x*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^
2]*(a + b*ArcSin[c*x])^2)/6 + (d^2*g^2*x^3*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x])^2)/8 - (2*d^2*f*g*(1 - c^2*x^2)^3*Sqrt[d - c^2*d*x^
2]*(a + b*ArcSin[c*x])^2)/(7*c^2) + (5*d^2*f^2*Sqrt[d - c^2*d*x^2]*(a + b*A
rcSin[c*x])^3)/(48*b*c*Sqrt[1 - c^2*x^2]) + (5*d^2*g^2*Sqrt[d - c^2*d*x^2]*
(a + b*ArcSin[c*x])^3)/(384*b*c^3*Sqrt[1 - c^2*x^2])
```

Rubi [A] time = 2.0527, antiderivative size = 1533, normalized size of antiderivative = 1., number of steps used = 50, number of rules used = 24, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$

= 0.727, Rules used = {4777, 4763, 4649, 4647, 4641, 4627, 321, 216, 4677, 195, 194, 4645, 12, 1799, 1850, 4699, 4697, 4707, 14, 4687, 459, 266, 43, 1267}

$$-\frac{bc^5d^2g^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)x^8}{32\sqrt{1-c^2x^2}}-\frac{4bc^5d^2fg\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)x^7}{49\sqrt{1-c^2x^2}}-\frac{1}{256}b^2c^4d^2g^2\sqrt{d-c^2dx^2}x^7+\frac{17bc}{}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (64*b^2*d^2*f*g*Sqrt[d - c^2*d*x^2])/(245*c^2) - (245*b^2*d^2*f^2*x*Sqrt[d
- c^2*d*x^2])/1152 - (359*b^2*d^2*g^2*x*Sqrt[d - c^2*d*x^2])/(36864*c^2) -
(1079*b^2*d^2*g^2*x^3*Sqrt[d - c^2*d*x^2])/55296 + (209*b^2*c^2*d^2*g^2*x^5
*Sqrt[d - c^2*d*x^2])/13824 - (b^2*c^4*d^2*g^2*x^7*Sqrt[d - c^2*d*x^2])/256
 + (32*b^2*d^2*f*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(735*c^2) - (65*b^2*d
^2*f^2*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/1728 + (24*b^2*d^2*f*g*(1 - c^2
*x^2)^2*Sqrt[d - c^2*d*x^2])/(1225*c^2) - (b^2*d^2*f^2*x*(1 - c^2*x^2)^2*Sq
rt[d - c^2*d*x^2])/108 + (4*b^2*d^2*f*g*(1 - c^2*x^2)^3*Sqrt[d - c^2*d*x^2]
)/(343*c^2) + (115*b^2*d^2*f^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(1152*c*Sqr
t[1 - c^2*x^2]) + (359*b^2*d^2*g^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(36864*
c^3*Sqrt[1 - c^2*x^2]) + (4*b*d^2*f*g*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c
*x]))/(7*c*Sqrt[1 - c^2*x^2]) - (5*b*c*d^2*f^2*x^2*Sqrt[d - c^2*d*x^2]*(a +
 b*ArcSin[c*x]))/(16*Sqrt[1 - c^2*x^2]) + (5*b*d^2*g^2*x^2*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x]))/(128*c*Sqrt[1 - c^2*x^2]) - (4*b*c*d^2*f*g*x^3*Sqr
t[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(7*Sqrt[1 - c^2*x^2]) - (59*b*c*d^2*g
^2*x^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(384*Sqrt[1 - c^2*x^2]) + (
12*b*c^3*d^2*f*g*x^5*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(35*Sqrt[1 -
c^2*x^2]) + (17*b*c^3*d^2*g^2*x^6*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/
(144*Sqrt[1 - c^2*x^2]) - (4*b*c^5*d^2*f*g*x^7*Sqrt[d - c^2*d*x^2]*(a + b*A
rcSin[c*x]))/(49*Sqrt[1 - c^2*x^2]) - (b*c^5*d^2*g^2*x^8*Sqrt[d - c^2*d*x^2
]*(a + b*ArcSin[c*x]))/(32*Sqrt[1 - c^2*x^2]) + (5*b*d^2*f^2*(1 - c^2*x^2)^
(3/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(48*c) + (b*d^2*f^2*(1 - c^2
*x^2)^(5/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(18*c) + (5*d^2*f^2*x*
Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/16 - (5*d^2*g^2*x*Sqrt[d - c^2*d
*x^2]*(a + b*ArcSin[c*x])^2)/(128*c^2) + (5*d^2*g^2*x^3*Sqrt[d - c^2*d*x^2]
*(a + b*ArcSin[c*x])^2)/64 + (5*d^2*f^2*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]
*(a + b*ArcSin[c*x])^2)/24 + (5*d^2*g^2*x^3*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^
2]*(a + b*ArcSin[c*x])^2)/48 + (d^2*f^2*x*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^
2]*(a + b*ArcSin[c*x])^2)/6 + (d^2*g^2*x^3*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x])^2)/8 - (2*d^2*f*g*(1 - c^2*x^2)^3*Sqrt[d - c^2*d*x^
2]*(a + b*ArcSin[c*x])^2)/(7*c^2) + (5*d^2*f^2*Sqrt[d - c^2*d*x^2]*(a + b*A
rcSin[c*x])^3)/(48*b*c*Sqrt[1 - c^2*x^2]) + (5*d^2*g^2*Sqrt[d - c^2*d*x^2]*
(a + b*ArcSin[c*x])^3)/(384*b*c^3*Sqrt[1 - c^2*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
```

```
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 321

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

Rule 216

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

Rule 4677

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

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1799

```
Int[(Pq_)*(x_)^(m_.)*((a_) + (b_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/2, Su
bst[Int[x^((m - 1)/2)*SubstFor[x^2, Pq, x]*(a + b*x)^p, x], x, x^2], x] /;
FreeQ[{a, b, p}, x] && PolyQ[Pq, x^2] && IntegerQ[(m - 1)/2]
```

Rule 1850

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_.), x_Symbol] :> Int[ExpandIntegrand
[Pq*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, n}, x] && PolyQ[Pq, x] && (IGtQ[p
, 0] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
```

```
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rule 459

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

Rule 266

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

Rule 43

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

Rule 1267

```
Int[((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (
c_.)*(x_)^4)^(p_.), x_Symbol] :> Simp[(c^p*(f*x)^(m + 4*p - 1)*(d + e*x^2)^
(q + 1))/(e*f^(4*p - 1)*(m + 4*p + 2*q + 1)), x] + Dist[1/(e*(m + 4*p + 2*q
 + 1)), Int[(f*x)^m*(d + e*x^2)^q*ExpandToSum[e*(m + 4*p + 2*q + 1)*((a + b
*x^2 + c*x^4)^p - c^p*x^(4*p)) - d*c^p*(m + 4*p - 1)*x^(4*p - 2), x], x], x
```

```
] /; FreeQ[{a, b, c, d, e, f, m, q}, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[p, 0
] &&  !IntegerQ[q] && NeQ[m + 4*p + 2*q + 1, 0]
```

Rubi steps

$$\int (f+gx)^2 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx = \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int (f+gx)^2 \left(1-c^2x^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int \left(f^2\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2 + 2fgx\left(1-c^2\right.\right.}{\sqrt{1-}}$$

$$= \frac{\left(d^2f^2\sqrt{d-c^2dx^2}\right)\int \left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2 \, dx}{\sqrt{1-c^2x^2}} + \frac{\left(2d^2fg\sqrt{d}\right.}{}$$

$$= \frac{1}{6}d^2f^2x\left(1-c^2x^2\right)^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2 + \frac{1}{8}d^2g^2x^3\left(1-c^2x\right.$$

$$= \frac{4bd^2fgx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{7c\sqrt{1-c^2x^2}} - \frac{4bcd^2fgx^3\sqrt{d-c^2dx^2}\left(a+b\right.}{7\sqrt{1-c^2x^2}}$$

$$= -\frac{1}{108}b^2d^2f^2x\left(1-c^2x^2\right)^2\sqrt{d-c^2dx^2} + \frac{4bd^2fgx\sqrt{d-c^2dx^2}\left(a+b\,\mathrm{si}\right.}{7c\sqrt{1-c^2x^2}}$$

$$= -\frac{1}{256}b^2c^4d^2g^2x^7\sqrt{d-c^2dx^2} - \frac{65b^2d^2f^2x\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}{1728} - \frac{1}{10}$$

$$= -\frac{245b^2d^2f^2x\sqrt{d-c^2dx^2}}{1152} - \frac{5}{512}b^2d^2g^2x^3\sqrt{d-c^2dx^2} + \frac{209b^2c^2d^2g^2x}{138}$$

$$= \frac{64b^2d^2fg\sqrt{d-c^2dx^2}}{245c^2} - \frac{245b^2d^2f^2x\sqrt{d-c^2dx^2}}{1152} + \frac{5b^2d^2g^2x\sqrt{d-c^2d}}{1024c^2}$$

$$= \frac{64b^2d^2fg\sqrt{d-c^2dx^2}}{245c^2} - \frac{245b^2d^2f^2x\sqrt{d-c^2dx^2}}{1152} - \frac{359b^2d^2g^2x\sqrt{d-c}}{36864c^2}$$

$$= \frac{64b^2d^2fg\sqrt{d-c^2dx^2}}{245c^2} - \frac{245b^2d^2f^2x\sqrt{d-c^2dx^2}}{1152} - \frac{359b^2d^2g^2x\sqrt{d-c}}{36864c^2}$$

Mathematica [A] time = 1.42679, size = 742, normalized size = 0.48

$$\frac{d^2\sqrt{d-c^2dx^2}\left(105b\sin^{-1}(cx)\left(352800a^2\left(8c^2f^2+g^2\right)+6720abc\sqrt{1-c^2x^2}\left(56c^2f^2x\left(8c^4x^4-26c^2x^2+33\right)+768fg\left(c^2x\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (d^2*Sqrt[d - c^2*d*x^2]*(12348000*a^3*(8*c^2*f^2 + g^2) - 3360*a*b^2*c^2*x
*(1960*c^2*f^2*x*(99 - 39*c^2*x^2 + 8*c^4*x^4) + 4608*f*g*(-35 + 35*c^2*x^2
 - 21*c^4*x^4 + 5*c^6*x^6) + 245*g^2*x*(-45 + 177*c^2*x^2 - 136*c^4*x^4 + 3
6*c^6*x^6)) + 352800*a^2*b*c*Sqrt[1 - c^2*x^2]*(768*f*g*(-1 + c^2*x^2)^3 +
56*c^2*f^2*x*(33 - 26*c^2*x^2 + 8*c^4*x^4) + 7*g^2*x*(-15 + 118*c^2*x^2 - 1
36*c^4*x^4 + 48*c^6*x^6)) - b^3*c*Sqrt[1 - c^2*x^2]*(274400*c^2*f^2*x*(897
- 194*c^2*x^2 + 32*c^4*x^4) + 147456*f*g*(-2161 + 757*c^2*x^2 - 351*c^4*x^4
 + 75*c^6*x^6) + 8575*g^2*x*(1077 + 2158*c^2*x^2 - 1672*c^4*x^4 + 432*c^6*x
^6)) + 105*b*(352800*a^2*(8*c^2*f^2 + g^2) + b^2*(87955*g^2 + 1120*c^2*(209
3*f^2 + 4608*f*g*x + 315*g^2*x^2) - 3360*c^4*x^2*(1848*f^2 + 1536*f*g*x + 4
13*g^2*x^2) - 640*c^8*x^6*(784*f^2 + 1152*f*g*x + 441*g^2*x^2) + 1792*c^6*x
^4*(1365*f^2 + 1728*f*g*x + 595*g^2*x^2)) + 6720*a*b*c*Sqrt[1 - c^2*x^2]*(7
68*f*g*(-1 + c^2*x^2)^3 + 56*c^2*f^2*x*(33 - 26*c^2*x^2 + 8*c^4*x^4) + 7*g^
2*x*(-15 + 118*c^2*x^2 - 136*c^4*x^4 + 48*c^6*x^6)))*ArcSin[c*x] + 352800*b
^2*(105*a*(8*c^2*f^2 + g^2) + b*c*Sqrt[1 - c^2*x^2]*(768*f*g*(-1 + c^2*x^2)
^3 + 56*c^2*f^2*x*(33 - 26*c^2*x^2 + 8*c^4*x^4) + 7*g^2*x*(-15 + 118*c^2*x^
2 - 136*c^4*x^4 + 48*c^6*x^6)))*ArcSin[c*x]^2 + 12348000*b^3*(8*c^2*f^2 + g
^2)*ArcSin[c*x]^3))/(948326400*b*c^3*Sqrt[1 - c^2*x^2])
```

Maple [B] time = 0.702, size = 3750, normalized size = 2.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 5/64*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2/c^2/(c^2*x^2-1)*arcsin(c*x)*x*g^2+4/7*a
*b*(-d*(c^2*x^2-1))^(1/2)*f*g*d^2/c^2/(c^2*x^2-1)*arcsin(c*x)-16/7*a*b*(-d*
(c^2*x^2-1))^(1/2)*f*g*d^2/(c^2*x^2-1)*arcsin(c*x)*x^2+2/7*b^2*(-d*(c^2*x^2
-1))^(1/2)*f*g*d^2*c^6/(c^2*x^2-1)*arcsin(c*x)^2*x^8+11/16*b^2*(-d*(c^2*x^2
-1))^(1/2)*d^2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^2*f^2-13/48*b
```

^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x
)*x^4*f^2+1/18*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c^5/(c^2*x^2-1)*(-c^2*x^2+1)^
(1/2)*arcsin(c*x)*x^6*f^2-17/144*b^2*(-d*(c^2*x^2-1))^(1/2)*g^2*d^2*c^3/(c^
2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^6+59/384*b^2*(-d*(c^2*x^2-1))^(1/
2)*g^2*d^2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^4-5/128*b^2*(-d*(
c^2*x^2-1))^(1/2)*g^2*d^2/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^2+
1/32*b^2*(-d*(c^2*x^2-1))^(1/2)*g^2*d^2*c^5/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*
arcsin(c*x)*x^8-8/7*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g*d^2*c^4/(c^2*x^2-1)*arcs
in(c*x)^2*x^6+12/7*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g*d^2*c^2/(c^2*x^2-1)*arcsi
n(c*x)^2*x^4+59/384*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c/(c^2*x^2-1)*(-c^2*x^2+
1)^(1/2)*x^4*g^2+11/16*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c/(c^2*x^2-1)*(-c^2*x
^2+1)^(1/2)*x^2*f^2-5/128*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2/c/(c^2*x^2-1)*(-c^
2*x^2+1)^(1/2)*x^2*g^2+1/32*a*b*(-d*(c^2*x^2-1))^(1/2)*g^2*d^2*c^5/(c^2*x^2
-1)*(-c^2*x^2+1)^(1/2)*x^8-17/144*a*b*(-d*(c^2*x^2-1))^(1/2)*g^2*d^2*c^3/(c
^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^6+1/18*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^5/(c
^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^6*f^2-13/48*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c
^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4*f^2+1/4*a*b*(-d*(c^2*x^2-1))^(1/2)*g^
2*d^2*c^6/(c^2*x^2-1)*arcsin(c*x)*x^9-23/24*a*b*(-d*(c^2*x^2-1))^(1/2)*g^2*
d^2*c^4/(c^2*x^2-1)*arcsin(c*x)*x^7+1/3*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^6/
(c^2*x^2-1)*arcsin(c*x)*x^7*f^2-5/16*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1
)^(1/2)/c/(c^2*x^2-1)*arcsin(c*x)^2*d^2*f^2-5/128*a*b*(-d*(c^2*x^2-1))^(1/2
)*(-c^2*x^2+1)^(1/2)/c^3/(c^2*x^2-1)*arcsin(c*x)^2*d^2*g^2-17/12*a*b*(-d*(c
^2*x^2-1))^(1/2)*d^2*c^4/(c^2*x^2-1)*arcsin(c*x)*x^5*f^2+127/96*a*b*(-d*(c^
2*x^2-1))^(1/2)*d^2*c^2/(c^2*x^2-1)*arcsin(c*x)*x^5*g^2+59/24*a*b*(-d*(c^2*
x^2-1))^(1/2)*d^2*c^2/(c^2*x^2-1)*arcsin(c*x)*x^3*f^2+59/48*b^2*(-d*(c^2*x^
2-1))^(1/2)*d^2*c^2/(c^2*x^2-1)*arcsin(c*x)^2*x^3*f^2-8/7*b^2*(-d*(c^2*x^2-
1))^(1/2)*f*g*d^2/(c^2*x^2-1)*arcsin(c*x)^2*x^2-299/1152*b^2*(-d*(c^2*x^2-1
))^(1/2)*d^2/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*f^2-17/24*b^2*(-d
*(c^2*x^2-1))^(1/2)*d^2*c^4/(c^2*x^2-1)*arcsin(c*x)^2*x^5*f^2+1/6*b^2*(-d*(
c^2*x^2-1))^(1/2)*d^2*c^6/(c^2*x^2-1)*arcsin(c*x)^2*x^7*f^2-359/36864*b^2*(
-d*(c^2*x^2-1))^(1/2)*g^2*d^2/c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x
)-5/48*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcsin(c
*x)^3*d^2*f^2-5/384*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/(c^2*
x^2-1)*arcsin(c*x)^3*d^2*g^2+1/8*b^2*(-d*(c^2*x^2-1))^(1/2)*g^2*d^2*c^6/(c^
2*x^2-1)*arcsin(c*x)^2*x^9-23/48*b^2*(-d*(c^2*x^2-1))^(1/2)*g^2*d^2*c^4/(c^
2*x^2-1)*arcsin(c*x)^2*x^7+127/192*b^2*(-d*(c^2*x^2-1))^(1/2)*g^2*d^2*c^2/(
c^2*x^2-1)*arcsin(c*x)^2*x^5+5/128*b^2*(-d*(c^2*x^2-1))^(1/2)*g^2*d^2/c^2/(
c^2*x^2-1)*arcsin(c*x)^2*x-4/343*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g*d^2*c^6/(c^
2*x^2-1)*x^8+5/192*a^2*g^2/c^2*d*x*(-c^2*d*x^2+d)^(3/2)+5/128*a^2*g^2/c^2*d
^2*x*(-c^2*d*x^2+d)^(1/2)+5/128*a^2*g^2/c^2*d^3/(c^2*d)^(1/2)*arctan((c^2*d
)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-2/7*a^2*f*g*(-c^2*d*x^2+d)^(7/2)/c^2/d-1/8*
a^2*g^2*x*(-c^2*d*x^2+d)^(7/2)/c^2/d+1081/110592*b^2*(-d*(c^2*x^2-1))^(1/2)
*g^2*d^2/(c^2*x^2-1)*x^3+299/1152*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1
)*x*f^2+5/16*a^2*f^2*d^2*x*(-c^2*d*x^2+d)^(1/2)+5/16*a^2*f^2*d^3/(c^2*d)^(1
/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-133/192*a*b*(-d*(c^2*x^2-1

```
))^(1/2)*d^2/(c^2*x^2-1)*arcsin(c*x)*x^3*g^2-11/8*a*b*(-d*(c^2*x^2-1))^(1/2
)*d^2/(c^2*x^2-1)*arcsin(c*x)*x*f^2-299/1152*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2
/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*f^2-359/36864*a*b*(-d*(c^2*x^2-1))^(1/2)*
d^2/c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*g^2+568/8575*b^2*(-d*(c^2*x^2-1))^(1
/2)*f*g*d^2*c^4/(c^2*x^2-1)*x^6-4432/25725*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g*d
^2*c^2/(c^2*x^2-1)*x^4+2/7*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g*d^2/c^2/(c^2*x^2-
1)*arcsin(c*x)^2-133/384*b^2*(-d*(c^2*x^2-1))^(1/2)*g^2*d^2/(c^2*x^2-1)*arc
sin(c*x)^2*x^3+11672/25725*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g*d^2/(c^2*x^2-1)*x
^2-11/16*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)*arcsin(c*x)^2*x*f^2-1/2
56*b^2*(-d*(c^2*x^2-1))^(1/2)*g^2*d^2*c^6/(c^2*x^2-1)*x^9+263/13824*b^2*(-d
*(c^2*x^2-1))^(1/2)*g^2*d^2*c^4/(c^2*x^2-1)*x^7-1915/55296*b^2*(-d*(c^2*x^2
-1))^(1/2)*g^2*d^2*c^2/(c^2*x^2-1)*x^5+359/36864*b^2*(-d*(c^2*x^2-1))^(1/2)
*g^2*d^2/c^2/(c^2*x^2-1)*x-1091/3456*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c^2/(c^
2*x^2-1)*x^3*f^2+113/1728*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c^4/(c^2*x^2-1)*x^
5*f^2-1/108*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c^6/(c^2*x^2-1)*x^7*f^2-8644/257
25*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g*d^2/c^2/(c^2*x^2-1)+1/6*a^2*f^2*x*(-c^2*d
*x^2+d)^(5/2)+4/7*a*b*(-d*(c^2*x^2-1))^(1/2)*f*g*d^2*c^6/(c^2*x^2-1)*arcsin
(c*x)*x^8-16/7*a*b*(-d*(c^2*x^2-1))^(1/2)*f*g*d^2*c^4/(c^2*x^2-1)*arcsin(c*
x)*x^6+24/7*a*b*(-d*(c^2*x^2-1))^(1/2)*f*g*d^2*c^2/(c^2*x^2-1)*arcsin(c*x)*
x^4+4/49*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g*d^2*c^5/(c^2*x^2-1)*(-c^2*x^2+1)^(1
/2)*arcsin(c*x)*x^7-12/35*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g*d^2*c^3/(c^2*x^2-1
)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^5+4/7*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g*d^2
*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^3-4/7*b^2*(-d*(c^2*x^2-1))^
(1/2)*f*g*d^2/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x+4/49*a*b*(-d*(
c^2*x^2-1))^(1/2)*f*g*d^2*c^5/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^7-12/35*a*b*
(-d*(c^2*x^2-1))^(1/2)*f*g*d^2*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^5+4/7*a
*b*(-d*(c^2*x^2-1))^(1/2)*f*g*d^2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^3-4/7*
a*b*(-d*(c^2*x^2-1))^(1/2)*f*g*d^2/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+1/48*
a^2*g^2/c^2*x*(-c^2*d*x^2+d)^(5/2)+5/24*a^2*f^2*d*x*(-c^2*d*x^2+d)^(3/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\Big(\big(a^2c^4d^2g^2x^6 + 2\,a^2c^4d^2fgx^5 - 4\,a^2c^2d^2fgx^3 + 2\,a^2d^2fgx + a^2d^2f^2 + \big(a^2c^4d^2f^2 - 2\,a^2c^2d^2g^2\big)x^4 - \big(2\,a^2c^2d^2f^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="
fricas")
```

```
[Out] integral((a^2*c^4*d^2*g^2*x^6 + 2*a^2*c^4*d^2*f*g*x^5 - 4*a^2*c^2*d^2*f*g*x
^3 + 2*a^2*d^2*f*g*x + a^2*d^2*f^2 + (a^2*c^4*d^2*f^2 - 2*a^2*c^2*d^2*g^2)*
x^4 - (2*a^2*c^2*d^2*f^2 - a^2*d^2*g^2)*x^2 + (b^2*c^4*d^2*g^2*x^6 + 2*b^2*
c^4*d^2*f*g*x^5 - 4*b^2*c^2*d^2*f*g*x^3 + 2*b^2*d^2*f*g*x + b^2*d^2*f^2 + (
b^2*c^4*d^2*f^2 - 2*b^2*c^2*d^2*g^2)*x^4 - (2*b^2*c^2*d^2*f^2 - b^2*d^2*g^2
)*x^2)*arcsin(c*x)^2 + 2*(a*b*c^4*d^2*g^2*x^6 + 2*a*b*c^4*d^2*f*g*x^5 - 4*a
*b*c^2*d^2*f*g*x^3 + 2*a*b*d^2*f*g*x + a*b*d^2*f^2 + (a*b*c^4*d^2*f^2 - 2*a
*b*c^2*d^2*g^2)*x^4 - (2*a*b*c^2*d^2*f^2 - a*b*d^2*g^2)*x^2)*arcsin(c*x))*s
qrt(-c^2*d*x^2 + d), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(-c^2dx^2 + d\right)^{\frac{5}{2}}\left(gx + f\right)^2 (b \arcsin (cx) + a)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="
giac")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(5/2)*(g*x + f)^2*(b*arcsin(c*x) + a)^2, x)
```

3.68 $\int (f+gx)\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=878

$$-\frac{2bc^5d^2g\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)x^7}{49\sqrt{1-c^2x^2}}+\frac{6bc^3d^2g\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)x^5}{35\sqrt{1-c^2x^2}}-\frac{2bcd^2g\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right.}{7\sqrt{1-c^2x^2}}$$

```
[Out] (32*b^2*d^2*g*Sqrt[d - c^2*d*x^2])/(245*c^2) - (245*b^2*d^2*f*x*Sqrt[d - c^
2*d*x^2])/1152 + (16*b^2*d^2*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(735*c^2)
 - (65*b^2*d^2*f*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/1728 + (12*b^2*d^2*g*
(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2])/(1225*c^2) - (b^2*d^2*f*x*(1 - c^2*x^2
)^2*Sqrt[d - c^2*d*x^2])/108 + (2*b^2*d^2*g*(1 - c^2*x^2)^3*Sqrt[d - c^2*d*
x^2])/(343*c^2) + (115*b^2*d^2*f*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(1152*c*S
qrt[1 - c^2*x^2]) + (2*b*d^2*g*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(
7*c*Sqrt[1 - c^2*x^2]) - (5*b*c*d^2*f*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin
[c*x]))/(16*Sqrt[1 - c^2*x^2]) - (2*b*c*d^2*g*x^3*Sqrt[d - c^2*d*x^2]*(a +
b*ArcSin[c*x]))/(7*Sqrt[1 - c^2*x^2]) + (6*b*c^3*d^2*g*x^5*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x]))/(35*Sqrt[1 - c^2*x^2]) - (2*b*c^5*d^2*g*x^7*Sqrt[d
 - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(49*Sqrt[1 - c^2*x^2]) + (5*b*d^2*f*(1 -
 c^2*x^2)^(3/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(48*c) + (b*d^2*f*
(1 - c^2*x^2)^(5/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(18*c) + (5*d^
2*f*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/16 + (5*d^2*f*x*(1 - c^2*x
^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/24 + (d^2*f*x*(1 - c^2*x^2)^
2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/6 - (d^2*g*(1 - c^2*x^2)^3*Sqr
t[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(7*c^2) + (5*d^2*f*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x])^3)/(48*b*c*Sqrt[1 - c^2*x^2])
```

Rubi [A] time = 0.941268, antiderivative size = 878, normalized size of antiderivative = 1., number of steps used = 25, number of rules used = 15, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.484, Rules used = {4777, 4763, 4649, 4647, 4641, 4627, 321, 216, 4677, 195, 194, 4645, 12, 1799, 1850}

$$-\frac{2bc^5d^2g\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)x^7}{49\sqrt{1-c^2x^2}}+\frac{6bc^3d^2g\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)x^5}{35\sqrt{1-c^2x^2}}-\frac{2bcd^2g\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right.}{7\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (32*b^2*d^2*g*Sqrt[d - c^2*d*x^2])/(245*c^2) - (245*b^2*d^2*f*x*Sqrt[d - c^
2*d*x^2])/1152 + (16*b^2*d^2*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(735*c^2)
```

```
 - (65*b^2*d^2*f*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/1728 + (12*b^2*d^2*g*
(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2])/(1225*c^2) - (b^2*d^2*f*x*(1 - c^2*x^2
)^2*Sqrt[d - c^2*d*x^2])/108 + (2*b^2*d^2*g*(1 - c^2*x^2)^3*Sqrt[d - c^2*d*
x^2])/(343*c^2) + (115*b^2*d^2*f*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(1152*c*S
qrt[1 - c^2*x^2]) + (2*b*d^2*g*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(
7*c*Sqrt[1 - c^2*x^2]) - (5*b*c*d^2*f*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin
[c*x]))/(16*Sqrt[1 - c^2*x^2]) - (2*b*c*d^2*g*x^3*Sqrt[d - c^2*d*x^2]*(a +
b*ArcSin[c*x]))/(7*Sqrt[1 - c^2*x^2]) + (6*b*c^3*d^2*g*x^5*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x]))/(35*Sqrt[1 - c^2*x^2]) - (2*b*c^5*d^2*g*x^7*Sqrt[d
 - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(49*Sqrt[1 - c^2*x^2]) + (5*b*d^2*f*(1 -
 c^2*x^2)^(3/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(48*c) + (b*d^2*f*
(1 - c^2*x^2)^(5/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(18*c) + (5*d^
2*f*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/16 + (5*d^2*f*x*(1 - c^2*x
^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/24 + (d^2*f*x*(1 - c^2*x^2)^
2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/6 - (d^2*g*(1 - c^2*x^2)^3*Sqr
t[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(7*c^2) + (5*d^2*f*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x])^3)/(48*b*c*Sqrt[1 - c^2*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 321

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

Rule 216

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

Rule 4677

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

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1799

```
Int[(Pq_)*(x_)^(m_.)*((a_) + (b_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/2, Su
bst[Int[x^((m - 1)/2)*SubstFor[x^2, Pq, x]*(a + b*x)^p, x], x, x^2], x] /;
FreeQ[{a, b, p}, x] && PolyQ[Pq, x^2] && IntegerQ[(m - 1)/2]
```

Rule 1850

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_.), x_Symbol] :> Int[ExpandIntegrand
[Pq*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, n}, x] && PolyQ[Pq, x] && (IGtQ[p
, 0] || EqQ[n, 1])
```

Rubi steps

$$\int (f+gx)\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx = \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int (f+gx)\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int \left(f\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2+gx\left(1-c^2x^2\right)^{5/2}\left(\right.\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d^2f\sqrt{d-c^2dx^2}\right)\int \left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}} + \frac{\left(d^2g\sqrt{d-c^2d\right.}{}$$

$$= \frac{1}{6}d^2fx\left(1-c^2x^2\right)^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2 - \frac{d^2g\left(1-c^2x^2\right)^3\sqrt{d-}}{}$$

$$= \frac{2bd^2gx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{7c\sqrt{1-c^2x^2}} - \frac{2bcd^2gx^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}\right.}{7\sqrt{1-c^2x^2}}$$

$$= -\frac{1}{108}b^2d^2fx\left(1-c^2x^2\right)^2\sqrt{d-c^2dx^2} + \frac{2bd^2gx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(c\right.}{7c\sqrt{1-c^2x^2}}$$

$$= -\frac{65b^2d^2fx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}{1728} - \frac{1}{108}b^2d^2fx\left(1-c^2x^2\right)^2\sqrt{d-c^2dx^2}$$

$$= -\frac{245b^2d^2fx\sqrt{d-c^2dx^2}}{1152} - \frac{65b^2d^2fx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}{1728} - \frac{1}{108}b^2d^2f$$

$$= \frac{32b^2d^2g\sqrt{d-c^2dx^2}}{245c^2} - \frac{245b^2d^2fx\sqrt{d-c^2dx^2}}{1152} + \frac{16b^2d^2g\left(1-c^2x^2\right)\sqrt{d-}}{735c^2}$$

Mathematica [A] time = 0.932277, size = 470, normalized size = 0.54

$$\frac{d^2\sqrt{d-c^2dx^2}\left(105b\sin^{-1}(cx)\left(88200a^2cf+1680ab\sqrt{1-c^2x^2}\left(7c^2fx\left(8c^4x^4-26c^2x^2+33\right)+48g\left(c^2x^2-1\right)^3\right)+b^2c\left(-2\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (d^2*Sqrt[d - c^2*d*x^2]*(3087000*a^3*c*f + 88200*a^2*b*Sqrt[1 - c^2*x^2]*(
48*g*(-1 + c^2*x^2)^3 + 7*c^2*f*x*(33 - 26*c^2*x^2 + 8*c^4*x^4)) - 840*a*b^
2*c*x*(245*c^2*f*x*(99 - 39*c^2*x^2 + 8*c^4*x^4) + 288*g*(-35 + 35*c^2*x^2
```

```
- 21*c^4*x^4 + 5*c^6*x^6)) + b^3*Sqrt[1 - c^2*x^2]*(-8575*c^2*f*x*(897 - 19
4*c^2*x^2 + 32*c^4*x^4) - 2304*g*(-2161 + 757*c^2*x^2 - 351*c^4*x^4 + 75*c^
6*x^6)) + 105*b*(88200*a^2*c*f + 1680*a*b*Sqrt[1 - c^2*x^2]*(48*g*(-1 + c^2
*x^2)^3 + 7*c^2*f*x*(33 - 26*c^2*x^2 + 8*c^4*x^4)) + b^2*c*(-2304*g*x*(-35
+ 35*c^2*x^2 - 21*c^4*x^4 + 5*c^6*x^6) - 245*f*(-299 + 792*c^2*x^2 - 312*c^
4*x^4 + 64*c^6*x^6)))*ArcSin[c*x] + 88200*b^2*(105*a*c*f + b*Sqrt[1 - c^2*x
^2]*(48*g*(-1 + c^2*x^2)^3 + 7*c^2*f*x*(33 - 26*c^2*x^2 + 8*c^4*x^4)))*ArcS
in[c*x]^2 + 3087000*b^3*c*f*ArcSin[c*x]^3))/(29635200*b*c^2*Sqrt[1 - c^2*x^
2])
```

Maple [B] time = 0.528, size = 2205, normalized size = 2.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 5/16*a^2*f*d^2*x*(-c^2*d*x^2+d)^(1/2)-1/7*a^2*g*(-c^2*d*x^2+d)^(7/2)/c^2/d-
5/16*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcsin(c*x
)^2*f*d^2+2/7*a*b*(-d*(c^2*x^2-1))^(1/2)*g*d^2*c^6/(c^2*x^2-1)*arcsin(c*x)*
x^8-8/7*a*b*(-d*(c^2*x^2-1))^(1/2)*g*d^2*c^4/(c^2*x^2-1)*arcsin(c*x)*x^6+12
/7*a*b*(-d*(c^2*x^2-1))^(1/2)*g*d^2*c^2/(c^2*x^2-1)*arcsin(c*x)*x^4+1/3*a*b
*(-d*(c^2*x^2-1))^(1/2)*f*d^2*c^6/(c^2*x^2-1)*arcsin(c*x)*x^7-17/12*a*b*(-d
*(c^2*x^2-1))^(1/2)*f*d^2*c^4/(c^2*x^2-1)*arcsin(c*x)*x^5+5/16*a^2*f*d^3/(c
^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+5/24*a^2*f*d*x*(-c
^2*d*x^2+d)^(3/2)+299/1152*b^2*(-d*(c^2*x^2-1))^(1/2)*f*d^2/(c^2*x^2-1)*x-4
322/25725*b^2*(-d*(c^2*x^2-1))^(1/2)*g*d^2/c^2/(c^2*x^2-1)+5836/25725*b^2*(
-d*(c^2*x^2-1))^(1/2)*g*d^2/(c^2*x^2-1)*x^2+59/24*a*b*(-d*(c^2*x^2-1))^(1/2
)*f*d^2*c^2/(c^2*x^2-1)*arcsin(c*x)*x^3-13/48*b^2*(-d*(c^2*x^2-1))^(1/2)*f*
d^2*c^3/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^4+2/49*b^2*(-d*(c^2*x^
2-1))^(1/2)*g*d^2*c^5/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^7+11/16*
b^2*(-d*(c^2*x^2-1))^(1/2)*f*d^2*c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/
2)*x^2-6/35*b^2*(-d*(c^2*x^2-1))^(1/2)*g*d^2*c^3/(c^2*x^2-1)*arcsin(c*x)*(-
c^2*x^2+1)^(1/2)*x^5+2/7*b^2*(-d*(c^2*x^2-1))^(1/2)*g*d^2*c/(c^2*x^2-1)*arc
sin(c*x)*(-c^2*x^2+1)^(1/2)*x^3-2/7*b^2*(-d*(c^2*x^2-1))^(1/2)*g*d^2/c/(c^2
*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x+1/18*b^2*(-d*(c^2*x^2-1))^(1/2)*f*
d^2*c^5/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^6+2/49*a*b*(-d*(c^2*x^
2-1))^(1/2)*g*d^2*c^5/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^7-6/35*a*b*(-d*(c^2*
x^2-1))^(1/2)*g*d^2*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^5+2/7*a*b*(-d*(c^2
*x^2-1))^(1/2)*g*d^2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^3-2/7*a*b*(-d*(c^2*
x^2-1))^(1/2)*g*d^2/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+1/18*a*b*(-d*(c^2*x^
```

```
2-1))^(1/2)*f*d^2*c^5/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^6-13/48*a*b*(-d*(c^2
*x^2-1))^(1/2)*f*d^2*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4+11/16*a*b*(-d*(
c^2*x^2-1))^(1/2)*f*d^2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2-17/24*b^2*(-d*
(c^2*x^2-1))^(1/2)*f*d^2*c^4/(c^2*x^2-1)*arcsin(c*x)^2*x^5+59/48*b^2*(-d*(c
^2*x^2-1))^(1/2)*f*d^2*c^2/(c^2*x^2-1)*arcsin(c*x)^2*x^3-5/48*b^2*(-d*(c^2*
x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcsin(c*x)^3*f*d^2+1/7*b^2*
(-d*(c^2*x^2-1))^(1/2)*g*d^2*c^6/(c^2*x^2-1)*arcsin(c*x)^2*x^8-4/7*b^2*(-d*
(c^2*x^2-1))^(1/2)*g*d^2*c^4/(c^2*x^2-1)*arcsin(c*x)^2*x^6+6/7*b^2*(-d*(c^2
*x^2-1))^(1/2)*g*d^2*c^2/(c^2*x^2-1)*arcsin(c*x)^2*x^4+1/6*b^2*(-d*(c^2*x^2
-1))^(1/2)*f*d^2*c^6/(c^2*x^2-1)*arcsin(c*x)^2*x^7-299/1152*b^2*(-d*(c^2*x^
2-1))^(1/2)*f*d^2/c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+2/7*a*b*(-d*
(c^2*x^2-1))^(1/2)*g*d^2/c^2/(c^2*x^2-1)*arcsin(c*x)-299/1152*a*b*(-d*(c^2*
x^2-1))^(1/2)*f*d^2/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)-8/7*a*b*(-d*(c^2*x^2-1
))^(1/2)*g*d^2/(c^2*x^2-1)*arcsin(c*x)*x^2-11/8*a*b*(-d*(c^2*x^2-1))^(1/2)*
f*d^2/(c^2*x^2-1)*arcsin(c*x)*x-4/7*b^2*(-d*(c^2*x^2-1))^(1/2)*g*d^2/(c^2*x
^2-1)*arcsin(c*x)^2*x^2-11/16*b^2*(-d*(c^2*x^2-1))^(1/2)*f*d^2/(c^2*x^2-1)*
arcsin(c*x)^2*x-2/343*b^2*(-d*(c^2*x^2-1))^(1/2)*g*d^2*c^6/(c^2*x^2-1)*x^8+
284/8575*b^2*(-d*(c^2*x^2-1))^(1/2)*g*d^2*c^4/(c^2*x^2-1)*x^6-2216/25725*b^
2*(-d*(c^2*x^2-1))^(1/2)*g*d^2*c^2/(c^2*x^2-1)*x^4+1/7*b^2*(-d*(c^2*x^2-1))
^(1/2)*g*d^2/c^2/(c^2*x^2-1)*arcsin(c*x)^2-1/108*b^2*(-d*(c^2*x^2-1))^(1/2)
*f*d^2*c^6/(c^2*x^2-1)*x^7+113/1728*b^2*(-d*(c^2*x^2-1))^(1/2)*f*d^2*c^4/(c
^2*x^2-1)*x^5+1/6*a^2*f*x*(-c^2*d*x^2+d)^(5/2)-1091/3456*b^2*(-d*(c^2*x^2-1
))^(1/2)*f*d^2*c^2/(c^2*x^2-1)*x^3
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\Big(\big(a^2c^4d^2gx^5 + a^2c^4d^2fx^4 - 2\,a^2c^2d^2gx^3 - 2\,a^2c^2d^2fx^2 + a^2d^2gx + a^2d^2f + \big(b^2c^4d^2gx^5 + b^2c^4d^2fx^4 - 2\,b^2c^2d^2gx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="fr
icas")
```

```
[Out] integral((a^2*c^4*d^2*g*x^5 + a^2*c^4*d^2*f*x^4 - 2*a^2*c^2*d^2*g*x^3 - 2*a
^2*c^2*d^2*f*x^2 + a^2*d^2*g*x + a^2*d^2*f + (b^2*c^4*d^2*g*x^5 + b^2*c^4*d
^2*f*x^4 - 2*b^2*c^2*d^2*g*x^3 - 2*b^2*c^2*d^2*f*x^2 + b^2*d^2*g*x + b^2*d^
2*f)*arcsin(c*x)^2 + 2*(a*b*c^4*d^2*g*x^5 + a*b*c^4*d^2*f*x^4 - 2*a*b*c^2*d
^2*g*x^3 - 2*a*b*c^2*d^2*f*x^2 + a*b*d^2*g*x + a*b*d^2*f)*arcsin(c*x))*sqrt
(-c^2*d*x^2 + d), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(-c^2dx^2+d\right)^{\frac{5}{2}}\left(gx+f\right)(b\arcsin\left(cx\right)+a)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="gi
ac")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(5/2)*(g*x + f)*(b*arcsin(c*x) + a)^2, x)
```

3.69 $\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{f+gx}\,dx$

Optimal. Leaf size=2989

result too large to display

```
[Out] (52*b^2*d^2*Sqrt[d - c^2*d*x^2])/(225*g) + (4*b^2*d^2*(c^2*f^2 - 2*g^2)*Sqr
t[d - c^2*d*x^2])/(9*g^3) + (a^2*d^2*(c^2*f^2 - g^2)^2*Sqrt[d - c^2*d*x^2])
/g^5 - (2*b^2*d^2*(c^2*f^2 - g^2)^2*Sqrt[d - c^2*d*x^2])/g^5 - (b^2*c^2*d^2
*f*x*Sqrt[d - c^2*d*x^2])/(64*g^2) + (b^2*c^2*d^2*f*(c^2*f^2 - 2*g^2)*x*Sqr
t[d - c^2*d*x^2])/(4*g^4) + (b^2*c^4*d^2*f*x^3*Sqrt[d - c^2*d*x^2])/(32*g^2
) + (4*a*b*c*d^2*x*Sqrt[d - c^2*d*x^2])/(15*g*Sqrt[1 - c^2*x^2]) - (2*a*b*c
*d^2*(c^2*f^2 - g^2)^2*x*Sqrt[d - c^2*d*x^2])/(g^5*Sqrt[1 - c^2*x^2]) + (26
*b^2*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(675*g) + (2*b^2*d^2*(c^2*f^2 -
 2*g^2)*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(27*g^3) - (2*b^2*d^2*(1 - c^2*x
^2)^2*Sqrt[d - c^2*d*x^2])/(125*g) + (2*a*b*d^2*(c^2*f^2 - g^2)^2*Sqrt[d -
c^2*d*x^2]*ArcSin[c*x])/g^5 + (b^2*c*d^2*f*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])
/(64*g^2*Sqrt[1 - c^2*x^2]) - (b^2*c*d^2*f*(c^2*f^2 - 2*g^2)*Sqrt[d - c^2*d
*x^2]*ArcSin[c*x])/(4*g^4*Sqrt[1 - c^2*x^2]) + (4*b^2*c*d^2*x*Sqrt[d - c^2*
d*x^2]*ArcSin[c*x])/(15*g*Sqrt[1 - c^2*x^2]) - (2*b^2*c*d^2*(c^2*f^2 - g^2)
^2*x*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(g^5*Sqrt[1 - c^2*x^2]) + (b^2*d^2*(c
^2*f^2 - g^2)^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2)/g^5 + (2*b*c*d^2*(c^2*f^
2 - 2*g^2)*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*g^3*Sqrt[1 - c^2*x
^2]) - (b*c^3*d^2*f*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*g^2*Sqr
t[1 - c^2*x^2]) + (b*c^3*d^2*f*(c^2*f^2 - 2*g^2)*x^2*Sqrt[d - c^2*d*x^2]*(a
 + b*ArcSin[c*x]))/(2*g^4*Sqrt[1 - c^2*x^2]) + (2*b*c^3*d^2*x^3*Sqrt[d - c^
2*d*x^2]*(a + b*ArcSin[c*x]))/(45*g*Sqrt[1 - c^2*x^2]) - (2*b*c^3*d^2*(c^2*
f^2 - 2*g^2)*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(9*g^3*Sqrt[1 - c
^2*x^2]) + (b*c^5*d^2*f*x^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*g^2
*Sqrt[1 - c^2*x^2]) - (2*b*c^5*d^2*x^5*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*
x]))/(25*g*Sqrt[1 - c^2*x^2]) - (2*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*
x])^2)/(15*g) + (c^2*d^2*f*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(8*
g^2) - (c^2*d^2*f*(c^2*f^2 - 2*g^2)*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x
])^2)/(2*g^4) - (c^2*d^2*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(15
*g) - (c^4*d^2*f*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(4*g^2) + (
c^4*d^2*x^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(5*g) - (d^2*(c^2*f^
2 - 2*g^2)*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(3*g^3)
 - (c*d^2*f*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(24*b*g^2*Sqrt[1 - c
^2*x^2]) - (c*d^2*f*(c^2*f^2 - 2*g^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x
])^3)/(6*b*g^4*Sqrt[1 - c^2*x^2]) + (c*d^2*(c^2*f^2 - g^2)^2*x*Sqrt[d - c^2
*d*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*g^5*Sqrt[1 - c^2*x^2]) + (d^2*(c^2*f^2
- g^2)^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c*g^6*(f + g*x)*Sq
rt[1 - c^2*x^2]) + (d^2*(c^2*f^2 - g^2)^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*
```

```
x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c*g^4*(f + g*x)) - (a^2*d^2*(c^2*f^2 - g^2
)^(5/2)*Sqrt[d - c^2*d*x^2]*ArcTan[(g + c^2*f*x)/(Sqrt[c^2*f^2 - g^2]*Sqrt[
1 - c^2*x^2])])/(g^6*Sqrt[1 - c^2*x^2]) + ((2*I)*a*b*d^2*(c^2*f^2 - g^2)^(5
/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f -
Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) + (I*b^2*d^2*(c^2*f^2 - g^2)
^(5/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c
*f - Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) - ((2*I)*a*b*d^2*(c^2*f
^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x]
)*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) - (I*b^2*d^2*(c^
2*f^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcSin
[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) + (2*a*b*d^
2*(c^2*f^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])
*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) + (2*b^2*d^2*(c^2
*f^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin
[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) - (2*a*b*d^
2*(c^2*f^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])
*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) - (2*b^2*d^2*(c^2
*f^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin
[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) + ((2*I)*b^
2*d^2*(c^2*f^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*PolyLog[3, (I*E^(I*ArcSin[c
*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) - ((2*I)*b^2*
d^2*(c^2*f^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*PolyLog[3, (I*E^(I*ArcSin[c*x
])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2])
```

Rubi [A] time = 4.94077, antiderivative size = 2989, normalized size of antiderivative = 1., number of steps used = 74, number of rules used = 35, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1.061, Rules used = {4777, 4767, 4647, 4641, 4627, 321, 216, 4677, 4645, 444, 43, 4697, 4707, 4619, 261, 266, 4765, 683, 4757, 4799, 1654, 12, 725, 204, 4797, 8, 4773, 3323, 2264, 2190, 2279, 2391, 2531, 2282, 6589}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2)/(f + g*x),x]
```

```
[Out] (52*b^2*d^2*Sqrt[d - c^2*d*x^2])/(225*g) + (4*b^2*d^2*(c^2*f^2 - 2*g^2)*Sqr
t[d - c^2*d*x^2])/(9*g^3) + (a^2*d^2*(c^2*f^2 - g^2)^2*Sqrt[d - c^2*d*x^2])
/g^5 - (2*b^2*d^2*(c^2*f^2 - g^2)^2*Sqrt[d - c^2*d*x^2])/g^5 - (b^2*c^2*d^2
*f*x*Sqrt[d - c^2*d*x^2])/(64*g^2) + (b^2*c^2*d^2*f*(c^2*f^2 - 2*g^2)*x*Sqr
t[d - c^2*d*x^2])/(4*g^4) + (b^2*c^4*d^2*f*x^3*Sqrt[d - c^2*d*x^2])/(32*g^2
) + (4*a*b*c*d^2*x*Sqrt[d - c^2*d*x^2])/(15*g*Sqrt[1 - c^2*x^2]) - (2*a*b*c
```

d^2(c^2*f^2 - g^2)^2*x*Sqrt[d - c^2*d*x^2])/(g^5*Sqrt[1 - c^2*x^2]) + (26
*b^2*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(675*g) + (2*b^2*d^2*(c^2*f^2 -
 2*g^2)*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(27*g^3) - (2*b^2*d^2*(1 - c^2*x
^2)^2*Sqrt[d - c^2*d*x^2])/(125*g) + (2*a*b*d^2*(c^2*f^2 - g^2)^2*Sqrt[d -
c^2*d*x^2]*ArcSin[c*x])/g^5 + (b^2*c*d^2*f*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])
/(64*g^2*Sqrt[1 - c^2*x^2]) - (b^2*c*d^2*f*(c^2*f^2 - 2*g^2)*Sqrt[d - c^2*d
*x^2]*ArcSin[c*x])/(4*g^4*Sqrt[1 - c^2*x^2]) + (4*b^2*c*d^2*x*Sqrt[d - c^2*
d*x^2]*ArcSin[c*x])/(15*g*Sqrt[1 - c^2*x^2]) - (2*b^2*c*d^2*(c^2*f^2 - g^2)
^2*x*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(g^5*Sqrt[1 - c^2*x^2]) + (b^2*d^2*(c
^2*f^2 - g^2)^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2)/g^5 + (2*b*c*d^2*(c^2*f^
2 - 2*g^2)*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*g^3*Sqrt[1 - c^2*x
^2]) - (b*c^3*d^2*f*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*g^2*Sqr
t[1 - c^2*x^2]) + (b*c^3*d^2*f*(c^2*f^2 - 2*g^2)*x^2*Sqrt[d - c^2*d*x^2]*(a
 + b*ArcSin[c*x]))/(2*g^4*Sqrt[1 - c^2*x^2]) + (2*b*c^3*d^2*x^3*Sqrt[d - c^
2*d*x^2]*(a + b*ArcSin[c*x]))/(45*g*Sqrt[1 - c^2*x^2]) - (2*b*c^3*d^2*(c^2*
f^2 - 2*g^2)*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(9*g^3*Sqrt[1 - c
^2*x^2]) + (b*c^5*d^2*f*x^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*g^2
*Sqrt[1 - c^2*x^2]) - (2*b*c^5*d^2*x^5*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*
x]))/(25*g*Sqrt[1 - c^2*x^2]) - (2*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*
x])^2)/(15*g) + (c^2*d^2*f*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(8*
g^2) - (c^2*d^2*f*(c^2*f^2 - 2*g^2)*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x
])^2)/(2*g^4) - (c^2*d^2*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(15
*g) - (c^4*d^2*f*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(4*g^2) + (
c^4*d^2*x^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(5*g) - (d^2*(c^2*f^
2 - 2*g^2)*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(3*g^3)
 - (c*d^2*f*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(24*b*g^2*Sqrt[1 - c
^2*x^2]) - (c*d^2*f*(c^2*f^2 - 2*g^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x
])^3)/(6*b*g^4*Sqrt[1 - c^2*x^2]) + (c*d^2*(c^2*f^2 - g^2)^2*x*Sqrt[d - c^2
*d*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*g^5*Sqrt[1 - c^2*x^2]) + (d^2*(c^2*f^2
- g^2)^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c*g^6*(f + g*x)*Sq
rt[1 - c^2*x^2]) + (d^2*(c^2*f^2 - g^2)^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*
x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c*g^4*(f + g*x)) - (a^2*d^2*(c^2*f^2 - g^2
)^(5/2)*Sqrt[d - c^2*d*x^2]*ArcTan[(g + c^2*f*x)/(Sqrt[c^2*f^2 - g^2]*Sqrt[
1 - c^2*x^2])])/(g^6*Sqrt[1 - c^2*x^2]) + ((2*I)*a*b*d^2*(c^2*f^2 - g^2)^(5
/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f -
Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) + (I*b^2*d^2*(c^2*f^2 - g^2)
^(5/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c
*f - Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) - ((2*I)*a*b*d^2*(c^2*f
^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x]
)*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) - (I*b^2*d^2*(c^
2*f^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcSin
[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) + (2*a*b*d^
2*(c^2*f^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])
*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) + (2*b^2*d^2*(c^2
*f^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin

```
[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) - (2*a*b*d^
2*(c^2*f^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])
*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) - (2*b^2*d^2*(c^2
*f^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin
[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) + ((2*I)*b^
2*d^2*(c^2*f^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*PolyLog[3, (I*E^(I*ArcSin[c
*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) - ((2*I)*b^2*
d^2*(c^2*f^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*PolyLog[3, (I*E^(I*ArcSin[c*x
])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[Sqrt[d + e*x^2]*(a
 + b*ArcSin[c*x])^n, (f + g*x)^m*(d + e*x^2)^(p - 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && IGtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
```

```
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 321

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

Rule 216

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

Rule 4677

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

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 444

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 43

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

```
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

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

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 261

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

Rule 266

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

Rule 4765

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_)*Sqrt[
(d_) + (e_.)*(x_)^2], x_Symbol] :> Simp[((f + g*x)^m*(d + e*x^2)*(a + b*Arc
Sin[c*x])^(n + 1))/(b*c*Sqrt[d]*(n + 1)), x] - Dist[1/(b*c*Sqrt[d]*(n + 1))
```

```
, Int[(d*g*m + 2*e*f*x + e*g*(m + 2)*x^2)*(f + g*x)^(m - 1)*(a + b*ArcSin[c
*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0
] && ILtQ[m, 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 683

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[2*c*d - b*e, 0] &
& IGtQ[p, 0] &&  !(EqQ[m, 3] && NeQ[p, 1])
```

Rule 4757

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.) + (g_.)*(x_) + (h_.)*(x
_)^2)^(p_.))/((d_) + (e_.)*(x_))^2, x_Symbol] :> With[{u = IntHide[(f + g*x
 + h*x^2)^p/(d + e*x)^2, x]}, Dist[(a + b*ArcSin[c*x])^n, u, x] - Dist[b*c*
n, Int[SimplifyIntegrand[(u*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2],
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, h}, x] && IGtQ[n, 0] && IGtQ[p,
 0] && EqQ[e*g - 2*d*h, 0]
```

Rule 4799

```
Int[(ArcSin[(c_.)*(x_)]*(b_.) + (a_))^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p
_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p, RFx*(a + b*ArcSin[c*x])
^n, x], x] /; FreeQ[{a, b, c, d, e}, x] && RationalFunctionQ[RFx, x] && IGt
Q[n, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 1654

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :
> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[(f*(d + e*x
)^(m + q - 1)*(a + c*x^2)^(p + 1))/(c*e^(q - 1)*(m + q + 2*p + 1)), x] + Di
st[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + c*x^2)^p*ExpandToSum[c
*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1)*(d + e*x)^q - f*(d + e*x)
^(q - 2)*(a*e^2*(m + q - 1) - c*d^2*(m + q + 2*p + 1) - 2*c*d*e*(m + q + p)
*x), x], x], x] /; GtQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, c, d,
 e, m, p}, x] && PolyQ[Pq, x] && NeQ[c*d^2 + a*e^2, 0] &&  !(EqQ[d, 0] && T
rue) &&  !(IGtQ[m, 0] && RationalQ[a, c, d, e] && (IntegerQ[p] || ILtQ[p +
1/2, 0]))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

Rule 4797

```
Int[ArcSin[(c_.)*(x_)]^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p_), x_Symbol] :
> With[{u = ExpandIntegrand[(d + e*x^2)^p*ArcSin[c*x]^n, RFx, x]}, Int[u, x
] /; SumQ[u]] /; FreeQ[{c, d, e}, x] && RationalFunctionQ[RFx, x] && IGtQ[n
, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 8

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

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
```

```
2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{f+gx}\,dx = \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int \frac{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{f+gx}\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int\left(-\frac{c^2f\left(c^2f^2-2g^2\right)\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{g^4}+\frac{c^2\left(c^2f^2-2g^2\right)x\sqrt{1-c^2x^2}\left(a+b\sin\right.}{g^3}\right.}{}$$

$$= -\frac{\left(c^4d^2f\sqrt{d-c^2dx^2}\right)\int x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{g^2\sqrt{1-c^2x^2}}+\frac{\left(c^4d^2\sqrt{d-c^2dx^2}\right)}{}$$

$$= -\frac{c^2d^2f\left(c^2f^2-2g^2\right)x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2g^4}-\frac{c^4d^2fx^3\sqrt{d-c^2dx^2}\left(a\right.}{4g^2}$$

$$= \frac{2bcd^2\left(c^2f^2-2g^2\right)x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3g^3\sqrt{1-c^2x^2}}+\frac{bc^3d^2f\left(c^2f^2-2g^2\right)x^2\sqrt{d}}{2g^4\sqrt{1}}$$

$$= \frac{b^2c^2d^2f\left(c^2f^2-2g^2\right)x\sqrt{d-c^2dx^2}}{4g^4}+\frac{b^2c^4d^2fx^3\sqrt{d-c^2dx^2}}{32g^2}+\frac{2bcd^2\left(c^2f^2-2g\right.}{}$$

$$= -\frac{b^2c^2d^2fx\sqrt{d-c^2dx^2}}{64g^2}+\frac{b^2c^2d^2f\left(c^2f^2-2g^2\right)x\sqrt{d-c^2dx^2}}{4g^4}+\frac{b^2c^4d^2fx^3\sqrt{d-}}{32g^2}$$

$$= -\frac{2b^2d^2\sqrt{d-c^2dx^2}}{25g}+\frac{4b^2d^2\left(c^2f^2-2g^2\right)\sqrt{d-c^2dx^2}}{9g^3}+\frac{a^2d^2\left(c^2f^2-g^2\right)^2\sqrt{d-}}{g^5}$$

$$= \frac{52b^2d^2\sqrt{d-c^2dx^2}}{225g}+\frac{4b^2d^2\left(c^2f^2-2g^2\right)\sqrt{d-c^2dx^2}}{9g^3}+\frac{a^2d^2\left(c^2f^2-g^2\right)^2\sqrt{d-}}{g^5}$$

$$= \frac{52b^2d^2\sqrt{d-c^2dx^2}}{225g}+\frac{4b^2d^2\left(c^2f^2-2g^2\right)\sqrt{d-c^2dx^2}}{9g^3}+\frac{a^2d^2\left(c^2f^2-g^2\right)^2\sqrt{d-}}{g^5}$$

$$= \frac{52b^2d^2\sqrt{d-c^2dx^2}}{225g}+\frac{4b^2d^2\left(c^2f^2-2g^2\right)\sqrt{d-c^2dx^2}}{9g^3}+\frac{a^2d^2\left(c^2f^2-g^2\right)^2\sqrt{d-}}{g^5}$$

$$= \frac{52b^2d^2\sqrt{d-c^2dx^2}}{225g}+\frac{4b^2d^2\left(c^2f^2-2g^2\right)\sqrt{d-c^2dx^2}}{9g^3}+\frac{a^2d^2\left(c^2f^2-g^2\right)^2\sqrt{d-}}{g^5}$$

$$= \frac{52b^2d^2\sqrt{d-c^2dx^2}}{225g}+\frac{4b^2d^2\left(c^2f^2-2g^2\right)\sqrt{d-c^2dx^2}}{9g^3}+\frac{a^2d^2\left(c^2f^2-g^2\right)^2\sqrt{d-}}{g^5}$$

Mathematica [A] time = 4.92338, size = 1277, normalized size = 0.43

$$\frac{d^2\sqrt{d-c^2dx^2}\left(\frac{x^4\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2c^4}{5g}-\frac{fx^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2c^4}{4g^2}-\frac{f\left(c^2f^2-2g^2\right)x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2c^2}{2g^4}-\frac{f\left(c^2f^2-2g^2\right)\left(a+b\sin^{-1}(\cdots\right.}{6bg^4}\cdots\right.}{\cdots}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2)/(f + g*x),x]
```

```
[Out] (d^2*Sqrt[d - c^2*d*x^2]*(-(c^2*f*(c^2*f^2 - 2*g^2)*x*Sqrt[1 - c^2*x^2]*(a
+ b*ArcSin[c*x])^2)/(2*g^4) - (c^4*f*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*
x])^2)/(4*g^2) + (c^4*x^4*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(5*g) -
((c^2*f^2 - 2*g^2)*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/(3*g^3) - (c*
f*(c^2*f^2 - 2*g^2)*(a + b*ArcSin[c*x])^3)/(6*b*g^4) - ((-(c^2*f^2) + g^2)^
2*(-1 + c^2*x^2)*(a + b*ArcSin[c*x])^3)/(3*b*c*g^4*(f + g*x)) + (b*c*f*(c^2
*f^2 - 2*g^2)*(c*x*(2*a*c*x + b*Sqrt[1 - c^2*x^2]) + b*(-1 + 2*c^2*x^2)*Arc
Sin[c*x]))/(4*g^4) + (b*c*f*(8*a*c^4*x^4 + b*c*x*Sqrt[1 - c^2*x^2]*(3 + 2*c
^2*x^2) + b*(-3 + 8*c^4*x^4)*ArcSin[c*x]))/(64*g^2) + (2*b*(c^2*f^2 - 2*g^2
)*(-(b*Sqrt[1 - c^2*x^2]*(-7 + c^2*x^2)) + 9*c*x*(a + b*ArcSin[c*x]) - 3*c^
3*x^3*(a + b*ArcSin[c*x])))/(27*g^3) - (2*b*(b*Sqrt[1 - c^2*x^2]*(8 + 4*c^2
*x^2 + 3*c^4*x^4) + 15*c^5*x^5*(a + b*ArcSin[c*x])))/(375*g) + (c*f*(6*b*c*
x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2 - 2*(a + b*ArcSin[c*x])^3 - 3*b^2
*(c*x*(2*a*c*x + b*Sqrt[1 - c^2*x^2]) + b*(-1 + 2*c^2*x^2)*ArcSin[c*x])))/(
48*b*g^2) - (9*c^2*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2 - 2*b*(b*Sqr
t[1 - c^2*x^2]*(2 + c^2*x^2) + 3*c^3*x^3*(a + b*ArcSin[c*x])) + 18*(Sqrt[1
- c^2*x^2]*(a + b*ArcSin[c*x])^2 - 2*b*(a*c*x + b*Sqrt[1 - c^2*x^2] + b*c*x
*ArcSin[c*x])))/(135*g) + ((-(c^2*f^2) + g^2)^2*((c^2*f^2 - g^2)*(a + b*Arc
Sin[c*x])^3 + c^2*g*x*(f + g*x)*(a + b*ArcSin[c*x])^3 + 3*b*c*(f + g*x)*(g*
Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2 - 2*b*g*(a*c*x + b*Sqrt[1 - c^2*x^2
] + b*c*x*ArcSin[c*x]) + I*Sqrt[c^2*f^2 - g^2]*((a + b*ArcSin[c*x])^2*Log[1
 + (I*E^(I*ArcSin[c*x])*g)/(-(c*f) + Sqrt[c^2*f^2 - g^2])] - (a + b*ArcSin[
c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])] - (2*I
)*b*(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*
f^2 - g^2])] + (2*I)*b*(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])*
g)/(c*f + Sqrt[c^2*f^2 - g^2])] + 2*b^2*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/
(c*f - Sqrt[c^2*f^2 - g^2])] - 2*b^2*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*
f + Sqrt[c^2*f^2 - g^2])]))))/(3*b*c*g^6*(f + g*x))))/Sqrt[1 - c^2*x^2]
```

Maple [F] time = 0.51, size = 0, normalized size = 0.

$$\int \frac{(a+b\arcsin(cx))^2}{gx+f}\left(-c^2dx^2+d\right)^{\frac{5}{2}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/(g*x+f),x)
```

```
[Out] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/(g*x+f),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/(g*x+f),x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(a^2c^4d^2x^4-2\,a^2c^2d^2x^2+a^2d^2+\left(b^2c^4d^2x^4-2\,b^2c^2d^2x^2+b^2d^2\right)\arcsin(cx)^2+2\left(abc^4d^2x^4-2\,abc^2d^2x^2+ab\right.}{gx+f}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/(g*x+f),x, algorithm="fr
icas")
```

```
[Out] integral((a^2*c^4*d^2*x^4 - 2*a^2*c^2*d^2*x^2 + a^2*d^2 + (b^2*c^4*d^2*x^4
 - 2*b^2*c^2*d^2*x^2 + b^2*d^2)*arcsin(c*x)^2 + 2*(a*b*c^4*d^2*x^4 - 2*a*b*c
^2*d^2*x^2 + a*b*d^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/(g*x + f), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))**2/(g*x+f),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(-c^2dx^2+d\right)^{\frac{5}{2}}(b\arcsin{(cx)}+a)^2}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/(g*x+f),x, algorithm="gi
ac")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(5/2)*(b*arcsin(c*x) + a)^2/(g*x + f), x)
```

3.70 $\int \frac{(f+gx)^3\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=692

$$-\frac{3f^2g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c^2\sqrt{d-c^2dx^2}}+\frac{6bf^2gx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{d-c^2dx^2}}+\frac{f^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{d-c^2dx^2}}+\frac{fg^2\sqrt{1-\cdots}}{2\cdots}$$

```
[Out] (6*b^2*f^2*g*(1 - c^2*x^2))/(c^2*Sqrt[d - c^2*d*x^2]) + (14*b^2*g^3*(1 - c^
2*x^2))/(9*c^4*Sqrt[d - c^2*d*x^2]) + (3*b^2*f*g^2*x*(1 - c^2*x^2))/(4*c^2*
Sqrt[d - c^2*d*x^2]) - (2*b^2*g^3*(1 - c^2*x^2)^2)/(27*c^4*Sqrt[d - c^2*d*x
^2]) - (3*b^2*f*g^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x])/(4*c^3*Sqrt[d - c^2*d*x^
2]) + (6*b*f^2*g*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(c*Sqrt[d - c^2*d
*x^2]) + (4*b*g^3*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(3*c^3*Sqrt[d -
c^2*d*x^2]) + (3*b*f*g^2*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(2*c*Sq
rt[d - c^2*d*x^2]) + (2*b*g^3*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(9
*c*Sqrt[d - c^2*d*x^2]) - (3*f^2*g*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(c^
2*Sqrt[d - c^2*d*x^2]) - (2*g^3*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(3*c^4
*Sqrt[d - c^2*d*x^2]) - (3*f*g^2*x*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(2*
c^2*Sqrt[d - c^2*d*x^2]) - (g^3*x^2*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(3
*c^2*Sqrt[d - c^2*d*x^2]) + (f^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3)/(
3*b*c*Sqrt[d - c^2*d*x^2]) + (f*g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3
)/(2*b*c^3*Sqrt[d - c^2*d*x^2])
```

Rubi [A] time = 0.702042, antiderivative size = 692, normalized size of antiderivative = 1., number of steps used = 17, number of rules used = 10, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.303, Rules used = {4777, 4773, 3317, 3296, 2638, 3311, 32, 2635, 8, 2633}

$$-\frac{3f^2g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c^2\sqrt{d-c^2dx^2}}+\frac{6bf^2gx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{d-c^2dx^2}}+\frac{f^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{d-c^2dx^2}}+\frac{fg^2\sqrt{1-\cdots}}{2\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^3*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (6*b^2*f^2*g*(1 - c^2*x^2))/(c^2*Sqrt[d - c^2*d*x^2]) + (14*b^2*g^3*(1 - c^
2*x^2))/(9*c^4*Sqrt[d - c^2*d*x^2]) + (3*b^2*f*g^2*x*(1 - c^2*x^2))/(4*c^2*
Sqrt[d - c^2*d*x^2]) - (2*b^2*g^3*(1 - c^2*x^2)^2)/(27*c^4*Sqrt[d - c^2*d*x
^2]) - (3*b^2*f*g^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x])/(4*c^3*Sqrt[d - c^2*d*x^
2]) + (6*b*f^2*g*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(c*Sqrt[d - c^2*d
```

```
*x^2]) + (4*b*g^3*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(3*c^3*Sqrt[d -
c^2*d*x^2]) + (3*b*f*g^2*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(2*c*Sq
rt[d - c^2*d*x^2]) + (2*b*g^3*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(9
*c*Sqrt[d - c^2*d*x^2]) - (3*f^2*g*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(c^
2*Sqrt[d - c^2*d*x^2]) - (2*g^3*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(3*c^4
*Sqrt[d - c^2*d*x^2]) - (3*f*g^2*x*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(2*
c^2*Sqrt[d - c^2*d*x^2]) - (g^3*x^2*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(3
*c^2*Sqrt[d - c^2*d*x^2]) + (f^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3)/(
3*b*c*Sqrt[d - c^2*d*x^2]) + (f*g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3
)/(2*b*c^3*Sqrt[d - c^2*d*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3317

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

Rule 3296

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

Rule 2638

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

Rule 3311

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

Rule 32

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

Rule 2635

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

Rule 8

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

Rule 2633

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
&& IGtQ[(n - 1)/2, 0]
```

Rubi steps

$$\int \frac{(f+gx)^3\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)^3\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}$$
$$= \frac{\sqrt{1-c^2x^2}\,\text{Subst}\left(\int (a+bx)^2(cf+g\sin(x))^3\,dx, x, \sin^{-1}(cx)\right)}{c^4\sqrt{d-c^2dx^2}}$$
$$= \frac{\sqrt{1-c^2x^2}\,\text{Subst}\left(\int \left(c^3f^3(a+bx)^2+3c^2f^2g(a+bx)^2\sin(x)+3cfg^2(a+bx)^2\sin^2(\right.\right.}{c^4\sqrt{d-c^2dx^2}}$$
$$= \frac{f^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{d-c^2dx^2}} + \frac{\left(3f^2g\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int (a+bx)^2\sin(x)\,dx, x, \text{s}\right.}{c^2\sqrt{d-c^2dx^2}}$$
$$= \frac{3bfg^2x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c\sqrt{d-c^2dx^2}} + \frac{2bg^3x^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{9c\sqrt{d-c^2dx^2}} - \frac{3f^2g\left(1\right.}{}$$
$$= \frac{3b^2fg^2x\left(1-c^2x^2\right)}{4c^2\sqrt{d-c^2dx^2}} + \frac{6bf^2gx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{d-c^2dx^2}} + \frac{3bfg^2x^2\sqrt{1-c^2x^2}\left(a+\right.}{2c\sqrt{d-c^2dx^2}}$$
$$= \frac{6b^2f^2g\left(1-c^2x^2\right)}{c^2\sqrt{d-c^2dx^2}} + \frac{2b^2g^3\left(1-c^2x^2\right)}{9c^4\sqrt{d-c^2dx^2}} + \frac{3b^2fg^2x\left(1-c^2x^2\right)}{4c^2\sqrt{d-c^2dx^2}} - \frac{2b^2g^3\left(1-c^2x^2\right)^2}{27c^4\sqrt{d-c^2dx^2}} - 3$$
$$= \frac{6b^2f^2g\left(1-c^2x^2\right)}{c^2\sqrt{d-c^2dx^2}} + \frac{14b^2g^3\left(1-c^2x^2\right)}{9c^4\sqrt{d-c^2dx^2}} + \frac{3b^2fg^2x\left(1-c^2x^2\right)}{4c^2\sqrt{d-c^2dx^2}} - \frac{2b^2g^3\left(1-c^2x^2\right)^2}{27c^4\sqrt{d-c^2dx^2}} -$$

Mathematica [A] time = 1.47757, size = 582, normalized size = 0.84

$$\frac{-36a^2d\left(1-c^2x^2\right)^{3/2}\left(c^2g\left(18f^2+9fgx+2g^2x^2\right)+4g^3\right)-108a^2c\sqrt{d}f\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}\left(2c^2f^2+3g^2\right)\tan^{-1}\left(\frac{cx\sqrt{d-c^2}}{\sqrt{d}\left(c^2x^2-\right.}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^3*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (-36*a^2*d*(1 - c^2*x^2)^(3/2)*(4*g^3 + c^2*g*(18*f^2 + 9*f*g*x + 2*g^2*x^2
)) - 216*a*b*c^3*d*f^3*(-1 + c^2*x^2)*ArcSin[c*x]^2 - 72*b^2*c^3*d*f^3*(-1
+ c^2*x^2)*ArcSin[c*x]^3 - 1296*a*b*c^2*d*f^2*g*(-1 + c^2*x^2)*(c*x - Sqrt[
1 - c^2*x^2]*ArcSin[c*x]) - 48*a*b*d*g^3*(-1 + c^2*x^2)*(6*c*x + c^3*x^3 -
3*Sqrt[1 - c^2*x^2]*(2 + c^2*x^2)*ArcSin[c*x]) + 648*b^2*c^2*d*f^2*g*(1 - c
^2*x^2)*(2*c*x*ArcSin[c*x] - Sqrt[1 - c^2*x^2]*(-2 + ArcSin[c*x]^2)) - 108*
a^2*c*Sqrt[d]*f*(2*c^2*f^2 + 3*g^2)*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]*A
```

```
rcTan[(c*x*Sqrt[d - c^2*d*x^2])/(Sqrt[d]*(-1 + c^2*x^2))] + 162*a*b*c*d*f*g
^2*(-1 + c^2*x^2)*(-2*ArcSin[c*x]^2 + Cos[2*ArcSin[c*x]] + 2*ArcSin[c*x]*Si
n[2*ArcSin[c*x]]) + 27*b^2*c*d*f*g^2*(1 - c^2*x^2)*(4*ArcSin[c*x]^3 - 6*Arc
Sin[c*x]*Cos[2*ArcSin[c*x]] + (3 - 6*ArcSin[c*x]^2)*Sin[2*ArcSin[c*x]]) - 2
*b^2*d*g^3*(1 - c^2*x^2)*(81*Sqrt[1 - c^2*x^2]*(-2 + ArcSin[c*x]^2) - (-2 +
 9*ArcSin[c*x]^2)*Cos[3*ArcSin[c*x]] + 6*ArcSin[c*x]*(-27*c*x + Sin[3*ArcSi
n[c*x]])))/(216*c^4*d*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2])
```

Maple [B] time = 0.696, size = 1876, normalized size = 2.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] -3/2*a*b*(-d*(c^2*x^2-1))^(1/2)*f*g^2/c/d/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^
2-6*a*b*(-d*(c^2*x^2-1))^(1/2)*g/c/d/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x*f^2-3
/2*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g^2/c/d/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1
)^(1/2)*x^2-6*b^2*(-d*(c^2*x^2-1))^(1/2)*g/c/d/(c^2*x^2-1)*arcsin(c*x)*(-c^
2*x^2+1)^(1/2)*x*f^2-3/2*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g^2/d/(c^2*x^2-1)*arc
sin(c*x)^2*x^3-3*b^2*(-d*(c^2*x^2-1))^(1/2)*g/d/(c^2*x^2-1)*arcsin(c*x)^2*x
^2*f^2-1/3*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/d/(c^2*x^2-1)*ar
csin(c*x)^3*f^3-1/3*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3/c^2/d/(c^2*x^2-1)*arcsin
(c*x)^2*x^2-3/4*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g^2/c^2/d/(c^2*x^2-1)*x+3*b^2*
(-d*(c^2*x^2-1))^(1/2)*g/c^2/d/(c^2*x^2-1)*arcsin(c*x)^2*f^2-2/3*a*b*(-d*(c
^2*x^2-1))^(1/2)*g^3/d/(c^2*x^2-1)*arcsin(c*x)*x^4+4/3*a*b*(-d*(c^2*x^2-1))
^(1/2)*g^3/c^4/d/(c^2*x^2-1)*arcsin(c*x)+6*b^2*(-d*(c^2*x^2-1))^(1/2)*g/d/(
c^2*x^2-1)*x^2*f^2-2/3*a^2*g^3/d/c^4*(-c^2*d*x^2+d)^(1/2)+3/2*a^2*f*g^2/c^2
/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-3*a^2*f^2*g/c^2
/d*(-c^2*d*x^2+d)^(1/2)-1/3*a^2*g^3*x^2/c^2/d*(-c^2*d*x^2+d)^(1/2)+2/27*b^2
*(-d*(c^2*x^2-1))^(1/2)*g^3/d/(c^2*x^2-1)*x^4-40/27*b^2*(-d*(c^2*x^2-1))^(1
/2)*g^3/c^4/d/(c^2*x^2-1)+a^2*f^3/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^
2*d*x^2+d)^(1/2))-2/3*a*b*(-d*(c^2*x^2-1))^(1/2)*g^3/c^2/d/(c^2*x^2-1)*arcs
in(c*x)*x^2+6*a*b*(-d*(c^2*x^2-1))^(1/2)*g/c^2/d/(c^2*x^2-1)*arcsin(c*x)*f^
2-2/9*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3/c/d/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+
1)^(1/2)*x^3-4/3*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3/c^3/d/(c^2*x^2-1)*arcsin(c*
x)*(-c^2*x^2+1)^(1/2)*x+3/4*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g^2/c^3/d/(c^2*x^2
-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)-1/2*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2
+1)^(1/2)/c^3/d/(c^2*x^2-1)*arcsin(c*x)^3*f*g^2+3/2*b^2*(-d*(c^2*x^2-1))^(1
/2)*f*g^2/c^2/d/(c^2*x^2-1)*arcsin(c*x)^2*x-2/9*a*b*(-d*(c^2*x^2-1))^(1/2)*
g^3/c/d/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^3-4/3*a*b*(-d*(c^2*x^2-1))^(1/2)*g
```

```
^3/c^3/d/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-3*a*b*(-d*(c^2*x^2-1))^(1/2)*f*g^
2/d/(c^2*x^2-1)*arcsin(c*x)*x^3+3/4*a*b*(-d*(c^2*x^2-1))^(1/2)*f*g^2/c^3/d/
(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)-6*a*b*(-d*(c^2*x^2-1))^(1/2)*g/d/(c^2*x^2-1)
*arcsin(c*x)*x^2*f^2-a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/d/(c^2
*x^2-1)*arcsin(c*x)^2*f^3-3/2*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)
/c^3/d/(c^2*x^2-1)*arcsin(c*x)^2*f*g^2+3*a*b*(-d*(c^2*x^2-1))^(1/2)*f*g^2/c
^2/d/(c^2*x^2-1)*arcsin(c*x)*x-3/2*a^2*f*g^2*x/c^2/d*(-c^2*d*x^2+d)^(1/2)+3
8/27*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3/c^2/d/(c^2*x^2-1)*x^2+2/3*b^2*(-d*(c^2*
x^2-1))^(1/2)*g^3/c^4/d/(c^2*x^2-1)*arcsin(c*x)^2-6*b^2*(-d*(c^2*x^2-1))^(1
/2)*g/c^2/d/(c^2*x^2-1)*f^2-1/3*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3/d/(c^2*x^2-1
)*arcsin(c*x)^2*x^4+3/4*b^2*(-d*(c^2*x^2-1))^(1/2)*f*g^2/d/(c^2*x^2-1)*x^3
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\left(a^2g^3x^3+3\,a^2fg^2x^2+3\,a^2f^2gx+a^2f^3+\left(b^2g^3x^3+3\,b^2fg^2x^2+3\,b^2f^2gx+b^2f^3\right)\arcsin\left(cx\right)^2+2\left(abg^3x^3+\right.\right.}{c^2dx^2-d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="
fricas")
```

```
[Out] integral(-(a^2*g^3*x^3 + 3*a^2*f*g^2*x^2 + 3*a^2*f^2*g*x + a^2*f^3 + (b^2*g
^3*x^3 + 3*b^2*f*g^2*x^2 + 3*b^2*f^2*g*x + b^2*f^3)*arcsin(c*x)^2 + 2*(a*b*
g^3*x^3 + 3*a*b*f*g^2*x^2 + 3*a*b*f^2*g*x + a*b*f^3)*arcsin(c*x))*sqrt(-c^2
*d*x^2 + d)/(c^2*d*x^2 - d), x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Exception raised: TypeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^3 (b \arcsin(cx)+a)^2}{\sqrt{-c^2dx^2+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="
giac")
```

```
[Out] integrate((g*x + f)^3*(b*arcsin(c*x) + a)^2/sqrt(-c^2*d*x^2 + d), x)
```

3.71 $\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=410

$$\frac{f^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{d-c^2dx^2}}-\frac{2fg\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c^2\sqrt{d-c^2dx^2}}+\frac{4bfgx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{d-c^2dx^2}}+\frac{g^2\sqrt{1-c^2x^2}\,(a}{6bc^3\sqrt{d}}$$

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

Rubi [A] time = 0.553056, antiderivative size = 410, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 9, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {4777, 4773, 3317, 3296, 2638, 3311, 32, 2635, 8}

$$\frac{f^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{d-c^2dx^2}}-\frac{2fg\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c^2\sqrt{d-c^2dx^2}}+\frac{4bfgx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{d-c^2dx^2}}+\frac{g^2\sqrt{1-c^2x^2}\,(a}{6bc^3\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^2*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2],x]
```

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

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3317

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

Rule 3296

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

Rule 2638

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

Rule 3311

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

Rule 32

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

Rule 2635

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

Rule 8

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

Rubi steps

$$\int \frac{(f+gx)^2 \left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\,\text{Subst}\left(\int (a+bx)^2(cf+g\sin(x))^2\,dx, x, \sin^{-1}(cx)\right)}{c^3\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\,\text{Subst}\left(\int \left(c^2f^2(a+bx)^2+2cfg(a+bx)^2\sin(x)+g^2(a+bx)^2\sin^2(x)\right)\,dx}{c^3\sqrt{d-c^2dx^2}}$$

$$= \frac{f^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{d-c^2dx^2}} + \frac{\left(2fg\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int (a+bx)^2\sin(x)\,dx, x, \text{si}\right.}{c^2\sqrt{d-c^2dx^2}}$$

$$= \frac{bg^2x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c\sqrt{d-c^2dx^2}} - \frac{2fg\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c^2\sqrt{d-c^2dx^2}} - \frac{g^2x\left(1-c^2x\right.}{2c^2}$$

$$= \frac{b^2g^2x\left(1-c^2x^2\right)}{4c^2\sqrt{d-c^2dx^2}} + \frac{4bfgx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{d-c^2dx^2}} + \frac{bg^2x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}\right.}{2c\sqrt{d-c^2dx^2}}$$

$$= \frac{4b^2fg\left(1-c^2x^2\right)}{c^2\sqrt{d-c^2dx^2}} + \frac{b^2g^2x\left(1-c^2x^2\right)}{4c^2\sqrt{d-c^2dx^2}} - \frac{b^2g^2\sqrt{1-c^2x^2}\sin^{-1}(cx)}{4c^3\sqrt{d-c^2dx^2}} + \frac{4bfgx\sqrt{1-c^2x^2}\left(\right.}{c\sqrt{d-}}$$

Mathematica [A] time = 1.37078, size = 400, normalized size = 0.98

$$3\sqrt{d}g\left(c^2x^2-1\right)\left(4c\left(a^2\sqrt{1-c^2x^2}(4f+gx)-8abcfx-8b^2f\sqrt{1-c^2x^2}\right)+2abg\cos\left(2\sin^{-1}(cx)\right)+b^2(-g)\sin\left(2\sin^{-1}(cx\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^2*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (-4*b^2*Sqrt[d]*(2*c^2*f^2 + g^2)*(-1 + c^2*x^2)*ArcSin[c*x]^3 - 12*a^2*(2*
c^2*f^2 + g^2)*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]*ArcTan[(c*x*Sqrt[d - c
^2*d*x^2])/(Sqrt[d]*(-1 + c^2*x^2))] + 6*b*Sqrt[d]*g*(-1 + c^2*x^2)*ArcSin[
c*x]*(16*c*f*(-(b*c*x) + a*Sqrt[1 - c^2*x^2]) + b*g*Cos[2*ArcSin[c*x]] + 2*
a*g*Sin[2*ArcSin[c*x]]) + 3*Sqrt[d]*g*(-1 + c^2*x^2)*(4*c*(-8*a*b*c*f*x - 8
*b^2*f*Sqrt[1 - c^2*x^2] + a^2*(4*f + g*x)*Sqrt[1 - c^2*x^2]) + 2*a*b*g*Cos
[2*ArcSin[c*x]] - b^2*g*Sin[2*ArcSin[c*x]]) + 6*b*Sqrt[d]*(-1 + c^2*x^2)*Ar
cSin[c*x]^2*(-2*a*(2*c^2*f^2 + g^2) + 8*b*c*f*g*Sqrt[1 - c^2*x^2] + b*g^2*S
in[2*ArcSin[c*x]]))/(24*c^3*Sqrt[d]*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2])
```

Maple [B] time = 0.387, size = 1181, normalized size = 2.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x)
```

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

```
1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^2+a*b*(-d*(c^2*x^2-1))^(1/2)*g^2/c^2/d/
(c^2*x^2-1)*arcsin(c*x)*x
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\left(a^2g^2x^2 + 2\,a^2fgx + a^2f^2 + \left(b^2g^2x^2 + 2\,b^2fgx + b^2f^2\right)\arcsin\left(cx\right)^2 + 2\left(abg^2x^2 + 2\,abfgx + abf^2\right)\arcsin\left(c\right.}{c^2dx^2 - d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="
fricas")
```

```
[Out] integral(-(a^2*g^2*x^2 + 2*a^2*f*g*x + a^2*f^2 + (b^2*g^2*x^2 + 2*b^2*f*g*x
 + b^2*f^2)*arcsin(c*x)^2 + 2*(a*b*g^2*x^2 + 2*a*b*f*g*x + a*b*f^2)*arcsin(
c*x))*sqrt(-c^2*d*x^2 + d)/(c^2*d*x^2 - d), x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Exception raised: TypeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^2 (b \arcsin(cx) + a)^2}{\sqrt{-c^2dx^2 + d}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="
giac")
```

```
[Out] integrate((g*x + f)^2*(b*arcsin(c*x) + a)^2/sqrt(-c^2*d*x^2 + d), x)
```

3.72 $\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=171

$$\frac{f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{d-c^2dx^2}}-\frac{g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c^2\sqrt{d-c^2dx^2}}+\frac{2bgx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{d-c^2dx^2}}+\frac{2b^2g\left(1-c^2x^2\right)}{c^2\sqrt{d-c^2dx^2}}$$

```
[Out] (2*b^2*g*(1 - c^2*x^2))/(c^2*Sqrt[d - c^2*d*x^2]) + (2*b*g*x*Sqrt[1 - c^2*x
^2]*(a + b*ArcSin[c*x]))/(c*Sqrt[d - c^2*d*x^2]) - (g*(1 - c^2*x^2)*(a + b*
ArcSin[c*x])^2)/(c^2*Sqrt[d - c^2*d*x^2]) + (f*Sqrt[1 - c^2*x^2]*(a + b*Arc
Sin[c*x])^3)/(3*b*c*Sqrt[d - c^2*d*x^2])
```

Rubi [A] time = 0.368733, antiderivative size = 207, normalized size of antiderivative = 1.21, number of steps used = 8, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {4777, 4763, 4641, 4677, 4619, 261}

$$\frac{f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{d-c^2dx^2}}+\frac{2abgx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}}-\frac{g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c^2\sqrt{d-c^2dx^2}}+\frac{2b^2g\left(1-c^2x^2\right)}{c^2\sqrt{d-c^2dx^2}}+\frac{2b^2gx\sqrt{1-c^2x^2}\,\mathrm{s}}{c\sqrt{d-c^2dx}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (2*a*b*g*x*Sqrt[1 - c^2*x^2])/(c*Sqrt[d - c^2*d*x^2]) + (2*b^2*g*(1 - c^2*x
^2))/(c^2*Sqrt[d - c^2*d*x^2]) + (2*b^2*g*x*Sqrt[1 - c^2*x^2]*ArcSin[c*x])/
(c*Sqrt[d - c^2*d*x^2]) - (g*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(c^2*Sqrt
[d - c^2*d*x^2]) + (f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c*Sqrt[
d - c^2*d*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4677

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

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 261

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

Rubi steps

$$\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{f\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}} + \frac{gx\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\right)dx}{\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(f\sqrt{1-c^2x^2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}} + \frac{\left(g\sqrt{1-c^2x^2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}$$

$$= -\frac{g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c^2\sqrt{d-c^2dx^2}} + \frac{f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{d-c^2dx^2}} + \frac{\left(2bg\sqrt{1-c^2x^2}\right)\int}{c\sqrt{d}}$$

$$= \frac{2abgx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}} - \frac{g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c^2\sqrt{d-c^2dx^2}} + \frac{f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{d-c^2dx^2}} +$$

$$= \frac{2abgx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}} + \frac{2b^2gx\sqrt{1-c^2x^2}\sin^{-1}(cx)}{c\sqrt{d-c^2dx^2}} - \frac{g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c^2\sqrt{d-c^2dx^2}} + \frac{f\sqrt{}}{}$$

$$= \frac{2abgx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}} + \frac{2b^2g\left(1-c^2x^2\right)}{c^2\sqrt{d-c^2dx^2}} + \frac{2b^2gx\sqrt{1-c^2x^2}\sin^{-1}(cx)}{c\sqrt{d-c^2dx^2}} - \frac{g\left(1-c^2x^2\right)\left(a+b\right.}{c^2\sqrt{d-c^2}}$$

Mathematica [A] time = 0.596177, size = 291, normalized size = 1.7

$$\frac{3\sqrt{d}g\left(c^2x^2-1\right)\left(a^2\sqrt{1-c^2x^2}-2abcx-2b^2\sqrt{1-c^2x^2}\right)-3a^2cf\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}\tan^{-1}\left(\frac{cx\sqrt{d-c^2dx^2}}{\sqrt{d}\left(c^2x^2-1\right)}\right)+3b\sqrt{d}\left(c^2x^2-1\right.}{3c^2\sqrt{d}\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (3*Sqrt[d]*g*(-1 + c^2*x^2)*(-2*a*b*c*x + a^2*Sqrt[1 - c^2*x^2] - 2*b^2*Sqr
t[1 - c^2*x^2]) - 6*b*Sqrt[d]*g*(-1 + c^2*x^2)*(b*c*x - a*Sqrt[1 - c^2*x^2]
)*ArcSin[c*x] + 3*b*Sqrt[d]*(-1 + c^2*x^2)*(-(a*c*f) + b*g*Sqrt[1 - c^2*x^2
])*ArcSin[c*x]^2 - b^2*c*Sqrt[d]*f*(-1 + c^2*x^2)*ArcSin[c*x]^3 - 3*a^2*c*f
*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]*ArcTan[(c*x*Sqrt[d - c^2*d*x^2])/(Sq
rt[d]*(-1 + c^2*x^2))])/(3*c^2*Sqrt[d]*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2
])
```

Maple [B] time = 0.303, size = 513, normalized size = 3.

$$-\frac{a^2 g}{c^2 d}\sqrt{-c^2 d x^2+d}+a^2 f \arctan\left(x\sqrt{c^2 d}\frac{1}{\sqrt{-c^2 d x^2+d}}\right)\frac{1}{\sqrt{c^2 d}}-\frac{b^2\left(\arcsin(cx)\right)^3 f}{3\,dc\left(c^2x^2-1\right)}\sqrt{-d\left(c^2x^2-1\right)}\sqrt{-c^2x^2+1}-\frac{b^2 g\,(\mathrm{ar}}{d\,(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] -a^2*g/c^2/d*(-c^2*d*x^2+d)^(1/2)+a^2*f/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*
x/(-c^2*d*x^2+d)^(1/2))-1/3*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c
/d/(c^2*x^2-1)*arcsin(c*x)^3*f-b^2*(-d*(c^2*x^2-1))^(1/2)*g/d/(c^2*x^2-1)*a
rcsin(c*x)^2*x^2-2*b^2*(-d*(c^2*x^2-1))^(1/2)*g/c/d/(c^2*x^2-1)*arcsin(c*x)
*(-c^2*x^2+1)^(1/2)*x+2*b^2*(-d*(c^2*x^2-1))^(1/2)*g/d/(c^2*x^2-1)*x^2+b^2*
(-d*(c^2*x^2-1))^(1/2)*g/c^2/d/(c^2*x^2-1)*arcsin(c*x)^2-2*b^2*(-d*(c^2*x^2
-1))^(1/2)*g/c^2/d/(c^2*x^2-1)-a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2
)/c/d/(c^2*x^2-1)*arcsin(c*x)^2*f-2*a*b*(-d*(c^2*x^2-1))^(1/2)*g/d/(c^2*x^2
-1)*arcsin(c*x)*x^2-2*a*b*(-d*(c^2*x^2-1))^(1/2)*g/c/d/(c^2*x^2-1)*(-c^2*x^
2+1)^(1/2)*x+2*a*b*(-d*(c^2*x^2-1))^(1/2)*g/c^2/d/(c^2*x^2-1)*arcsin(c*x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\left(a^2gx+a^2f+\left(b^2gx+b^2f\right)\arcsin(cx)^2+2\left(abgx+abf\right)\arcsin(cx)\right)}{c^2dx^2-d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="fr
icas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(a^2*g*x + a^2*f + (b^2*g*x + b^2*f)*arcsin(
c*x)^2 + 2*(a*b*g*x + a*b*f)*arcsin(c*x))/(c^2*d*x^2 - d), x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Exception raised: TypeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)(b\arcsin(cx)+a)^2}{\sqrt{-c^2dx^2+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="gi
ac")
```

```
[Out] integrate((g*x + f)*(b*arcsin(c*x) + a)^2/sqrt(-c^2*d*x^2 + d), x)
```

3.73 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(f+gx)\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=589

$$-\frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{d-c^2dx^2}\sqrt{c^2f^2-g^2}}+\frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{\sqrt{d-c^2dx^2}\sqrt{c^2f^2-g^2}}-$$

```
[Out] ((-I)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*
g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2])
+ (I*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*g
)/(c*f + Sqrt[c^2*f^2 - g^2])])/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]) -
 (2*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])
*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2])
 + (2*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x
])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2
]) - ((2*I)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f -
 Sqrt[c^2*f^2 - g^2])])/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]) + ((2*I)*
b^2*Sqrt[1 - c^2*x^2]*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^
2 - g^2])])/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2])
```

Rubi [A] time = 1.01781, antiderivative size = 589, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.242, Rules used = {4777, 4773, 3323, 2264, 2190, 2531, 2282, 6589}

$$-\frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{d-c^2dx^2}\sqrt{c^2f^2-g^2}}+\frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{\sqrt{d-c^2dx^2}\sqrt{c^2f^2-g^2}}-$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/((f + g*x)*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] ((-I)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*
g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2])
+ (I*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*g
)/(c*f + Sqrt[c^2*f^2 - g^2])])/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]) -
 (2*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])
*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2])
 + (2*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x
```

```
])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2
]) - ((2*I)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f -
 Sqrt[c^2*f^2 - g^2])])/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]) + ((2*I)*
b^2*Sqrt[1 - c^2*x^2]*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^
2 - g^2])])/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(f+gx)\sqrt{d-c^2dx^2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(f+gx)\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\,\text{Subst}\left(\int \frac{(a+bx)^2}{cf+g\sin(x)}\,dx, x, \sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(2\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int \frac{e^{ix}(a+bx)^2}{2ce^{ix}f+ig-ie^{2ix}g}\,dx, x, \sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}$$

$$= -\frac{\left(2ig\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int \frac{e^{ix}(a+bx)^2}{2cf-2ie^{ix}g-2\sqrt{c^2f^2-g^2}}\,dx, x, \sin^{-1}(cx)\right)}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}} + \frac{\left(2ig\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int\right.}{\sqrt{c^2f^2}}$$

$$= -\frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}} + \frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\right.}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}}$$

$$= -\frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}} + \frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\right.}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}}$$

$$= -\frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}} + \frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\right.}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}}$$

$$= -\frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}} + \frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\right.}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}}$$

Mathematica [A] time = 0.391118, size = 357, normalized size = 0.61

$$-\frac{i\sqrt{1-c^2x^2}\left(-2ib\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)+2ib\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)+2b^2\text{Poly}\right.}{\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/((f + g*x)*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] ((-I)*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^2*Log[1 + (I*E^(I*ArcSin[c*x])
*g)/(-(c*f) + Sqrt[c^2*f^2 - g^2])] - (a + b*ArcSin[c*x])^2*Log[1 - (I*E^(I
```

```
*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])] - (2*I)*b*(a + b*ArcSin[c*x])
*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])] + (2*I)*b*
(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2
- g^2])] + 2*b^2*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g
^2])] - 2*b^2*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2]
)]))/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2])
```

Maple [F] time = 0.589, size = 0, normalized size = 0.

$$\int \frac{(a+b\arcsin(cx))^2}{gx+f}\frac{1}{\sqrt{-c^2dx^2+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(g*x+f)/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2/(g*x+f)/(-c^2*d*x^2+d)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b\arcsin(cx)+a)^2}{\sqrt{-c^2dx^2+d}(gx+f)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(g*x+f)/(-c^2*d*x^2+d)^(1/2),x, algorithm="ma
xima")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/(sqrt(-c^2*d*x^2 + d)*(g*x + f)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)}{c^2dgx^3+c^2dfx^2-dgx-df},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(g*x+f)/(-c^2*d*x^2+d)^(1/2),x, algorithm="fr
icas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2
)/(c^2*d*g*x^3 + c^2*d*f*x^2 - d*g*x - d*f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + b \operatorname{asin}(cx))^2}{\sqrt{-d(cx-1)(cx+1)}\,(f+gx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(g*x+f)/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2/(sqrt(-d*(c*x - 1)*(c*x + 1))*(f + g*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b \arcsin(cx) + a)^2}{\sqrt{-c^2dx^2 + d}\,(gx+f)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(g*x+f)/(-c^2*d*x^2+d)^(1/2),x, algorithm="gi
ac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/(sqrt(-c^2*d*x^2 + d)*(g*x + f)), x)
```

3.74 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(f+gx)^2\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=1113

result too large to display

```
[Out] (I*c*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/((c^2*f^2 - g^2)*Sqrt[d - c^2
*d*x^2]) + (g*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/((c^2*f^2 - g^2)*(f + g*
x)*Sqrt[d - c^2*d*x^2]) - (2*b*c*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[
1 - (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)*
Sqrt[d - c^2*d*x^2]) - (I*c^2*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2*Log
[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)
^(3/2)*Sqrt[d - c^2*d*x^2]) - (2*b*c*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*
Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g
^2)*Sqrt[d - c^2*d*x^2]) + (I*c^2*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2
*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 -
g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) + ((2*I)*b^2*c*Sqrt[1 - c^2*x^2]*PolyLog[2,
 (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)*Sqr
t[d - c^2*d*x^2]) - (2*b*c^2*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*PolyLo
g[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)
^(3/2)*Sqrt[d - c^2*d*x^2]) + ((2*I)*b^2*c*Sqrt[1 - c^2*x^2]*PolyLog[2, (I*
E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)*Sqrt[d
- c^2*d*x^2]) + (2*b*c^2*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*PolyLog[2,
 (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)^(3/
2)*Sqrt[d - c^2*d*x^2]) - ((2*I)*b^2*c^2*f*Sqrt[1 - c^2*x^2]*PolyLog[3, (I*
E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)^(3/2)*S
qrt[d - c^2*d*x^2]) + ((2*I)*b^2*c^2*f*Sqrt[1 - c^2*x^2]*PolyLog[3, (I*E^(I
*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)^(3/2)*Sqrt[
d - c^2*d*x^2])
```

Rubi [A] time = 1.47566, antiderivative size = 1113, normalized size of antiderivative = 1., number of steps used = 20, number of rules used = 12, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.364, Rules used = {4777, 4773, 3324, 3323, 2264, 2190, 2531, 2282, 6589, 4519, 2279, 2391}

$$\frac{2ic\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)b^2}{\left(c^2f^2-g^2\right)\sqrt{d-c^2dx^2}}+\frac{2ic\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,\frac{ie^{i\sin^{-1}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)b^2}{\left(c^2f^2-g^2\right)\sqrt{d-c^2dx^2}}-\frac{2ic^2f\sqrt{1-c^2x^2}\,\text{PolyLog}\left(3,\frac{ie^{i}}{cf-}\right.}{\left(c^2f^2-g^2\right)^{3/2}\sqrt{d-c^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/((f + g*x)^2*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] (I*c*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/((c^2*f^2 - g^2)*Sqrt[d - c^2
*d*x^2]) + (g*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/((c^2*f^2 - g^2)*(f + g*
x)*Sqrt[d - c^2*d*x^2]) - (2*b*c*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[
1 - (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)*
Sqrt[d - c^2*d*x^2]) - (I*c^2*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2*Log
[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)
^(3/2)*Sqrt[d - c^2*d*x^2]) - (2*b*c*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*
Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g
^2)*Sqrt[d - c^2*d*x^2]) + (I*c^2*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2
*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 -
g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) + ((2*I)*b^2*c*Sqrt[1 - c^2*x^2]*PolyLog[2,
 (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)*Sqr
t[d - c^2*d*x^2]) - (2*b*c^2*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*PolyLo
g[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)
^(3/2)*Sqrt[d - c^2*d*x^2]) + ((2*I)*b^2*c*Sqrt[1 - c^2*x^2]*PolyLog[2, (I*
E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)*Sqrt[d
- c^2*d*x^2]) + (2*b*c^2*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*PolyLog[2,
 (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)^(3/
2)*Sqrt[d - c^2*d*x^2]) - ((2*I)*b^2*c^2*f*Sqrt[1 - c^2*x^2]*PolyLog[3, (I*
E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)^(3/2)*S
qrt[d - c^2*d*x^2]) + ((2*I)*b^2*c^2*f*Sqrt[1 - c^2*x^2]*PolyLog[3, (I*E^(I
*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)^(3/2)*Sqrt[
d - c^2*d*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3324

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[(b*(c + d*x)^m*Cos[e + f*x])/(f*(a^2 - b^2)*(a + b*Sin[e +
f*x])), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[(b*d*m)/(f*(a^2 - b^2)), Int[((c + d*x)^(m - 1)*Cos[e + f*x])/(a
 + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
```

```
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(f+gx)^2\sqrt{d-c^2dx^2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(f+gx)^2\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(c\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int \frac{(a+bx)^2}{(cf+g\sin(x))^2}\,dx, x, \sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}$$

$$= \frac{g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{\left(c^2f^2-g^2\right)(f+gx)\sqrt{d-c^2dx^2}} + \frac{\left(c^2f\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int \frac{(a+bx)^2}{cf+g\sin(x)}\,dx, x, \sin^{-1}(cx)\right)}{\left(c^2f^2-g^2\right)\sqrt{d-c^2dx^2}} -$$

$$= \frac{ic\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{\left(c^2f^2-g^2\right)\sqrt{d-c^2dx^2}} + \frac{g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{\left(c^2f^2-g^2\right)(f+gx)\sqrt{d-c^2dx^2}} + \frac{\left(2c^2f\sqrt{1-c^2x^2}\right)\text{Sub}}{\left(c^2f\right.}$$

$$= \frac{ic\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{\left(c^2f^2-g^2\right)\sqrt{d-c^2dx^2}} + \frac{g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{\left(c^2f^2-g^2\right)(f+gx)\sqrt{d-c^2dx^2}} - \frac{2bc\sqrt{1-c^2x^2}\left(a+b\,\text{s}\right.}{\left(c^2f^2-\right.}$$

$$= \frac{ic\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{\left(c^2f^2-g^2\right)\sqrt{d-c^2dx^2}} + \frac{g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{\left(c^2f^2-g^2\right)(f+gx)\sqrt{d-c^2dx^2}} - \frac{2bc\sqrt{1-c^2x^2}\left(a+b\,\text{s}\right.}{\left(c^2f^2-\right.}$$

$$= \frac{ic\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{\left(c^2f^2-g^2\right)\sqrt{d-c^2dx^2}} + \frac{g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{\left(c^2f^2-g^2\right)(f+gx)\sqrt{d-c^2dx^2}} - \frac{2bc\sqrt{1-c^2x^2}\left(a+b\,\text{s}\right.}{\left(c^2f^2-\right.}$$

$$= \frac{ic\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{\left(c^2f^2-g^2\right)\sqrt{d-c^2dx^2}} + \frac{g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{\left(c^2f^2-g^2\right)(f+gx)\sqrt{d-c^2dx^2}} - \frac{2bc\sqrt{1-c^2x^2}\left(a+b\,\text{s}\right.}{\left(c^2f^2-\right.}$$

$$= \frac{ic\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{\left(c^2f^2-g^2\right)\sqrt{d-c^2dx^2}} + \frac{g\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{\left(c^2f^2-g^2\right)(f+gx)\sqrt{d-c^2dx^2}} - \frac{2bc\sqrt{1-c^2x^2}\left(a+b\,\text{s}\right.}{\left(c^2f^2-\right.}$$

Mathematica [A] time = 0.719405, size = 651, normalized size = 0.58

$$\frac{c\sqrt{1-c^2x^2}\left(-\frac{icf\left(-2ib\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)+2b^2\text{PolyLog}\left(3,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)+\left(a+b\sin^{-1}(cx)\right)^2\log\left(1+\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}-cf}\right)\right)}{\sqrt{c^2f^2-g^2}}+\frac{cf\left(i\left(2b^2\text{PolyL}\ldots\right.\right.}{\ldots}\right.}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/((f + g*x)^2*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] (c*Sqrt[1 - c^2*x^2]*(I*(a + b*ArcSin[c*x])^2 + (g*Sqrt[1 - c^2*x^2]*(a + b
*ArcSin[c*x])^2)/(c*f + c*g*x) - 2*b*(a + b*ArcSin[c*x])*Log[1 + (I*E^(I*Ar
cSin[c*x])*g)/(-(c*f) + Sqrt[c^2*f^2 - g^2])] - 2*b*(a + b*ArcSin[c*x])*Log
[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])] + (2*I)*b^2*PolyL
og[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])] + (2*I)*b^2*Poly
Log[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])] - (I*c*f*((a +
b*ArcSin[c*x])^2*Log[1 + (I*E^(I*ArcSin[c*x])*g)/(-(c*f) + Sqrt[c^2*f^2 - g
^2])] - (2*I)*b*(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f
 - Sqrt[c^2*f^2 - g^2])] + 2*b^2*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f -
Sqrt[c^2*f^2 - g^2])]))/Sqrt[c^2*f^2 - g^2] + (c*f*(2*b*(a + b*ArcSin[c*x])
*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])] + I*((a +
b*ArcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2]
)] + 2*b^2*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])
))/Sqrt[c^2*f^2 - g^2]))/((c^2*f^2 - g^2)*Sqrt[d - c^2*d*x^2])
```

Maple [F] time = 1.546, size = 0, normalized size = 0.

$$\int \frac{(a+b\arcsin(cx))^2}{(gx+f)^2}\frac{1}{\sqrt{-c^2dx^2+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(g*x+f)^2/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2/(g*x+f)^2/(-c^2*d*x^2+d)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b \arcsin(cx) + a)^2}{\sqrt{-c^2dx^2 + d}(gx + f)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(g*x+f)^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="
maxima")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/(sqrt(-c^2*d*x^2 + d)*(g*x + f)^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2 + d}\left(b^2 \arcsin(cx)^2 + 2\, ab \arcsin(cx) + a^2\right)}{c^2dg^2x^4 + 2\, c^2dfgx^3 - 2\, dfgx - df^2 + \left(c^2df^2 - dg^2\right)x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(g*x+f)^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="
fricas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2
)/(c^2*d*g^2*x^4 + 2*c^2*d*f*g*x^3 - 2*d*f*g*x - d*f^2 + (c^2*d*f^2 - d*g^2
)*x^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + b \operatorname{asin}(cx))^2}{\sqrt{-d(cx - 1)(cx + 1)}\left(f + gx\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(g*x+f)**2/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2/(sqrt(-d*(c*x - 1)*(c*x + 1))*(f + g*x)**2),
x)
```

<u>Giac</u> [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(g*x+f)^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="
giac")
```

```
[Out] Exception raised: TypeError
```

3.75 $\int \frac{(f+gx)^3\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=738

$$-\frac{2ib^2g\sqrt{1-c^2x^2}\left(3c^2f^2+g^2\right)\mathrm{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{c^4d\sqrt{d-c^2dx^2}}+\frac{2ib^2g\sqrt{1-c^2x^2}\left(3c^2f^2+g^2\right)\mathrm{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{c^4d\sqrt{d-c^2dx^2}}-\frac{ib^2f}{}$$

```
[Out] (-2*a*b*g^3*x*Sqrt[1 - c^2*x^2])/(c^3*d*Sqrt[d - c^2*d*x^2]) - (2*b^2*g^3*(
1 - c^2*x^2))/(c^4*d*Sqrt[d - c^2*d*x^2]) - (2*b^2*g^3*x*Sqrt[1 - c^2*x^2]*
ArcSin[c*x])/(c^3*d*Sqrt[d - c^2*d*x^2]) + (g*(3*c^2*f^2 + g^2)*(a + b*ArcS
in[c*x])^2)/(c^4*d*Sqrt[d - c^2*d*x^2]) + (f*(f^2 + (3*g^2)/c^2)*x*(a + b*A
rcSin[c*x])^2)/(d*Sqrt[d - c^2*d*x^2]) - (I*f*(c^2*f^2 + 3*g^2)*Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^2)/(c^3*d*Sqrt[d - c^2*d*x^2]) + (g^3*(1 - c^2*x
^2)*(a + b*ArcSin[c*x])^2)/(c^4*d*Sqrt[d - c^2*d*x^2]) - (f*g^2*Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^3)/(b*c^3*d*Sqrt[d - c^2*d*x^2]) + ((4*I)*b*g*(3
*c^2*f^2 + g^2)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*
x])])/(c^4*d*Sqrt[d - c^2*d*x^2]) + (2*b*f*(c^2*f^2 + 3*g^2)*Sqrt[1 - c^2*x
^2]*(a + b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(c^3*d*Sqrt[d - c^2
*d*x^2]) - ((2*I)*b^2*g*(3*c^2*f^2 + g^2)*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)
*E^(I*ArcSin[c*x])])/(c^4*d*Sqrt[d - c^2*d*x^2]) + ((2*I)*b^2*g*(3*c^2*f^2
+ g^2)*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c^4*d*Sqrt[d - c
^2*d*x^2]) - (I*b^2*f*(c^2*f^2 + 3*g^2)*Sqrt[1 - c^2*x^2]*PolyLog[2, -E^((2
*I)*ArcSin[c*x])])/(c^3*d*Sqrt[d - c^2*d*x^2])
```

Rubi [A] time = 1.19116, antiderivative size = 738, normalized size of antiderivative = 1., number of steps used = 23, number of rules used = 15, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.454, Rules used = {4777, 4775, 4763, 4651, 4675, 3719, 2190, 2279, 2391, 4677, 4657, 4181, 4641, 4619, 261}

$$-\frac{2ib^2g\sqrt{1-c^2x^2}\left(3c^2f^2+g^2\right)\mathrm{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{c^4d\sqrt{d-c^2dx^2}}+\frac{2ib^2g\sqrt{1-c^2x^2}\left(3c^2f^2+g^2\right)\mathrm{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{c^4d\sqrt{d-c^2dx^2}}-\frac{ib^2f}{}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^3*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2),x]
```



```
[Out] (-2*a*b*g^3*x*Sqrt[1 - c^2*x^2])/(c^3*d*Sqrt[d - c^2*d*x^2]) - (2*b^2*g^3*(
1 - c^2*x^2))/(c^4*d*Sqrt[d - c^2*d*x^2]) - (2*b^2*g^3*x*Sqrt[1 - c^2*x^2]*
```

```
ArcSin[c*x])/(c^3*d*Sqrt[d - c^2*d*x^2]) + (g*(3*c^2*f^2 + g^2)*(a + b*ArcS
in[c*x])^2)/(c^4*d*Sqrt[d - c^2*d*x^2]) + (f*(f^2 + (3*g^2)/c^2)*x*(a + b*A
rcSin[c*x])^2)/(d*Sqrt[d - c^2*d*x^2]) - (I*f*(c^2*f^2 + 3*g^2)*Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^2)/(c^3*d*Sqrt[d - c^2*d*x^2]) + (g^3*(1 - c^2*x
^2)*(a + b*ArcSin[c*x])^2)/(c^4*d*Sqrt[d - c^2*d*x^2]) - (f*g^2*Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^3)/(b*c^3*d*Sqrt[d - c^2*d*x^2]) + ((4*I)*b*g*(3
*c^2*f^2 + g^2)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*
x])])/(c^4*d*Sqrt[d - c^2*d*x^2]) + (2*b*f*(c^2*f^2 + 3*g^2)*Sqrt[1 - c^2*x
^2]*(a + b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(c^3*d*Sqrt[d - c^2
*d*x^2]) - ((2*I)*b^2*g*(3*c^2*f^2 + g^2)*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)
*E^(I*ArcSin[c*x])])/(c^4*d*Sqrt[d - c^2*d*x^2]) + ((2*I)*b^2*g*(3*c^2*f^2
+ g^2)*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c^4*d*Sqrt[d - c
^2*d*x^2]) - (I*b^2*f*(c^2*f^2 + 3*g^2)*Sqrt[1 - c^2*x^2]*PolyLog[2, -E^((2
*I)*ArcSin[c*x])])/(c^3*d*Sqrt[d - c^2*d*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4775

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
```

```
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4675

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

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4677

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

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 261

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

Rubi steps

$$\int \frac{(f+gx)^3\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)^3\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}\,dx}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{\left(c^2f^3+3fg^2+g\left(3c^2f^2+g^2\right)x\right)\left(a+b\sin^{-1}(cx)\right)^2}{c^2\left(1-c^2x^2\right)^{3/2}} - \frac{3fg^2\left(a+b\sin^{-1}(cx)\right)^2}{c^2\sqrt{1-c^2x^2}} - \frac{g^3x\left(a+b\sin^{-1}(\right.}{c^2\sqrt{1-c^2x^2}}\right.}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \frac{\left(c^2f^3+3fg^2+g\left(3c^2f^2+g^2\right)x\right)\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}\,dx}{c^2d\sqrt{d-c^2dx^2}} - \frac{\left(3fg^2\sqrt{1-c^2x^2}\right)\int \frac{\left(a+b\sin^{-1}(\right.}{\sqrt{1-c^2x^2}}}{c^2d\sqrt{d-c^2dx^2}}$$

$$= \frac{g^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c^4d\sqrt{d-c^2dx^2}} - \frac{fg^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{bc^3d\sqrt{d-c^2dx^2}} + \frac{\sqrt{1-c^2x^2}\int}{}$$

$$= -\frac{2abg^3x\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} + \frac{g^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c^4d\sqrt{d-c^2dx^2}} - \frac{fg^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(\right.}{bc^3d\sqrt{d-c^2dx^2}}$$

$$= -\frac{2abg^3x\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} - \frac{2b^2g^3x\sqrt{1-c^2x^2}\sin^{-1}(cx)}{c^3d\sqrt{d-c^2dx^2}} + \frac{g\left(3c^2f^2+g^2\right)\left(a+b\sin^{-1}(cx)\right.}{c^4d\sqrt{d-c^2dx^2}}$$

$$= -\frac{2abg^3x\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} - \frac{2b^2g^3\left(1-c^2x^2\right)}{c^4d\sqrt{d-c^2dx^2}} - \frac{2b^2g^3x\sqrt{1-c^2x^2}\sin^{-1}(cx)}{c^3d\sqrt{d-c^2dx^2}} + \frac{g\left(3c^2f^2+\right.}{c^4}$$

$$= -\frac{2abg^3x\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} - \frac{2b^2g^3\left(1-c^2x^2\right)}{c^4d\sqrt{d-c^2dx^2}} - \frac{2b^2g^3x\sqrt{1-c^2x^2}\sin^{-1}(cx)}{c^3d\sqrt{d-c^2dx^2}} + \frac{g\left(3c^2f^2+\right.}{c^4}$$

$$= -\frac{2abg^3x\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} - \frac{2b^2g^3\left(1-c^2x^2\right)}{c^4d\sqrt{d-c^2dx^2}} - \frac{2b^2g^3x\sqrt{1-c^2x^2}\sin^{-1}(cx)}{c^3d\sqrt{d-c^2dx^2}} + \frac{g\left(3c^2f^2+\right.}{c^4}$$

$$= -\frac{2abg^3x\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} - \frac{2b^2g^3\left(1-c^2x^2\right)}{c^4d\sqrt{d-c^2dx^2}} - \frac{2b^2g^3x\sqrt{1-c^2x^2}\sin^{-1}(cx)}{c^3d\sqrt{d-c^2dx^2}} + \frac{g\left(3c^2f^2+\right.}{c^4}$$

$$= -\frac{2abg^3x\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} - \frac{2b^2g^3\left(1-c^2x^2\right)}{c^4d\sqrt{d-c^2dx^2}} - \frac{2b^2g^3x\sqrt{1-c^2x^2}\sin^{-1}(cx)}{c^3d\sqrt{d-c^2dx^2}} + \frac{g\left(3c^2f^2+\right.}{c^4}$$

Mathematica [A] time = 3.32526, size = 325, normalized size = 0.44

$$\frac{\sqrt{1-c^2x^2}\left(-(cf+g)^3\left(-\tan\left(\frac{1}{4}\left(2\sin^{-1}(cx)+\pi\right)\right)\left(a+b\sin^{-1}(cx)\right)^2+i\left(4b^2\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)+\left(a+b\sin^{-1}(cx\right.\right.\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((f + g*x)^3*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*(2*g^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2 - (2*c*f*
g^2*(a + b*ArcSin[c*x])^3)/b - 4*b*g^3*(a*c*x + b*Sqrt[1 - c^2*x^2] + b*c*x
*ArcSin[c*x]) + (c*f - g)^3*(-((a + b*ArcSin[c*x])^2*Cot[(Pi + 2*ArcSin[c*x
])/4]) + I*((a + b*ArcSin[c*x])*(a + b*ArcSin[c*x] - (4*I)*b*Log[1 + I/E^(I
*ArcSin[c*x])]) + 4*b^2*PolyLog[2, (-I)/E^(I*ArcSin[c*x])])) - (c*f + g)^3*
(I*((a + b*ArcSin[c*x])*(a + b*ArcSin[c*x] + (4*I)*b*Log[1 + I*E^(I*ArcSin[
c*x])]) + 4*b^2*PolyLog[2, (-I)*E^(I*ArcSin[c*x])]) - (a + b*ArcSin[c*x])^2
*Tan[(Pi + 2*ArcSin[c*x])/4])))/(2*c^4*d*Sqrt[d - c^2*d*x^2])
```

Maple [B] time = 0.635, size = 2663, normalized size = 3.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] -6*a*b*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^2-1)*arcsin(c*x)*x*f*g^2-6*b^2
*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^2/d^2/(c^2*x^2-1)*f^2*g*arcsin
(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+6*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2
*x^2+1)^(1/2)/c^2/d^2/(c^2*x^2-1)*f^2*g*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2
+1)^(1/2)))-6*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d^2/(c^2*x^
2-1)*f*g^2*arcsin(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)+3*I*b^2*(-d*(c^2*
x^2-1))^(1/2)/c^3/d^2/(c^2*x^2-1)*arcsin(c*x)^2*(-c^2*x^2+1)^(1/2)*f*g^2+3*
a^2*f*g^2*x/c^2/d/(-c^2*d*x^2+d)^(1/2)-3*a^2*f*g^2/c^2/d/(c^2*d)^(1/2)*arct
an((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-b^2*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^
2*x^2-1)*arcsin(c*x)^2*x*f^3-2*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3/c^2/d^2/(c^2*
x^2-1)*x^2-2*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3/c^4/d^2/(c^2*x^2-1)*arcsin(c*x)
^2+2*a^2*g^3/d/c^4/(-c^2*d*x^2+d)^(1/2)+a^2*f^3/d*x/(-c^2*d*x^2+d)^(1/2)-4*
a*b*(-d*(c^2*x^2-1))^(1/2)*g^3/c^4/d^2/(c^2*x^2-1)*arcsin(c*x)-2*a*b*(-d*(c
^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)*arcsin(c*x)*x*f^3+b^2*(-d*(c^2*x^2-1))^(1/
```

```
2)*g^3/c^2/d^2/(c^2*x^2-1)*arcsin(c*x)^2*x^2-3*b^2*(-d*(c^2*x^2-1))^(1/2)/c
^2/d^2/(c^2*x^2-1)*arcsin(c*x)^2*f^2*g+6*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*
x^2-1))^(1/2)/c^3/d^2/(c^2*x^2-1)*f*arcsin(c*x)*g^2+6*I*b^2*(-d*(c^2*x^2-1)
)^(1/2)*(-c^2*x^2+1)^(1/2)/c^2/d^2/(c^2*x^2-1)*f^2*g*dilog(1+I*(I*c*x+(-c^2
*x^2+1)^(1/2)))-6*I*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^2/d^2/(
c^2*x^2-1)*f^2*g*dilog(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+3*I*b^2*(-d*(c^2*x^2
-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d^2/(c^2*x^2-1)*f*g^2*polylog(2,-(I*c*x+(
-c^2*x^2+1)^(1/2))^2)-6*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d
^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*f*g^2+6*a*b*(-d*(c^2*x^2-1))^
(1/2)*(-c^2*x^2+1)^(1/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)/c^2/d^2/(c^2*x^2-1)
*f^2*g-6*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*ln(I*c*x+(-c^2*x^2+1
)^(1/2)+I)/c^3/d^2/(c^2*x^2-1)*f*g^2+3*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2
+1)^(1/2)/c^3/d^2/(c^2*x^2-1)*arcsin(c*x)^2*f*g^2+2*I*a*b*(-c^2*x^2+1)^(1/2
)*(-d*(c^2*x^2-1))^(1/2)/c/d^2/(c^2*x^2-1)*f^3*arcsin(c*x)-6*a*b*(-d*(c^2*x
^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^2/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(
1/2)-I)*f^2*g+I*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/d^2/(c^2*x^
2-1)*f^3*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)-2*b^2*(-d*(c^2*x^2-1))^(1
/2)*(-c^2*x^2+1)^(1/2)/c^4/d^2/(c^2*x^2-1)*g^3*arcsin(c*x)*ln(1+I*(I*c*x+(-
c^2*x^2+1)^(1/2)))+2*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^4/d^2/
(c^2*x^2-1)*g^3*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-6*a*b*(-d*(c
^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^2-1)*arcsin(c*x)*f^2*g+3*a^2*f^2*g/c^2/d/(-
c^2*d*x^2+d)^(1/2)-a^2*g^3*x^2/c^2/d/(-c^2*d*x^2+d)^(1/2)+2*b^2*(-d*(c^2*x^
2-1))^(1/2)*g^3/c^4/d^2/(c^2*x^2-1)-2*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+
1)^(1/2)/c/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*f^3-2*a*b*(-d*(c^
2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^4/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1
)^(1/2)-I)*g^3-2*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*ln(I*c*x+(-c
^2*x^2+1)^(1/2)+I)/c/d^2/(c^2*x^2-1)*f^3+2*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2
*x^2+1)^(1/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)/c^4/d^2/(c^2*x^2-1)*g^3+2*a*b*
(-d*(c^2*x^2-1))^(1/2)*g^3/c^3/d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+2*a*b*(
-d*(c^2*x^2-1))^(1/2)*g^3/c^2/d^2/(c^2*x^2-1)*arcsin(c*x)*x^2+b^2*(-d*(c^2*
x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d^2/(c^2*x^2-1)*arcsin(c*x)^3*f*g^2+2*
I*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^4/d^2/(c^2*x^2-1)*g^3*dil
og(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-2*I*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2
+1)^(1/2)/c^4/d^2/(c^2*x^2-1)*g^3*dilog(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+2*b
^2*(-d*(c^2*x^2-1))^(1/2)*g^3/c^3/d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin
(c*x)*x+I*b^2*(-d*(c^2*x^2-1))^(1/2)/c/d^2/(c^2*x^2-1)*arcsin(c*x)^2*(-c^2*
x^2+1)^(1/2)*f^3-3*b^2*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^2-1)*arcsin(c*
x)^2*x*f*g^2-2*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/d^2/(c^2*x^2
-1)*f^3*arcsin(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(a^2g^3x^3 + 3\,a^2fg^2x^2 + 3\,a^2f^2gx + a^2f^3 + \left(b^2g^3x^3 + 3\,b^2fg^2x^2 + 3\,b^2f^2gx + b^2f^3\right)\arcsin\left(cx\right)^2 + 2\left(abg^3x^3 + 3\right.\right.}{c^4d^2x^4 - 2\,c^2d^2x^2 + d^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="
fricas")
```

```
[Out] integral((a^2*g^3*x^3 + 3*a^2*f*g^2*x^2 + 3*a^2*f^2*g*x + a^2*f^3 + (b^2*g^
3*x^3 + 3*b^2*f*g^2*x^2 + 3*b^2*f^2*g*x + b^2*f^3)*arcsin(c*x)^2 + 2*(a*b*g
^3*x^3 + 3*a*b*f*g^2*x^2 + 3*a*b*f^2*g*x + a*b*f^3)*arcsin(c*x))*sqrt(-c^2*
d*x^2 + d)/(c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2), x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Exception raised: TypeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(gx + f\right)^3 \left(b\arcsin\left(cx\right) + a\right)^2}{\left(-c^2dx^2 + d\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="
giac")
```

```
[Out] integrate((g*x + f)^3*(b*arcsin(c*x) + a)^2/(-c^2*d*x^2 + d)^(3/2), x)
```

3.76 $\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=513

$$-\frac{ib^2\sqrt{1-c^2x^2}\left(c^2f^2+g^2\right)\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{c^3d\sqrt{d-c^2dx^2}}-\frac{4ib^2fg\sqrt{1-c^2x^2}\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{c^2d\sqrt{d-c^2dx^2}}+\frac{4ib^2fg\sqrt{1-c^2x^2}\text{Pol}}{c^2d\sqrt{d}}$$

```
[Out] (2*f*g*(a + b*ArcSin[c*x])^2)/(c^2*d*Sqrt[d - c^2*d*x^2]) + ((c^2*f^2 + g^2
)*x*(a + b*ArcSin[c*x])^2)/(c^2*d*Sqrt[d - c^2*d*x^2]) - (I*(c^2*f^2 + g^2)
*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(c^3*d*Sqrt[d - c^2*d*x^2]) - (g^
2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c^3*d*Sqrt[d - c^2*d*x^2])
+ ((8*I)*b*f*g*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x
])])/(c^2*d*Sqrt[d - c^2*d*x^2]) + (2*b*(c^2*f^2 + g^2)*Sqrt[1 - c^2*x^2]*(
a + b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(c^3*d*Sqrt[d - c^2*d*x^
2]) - ((4*I)*b^2*f*g*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/
(c^2*d*Sqrt[d - c^2*d*x^2]) + ((4*I)*b^2*f*g*Sqrt[1 - c^2*x^2]*PolyLog[2, I
*E^(I*ArcSin[c*x])])/(c^2*d*Sqrt[d - c^2*d*x^2]) - (I*b^2*(c^2*f^2 + g^2)*S
qrt[1 - c^2*x^2]*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(c^3*d*Sqrt[d - c^2*d*
x^2])
```

Rubi [A] time = 0.980223, antiderivative size = 513, normalized size of antiderivative = 1., number of steps used = 19, number of rules used = 13, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.394, Rules used = {4777, 4775, 4763, 4651, 4675, 3719, 2190, 2279, 2391, 4677, 4657, 4181, 4641}

$$-\frac{ib^2\sqrt{1-c^2x^2}\left(c^2f^2+g^2\right)\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{c^3d\sqrt{d-c^2dx^2}}-\frac{4ib^2fg\sqrt{1-c^2x^2}\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{c^2d\sqrt{d-c^2dx^2}}+\frac{4ib^2fg\sqrt{1-c^2x^2}\text{Pol}}{c^2d\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^2*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (2*f*g*(a + b*ArcSin[c*x])^2)/(c^2*d*Sqrt[d - c^2*d*x^2]) + ((c^2*f^2 + g^2
)*x*(a + b*ArcSin[c*x])^2)/(c^2*d*Sqrt[d - c^2*d*x^2]) - (I*(c^2*f^2 + g^2)
*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(c^3*d*Sqrt[d - c^2*d*x^2]) - (g^
2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c^3*d*Sqrt[d - c^2*d*x^2])
+ ((8*I)*b*f*g*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x
])])/(c^2*d*Sqrt[d - c^2*d*x^2]) + (2*b*(c^2*f^2 + g^2)*Sqrt[1 - c^2*x^2]*(
```

```
a + b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(c^3*d*Sqrt[d - c^2*d*x^
2]) - ((4*I)*b^2*f*g*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/
(c^2*d*Sqrt[d - c^2*d*x^2]) + ((4*I)*b^2*f*g*Sqrt[1 - c^2*x^2]*PolyLog[2, I
*E^(I*ArcSin[c*x])])/(c^2*d*Sqrt[d - c^2*d*x^2]) - (I*b^2*(c^2*f^2 + g^2)*S
qrt[1 - c^2*x^2]*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(c^3*d*Sqrt[d - c^2*d*
x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4775

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4675

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

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4677

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

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
```

```
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}\,dx}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{\left(c^2f^2+g^2+2c^2fgx\right)\left(a+b\sin^{-1}(cx)\right)^2}{c^2\left(1-c^2x^2\right)^{3/2}} - \frac{g^2\left(a+b\sin^{-1}(cx)\right)^2}{c^2\sqrt{1-c^2x^2}}\right)dx}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \frac{\left(c^2f^2+g^2+2c^2fgx\right)\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}\,dx}{c^2d\sqrt{d-c^2dx^2}} - \frac{\left(g^2\sqrt{1-c^2x^2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{c^2d\sqrt{d-c^2dx^2}}$$

$$= -\frac{g^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc^3d\sqrt{d-c^2dx^2}} + \frac{\sqrt{1-c^2x^2}\int \left(\frac{c^2f^2\left(1+\frac{g^2}{c^2f^2}\right)\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}} + \frac{2c^2fgx\left(a+\cdots\right.}{\left(1-c\cdots\right.}\cdots\right.}{c^2d\sqrt{d-c^2dx^2}\cdots}$$

$$= -\frac{g^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc^3d\sqrt{d-c^2dx^2}} + \frac{\left(2fg\sqrt{1-c^2x^2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}\,dx}{d\sqrt{d-c^2dx^2}} + \frac{\left(\left(c^2f^2+g\cdots\right.\right.}{\cdots}$$

$$= \frac{2fg\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{\left(c^2f^2+g^2\right)x\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} - \frac{g^2\sqrt{1-c^2x^2}\left(a+b\sin^{-\cdots}\right.}{3bc^3d\sqrt{d-c^2dx^2}}\cdots$$

$$= \frac{2fg\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{\left(c^2f^2+g^2\right)x\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} - \frac{g^2\sqrt{1-c^2x^2}\left(a+b\sin^{-\cdots}\right.}{3bc^3d\sqrt{d-c^2dx^2}}\cdots$$

$$= \frac{2fg\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{\left(c^2f^2+g^2\right)x\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} - \frac{i\left(c^2f^2+g^2\right)\sqrt{1-c^2x^2}\cdots}{c^3d\sqrt{d-c\cdots}}$$

$$= \frac{2fg\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{\left(c^2f^2+g^2\right)x\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} - \frac{i\left(c^2f^2+g^2\right)\sqrt{1-c^2x^2}\cdots}{c^3d\sqrt{d-c\cdots}}$$

$$= \frac{2fg\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{\left(c^2f^2+g^2\right)x\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} - \frac{i\left(c^2f^2+g^2\right)\sqrt{1-c^2x^2}\cdots}{c^3d\sqrt{d-c\cdots}}$$

$$= \frac{2fg\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{\left(c^2f^2+g^2\right)x\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} - \frac{i\left(c^2f^2+g^2\right)\sqrt{1-c^2x^2}\cdots}{c^3d\sqrt{d-c\cdots}}$$

Mathematica [A] time = 2.2354, size = 259, normalized size = 0.5

$$\sqrt{1-c^2x^2}\left(-3(cf+g)^2\left(-\tan\left(\frac{1}{4}\left(2\sin^{-1}(cx)+\pi\right)\right)\left(a+b\sin^{-1}(cx)\right)^2+i\left(4b^2\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)+\left(a+b\sin^{-1}\right.\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^2*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*((-2*g^2*(a + b*ArcSin[c*x])^3)/b + 3*(-(c*f) + g)^2*(-(
(a + b*ArcSin[c*x])^2*Cot[(Pi + 2*ArcSin[c*x])/4]) + I*((a + b*ArcSin[c*x])
*(a + b*ArcSin[c*x] - (4*I)*b*Log[1 + I/E^(I*ArcSin[c*x])]) + 4*b^2*PolyLog
[2, (-I)/E^(I*ArcSin[c*x])])) - 3*(c*f + g)^2*(I*((a + b*ArcSin[c*x])*(a +
b*ArcSin[c*x] + (4*I)*b*Log[1 + I*E^(I*ArcSin[c*x])]) + 4*b^2*PolyLog[2, (-
I)*E^(I*ArcSin[c*x])]) - (a + b*ArcSin[c*x])^2*Tan[(Pi + 2*ArcSin[c*x])/4])
))/(6*c^3*d*Sqrt[d - c^2*d*x^2])
```

Maple [B] time = 0.453, size = 1861, normalized size = 3.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] -2*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d^2/(c^2*x^2-1)*g^2*ar
csin(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)+I*b^2*(-d*(c^2*x^2-1))^(1/2)*(
-c^2*x^2+1)^(1/2)/c^3/d^2/(c^2*x^2-1)*g^2*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1
/2))^2)+a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d^2/(c^2*x^2-1)*a
rcsin(c*x)^2*g^2-4*a*b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/d^2/(c^2*x^2-1)*x
^2*f*g-2*a*b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/c^2/d^2/(c^2*x^2-1)*x*g^2-2
*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/d^2/(c^2*x^2-1)*ln(I*c*x+(
-c^2*x^2+1)^(1/2)-I)*f^2-2*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^
3/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*g^2-2*a*b*(-d*(c^2*x^2-1))
^(1/2)*(-c^2*x^2+1)^(1/2)/c/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)*
f^2-2*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d^2/(c^2*x^2-1)*ln(
I*c*x+(-c^2*x^2+1)^(1/2)+I)*g^2-2*b^2*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)^2/
c^2/d^2/(c^2*x^2-1)*(-c^2*x^2+1)*f*g+I*b^2*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*
x)^2/c/d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*f^2-b^2*(-d*(c^2*x^2-1))^(1/2)*ar
csin(c*x)^2/c^2/d^2/(c^2*x^2-1)*x*g^2-2*a*b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c
```

```
*x)/d^2/(c^2*x^2-1)*x*f^2+1/3*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)
/c^3/d^2/(c^2*x^2-1)*g^2*arcsin(c*x)^3-2*b^2*(-d*(c^2*x^2-1))^(1/2)*arcsin(
c*x)^2/d^2/(c^2*x^2-1)*x^2*f*g+4*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1
/2)/c^2/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)*f*g+2*I*a*b*(-c^2*x^
2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c/d^2/(c^2*x^2-1)*arcsin(c*x)*f^2+2*I*a*b
*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^3/d^2/(c^2*x^2-1)*arcsin(c*x)*
g^2-4*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^2/d^2/(c^2*x^2-1)*f*g
*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-4*a*b*(-d*(c^2*x^2-1))^(1/2
)*arcsin(c*x)/c^2/d^2/(c^2*x^2-1)*(-c^2*x^2+1)*f*g-4*a*b*(-d*(c^2*x^2-1))^(
1/2)*(-c^2*x^2+1)^(1/2)/c^2/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*
f*g+4*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^2/d^2/(c^2*x^2-1)*f*g
*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+4*I*b^2*(-d*(c^2*x^2-1))^(1
/2)*(-c^2*x^2+1)^(1/2)/c^2/d^2/(c^2*x^2-1)*f*g*dilog(1+I*(I*c*x+(-c^2*x^2+1
)^(1/2)))-4*I*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^2/d^2/(c^2*x^
2-1)*f*g*dilog(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+a^2*g^2*x/c^2/d/(-c^2*d*x^2+
d)^(1/2)-a^2*g^2/c^2/d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^
(1/2))+2*a^2*f*g/c^2/d/(-c^2*d*x^2+d)^(1/2)-b^2*(-d*(c^2*x^2-1))^(1/2)*arcs
in(c*x)^2/d^2/(c^2*x^2-1)*x*f^2+a^2*f^2/d*x/(-c^2*d*x^2+d)^(1/2)+I*b^2*(-d*
(c^2*x^2-1))^(1/2)*arcsin(c*x)^2/c^3/d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*g^2
-2*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/d^2/(c^2*x^2-1)*f^2*arcs
in(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)+I*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c
^2*x^2+1)^(1/2)/c/d^2/(c^2*x^2-1)*f^2*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))
^2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(a^2g^2x^2 + 2\,a^2fgx + a^2f^2 + \left(b^2g^2x^2 + 2\,b^2fgx + b^2f^2\right)\arcsin\left(cx\right)^2 + 2\left(abg^2x^2 + 2\,abfgx + abf^2\right)\arcsin\left(cx\right)}{c^4d^2x^4 - 2\,c^2d^2x^2 + d^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="
fricas")
```

```
[Out] integral((a^2*g^2*x^2 + 2*a^2*f*g*x + a^2*f^2 + (b^2*g^2*x^2 + 2*b^2*f*g*x
+ b^2*f^2)*arcsin(c*x)^2 + 2*(a*b*g^2*x^2 + 2*a*b*f*g*x + a*b*f^2)*arcsin(c
*x))*sqrt(-c^2*d*x^2 + d)/(c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+b\operatorname{asin}(cx))^2\left(f+gx\right)^2}{\left(-d\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2*(f + g*x)**2/(-d*(c*x - 1)*(c*x + 1))**(3/2),
 x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(gx+f\right)^2(b\arcsin(cx)+a)^2}{\left(-c^2dx^2+d\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="
giac")
```

```
[Out] integrate((g*x + f)^2*(b*arcsin(c*x) + a)^2/(-c^2*d*x^2 + d)^(3/2), x)
```

3.77 $\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=410

$$-\frac{ib^2f\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{cd\sqrt{d-c^2dx^2}}-\frac{2ib^2g\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{c^2d\sqrt{d-c^2dx^2}}+\frac{2ib^2g\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{c^2d\sqrt{d-c^2dx^2}}$$

```
[Out] (g*(a + b*ArcSin[c*x])^2)/(c^2*d*Sqrt[d - c^2*d*x^2]) + (f*x*(a + b*ArcSin[
c*x])^2)/(d*Sqrt[d - c^2*d*x^2]) - (I*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x
])^2)/(c*d*Sqrt[d - c^2*d*x^2]) + ((4*I)*b*g*Sqrt[1 - c^2*x^2]*(a + b*ArcSi
n[c*x])*ArcTan[E^(I*ArcSin[c*x])])/(c^2*d*Sqrt[d - c^2*d*x^2]) + (2*b*f*Sqr
t[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(c*d*Sqr
t[d - c^2*d*x^2]) - ((2*I)*b^2*g*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)*E^(I*Arc
Sin[c*x])])/(c^2*d*Sqrt[d - c^2*d*x^2]) + ((2*I)*b^2*g*Sqrt[1 - c^2*x^2]*Po
lyLog[2, I*E^(I*ArcSin[c*x])])/(c^2*d*Sqrt[d - c^2*d*x^2]) - (I*b^2*f*Sqrt[
1 - c^2*x^2]*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(c*d*Sqrt[d - c^2*d*x^2])
```

Rubi [A] time = 0.572884, antiderivative size = 410, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 11, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.355, Rules used = {4777, 4763, 4651, 4675, 3719, 2190, 2279, 2391, 4677, 4657, 4181}

$$-\frac{ib^2f\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{cd\sqrt{d-c^2dx^2}}-\frac{2ib^2g\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{c^2d\sqrt{d-c^2dx^2}}+\frac{2ib^2g\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{c^2d\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (g*(a + b*ArcSin[c*x])^2)/(c^2*d*Sqrt[d - c^2*d*x^2]) + (f*x*(a + b*ArcSin[
c*x])^2)/(d*Sqrt[d - c^2*d*x^2]) - (I*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x
])^2)/(c*d*Sqrt[d - c^2*d*x^2]) + ((4*I)*b*g*Sqrt[1 - c^2*x^2]*(a + b*ArcSi
n[c*x])*ArcTan[E^(I*ArcSin[c*x])])/(c^2*d*Sqrt[d - c^2*d*x^2]) + (2*b*f*Sqr
t[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(c*d*Sqr
t[d - c^2*d*x^2]) - ((2*I)*b^2*g*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)*E^(I*Arc
Sin[c*x])])/(c^2*d*Sqrt[d - c^2*d*x^2]) + ((2*I)*b^2*g*Sqrt[1 - c^2*x^2]*Po
lyLog[2, I*E^(I*ArcSin[c*x])])/(c^2*d*Sqrt[d - c^2*d*x^2]) - (I*b^2*f*Sqrt[
1 - c^2*x^2]*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(c*d*Sqrt[d - c^2*d*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4675

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

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4677

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

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}dx}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{f\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}} + \frac{gx\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}\right)dx}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(f\sqrt{1-c^2x^2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}dx}{d\sqrt{d-c^2dx^2}} + \frac{\left(g\sqrt{1-c^2x^2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}dx}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{g\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{fx\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} - \frac{\left(2bcf\sqrt{1-c^2x^2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{1-c^2x^2}dx}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{g\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{fx\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} - \frac{\left(2bf\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int(a+bx)\,\text{ta}\right.}{cd\sqrt{d-c^2dx^2}}$$

$$= \frac{g\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{fx\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} - \frac{if\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{cd\sqrt{d-c^2dx^2}} + \frac{4ib}{}$$

$$= \frac{g\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{fx\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} - \frac{if\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{cd\sqrt{d-c^2dx^2}} + \frac{4ib}{}$$

$$= \frac{g\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{fx\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} - \frac{if\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{cd\sqrt{d-c^2dx^2}} + \frac{4ib}{}$$

$$= \frac{g\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{fx\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} - \frac{if\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{cd\sqrt{d-c^2dx^2}} + \frac{4ib}{}$$

Mathematica [A] time = 1.36067, size = 237, normalized size = 0.58

$$\frac{\sqrt{1-c^2x^2}\left((cf-g)\left(-\cot\left(\frac{1}{4}\left(2\sin^{-1}(cx)+\pi\right)\right)\left(a+b\sin^{-1}(cx)\right)^2 + i\left(4b^2\text{PolyLog}\left(2,-ie^{-i\sin^{-1}(cx)}\right)+\left(a+b\sin^{-1}(cx\right.\right.\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*((c*f - g)*(-((a + b*ArcSin[c*x])^2*Cot[(Pi + 2*ArcSin[c
*x])/4]) + I*((a + b*ArcSin[c*x])*(a + b*ArcSin[c*x] - (4*I)*b*Log[1 + I/E^
```

```
(I*ArcSin[c*x])]) + 4*b^2*PolyLog[2, (-I)/E^(I*ArcSin[c*x])])) - (c*f + g)*
(I*((a + b*ArcSin[c*x])*(a + b*ArcSin[c*x] + (4*I)*b*Log[1 + I*E^(I*ArcSin[
c*x])]) + 4*b^2*PolyLog[2, (-I)*E^(I*ArcSin[c*x])]) - (a + b*ArcSin[c*x])^2
*Tan[(Pi + 2*ArcSin[c*x])/4])))/(2*c^2*d*Sqrt[d - c^2*d*x^2])
```

Maple [B] time = 0.312, size = 1047, normalized size = 2.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] a^2*g/c^2/d/(-c^2*d*x^2+d)^(1/2)+a^2*f/d*x/(-c^2*d*x^2+d)^(1/2)+I*b^2*(-d*(
c^2*x^2-1))^(1/2)/c/d^2/(c^2*x^2-1)*arcsin(c*x)^2*(-c^2*x^2+1)^(1/2)*f-b^2*
(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)*arcsin(c*x)^2*x*f-b^2*(-d*(c^2*x^2-1
))^(1/2)/c^2/d^2/(c^2*x^2-1)*arcsin(c*x)^2*g-2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(
c^2*x^2-1))^(1/2)/c/d^2/(c^2*x^2-1)*f*arcsin(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^
(1/2))^2)-2*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^
2-1)*g*dilog(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(
c^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^2-1)*g*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2
+1)^(1/2)))+2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^
2-1)*g*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+I*b^2*(-c^2*x^2+1)^(1
/2)*(-d*(c^2*x^2-1))^(1/2)/c/d^2/(c^2*x^2-1)*f*polylog(2,-(I*c*x+(-c^2*x^2+
1)^(1/2))^2)+2*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2/(c^2
*x^2-1)*g*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+2*I*a*b*(-d*(c^2*x^2-1))^(1
/2)*(-c^2*x^2+1)^(1/2)/c/d^2/(c^2*x^2-1)*f*arcsin(c*x)-2*a*b*(-d*(c^2*x^2-1
))^(1/2)/d^2/(c^2*x^2-1)*arcsin(c*x)*x*f-2*a*b*(-d*(c^2*x^2-1))^(1/2)/c^2/d
^2/(c^2*x^2-1)*arcsin(c*x)*g-2*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2
)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)/c/d^2/(c^2*x^2-1)*f+2*a*b*(-c^2*x^2+1)^(1/
2)*(-d*(c^2*x^2-1))^(1/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)/c^2/d^2/(c^2*x^2-1
)*g-2*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c/d^2/(c^2*x^2-1)*ln(I*
c*x+(-c^2*x^2+1)^(1/2)-I)*f-2*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)
/c^2/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*g
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{abcf\sqrt{\frac{1}{c^4d}}\log\left(x^2-\frac{1}{c^2}\right)}{d}+\frac{2\,abfx\arcsin\left(cx\right)}{\sqrt{-c^2dx^2+d}d}+\frac{a^2fx}{\sqrt{-c^2dx^2+d}d}-\sqrt{d}\int\frac{2\,abgx\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+\left(b^2gx+\right.}{\left(c^2d^2x^2-d^2\right)\sqrt{cx+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="ma
xima")
```

```
[Out] -a*b*c*f*sqrt(1/(c^4*d))*log(x^2 - 1/c^2)/d + 2*a*b*f*x*arcsin(c*x)/(sqrt(-
c^2*d*x^2 + d)*d) + a^2*f*x/(sqrt(-c^2*d*x^2 + d)*d) - sqrt(d)*integrate((2
*a*b*g*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + (b^2*g*x + b^2*f)*arc
tan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2)/((c^2*d^2*x^2 - d^2)*sqrt(c*x +
1)*sqrt(-c*x + 1)), x) + a^2*g/(sqrt(-c^2*d*x^2 + d)*c^2*d)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}\left(a^2gx+a^2f+\left(b^2gx+b^2f\right)\arcsin\left(cx\right)^2+2\left(abgx+abf\right)\arcsin\left(cx\right)\right)}{c^4d^2x^4-2\,c^2d^2x^2+d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="fr
icas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(a^2*g*x + a^2*f + (b^2*g*x + b^2*f)*arcsin(c
*x)^2 + 2*(a*b*g*x + a*b*f)*arcsin(c*x))/(c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2
), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{(a+b\,\text{asin}\,(cx))^2\left(f+gx\right)}{\left(-d\,(cx-1)\,(cx+1)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2*(f + g*x)/(-d*(c*x - 1)*(c*x + 1))**(3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)(b\arcsin{(cx)}+a)^2}{(-c^2dx^2+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="gi
ac")
```

```
[Out] integrate((g*x + f)*(b*arcsin(c*x) + a)^2/(-c^2*d*x^2 + d)^(3/2), x)
```

3.78 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(f+gx)\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=1137

result too large to display

```
[Out] ((-I/2)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(d*(c*f - g)*Sqrt[d - c^2*
d*x^2]) + ((I/2)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(d*(c*f + g)*Sqrt
[d - c^2*d*x^2]) - (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2*Cot[Pi/4 + ArcS
in[c*x]/2])/(2*d*(c*f - g)*Sqrt[d - c^2*d*x^2]) + (2*b*Sqrt[1 - c^2*x^2]*(a
 + b*ArcSin[c*x])*Log[1 - I/E^(I*ArcSin[c*x])])/(d*(c*f + g)*Sqrt[d - c^2*d
*x^2]) + (2*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 - I*E^(I*ArcSin[c
*x])])/(d*(c*f - g)*Sqrt[d - c^2*d*x^2]) + (I*g^2*Sqrt[1 - c^2*x^2]*(a + b*
ArcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])]
)/(d*(c^2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) - (I*g^2*Sqrt[1 - c^2*x^2]*
(a + b*ArcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 -
 g^2])])/(d*(c^2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) + ((2*I)*b^2*Sqrt[1
- c^2*x^2]*PolyLog[2, I/E^(I*ArcSin[c*x])])/(d*(c*f + g)*Sqrt[d - c^2*d*x^2
]) - ((2*I)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])])/(d*(c*f
- g)*Sqrt[d - c^2*d*x^2]) + (2*b*g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*
PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(d*(c^2*f^
2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) - (2*b*g^2*Sqrt[1 - c^2*x^2]*(a + b*Arc
Sin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/
(d*(c^2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) + ((2*I)*b^2*g^2*Sqrt[1 - c^2
*x^2]*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(d*(
c^2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) - ((2*I)*b^2*g^2*Sqrt[1 - c^2*x^2
]*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(d*(c^2*
f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) + (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*
x])^2*Tan[Pi/4 + ArcSin[c*x]/2])/(2*d*(c*f + g)*Sqrt[d - c^2*d*x^2])
```

Rubi [A] time = 1.99994, antiderivative size = 1137, normalized size of antiderivative = 1., number of steps used = 28, number of rules used = 14, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.424, Rules used = {4777, 4775, 4773, 3318, 4184, 3717, 2190, 2279, 2391, 3323, 2264, 2531, 2282, 6589}

$$\frac{2i\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,ie^{-i\sin^{-1}(cx)}\right)b^2}{d(cf+g)\sqrt{d-c^2dx^2}}-\frac{2i\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)b^2}{d(cf-g)\sqrt{d-c^2dx^2}}+\frac{2ig^2\sqrt{1-c^2x^2}\,\text{PolyLog}\left(3,\frac{ie^{i\sin^{-1}(c}}{cf-\sqrt{c^2f^2}}\right.}{d\left(c^2f^2-g^2\right)^{3/2}\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/((f + g*x)*(d - c^2*d*x^2)^(3/2)),x]
```

```
[Out] ((-I/2)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(d*(c*f - g)*Sqrt[d - c^2*
d*x^2]) + ((I/2)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(d*(c*f + g)*Sqrt
[d - c^2*d*x^2]) - (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2*Cot[Pi/4 + ArcS
in[c*x]/2])/(2*d*(c*f - g)*Sqrt[d - c^2*d*x^2]) + (2*b*Sqrt[1 - c^2*x^2]*(a
 + b*ArcSin[c*x])*Log[1 - I/E^(I*ArcSin[c*x])])/(d*(c*f + g)*Sqrt[d - c^2*d
*x^2]) + (2*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 - I*E^(I*ArcSin[c
*x])])/(d*(c*f - g)*Sqrt[d - c^2*d*x^2]) + (I*g^2*Sqrt[1 - c^2*x^2]*(a + b*
ArcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])]
)/(d*(c^2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) - (I*g^2*Sqrt[1 - c^2*x^2]*
(a + b*ArcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 -
 g^2])])/(d*(c^2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) + ((2*I)*b^2*Sqrt[1
- c^2*x^2]*PolyLog[2, I/E^(I*ArcSin[c*x])])/(d*(c*f + g)*Sqrt[d - c^2*d*x^2
]) - ((2*I)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])])/(d*(c*f
- g)*Sqrt[d - c^2*d*x^2]) + (2*b*g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*
PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(d*(c^2*f^
2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) - (2*b*g^2*Sqrt[1 - c^2*x^2]*(a + b*Arc
Sin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/
(d*(c^2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) + ((2*I)*b^2*g^2*Sqrt[1 - c^2
*x^2]*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(d*(
c^2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) - ((2*I)*b^2*g^2*Sqrt[1 - c^2*x^2
]*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(d*(c^2*
f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) + (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*
x])^2*Tan[Pi/4 + ArcSin[c*x]/2])/(2*d*(c*f + g)*Sqrt[d - c^2*d*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4775

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3318

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

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(f+gx)\left(d-c^2dx^2\right)^{3/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(f+gx)\left(1-c^2x^2\right)^{3/2}}\,dx}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(-\frac{c\left(a+b\sin^{-1}(cx)\right)^2}{2(cf+g)(-1+cx)\sqrt{1-c^2x^2}} + \frac{c\left(a+b\sin^{-1}(cx)\right)^2}{2(cf-g)(1+cx)\sqrt{1-c^2x^2}} + \frac{g^2\left(a+b\sin^{-1}(cx)\right)^2}{(-cf+g)(cf+g)(f+gx)\sqrt{1-c^2x^2}}\right) dx}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(c\sqrt{1-c^2x^2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(1+cx)\sqrt{1-c^2x^2}}\,dx}{2d(cf-g)\sqrt{d-c^2dx^2}} - \frac{\left(c\sqrt{1-c^2x^2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(-1+cx)\sqrt{1-c^2x^2}}\,dx}{2d(cf+g)\sqrt{d-c^2dx^2}} + \frac{\left(g^2\sqrt{1-c^2x^2}\right)\int}{d(-cf+g)(cf+}$$

$$= \frac{\left(c\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int \frac{(a+bx)^2}{c+c\sin(x)}\,dx, x, \sin^{-1}(cx)\right)}{2d(cf-g)\sqrt{d-c^2dx^2}} - \frac{\left(c\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int \frac{(a+bx)^2}{-c+c\sin(x)}\,dx\right.}{2d(cf+g)\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\,\text{Subst}\left(\int (a+bx)^2\csc^2\left(\frac{\pi}{4}+\frac{x}{2}\right)dx, x, \sin^{-1}(cx)\right)}{4d(cf-g)\sqrt{d-c^2dx^2}} + \frac{\sqrt{1-c^2x^2}\,\text{Subst}\left(\int (a+\right.}{4d(cf}$$

$$= -\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\cot\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(cx)\right)}{2d(cf-g)\sqrt{d-c^2dx^2}} + \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\tan}{2d(cf+g)\sqrt{d-c}}$$

$$= -\frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2d(cf-g)\sqrt{d-c^2dx^2}} + \frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2d(cf+g)\sqrt{d-c^2dx^2}} - \frac{\sqrt{1-c^2x^2}\left(a+b\sin\right.}{2d(cf-}$$

$$= -\frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2d(cf-g)\sqrt{d-c^2dx^2}} + \frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2d(cf+g)\sqrt{d-c^2dx^2}} - \frac{\sqrt{1-c^2x^2}\left(a+b\sin\right.}{2d(cf-}$$

$$= -\frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2d(cf-g)\sqrt{d-c^2dx^2}} + \frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2d(cf+g)\sqrt{d-c^2dx^2}} - \frac{\sqrt{1-c^2x^2}\left(a+b\sin\right.}{2d(cf-}$$

$$= -\frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2d(cf-g)\sqrt{d-c^2dx^2}} + \frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2d(cf+g)\sqrt{d-c^2dx^2}} - \frac{\sqrt{1-c^2x^2}\left(a+b\sin\right.}{2d(cf-}$$

Mathematica [A] time = 4.96684, size = 597, normalized size = 0.53

$$\frac{\sqrt{1-c^2x^2}\left(\frac{2ig^2\left(-2ib\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)+2ib\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)+2b^2\text{PolyLog}\left(3,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)-2b^2\text{PolyLog}\left(3,\right.\right.}{(cf-g)(cf+g)\sqrt{c^2f^2-g^2}}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/((f + g*x)*(d - c^2*d*x^2)^(3/2)),x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*((-((a + b*ArcSin[c*x])*((-I)*a + a*Cot[(Pi + 2*ArcSin[c
*x])/4] + b*ArcSin[c*x]*(-I + Cot[(Pi + 2*ArcSin[c*x])/4]) - 4*b*Log[1 + I/
E^(I*ArcSin[c*x])])) + (4*I)*b^2*PolyLog[2, (-I)/E^(I*ArcSin[c*x])])/(c*f -
 g) + ((2*I)*g^2*((a + b*ArcSin[c*x])^2*Log[1 + (I*E^(I*ArcSin[c*x])*g)/(-(
c*f) + Sqrt[c^2*f^2 - g^2])] - (a + b*ArcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin
[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])] - (2*I)*b*(a + b*ArcSin[c*x])*PolyLo
g[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])] + (2*I)*b*(a + b*
ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])
] + 2*b^2*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])] -
 2*b^2*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]))/((
c*f - g)*(c*f + g)*Sqrt[c^2*f^2 - g^2]) + ((-4*I)*b^2*PolyLog[2, (-I)*E^(I*
ArcSin[c*x])] + (a + b*ArcSin[c*x])*((-I)*a + 4*b*Log[1 + I*E^(I*ArcSin[c*x
])] + a*Tan[(Pi + 2*ArcSin[c*x])/4] + b*ArcSin[c*x]*(-I + Tan[(Pi + 2*ArcSi
n[c*x])/4])))/(c*f + g)))/(2*d*Sqrt[d - c^2*d*x^2])
```

Maple [F] time = 2.438, size = 0, normalized size = 0.

$$\int \frac{(a+b\arcsin(cx))^2}{gx+f}\left(-c^2dx^2+d\right)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(g*x+f)/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2/(g*x+f)/(-c^2*d*x^2+d)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b\arcsin(cx)+a)^2}{(-c^2dx^2+d)^{\frac{3}{2}}(gx+f)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(g*x+f)/(-c^2*d*x^2+d)^(3/2),x, algorithm="ma
xima")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/((-c^2*d*x^2 + d)^(3/2)*(g*x + f)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)}{c^4d^2gx^5+c^4d^2fx^4-2\,c^2d^2gx^3-2\,c^2d^2fx^2+d^2gx+d^2f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(g*x+f)/(-c^2*d*x^2+d)^(3/2),x, algorithm="fr
icas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)
/(c^4*d^2*g*x^5 + c^4*d^2*f*x^4 - 2*c^2*d^2*g*x^3 - 2*c^2*d^2*f*x^2 + d^2*g
*x + d^2*f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+b\,\mathrm{asin}(cx))^2}{(-d(cx-1)(cx+1))^{\frac{3}{2}}\,(f+gx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(g*x+f)/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2/((-d*(c*x - 1)*(c*x + 1))**(3/2)*(f + g*x)),
x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b \arcsin(cx) + a)^2}{\left(-c^2dx^2 + d\right)^{\frac{3}{2}}\left(gx + f\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(g*x+f)/(-c^2*d*x^2+d)^(3/2),x, algorithm="gi
ac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/((-c^2*d*x^2 + d)^(3/2)*(g*x + f)), x)
```

3.79 $\int \frac{(f+gx)^3\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=1589

result too large to display

```
[Out] ((-I/12)*(c*f - g)^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(c^4*d^2*Sqrt
[d - c^2*d*x^2]) + ((I/4)*(c*f - 2*g)*(c*f + g)^2*Sqrt[1 - c^2*x^2]*(a + b*
ArcSin[c*x])^2)/(c^4*d^2*Sqrt[d - c^2*d*x^2]) + ((I/12)*(c*f + g)^3*Sqrt[1
- c^2*x^2]*(a + b*ArcSin[c*x])^2)/(c^4*d^2*Sqrt[d - c^2*d*x^2]) - ((I/4)*(c
*f - g)^2*(c*f + 2*g)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(c^4*d^2*Sqr
t[d - c^2*d*x^2]) - (b^2*(c*f - g)^3*Sqrt[1 - c^2*x^2]*Cot[Pi/4 + ArcSin[c*
x]/2])/(6*c^4*d^2*Sqrt[d - c^2*d*x^2]) - ((c*f - g)^3*Sqrt[1 - c^2*x^2]*(a
+ b*ArcSin[c*x])^2*Cot[Pi/4 + ArcSin[c*x]/2])/(12*c^4*d^2*Sqrt[d - c^2*d*x^
2]) - ((c*f - g)^2*(c*f + 2*g)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2*Cot[
Pi/4 + ArcSin[c*x]/2])/(4*c^4*d^2*Sqrt[d - c^2*d*x^2]) - (b*(c*f - g)^3*Sqr
t[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Csc[Pi/4 + ArcSin[c*x]/2]^2)/(12*c^4*d^2
*Sqrt[d - c^2*d*x^2]) - ((c*f - g)^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^
2*Cot[Pi/4 + ArcSin[c*x]/2]*Csc[Pi/4 + ArcSin[c*x]/2]^2)/(24*c^4*d^2*Sqrt[d
 - c^2*d*x^2]) + (b*(c*f - 2*g)*(c*f + g)^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin
[c*x])*Log[1 - I/E^(I*ArcSin[c*x])])/(c^4*d^2*Sqrt[d - c^2*d*x^2]) + (b*(c*
f + g)^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 - I/E^(I*ArcSin[c*x])]
)/(3*c^4*d^2*Sqrt[d - c^2*d*x^2]) + (b*(c*f - g)^3*Sqrt[1 - c^2*x^2]*(a + b
*ArcSin[c*x])*Log[1 - I*E^(I*ArcSin[c*x])])/(3*c^4*d^2*Sqrt[d - c^2*d*x^2])
 + (b*(c*f - g)^2*(c*f + 2*g)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 -
 I*E^(I*ArcSin[c*x])])/(c^4*d^2*Sqrt[d - c^2*d*x^2]) + (I*b^2*(c*f - 2*g)*(
c*f + g)^2*Sqrt[1 - c^2*x^2]*PolyLog[2, I/E^(I*ArcSin[c*x])])/(c^4*d^2*Sqrt
[d - c^2*d*x^2]) + ((I/3)*b^2*(c*f + g)^3*Sqrt[1 - c^2*x^2]*PolyLog[2, I/E^
(I*ArcSin[c*x])])/(c^4*d^2*Sqrt[d - c^2*d*x^2]) - ((I/3)*b^2*(c*f - g)^3*Sq
rt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c^4*d^2*Sqrt[d - c^2*d*x^
2]) - (I*b^2*(c*f - g)^2*(c*f + 2*g)*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*Ar
cSin[c*x])])/(c^4*d^2*Sqrt[d - c^2*d*x^2]) - (b*(c*f + g)^3*Sqrt[1 - c^2*x^
2]*(a + b*ArcSin[c*x])*Sec[Pi/4 + ArcSin[c*x]/2]^2)/(12*c^4*d^2*Sqrt[d - c^
2*d*x^2]) + (b^2*(c*f + g)^3*Sqrt[1 - c^2*x^2]*Tan[Pi/4 + ArcSin[c*x]/2])/(
6*c^4*d^2*Sqrt[d - c^2*d*x^2]) + ((c*f - 2*g)*(c*f + g)^2*Sqrt[1 - c^2*x^2]
*(a + b*ArcSin[c*x])^2*Tan[Pi/4 + ArcSin[c*x]/2])/(4*c^4*d^2*Sqrt[d - c^2*d
*x^2]) + ((c*f + g)^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2*Tan[Pi/4 + Ar
cSin[c*x]/2])/(12*c^4*d^2*Sqrt[d - c^2*d*x^2]) + ((c*f + g)^3*Sqrt[1 - c^2*
x^2]*(a + b*ArcSin[c*x])^2*Sec[Pi/4 + ArcSin[c*x]/2]^2*Tan[Pi/4 + ArcSin[c*
x]/2])/(24*c^4*d^2*Sqrt[d - c^2*d*x^2])
```

Rubi [A] time = 2.11152, antiderivative size = 1589, normalized size of antiderivative = 1., number of steps used = 37, number of rules used = 12, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.364, Rules used = {4777, 4775, 4773, 3318, 4186, 3767, 8, 4184, 3717, 2190, 2279, 2391}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^3*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] ((-I/12)*(c*f - g)^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(c^4*d^2*Sqrt
[d - c^2*d*x^2]) + ((I/4)*(c*f - 2*g)*(c*f + g)^2*Sqrt[1 - c^2*x^2]*(a + b*
ArcSin[c*x])^2)/(c^4*d^2*Sqrt[d - c^2*d*x^2]) + ((I/12)*(c*f + g)^3*Sqrt[1
- c^2*x^2]*(a + b*ArcSin[c*x])^2)/(c^4*d^2*Sqrt[d - c^2*d*x^2]) - ((I/4)*(c
*f - g)^2*(c*f + 2*g)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(c^4*d^2*Sqr
t[d - c^2*d*x^2]) - (b^2*(c*f - g)^3*Sqrt[1 - c^2*x^2]*Cot[Pi/4 + ArcSin[c*
x]/2])/(6*c^4*d^2*Sqrt[d - c^2*d*x^2]) - ((c*f - g)^3*Sqrt[1 - c^2*x^2]*(a
+ b*ArcSin[c*x])^2*Cot[Pi/4 + ArcSin[c*x]/2])/(12*c^4*d^2*Sqrt[d - c^2*d*x^
2]) - ((c*f - g)^2*(c*f + 2*g)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2*Cot[
Pi/4 + ArcSin[c*x]/2])/(4*c^4*d^2*Sqrt[d - c^2*d*x^2]) - (b*(c*f - g)^3*Sqr
t[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Csc[Pi/4 + ArcSin[c*x]/2]^2)/(12*c^4*d^2
*Sqrt[d - c^2*d*x^2]) - ((c*f - g)^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^
2*Cot[Pi/4 + ArcSin[c*x]/2]*Csc[Pi/4 + ArcSin[c*x]/2]^2)/(24*c^4*d^2*Sqrt[d
 - c^2*d*x^2]) + (b*(c*f - 2*g)*(c*f + g)^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin
[c*x])*Log[1 - I/E^(I*ArcSin[c*x])])/(c^4*d^2*Sqrt[d - c^2*d*x^2]) + (b*(c*
f + g)^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 - I/E^(I*ArcSin[c*x])]
)/(3*c^4*d^2*Sqrt[d - c^2*d*x^2]) + (b*(c*f - g)^3*Sqrt[1 - c^2*x^2]*(a + b
*ArcSin[c*x])*Log[1 - I*E^(I*ArcSin[c*x])])/(3*c^4*d^2*Sqrt[d - c^2*d*x^2])
 + (b*(c*f - g)^2*(c*f + 2*g)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 -
 I*E^(I*ArcSin[c*x])])/(c^4*d^2*Sqrt[d - c^2*d*x^2]) + (I*b^2*(c*f - 2*g)*(
c*f + g)^2*Sqrt[1 - c^2*x^2]*PolyLog[2, I/E^(I*ArcSin[c*x])])/(c^4*d^2*Sqrt
[d - c^2*d*x^2]) + ((I/3)*b^2*(c*f + g)^3*Sqrt[1 - c^2*x^2]*PolyLog[2, I/E^
(I*ArcSin[c*x])])/(c^4*d^2*Sqrt[d - c^2*d*x^2]) - ((I/3)*b^2*(c*f - g)^3*Sq
rt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c^4*d^2*Sqrt[d - c^2*d*x^
2]) - (I*b^2*(c*f - g)^2*(c*f + 2*g)*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*Ar
cSin[c*x])])/(c^4*d^2*Sqrt[d - c^2*d*x^2]) - (b*(c*f + g)^3*Sqrt[1 - c^2*x^
2]*(a + b*ArcSin[c*x])*Sec[Pi/4 + ArcSin[c*x]/2]^2)/(12*c^4*d^2*Sqrt[d - c^
2*d*x^2]) + (b^2*(c*f + g)^3*Sqrt[1 - c^2*x^2]*Tan[Pi/4 + ArcSin[c*x]/2])/(
6*c^4*d^2*Sqrt[d - c^2*d*x^2]) + ((c*f - 2*g)*(c*f + g)^2*Sqrt[1 - c^2*x^2]
*(a + b*ArcSin[c*x])^2*Tan[Pi/4 + ArcSin[c*x]/2])/(4*c^4*d^2*Sqrt[d - c^2*d
*x^2]) + ((c*f + g)^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2*Tan[Pi/4 + Ar
cSin[c*x]/2])/(12*c^4*d^2*Sqrt[d - c^2*d*x^2]) + ((c*f + g)^3*Sqrt[1 - c^2*
x^2]*(a + b*ArcSin[c*x])^2*Sec[Pi/4 + ArcSin[c*x]/2]^2*Tan[Pi/4 + ArcSin[c*
x]/2])/(24*c^4*d^2*Sqrt[d - c^2*d*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4775

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3318

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

Rule 4186

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

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
```

```
d}, x] && IGtQ[n/2, 0]
```

Rule 8

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

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rubi steps

$$\int \frac{(f+gx)^3\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)^3\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\,dx}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int\left(\frac{(cf+g)^3\left(a+b\sin^{-1}(cx)\right)^2}{4c^3(-1+cx)^2\sqrt{1-c^2x^2}} - \frac{(cf-2g)(cf+g)^2\left(a+b\sin^{-1}(cx)\right)^2}{4c^3(-1+cx)\sqrt{1-c^2x^2}} + \frac{(cf-g)^3\left(a+b\sin^{-1}(cx)\right)^2}{4c^3(1+cx)^2\sqrt{1-c^2x^2}}\right.}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{\left((cf-g)^3\sqrt{1-c^2x^2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(1+cx)^2\sqrt{1-c^2x^2}}\,dx}{4c^3d^2\sqrt{d-c^2dx^2}} - \frac{\left((cf-2g)(cf+g)^2\sqrt{1-c^2x^2}\right)\int \frac{\left(a+b\sin\right.}{(-1+cx)}}{4c^3d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{\left((cf-g)^3\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int \frac{(a+bx)^2}{(c+c\sin(x))^2}\,dx, x, \sin^{-1}(cx)\right)}{4c^2d^2\sqrt{d-c^2dx^2}} - \frac{\left((cf-2g)(cf+g)^2\sqrt{\right.}{}$$

$$= \frac{\left((cf-g)^3\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int (a+bx)^2\csc^4\left(\frac{\pi}{4}+\frac{x}{2}\right)dx, x, \sin^{-1}(cx)\right)}{16c^4d^2\sqrt{d-c^2dx^2}} + \frac{\left((cf-2\right.}{}$$

$$= -\frac{(cf-g)^2(cf+2g)\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\cot\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(cx)\right)}{4c^4d^2\sqrt{d-c^2dx^2}} - \frac{b(cf-g)}{}$$

$$= \frac{i(cf-2g)(cf+g)^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{4c^4d^2\sqrt{d-c^2dx^2}} - \frac{i(cf-g)^2(cf+2g)\sqrt{1-c^2x^2}\left(a\right.}{4c^4d^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{i(cf-g)^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{12c^4d^2\sqrt{d-c^2dx^2}} + \frac{i(cf-2g)(cf+g)^2\sqrt{1-c^2x^2}\left(a+b\sin\right.}{4c^4d^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{i(cf-g)^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{12c^4d^2\sqrt{d-c^2dx^2}} + \frac{i(cf-2g)(cf+g)^2\sqrt{1-c^2x^2}\left(a+b\sin\right.}{4c^4d^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{i(cf-g)^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{12c^4d^2\sqrt{d-c^2dx^2}} + \frac{i(cf-2g)(cf+g)^2\sqrt{1-c^2x^2}\left(a+b\sin\right.}{4c^4d^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{i(cf-g)^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{12c^4d^2\sqrt{d-c^2dx^2}} + \frac{i(cf-2g)(cf+g)^2\sqrt{1-c^2x^2}\left(a+b\sin\right.}{4c^4d^2\sqrt{d-c^2dx^2}}$$

Mathematica [A] time = 6.25324, size = 715, normalized size = 0.45

$$\frac{\sqrt{1-c^2x^2}\Bigg(-\frac{(cf-g)^3\Big(-2\Big(-\tan\big(\frac{\pi}{4}-\frac{1}{2}\sin^{-1}(cx)\big)\big(a+b\sin^{-1}(cx)\big)^2+ib\Big(\frac{(a+b\sin^{-1}(cx))^2}{b}-4\Big(i\log\Big(1+e^{\frac{1}{2}i(\pi-2\sin^{-1}(cx))}\Big)\big(a+b\sin^{-1}(cx)\big)-b\,\text{PolyLog}\Big(2,-e^{\frac{1}{2}i(\pi-2\sin\cdots}}{24\cdots}}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((f + g*x)^3*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*(((c*f - g)^2*(c*f + 2*g)*(I*b*((a + b*ArcSin[c*x])^2/b
- 4*(I*(a + b*ArcSin[c*x])*Log[1 + E^((I/2)*(Pi - 2*ArcSin[c*x]))] - b*Poly
Log[2, -E^((I/2)*(Pi - 2*ArcSin[c*x]))])) - (a + b*ArcSin[c*x])^2*Tan[Pi/4
- ArcSin[c*x]/2]))/(4*c^4) - ((c*f - g)^3*(2*b*(a + b*ArcSin[c*x])*Sec[Pi/4
 - ArcSin[c*x]/2]^2 + 4*b^2*Tan[Pi/4 - ArcSin[c*x]/2] + (a + b*ArcSin[c*x])
^2*Sec[Pi/4 - ArcSin[c*x]/2]^2*Tan[Pi/4 - ArcSin[c*x]/2] - 2*(I*b*((a + b*A
rcSin[c*x])^2/b - 4*(I*(a + b*ArcSin[c*x])*Log[1 + E^((I/2)*(Pi - 2*ArcSin[
c*x]))] - b*PolyLog[2, -E^((I/2)*(Pi - 2*ArcSin[c*x]))])) - (a + b*ArcSin[c
*x])^2*Tan[Pi/4 - ArcSin[c*x]/2])))/(24*c^4) - ((c*f - 2*g)*(c*f + g)^2*(I*
b*((a + b*ArcSin[c*x])^2/b + 4*(I*(a + b*ArcSin[c*x])*Log[1 + E^((I/2)*(Pi
+ 2*ArcSin[c*x]))] + b*PolyLog[2, -E^((I/2)*(Pi + 2*ArcSin[c*x]))])) - (a +
 b*ArcSin[c*x])^2*Tan[Pi/4 + ArcSin[c*x]/2]))/(4*c^4) - ((c*f + g)^3*(2*b*(
a + b*ArcSin[c*x])*Sec[Pi/4 + ArcSin[c*x]/2]^2 - 4*b^2*Tan[Pi/4 + ArcSin[c*
x]/2] - (a + b*ArcSin[c*x])^2*Sec[Pi/4 + ArcSin[c*x]/2]^2*Tan[Pi/4 + ArcSin
[c*x]/2] + 2*(I*b*((a + b*ArcSin[c*x])^2/b + 4*(I*(a + b*ArcSin[c*x])*Log[1
 + E^((I/2)*(Pi + 2*ArcSin[c*x]))] + b*PolyLog[2, -E^((I/2)*(Pi + 2*ArcSin[
c*x]))])) - (a + b*ArcSin[c*x])^2*Tan[Pi/4 + ArcSin[c*x]/2])))/(24*c^4)))/(
d^2*Sqrt[d - c^2*d*x^2])
```

Maple [B] time = 0.802, size = 13136, normalized size = 8.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{3}\,abcf^3\left(\frac{1}{c^4d^{\frac{5}{2}}x^2-c^2d^{\frac{5}{2}}}+\frac{2\,\log\left(cx+1\right)}{c^2d^{\frac{5}{2}}}+\frac{2\,\log\left(cx-1\right)}{c^2d^{\frac{5}{2}}}\right)+\frac{2}{3}\,abf^3\left(\frac{2\,x}{\sqrt{-c^2dx^2+d}d^2}+\frac{x}{\left(-c^2dx^2+d\right)^{\frac{3}{2}}d}\right)\arcsin\left(cx\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="
maxima")
```

```
[Out] 1/3*a*b*c*f^3*(1/(c^4*d^(5/2)*x^2 - c^2*d^(5/2)) + 2*log(c*x + 1)/(c^2*d^(5
/2)) + 2*log(c*x - 1)/(c^2*d^(5/2))) + 2/3*a*b*f^3*(2*x/(sqrt(-c^2*d*x^2 +
d)*d^2) + x/((-c^2*d*x^2 + d)^(3/2)*d))*arcsin(c*x) + 1/3*a^2*f^3*(2*x/(sqr
t(-c^2*d*x^2 + d)*d^2) + x/((-c^2*d*x^2 + d)^(3/2)*d)) + 1/3*a^2*g^3*(3*x^2
/((-c^2*d*x^2 + d)^(3/2)*c^2*d) - 2/((-c^2*d*x^2 + d)^(3/2)*c^4*d)) - a^2*f
*g^2*(x/(sqrt(-c^2*d*x^2 + d)*c^2*d^2) - x/((-c^2*d*x^2 + d)^(3/2)*c^2*d))
+ sqrt(d)*integrate(((b^2*g^3*x^3 + 3*b^2*f*g^2*x^2 + 3*b^2*f^2*g*x + b^2*f
^3)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*g^3*x^3 + 3*a*b*f
*g^2*x^2 + 3*a*b*f^2*g*x)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))/((c^4
*d^3*x^4 - 2*c^2*d^3*x^2 + d^3)*sqrt(c*x + 1)*sqrt(-c*x + 1)), x) + a^2*f^2
*g/((-c^2*d*x^2 + d)^(3/2)*c^2*d)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(-\frac{\left(a^2g^3x^3+3\,a^2fg^2x^2+3\,a^2f^2gx+a^2f^3+\left(b^2g^3x^3+3\,b^2fg^2x^2+3\,b^2f^2gx+b^2f^3\right)\arcsin\left(cx\right)^2+2\left(abg^3x^3\right.\right.}{c^6d^3x^6-3\,c^4d^3x^4+3\,c^2d^3x^2-d^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="
fricas")
```

```
[Out] integral(-(a^2*g^3*x^3 + 3*a^2*f*g^2*x^2 + 3*a^2*f^2*g*x + a^2*f^3 + (b^2*g
^3*x^3 + 3*b^2*f*g^2*x^2 + 3*b^2*f^2*g*x + b^2*f^3)*arcsin(c*x)^2 + 2*(a*b*
g^3*x^3 + 3*a*b*f*g^2*x^2 + 3*a*b*f^2*g*x + a*b*f^3)*arcsin(c*x))*sqrt(-c^2
*d*x^2 + d)/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3), x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Exception raised: TypeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^3 (b \arcsin(cx) + a)^2}{(-c^2dx^2 + d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="
giac")
```

```
[Out] integrate((g*x + f)^3*(b*arcsin(c*x) + a)^2/(-c^2*d*x^2 + d)^(5/2), x)
```

3.80 $\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=1025

$$\frac{g^2\left(a+b\sin^{-1}(cx)\right)^2x^3}{3d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}-\frac{bg^2\left(a+b\sin^{-1}(cx)\right)x^2}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{2f^2\left(a+b\sin^{-1}(cx)\right)^2x}{3d^2\sqrt{d-c^2dx^2}}+\frac{f^2\left(a+b\sin^{-1}(cx)\right)^2x}{3d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}-\frac{2bfg}{3cd^2\sqrt{}}$$

```
[Out] (2*b^2*f*g)/(3*c^2*d^2*Sqrt[d - c^2*d*x^2]) + (b^2*f^2*x)/(3*d^2*Sqrt[d - c
^2*d*x^2]) + (b^2*g^2*x)/(3*c^2*d^2*Sqrt[d - c^2*d*x^2]) - (b^2*g^2*Sqrt[1
- c^2*x^2]*ArcSin[c*x])/(3*c^3*d^2*Sqrt[d - c^2*d*x^2]) - (b*f^2*(a + b*Arc
Sin[c*x]))/(3*c*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) - (2*b*f*g*x*(a
+ b*ArcSin[c*x]))/(3*c*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) - (b*g^2*
x^2*(a + b*ArcSin[c*x]))/(3*c*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) +
(2*f^2*x*(a + b*ArcSin[c*x])^2)/(3*d^2*Sqrt[d - c^2*d*x^2]) + (2*f*g*(a + b
*ArcSin[c*x])^2)/(3*c^2*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]) + (f^2*x*(a
+ b*ArcSin[c*x])^2)/(3*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]) + (g^2*x^3*(a
 + b*ArcSin[c*x])^2)/(3*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]) - (((2*I)/3)
*f^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(c*d^2*Sqrt[d - c^2*d*x^2]) +
 ((I/3)*g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(c^3*d^2*Sqrt[d - c^2*
d*x^2]) + (((4*I)/3)*b*f*g*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcTan[E^(
I*ArcSin[c*x])])/(c^2*d^2*Sqrt[d - c^2*d*x^2]) + (4*b*f^2*Sqrt[1 - c^2*x^2]
*(a + b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(3*c*d^2*Sqrt[d - c^2*
d*x^2]) - (2*b*g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 + E^((2*I)*A
rcSin[c*x])])/(3*c^3*d^2*Sqrt[d - c^2*d*x^2]) - (((2*I)/3)*b^2*f*g*Sqrt[1 -
 c^2*x^2]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(c^2*d^2*Sqrt[d - c^2*d*x^2])
 + (((2*I)/3)*b^2*f*g*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c
^2*d^2*Sqrt[d - c^2*d*x^2]) - (((2*I)/3)*b^2*f^2*Sqrt[1 - c^2*x^2]*PolyLog[
2, -E^((2*I)*ArcSin[c*x])])/(c*d^2*Sqrt[d - c^2*d*x^2]) + ((I/3)*b^2*g^2*Sq
rt[1 - c^2*x^2]*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(c^3*d^2*Sqrt[d - c^2*d
*x^2])
```

Rubi [A] time = 1.3072, antiderivative size = 1025, normalized size of antiderivative = 1., number of steps used = 30, number of rules used = 18, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.546, Rules used = {4777, 4763, 4655, 4651, 4675, 3719, 2190, 2279, 2391, 4677, 191, 4657, 4181, 261, 4681, 4703, 288, 216}

$$\frac{g^2\left(a+b\sin^{-1}(cx)\right)^2x^3}{3d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}-\frac{bg^2\left(a+b\sin^{-1}(cx)\right)x^2}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{2f^2\left(a+b\sin^{-1}(cx)\right)^2x}{3d^2\sqrt{d-c^2dx^2}}+\frac{f^2\left(a+b\sin^{-1}(cx)\right)^2x}{3d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}-\frac{2bfg}{3cd^2\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^2*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (2*b^2*f*g)/(3*c^2*d^2*Sqrt[d - c^2*d*x^2]) + (b^2*f^2*x)/(3*d^2*Sqrt[d - c
^2*d*x^2]) + (b^2*g^2*x)/(3*c^2*d^2*Sqrt[d - c^2*d*x^2]) - (b^2*g^2*Sqrt[1
- c^2*x^2]*ArcSin[c*x])/(3*c^3*d^2*Sqrt[d - c^2*d*x^2]) - (b*f^2*(a + b*Arc
Sin[c*x]))/(3*c*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) - (2*b*f*g*x*(a
+ b*ArcSin[c*x]))/(3*c*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) - (b*g^2*
x^2*(a + b*ArcSin[c*x]))/(3*c*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) +
(2*f^2*x*(a + b*ArcSin[c*x])^2)/(3*d^2*Sqrt[d - c^2*d*x^2]) + (2*f*g*(a + b
*ArcSin[c*x])^2)/(3*c^2*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]) + (f^2*x*(a
+ b*ArcSin[c*x])^2)/(3*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]) + (g^2*x^3*(a
 + b*ArcSin[c*x])^2)/(3*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]) - (((2*I)/3)
*f^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(c*d^2*Sqrt[d - c^2*d*x^2]) +
 ((I/3)*g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(c^3*d^2*Sqrt[d - c^2*
d*x^2]) + (((4*I)/3)*b*f*g*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcTan[E^(
I*ArcSin[c*x])])/(c^2*d^2*Sqrt[d - c^2*d*x^2]) + (4*b*f^2*Sqrt[1 - c^2*x^2]
*(a + b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(3*c*d^2*Sqrt[d - c^2*
d*x^2]) - (2*b*g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 + E^((2*I)*A
rcSin[c*x])])/(3*c^3*d^2*Sqrt[d - c^2*d*x^2]) - (((2*I)/3)*b^2*f*g*Sqrt[1 -
 c^2*x^2]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(c^2*d^2*Sqrt[d - c^2*d*x^2])
 + (((2*I)/3)*b^2*f*g*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c
^2*d^2*Sqrt[d - c^2*d*x^2]) - (((2*I)/3)*b^2*f^2*Sqrt[1 - c^2*x^2]*PolyLog[
2, -E^((2*I)*ArcSin[c*x])])/(c*d^2*Sqrt[d - c^2*d*x^2]) + ((I/3)*b^2*g^2*Sq
rt[1 - c^2*x^2]*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(c^3*d^2*Sqrt[d - c^2*d
*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4675

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

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4677

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

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 261

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

Rule 4681

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^F
racPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c
^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d,
 e, f, m, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] &
```

```
& NeQ[m, -1]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rule 288

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

Rule 216

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

Rubi steps

$$\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\,dx}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{f^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}} + \frac{2fgx\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}} + \frac{g^2x^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\right)dx}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(f^2\sqrt{1-c^2x^2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\,dx}{d^2\sqrt{d-c^2dx^2}} + \frac{\left(2fg\sqrt{1-c^2x^2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\,dx}{d^2\sqrt{d-c^2dx^2}} + \frac{\left(g^2\sqrt{1-\right.}{}$$

$$= \frac{2fg\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}} + \frac{f^2x\left(a+b\sin^{-1}(cx)\right)^2}{3d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}} + \frac{g^2x^3\left(a+b\sin^{-1}(cx)\right)^2}{3d^2\left(1-c^2x^2\right)\sqrt{d-c^2d}}$$

$$= -\frac{bf^2\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{2bfgx\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{bg^2x^2\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx}}$$

$$= \frac{2b^2fg}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{b^2f^2x}{3d^2\sqrt{d-c^2dx^2}} + \frac{b^2g^2x}{3c^2d^2\sqrt{d-c^2dx^2}} - \frac{bf^2\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}$$

$$= \frac{2b^2fg}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{b^2f^2x}{3d^2\sqrt{d-c^2dx^2}} + \frac{b^2g^2x}{3c^2d^2\sqrt{d-c^2dx^2}} - \frac{b^2g^2\sqrt{1-c^2x^2}\sin^{-1}(cx)}{3c^3d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{2b^2fg}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{b^2f^2x}{3d^2\sqrt{d-c^2dx^2}} + \frac{b^2g^2x}{3c^2d^2\sqrt{d-c^2dx^2}} - \frac{b^2g^2\sqrt{1-c^2x^2}\sin^{-1}(cx)}{3c^3d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{2b^2fg}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{b^2f^2x}{3d^2\sqrt{d-c^2dx^2}} + \frac{b^2g^2x}{3c^2d^2\sqrt{d-c^2dx^2}} - \frac{b^2g^2\sqrt{1-c^2x^2}\sin^{-1}(cx)}{3c^3d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{2b^2fg}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{b^2f^2x}{3d^2\sqrt{d-c^2dx^2}} + \frac{b^2g^2x}{3c^2d^2\sqrt{d-c^2dx^2}} - \frac{b^2g^2\sqrt{1-c^2x^2}\sin^{-1}(cx)}{3c^3d^2\sqrt{d-c^2dx^2}}$$

Mathematica [A] time = 6.24611, size = 711, normalized size = 0.69

$$\frac{\sqrt{1-c^2x^2}\left(-\frac{(cf-g)^2\left(-2\left(-\tan\left(\frac{\pi}{4}-\frac{1}{2}\sin^{-1}(cx)\right)\left(a+b\sin^{-1}(cx)\right)^2+ib\left(\frac{\left(a+b\sin^{-1}(cx)\right)^2}{b}-4\left(i\log\left(1+e^{\frac{1}{2}i\left(\pi-2\sin^{-1}(cx)\right)}\right)\left(a+b\sin^{-1}(cx)\right)-b\,\text{PolyLog}\left(2,-e^{\frac{1}{2}i\left(\pi-2 \cdots\right.}\right.\right.\right.\right.\right.}{2\cdots}\right.}{\cdots}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((f + g*x)^2*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*(((c^2*f^2 - g^2)*(I*b*((a + b*ArcSin[c*x])^2/b - 4*(I*(
a + b*ArcSin[c*x])*Log[1 + E^((I/2)*(Pi - 2*ArcSin[c*x]))] - b*PolyLog[2, -
E^((I/2)*(Pi - 2*ArcSin[c*x]))])) - (a + b*ArcSin[c*x])^2*Tan[Pi/4 - ArcSin
[c*x]/2]))/(4*c^3) - ((c*f - g)^2*(2*b*(a + b*ArcSin[c*x])*Sec[Pi/4 - ArcSi
n[c*x]/2]^2 + 4*b^2*Tan[Pi/4 - ArcSin[c*x]/2] + (a + b*ArcSin[c*x])^2*Sec[P
i/4 - ArcSin[c*x]/2]^2*Tan[Pi/4 - ArcSin[c*x]/2] - 2*(I*b*((a + b*ArcSin[c*
x])^2/b - 4*(I*(a + b*ArcSin[c*x])*Log[1 + E^((I/2)*(Pi - 2*ArcSin[c*x]))]
- b*PolyLog[2, -E^((I/2)*(Pi - 2*ArcSin[c*x]))])) - (a + b*ArcSin[c*x])^2*T
an[Pi/4 - ArcSin[c*x]/2])))/(24*c^3) - ((c^2*f^2 - g^2)*(I*b*((a + b*ArcSin
[c*x])^2/b + 4*(I*(a + b*ArcSin[c*x])*Log[1 + E^((I/2)*(Pi + 2*ArcSin[c*x])
)] + b*PolyLog[2, -E^((I/2)*(Pi + 2*ArcSin[c*x]))])) - (a + b*ArcSin[c*x])^
2*Tan[Pi/4 + ArcSin[c*x]/2]))/(4*c^3) - ((c*f + g)^2*(2*b*(a + b*ArcSin[c*x
])*Sec[Pi/4 + ArcSin[c*x]/2]^2 - 4*b^2*Tan[Pi/4 + ArcSin[c*x]/2] - (a + b*A
rcSin[c*x])^2*Sec[Pi/4 + ArcSin[c*x]/2]^2*Tan[Pi/4 + ArcSin[c*x]/2] + 2*(I*
b*((a + b*ArcSin[c*x])^2/b + 4*(I*(a + b*ArcSin[c*x])*Log[1 + E^((I/2)*(Pi
+ 2*ArcSin[c*x]))] + b*PolyLog[2, -E^((I/2)*(Pi + 2*ArcSin[c*x]))])) - (a +
 b*ArcSin[c*x])^2*Tan[Pi/4 + ArcSin[c*x]/2])))/(24*c^3)))/(d^2*Sqrt[d - c^2
*d*x^2])
```

Maple [B] time = 0.454, size = 9710, normalized size = 9.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{3}\,abcf^2\left(\frac{1}{c^4d^{\frac{5}{2}}x^2-c^2d^{\frac{5}{2}}}+\frac{2\,\log\left(cx+1\right)}{c^2d^{\frac{5}{2}}}+\frac{2\,\log\left(cx-1\right)}{c^2d^{\frac{5}{2}}}\right)+\frac{2}{3}\,abf^2\left(\frac{2\,x}{\sqrt{-c^2dx^2+d}d^2}+\frac{x}{\left(-c^2dx^2+d\right)^{\frac{3}{2}}d}\right)\arcsin\left(cx\right)+\frac{1}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="
maxima")
```

```
[Out] 1/3*a*b*c*f^2*(1/(c^4*d^(5/2)*x^2 - c^2*d^(5/2)) + 2*log(c*x + 1)/(c^2*d^(5
/2)) + 2*log(c*x - 1)/(c^2*d^(5/2))) + 2/3*a*b*f^2*(2*x/(sqrt(-c^2*d*x^2 +
d)*d^2) + x/((-c^2*d*x^2 + d)^(3/2)*d))*arcsin(c*x) + 1/3*a^2*f^2*(2*x/(sqr
t(-c^2*d*x^2 + d)*d^2) + x/((-c^2*d*x^2 + d)^(3/2)*d)) - 1/3*a^2*g^2*(x/(sq
rt(-c^2*d*x^2 + d)*c^2*d^2) - x/((-c^2*d*x^2 + d)^(3/2)*c^2*d)) + sqrt(d)*i
ntegrate(((b^2*g^2*x^2 + 2*b^2*f*g*x + b^2*f^2)*arctan2(c*x, sqrt(c*x + 1)*
sqrt(-c*x + 1))^2 + 2*(a*b*g^2*x^2 + 2*a*b*f*g*x)*arctan2(c*x, sqrt(c*x + 1
)*sqrt(-c*x + 1)))/((c^4*d^3*x^4 - 2*c^2*d^3*x^2 + d^3)*sqrt(c*x + 1)*sqrt(
-c*x + 1)), x) + 2/3*a^2*f*g/((-c^2*d*x^2 + d)^(3/2)*c^2*d)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(-\frac{\left(a^2g^2x^2+2\,a^2fgx+a^2f^2+\left(b^2g^2x^2+2\,b^2fgx+b^2f^2\right)\arcsin\left(cx\right)^2+2\left(abg^2x^2+2\,abfgx+abf^2\right)\arcsin\left(c\right.}{c^6d^3x^6-3\,c^4d^3x^4+3\,c^2d^3x^2-d^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="
fricas")
```

```
[Out] integral(-(a^2*g^2*x^2 + 2*a^2*f*g*x + a^2*f^2 + (b^2*g^2*x^2 + 2*b^2*f*g*x
 + b^2*f^2)*arcsin(c*x)^2 + 2*(a*b*g^2*x^2 + 2*a*b*f*g*x + a*b*f^2)*arcsin(
c*x))*sqrt(-c^2*d*x^2 + d)/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d
^3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^2(b\arcsin(cx)+a)^2}{(-c^2dx^2+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="
giac")
```

```
[Out] integrate((g*x + f)^2*(b*arcsin(c*x) + a)^2/(-c^2*d*x^2 + d)^(5/2), x)
```

3.81 $\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=641

$$-\frac{2ib^2f\sqrt{1-c^2x^2}\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{3cd^2\sqrt{d-c^2dx^2}}-\frac{ib^2g\sqrt{1-c^2x^2}\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{3c^2d^2\sqrt{d-c^2dx^2}}+\frac{ib^2g\sqrt{1-c^2x^2}\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{3c^2d^2\sqrt{d-c^2dx^2}}$$

```
[Out] (b^2*g)/(3*c^2*d^2*Sqrt[d - c^2*d*x^2]) + (b^2*f*x)/(3*d^2*Sqrt[d - c^2*d*x
^2]) - (b*f*(a + b*ArcSin[c*x]))/(3*c*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*
x^2]) - (b*g*x*(a + b*ArcSin[c*x]))/(3*c*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2
*d*x^2]) + (2*f*x*(a + b*ArcSin[c*x])^2)/(3*d^2*Sqrt[d - c^2*d*x^2]) + (g*(
a + b*ArcSin[c*x])^2)/(3*c^2*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]) + (f*x*
(a + b*ArcSin[c*x])^2)/(3*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]) - (((2*I)/
3)*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(c*d^2*Sqrt[d - c^2*d*x^2]) +
 (((2*I)/3)*b*g*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*
x])])/(c^2*d^2*Sqrt[d - c^2*d*x^2]) + (4*b*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSi
n[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(3*c*d^2*Sqrt[d - c^2*d*x^2]) - ((I
/3)*b^2*g*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(c^2*d^2*Sq
rt[d - c^2*d*x^2]) + ((I/3)*b^2*g*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSi
n[c*x])])/(c^2*d^2*Sqrt[d - c^2*d*x^2]) - (((2*I)/3)*b^2*f*Sqrt[1 - c^2*x^2
]*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(c*d^2*Sqrt[d - c^2*d*x^2])
```

Rubi [A] time = 0.78413, antiderivative size = 641, normalized size of antiderivative = 1., number of steps used = 21, number of rules used = 14, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.452, Rules used = {4777, 4763, 4655, 4651, 4675, 3719, 2190, 2279, 2391, 4677, 191, 4657, 4181, 261}

$$-\frac{2ib^2f\sqrt{1-c^2x^2}\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{3cd^2\sqrt{d-c^2dx^2}}-\frac{ib^2g\sqrt{1-c^2x^2}\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{3c^2d^2\sqrt{d-c^2dx^2}}+\frac{ib^2g\sqrt{1-c^2x^2}\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{3c^2d^2\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2),x]
```


```
[Out] (b^2*g)/(3*c^2*d^2*Sqrt[d - c^2*d*x^2]) + (b^2*f*x)/(3*d^2*Sqrt[d - c^2*d*x
^2]) - (b*f*(a + b*ArcSin[c*x]))/(3*c*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*
x^2]) - (b*g*x*(a + b*ArcSin[c*x]))/(3*c*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2
*d*x^2]) + (2*f*x*(a + b*ArcSin[c*x])^2)/(3*d^2*Sqrt[d - c^2*d*x^2]) + (g*(
```

```
a + b*ArcSin[c*x])^2)/(3*c^2*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]) + (f*x*
(a + b*ArcSin[c*x])^2)/(3*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]) - (((2*I)/
3)*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(c*d^2*Sqrt[d - c^2*d*x^2]) +
 (((2*I)/3)*b*g*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*
x])])/(c^2*d^2*Sqrt[d - c^2*d*x^2]) + (4*b*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSi
n[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(3*c*d^2*Sqrt[d - c^2*d*x^2]) - ((I
/3)*b^2*g*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(c^2*d^2*Sq
rt[d - c^2*d*x^2]) + ((I/3)*b^2*g*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSi
n[c*x])])/(c^2*d^2*Sqrt[d - c^2*d*x^2]) - (((2*I)/3)*b^2*f*Sqrt[1 - c^2*x^2
]*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(c*d^2*Sqrt[d - c^2*d*x^2])
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPar
t[p])/(1 - c^2*x^2)^FracPart[p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*Arc
Sin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e,
 0] && IntegerQ[m] && IntegerQ[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4675

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

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4677

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

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 261

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

Rubi steps

$$\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\,dx}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{f\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}} + \frac{gx\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\right)dx}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(f\sqrt{1-c^2x^2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\,dx}{d^2\sqrt{d-c^2dx^2}} + \frac{\left(g\sqrt{1-c^2x^2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\,dx}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{g\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}} + \frac{fx\left(a+b\sin^{-1}(cx)\right)^2}{3d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}} + \frac{\left(2f\sqrt{1-c^2x^2}\right)\int \frac{\left(a+b\sin^{-1}\right.}{\left(1-c^2x\right.}}{3d^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{bf\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{bgx\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{2fx\left(a+b\sin^{-1}(cx)\right)^2}{3d^2\sqrt{d-c^2dx^2}} +$$

$$= \frac{b^2g}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{b^2fx}{3d^2\sqrt{d-c^2dx^2}} - \frac{bf\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{bgx\left(a+b\sin^{-}\right.}{3cd^2\sqrt{1-c^2x^2}\sqrt{d}}$$

$$= \frac{b^2g}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{b^2fx}{3d^2\sqrt{d-c^2dx^2}} - \frac{bf\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{bgx\left(a+b\sin^{-}\right.}{3cd^2\sqrt{1-c^2x^2}\sqrt{d}}$$

$$= \frac{b^2g}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{b^2fx}{3d^2\sqrt{d-c^2dx^2}} - \frac{bf\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{bgx\left(a+b\sin^{-}\right.}{3cd^2\sqrt{1-c^2x^2}\sqrt{d}}$$

$$= \frac{b^2g}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{b^2fx}{3d^2\sqrt{d-c^2dx^2}} - \frac{bf\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{bgx\left(a+b\sin^{-}\right.}{3cd^2\sqrt{1-c^2x^2}\sqrt{d}}$$

$$= \frac{b^2g}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{b^2fx}{3d^2\sqrt{d-c^2dx^2}} - \frac{bf\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{bgx\left(a+b\sin^{-}\right.}{3cd^2\sqrt{1-c^2x^2}\sqrt{d}}$$

Mathematica [A] time = 6.22337, size = 683, normalized size = 1.07

$$\sqrt{1-c^2x^2}\left(-\frac{(cf-g)\left(-2\left(-\tan\left(\frac{\pi}{4}-\frac{1}{2}\sin^{-1}(cx)\right)\left(a+b\sin^{-1}(cx)\right)^2+ib\left(\frac{\left(a+b\sin^{-1}(cx)\right)^2}{b}-4\left(i\log\left(1+e^{\frac{1}{2}i\left(\pi-2\sin^{-1}(cx)\right)}\right)\left(a+b\sin^{-1}(cx)\right)-b\text{PolyLog}\left(2,-e^{\frac{1}{2}i\left(\pi-2\sin\right.}\right.\right.\right.\right.\right.}{2}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*((f*(I*b*((a + b*ArcSin[c*x])^2/b - 4*(I*(a + b*ArcSin[c
*x])*Log[1 + E^((I/2)*(Pi - 2*ArcSin[c*x]))] - b*PolyLog[2, -E^((I/2)*(Pi -
 2*ArcSin[c*x]))])) - (a + b*ArcSin[c*x])^2*Tan[Pi/4 - ArcSin[c*x]/2]))/(4*
c) - ((c*f - g)*(2*b*(a + b*ArcSin[c*x])*Sec[Pi/4 - ArcSin[c*x]/2]^2 + 4*b^
2*Tan[Pi/4 - ArcSin[c*x]/2] + (a + b*ArcSin[c*x])^2*Sec[Pi/4 - ArcSin[c*x]/
2]^2*Tan[Pi/4 - ArcSin[c*x]/2] - 2*(I*b*((a + b*ArcSin[c*x])^2/b - 4*(I*(a
+ b*ArcSin[c*x])*Log[1 + E^((I/2)*(Pi - 2*ArcSin[c*x]))] - b*PolyLog[2, -E^
((I/2)*(Pi - 2*ArcSin[c*x]))])) - (a + b*ArcSin[c*x])^2*Tan[Pi/4 - ArcSin[c
*x]/2])))/(24*c^2) - (f*(I*b*((a + b*ArcSin[c*x])^2/b + 4*(I*(a + b*ArcSin[
c*x])*Log[1 + E^((I/2)*(Pi + 2*ArcSin[c*x]))] + b*PolyLog[2, -E^((I/2)*(Pi
+ 2*ArcSin[c*x]))])) - (a + b*ArcSin[c*x])^2*Tan[Pi/4 + ArcSin[c*x]/2]))/(4
*c) - ((c*f + g)*(2*b*(a + b*ArcSin[c*x])*Sec[Pi/4 + ArcSin[c*x]/2]^2 - 4*b
^2*Tan[Pi/4 + ArcSin[c*x]/2] - (a + b*ArcSin[c*x])^2*Sec[Pi/4 + ArcSin[c*x]
/2]^2*Tan[Pi/4 + ArcSin[c*x]/2] + 2*(I*b*((a + b*ArcSin[c*x])^2/b + 4*(I*(a
 + b*ArcSin[c*x])*Log[1 + E^((I/2)*(Pi + 2*ArcSin[c*x]))] + b*PolyLog[2, -E
^((I/2)*(Pi + 2*ArcSin[c*x]))])) - (a + b*ArcSin[c*x])^2*Tan[Pi/4 + ArcSin[
c*x]/2])))/(24*c^2)))/(d^2*Sqrt[d - c^2*d*x^2])
```

Maple [B] time = 0.411, size = 5897, normalized size = 9.2

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{3}\,abcf\left(\frac{1}{c^4d^{\frac{5}{2}}x^2-c^2d^{\frac{5}{2}}}+\frac{2\,\log\left(cx+1\right)}{c^2d^{\frac{5}{2}}}+\frac{2\,\log\left(cx-1\right)}{c^2d^{\frac{5}{2}}}\right)+\frac{2}{3}\,abf\left(\frac{2\,x}{\sqrt{-c^2dx^2+d}d^2}+\frac{x}{\left(-c^2dx^2+d\right)^{\frac{3}{2}}d}\right)\arcsin\left(cx\right)+\frac{1}{3}\,a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="ma
xima")
```

```
[Out] 1/3*a*b*c*f*(1/(c^4*d^(5/2)*x^2 - c^2*d^(5/2)) + 2*log(c*x + 1)/(c^2*d^(5/2
)) + 2*log(c*x - 1)/(c^2*d^(5/2))) + 2/3*a*b*f*(2*x/(sqrt(-c^2*d*x^2 + d)*d
^2) + x/((-c^2*d*x^2 + d)^(3/2)*d))*arcsin(c*x) + 1/3*a^2*f*(2*x/(sqrt(-c^2
*d*x^2 + d)*d^2) + x/((-c^2*d*x^2 + d)^(3/2)*d)) + sqrt(d)*integrate((2*a*b
*g*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + (b^2*g*x + b^2*f)*arctan2
(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2)/((c^4*d^3*x^4 - 2*c^2*d^3*x^2 + d^3)
*sqrt(c*x + 1)*sqrt(-c*x + 1)), x) + 1/3*a^2*g/((-c^2*d*x^2 + d)^(3/2)*c^2*
d)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\left(a^2gx+a^2f+\left(b^2gx+b^2f\right)\arcsin\left(cx\right)^2+2\left(abgx+abf\right)\arcsin\left(cx\right)\right)}{c^6d^3x^6-3\,c^4d^3x^4+3\,c^2d^3x^2-d^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="fr
icas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(a^2*g*x + a^2*f + (b^2*g*x + b^2*f)*arcsin(
c*x)^2 + 2*(a*b*g*x + a*b*f)*arcsin(c*x))/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*
c^2*d^3*x^2 - d^3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)(b\arcsin(cx)+a)^2}{(-c^2dx^2+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="gi
ac")
```

```
[Out] integrate((g*x + f)*(b*arcsin(c*x) + a)^2/(-c^2*d*x^2 + d)^(5/2), x)
```

3.82 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^n \log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}}\,dx$

Optimal. Leaf size=37

$$\text{Unintegrable}\left(\frac{\left(a+b\sin^{-1}(cx)\right)^n \log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}},x\right)$$

```
[Out] Unintegrable[((a + b*ArcSin[c*x])^n*Log[h*(f + g*x)^m])/Sqrt[1 - c^2*x^2],
x]
```

Rubi [A] time = 0.183366, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^n \log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((a + b*ArcSin[c*x])^n*Log[h*(f + g*x)^m])/Sqrt[1 - c^2*x^2],x]
```

```
[Out] Defer[Int][((a + b*ArcSin[c*x])^n*Log[h*(f + g*x)^m])/Sqrt[1 - c^2*x^2], x]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^n \log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}}\,dx=\int \frac{\left(a+b\sin^{-1}(cx)\right)^n \log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}}\,dx$$

Mathematica [A] time = 0.148051, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^n \log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a + b*ArcSin[c*x])^n*Log[h*(f + g*x)^m])/Sqrt[1 - c^2*x^2],x]
```

```
[Out] Integrate[((a + b*ArcSin[c*x])^n*Log[h*(f + g*x)^m])/Sqrt[1 - c^2*x^2], x]
```

Maple [A] time = 5.632, size = 0, normalized size = 0.

$$\int (a + b \arcsin (cx))^n \ln \left(h \left(gx + f\right)^m\right) \frac{1}{\sqrt{-c^2x^2 + 1}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^n*ln(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^n*ln(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^n*log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algori
thm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2 + 1}(b \arcsin (cx) + a)^n \log \left(\left(gx + f\right)^m h\right)}{c^2x^2 - 1}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^n*log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algori
thm="fricas")
```

```
[Out] integral(-sqrt(-c^2*x^2 + 1)*(b*arcsin(c*x) + a)^n*log((g*x + f)^m*h)/(c^2*
x^2 - 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**n*ln(h*(g*x+f)**m)/(-c**2*x**2+1)**(1/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b \arcsin(cx) + a)^n \log\left(\left(gx + f\right)^m h\right)}{\sqrt{-c^2x^2 + 1}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^n*log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algori
thm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^n*log((g*x + f)^m*h)/sqrt(-c^2*x^2 + 1), x)
```

3.83 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^3\log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}}\,dx$

Optimal. Leaf size=634

$$-\frac{6ib^2m\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(4,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{c}-\frac{6ib^2m\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(4,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{c}+\frac{im\left(a+b\sin\right.}{}$$

```
[Out] ((I/20)*m*(a + b*ArcSin[c*x])^5)/(b^2*c) - (m*(a + b*ArcSin[c*x])^4*Log[1 -
 (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(4*b*c) - (m*(a + b*
ArcSin[c*x])^4*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]
)/(4*b*c) + ((a + b*ArcSin[c*x])^4*Log[h*(f + g*x)^m])/(4*b*c) + (I*m*(a +
b*ArcSin[c*x])^3*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g
^2])])/c + (I*m*(a + b*ArcSin[c*x])^3*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c
*f + Sqrt[c^2*f^2 - g^2])])/c - (3*b*m*(a + b*ArcSin[c*x])^2*PolyLog[3, (I*
E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/c - (3*b*m*(a + b*ArcSin
[c*x])^2*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/c
 - ((6*I)*b^2*m*(a + b*ArcSin[c*x])*PolyLog[4, (I*E^(I*ArcSin[c*x])*g)/(c*f
 - Sqrt[c^2*f^2 - g^2])])/c - ((6*I)*b^2*m*(a + b*ArcSin[c*x])*PolyLog[4, (
I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/c + (6*b^3*m*PolyLog[5
, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/c + (6*b^3*m*PolyLo
g[5, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/c
```

Rubi [A] time = 0.871398, antiderivative size = 634, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 9, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.257, Rules used = {4641, 4779, 4741, 4519, 2190, 2531, 6609, 2282, 6589}

$$-\frac{6ib^2m\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(4,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{c}-\frac{6ib^2m\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(4,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{c}+\frac{im\left(a+b\sin\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*ArcSin[c*x])^3*Log[h*(f + g*x)^m])/Sqrt[1 - c^2*x^2],x]
```

```
[Out] ((I/20)*m*(a + b*ArcSin[c*x])^5)/(b^2*c) - (m*(a + b*ArcSin[c*x])^4*Log[1 -
 (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(4*b*c) - (m*(a + b*
ArcSin[c*x])^4*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]
)/(4*b*c) + ((a + b*ArcSin[c*x])^4*Log[h*(f + g*x)^m])/(4*b*c) + (I*m*(a +
b*ArcSin[c*x])^3*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g
^2])])/c + (I*m*(a + b*ArcSin[c*x])^3*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c
```

```
*f + Sqrt[c^2*f^2 - g^2])])/c - (3*b*m*(a + b*ArcSin[c*x])^2*PolyLog[3, (I*
E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/c - (3*b*m*(a + b*ArcSin
[c*x])^2*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/c
 - ((6*I)*b^2*m*(a + b*ArcSin[c*x])*PolyLog[4, (I*E^(I*ArcSin[c*x])*g)/(c*f
 - Sqrt[c^2*f^2 - g^2])])/c - ((6*I)*b^2*m*(a + b*ArcSin[c*x])*PolyLog[4, (
I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/c + (6*b^3*m*PolyLog[5
, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/c + (6*b^3*m*PolyLo
g[5, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/c
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4779

```
Int[(Log[(h_.)*((f_.) + (g_.)*(x_))^(m_.)]*((a_.) + ArcSin[(c_.)*(x_)]*(b_.
))^(n_.))/Sqrt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Simp[(Log[h*(f + g*x)^m]*
(a + b*ArcSin[c*x])^(n + 1))/(b*c*Sqrt[d]*(n + 1)), x] - Dist[(g*m)/(b*c*Sq
rt[d]*(n + 1)), Int[(a + b*ArcSin[c*x])^(n + 1)/(f + g*x), x], x] /; FreeQ[
{a, b, c, d, e, f, g, h, m}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && IGtQ[n
, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
```

```
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^3\log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}}\,dx = \frac{\left(a+b\sin^{-1}(cx)\right)^4\log\left(h(f+gx)^m\right)}{4bc} - \frac{(gm)\int\frac{\left(a+b\sin^{-1}(cx)\right)^4}{f+gx}\,dx}{4bc}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^4\log\left(h(f+gx)^m\right)}{4bc} - \frac{(gm)\,\text{Subst}\left(\int\frac{(a+bx)^4\cos(x)}{cf+g\sin(x)}\,dx, x, \sin^{-1}\ldots\right.}{4bc}$$

$$= \frac{im\left(a+b\sin^{-1}(cx)\right)^5}{20b^2c} + \frac{\left(a+b\sin^{-1}(cx)\right)^4\log\left(h(f+gx)^m\right)}{4bc} - \frac{(gm)\,\text{Subst}\left(\ldots\right.}{\ldots}$$

$$= \frac{im\left(a+b\sin^{-1}(cx)\right)^5}{20b^2c} - \frac{m\left(a+b\sin^{-1}(cx)\right)^4\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{4bc} - \frac{m\left(a+\ldots\right.}{\ldots}$$

$$= \frac{im\left(a+b\sin^{-1}(cx)\right)^5}{20b^2c} - \frac{m\left(a+b\sin^{-1}(cx)\right)^4\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{4bc} - \frac{m\left(a+\ldots\right.}{\ldots}$$

$$= \frac{im\left(a+b\sin^{-1}(cx)\right)^5}{20b^2c} - \frac{m\left(a+b\sin^{-1}(cx)\right)^4\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{4bc} - \frac{m\left(a+\ldots\right.}{\ldots}$$

$$= \frac{im\left(a+b\sin^{-1}(cx)\right)^5}{20b^2c} - \frac{m\left(a+b\sin^{-1}(cx)\right)^4\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{4bc} - \frac{m\left(a+\ldots\right.}{\ldots}$$

$$= \frac{im\left(a+b\sin^{-1}(cx)\right)^5}{20b^2c} - \frac{m\left(a+b\sin^{-1}(cx)\right)^4\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{4bc} - \frac{m\left(a+\ldots\right.}{\ldots}$$

$$= \frac{im\left(a+b\sin^{-1}(cx)\right)^5}{20b^2c} - \frac{m\left(a+b\sin^{-1}(cx)\right)^4\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{4bc} - \frac{m\left(a+\ldots\right.}{\ldots}$$

Mathematica [F] time = 152.004, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^3\log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a + b*ArcSin[c*x])^3*Log[h*(f + g*x)^m])/Sqrt[1 - c^2*x^2],x]
```

```
[Out] Integrate[((a + b*ArcSin[c*x])^3*Log[h*(f + g*x)^m])/Sqrt[1 - c^2*x^2], x]
```

Maple [F] time = 8.092, size = 0, normalized size = 0.

$$\int (a+b\arcsin(cx))^3 \ln\left(h\left(gx+f\right)^m\right)\frac{1}{\sqrt{-c^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^3*ln(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^3*ln(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^3*log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algori
thm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(-\frac{\left(b^3\arcsin(cx)^3+3\,ab^2\arcsin(cx)^2+3\,a^2b\arcsin(cx)+a^3\right)\sqrt{-c^2x^2+1}\log\left(\left(gx+f\right)^m h\right)}{c^2x^2-1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^3*log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algori
thm="fricas")
```

```
[Out] integral(-(b^3*arcsin(c*x)^3 + 3*a*b^2*arcsin(c*x)^2 + 3*a^2*b*arcsin(c*x)
+ a^3)*sqrt(-c^2*x^2 + 1)*log((g*x + f)^m*h)/(c^2*x^2 - 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**3*ln(h*(g*x+f)**m)/(-c**2*x**2+1)**(1/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b \arcsin(cx) + a)^3 \log\left(\left(gx + f\right)^m h\right)}{\sqrt{-c^2x^2 + 1}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^3*log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algori
thm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^3*log((g*x + f)^m*h)/sqrt(-c^2*x^2 + 1), x)
```

3.84 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}}\,dx$

Optimal. Leaf size=514

$$\frac{im\left(a+b\sin^{-1}(cx)\right)^2\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{c}+\frac{im\left(a+b\sin^{-1}(cx)\right)^2\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{c}-\frac{2bm\left(a+b\sin^{-1}(cx\right.}{}$$

```
[Out] ((I/12)*m*(a + b*ArcSin[c*x])^4)/(b^2*c) - (m*(a + b*ArcSin[c*x])^3*Log[1 -
 (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(3*b*c) - (m*(a + b*
ArcSin[c*x])^3*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]
)/(3*b*c) + ((a + b*ArcSin[c*x])^3*Log[h*(f + g*x)^m])/(3*b*c) + (I*m*(a +
b*ArcSin[c*x])^2*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g
^2])])/c + (I*m*(a + b*ArcSin[c*x])^2*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c
*f + Sqrt[c^2*f^2 - g^2])])/c - (2*b*m*(a + b*ArcSin[c*x])*PolyLog[3, (I*E^
(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/c - (2*b*m*(a + b*ArcSin[c
*x])*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/c - (
(2*I)*b^2*m*PolyLog[4, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])]
)/c - ((2*I)*b^2*m*PolyLog[4, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 -
 g^2])])/c
```

Rubi [A] time = 0.752853, antiderivative size = 514, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 9, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.257, Rules used = {4641, 4779, 4741, 4519, 2190, 2531, 6609, 2282, 6589}

$$\frac{im\left(a+b\sin^{-1}(cx)\right)^2\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{c}+\frac{im\left(a+b\sin^{-1}(cx)\right)^2\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{c}-\frac{2bm\left(a+b\sin^{-1}(cx\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*ArcSin[c*x])^2*Log[h*(f + g*x)^m])/Sqrt[1 - c^2*x^2],x]
```

```
[Out] ((I/12)*m*(a + b*ArcSin[c*x])^4)/(b^2*c) - (m*(a + b*ArcSin[c*x])^3*Log[1 -
 (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(3*b*c) - (m*(a + b*
ArcSin[c*x])^3*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]
)/(3*b*c) + ((a + b*ArcSin[c*x])^3*Log[h*(f + g*x)^m])/(3*b*c) + (I*m*(a +
b*ArcSin[c*x])^2*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g
^2])])/c + (I*m*(a + b*ArcSin[c*x])^2*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c
*f + Sqrt[c^2*f^2 - g^2])])/c - (2*b*m*(a + b*ArcSin[c*x])*PolyLog[3, (I*E^
(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/c - (2*b*m*(a + b*ArcSin[c
```

```
*x])*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/c - (
(2*I)*b^2*m*PolyLog[4, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])]
)/c - ((2*I)*b^2*m*PolyLog[4, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 -
 g^2])])/c
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4779

```
Int[(Log[(h_.)*((f_.) + (g_.)*(x_))^(m_.)]*((a_.) + ArcSin[(c_.)*(x_)]*(b_.
))^(n_.))/Sqrt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Simp[(Log[h*(f + g*x)^m]*
(a + b*ArcSin[c*x])^(n + 1))/(b*c*Sqrt[d]*(n + 1)), x] - Dist[(g*m)/(b*c*Sq
rt[d]*(n + 1)), Int[(a + b*ArcSin[c*x])^(n + 1)/(f + g*x), x], x] /; FreeQ[
{a, b, c, d, e, f, g, h, m}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && IGtQ[n
, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}}\,dx = \frac{\left(a+b\sin^{-1}(cx)\right)^3\log\left(h(f+gx)^m\right)}{3bc} - \frac{(gm)\int\frac{\left(a+b\sin^{-1}(cx)\right)^3}{f+gx}\,dx}{3bc}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^3\log\left(h(f+gx)^m\right)}{3bc} - \frac{(gm)\,\text{Subst}\left(\int\frac{(a+bx)^3\cos(x)}{cf+g\sin(x)}\,dx,x,\sin^{-1}\right.}{3bc}$$

$$= \frac{im\left(a+b\sin^{-1}(cx)\right)^4}{12b^2c} + \frac{\left(a+b\sin^{-1}(cx)\right)^3\log\left(h(f+gx)^m\right)}{3bc} - \frac{(gm)\,\text{Subst}\left(\right.}{}$$

$$= \frac{im\left(a+b\sin^{-1}(cx)\right)^4}{12b^2c} - \frac{m\left(a+b\sin^{-1}(cx)\right)^3\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{3bc} - \frac{m\left(a+\right.}{}$$

$$= \frac{im\left(a+b\sin^{-1}(cx)\right)^4}{12b^2c} - \frac{m\left(a+b\sin^{-1}(cx)\right)^3\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{3bc} - \frac{m\left(a+\right.}{}$$

$$= \frac{im\left(a+b\sin^{-1}(cx)\right)^4}{12b^2c} - \frac{m\left(a+b\sin^{-1}(cx)\right)^3\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{3bc} - \frac{m\left(a+\right.}{}$$

$$= \frac{im\left(a+b\sin^{-1}(cx)\right)^4}{12b^2c} - \frac{m\left(a+b\sin^{-1}(cx)\right)^3\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{3bc} - \frac{m\left(a+\right.}{}$$

$$= \frac{im\left(a+b\sin^{-1}(cx)\right)^4}{12b^2c} - \frac{m\left(a+b\sin^{-1}(cx)\right)^3\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{3bc} - \frac{m\left(a+\right.}{}$$

Mathematica [F] time = 76.4079, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a + b*ArcSin[c*x])^2*Log[h*(f + g*x)^m])/Sqrt[1 - c^2*x^2],x]
```

```
[Out] Integrate[((a + b*ArcSin[c*x])^2*Log[h*(f + g*x)^m])/Sqrt[1 - c^2*x^2], x]
```

Maple [F] time = 6.27, size = 0, normalized size = 0.

$$\int (a+b\arcsin(cx))^2 \ln\left(h\left(gx+f\right)^m\right)\frac{1}{\sqrt{-c^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2*ln(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2*ln(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2*log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algori
thm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)\log\left(\left(gx+f\right)^m h\right)}{c^2x^2-1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2*log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algori
thm="fricas")
```

```
[Out] integral(-sqrt(-c^2*x^2 + 1)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*
log((g*x + f)^m*h)/(c^2*x^2 - 1), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + b\operatorname{asin}(cx))^2 \log\left(h\left(f + gx\right)^m\right)}{\sqrt{-(cx-1)(cx+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2*ln(h*(g*x+f)**m)/(-c**2*x**2+1)**(1/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2*log(h*(f + g*x)**m)/sqrt(-(c*x - 1)*(c*x + 1)
), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b\arcsin(cx) + a)^2 \log\left(\left(gx + f\right)^m h\right)}{\sqrt{-c^2x^2 + 1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2*log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algori
thm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2*log((g*x + f)^m*h)/sqrt(-c^2*x^2 + 1), x)
```

3.85 $\int \frac{(a+b\sin^{-1}(cx))\log(h(f+gx)^m)}{\sqrt{1-c^2x^2}}\,dx$

Optimal. Leaf size=390

$$\frac{im\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{c}+\frac{im\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{c}-\frac{bm\text{PolyLog}\left(3,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{c}$$

```
[Out] ((I/6)*m*(a + b*ArcSin[c*x])^3)/(b^2*c) - (m*(a + b*ArcSin[c*x])^2*Log[1 -
(I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(2*b*c) - (m*(a + b*A
rcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])
/(2*b*c) + ((a + b*ArcSin[c*x])^2*Log[h*(f + g*x)^m])/(2*b*c) + (I*m*(a + b
*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2]
)])/c + (I*m*(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f +
Sqrt[c^2*f^2 - g^2])])/c - (b*m*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f - S
qrt[c^2*f^2 - g^2])])/c - (b*m*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sq
rt[c^2*f^2 - g^2])])/c
```

Rubi [A] time = 0.623169, antiderivative size = 390, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.242, Rules used = {4641, 4779, 4741, 4519, 2190, 2531, 2282, 6589}

$$\frac{im\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{c}+\frac{im\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{c}-\frac{bm\text{PolyLog}\left(3,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*ArcSin[c*x])*Log[h*(f + g*x)^m])/Sqrt[1 - c^2*x^2],x]
```


```
[Out] ((I/6)*m*(a + b*ArcSin[c*x])^3)/(b^2*c) - (m*(a + b*ArcSin[c*x])^2*Log[1 -
(I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(2*b*c) - (m*(a + b*A
rcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])
/(2*b*c) + ((a + b*ArcSin[c*x])^2*Log[h*(f + g*x)^m])/(2*b*c) + (I*m*(a + b
*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2]
)])/c + (I*m*(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f +
Sqrt[c^2*f^2 - g^2])])/c - (b*m*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f - S
qrt[c^2*f^2 - g^2])])/c - (b*m*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sq
rt[c^2*f^2 - g^2])])/c
```


Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4779

```
Int[(Log[(h_.)*((f_.) + (g_.)*(x_))^(m_.)]*((a_.) + ArcSin[(c_.)*(x_)]*(b_.
))^(n_.))/Sqrt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Simp[(Log[h*(f + g*x)^m]*
(a + b*ArcSin[c*x])^(n + 1))/(b*c*Sqrt[d]*(n + 1)), x] - Dist[(g*m)/(b*c*Sq
rt[d]*(n + 1)), Int[(a + b*ArcSin[c*x])^(n + 1)/(f + g*x), x], x] /; FreeQ[
{a, b, c, d, e, f, g, h, m}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && IGtQ[n
, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)\log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}}\,dx = \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(h(f+gx)^m\right)}{2bc} - \frac{(gm)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{f+gx}\,dx}{2bc}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(h(f+gx)^m\right)}{2bc} - \frac{(gm)\,\text{Subst}\left(\int \frac{(a+bx)^2\cos(x)}{cf+g\sin(x)}\,dx, x, \sin^{-}\right.}{2bc}$$

$$= \frac{im\left(a+b\sin^{-1}(cx)\right)^3}{6b^2c} + \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(h(f+gx)^m\right)}{2bc} - \frac{(gm)\,\text{Subst}\left(\right.}{}$$

$$= \frac{im\left(a+b\sin^{-1}(cx)\right)^3}{6b^2c} - \frac{m\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{2bc} - \frac{m\left(a+\right.}{}$$

$$= \frac{im\left(a+b\sin^{-1}(cx)\right)^3}{6b^2c} - \frac{m\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{2bc} - \frac{m\left(a+\right.}{}$$

$$= \frac{im\left(a+b\sin^{-1}(cx)\right)^3}{6b^2c} - \frac{m\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{2bc} - \frac{m\left(a+\right.}{}$$

$$= \frac{im\left(a+b\sin^{-1}(cx)\right)^3}{6b^2c} - \frac{m\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{2bc} - \frac{m\left(a+\right.}{}$$

Mathematica [B] time = 9.7144, size = 2724, normalized size = 6.98

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((a + b*ArcSin[c*x])*Log[h*(f + g*x)^m])/Sqrt[1 - c^2*x^2],x]
```

```
[Out] (m*ArcSin[c*x]*(2*a + b*ArcSin[c*x])*Log[f + g*x])/(2*c) + (a*ArcSin[c*x]*(
-(m*Log[f + g*x]) + Log[h*(f + g*x)^m]))/c + (b*f*(-(m*Log[f + g*x]) + Log[
h*(f + g*x)^m])*((-I)*ArcSin[c*x]*(Log[1 + (I*E^(I*ArcSin[c*x])*g)/(-(c*f)
+ Sqrt[c^2*f^2 - g^2])] - Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f
^2 - g^2])]) - PolyLog[2, ((-I)*E^(I*ArcSin[c*x])*g)/(-(c*f) + Sqrt[c^2*f^2
 - g^2])] + PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]
))/Sqrt[c^2*f^2 - g^2] + (a*g*m*(-(((3*I)/2)*Pi*ArcSin[c*x] - (I/2)*ArcSin[
c*x]^2 + 2*Pi*Log[1 + E^((-I)*ArcSin[c*x])] - Pi*Log[1 + I*E^(I*ArcSin[c*x]
)] + 2*ArcSin[c*x]*Log[1 + I*E^(I*ArcSin[c*x])] - 2*Pi*Log[Cos[ArcSin[c*x]/
2]] + Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] - (2*I)*PolyLog[2, (-I)*E^(I*Arc
Sin[c*x])])/(2*c*(-c^(-1) - f/g)*g) + ((I/2)*Pi*ArcSin[c*x] - (I/2)*ArcSin[
c*x]^2 + 2*Pi*Log[1 + E^((-I)*ArcSin[c*x])] + Pi*Log[1 - I*E^(I*ArcSin[c*x]
)] + 2*ArcSin[c*x]*Log[1 - I*E^(I*ArcSin[c*x])] - 2*Pi*Log[Cos[ArcSin[c*x]/
2]] - Pi*Log[Sin[(Pi + 2*ArcSin[c*x])/4]] - (2*I)*PolyLog[2, I*E^(I*ArcSin[
c*x])])/(2*c*(c^(-1) - f/g)*g) + (((-I/2)*ArcSin[c*x]^2)/g + (ArcSin[c*x]*L
og[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/g + (ArcSin[c*
x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/g - (I*Pol
yLog[2, ((-I)*E^(I*ArcSin[c*x])*g)/(-(c*f) + Sqrt[c^2*f^2 - g^2])])/g - (I*
PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/g)/(c^2*(-
c^(-1) - f/g)*(c^(-1) - f/g))))/c - a*c*g*m*(-(((3*I)/2)*Pi*ArcSin[c*x] - (
I/2)*ArcSin[c*x]^2 + 2*Pi*Log[1 + E^((-I)*ArcSin[c*x])] - Pi*Log[1 + I*E^(I
*ArcSin[c*x])] + 2*ArcSin[c*x]*Log[1 + I*E^(I*ArcSin[c*x])] - 2*Pi*Log[Cos[
ArcSin[c*x]/2]] + Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] - (2*I)*PolyLog[2, (
-I)*E^(I*ArcSin[c*x])])/(2*c^3*(-c^(-1) - f/g)*g) + ((I/2)*Pi*ArcSin[c*x] -
 (I/2)*ArcSin[c*x]^2 + 2*Pi*Log[1 + E^((-I)*ArcSin[c*x])] + Pi*Log[1 - I*E^
(I*ArcSin[c*x])] + 2*ArcSin[c*x]*Log[1 - I*E^(I*ArcSin[c*x])] - 2*Pi*Log[Co
s[ArcSin[c*x]/2]] - Pi*Log[Sin[(Pi + 2*ArcSin[c*x])/4]] - (2*I)*PolyLog[2,
I*E^(I*ArcSin[c*x])])/(2*c^3*(c^(-1) - f/g)*g) + (f^2*(((-I/2)*ArcSin[c*x]^
2)/g + (ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g
^2])])/g + (ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2
 - g^2])])/g - (I*PolyLog[2, ((-I)*E^(I*ArcSin[c*x])*g)/(-(c*f) + Sqrt[c^2*
f^2 - g^2])])/g - (I*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2
 - g^2])])/g))/(c^2*(-c^(-1) - f/g)*(c^(-1) - f/g)*g^2)) + (b*(-(m*Log[f +
g*x]) + Log[h*(f + g*x)^m])*(ArcSin[c*x]^2 - 2*c*f*((Pi*ArcTan[(g + c*f*Tan
[ArcSin[c*x]/2])/Sqrt[c^2*f^2 - g^2]])/Sqrt[c^2*f^2 - g^2] + (2*ArcCos[-((c
*f)/g)]*ArcTanh[((c*f - g)*Cot[(Pi + 2*ArcSin[c*x])/4])/Sqrt[-(c^2*f^2) + g
^2]] + (Pi - 2*ArcSin[c*x])*ArcTanh[((c*f + g)*Tan[(Pi + 2*ArcSin[c*x])/4])
/Sqrt[-(c^2*f^2) + g^2]] + (ArcCos[-((c*f)/g)] + (2*I)*(ArcTanh[((c*f - g)*
Cot[(Pi + 2*ArcSin[c*x])/4])/Sqrt[-(c^2*f^2) + g^2]] + ArcTanh[((c*f + g)*T
an[(Pi + 2*ArcSin[c*x])/4])/Sqrt[-(c^2*f^2) + g^2]]))*Log[((1/2 + I/2)*Sqrt
```

```
[-(c^2*f^2) + g^2])/(E^((I/2)*ArcSin[c*x])*Sqrt[g]*Sqrt[c*f + c*g*x])] + (A
rcCos[-((c*f)/g)] - (2*I)*ArcTanh[((c*f - g)*Cot[(Pi + 2*ArcSin[c*x])/4])/S
qrt[-(c^2*f^2) + g^2]] - (2*I)*ArcTanh[((c*f + g)*Tan[(Pi + 2*ArcSin[c*x])/
4])/Sqrt[-(c^2*f^2) + g^2]])*Log[((1/2 - I/2)*E^((I/2)*ArcSin[c*x])*Sqrt[-(
c^2*f^2) + g^2])/(Sqrt[g]*Sqrt[c*f + c*g*x])] - (ArcCos[-((c*f)/g)] + (2*I)
*ArcTanh[((c*f - g)*Cot[(Pi + 2*ArcSin[c*x])/4])/Sqrt[-(c^2*f^2) + g^2]])*L
og[((c*f + g)*(-(c*f) + g - I*Sqrt[-(c^2*f^2) + g^2])*(1 + I*Cot[(Pi + 2*Ar
cSin[c*x])/4]))/(g*(c*f + g + Sqrt[-(c^2*f^2) + g^2]*Cot[(Pi + 2*ArcSin[c*x
])/4]))] - (ArcCos[-((c*f)/g)] - (2*I)*ArcTanh[((c*f - g)*Cot[(Pi + 2*ArcSi
n[c*x])/4])/Sqrt[-(c^2*f^2) + g^2]])*Log[((c*f + g)*(I*c*f - I*g + Sqrt[-(c
^2*f^2) + g^2])*(I + Cot[(Pi + 2*ArcSin[c*x])/4]))/(g*(c*f + g + Sqrt[-(c^2
*f^2) + g^2]*Cot[(Pi + 2*ArcSin[c*x])/4]))] + I*(PolyLog[2, ((c*f - I*Sqrt[
-(c^2*f^2) + g^2])*(c*f + g - Sqrt[-(c^2*f^2) + g^2]*Cot[(Pi + 2*ArcSin[c*x
])/4]))/(g*(c*f + g + Sqrt[-(c^2*f^2) + g^2]*Cot[(Pi + 2*ArcSin[c*x])/4]))]
 - PolyLog[2, ((c*f + I*Sqrt[-(c^2*f^2) + g^2])*(c*f + g - Sqrt[-(c^2*f^2)
+ g^2]*Cot[(Pi + 2*ArcSin[c*x])/4]))/(g*(c*f + g + Sqrt[-(c^2*f^2) + g^2]*C
ot[(Pi + 2*ArcSin[c*x])/4]))]))/Sqrt[-(c^2*f^2) + g^2])))/(2*c) - (b*g*m*((
(-I/3)*ArcSin[c*x]^3)/g + (ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c
*f - Sqrt[c^2*f^2 - g^2])])/g + (ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcSin[c*x])
*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/g - ((2*I)*ArcSin[c*x]*PolyLog[2, (I*E^(I
*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/g - ((2*I)*ArcSin[c*x]*PolyL
og[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/g + (2*PolyLog[
3, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/g + (2*PolyLog[3,
(I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/g))/(2*c)
```

Maple [F] time = 4.362, size = 0, normalized size = 0.

$$\int \left(a+b \arcsin \left(c x\right)\right) \ln \left(h \left(g x+f\right)^{m}\right) \frac{1}{\sqrt{-c^{2} x^{2}+1}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))*ln(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] int((a+b*arcsin(c*x))*ln(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algorith
m="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}(b\arcsin(cx)+a)\log\left(\left(gx+f\right)^m h\right)}{c^2x^2-1}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algorith
m="fricas")
```

```
[Out] integral(-sqrt(-c^2*x^2 + 1)*(b*arcsin(c*x) + a)*log((g*x + f)^m*h)/(c^2*x^
2 - 1), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+b\,\text{asin}\,(cx))\log\left(h\left(f+gx\right)^m\right)}{\sqrt{-(cx-1)(cx+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))*ln(h*(g*x+f)**m)/(-c**2*x**2+1)**(1/2),x)
```

```
[Out] Integral((a + b*asin(c*x))*log(h*(f + g*x)**m)/sqrt(-(c*x - 1)*(c*x + 1)),
x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b\arcsin(cx)+a)\log\left(\left(gx+f\right)^m h\right)}{\sqrt{-c^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algorith
m="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)*log((g*x + f)^m*h)/sqrt(-c^2*x^2 + 1), x)
```

3.86 $\int \frac{\log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}}\,dx$

Optimal. Leaf size=237

$$\frac{im\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{c}+\frac{im\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{c}-\frac{m\sin^{-1}(cx)\log\left(1-\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{c}-\frac{m\sin^{-1}(cx)\log\left(1-\frac{i}{\sqrt{}}\right)}{c}$$

```
[Out] ((I/2)*m*ArcSin[c*x]^2)/c - (m*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/
(c*f - Sqrt[c^2*f^2 - g^2])])/c - (m*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x
])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/c + (ArcSin[c*x]*Log[h*(f + g*x)^m])/c
+ (I*m*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/c +
 (I*m*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/c
```

Rubi [A] time = 0.33166, antiderivative size = 237, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.28, Rules used = {216, 2404, 4741, 4519, 2190, 2279, 2391}

$$\frac{im\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{c}+\frac{im\text{PolyLog}\left(2,\frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{c}-\frac{m\sin^{-1}(cx)\log\left(1-\frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{c}-\frac{m\sin^{-1}(cx)\log\left(1-\frac{i}{\sqrt{}}\right)}{c}$$

Antiderivative was successfully verified.

```
[In] Int[Log[h*(f + g*x)^m]/Sqrt[1 - c^2*x^2],x]
```


```
[Out] ((I/2)*m*ArcSin[c*x]^2)/c - (m*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/
(c*f - Sqrt[c^2*f^2 - g^2])])/c - (m*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x
])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/c + (ArcSin[c*x]*Log[h*(f + g*x)^m])/c
+ (I*m*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/c +
 (I*m*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/c
```


Rule 216

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

Rule 2404

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
```

```
b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rubi steps

$$\int \frac{\log \left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}}\,dx = \frac{\sin^{-1}(cx)\log \left(h(f+gx)^m\right)}{c} - (gm)\int \frac{\sin^{-1}(cx)}{cf+cgx}\,dx$$
$$= \frac{\sin^{-1}(cx)\log \left(h(f+gx)^m\right)}{c} - (gm)\,\text{Subst}\left(\int \frac{x\cos(x)}{c^2f+cg\sin(x)}\,dx, x, \sin^{-1}(cx)\right)$$
$$= \frac{im\sin^{-1}(cx)^2}{2c} + \frac{\sin^{-1}(cx)\log \left(h(f+gx)^m\right)}{c} - (gm)\,\text{Subst}\left(\int \frac{e^{ix}x}{c^2f-ice^{ix}g-c\sqrt{c^2f^2-g^2}}\,dx, x$$
$$= \frac{im\sin^{-1}(cx)^2}{2c} - \frac{m\sin^{-1}(cx)\log \left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{c} - \frac{m\sin^{-1}(cx)\log \left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)}{c} + \frac{\sin^{-1}(}{}$$

$$= \frac{im\sin^{-1}(cx)^2}{2c} - \frac{m\sin^{-1}(cx)\log \left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{c} - \frac{m\sin^{-1}(cx)\log \left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)}{c} + \frac{\sin^{-1}(}{}$$
$$= \frac{im\sin^{-1}(cx)^2}{2c} - \frac{m\sin^{-1}(cx)\log \left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{c} - \frac{m\sin^{-1}(cx)\log \left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)}{c} + \frac{\sin^{-1}(}{}$$

Mathematica [A] time = 0.0236326, size = 246, normalized size = 1.04

$$\frac{im\text{PolyLog}\left(2, \frac{ige^{i\sin^{-1}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{c} + \frac{im\text{PolyLog}\left(2, \frac{ige^{i\sin^{-1}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{c} - \frac{m\sin^{-1}(cx)\log \left(1-\frac{icge^{i\sin^{-1}(cx)}}{c^2f-c\sqrt{c^2f^2-g^2}}\right)}{c} - \frac{m\sin^{-1}(cx)\log \left(1-\right.}{c}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[h*(f + g*x)^m]/Sqrt[1 - c^2*x^2],x]
```

```
[Out] ((I/2)*m*ArcSin[c*x]^2)/c - (m*ArcSin[c*x]*Log[1 - (I*c*E^(I*ArcSin[c*x])*g
)/(c^2*f - c*Sqrt[c^2*f^2 - g^2])])/c - (m*ArcSin[c*x]*Log[1 - (I*c*E^(I*Ar
cSin[c*x])*g)/(c^2*f + c*Sqrt[c^2*f^2 - g^2])])/c + (ArcSin[c*x]*Log[h*(f +
 g*x)^m])/c + (I*m*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 -
 g^2])])/c + (I*m*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 -
g^2])])/c
```

Maple [F] time = 0.165, size = 0, normalized size = 0.

$$\int \ln \left(h\left(gx+f\right)^{m}\right)\frac{1}{\sqrt{-c^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] int(ln(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left(\left(gx+f\right)^m h\right)}{\sqrt{-c^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(log((g*x + f)^m*h)/sqrt(-c^2*x^2 + 1), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}\log\left(\left(gx+f\right)^m h\right)}{c^2x^2-1}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*x^2 + 1)*log((g*x + f)^m*h)/(c^2*x^2 - 1), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left(h\left(f+gx\right)^m\right)}{\sqrt{-\left(cx-1\right)\left(cx+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(h*(g*x+f)**m)/(-c**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(log(h*(f + g*x)**m)/sqrt(-(c*x - 1)*(c*x + 1)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left(\left(gx+f\right)^{m}h\right)}{\sqrt{-c^{2}x^{2}+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(log((g*x + f)^m*h)/sqrt(-c^2*x^2 + 1), x)
```

3.87 $\int \frac{\log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=37

$$\text{Unintegrable}\left(\frac{\log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)},x\right)$$

```
[Out] Unintegrable[Log[h*(f + g*x)^m]/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])), x]
```

Rubi [A] time = 0.193949, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Log[h*(f + g*x)^m]/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])),x]
```

```
[Out] Defer[Int][Log[h*(f + g*x)^m]/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{\log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx=\int \frac{\log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Mathematica [A] time = 0.205206, size = 0, normalized size = 0.

$$\int \frac{\log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Log[h*(f + g*x)^m]/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])),x]
```

```
[Out] Integrate[Log[h*(f + g*x)^m]/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])), x]
```

Maple [A] time = 2.396, size = 0, normalized size = 0.

$$\int \frac{\ln\left(h\left(gx+f\right)^{m}\right)}{a+b\arcsin\left(cx\right)}\frac{1}{\sqrt{-c^{2}x^{2}+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(h*(g*x+f)^m)/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] int(ln(h*(g*x+f)^m)/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left(\left(gx+f\right)^{m}h\right)}{\sqrt{-c^{2}x^{2}+1}(b\arcsin\left(cx\right)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(h*(g*x+f)^m)/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorith
m="maxima")
```

```
[Out] integrate(log((g*x + f)^m*h)/(sqrt(-c^2*x^2 + 1)*(b*arcsin(c*x) + a)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\sqrt{-c^{2}x^{2}+1}\log\left(\left(gx+f\right)^{m}h\right)}{ac^{2}x^{2}+\left(bc^{2}x^{2}-b\right)\arcsin\left(cx\right)-a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(h*(g*x+f)^m)/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorith
m="fricas")
```

```
[Out] integral(-sqrt(-c^2*x^2 + 1)*log((g*x + f)^m*h)/(a*c^2*x^2 + (b*c^2*x^2 - b
)*arcsin(c*x) - a), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left(h\left(f+gx\right)^{m}\right)}{\sqrt{-\left(cx-1\right)\left(cx+1\right)}\left(a+b\operatorname{asin}\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(h*(g*x+f)**m)/(a+b*asin(c*x))/(-c**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(log(h*(f + g*x)**m)/(sqrt(-(c*x - 1)*(c*x + 1))*(a + b*asin(c*x)))
, x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left(\left(gx+f\right)^{m}h\right)}{\sqrt{-c^{2}x^{2}+1}(b\arcsin\left(cx\right)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(h*(g*x+f)^m)/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorith
m="giac")
```

```
[Out] integrate(log((g*x + f)^m*h)/(sqrt(-c^2*x^2 + 1)*(b*arcsin(c*x) + a)), x)
```

3.88 $\int (d+ex)^3(f+gx)\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=351

$$\frac{1}{2}d^2x^2(dg+3ef)\left(a+b\sin^{-1}(cx)\right)+d^3fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}e^2x^4(3dg+ef)\left(a+b\sin^{-1}(cx)\right)+dex^3(dg+ef)\left(a+b\sin\right.$$

```
[Out] (b*e*(4*e^2*g + 25*c^2*d*(e*f + d*g))*x^2*Sqrt[1 - c^2*x^2])/(75*c^3) + (b*
e^2*(e*f + 3*d*g)*x^3*Sqrt[1 - c^2*x^2])/(16*c) + (b*e^3*g*x^4*Sqrt[1 - c^2
*x^2])/(25*c) + (b*(32*(75*c^4*d^3*f + 8*e^3*g + 50*c^2*d*e*(e*f + d*g)) +
75*c^2*(8*c^2*d^2*(3*e*f + d*g) + 3*e^2*(e*f + 3*d*g))*x)*Sqrt[1 - c^2*x^2]
)/(2400*c^5) - (b*(8*c^2*d^2*(3*e*f + d*g) + 3*e^2*(e*f + 3*d*g))*ArcSin[c*
x])/(32*c^4) + d^3*f*x*(a + b*ArcSin[c*x]) + (d^2*(3*e*f + d*g)*x^2*(a + b*
ArcSin[c*x]))/2 + d*e*(e*f + d*g)*x^3*(a + b*ArcSin[c*x]) + (e^2*(e*f + 3*d
*g)*x^4*(a + b*ArcSin[c*x]))/4 + (e^3*g*x^5*(a + b*ArcSin[c*x]))/5
```

Rubi [A] time = 0.991871, antiderivative size = 351, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.19, Rules used = {4749, 1809, 780, 216}

$$\frac{1}{2}d^2x^2(dg+3ef)\left(a+b\sin^{-1}(cx)\right)+d^3fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}e^2x^4(3dg+ef)\left(a+b\sin^{-1}(cx)\right)+dex^3(dg+ef)\left(a+b\sin\right.$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^3*(f + g*x)*(a + b*ArcSin[c*x]),x]
```


```
[Out] (b*e*(4*e^2*g + 25*c^2*d*(e*f + d*g))*x^2*Sqrt[1 - c^2*x^2])/(75*c^3) + (b*
e^2*(e*f + 3*d*g)*x^3*Sqrt[1 - c^2*x^2])/(16*c) + (b*e^3*g*x^4*Sqrt[1 - c^2
*x^2])/(25*c) + (b*(32*(75*c^4*d^3*f + 8*e^3*g + 50*c^2*d*e*(e*f + d*g)) +
75*c^2*(8*c^2*d^2*(3*e*f + d*g) + 3*e^2*(e*f + 3*d*g))*x)*Sqrt[1 - c^2*x^2]
)/(2400*c^5) - (b*(8*c^2*d^2*(3*e*f + d*g) + 3*e^2*(e*f + 3*d*g))*ArcSin[c*
x])/(32*c^4) + d^3*f*x*(a + b*ArcSin[c*x]) + (d^2*(3*e*f + d*g)*x^2*(a + b*
ArcSin[c*x]))/2 + d*e*(e*f + d*g)*x^3*(a + b*ArcSin[c*x]) + (e^2*(e*f + 3*d
*g)*x^4*(a + b*ArcSin[c*x]))/4 + (e^3*g*x^5*(a + b*ArcSin[c*x]))/5
```


Rule 4749

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_), x_Symbol] :> With[{u = IntHid
e[ExpandExpression[Px, x], x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, I
nt[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[{a, b, c}, x
```

```
] && PolynomialQ[Px, x]
```

Rule 1809

```
Int[(Pq_)*((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2)^(p_), x_Symbol] :> With[
{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[(f*(c*x)^(m + q -
1)*(a + b*x^2)^(p + 1))/(b*c^(q - 1)*(m + q + 2*p + 1)), x] + Dist[1/(b*(m
+ q + 2*p + 1)), Int[(c*x)^m*(a + b*x^2)^p*ExpandToSum[b*(m + q + 2*p + 1)*
Pq - b*f*(m + q + 2*p + 1)*x^q - a*f*(m + q - 1)*x^(q - 2), x], x], x] /; G
tQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, m, p}, x] && PolyQ[
Pq, x] && ( !IGtQ[m, 0] || IGtQ[p + 1/2, -1])
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 216

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

Rubi steps

$$\int (d+ex)^3(f+gx)\left(a+b\sin^{-1}(cx)\right)\,dx = d^3fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d^2(3ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)+de(ef+dg)x^3\left(\right.$$

$$=\frac{be^3gx^4\sqrt{1-c^2x^2}}{25c}+d^3fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d^2(3ef+dg)x^2\left(a+b\sin^{-1}(cx\right.$$

$$=\frac{be^2(ef+3dg)x^3\sqrt{1-c^2x^2}}{16c}+\frac{be^3gx^4\sqrt{1-c^2x^2}}{25c}+d^3fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d^2$$

$$=\frac{be\left(4e^2g+25c^2d(ef+dg)\right)x^2\sqrt{1-c^2x^2}}{75c^3}+\frac{be^2(ef+3dg)x^3\sqrt{1-c^2x^2}}{16c}+\frac{be^3gx}{}$$

$$=\frac{be\left(4e^2g+25c^2d(ef+dg)\right)x^2\sqrt{1-c^2x^2}}{75c^3}+\frac{be^2(ef+3dg)x^3\sqrt{1-c^2x^2}}{16c}+\frac{be^3gx}{}$$

$$=\frac{be\left(4e^2g+25c^2d(ef+dg)\right)x^2\sqrt{1-c^2x^2}}{75c^3}+\frac{be^2(ef+3dg)x^3\sqrt{1-c^2x^2}}{16c}+\frac{be^3gx}{}$$

Mathematica [A] time = 0.395729, size = 305, normalized size = 0.87

$$\frac{120ac^5x\left(10d^2ex(3f+2gx)+10d^3(2f+gx)+5de^2x^2(4f+3gx)+e^3x^3(5f+4gx)\right)+b\sqrt{1-c^2x^2}\left(2c^4\left(100d^2ex(9f+4g\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^3*(f + g*x)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (120*a*c^5*x*(10*d^3*(2*f + g*x) + 10*d^2*e*x*(3*f + 2*g*x) + 5*d*e^2*x^2*(
4*f + 3*g*x) + e^3*x^3*(5*f + 4*g*x)) + b*Sqrt[1 - c^2*x^2]*(256*e^3*g + 2*
c^4*(300*d^3*(4*f + g*x) + 100*d^2*e*x*(9*f + 4*g*x) + 25*d*e^2*x^2*(16*f +
 9*g*x) + 3*e^3*x^3*(25*f + 16*g*x)) + c^2*e*(1600*d^2*g + 25*d*e*(64*f + 2
7*g*x) + e^2*x*(225*f + 128*g*x))) + 15*b*c*(-40*c^2*d^2*(3*e*f + d*g) - 15
*e^2*(e*f + 3*d*g) + 8*c^4*x*(10*d^3*(2*f + g*x) + 10*d^2*e*x*(3*f + 2*g*x)
 + 5*d*e^2*x^2*(4*f + 3*g*x) + e^3*x^3*(5*f + 4*g*x)))*ArcSin[c*x])/(2400*c
^5)
```

Maple [A] time = 0.019, size = 490, normalized size = 1.4

$$\frac{1}{c}\left(\frac{a}{c^4}\left(\frac{e^3gc^5x^5}{5}+\frac{\left(3\,dce^2g+e^3cf\right)c^4x^4}{4}+\frac{\left(3\,c^2d^2eg+3\,dc^2e^2f\right)c^3x^3}{3}+\frac{\left(c^3d^3g+3\,c^3d^2ef\right)c^2x^2}{2}+c^5d^3fx\right)+\frac{b}{c^4}\left(\frac{\arcsin(}{}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^3*(g*x+f)*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c*(a/c^4*(1/5*e^3*g*c^5*x^5+1/4*(3*c*d*e^2*g+c*e^3*f)*c^4*x^4+1/3*(3*c^2*
d^2*e*g+3*c^2*d*e^2*f)*c^3*x^3+1/2*(c^3*d^3*g+3*c^3*d^2*e*f)*c^2*x^2+c^5*d^
3*f*x)+b/c^4*(1/5*arcsin(c*x)*e^3*g*c^5*x^5+3/4*arcsin(c*x)*c^5*x^4*d*e^2*g
+1/4*arcsin(c*x)*c^5*x^4*e^3*f+arcsin(c*x)*c^5*x^3*d^2*e*g+arcsin(c*x)*c^5*
x^3*d*e^2*f+1/2*arcsin(c*x)*c^5*x^2*d^3*g+3/2*arcsin(c*x)*c^5*x^2*d^2*e*f+a
rcsin(c*x)*c^5*d^3*f*x-1/5*e^3*g*(-1/5*c^4*x^4*(-c^2*x^2+1)^(1/2)-4/15*c^2*
x^2*(-c^2*x^2+1)^(1/2)-8/15*(-c^2*x^2+1)^(1/2))-1/20*(15*c*d*e^2*g+5*c*e^3*
f)*(-1/4*c^3*x^3*(-c^2*x^2+1)^(1/2)-3/8*c*x*(-c^2*x^2+1)^(1/2)+3/8*arcsin(c
*x))-1/20*(20*c^2*d^2*e*g+20*c^2*d*e^2*f)*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-
2/3*(-c^2*x^2+1)^(1/2))-1/20*(10*c^3*d^3*g+30*c^3*d^2*e*f)*(-1/2*c*x*(-c^2*
x^2+1)^(1/2)+1/2*arcsin(c*x))+c^4*d^3*f*(-c^2*x^2+1)^(1/2)))
```

Maxima [A] time = 1.74747, size = 778, normalized size = 2.22

$$\frac{1}{5}ae^3gx^5 + \frac{1}{4}ae^3fx^4 + \frac{3}{4}ade^2gx^4 + ade^2fx^3 + ad^2egx^3 + \frac{3}{2}ad^2efx^2 + \frac{1}{2}ad^3gx^2 + \frac{3}{4}\left(2x^2\arcsin(cx) + c\left(\frac{\sqrt{-c^2x^2+1}x}{c^2}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/5*a*e^3*g*x^5 + 1/4*a*e^3*f*x^4 + 3/4*a*d*e^2*g*x^4 + a*d*e^2*f*x^3 + a*d
^2*e*g*x^3 + 3/2*a*d^2*e*f*x^2 + 1/2*a*d^3*g*x^2 + 3/4*(2*x^2*arcsin(c*x) +
 c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^2)))*b*
d^2*e*f + 1/3*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-
c^2*x^2 + 1)/c^4))*b*d*e^2*f + 1/32*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 +
 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c^2*x/sqrt(c^2))/(sqrt(
c^2)*c^4))*c)*b*e^3*f + 1/4*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^
2 - arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^2)))*b*d^3*g + 1/3*(3*x^3*arcsin(c
*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*d^2*e*g
+ 3/32*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2
 + 1)*x/c^4 - 3*arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^4))*c)*b*d*e^2*g + 1/7
5*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1
)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*b*e^3*g + a*d^3*f*x + (c*x*arcsin(
c*x) + sqrt(-c^2*x^2 + 1))*b*d^3*f/c
```

Fricas [A] time = 1.85592, size = 980, normalized size = 2.79

$$\frac{480\,ac^5e^3gx^5 + 2400\,ac^5d^3fx + 600\left(ac^5e^3f + 3\,ac^5de^2g\right)x^4 + 2400\left(ac^5de^2f + ac^5d^2eg\right)x^3 + 1200\left(3\,ac^5d^2ef + ac^5d^3g\right)x^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2400*(480*a*c^5*e^3*g*x^5 + 2400*a*c^5*d^3*f*x + 600*(a*c^5*e^3*f + 3*a*c
^5*d*e^2*g)*x^4 + 2400*(a*c^5*d*e^2*f + a*c^5*d^2*e*g)*x^3 + 1200*(3*a*c^5*
d^2*e*f + a*c^5*d^3*g)*x^2 + 15*(32*b*c^5*e^3*g*x^5 + 160*b*c^5*d^3*f*x + 4
0*(b*c^5*e^3*f + 3*b*c^5*d*e^2*g)*x^4 + 160*(b*c^5*d*e^2*f + b*c^5*d^2*e*g)
*x^3 + 80*(3*b*c^5*d^2*e*f + b*c^5*d^3*g)*x^2 - 15*(8*b*c^3*d^2*e + b*c*e^3
)*f - 5*(8*b*c^3*d^3 + 9*b*c*d*e^2)*g)*arcsin(c*x) + (96*b*c^4*e^3*g*x^4 +
150*(b*c^4*e^3*f + 3*b*c^4*d*e^2*g)*x^3 + 32*(25*b*c^4*d*e^2*f + (25*b*c^4*
d^2*e + 4*b*c^2*e^3)*g)*x^2 + 800*(3*b*c^4*d^3 + 2*b*c^2*d*e^2)*f + 64*(25*
b*c^2*d^2*e + 4*b*e^3)*g + 75*(3*(8*b*c^4*d^2*e + b*c^2*e^3)*f + (8*b*c^4*d
^3 + 9*b*c^2*d*e^2)*g)*x)*sqrt(-c^2*x^2 + 1))/c^5
```

Sympy [A] time = 5.15809, size = 770, normalized size = 2.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**3*(g*x+f)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d**3*f*x + a*d**3*g*x**2/2 + 3*a*d**2*e*f*x**2/2 + a*d**2*e*g*
x**3 + a*d*e**2*f*x**3 + 3*a*d*e**2*g*x**4/4 + a*e**3*f*x**4/4 + a*e**3*g*x
**5/5 + b*d**3*f*x*asin(c*x) + b*d**3*g*x**2*asin(c*x)/2 + 3*b*d**2*e*f*x**
2*asin(c*x)/2 + b*d**2*e*g*x**3*asin(c*x) + b*d*e**2*f*x**3*asin(c*x) + 3*b
*d*e**2*g*x**4*asin(c*x)/4 + b*e**3*f*x**4*asin(c*x)/4 + b*e**3*g*x**5*asin
(c*x)/5 + b*d**3*f*sqrt(-c**2*x**2 + 1)/c + b*d**3*g*x*sqrt(-c**2*x**2 + 1)
/(4*c) + 3*b*d**2*e*f*x*sqrt(-c**2*x**2 + 1)/(4*c) + b*d**2*e*g*x**2*sqrt(-
c**2*x**2 + 1)/(3*c) + b*d*e**2*f*x**2*sqrt(-c**2*x**2 + 1)/(3*c) + 3*b*d*e
**2*g*x**3*sqrt(-c**2*x**2 + 1)/(16*c) + b*e**3*f*x**3*sqrt(-c**2*x**2 + 1)
/(16*c) + b*e**3*g*x**4*sqrt(-c**2*x**2 + 1)/(25*c) - b*d**3*g*asin(c*x)/(4
*c**2) - 3*b*d**2*e*f*asin(c*x)/(4*c**2) + 2*b*d**2*e*g*sqrt(-c**2*x**2 + 1
)/(3*c**3) + 2*b*d*e**2*f*sqrt(-c**2*x**2 + 1)/(3*c**3) + 9*b*d*e**2*g*x*sq
```

```
rt(-c**2*x**2 + 1)/(32*c**3) + 3*b*e**3*f*x*sqrt(-c**2*x**2 + 1)/(32*c**3)
+ 4*b*e**3*g*x**2*sqrt(-c**2*x**2 + 1)/(75*c**3) - 9*b*d*e**2*g*asin(c*x)/(
32*c**4) - 3*b*e**3*f*asin(c*x)/(32*c**4) + 8*b*e**3*g*sqrt(-c**2*x**2 + 1)
/(75*c**5), Ne(c, 0)), (a*(d**3*f*x + d**3*g*x**2/2 + 3*d**2*e*f*x**2/2 + d
**2*e*g*x**3 + d*e**2*f*x**3 + 3*d*e**2*g*x**4/4 + e**3*f*x**4/4 + e**3*g*x
**5/5), True))
```

Giac [B] time = 1.29463, size = 1118, normalized size = 3.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/5*a*g*x^5*e^3 + a*d^2*g*x^3*e + b*d^3*f*x*arcsin(c*x) + a*d*f*x^3*e^2 + a
*d^3*f*x + (c^2*x^2 - 1)*b*d^2*g*x*arcsin(c*x)*e/c^2 + 1/4*sqrt(-c^2*x^2 +
1)*b*d^3*g*x/c + 3/4*sqrt(-c^2*x^2 + 1)*b*d^2*f*x*e/c + 1/2*(c^2*x^2 - 1)*b
*d^3*g*arcsin(c*x)/c^2 + (c^2*x^2 - 1)*b*d*f*x*arcsin(c*x)*e^2/c^2 + 3/2*(c
^2*x^2 - 1)*b*d^2*f*arcsin(c*x)*e/c^2 + b*d^2*g*x*arcsin(c*x)*e/c^2 + sqrt(
-c^2*x^2 + 1)*b*d^3*f/c + 1/2*(c^2*x^2 - 1)*a*d^3*g/c^2 + 1/4*b*d^3*g*arcsi
n(c*x)/c^2 + b*d*f*x*arcsin(c*x)*e^2/c^2 + 3/2*(c^2*x^2 - 1)*a*d^2*f*e/c^2
+ 3/4*b*d^2*f*arcsin(c*x)*e/c^2 - 3/16*(-c^2*x^2 + 1)^(3/2)*b*d*g*x*e^2/c^3
 - 1/3*(-c^2*x^2 + 1)^(3/2)*b*d^2*g*e/c^3 + 1/5*(c^2*x^2 - 1)^2*b*g*x*arcsi
n(c*x)*e^3/c^4 + 3/4*(c^2*x^2 - 1)^2*b*d*g*arcsin(c*x)*e^2/c^4 - 1/16*(-c^2
*x^2 + 1)^(3/2)*b*f*x*e^3/c^3 - 1/3*(-c^2*x^2 + 1)^(3/2)*b*d*f*e^2/c^3 + 15
/32*sqrt(-c^2*x^2 + 1)*b*d*g*x*e^2/c^3 + sqrt(-c^2*x^2 + 1)*b*d^2*g*e/c^3 +
 1/4*(c^2*x^2 - 1)^2*b*f*arcsin(c*x)*e^3/c^4 + 2/5*(c^2*x^2 - 1)*b*g*x*arcs
in(c*x)*e^3/c^4 + 3/4*(c^2*x^2 - 1)^2*a*d*g*e^2/c^4 + 3/2*(c^2*x^2 - 1)*b*d
*g*arcsin(c*x)*e^2/c^4 + 5/32*sqrt(-c^2*x^2 + 1)*b*f*x*e^3/c^3 + sqrt(-c^2*
x^2 + 1)*b*d*f*e^2/c^3 + 1/4*(c^2*x^2 - 1)^2*a*f*e^3/c^4 + 1/2*(c^2*x^2 - 1
)*b*f*arcsin(c*x)*e^3/c^4 + 1/5*b*g*x*arcsin(c*x)*e^3/c^4 + 3/2*(c^2*x^2 -
1)*a*d*g*e^2/c^4 + 15/32*b*d*g*arcsin(c*x)*e^2/c^4 + 1/25*(c^2*x^2 - 1)^2*s
qrt(-c^2*x^2 + 1)*b*g*e^3/c^5 + 1/2*(c^2*x^2 - 1)*a*f*e^3/c^4 + 5/32*b*f*ar
csin(c*x)*e^3/c^4 - 2/15*(-c^2*x^2 + 1)^(3/2)*b*g*e^3/c^5 + 1/5*sqrt(-c^2*x
^2 + 1)*b*g*e^3/c^5
```

3.89 $\int (d+ex)^2(f+gx)\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=248

$$d^2fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}ex^3(2dg+ef)\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}dx^2(dg+2ef)\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}e^2gx^4\left(a+b\sin^{-1}(cx)\right)$$

```
[Out] (b*e*(e*f + 2*d*g)*x^2*Sqrt[1 - c^2*x^2])/(9*c) + (b*e^2*g*x^3*Sqrt[1 - c^2
*x^2])/(16*c) + (b*(32*(9*c^2*d^2*f + 2*e*(e*f + 2*d*g)) + 9*(3*e^2*g + 8*c
^2*d*(2*e*f + d*g))*x)*Sqrt[1 - c^2*x^2])/(288*c^3) - (b*(3*e^2*g + 8*c^2*d
*(2*e*f + d*g))*ArcSin[c*x])/(32*c^4) + d^2*f*x*(a + b*ArcSin[c*x]) + (d*(2
*e*f + d*g)*x^2*(a + b*ArcSin[c*x]))/2 + (e*(e*f + 2*d*g)*x^3*(a + b*ArcSin
[c*x]))/3 + (e^2*g*x^4*(a + b*ArcSin[c*x]))/4
```

Rubi [A] time = 0.535084, antiderivative size = 248, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {4749, 12, 1809, 780, 216}

$$d^2fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}ex^3(2dg+ef)\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}dx^2(dg+2ef)\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}e^2gx^4\left(a+b\sin^{-1}(cx)\right)$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^2*(f + g*x)*(a + b*ArcSin[c*x]),x]
```


```
[Out] (b*e*(e*f + 2*d*g)*x^2*Sqrt[1 - c^2*x^2])/(9*c) + (b*e^2*g*x^3*Sqrt[1 - c^2
*x^2])/(16*c) + (b*(32*(9*c^2*d^2*f + 2*e*(e*f + 2*d*g)) + 9*(3*e^2*g + 8*c
^2*d*(2*e*f + d*g))*x)*Sqrt[1 - c^2*x^2])/(288*c^3) - (b*(3*e^2*g + 8*c^2*d
*(2*e*f + d*g))*ArcSin[c*x])/(32*c^4) + d^2*f*x*(a + b*ArcSin[c*x]) + (d*(2
*e*f + d*g)*x^2*(a + b*ArcSin[c*x]))/2 + (e*(e*f + 2*d*g)*x^3*(a + b*ArcSin
[c*x]))/3 + (e^2*g*x^4*(a + b*ArcSin[c*x]))/4
```


Rule 4749

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_), x_Symbol] :> With[{u = IntHid
e[ExpandExpression[Px, x], x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, I
nt[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[{a, b, c}, x
] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1809

```
Int[(Pq_)*((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2)^(p_), x_Symbol] :> With[
{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[(f*(c*x)^(m + q -
1)*(a + b*x^2)^(p + 1))/(b*c^(q - 1)*(m + q + 2*p + 1)), x] + Dist[1/(b*(m
+ q + 2*p + 1)), Int[(c*x)^m*(a + b*x^2)^p*ExpandToSum[b*(m + q + 2*p + 1)*
Pq - b*f*(m + q + 2*p + 1)*x^q - a*f*(m + q - 1)*x^(q - 2), x], x], x] /; G
tQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, m, p}, x] && PolyQ[
Pq, x] && ( !IGtQ[m, 0] || IGtQ[p + 1/2, -1])
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 216

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

Rubi steps

$$\int (d+ex)^2(f+gx)\left(a+b\sin^{-1}(cx)\right)dx = d^2fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d(2ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}e(ef+2dg)x^3\left(\right.$$

$$= d^2fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d(2ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}e(ef+2dg)x^3\left(\right.$$

$$= \frac{be^2gx^3\sqrt{1-c^2x^2}}{16c}+d^2fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d(2ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)$$

$$= \frac{be(ef+2dg)x^2\sqrt{1-c^2x^2}}{9c}+\frac{be^2gx^3\sqrt{1-c^2x^2}}{16c}+d^2fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d(2$$

$$= \frac{be(ef+2dg)x^2\sqrt{1-c^2x^2}}{9c}+\frac{be^2gx^3\sqrt{1-c^2x^2}}{16c}+\frac{b\left(32\left(9c^2d^2f+2e(ef+2dg)\right.\right.}{}$$

$$= \frac{be(ef+2dg)x^2\sqrt{1-c^2x^2}}{9c}+\frac{be^2gx^3\sqrt{1-c^2x^2}}{16c}+\frac{b\left(32\left(9c^2d^2f+2e(ef+2dg)\right.\right.}{}$$

Mathematica [A] time = 0.298787, size = 211, normalized size = 0.85

$$\frac{24ac^4x\left(6d^2(2f+gx)+4dex(3f+2gx)+e^2x^2(4f+3gx)\right)+bc\sqrt{1-c^2x^2}\left(2c^2\left(36d^2(4f+gx)+8dex(9f+4gx)+e^2x^2(1\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^2*(f + g*x)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (24*a*c^4*x*(6*d^2*(2*f + g*x) + 4*d*e*x*(3*f + 2*g*x) + e^2*x^2*(4*f + 3*g
*x)) + b*c*Sqrt[1 - c^2*x^2]*(e*(64*e*f + 128*d*g + 27*e*g*x) + 2*c^2*(36*d
^2*(4*f + g*x) + 8*d*e*x*(9*f + 4*g*x) + e^2*x^2*(16*f + 9*g*x))) + 3*b*(-9
*e^2*g - 24*c^2*d*(2*e*f + d*g) + 8*c^4*x*(6*d^2*(2*f + g*x) + 4*d*e*x*(3*f
 + 2*g*x) + e^2*x^2*(4*f + 3*g*x)))*ArcSin[c*x])/(288*c^4)
```

Maple [A] time = 0.006, size = 338, normalized size = 1.4

$$\frac{1}{c}\left(\frac{a}{c^3}\left(\frac{e^2gc^4x^4}{4}+\frac{\left(2\,dceg+e^2cf\right)c^3x^3}{3}+\frac{\left(c^2d^2g+2\,dc^2ef\right)c^2x^2}{2}+c^4d^2fx\right)+\frac{b}{c^3}\left(\frac{\arcsin(cx)\,e^2gc^4x^4}{4}+\frac{2\,\arcsin(cx)\,c^4x}{3}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^2*(g*x+f)*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c*(a/c^3*(1/4*e^2*g*c^4*x^4+1/3*(2*c*d*e*g+c*e^2*f)*c^3*x^3+1/2*(c^2*d^2*
g+2*c^2*d*e*f)*c^2*x^2+c^4*d^2*f*x)+b/c^3*(1/4*arcsin(c*x)*e^2*g*c^4*x^4+2/
3*arcsin(c*x)*c^4*x^3*d*e*g+1/3*arcsin(c*x)*c^4*x^3*e^2*f+1/2*arcsin(c*x)*c
^4*x^2*d^2*g+arcsin(c*x)*c^4*x^2*d*e*f+arcsin(c*x)*c^4*d^2*f*x-1/4*e^2*g*(-
1/4*c^3*x^3*(-c^2*x^2+1)^(1/2)-3/8*c*x*(-c^2*x^2+1)^(1/2)+3/8*arcsin(c*x))-
1/12*(8*c*d*e*g+4*c*e^2*f)*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-c^2*x^2+1
)^(1/2))-1/12*(6*c^2*d^2*g+12*c^2*d*e*f)*(-1/2*c*x*(-c^2*x^2+1)^(1/2)+1/2*a
rcsin(c*x))+c^3*d^2*f*(-c^2*x^2+1)^(1/2)))
```

Maxima [A] time = 1.74651, size = 525, normalized size = 2.12

$$\frac{1}{4}ae^2gx^4 + \frac{1}{3}ae^2fx^3 + \frac{2}{3}adegx^3 + adefx^2 + \frac{1}{2}ad^2gx^2 + \frac{1}{2}\left(2x^2\arcsin(cx) + c\left(\frac{\sqrt{-c^2x^2+1}x}{c^2} - \frac{\arcsin\left(\frac{c^2x}{\sqrt{c^2}}\right)}{\sqrt{c^2}c^2}\right)\right)bdef +$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*a*e^2*g*x^4 + 1/3*a*e^2*f*x^3 + 2/3*a*d*e*g*x^3 + a*d*e*f*x^2 + 1/2*a*d
^2*g*x^2 + 1/2*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c^
2*x/sqrt(c^2))/(sqrt(c^2)*c^2)))*b*d*e*f + 1/9*(3*x^3*arcsin(c*x) + c*(sqrt
(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*e^2*f + 1/4*(2*x^2*ar
csin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2
)*c^2)))*b*d^2*g + 2/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 +
 2*sqrt(-c^2*x^2 + 1)/c^4))*b*d*e*g + 1/32*(8*x^4*arcsin(c*x) + (2*sqrt(-c^
2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c^2*x/sqrt(c^2))
/(sqrt(c^2)*c^4))*c)*b*e^2*g + a*d^2*f*x + (c*x*arcsin(c*x) + sqrt(-c^2*x^2
 + 1))*b*d^2*f/c
```

Fricas [A] time = 1.76757, size = 668, normalized size = 2.69

$$\frac{72\,ac^4e^2gx^4 + 288\,ac^4d^2fx + 96\left(ac^4e^2f + 2\,ac^4deg\right)x^3 + 144\left(2\,ac^4def + ac^4d^2g\right)x^2 + 3\left(24\,bc^4e^2gx^4 + 96\,bc^4d^2fx - 48\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/288*(72*a*c^4*e^2*g*x^4 + 288*a*c^4*d^2*f*x + 96*(a*c^4*e^2*f + 2*a*c^4*d
*e*g)*x^3 + 144*(2*a*c^4*d*e*f + a*c^4*d^2*g)*x^2 + 3*(24*b*c^4*e^2*g*x^4 +
 96*b*c^4*d^2*f*x - 48*b*c^2*d*e*f + 32*(b*c^4*e^2*f + 2*b*c^4*d*e*g)*x^3 +
 48*(2*b*c^4*d*e*f + b*c^4*d^2*g)*x^2 - 3*(8*b*c^2*d^2 + 3*b*e^2)*g)*arcsin
(c*x) + (18*b*c^3*e^2*g*x^3 + 128*b*c*d*e*g + 32*(b*c^3*e^2*f + 2*b*c^3*d*e
*g)*x^2 + 32*(9*b*c^3*d^2 + 2*b*c*e^2)*f + 9*(16*b*c^3*d*e*f + (8*b*c^3*d^2
 + 3*b*c*e^2)*g)*x)*sqrt(-c^2*x^2 + 1))/c^4
```

Sympy [A] time = 2.95428, size = 502, normalized size = 2.02

$$\begin{cases} ad^2fx + \frac{ad^2gx^2}{2} + adefx^2 + \frac{2adegx^3}{3} + \frac{ae^2fx^3}{3} + \frac{ae^2gx^4}{4} + bd^2fx\operatorname{asin}(cx) + \frac{bd^2gx^2\operatorname{asin}(cx)}{2} + bdefx^2\operatorname{asin}(cx) + \frac{2bdegx^3\operatorname{asin}(cx)}{3} \\ a\left(d^2fx + \frac{d^2gx^2}{2} + defx^2 + \frac{2degx^3}{3} + \frac{e^2fx^3}{3} + \frac{e^2gx^4}{4}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**2*(g*x+f)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d**2*f*x + a*d**2*g*x**2/2 + a*d*e*f*x**2 + 2*a*d*e*g*x**3/3 +
 a*e**2*f*x**3/3 + a*e**2*g*x**4/4 + b*d**2*f*x*asin(c*x) + b*d**2*g*x**2*a
sin(c*x)/2 + b*d*e*f*x**2*asin(c*x) + 2*b*d*e*g*x**3*asin(c*x)/3 + b*e**2*f
*x**3*asin(c*x)/3 + b*e**2*g*x**4*asin(c*x)/4 + b*d**2*f*sqrt(-c**2*x**2 +
1)/c + b*d**2*g*x*sqrt(-c**2*x**2 + 1)/(4*c) + b*d*e*f*x*sqrt(-c**2*x**2 +
1)/(2*c) + 2*b*d*e*g*x**2*sqrt(-c**2*x**2 + 1)/(9*c) + b*e**2*f*x**2*sqrt(-
c**2*x**2 + 1)/(9*c) + b*e**2*g*x**3*sqrt(-c**2*x**2 + 1)/(16*c) - b*d**2*g
*asin(c*x)/(4*c**2) - b*d*e*f*asin(c*x)/(2*c**2) + 4*b*d*e*g*sqrt(-c**2*x**
2 + 1)/(9*c**3) + 2*b*e**2*f*sqrt(-c**2*x**2 + 1)/(9*c**3) + 3*b*e**2*g*x*s
qrt(-c**2*x**2 + 1)/(32*c**3) - 3*b*e**2*g*asin(c*x)/(32*c**4), Ne(c, 0)),
(a*(d**2*f*x + d**2*g*x**2/2 + d*e*f*x**2 + 2*d*e*g*x**3/3 + e**2*f*x**3/3
+ e**2*g*x**4/4), True))
```

Giac [B] time = 1.3287, size = 699, normalized size = 2.82

$$\frac{2}{3}adgx^3e + bd^2fx\arcsin(cx) + \frac{1}{3}afx^3e^2 + ad^2fx + \frac{2\left(c^2x^2-1\right)bdgx\arcsin(cx)e}{3c^2} + \frac{\sqrt{-c^2x^2+1}bd^2gx}{4c} + \frac{\sqrt{-c^2x^2+1}bd}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 2/3*a*d*g*x^3*e + b*d^2*f*x*arcsin(c*x) + 1/3*a*f*x^3*e^2 + a*d^2*f*x + 2/3
*(c^2*x^2 - 1)*b*d*g*x*arcsin(c*x)*e/c^2 + 1/4*sqrt(-c^2*x^2 + 1)*b*d^2*g*x
/c + 1/2*sqrt(-c^2*x^2 + 1)*b*d*f*x*e/c + 1/2*(c^2*x^2 - 1)*b*d^2*g*arcsin(
c*x)/c^2 + 1/3*(c^2*x^2 - 1)*b*f*x*arcsin(c*x)*e^2/c^2 + (c^2*x^2 - 1)*b*d*
f*arcsin(c*x)*e/c^2 + 2/3*b*d*g*x*arcsin(c*x)*e/c^2 + sqrt(-c^2*x^2 + 1)*b*
d^2*f/c + 1/2*(c^2*x^2 - 1)*a*d^2*g/c^2 + 1/4*b*d^2*g*arcsin(c*x)/c^2 + 1/3
*b*f*x*arcsin(c*x)*e^2/c^2 + (c^2*x^2 - 1)*a*d*f*e/c^2 + 1/2*b*d*f*arcsin(c
*x)*e/c^2 - 1/16*(-c^2*x^2 + 1)^(3/2)*b*g*x*e^2/c^3 - 2/9*(-c^2*x^2 + 1)^(3
/2)*b*d*g*e/c^3 + 1/4*(c^2*x^2 - 1)^2*b*g*arcsin(c*x)*e^2/c^4 - 1/9*(-c^2*x
^2 + 1)^(3/2)*b*f*e^2/c^3 + 5/32*sqrt(-c^2*x^2 + 1)*b*g*x*e^2/c^3 + 2/3*sqr
t(-c^2*x^2 + 1)*b*d*g*e/c^3 + 1/4*(c^2*x^2 - 1)^2*a*g*e^2/c^4 + 1/2*(c^2*x^
2 - 1)*b*g*arcsin(c*x)*e^2/c^4 + 1/3*sqrt(-c^2*x^2 + 1)*b*f*e^2/c^3 + 1/2*(
c^2*x^2 - 1)*a*g*e^2/c^4 + 5/32*b*g*arcsin(c*x)*e^2/c^4
```

3.90 $\int (d+ex)(f+gx)\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=148

$$\frac{1}{2}x^2(dg+ef)\left(a+b\sin^{-1}(cx)\right)+dfx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}egx^3\left(a+b\sin^{-1}(cx)\right)+\frac{b\sqrt{1-c^2x^2}\left(9c^2x(dg+ef)+4\left(9c^2df\right.\right.}{36c^3}$$

```
[Out] (b*e*g*x^2*Sqrt[1 - c^2*x^2])/(9*c) + (b*(4*(9*c^2*d*f + 2*e*g) + 9*c^2*(e*
f + d*g)*x)*Sqrt[1 - c^2*x^2])/(36*c^3) - (b*(e*f + d*g)*ArcSin[c*x])/(4*c^
2) + d*f*x*(a + b*ArcSin[c*x]) + ((e*f + d*g)*x^2*(a + b*ArcSin[c*x]))/2 +
(e*g*x^3*(a + b*ArcSin[c*x]))/3
```

Rubi [A] time = 0.192987, antiderivative size = 148, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {4749, 12, 1809, 780, 216}

$$\frac{1}{2}x^2(dg+ef)\left(a+b\sin^{-1}(cx)\right)+dfx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}egx^3\left(a+b\sin^{-1}(cx)\right)+\frac{b\sqrt{1-c^2x^2}\left(9c^2x(dg+ef)+4\left(9c^2df\right.\right.}{36c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)*(f + g*x)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*e*g*x^2*Sqrt[1 - c^2*x^2])/(9*c) + (b*(4*(9*c^2*d*f + 2*e*g) + 9*c^2*(e*
f + d*g)*x)*Sqrt[1 - c^2*x^2])/(36*c^3) - (b*(e*f + d*g)*ArcSin[c*x])/(4*c^
2) + d*f*x*(a + b*ArcSin[c*x]) + ((e*f + d*g)*x^2*(a + b*ArcSin[c*x]))/2 +
(e*g*x^3*(a + b*ArcSin[c*x]))/3
```

Rule 4749

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_), x_Symbol] :> With[{u = IntHid
e[ExpandExpression[Px, x], x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, I
nt[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[{a, b, c}, x
] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1809

```
Int[(Pq_)*((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2)^(p_), x_Symbol] :> With[
{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[(f*(c*x)^(m + q -
1)*(a + b*x^2)^(p + 1))/(b*c^(q - 1)*(m + q + 2*p + 1)), x] + Dist[1/(b*(m
+ q + 2*p + 1)), Int[(c*x)^m*(a + b*x^2)^p*ExpandToSum[b*(m + q + 2*p + 1)*
Pq - b*f*(m + q + 2*p + 1)*x^q - a*f*(m + q - 1)*x^(q - 2), x], x], x] /; G
tQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, m, p}, x] && PolyQ[
Pq, x] && ( !IGtQ[m, 0] || IGtQ[p + 1/2, -1])
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 216

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

Rubi steps

$$\int (d+ex)(f+gx)\left(a+b\sin^{-1}(cx)\right)dx = dfx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}(ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}egx^3\left(a+b\sin^{-1}(\right.$$

$$= dfx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}(ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}egx^3\left(a+b\sin^{-1}(\right.$$

$$= \frac{begx^2\sqrt{1-c^2x^2}}{9c}+dfx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}(ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}$$

$$= \frac{begx^2\sqrt{1-c^2x^2}}{9c}+\frac{b\left(4\left(9c^2df+2eg\right)+9c^2(ef+dg)x\right)\sqrt{1-c^2x^2}}{36c^3}+dfx\left(a+\right.$$

$$= \frac{begx^2\sqrt{1-c^2x^2}}{9c}+\frac{b\left(4\left(9c^2df+2eg\right)+9c^2(ef+dg)x\right)\sqrt{1-c^2x^2}}{36c^3}-\frac{b(ef+d}{}$$

Mathematica [A] time = 0.187501, size = 138, normalized size = 0.93

$$\frac{6ac^3x(3d(2f+gx)+ex(3f+2gx))+b\sqrt{1-c^2x^2}\left(c^2(9d(4f+gx)+ex(9f+4gx))+8eg\right)+3bc\sin^{-1}(cx)\left(12c^2dfx+3\right.}{36c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)*(f + g*x)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (6*a*c^3*x*(3*d*(2*f + g*x) + e*x*(3*f + 2*g*x)) + b*Sqrt[1 - c^2*x^2]*(8*e
*g + c^2*(9*d*(4*f + g*x) + e*x*(9*f + 4*g*x))) + 3*b*c*(12*c^2*d*f*x + 4*c
^2*e*g*x^3 + 3*d*g*(-1 + 2*c^2*x^2) + e*f*(-3 + 6*c^2*x^2))*ArcSin[c*x])/(3
6*c^3)
```

Maple [A] time = 0.006, size = 198, normalized size = 1.3

$$\frac{1}{c}\left(\frac{a}{c^2}\left(\frac{egc^3x^3}{3}+\frac{\left(dcg+ecf\right)c^2x^2}{2}+c^3fdx\right)+\frac{b}{c^2}\left(\frac{\arcsin\left(cx\right)egc^3x^3}{3}+\frac{\arcsin\left(cx\right)c^3x^2dg}{2}+\frac{\arcsin\left(cx\right)c^3x^2ef}{2}+\arcsin\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(g*x+f)*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c*(a/c^2*(1/3*e*g*c^3*x^3+1/2*(c*d*g+c*e*f)*c^2*x^2+c^3*f*d*x)+b/c^2*(1/3
*arcsin(c*x)*e*g*c^3*x^3+1/2*arcsin(c*x)*c^3*x^2*d*g+1/2*arcsin(c*x)*c^3*x^
2*e*f+arcsin(c*x)*c^3*f*d*x-1/3*e*g*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-
c^2*x^2+1)^(1/2))-1/6*(3*c*d*g+3*c*e*f)*(-1/2*c*x*(-c^2*x^2+1)^(1/2)+1/2*ar
csin(c*x))+c^2*f*d*(-c^2*x^2+1)^(1/2)))
```

Maxima [A] time = 1.57911, size = 301, normalized size = 2.03

$$\frac{1}{3}aegx^3+\frac{1}{2}aefx^2+\frac{1}{2}adgx^2+\frac{1}{4}\left(2x^2\arcsin\left(cx\right)+c\left(\frac{\sqrt{-c^2x^2+1}x}{c^2}-\frac{\arcsin\left(\frac{c^2x}{\sqrt{c^2}}\right)}{\sqrt{c^2}c^2}\right)\right)bef+\frac{1}{4}\left(2x^2\arcsin\left(cx\right)+c\left(\sqrt{-\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/3*a*e*g*x^3 + 1/2*a*e*f*x^2 + 1/2*a*d*g*x^2 + 1/4*(2*x^2*arcsin(c*x) + c*
(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^2)))*b*e*f
 + 1/4*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c^2*x/sqrt
(c^2))/(sqrt(c^2)*c^2)))*b*d*g + 1/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2
+ 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*e*g + a*d*f*x + (c*x*arcsin(c*x
) + sqrt(-c^2*x^2 + 1))*b*d*f/c
```

Fricas [A] time = 1.76674, size = 378, normalized size = 2.55

$$\frac{12\,ac^3egx^3 + 36\,ac^3dfx + 18\left(ac^3ef + ac^3dg\right)x^2 + 3\left(4\,bc^3egx^3 + 12\,bc^3dfx - 3\,bcef - 3\,bcdg + 6\left(bc^3ef + bc^3dg\right)x^2\right)\text{ar}}{36\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/36*(12*a*c^3*e*g*x^3 + 36*a*c^3*d*f*x + 18*(a*c^3*e*f + a*c^3*d*g)*x^2 +
3*(4*b*c^3*e*g*x^3 + 12*b*c^3*d*f*x - 3*b*c*e*f - 3*b*c*d*g + 6*(b*c^3*e*f
+ b*c^3*d*g)*x^2)*arcsin(c*x) + (4*b*c^2*e*g*x^2 + 36*b*c^2*d*f + 8*b*e*g +
 9*(b*c^2*e*f + b*c^2*d*g)*x)*sqrt(-c^2*x^2 + 1))/c^3
```

Sympy [A] time = 1.31798, size = 267, normalized size = 1.8

$$\begin{cases} adfx + \frac{adgx^2}{2} + \frac{aefx^2}{2} + \frac{aegx^3}{3} + bdfx\,\text{asin}\,(cx) + \frac{bdgx^2\,\text{asin}\,(cx)}{2} + \frac{befx^2\,\text{asin}\,(cx)}{2} + \frac{begx^3\,\text{asin}\,(cx)}{3} + \frac{bdf\sqrt{-c^2x^2+1}}{c} + \frac{bdgx\sqrt{-c^2x^2+1}}{4c} \\ a\left(dfx + \frac{dgx^2}{2} + \frac{efx^2}{2} + \frac{egx^3}{3}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d*f*x + a*d*g*x**2/2 + a*e*f*x**2/2 + a*e*g*x**3/3 + b*d*f*x*a
sin(c*x) + b*d*g*x**2*asin(c*x)/2 + b*e*f*x**2*asin(c*x)/2 + b*e*g*x**3*asi
n(c*x)/3 + b*d*f*sqrt(-c**2*x**2 + 1)/c + b*d*g*x*sqrt(-c**2*x**2 + 1)/(4*c
) + b*e*f*x*sqrt(-c**2*x**2 + 1)/(4*c) + b*e*g*x**2*sqrt(-c**2*x**2 + 1)/(9
*c) - b*d*g*asin(c*x)/(4*c**2) - b*e*f*asin(c*x)/(4*c**2) + 2*b*e*g*sqrt(-c
**2*x**2 + 1)/(9*c**3), Ne(c, 0)), (a*(d*f*x + d*g*x**2/2 + e*f*x**2/2 + e*
g*x**3/3), True))
```

Giac [B] time = 1.31928, size = 362, normalized size = 2.45

$$\frac{1}{3}\,agx^3e + bdfx\arcsin\,(cx) + adfx + \frac{\left(c^2x^2-1\right)bgx\arcsin\,(cx)\,e}{3\,c^2} + \frac{\sqrt{-c^2x^2+1}bdgx}{4\,c} + \frac{\sqrt{-c^2x^2+1}bfxe}{4\,c} + \frac{\left(c^2x^2-1\right)b\text{d}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/3*a*g*x^3*e + b*d*f*x*arcsin(c*x) + a*d*f*x + 1/3*(c^2*x^2 - 1)*b*g*x*arc
sin(c*x)*e/c^2 + 1/4*sqrt(-c^2*x^2 + 1)*b*d*g*x/c + 1/4*sqrt(-c^2*x^2 + 1)*
b*f*x*e/c + 1/2*(c^2*x^2 - 1)*b*d*g*arcsin(c*x)/c^2 + 1/2*(c^2*x^2 - 1)*b*f
*arcsin(c*x)*e/c^2 + 1/3*b*g*x*arcsin(c*x)*e/c^2 + sqrt(-c^2*x^2 + 1)*b*d*f
/c + 1/2*(c^2*x^2 - 1)*a*d*g/c^2 + 1/4*b*d*g*arcsin(c*x)/c^2 + 1/2*(c^2*x^2
 - 1)*a*f*e/c^2 + 1/4*b*f*arcsin(c*x)*e/c^2 - 1/9*(-c^2*x^2 + 1)^(3/2)*b*g*
e/c^3 + 1/3*sqrt(-c^2*x^2 + 1)*b*g*e/c^3
```

3.91 $\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{d+ex}\,dx$

Optimal. Leaf size=344

$$-\frac{ib(ef-dg)\mathrm{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^2}-\frac{ib(ef-dg)\mathrm{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e^2}+\frac{(ef-dg)\log(d+ex)\left(a+b\sin^{-1}(cx)\right)}{e^2}$$

```
[Out] (b*g*Sqrt[1 - c^2*x^2])/(c*e) - ((I/2)*b*(e*f - d*g)*ArcSin[c*x]^2)/e^2 + (
g*x*(a + b*ArcSin[c*x]))/e + (b*(e*f - d*g)*ArcSin[c*x]*Log[1 - (I*e*E^(I*A
rcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^2 + (b*(e*f - d*g)*ArcSin[c*x]
*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^2 - (b*(e*
f - d*g)*ArcSin[c*x]*Log[d + e*x])/e^2 + ((e*f - d*g)*(a + b*ArcSin[c*x])*L
og[d + e*x])/e^2 - (I*b*(e*f - d*g)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d
 - Sqrt[c^2*d^2 - e^2])])/e^2 - (I*b*(e*f - d*g)*PolyLog[2, (I*e*E^(I*ArcSi
n[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^2
```

Rubi [A] time = 0.643494, antiderivative size = 344, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 12, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.571, Rules used = {43, 4753, 12, 6742, 261, 216, 2404, 4741, 4519, 2190, 2279, 2391}

$$-\frac{ib(ef-dg)\mathrm{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^2}-\frac{ib(ef-dg)\mathrm{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e^2}+\frac{(ef-dg)\log(d+ex)\left(a+b\sin^{-1}(cx)\right)}{e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x]))/(d + e*x),x]
```


```
[Out] (b*g*Sqrt[1 - c^2*x^2])/(c*e) - ((I/2)*b*(e*f - d*g)*ArcSin[c*x]^2)/e^2 + (
g*x*(a + b*ArcSin[c*x]))/e + (b*(e*f - d*g)*ArcSin[c*x]*Log[1 - (I*e*E^(I*A
rcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^2 + (b*(e*f - d*g)*ArcSin[c*x]
*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^2 - (b*(e*
f - d*g)*ArcSin[c*x]*Log[d + e*x])/e^2 + ((e*f - d*g)*(a + b*ArcSin[c*x])*L
og[d + e*x])/e^2 - (I*b*(e*f - d*g)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d
 - Sqrt[c^2*d^2 - e^2])])/e^2 - (I*b*(e*f - d*g)*PolyLog[2, (I*e*E^(I*ArcSi
n[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^2
```


Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
```

```
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 4753

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 261

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

Rule 216

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

Rule 2404

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rubi steps

$$\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{d+ex}\,dx = \frac{gx\left(a+b\sin^{-1}(cx)\right)}{e} + \frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)\log(d+ex)}{e^2} - (bc)\int \frac{egx+(ef-dg}{e^2\sqrt{1-}}$$

$$= \frac{gx\left(a+b\sin^{-1}(cx)\right)}{e} + \frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)\log(d+ex)}{e^2} - \frac{(bc)\int \frac{egx+(ef-dg)\log(d+}{\sqrt{1-c^2x^2}}}{e^2}$$

$$= \frac{gx\left(a+b\sin^{-1}(cx)\right)}{e} + \frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)\log(d+ex)}{e^2} - \frac{(bc)\int \left(\frac{egx}{\sqrt{1-c^2x^2}} + \frac{(ef-}{}\right.}{e^2}$$

$$= \frac{gx\left(a+b\sin^{-1}(cx)\right)}{e} + \frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)\log(d+ex)}{e^2} - \frac{(bcg)\int \frac{x}{\sqrt{1-c^2x^2}}\,dx}{e} -$$

$$= \frac{bg\sqrt{1-c^2x^2}}{ce} + \frac{gx\left(a+b\sin^{-1}(cx)\right)}{e} - \frac{b(ef-dg)\sin^{-1}(cx)\log(d+ex)}{e^2} + \frac{(ef-dg)\left(a\right.}{}$$

$$= \frac{bg\sqrt{1-c^2x^2}}{ce} + \frac{gx\left(a+b\sin^{-1}(cx)\right)}{e} - \frac{b(ef-dg)\sin^{-1}(cx)\log(d+ex)}{e^2} + \frac{(ef-dg)\left(a\right.}{}$$

$$= \frac{bg\sqrt{1-c^2x^2}}{ce} - \frac{ib(ef-dg)\sin^{-1}(cx)^2}{2e^2} + \frac{gx\left(a+b\sin^{-1}(cx)\right)}{e} - \frac{b(ef-dg)\sin^{-1}(cx)\,\mathrm{lo}}{e^2}$$

$$= \frac{bg\sqrt{1-c^2x^2}}{ce} - \frac{ib(ef-dg)\sin^{-1}(cx)^2}{2e^2} + \frac{gx\left(a+b\sin^{-1}(cx)\right)}{e} + \frac{b(ef-dg)\sin^{-1}(cx)\,\mathrm{lo}}{e^2}$$

$$= \frac{bg\sqrt{1-c^2x^2}}{ce} - \frac{ib(ef-dg)\sin^{-1}(cx)^2}{2e^2} + \frac{gx\left(a+b\sin^{-1}(cx)\right)}{e} + \frac{b(ef-dg)\sin^{-1}(cx)\,\mathrm{lo}}{e^2}$$

$$= \frac{bg\sqrt{1-c^2x^2}}{ce} - \frac{ib(ef-dg)\sin^{-1}(cx)^2}{2e^2} + \frac{gx\left(a+b\sin^{-1}(cx)\right)}{e} + \frac{b(ef-dg)\sin^{-1}(cx)\,\mathrm{lo}}{e^2}$$

Mathematica [A] time = 0.549131, size = 282, normalized size = 0.82

$$-\frac{1}{2}ib(ef-dg)\left(2\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)+2\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)+\sin^{-1}(cx)\left(\sin^{-1}(cx)+2i\left(\log\left(1+\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}-cd}\right)\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x]))/(d + e*x),x]
```

```
[Out] ((b*e*g*Sqrt[1 - c^2*x^2])/c + e*g*x*(a + b*ArcSin[c*x]) - b*(e*f - d*g)*Ar
cSin[c*x]*Log[d + e*x] + (e*f - d*g)*(a + b*ArcSin[c*x])*Log[d + e*x] - (I/
```

```
2)*b*(e*f - d*g)*(ArcSin[c*x]*(ArcSin[c*x] + (2*I)*(Log[1 + (I*e*E^(I*ArcSi
n[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] + Log[1 - (I*e*E^(I*ArcSin[c*x]))/
(c*d + Sqrt[c^2*d^2 - e^2])])) + 2*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d
- Sqrt[c^2*d^2 - e^2])] + 2*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[
c^2*d^2 - e^2])]))/e^2
```

Maple [B] time = 0.367, size = 1578, normalized size = 4.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))/(e*x+d),x)
```

```
[Out] a*g/e*x-a/e^2*ln(c*e*x+c*d)*d*g+a/e*ln(c*e*x+c*d)*f-b*e*f*arcsin(c*x)/(c^2*
d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*
c+(-c^2*d^2+e^2)^(1/2)))+b*d*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(
-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+b*
arcsin(c*x)*g/e*x-I*b*d*g/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1
/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+I*c^2*b/e^2*d^3*
g/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1
/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+c^2*b/e*f*arcsin(c*x)/(c^2*d^2-e^2)*ln((
I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e
^2)^(1/2)))*d^2-I*b*d*g/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2
))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+I*b*e*f/(c^2*d^2-e
^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-
(-c^2*d^2+e^2)^(1/2)))+1/2*I*b*arcsin(c*x)^2/e^2*d*g-I*c^2*b/e*f/(c^2*d^2-e
^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-
(-c^2*d^2+e^2)^(1/2)))*d^2-c^2*b/e^2*d^3*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*
d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2
)^(1/2)))-c^2*b/e^2*d^3*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*
x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+b*d*g*a
rcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e
^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-1/2*I*b*arcsin(c*x)^2/e*f-b*e*f*ar
csin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^
2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+b*g*(-c^2*x^2+1)^(1/2)/c/e+I*b*e*f/
(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2
))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+I*c^2*b/e^2*d^3*g/(c^2*d^2-e^2)*dilog((I*d
*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)
^(1/2)))-I*c^2*b/e*f/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*
e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*d^2+c^2*b/e*f*arcsin(
c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1
```

```
/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*d^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$ag\left(\frac{x}{e} - \frac{d\log(ex+d)}{e^2}\right) + \frac{af\log(ex+d)}{e} + \int \frac{(bgx+bf)\arctan\left(cx, \sqrt{cx+1}\sqrt{-cx+1}\right)}{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] a*g*(x/e - d*log(e*x + d)/e^2) + a*f*log(e*x + d)/e + integrate((b*g*x + b*
f)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(e*x + d), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{agx + af + (bgx+bf)\arcsin(cx)}{ex+d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral((a*g*x + a*f + (b*g*x + b*f)*arcsin(c*x))/(e*x + d), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+b\,\mathrm{asin}(cx))(f+gx)}{d+ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))/(e*x+d),x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x)/(d + e*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)(b\arcsin(cx)+a)}{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((g*x + f)*(b*arcsin(c*x) + a)/(e*x + d), x)
```

3.92 $\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{(d+ex)^2}\,dx$

Optimal. Leaf size=358

$$-\frac{ibg\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^2}-\frac{ibg\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e^2}-\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{e^2(d+ex)}+\frac{g\log(d+ex)\left(a+b\sin^{-1}(c\cdots\right.}{e^2}$$

```
[Out] ((-I/2)*b*g*ArcSin[c*x]^2)/e^2 - ((e*f - d*g)*(a + b*ArcSin[c*x]))/(e^2*(d
+ e*x)) + (b*c*(e*f - d*g)*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1
 - c^2*x^2])])/(e^2*Sqrt[c^2*d^2 - e^2]) + (b*g*ArcSin[c*x]*Log[1 - (I*e*E^
(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^2 + (b*g*ArcSin[c*x]*Log[1
 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^2 - (b*g*ArcSin[
c*x]*Log[d + e*x])/e^2 + (g*(a + b*ArcSin[c*x])*Log[d + e*x])/e^2 - (I*b*g*
PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^2 - (I*b
*g*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^2
```

Rubi [A] time = 0.952115, antiderivative size = 358, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 13, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.619, Rules used = {43, 4753, 12, 6742, 725, 204, 216, 2404, 4741, 4519, 2190, 2279, 2391}

$$-\frac{ibg\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^2}-\frac{ibg\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e^2}-\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{e^2(d+ex)}+\frac{g\log(d+ex)\left(a+b\sin^{-1}(c\cdots\right.}{e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x]))/(d + e*x)^2,x]
```

```
[Out] ((-I/2)*b*g*ArcSin[c*x]^2)/e^2 - ((e*f - d*g)*(a + b*ArcSin[c*x]))/(e^2*(d
+ e*x)) + (b*c*(e*f - d*g)*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1
 - c^2*x^2])])/(e^2*Sqrt[c^2*d^2 - e^2]) + (b*g*ArcSin[c*x]*Log[1 - (I*e*E^
(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^2 + (b*g*ArcSin[c*x]*Log[1
 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^2 - (b*g*ArcSin[
c*x]*Log[d + e*x])/e^2 + (g*(a + b*ArcSin[c*x])*Log[d + e*x])/e^2 - (I*b*g*
PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^2 - (I*b
*g*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^2
```

Rule 43

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

Rule 4753

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

Rule 216

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

Rule 2404

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
```

```
x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rubi steps

$$\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{(d+ex)^2}\,dx = -\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{e^2(d+ex)} + \frac{g\left(a+b\sin^{-1}(cx)\right)\log(d+ex)}{e^2} - (bc)\int \frac{-ef\left(1-\frac{dg}{ef}\right)}{e^2(d}$$

$$= -\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{e^2(d+ex)} + \frac{g\left(a+b\sin^{-1}(cx)\right)\log(d+ex)}{e^2} - \frac{(bc)\int \frac{-ef\left(1-\frac{dg}{ef}\right)+g(d+}{(d+ex)\sqrt{1}}}{e^2}$$

$$= -\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{e^2(d+ex)} + \frac{g\left(a+b\sin^{-1}(cx)\right)\log(d+ex)}{e^2} - \frac{(bc)\int\left(\frac{-ef+dg}{(d+ex)\sqrt{1-c^2x^2}}\right.}{e^2}$$

$$= -\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{e^2(d+ex)} + \frac{g\left(a+b\sin^{-1}(cx)\right)\log(d+ex)}{e^2} - \frac{(bcg)\int \frac{\log(d+ex)}{\sqrt{1-c^2x^2}}\,dx}{e^2}$$

$$= -\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{e^2(d+ex)} - \frac{bg\sin^{-1}(cx)\log(d+ex)}{e^2} + \frac{g\left(a+b\sin^{-1}(cx)\right)\log(d+}{e^2}$$

$$= -\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{e^2(d+ex)} + \frac{bc(ef-dg)\tan^{-1}\left(\frac{e+c^2dx}{\sqrt{c^2d^2-e^2}\sqrt{1-c^2x^2}}\right)}{e^2\sqrt{c^2d^2-e^2}} - \frac{bg\sin^{-1}(cx)\log}{e^2}$$

$$= -\frac{ibg\sin^{-1}(cx)^2}{2e^2} - \frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{e^2(d+ex)} + \frac{bc(ef-dg)\tan^{-1}\left(\frac{e+c^2dx}{\sqrt{c^2d^2-e^2}\sqrt{1-c^2x^2}}\right)}{e^2\sqrt{c^2d^2-e^2}}$$

$$= -\frac{ibg\sin^{-1}(cx)^2}{2e^2} - \frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{e^2(d+ex)} + \frac{bc(ef-dg)\tan^{-1}\left(\frac{e+c^2dx}{\sqrt{c^2d^2-e^2}\sqrt{1-c^2x^2}}\right)}{e^2\sqrt{c^2d^2-e^2}}$$

$$= -\frac{ibg\sin^{-1}(cx)^2}{2e^2} - \frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{e^2(d+ex)} + \frac{bc(ef-dg)\tan^{-1}\left(\frac{e+c^2dx}{\sqrt{c^2d^2-e^2}\sqrt{1-c^2x^2}}\right)}{e^2\sqrt{c^2d^2-e^2}}$$

$$= -\frac{ibg\sin^{-1}(cx)^2}{2e^2} - \frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{e^2(d+ex)} + \frac{bc(ef-dg)\tan^{-1}\left(\frac{e+c^2dx}{\sqrt{c^2d^2-e^2}\sqrt{1-c^2x^2}}\right)}{e^2\sqrt{c^2d^2-e^2}}$$

Mathematica [A] time = 0.46929, size = 322, normalized size = 0.9

$$-\frac{1}{2}ibg\left(2\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)+2\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)+\sin^{-1}(cx)\left(\sin^{-1}(cx)+2i\left(\log\left(1+\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}-cd}\right)+\log\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x]))/(d + e*x)^2,x]
```

```
[Out] (-(((e*f - d*g)*(a + b*ArcSin[c*x]))/(d + e*x)) + (b*c*(e*f - d*g)*ArcTan[(
e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/Sqrt[c^2*d^2 - e^2]
- b*g*ArcSin[c*x]*Log[d + e*x] + g*(a + b*ArcSin[c*x])*Log[d + e*x] - (I/2)
*b*g*(ArcSin[c*x]*(ArcSin[c*x] + (2*I)*(Log[1 + (I*e*E^(I*ArcSin[c*x]))/(-(
c*d) + Sqrt[c^2*d^2 - e^2])] + Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[
c^2*d^2 - e^2])])) + 2*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d
^2 - e^2])] + 2*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^
2])]))/e^2
```

Maple [B] time = 0.703, size = 982, normalized size = 2.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^2,x)
```

```
[Out] c*a/e^2/(c*e*x+c*d)*d*g-c*a/e/(c*e*x+c*d)*f+a*g/e^2*ln(c*e*x+c*d)-1/2*I*b*g
*arcsin(c*x)^2/e^2+c*b*arcsin(c*x)/e^2/(c*e*x+c*d)*d*g-c*b*arcsin(c*x)/e/(c
*e*x+c*d)*f+2*c*b/e*f/(c^2*d^2-e^2)^(1/2)*arctan(1/2*(2*(I*c*x+(-c^2*x^2+1)
^(1/2))*e+2*I*d*c)/(c^2*d^2-e^2)^(1/2))+c^2*b/e^2*g*arcsin(c*x)/(c^2*d^2-e^
2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^
2*d^2+e^2)^(1/2)))*d^2+c^2*b/e^2*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c
*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2))
)*d^2-b*arcsin(c*x)*g/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-
(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-b*arcsin(c*x)*g/(c^2*d^
2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+
(-c^2*d^2+e^2)^(1/2)))+I*b*g/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)
^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+I*b*g/(c^2*d^
2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d
*c+(-c^2*d^2+e^2)^(1/2)))-2*c*b/e^2*d*g/(c^2*d^2-e^2)^(1/2)*arctan(1/2*(2*(
I*c*x+(-c^2*x^2+1)^(1/2))*e+2*I*d*c)/(c^2*d^2-e^2)^(1/2))-I*c^2*b/e^2*g/(c^
2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/
(I*d*c-(-c^2*d^2+e^2)^(1/2)))*d^2-I*c^2*b/e^2*g/(c^2*d^2-e^2)*dilog((I*d*c+
(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1
/2)))*d^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{agx + af + \left(bgx + bf\right)\arcsin\left(cx\right)}{e^2x^2 + 2\,dex + d^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral((a*g*x + a*f + (b*g*x + b*f)*arcsin(c*x))/(e^2*x^2 + 2*d*e*x + d^2
), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + b\,\text{asin}\,(cx))\left(f + gx\right)}{(d + ex)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))/(e*x+d)**2,x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x)/(d + e*x)**2, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(gx + f\right)(b\arcsin\left(cx\right) + a)}{(ex + d)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((g*x + f)*(b*arcsin(c*x) + a)/(e*x + d)^2, x)
```

3.93 $\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{(d+ex)^3}\,dx$

Optimal. Leaf size=202

$$-\frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)}{2(d+ex)^2(ef-dg)}+\frac{bc\sqrt{1-c^2x^2}(ef-dg)}{2e\left(c^2d^2-e^2\right)(d+ex)}-\frac{bc\left(2e^2g-c^2d(dg+ef)\right)\tan^{-1}\left(\frac{c^2dx+e}{\sqrt{1-c^2x^2}\sqrt{c^2d^2-e^2}}\right)}{2e^2\left(c^2d^2-e^2\right)^{3/2}}+\frac{bg^2\sin^{-1}(cx)}{2e^2(ef-dg)}$$

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

Rubi [A] time = 0.357813, antiderivative size = 202, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 8, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.381, Rules used = {37, 4753, 12, 1651, 844, 216, 725, 204}

$$-\frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)}{2(d+ex)^2(ef-dg)}+\frac{bc\sqrt{1-c^2x^2}(ef-dg)}{2e\left(c^2d^2-e^2\right)(d+ex)}-\frac{bc\left(2e^2g-c^2d(dg+ef)\right)\tan^{-1}\left(\frac{c^2dx+e}{\sqrt{1-c^2x^2}\sqrt{c^2d^2-e^2}}\right)}{2e^2\left(c^2d^2-e^2\right)^{3/2}}+\frac{bg^2\sin^{-1}(cx)}{2e^2(ef-dg)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x]))/(d + e*x)^3,x]
```


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


Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 4753

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1651

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :>
 With[{Q = PolynomialQuotient[Pq, d + e*x, x], R = PolynomialRemainder[Pq,
d + e*x, x]}, Simp[(e*R*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*
d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)
*(a + c*x^2)^p*ExpandToSum[(m + 1)*(c*d^2 + a*e^2)*Q + c*d*R*(m + 1) - c*e*
R*(m + 2*p + 3)*x, x], x], x]] /; FreeQ[{a, c, d, e, p}, x] && PolyQ[Pq, x]
 && NeQ[c*d^2 + a*e^2, 0] && LtQ[m, -1]
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rule 216

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

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

Rubi steps

$$\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{(d+ex)^3}\,dx = -\frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)}{2(ef-dg)(d+ex)^2} - (bc)\int -\frac{(f+gx)^2}{2(ef-dg)(d+ex)^2\sqrt{1-c^2x^2}}\,dx$$

$$= -\frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)}{2(ef-dg)(d+ex)^2} + \frac{(bc)\int \frac{(f+gx)^2}{(d+ex)^2\sqrt{1-c^2x^2}}\,dx}{2(ef-dg)}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{2e\left(c^2d^2-e^2\right)(d+ex)} - \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)}{2(ef-dg)(d+ex)^2} + \frac{(bc)\int \frac{c^2df^2-g(2ef-dg)+\left(\frac{c^2d^2}{e}-e\right)g^2}{(d+ex)\sqrt{1-c^2x^2}}}{2\left(c^2d^2-e^2\right)(ef-dg)}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{2e\left(c^2d^2-e^2\right)(d+ex)} - \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)}{2(ef-dg)(d+ex)^2} + \frac{\left(bcg^2\right)\int \frac{1}{\sqrt{1-c^2x^2}}\,dx}{2e^2(ef-dg)} - \frac{\left(bc\left(2e\right.\right.}{}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{2e\left(c^2d^2-e^2\right)(d+ex)} + \frac{bg^2\sin^{-1}(cx)}{2e^2(ef-dg)} - \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)}{2(ef-dg)(d+ex)^2} + \frac{\left(bc\left(2e^2g-c\right.\right.}{}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{2e\left(c^2d^2-e^2\right)(d+ex)} + \frac{bg^2\sin^{-1}(cx)}{2e^2(ef-dg)} - \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)}{2(ef-dg)(d+ex)^2} - \frac{bc\left(2e^2g-c^2\right.}{}$$

Mathematica [A] time = 0.546601, size = 263, normalized size = 1.3

$$\frac{\frac{a(dg-ef)}{(d+ex)^2} - \frac{2ag}{d+ex} - \frac{bce\sqrt{1-c^2x^2}(ef-dg)}{\left(e^2-c^2d^2\right)(d+ex)} + \frac{bc\left(c^2d(dg+ef)-2e^2g\right)\log\left(\sqrt{1-c^2x^2}\sqrt{e^2-c^2d^2}+c^2dx+e\right)}{(e-cd)(cd+e)\sqrt{e^2-c^2d^2}} + \frac{bc\log(d+ex)\left(c^2d(dg+ef)-2e^2g\right)}{(cd-e)(cd+e)\sqrt{e^2-c^2d^2}} - \frac{b\sin^{-1}(cx)(dg+e}{(d+ex)^2}}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x]))/(d + e*x)^3,x]
```

```
[Out] ((a*(-(e*f) + d*g))/(d + e*x)^2 - (2*a*g)/(d + e*x) - (b*c*e*(e*f - d*g)*Sq
rt[1 - c^2*x^2])/((-(c^2*d^2) + e^2)*(d + e*x)) - (b*(d*g + e*(f + 2*g*x))*
ArcSin[c*x])/(d + e*x)^2 + (b*c*(-2*e^2*g + c^2*d*(e*f + d*g))*Log[d + e*x]
)/((c*d - e)*(c*d + e)*Sqrt[-(c^2*d^2) + e^2]) + (b*c*(-2*e^2*g + c^2*d*(e*
f + d*g))*Log[e + c^2*d*x + Sqrt[-(c^2*d^2) + e^2]*Sqrt[1 - c^2*x^2]])/((-(
c*d) + e)*(c*d + e)*Sqrt[-(c^2*d^2) + e^2]))/(2*e^2)
```

Maple [B] time = 0.014, size = 805, normalized size = 4.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^3,x)
```

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

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 40.6045, size = 2380, normalized size = 11.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] [-1/4*(4*(a*c^4*d^4*e - 2*a*c^2*d^2*e^3 + a*e^5)*g*x + (b*c^3*d^3*e*f + (b*
c^3*d*e^3*f + (b*c^3*d^2*e^2 - 2*b*c*e^4)*g)*x^2 + (b*c^3*d^4 - 2*b*c*d^2*e
^2)*g + 2*(b*c^3*d^2*e^2*f + (b*c^3*d^3*e - 2*b*c*d*e^3)*g)*x)*sqrt(-c^2*d^
2 + e^2)*log((2*c^2*d*e*x - c^2*d^2 + (2*c^4*d^2 - c^2*e^2)*x^2 - 2*sqrt(-c
^2*d^2 + e^2)*(c^2*d*x + e)*sqrt(-c^2*x^2 + 1) + 2*e^2)/(e^2*x^2 + 2*d*e*x
+ d^2)) + 2*(a*c^4*d^4*e - 2*a*c^2*d^2*e^3 + a*e^5)*f + 2*(a*c^4*d^5 - 2*a*
c^2*d^3*e^2 + a*d*e^4)*g + 2*(2*(b*c^4*d^4*e - 2*b*c^2*d^2*e^3 + b*e^5)*g*x
 + (b*c^4*d^4*e - 2*b*c^2*d^2*e^3 + b*e^5)*f + (b*c^4*d^5 - 2*b*c^2*d^3*e^2
 + b*d*e^4)*g)*arcsin(c*x) - 2*sqrt(-c^2*x^2 + 1)*((b*c^3*d^3*e^2 - b*c*d*e
^4)*f - (b*c^3*d^4*e - b*c*d^2*e^3)*g + ((b*c^3*d^2*e^3 - b*c*e^5)*f - (b*c
^3*d^3*e^2 - b*c*d*e^4)*g)*x))/(c^4*d^6*e^2 - 2*c^2*d^4*e^4 + d^2*e^6 + (c^
4*d^4*e^4 - 2*c^2*d^2*e^6 + e^8)*x^2 + 2*(c^4*d^5*e^3 - 2*c^2*d^3*e^5 + d*e
^7)*x), -1/2*(2*(a*c^4*d^4*e - 2*a*c^2*d^2*e^3 + a*e^5)*g*x - (b*c^3*d^3*e*
f + (b*c^3*d*e^3*f + (b*c^3*d^2*e^2 - 2*b*c*e^4)*g)*x^2 + (b*c^3*d^4 - 2*b*
c*d^2*e^2)*g + 2*(b*c^3*d^2*e^2*f + (b*c^3*d^3*e - 2*b*c*d*e^3)*g)*x)*sqrt(
c^2*d^2 - e^2)*arctan(sqrt(c^2*d^2 - e^2)*(c^2*d*x + e)*sqrt(-c^2*x^2 + 1)/
(c^2*d^2 - (c^4*d^2 - c^2*e^2)*x^2 - e^2)) + (a*c^4*d^4*e - 2*a*c^2*d^2*e^3
 + a*e^5)*f + (a*c^4*d^5 - 2*a*c^2*d^3*e^2 + a*d*e^4)*g + (2*(b*c^4*d^4*e -
 2*b*c^2*d^2*e^3 + b*e^5)*g*x + (b*c^4*d^4*e - 2*b*c^2*d^2*e^3 + b*e^5)*f +
 (b*c^4*d^5 - 2*b*c^2*d^3*e^2 + b*d*e^4)*g)*arcsin(c*x) - sqrt(-c^2*x^2 + 1
)*((b*c^3*d^3*e^2 - b*c*d*e^4)*f - (b*c^3*d^4*e - b*c*d^2*e^3)*g + ((b*c^3*
d^2*e^3 - b*c*e^5)*f - (b*c^3*d^3*e^2 - b*c*d*e^4)*g)*x))/(c^4*d^6*e^2 - 2*
c^2*d^4*e^4 + d^2*e^6 + (c^4*d^4*e^4 - 2*c^2*d^2*e^6 + e^8)*x^2 + 2*(c^4*d^
5*e^3 - 2*c^2*d^3*e^5 + d*e^7)*x)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + b\operatorname{asin}(cx))\left(f + gx\right)}{(d + ex)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))/(e*x+d)**3,x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x)/(d + e*x)**3, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)(b\arcsin(cx)+a)}{(ex+d)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((g*x + f)*(b*arcsin(c*x) + a)/(e*x + d)^3, x)
```

3.94 $\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{(d+ex)^4}\,dx$

Optimal. Leaf size=257

$$-\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{3e^2(d+ex)^3}-\frac{g\left(a+b\sin^{-1}(cx)\right)}{2e^2(d+ex)^2}+\frac{bc\sqrt{1-c^2x^2}\left(c^2df-eg\right)}{2\left(c^2d^2-e^2\right)^2(d+ex)}+\frac{bc\sqrt{1-c^2x^2}(ef-dg)}{6e\left(c^2d^2-e^2\right)(d+ex)^2}+\frac{bc^3\left(c^2d^2(dg\right.}{}$$

```
[Out] (b*c*(e*f - d*g)*Sqrt[1 - c^2*x^2])/(6*e*(c^2*d^2 - e^2)*(d + e*x)^2) + (b*
c*(c^2*d*f - e*g)*Sqrt[1 - c^2*x^2])/(2*(c^2*d^2 - e^2)^2*(d + e*x)) - ((e*
f - d*g)*(a + b*ArcSin[c*x]))/(3*e^2*(d + e*x)^3) - (g*(a + b*ArcSin[c*x]))
/(2*e^2*(d + e*x)^2) + (b*c^3*(e^2*(e*f - 4*d*g) + c^2*d^2*(2*e*f + d*g))*A
rcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(6*e^2*(c^2*d
^2 - e^2)^(5/2))
```

Rubi [A] time = 0.427468, antiderivative size = 257, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {43, 4753, 12, 835, 807, 725, 204}

$$-\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{3e^2(d+ex)^3}-\frac{g\left(a+b\sin^{-1}(cx)\right)}{2e^2(d+ex)^2}+\frac{bc\sqrt{1-c^2x^2}\left(c^2df-eg\right)}{2\left(c^2d^2-e^2\right)^2(d+ex)}+\frac{bc\sqrt{1-c^2x^2}(ef-dg)}{6e\left(c^2d^2-e^2\right)(d+ex)^2}+\frac{bc^3\left(c^2d^2(dg\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x]))/(d + e*x)^4,x]
```

```
[Out] (b*c*(e*f - d*g)*Sqrt[1 - c^2*x^2])/(6*e*(c^2*d^2 - e^2)*(d + e*x)^2) + (b*
c*(c^2*d*f - e*g)*Sqrt[1 - c^2*x^2])/(2*(c^2*d^2 - e^2)^2*(d + e*x)) - ((e*
f - d*g)*(a + b*ArcSin[c*x]))/(3*e^2*(d + e*x)^3) - (g*(a + b*ArcSin[c*x]))
/(2*e^2*(d + e*x)^2) + (b*c^3*(e^2*(e*f - 4*d*g) + c^2*d^2*(2*e*f + d*g))*A
rcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(6*e^2*(c^2*d
^2 - e^2)^(5/2))
```

Rule 43

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

Rule 4753

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

Rubi steps

$$\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{(d+ex)^4}\,dx = -\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{3e^2(d+ex)^3} - \frac{g\left(a+b\sin^{-1}(cx)\right)}{2e^2(d+ex)^2} - (bc)\int \frac{-2ef-dg-3egx}{6e^2(d+ex)^3\sqrt{1-c^2x^2}}\,dx$$

$$= -\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{3e^2(d+ex)^3} - \frac{g\left(a+b\sin^{-1}(cx)\right)}{2e^2(d+ex)^2} - \frac{(bc)\int \frac{-2ef-dg-3egx}{(d+ex)^3\sqrt{1-c^2x^2}}\,dx}{6e^2}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{6e\left(c^2d^2-e^2\right)(d+ex)^2} - \frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{3e^2(d+ex)^3} - \frac{g\left(a+b\sin^{-1}(cx)\right)}{2e^2(d+ex)^2} - \frac{(bc)\int}{}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{6e\left(c^2d^2-e^2\right)(d+ex)^2} + \frac{bc\left(c^2df-eg\right)\sqrt{1-c^2x^2}}{2\left(c^2d^2-e^2\right)^2(d+ex)} - \frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{3e^2(d+ex)^3} - g$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{6e\left(c^2d^2-e^2\right)(d+ex)^2} + \frac{bc\left(c^2df-eg\right)\sqrt{1-c^2x^2}}{2\left(c^2d^2-e^2\right)^2(d+ex)} - \frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{3e^2(d+ex)^3} - g$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{6e\left(c^2d^2-e^2\right)(d+ex)^2} + \frac{bc\left(c^2df-eg\right)\sqrt{1-c^2x^2}}{2\left(c^2d^2-e^2\right)^2(d+ex)} - \frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{3e^2(d+ex)^3} - g$$

Mathematica [A] time = 0.773146, size = 321, normalized size = 1.25

$$\frac{\frac{a(2dg-2ef)}{(d+ex)^3} - \frac{3ag}{(d+ex)^2} + \frac{bce\sqrt{1-c^2x^2}\left(c^2d\left(d^2(-g)+4def+3e^2fx\right)-e^2(2dg+e(f+3gx))\right)}{\left(e^2-c^2d^2\right)^2(d+ex)^2} - \frac{bc^3\left(c^2d^2(dg+2ef)+e^2(ef-4dg)\right)\log\left(\sqrt{1-c^2x^2}\sqrt{e^2-c^2d^2}+c^2dx+e\right)}{(e-cd)^2(cd+e)^2\sqrt{e^2-c^2d^2}} +}{6e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x]))/(d + e*x)^4,x]
```

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

Maple [B] time = 0.013, size = 1269, normalized size = 4.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^4,x)
```

```
[Out] -1/2*c^2*a*g/e^2/(c*e*x+c*d)^2+1/3*c^3*a/e^2/(c*e*x+c*d)^3*d*g-1/3*c^3*a/e/
(c*e*x+c*d)^3*f-1/2*c^2*b*arcsin(c*x)*g/e^2/(c*e*x+c*d)^2+1/3*c^3*b*arcsin(
c*x)/e^2/(c*e*x+c*d)^3*d*g-1/3*c^3*b*arcsin(c*x)/e/(c*e*x+c*d)^3*f-1/6*c^3*
b/e^3/(c^2*d^2-e^2)/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*
d^2-e^2)/e^2)^(1/2)*d*g+1/6*c^3*b/e^2/(c^2*d^2-e^2)/(c*x+d*c/e)^2*(-(c*x+d*
c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f-1/2*c^4*b/e^2*d^2/(c^
2*d^2-e^2)^2/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/
e^2)^(1/2)*g+1/2*c^4*b/e*d/(c^2*d^2-e^2)^2/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*
c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f+1/2*c^5*b/e^3*d^3/(c^2*d^2-e^2)^
2/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2
*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^
2)/e^2)^(1/2))/(c*x+d*c/e))*g-1/2*c^5*b/e^2*d^2/(c^2*d^2-e^2)^2/(-(c^2*d^2-
e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e
^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)
)/(c*x+d*c/e))*f-2/3*c^3*b/e^3/(c^2*d^2-e^2)/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln(
(-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c
*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*d*g+
1/6*c^3*b/e^2/(c^2*d^2-e^2)/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)
/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c
/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*f+1/2*c^2*b/e^2*g/(c^
2*d^2-e^2)/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^
2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{(3\,ex+d)ag}{6\left(e^5x^3+3\,de^4x^2+3\,d^2e^3x+d^3e^2\right)}-\frac{af}{3\left(e^4x^3+3\,de^3x^2+3\,d^2e^2x+d^3e\right)}-\frac{\left(3\,begx+2\,bef+bdg\right)\arctan\left(cx,\sqrt{cx+1}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] -1/6*(3*e*x + d)*a*g/(e^5*x^3 + 3*d*e^4*x^2 + 3*d^2*e^3*x + d^3*e^2) - 1/3*
a*f/(e^4*x^3 + 3*d*e^3*x^2 + 3*d^2*e^2*x + d^3*e) - 1/6*((3*b*e*g*x + 2*b*e
*f + b*d*g)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + 6*(e^5*x^3 + 3*d*e
^4*x^2 + 3*d^2*e^3*x + d^3*e^2)*integrate(1/6*(3*b*c*e*g*x + 2*b*c*e*f + b*
c*d*g)*e^(1/2*log(c*x + 1) + 1/2*log(-c*x + 1))/(c^4*e^5*x^7 + 3*c^4*d*e^4*
x^6 - 3*c^2*d^2*e^3*x^3 - c^2*d^3*e^2*x^2 + (3*c^4*d^2*e^3 - c^2*e^5)*x^5 +
 (c^4*d^3*e^2 - 3*c^2*d*e^4)*x^4 + (c^2*e^5*x^5 + 3*c^2*d*e^4*x^4 - 3*d^2*e
^3*x - d^3*e^2 + (3*c^2*d^2*e^3 - e^5)*x^3 + (c^2*d^3*e^2 - 3*d*e^4)*x^2)*e
^(log(c*x + 1) + log(-c*x + 1))), x))/(e^5*x^3 + 3*d*e^4*x^2 + 3*d^2*e^3*x
+ d^3*e^2)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + b \operatorname{asin}(cx))\left(f + gx\right)}{(d + ex)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))/(e*x+d)**4,x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x)/(d + e*x)**4, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(gx + f\right)(b \arcsin(cx) + a)}{(ex + d)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] integrate((g*x + f)*(b*arcsin(c*x) + a)/(e*x + d)^4, x)
```

3.95 $\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{(d+ex)^5}\,dx$

Optimal. Leaf size=360

$$-\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{4e^2(d+ex)^4}-\frac{g\left(a+b\sin^{-1}(cx)\right)}{3e^2(d+ex)^3}+\frac{bc^3\sqrt{1-c^2x^2}\left(c^2d^2(dg+11ef)+4e^2(ef-4dg)\right)}{24e\left(c^2d^2-e^2\right)^3(d+ex)}-\frac{bc\sqrt{1-c^2x^2}\left(4e\right.}{24e\left(c^2d^2\right.}$$

```
[Out] (b*c*(e*f - d*g)*Sqrt[1 - c^2*x^2])/(12*e*(c^2*d^2 - e^2)*(d + e*x)^3) - (b
*c*(4*e^2*g - c^2*d*(5*e*f - d*g))*Sqrt[1 - c^2*x^2])/(24*e*(c^2*d^2 - e^2)
^2*(d + e*x)^2) + (b*c^3*(4*e^2*(e*f - 4*d*g) + c^2*d^2*(11*e*f + d*g))*Sqr
t[1 - c^2*x^2])/(24*e*(c^2*d^2 - e^2)^3*(d + e*x)) - ((e*f - d*g)*(a + b*Ar
cSin[c*x]))/(4*e^2*(d + e*x)^4) - (g*(a + b*ArcSin[c*x]))/(3*e^2*(d + e*x)^
3) - (b*c^3*(4*e^4*g - c^2*d*e^2*(9*e*f - 13*d*g) - 2*c^4*d^3*(3*e*f + d*g)
)*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(24*e^2*(c
^2*d^2 - e^2)^(7/2))
```

Rubi [A] time = 0.695172, antiderivative size = 360, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {43, 4753, 12, 835, 807, 725, 204}

$$-\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{4e^2(d+ex)^4}-\frac{g\left(a+b\sin^{-1}(cx)\right)}{3e^2(d+ex)^3}+\frac{bc^3\sqrt{1-c^2x^2}\left(c^2d^2(dg+11ef)+4e^2(ef-4dg)\right)}{24e\left(c^2d^2-e^2\right)^3(d+ex)}-\frac{bc\sqrt{1-c^2x^2}\left(4e\right.}{24e\left(c^2d^2\right.}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x]))/(d + e*x)^5,x]
```

```
[Out] (b*c*(e*f - d*g)*Sqrt[1 - c^2*x^2])/(12*e*(c^2*d^2 - e^2)*(d + e*x)^3) - (b
*c*(4*e^2*g - c^2*d*(5*e*f - d*g))*Sqrt[1 - c^2*x^2])/(24*e*(c^2*d^2 - e^2)
^2*(d + e*x)^2) + (b*c^3*(4*e^2*(e*f - 4*d*g) + c^2*d^2*(11*e*f + d*g))*Sqr
t[1 - c^2*x^2])/(24*e*(c^2*d^2 - e^2)^3*(d + e*x)) - ((e*f - d*g)*(a + b*Ar
cSin[c*x]))/(4*e^2*(d + e*x)^4) - (g*(a + b*ArcSin[c*x]))/(3*e^2*(d + e*x)^
3) - (b*c^3*(4*e^4*g - c^2*d*e^2*(9*e*f - 13*d*g) - 2*c^4*d^3*(3*e*f + d*g)
)*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(24*e^2*(c
^2*d^2 - e^2)^(7/2))
```

Rule 43

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

Rule 4753

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

a, 0] || LtQ[b, 0])

Rubi steps

$$\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{(d+ex)^5}\,dx = -\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{4e^2(d+ex)^4}-\frac{g\left(a+b\sin^{-1}(cx)\right)}{3e^2(d+ex)^3}-(bc)\int \frac{-3ef-dg-4egx}{12e^2(d+ex)^4\sqrt{1-c^2x^2}}$$

$$= -\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{4e^2(d+ex)^4}-\frac{g\left(a+b\sin^{-1}(cx)\right)}{3e^2(d+ex)^3}-\frac{(bc)\int \frac{-3ef-dg-4egx}{(d+ex)^4\sqrt{1-c^2x^2}}\,dx}{12e^2}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{12e\left(c^2d^2-e^2\right)(d+ex)^3}-\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{4e^2(d+ex)^4}-\frac{g\left(a+b\sin^{-1}(cx)\right)}{3e^2(d+ex)^3}-\frac{(bc)\int}{}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{12e\left(c^2d^2-e^2\right)(d+ex)^3}-\frac{bc\left(4e^2g-c^2d(5ef-dg)\right)\sqrt{1-c^2x^2}}{24e\left(c^2d^2-e^2\right)^2(d+ex)^2}-\frac{(ef-dg)\left(a+b\sin\right.}{4e^2(d+ex)}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{12e\left(c^2d^2-e^2\right)(d+ex)^3}-\frac{bc\left(4e^2g-c^2d(5ef-dg)\right)\sqrt{1-c^2x^2}}{24e\left(c^2d^2-e^2\right)^2(d+ex)^2}+\frac{bc^3\left(4e^2(ef-4dg)\right.}{24e\left(c\right.}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{12e\left(c^2d^2-e^2\right)(d+ex)^3}-\frac{bc\left(4e^2g-c^2d(5ef-dg)\right)\sqrt{1-c^2x^2}}{24e\left(c^2d^2-e^2\right)^2(d+ex)^2}+\frac{bc^3\left(4e^2(ef-4dg)\right.}{24e\left(c\right.}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{12e\left(c^2d^2-e^2\right)(d+ex)^3}-\frac{bc\left(4e^2g-c^2d(5ef-dg)\right)\sqrt{1-c^2x^2}}{24e\left(c^2d^2-e^2\right)^2(d+ex)^2}+\frac{bc^3\left(4e^2(ef-4dg)\right.}{24e\left(c\right.}$$

Mathematica [A] time = 1.27819, size = 418, normalized size = 1.16

$$\frac{\frac{a(6dg-6ef)}{(d+ex)^4}-\frac{8ag}{(d+ex)^3}-\frac{be\sqrt{1-c^2x^2}\left(c^5d^2\left(d^2e(18f+gx)-2d^3g+de^2x(27f+gx)+11e^3fx^2\right)-c^3e^2\left(5d^2e(f+7gx)+15d^3g+de^2x(16gx-3f)-4e^3fx^2\right)+2ce^4(dg+e(f+\right.}{\left(e^2-c^2d^2\right)^3(d+ex)^3}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x]))/(d + e*x)^5,x]
```

```
[Out] ((a*(-6*e*f + 6*d*g))/(d + e*x)^4 - (8*a*g)/(d + e*x)^3 - (b*e*Sqrt[1 - c^2
*x^2]*(c^5*d^2*(-2*d^3*g + 11*e^3*f*x^2 + d^2*e*(18*f + g*x) + d*e^2*x*(27*
f + g*x)) + 2*c*e^4*(d*g + e*(f + 2*g*x)) - c^3*e^2*(15*d^3*g - 4*e^3*f*x^2
```

```
 + 5*d^2*e*(f + 7*g*x) + d*e^2*x*(-3*f + 16*g*x))))/((-(c^2*d^2) + e^2)^3*(
d + e*x)^3) - (2*b*(3*e*f + d*g + 4*e*g*x)*ArcSin[c*x])/(d + e*x)^4 + (b*c^
3*(4*e^4*g - 2*c^4*d^3*(3*e*f + d*g) + c^2*d*e^2*(-9*e*f + 13*d*g))*Log[d +
 e*x])/((-(c*d) + e)^3*(c*d + e)^3*Sqrt[-(c^2*d^2) + e^2]) + (b*c^3*(-4*e^4
*g + c^2*d*e^2*(9*e*f - 13*d*g) + 2*c^4*d^3*(3*e*f + d*g))*Log[e + c^2*d*x
+ Sqrt[-(c^2*d^2) + e^2]*Sqrt[1 - c^2*x^2]])/((-(c*d) + e)^3*(c*d + e)^3*Sq
rt[-(c^2*d^2) + e^2]))/(24*e^2)
```

Maple [B] time = 0.019, size = 1804, normalized size = 5.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^5,x)
```

```
[Out] 1/4*c^4*a/e^2/(c*e*x+c*d)^4*d*g-1/4*c^4*a/e/(c*e*x+c*d)^4*f-1/3*c^3*a*g/e^2
/(c*e*x+c*d)^3+1/4*c^4*b*arcsin(c*x)/e^2/(c*e*x+c*d)^4*d*g-1/4*c^4*b*arcsin
(c*x)/e/(c*e*x+c*d)^4*f-1/3*c^3*b*arcsin(c*x)*g/e^2/(c*e*x+c*d)^3+1/6*c^3*b
/e^3*g/(c^2*d^2-e^2)/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2
*d^2-e^2)/e^2)^(1/2)+2/3*c^4*b/e^2*g*d/(c^2*d^2-e^2)^2/(c*x+d*c/e)*(-(c*x+d
*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)-7/8*c^5*b/e^3*g*d^2/(c
^2*d^2-e^2)^2/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(
c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)
-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))+1/6*c^3*b/e^3*g/(c^2*d^2-e^2)/(-(c^
2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2
*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)
^(1/2))/(c*x+d*c/e))-1/12*c^4*b/e^4/(c^2*d^2-e^2)/(c*x+d*c/e)^3*(-(c*x+d*c/
e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*d*g+1/12*c^4*b/e^3/(c^2*d
^2-e^2)/(c*x+d*c/e)^3*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2
)^(1/2)*f-5/24*c^5*b/e^3*d^2/(c^2*d^2-e^2)^2/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+
2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*g+5/24*c^5*b/e^2*d/(c^2*d^2-e^
2)^2/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(
1/2)*f-5/8*c^6*b/e^2*d^3/(c^2*d^2-e^2)^3/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/
e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*g+5/8*c^6*b/e*d^2/(c^2*d^2-e^2)^3/(c
*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f+5/
8*c^7*b/e^3*d^4/(c^2*d^2-e^2)^3/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-
e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2
*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*g-5/8*c^7*b/e^2*d
^3/(c^2*d^2-e^2)^3/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*
c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d
*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*f+3/8*c^5*b/e^2*d/(c^2*d^2-e^2
```

```
)^2/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)
+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-
e^2)/e^2)^(1/2))/(c*x+d*c/e))*f-1/6*c^4*b/e/(c^2*d^2-e^2)^2/(c*x+d*c/e)*(-(
c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{(4\,ex+d)ag}{12\left(e^6x^4+4\,de^5x^3+6\,d^2e^4x^2+4\,d^3e^3x+d^4e^2\right)}-\frac{af}{4\left(e^5x^4+4\,de^4x^3+6\,d^2e^3x^2+4\,d^3e^2x+d^4e\right)}-\frac{\left(4\,begx+3\,bef+bd\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(4*e*x + d)*a*g/(e^6*x^4 + 4*d*e^5*x^3 + 6*d^2*e^4*x^2 + 4*d^3*e^3*x
+ d^4*e^2) - 1/4*a*f/(e^5*x^4 + 4*d*e^4*x^3 + 6*d^2*e^3*x^2 + 4*d^3*e^2*x +
 d^4*e) - 1/12*((4*b*e*g*x + 3*b*e*f + b*d*g)*arctan2(c*x, sqrt(c*x + 1)*sq
rt(-c*x + 1)) + 12*(e^6*x^4 + 4*d*e^5*x^3 + 6*d^2*e^4*x^2 + 4*d^3*e^3*x + d
^4*e^2)*integrate(1/12*(4*b*c*e*g*x + 3*b*c*e*f + b*c*d*g)*e^(1/2*log(c*x +
 1) + 1/2*log(-c*x + 1))/(c^4*e^6*x^8 + 4*c^4*d*e^5*x^7 - 4*c^2*d^3*e^3*x^3
 - c^2*d^4*e^2*x^2 + (6*c^4*d^2*e^4 - c^2*e^6)*x^6 + 4*(c^4*d^3*e^3 - c^2*d
*e^5)*x^5 + (c^4*d^4*e^2 - 6*c^2*d^2*e^4)*x^4 + (c^2*e^6*x^6 + 4*c^2*d*e^5*
x^5 - 4*d^3*e^3*x - d^4*e^2 + (6*c^2*d^2*e^4 - e^6)*x^4 + 4*(c^2*d^3*e^3 -
d*e^5)*x^3 + (c^2*d^4*e^2 - 6*d^2*e^4)*x^2)*e^(log(c*x + 1) + log(-c*x + 1)
)), x))/(e^6*x^4 + 4*d*e^5*x^3 + 6*d^2*e^4*x^2 + 4*d^3*e^3*x + d^4*e^2)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + b\,\mathrm{asin}\,(cx))\left(f + gx\right)}{\left(d + ex\right)^{5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))/(e*x+d)**5,x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x)/(d + e*x)**5, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(gx + f\right)(b\arcsin\left(cx\right) + a)}{\left(ex + d\right)^{5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] integrate((g*x + f)*(b*arcsin(c*x) + a)/(e*x + d)^5, x)
```

3.96 $\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{(d+ex)^6}\,dx$

Optimal. Leaf size=457

$$-\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{5e^2(d+ex)^5}-\frac{g\left(a+b\sin^{-1}(cx)\right)}{4e^2(d+ex)^4}-\frac{bc^3\sqrt{1-c^2x^2}\left(c^4\left(-d^3\right)(dg+10ef)-c^2de^2(11ef-18dg)+4e^4g\right)}{24e\left(c^2d^2-e^2\right)^4(d+ex)}+$$

```
[Out] (b*c*(e*f - d*g)*Sqrt[1 - c^2*x^2])/(20*e*(c^2*d^2 - e^2)*(d + e*x)^4) - (b
*c*(5*e^2*g - c^2*d*(7*e*f - 2*d*g))*Sqrt[1 - c^2*x^2])/(60*e*(c^2*d^2 - e^
2)^2*(d + e*x)^3) + (b*c^3*(e^2*(9*e*f - 34*d*g) + c^2*d^2*(26*e*f - d*g))*
Sqrt[1 - c^2*x^2])/(120*e*(c^2*d^2 - e^2)^3*(d + e*x)^2) - (b*c^3*(4*e^4*g
- c^2*d*e^2*(11*e*f - 18*d*g) - c^4*d^3*(10*e*f + d*g))*Sqrt[1 - c^2*x^2])/
(24*e*(c^2*d^2 - e^2)^4*(d + e*x)) - ((e*f - d*g)*(a + b*ArcSin[c*x]))/(5*e
^2*(d + e*x)^5) - (g*(a + b*ArcSin[c*x]))/(4*e^2*(d + e*x)^4) + (b*c^5*(c^2
*d^2*e^2*(24*e*f - 19*d*g) + 3*e^4*(e*f - 6*d*g) + 2*c^4*d^4*(4*e*f + d*g))
*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(40*e^2*(c^
2*d^2 - e^2)^(9/2))
```

Rubi [A] time = 0.965565, antiderivative size = 457, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {43, 4753, 12, 835, 807, 725, 204}

$$-\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{5e^2(d+ex)^5}-\frac{g\left(a+b\sin^{-1}(cx)\right)}{4e^2(d+ex)^4}-\frac{bc^3\sqrt{1-c^2x^2}\left(c^4\left(-d^3\right)(dg+10ef)-c^2de^2(11ef-18dg)+4e^4g\right)}{24e\left(c^2d^2-e^2\right)^4(d+ex)}+$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x]))/(d + e*x)^6,x]
```


```
[Out] (b*c*(e*f - d*g)*Sqrt[1 - c^2*x^2])/(20*e*(c^2*d^2 - e^2)*(d + e*x)^4) - (b
*c*(5*e^2*g - c^2*d*(7*e*f - 2*d*g))*Sqrt[1 - c^2*x^2])/(60*e*(c^2*d^2 - e^
2)^2*(d + e*x)^3) + (b*c^3*(e^2*(9*e*f - 34*d*g) + c^2*d^2*(26*e*f - d*g))*
Sqrt[1 - c^2*x^2])/(120*e*(c^2*d^2 - e^2)^3*(d + e*x)^2) - (b*c^3*(4*e^4*g
- c^2*d*e^2*(11*e*f - 18*d*g) - c^4*d^3*(10*e*f + d*g))*Sqrt[1 - c^2*x^2])/
(24*e*(c^2*d^2 - e^2)^4*(d + e*x)) - ((e*f - d*g)*(a + b*ArcSin[c*x]))/(5*e
^2*(d + e*x)^5) - (g*(a + b*ArcSin[c*x]))/(4*e^2*(d + e*x)^4) + (b*c^5*(c^2
*d^2*e^2*(24*e*f - 19*d*g) + 3*e^4*(e*f - 6*d*g) + 2*c^4*d^4*(4*e*f + d*g))
*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(40*e^2*(c^
```

```
2*d^2 - e^2)^(9/2))
```

Rule 43

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

Rule 4753

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

Rubi steps

$$\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{(d+ex)^6}\,dx = -\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{5e^2(d+ex)^5} - \frac{g\left(a+b\sin^{-1}(cx)\right)}{4e^2(d+ex)^4} - (bc)\int \frac{-4ef-dg-5egx}{20e^2(d+ex)^5\sqrt{1-c^2x^2}}$$

$$= -\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{5e^2(d+ex)^5} - \frac{g\left(a+b\sin^{-1}(cx)\right)}{4e^2(d+ex)^4} - \frac{(bc)\int \frac{-4ef-dg-5egx}{(d+ex)^5\sqrt{1-c^2x^2}}\,dx}{20e^2}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{20e\left(c^2d^2-e^2\right)(d+ex)^4} - \frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{5e^2(d+ex)^5} - \frac{g\left(a+b\sin^{-1}(cx)\right)}{4e^2(d+ex)^4} - \frac{(bc)\int}{}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{20e\left(c^2d^2-e^2\right)(d+ex)^4} - \frac{bc\left(5e^2g-c^2d(7ef-2dg)\right)\sqrt{1-c^2x^2}}{60e\left(c^2d^2-e^2\right)^2(d+ex)^3} - \frac{(ef-dg)\left(a+b\right.}{5e^2(d+e}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{20e\left(c^2d^2-e^2\right)(d+ex)^4} - \frac{bc\left(5e^2g-c^2d(7ef-2dg)\right)\sqrt{1-c^2x^2}}{60e\left(c^2d^2-e^2\right)^2(d+ex)^3} + \frac{bc^3\left(e^2(9ef-34\right.}{120e}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{20e\left(c^2d^2-e^2\right)(d+ex)^4} - \frac{bc\left(5e^2g-c^2d(7ef-2dg)\right)\sqrt{1-c^2x^2}}{60e\left(c^2d^2-e^2\right)^2(d+ex)^3} + \frac{bc^3\left(e^2(9ef-34\right.}{120e}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{20e\left(c^2d^2-e^2\right)(d+ex)^4} - \frac{bc\left(5e^2g-c^2d(7ef-2dg)\right)\sqrt{1-c^2x^2}}{60e\left(c^2d^2-e^2\right)^2(d+ex)^3} + \frac{bc^3\left(e^2(9ef-34\right.}{120e}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{20e\left(c^2d^2-e^2\right)(d+ex)^4} - \frac{bc\left(5e^2g-c^2d(7ef-2dg)\right)\sqrt{1-c^2x^2}}{60e\left(c^2d^2-e^2\right)^2(d+ex)^3} + \frac{bc^3\left(e^2(9ef-34\right.}{120e}$$

Mathematica [A] time = 1.39366, size = 494, normalized size = 1.08

$$\frac{\frac{3a(8dg-8ef)}{(d+ex)^5} - \frac{30ag}{(d+ex)^4} + \frac{bce\sqrt{1-c^2x^2}\left(-2\left(e^2-c^2d^2\right)^2(d+ex)\left(c^2d(2dg-7ef)+5e^2g\right)+5c^2(d+ex)^3\left(c^4d^3(dg+10ef)+c^2de^2(11ef-18dg)-4e^4g\right)-c^2\left(c^2d^2-e^2\right)(d+ex)\right.}{\left(e^2-c^2d^2\right)^4(d+ex)^4}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x]))/(d + e*x)^6,x]
```

```
[Out] ((3*a*(-8*e*f + 8*d*g))/(d + e*x)^5 - (30*a*g)/(d + e*x)^4 + (b*c*e*Sqrt[1
- c^2*x^2]*(-6*(-(c^2*d^2) + e^2)^3*(e*f - d*g) - 2*(-(c^2*d^2) + e^2)^2*(5
*e^2*g + c^2*d*(-7*e*f + 2*d*g))*(d + e*x) - c^2*(c^2*d^2 - e^2)*(c^2*d^2*(
-26*e*f + d*g) + e^2*(-9*e*f + 34*d*g))*(d + e*x)^2 + 5*c^2*(-4*e^4*g + c^2
*d*e^2*(11*e*f - 18*d*g) + c^4*d^3*(10*e*f + d*g))*(d + e*x)^3))/((-(c^2*d^
2) + e^2)^4*(d + e*x)^4) - (6*b*(4*e*f + d*g + 5*e*g*x)*ArcSin[c*x])/(d + e
*x)^5 + (3*b*c^5*(c^2*d^2*e^2*(24*e*f - 19*d*g) + 3*e^4*(e*f - 6*d*g) + 2*c
^4*d^4*(4*e*f + d*g))*Log[d + e*x])/((-(c*d) + e)^4*(c*d + e)^4*Sqrt[-(c^2*
d^2) + e^2]) - (3*b*c^5*(c^2*d^2*e^2*(24*e*f - 19*d*g) + 3*e^4*(e*f - 6*d*g
) + 2*c^4*d^4*(4*e*f + d*g))*Log[e + c^2*d*x + Sqrt[-(c^2*d^2) + e^2]*Sqrt[
1 - c^2*x^2]])/((-(c*d) + e)^4*(c*d + e)^4*Sqrt[-(c^2*d^2) + e^2]))/(120*e^
2)
```

Maple [B] time = 0.018, size = 2431, normalized size = 5.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^6,x)
```

```
[Out] -1/4*c^4*b*arcsin(c*x)*g/e^2/(c*e*x+c*d)^4+1/5*c^5*a/e^2/(c*e*x+c*d)^5*d*g-
11/24*c^6*b/e*d/(c^2*d^2-e^2)^3/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*
c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f-7/8*c^9*b/e^2*d^4/(c^2*d^2-e^2)^4/(-(c^2*d^
2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2
-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/
2))/(c*x+d*c/e))*f+7/8*c^9*b/e^3*d^5/(c^2*d^2-e^2)^4/(-(c^2*d^2-e^2)/e^2)^(
1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1
/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/
e))*g+9/20*c^5*b/e^3/(c^2*d^2-e^2)^2/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2
*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e
)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*d*g+13/12*c^
6*b/e^2*d^2/(c^2*d^2-e^2)^3/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)
-(c^2*d^2-e^2)/e^2)^(1/2)*g-7/60*c^6*b/e^4*d^2/(c^2*d^2-e^2)^2/(c*x+d*c/e)^
3*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*g+7/60*c^6*b
/e^3*d/(c^2*d^2-e^2)^2/(c*x+d*c/e)^3*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c
^2*d^2-e^2)/e^2)^(1/2)*f-7/24*c^7*b/e^3*d^3/(c^2*d^2-e^2)^3/(c*x+d*c/e)^2*(
-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*g+7/24*c^7*b/e^
2*d^2/(c^2*d^2-e^2)^3/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^
2*d^2-e^2)/e^2)^(1/2)*f+3/4*c^7*b/e^2*d^2/(c^2*d^2-e^2)^3/(-(c^2*d^2-e^2)/e
```

```
^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^
2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x
+d*c/e))*f-11/8*c^7*b/e^3*d^3/(c^2*d^2-e^2)^3/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln
((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(
c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*g+7
/8*c^8*b/e*d^3/(c^2*d^2-e^2)^4/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c
/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f-7/8*c^8*b/e^2*d^4/(c^2*d^2-e^2)^4/(c*x+d*c/e
)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*g-1/20*c^5*b
/e^5/(c^2*d^2-e^2)/(c*x+d*c/e)^4*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d
^2-e^2)/e^2)^(1/2)*d*g+17/60*c^5*b/e^3/(c^2*d^2-e^2)^2/(c*x+d*c/e)^2*(-(c*x
+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*d*g-1/5*c^5*a/e/(c*e
*x+c*d)^5*f-1/5*c^5*b*arcsin(c*x)/e/(c*e*x+c*d)^5*f-1/4*c^4*a*g/e^2/(c*e*x+
c*d)^4-1/6*c^4*b/e^2*g/(c^2*d^2-e^2)^2/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*
(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)-3/40*c^5*b/e^2/(c^2*d^2-e^2)^2/(-(c^2*
d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d
^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(
1/2))/(c*x+d*c/e))*f+1/5*c^5*b*arcsin(c*x)/e^2/(c*e*x+c*d)^5*d*g+1/20*c^5*b
/e^4/(c^2*d^2-e^2)/(c*x+d*c/e)^4*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d
^2-e^2)/e^2)^(1/2)*f-3/40*c^5*b/e^2/(c^2*d^2-e^2)^2/(c*x+d*c/e)^2*(-(c*x+d*
c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f+1/12*c^4*b/e^4*g/(c^2
*d^2-e^2)/(c*x+d*c/e)^3*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e
^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{(5\,ex+d)ag}{20\left(e^7x^5+5\,de^6x^4+10\,d^2e^5x^3+10\,d^3e^4x^2+5\,d^4e^3x+d^5e^2\right)}-\frac{af}{5\left(e^6x^5+5\,de^5x^4+10\,d^2e^4x^3+10\,d^3e^3x^2+5\,d^4e^2x+\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] -1/20*(5*e*x + d)*a*g/(e^7*x^5 + 5*d*e^6*x^4 + 10*d^2*e^5*x^3 + 10*d^3*e^4*
x^2 + 5*d^4*e^3*x + d^5*e^2) - 1/5*a*f/(e^6*x^5 + 5*d*e^5*x^4 + 10*d^2*e^4*
x^3 + 10*d^3*e^3*x^2 + 5*d^4*e^2*x + d^5*e) - 1/20*((5*b*e*g*x + 4*b*e*f +
b*d*g)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + 20*(e^7*x^5 + 5*d*e^6*x
^4 + 10*d^2*e^5*x^3 + 10*d^3*e^4*x^2 + 5*d^4*e^3*x + d^5*e^2)*integrate(1/2
0*(5*b*c*e*g*x + 4*b*c*e*f + b*c*d*g)*e^(1/2*log(c*x + 1) + 1/2*log(-c*x +
1))/(c^4*e^7*x^9 + 5*c^4*d*e^6*x^8 - 5*c^2*d^4*e^3*x^3 - c^2*d^5*e^2*x^2 +
(10*c^4*d^2*e^5 - c^2*e^7)*x^7 + 5*(2*c^4*d^3*e^4 - c^2*d*e^6)*x^6 + 5*(c^4
*d^4*e^3 - 2*c^2*d^2*e^5)*x^5 + (c^4*d^5*e^2 - 10*c^2*d^3*e^4)*x^4 + (c^2*e
```

```
^7*x^7 + 5*c^2*d*e^6*x^6 - 5*d^4*e^3*x - d^5*e^2 + (10*c^2*d^2*e^5 - e^7)*x
^5 + 5*(2*c^2*d^3*e^4 - d*e^6)*x^4 + 5*(c^2*d^4*e^3 - 2*d^2*e^5)*x^3 + (c^2
*d^5*e^2 - 10*d^3*e^4)*x^2)*e^(log(c*x + 1) + log(-c*x + 1))), x))/(e^7*x^5
 + 5*d*e^6*x^4 + 10*d^2*e^5*x^3 + 10*d^3*e^4*x^2 + 5*d^4*e^3*x + d^5*e^2)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))/(e*x+d)**6,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)(b \arcsin(cx)+a)}{(ex+d)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] integrate((g*x + f)*(b*arcsin(c*x) + a)/(e*x + d)^6, x)
```

3.97 $\int (d+ex)^3 \left(f+gx+hx^2\right) \left(a+b\sin^{-1}(cx)\right) dx$

Optimal. Leaf size=512

$$\frac{1}{4}ex^4\left(a+b\sin^{-1}(cx)\right)\left(3d^2h+3deg+e^2f\right)+\frac{1}{3}dx^3\left(a+b\sin^{-1}(cx)\right)\left(d^2h+3deg+3e^2f\right)+\frac{1}{2}d^2x^2(dg+3ef)\left(a+b\sin^{-1}\right.$$

```
[Out] (b*(12*e^2*(e*g + 3*d*h) + 25*c^2*d*(3*e^2*f + 3*d*e*g + d^2*h))*x^2*Sqrt[1
 - c^2*x^2])/(225*c^3) + (b*e*(5*e^2*h + 9*c^2*(e^2*f + 3*d*e*g + 3*d^2*h))
*x^3*Sqrt[1 - c^2*x^2])/(144*c^3) + (b*e^2*(e*g + 3*d*h)*x^4*Sqrt[1 - c^2*x
^2])/(25*c) + (b*e^3*h*x^5*Sqrt[1 - c^2*x^2])/(36*c) + (b*(32*(225*c^4*d^3*
f + 24*e^2*(e*g + 3*d*h) + 50*c^2*d*(3*e^2*f + 3*d*e*g + d^2*h)) + 75*(24*c
^4*d^2*(3*e*f + d*g) + 5*e^3*h + 9*c^2*e*(e^2*f + 3*d*e*g + 3*d^2*h))*x)*Sq
rt[1 - c^2*x^2])/(7200*c^5) - (b*(24*c^4*d^2*(3*e*f + d*g) + 5*e^3*h + 9*c^
2*e*(e^2*f + 3*d*e*g + 3*d^2*h))*ArcSin[c*x])/(96*c^6) + d^3*f*x*(a + b*Arc
Sin[c*x]) + (d^2*(3*e*f + d*g)*x^2*(a + b*ArcSin[c*x]))/2 + (d*(3*e^2*f + 3
*d*e*g + d^2*h)*x^3*(a + b*ArcSin[c*x]))/3 + (e*(e^2*f + 3*d*e*g + 3*d^2*h)
*x^4*(a + b*ArcSin[c*x]))/4 + (e^2*(e*g + 3*d*h)*x^5*(a + b*ArcSin[c*x]))/5
 + (e^3*h*x^6*(a + b*ArcSin[c*x]))/6
```

Rubi [A] time = 2.51078, antiderivative size = 509, normalized size of antiderivative = 0.99, number of steps used = 8, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {4749, 12, 1809, 780, 216}

$$\frac{1}{4}ex^4\left(a+b\sin^{-1}(cx)\right)\left(3d^2h+3deg+e^2f\right)+\frac{1}{3}dx^3\left(a+b\sin^{-1}(cx)\right)\left(d^2h+3deg+3e^2f\right)+\frac{1}{2}d^2x^2(dg+3ef)\left(a+b\sin^{-1}\right.$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^3*(f + g*x + h*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*(12*e^2*(e*g + 3*d*h) + 25*c^2*d*(3*e^2*f + 3*d*e*g + d^2*h))*x^2*Sqrt[1
 - c^2*x^2])/(225*c^3) + (b*e*(27*d*e*g + 27*d^2*h + e^2*(9*f + (5*h)/c^2))
*x^3*Sqrt[1 - c^2*x^2])/(144*c) + (b*e^2*(e*g + 3*d*h)*x^4*Sqrt[1 - c^2*x^2
])/(25*c) + (b*e^3*h*x^5*Sqrt[1 - c^2*x^2])/(36*c) + (b*(32*(225*c^4*d^3*f
+ 24*e^2*(e*g + 3*d*h) + 50*c^2*d*(3*e^2*f + 3*d*e*g + d^2*h)) + 75*(24*c^4
*d^2*(3*e*f + d*g) + 5*e^3*h + 9*c^2*e*(e^2*f + 3*d*e*g + 3*d^2*h))*x)*Sqrt
[1 - c^2*x^2])/(7200*c^5) - (b*(24*c^4*d^2*(3*e*f + d*g) + 5*e^3*h + 9*c^2*
e*(e^2*f + 3*d*e*g + 3*d^2*h))*ArcSin[c*x])/(96*c^6) + d^3*f*x*(a + b*ArcSi
n[c*x]) + (d^2*(3*e*f + d*g)*x^2*(a + b*ArcSin[c*x]))/2 + (d*(3*e^2*f + 3*d
*e*g + d^2*h)*x^3*(a + b*ArcSin[c*x]))/3 + (e*(e^2*f + 3*d*e*g + 3*d^2*h)*x
```

```
^4*(a + b*ArcSin[c*x]))/4 + (e^2*(e*g + 3*d*h)*x^5*(a + b*ArcSin[c*x]))/5 +
 (e^3*h*x^6*(a + b*ArcSin[c*x]))/6
```

Rule 4749

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_), x_Symbol] :> With[{u = IntHid
e[ExpandExpression[Px, x], x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, I
nt[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[{a, b, c}, x
] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1809

```
Int[(Pq_)*((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2)^(p_), x_Symbol] :> With[
{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[(f*(c*x)^(m + q -
1)*(a + b*x^2)^(p + 1))/(b*c^(q - 1)*(m + q + 2*p + 1)), x] + Dist[1/(b*(m
+ q + 2*p + 1)), Int[(c*x)^m*(a + b*x^2)^p*ExpandToSum[b*(m + q + 2*p + 1)*
Pq - b*f*(m + q + 2*p + 1)*x^q - a*f*(m + q - 1)*x^(q - 2), x], x], x] /; G
tQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, m, p}, x] && PolyQ[
Pq, x] && ( !IGtQ[m, 0] || IGtQ[p + 1/2, -1])
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 216

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

Rubi steps

$$\int (d+ex)^3\left(f+gx+hx^2\right)\left(a+b\sin^{-1}(cx)\right)\,dx = d^3fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d^2(3ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}d\left(3e^2\right.$$

$$= d^3fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d^2(3ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}d\left(3e^2\right.$$

$$= \frac{be^3hx^5\sqrt{1-c^2x^2}}{36c}+d^3fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d^2(3ef+dg)x^2\left(a+b\right.$$

$$= \frac{be^2(eg+3dh)x^4\sqrt{1-c^2x^2}}{25c}+\frac{be^3hx^5\sqrt{1-c^2x^2}}{36c}+d^3fx\left(a+b\sin^{-1}(cx\right.$$

$$= \frac{be\left(5e^2h+9c^2\left(e^2f+3deg+3d^2h\right)\right)x^3\sqrt{1-c^2x^2}}{144c^3}+\frac{be^2(eg+3dh)x^4\sqrt{}}{25c}$$

$$= \frac{b\left(12e^2(eg+3dh)+25c^2d\left(3e^2f+3deg+d^2h\right)\right)x^2\sqrt{1-c^2x^2}}{225c^3}+\frac{be\left(5e\right.}{}$$

$$= \frac{b\left(12e^2(eg+3dh)+25c^2d\left(3e^2f+3deg+d^2h\right)\right)x^2\sqrt{1-c^2x^2}}{225c^3}+\frac{be\left(5e\right.}{}$$

$$= \frac{b\left(12e^2(eg+3dh)+25c^2d\left(3e^2f+3deg+d^2h\right)\right)x^2\sqrt{1-c^2x^2}}{225c^3}+\frac{be\left(5e\right.}{}$$

Mathematica [A] time = 0.518424, size = 463, normalized size = 0.9

$$\frac{1}{4}aex^4\left(3d^2h+3deg+e^2f\right)+\frac{1}{3}adx^3\left(d^2h+3deg+3e^2f\right)+\frac{1}{2}ad^2x^2(dg+3ef)+ad^3fx+\frac{1}{5}ae^2x^5(3dh+eg)+\frac{1}{6}ae^3hx^6$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^3*(f + g*x + h*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] a*d^3*f*x + (a*d^2*(3*e*f + d*g)*x^2)/2 + (a*d*(3*e^2*f + 3*d*e*g + d^2*h)*
x^3)/3 + (a*e*(e^2*f + 3*d*e*g + 3*d^2*h)*x^4)/4 + (a*e^2*(e*g + 3*d*h)*x^5
)/5 + (a*e^3*h*x^6)/6 + (b*Sqrt[1 - c^2*x^2]*(3*e^2*(256*e*g + 768*d*h + 12
5*e*h*x) + c^2*(1600*d^3*h + 75*d^2*e*(64*g + 27*h*x) + e^3*x*(675*f + 384*
g*x + 250*h*x^2) + 3*d*e^2*(1600*f + 675*g*x + 384*h*x^2)) + 2*c^4*(100*d^3
*(36*f + x*(9*g + 4*h*x)) + 75*d^2*e*x*(36*f + x*(16*g + 9*h*x)) + 3*d*e^2*
x^2*(400*f + 9*x*(25*g + 16*h*x)) + e^3*x^3*(225*f + 4*x*(36*g + 25*h*x))))
)/(7200*c^5) - (b*(24*c^4*d^2*(3*e*f + d*g) + 5*e^3*h + 9*c^2*e*(e^2*f + 3*
d*e*g + 3*d^2*h))*ArcSin[c*x])/(96*c^6) + (b*x*(10*d^3*(6*f + x*(3*g + 2*h*
x)) + 15*d^2*e*x*(6*f + x*(4*g + 3*h*x)) + 3*d*e^2*x^2*(20*f + 3*x*(5*g + 4
```

```
*h*x)) + e^3*x^3*(15*f + 2*x*(6*g + 5*h*x)))*ArcSin[c*x])/60
```

Maple [A] time = 0.017, size = 705, normalized size = 1.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^3*(h*x^2+g*x+f)*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c*(a/c^5*(1/6*e^3*h*c^6*x^6+1/5*(3*c*d*e^2*h+c*e^3*g)*c^5*x^5+1/4*(3*c^2*
d^2*e*h+3*c^2*d*e^2*g+c^2*e^3*f)*c^4*x^4+1/3*(c^3*d^3*h+3*c^3*d^2*e*g+3*c^3
*d*e^2*f)*c^3*x^3+1/2*(c^4*d^3*g+3*c^4*d^2*e*f)*c^2*x^2+c^6*d^3*f*x)+b/c^5*
(1/6*arcsin(c*x)*e^3*h*c^6*x^6+3/5*arcsin(c*x)*c^6*x^5*d*e^2*h+1/5*arcsin(c
*x)*c^6*x^5*e^3*g+3/4*arcsin(c*x)*c^6*x^4*d^2*e*h+3/4*arcsin(c*x)*c^6*x^4*d
*e^2*g+1/4*arcsin(c*x)*c^6*x^4*e^3*f+1/3*arcsin(c*x)*c^6*x^3*d^3*h+arcsin(c
*x)*c^6*x^3*d^2*e*g+arcsin(c*x)*c^6*x^3*d*e^2*f+1/2*arcsin(c*x)*c^6*x^2*d^3
*g+3/2*arcsin(c*x)*c^6*x^2*d^2*e*f+arcsin(c*x)*c^6*d^3*f*x-1/6*e^3*h*(-1/6*
c^5*x^5*(-c^2*x^2+1)^(1/2)-5/24*c^3*x^3*(-c^2*x^2+1)^(1/2)-5/16*c*x*(-c^2*x
^2+1)^(1/2)+5/16*arcsin(c*x))-1/60*(36*c*d*e^2*h+12*c*e^3*g)*(-1/5*c^4*x^4*
(-c^2*x^2+1)^(1/2)-4/15*c^2*x^2*(-c^2*x^2+1)^(1/2)-8/15*(-c^2*x^2+1)^(1/2))
-1/60*(45*c^2*d^2*e*h+45*c^2*d*e^2*g+15*c^2*e^3*f)*(-1/4*c^3*x^3*(-c^2*x^2+
1)^(1/2)-3/8*c*x*(-c^2*x^2+1)^(1/2)+3/8*arcsin(c*x))-1/60*(20*c^3*d^3*h+60*
c^3*d^2*e*g+60*c^3*d*e^2*f)*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-c^2*x^2+
1)^(1/2))-1/60*(30*c^4*d^3*g+90*c^4*d^2*e*f)*(-1/2*c*x*(-c^2*x^2+1)^(1/2)+1
/2*arcsin(c*x))+c^5*d^3*f*(-c^2*x^2+1)^(1/2)))
```

Maxima [A] time = 1.68132, size = 1257, normalized size = 2.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/6*a*e^3*h*x^6 + 1/5*a*e^3*g*x^5 + 3/5*a*d*e^2*h*x^5 + 1/4*a*e^3*f*x^4 + 3
/4*a*d*e^2*g*x^4 + 3/4*a*d^2*e*h*x^4 + a*d*e^2*f*x^3 + a*d^2*e*g*x^3 + 1/3*
a*d^3*h*x^3 + 3/2*a*d^2*e*f*x^2 + 1/2*a*d^3*g*x^2 + 3/4*(2*x^2*arcsin(c*x)
+ c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^2)))*b
```

```
*d^2*e*f + 1/3*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(
-c^2*x^2 + 1)/c^4))*b*d*e^2*f + 1/32*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2
+ 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c^2*x/sqrt(c^2))/(sqrt
(c^2)*c^4))*c)*b*e^3*f + 1/4*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c
^2 - arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^2)))*b*d^3*g + 1/3*(3*x^3*arcsin(
c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*d^2*e*g
 + 3/32*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^
2 + 1)*x/c^4 - 3*arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^4))*c)*b*d*e^2*g + 1/
75*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 +
1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*b*e^3*g + 1/9*(3*x^3*arcsin(c*x)
+ c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*d^3*h + 3/32
*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*
x/c^4 - 3*arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^4))*c)*b*d^2*e*h + 1/25*(15*
x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/
c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*b*d*e^2*h + 1/288*(48*x^6*arcsin(c*x) +
(8*sqrt(-c^2*x^2 + 1)*x^5/c^2 + 10*sqrt(-c^2*x^2 + 1)*x^3/c^4 + 15*sqrt(-c^
2*x^2 + 1)*x/c^6 - 15*arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^6))*c)*b*e^3*h +
 a*d^3*f*x + (c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*b*d^3*f/c
```

Fricas [A] time = 4.03276, size = 1509, normalized size = 2.95

$$\frac{1200\,ac^6e^3hx^6 + 7200\,ac^6d^3fx + 1440\left(ac^6e^3g + 3\,ac^6de^2h\right)x^5 + 1800\left(ac^6e^3f + 3\,ac^6de^2g + 3\,ac^6d^2eh\right)x^4 + 2400\left(3\,ac^6d\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/7200*(1200*a*c^6*e^3*h*x^6 + 7200*a*c^6*d^3*f*x + 1440*(a*c^6*e^3*g + 3*a
*c^6*d*e^2*h)*x^5 + 1800*(a*c^6*e^3*f + 3*a*c^6*d*e^2*g + 3*a*c^6*d^2*e*h)*
x^4 + 2400*(3*a*c^6*d*e^2*f + 3*a*c^6*d^2*e*g + a*c^6*d^3*h)*x^3 + 3600*(3*
a*c^6*d^2*e*f + a*c^6*d^3*g)*x^2 + 15*(80*b*c^6*e^3*h*x^6 + 480*b*c^6*d^3*f
*x + 96*(b*c^6*e^3*g + 3*b*c^6*d*e^2*h)*x^5 + 120*(b*c^6*e^3*f + 3*b*c^6*d*
e^2*g + 3*b*c^6*d^2*e*h)*x^4 + 160*(3*b*c^6*d*e^2*f + 3*b*c^6*d^2*e*g + b*c
^6*d^3*h)*x^3 + 240*(3*b*c^6*d^2*e*f + b*c^6*d^3*g)*x^2 - 45*(8*b*c^4*d^2*e
 + b*c^2*e^3)*f - 15*(8*b*c^4*d^3 + 9*b*c^2*d*e^2)*g - 5*(27*b*c^2*d^2*e +
5*b*e^3)*h)*arcsin(c*x) + (200*b*c^5*e^3*h*x^5 + 288*(b*c^5*e^3*g + 3*b*c^5
*d*e^2*h)*x^4 + 50*(9*b*c^5*e^3*f + 27*b*c^5*d*e^2*g + (27*b*c^5*d^2*e + 5*
b*c^3*e^3)*h)*x^3 + 32*(75*b*c^5*d*e^2*f + 3*(25*b*c^5*d^2*e + 4*b*c^3*e^3)
*g + (25*b*c^5*d^3 + 36*b*c^3*d*e^2)*h)*x^2 + 2400*(3*b*c^5*d^3 + 2*b*c^3*d
*e^2)*f + 192*(25*b*c^3*d^2*e + 4*b*c*e^3)*g + 64*(25*b*c^3*d^3 + 36*b*c*d*
e^2)*h + 75*(9*(8*b*c^5*d^2*e + b*c^3*e^3)*f + 3*(8*b*c^5*d^3 + 9*b*c^3*d*e
```

```
^2)*g + (27*b*c^3*d^2*e + 5*b*c*e^3)*h)*x)*sqrt(-c^2*x^2 + 1))/c^6
```

Sympy [A] time = 11.0425, size = 1263, normalized size = 2.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**3*(h*x**2+g*x+f)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d**3*f*x + a*d**3*g*x**2/2 + a*d**3*h*x**3/3 + 3*a*d**2*e*f*x*
*2/2 + a*d**2*e*g*x**3 + 3*a*d**2*e*h*x**4/4 + a*d*e**2*f*x**3 + 3*a*d*e**2
*g*x**4/4 + 3*a*d*e**2*h*x**5/5 + a*e**3*f*x**4/4 + a*e**3*g*x**5/5 + a*e**
3*h*x**6/6 + b*d**3*f*x*asin(c*x) + b*d**3*g*x**2*asin(c*x)/2 + b*d**3*h*x*
*3*asin(c*x)/3 + 3*b*d**2*e*f*x**2*asin(c*x)/2 + b*d**2*e*g*x**3*asin(c*x)
+ 3*b*d**2*e*h*x**4*asin(c*x)/4 + b*d*e**2*f*x**3*asin(c*x) + 3*b*d*e**2*g*
x**4*asin(c*x)/4 + 3*b*d*e**2*h*x**5*asin(c*x)/5 + b*e**3*f*x**4*asin(c*x)/
4 + b*e**3*g*x**5*asin(c*x)/5 + b*e**3*h*x**6*asin(c*x)/6 + b*d**3*f*sqrt(-
c**2*x**2 + 1)/c + b*d**3*g*x*sqrt(-c**2*x**2 + 1)/(4*c) + b*d**3*h*x**2*sq
rt(-c**2*x**2 + 1)/(9*c) + 3*b*d**2*e*f*x*sqrt(-c**2*x**2 + 1)/(4*c) + b*d*
*2*e*g*x**2*sqrt(-c**2*x**2 + 1)/(3*c) + 3*b*d**2*e*h*x**3*sqrt(-c**2*x**2
+ 1)/(16*c) + b*d*e**2*f*x**2*sqrt(-c**2*x**2 + 1)/(3*c) + 3*b*d*e**2*g*x**
3*sqrt(-c**2*x**2 + 1)/(16*c) + 3*b*d*e**2*h*x**4*sqrt(-c**2*x**2 + 1)/(25*
c) + b*e**3*f*x**3*sqrt(-c**2*x**2 + 1)/(16*c) + b*e**3*g*x**4*sqrt(-c**2*x
**2 + 1)/(25*c) + b*e**3*h*x**5*sqrt(-c**2*x**2 + 1)/(36*c) - b*d**3*g*asin
(c*x)/(4*c**2) - 3*b*d**2*e*f*asin(c*x)/(4*c**2) + 2*b*d**3*h*sqrt(-c**2*x*
*2 + 1)/(9*c**3) + 2*b*d**2*e*g*sqrt(-c**2*x**2 + 1)/(3*c**3) + 9*b*d**2*e*
h*x*sqrt(-c**2*x**2 + 1)/(32*c**3) + 2*b*d*e**2*f*sqrt(-c**2*x**2 + 1)/(3*c
**3) + 9*b*d*e**2*g*x*sqrt(-c**2*x**2 + 1)/(32*c**3) + 4*b*d*e**2*h*x**2*sq
rt(-c**2*x**2 + 1)/(25*c**3) + 3*b*e**3*f*x*sqrt(-c**2*x**2 + 1)/(32*c**3)
+ 4*b*e**3*g*x**2*sqrt(-c**2*x**2 + 1)/(75*c**3) + 5*b*e**3*h*x**3*sqrt(-c*
*2*x**2 + 1)/(144*c**3) - 9*b*d**2*e*h*asin(c*x)/(32*c**4) - 9*b*d*e**2*g*a
sin(c*x)/(32*c**4) - 3*b*e**3*f*asin(c*x)/(32*c**4) + 8*b*d*e**2*h*sqrt(-c*
*2*x**2 + 1)/(25*c**5) + 8*b*e**3*g*sqrt(-c**2*x**2 + 1)/(75*c**5) + 5*b*e*
*3*h*x*sqrt(-c**2*x**2 + 1)/(96*c**5) - 5*b*e**3*h*asin(c*x)/(96*c**6), Ne(
c, 0)), (a*(d**3*f*x + d**3*g*x**2/2 + d**3*h*x**3/3 + 3*d**2*e*f*x**2/2 +
d**2*e*g*x**3 + 3*d**2*e*h*x**4/4 + d*e**2*f*x**3 + 3*d*e**2*g*x**4/4 + 3*d
*e**2*h*x**5/5 + e**3*f*x**4/4 + e**3*g*x**5/5 + e**3*h*x**6/6), True))
```

Giac [B] time = 1.32452, size = 1962, normalized size = 3.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 3/5*a*d*h*x^5*e^2 + 1/3*a*d^3*h*x^3 + 1/5*a*g*x^5*e^3 + a*d^2*g*x^3*e + b*d
^3*f*x*arcsin(c*x) + a*d*f*x^3*e^2 + a*d^3*f*x + 1/3*(c^2*x^2 - 1)*b*d^3*h*
x*arcsin(c*x)/c^2 + (c^2*x^2 - 1)*b*d^2*g*x*arcsin(c*x)*e/c^2 + 1/4*sqrt(-c
^2*x^2 + 1)*b*d^3*g*x/c + 3/4*sqrt(-c^2*x^2 + 1)*b*d^2*f*x*e/c + 1/2*(c^2*x
^2 - 1)*b*d^3*g*arcsin(c*x)/c^2 + 1/3*b*d^3*h*x*arcsin(c*x)/c^2 + (c^2*x^2
- 1)*b*d*f*x*arcsin(c*x)*e^2/c^2 + 3/2*(c^2*x^2 - 1)*b*d^2*f*arcsin(c*x)*e/
c^2 + b*d^2*g*x*arcsin(c*x)*e/c^2 + sqrt(-c^2*x^2 + 1)*b*d^3*f/c - 3/16*(-c
^2*x^2 + 1)^(3/2)*b*d^2*h*x*e/c^3 + 1/2*(c^2*x^2 - 1)*a*d^3*g/c^2 + 1/4*b*d
^3*g*arcsin(c*x)/c^2 + b*d*f*x*arcsin(c*x)*e^2/c^2 + 3/5*(c^2*x^2 - 1)^2*b*
d*h*x*arcsin(c*x)*e^2/c^4 + 3/2*(c^2*x^2 - 1)*a*d^2*f*e/c^2 + 3/4*b*d^2*f*a
rcsin(c*x)*e/c^2 + 3/4*(c^2*x^2 - 1)^2*b*d^2*h*arcsin(c*x)*e/c^4 - 1/9*(-c^
2*x^2 + 1)^(3/2)*b*d^3*h/c^3 - 3/16*(-c^2*x^2 + 1)^(3/2)*b*d*g*x*e^2/c^3 -
1/3*(-c^2*x^2 + 1)^(3/2)*b*d^2*g*e/c^3 + 15/32*sqrt(-c^2*x^2 + 1)*b*d^2*h*x
*e/c^3 + 1/5*(c^2*x^2 - 1)^2*b*g*x*arcsin(c*x)*e^3/c^4 + 3/4*(c^2*x^2 - 1)^
2*b*d*g*arcsin(c*x)*e^2/c^4 + 6/5*(c^2*x^2 - 1)*b*d*h*x*arcsin(c*x)*e^2/c^4
 + 3/4*(c^2*x^2 - 1)^2*a*d^2*h*e/c^4 + 3/2*(c^2*x^2 - 1)*b*d^2*h*arcsin(c*x
)*e/c^4 + 1/3*sqrt(-c^2*x^2 + 1)*b*d^3*h/c^3 - 1/16*(-c^2*x^2 + 1)^(3/2)*b*
f*x*e^3/c^3 - 1/3*(-c^2*x^2 + 1)^(3/2)*b*d*f*e^2/c^3 + 15/32*sqrt(-c^2*x^2
+ 1)*b*d*g*x*e^2/c^3 + sqrt(-c^2*x^2 + 1)*b*d^2*g*e/c^3 + 1/4*(c^2*x^2 - 1)
^2*b*f*arcsin(c*x)*e^3/c^4 + 2/5*(c^2*x^2 - 1)*b*g*x*arcsin(c*x)*e^3/c^4 +
3/4*(c^2*x^2 - 1)^2*a*d*g*e^2/c^4 + 3/2*(c^2*x^2 - 1)*b*d*g*arcsin(c*x)*e^2
/c^4 + 3/5*b*d*h*x*arcsin(c*x)*e^2/c^4 + 3/2*(c^2*x^2 - 1)*a*d^2*h*e/c^4 +
15/32*b*d^2*h*arcsin(c*x)*e/c^4 + 5/32*sqrt(-c^2*x^2 + 1)*b*f*x*e^3/c^3 + 1
/36*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*h*x*e^3/c^5 + sqrt(-c^2*x^2 + 1)*b
*d*f*e^2/c^3 + 3/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*d*h*e^2/c^5 + 1/4*
(c^2*x^2 - 1)^2*a*f*e^3/c^4 + 1/2*(c^2*x^2 - 1)*b*f*arcsin(c*x)*e^3/c^4 + 1
/6*(c^2*x^2 - 1)^3*b*h*arcsin(c*x)*e^3/c^6 + 1/5*b*g*x*arcsin(c*x)*e^3/c^4
+ 3/2*(c^2*x^2 - 1)*a*d*g*e^2/c^4 + 15/32*b*d*g*arcsin(c*x)*e^2/c^4 + 1/25*
(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*g*e^3/c^5 - 13/144*(-c^2*x^2 + 1)^(3/2
)*b*h*x*e^3/c^5 - 2/5*(-c^2*x^2 + 1)^(3/2)*b*d*h*e^2/c^5 + 1/2*(c^2*x^2 - 1
)*a*f*e^3/c^4 + 1/6*(c^2*x^2 - 1)^3*a*h*e^3/c^6 + 5/32*b*f*arcsin(c*x)*e^3/
c^4 + 1/2*(c^2*x^2 - 1)^2*b*h*arcsin(c*x)*e^3/c^6 - 2/15*(-c^2*x^2 + 1)^(3/
2)*b*g*e^3/c^5 + 11/96*sqrt(-c^2*x^2 + 1)*b*h*x*e^3/c^5 + 3/5*sqrt(-c^2*x^2
 + 1)*b*d*h*e^2/c^5 + 1/2*(c^2*x^2 - 1)^2*a*h*e^3/c^6 + 1/2*(c^2*x^2 - 1)*b
*h*arcsin(c*x)*e^3/c^6 + 1/5*sqrt(-c^2*x^2 + 1)*b*g*e^3/c^5 + 1/2*(c^2*x^2
- 1)*a*h*e^3/c^6 + 11/96*b*h*arcsin(c*x)*e^3/c^6
```

3.98 $\int (d+ex)^2 \left(f+gx+hx^2\right) \left(a+b\sin^{-1}(cx)\right) dx$

Optimal. Leaf size=361

$$\frac{1}{3}x^3\left(a+b\sin^{-1}(cx)\right)\left(d^2h+2deg+e^2f\right)+d^2fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}dx^2(dg+2ef)\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}ex^4(2dh+eg)\left(\right.$$

```
[Out] (b*(12*e^2*h + 25*c^2*(e^2*f + 2*d*e*g + d^2*h))*x^2*Sqrt[1 - c^2*x^2])/(22
5*c^3) + (b*e*(e*g + 2*d*h)*x^3*Sqrt[1 - c^2*x^2])/(16*c) + (b*e^2*h*x^4*Sq
rt[1 - c^2*x^2])/(25*c) + (b*(32*(225*c^4*d^2*f + 24*e^2*h + 50*c^2*(e^2*f
+ 2*d*e*g + d^2*h)) + 225*c^2*(8*c^2*d*(2*e*f + d*g) + 3*e*(e*g + 2*d*h))*x
)*Sqrt[1 - c^2*x^2])/(7200*c^5) - (b*(8*c^2*d*(2*e*f + d*g) + 3*e*(e*g + 2*
d*h))*ArcSin[c*x])/(32*c^4) + d^2*f*x*(a + b*ArcSin[c*x]) + (d*(2*e*f + d*g
)*x^2*(a + b*ArcSin[c*x]))/2 + ((e^2*f + 2*d*e*g + d^2*h)*x^3*(a + b*ArcSin
[c*x]))/3 + (e*(e*g + 2*d*h)*x^4*(a + b*ArcSin[c*x]))/4 + (e^2*h*x^5*(a + b
*ArcSin[c*x]))/5
```

Rubi [A] time = 1.21528, antiderivative size = 361, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {4749, 12, 1809, 780, 216}

$$\frac{1}{3}x^3\left(a+b\sin^{-1}(cx)\right)\left(d^2h+2deg+e^2f\right)+d^2fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}dx^2(dg+2ef)\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}ex^4(2dh+eg)\left(\right.$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^2*(f + g*x + h*x^2)*(a + b*ArcSin[c*x]),x]
```


```
[Out] (b*(12*e^2*h + 25*c^2*(e^2*f + 2*d*e*g + d^2*h))*x^2*Sqrt[1 - c^2*x^2])/(22
5*c^3) + (b*e*(e*g + 2*d*h)*x^3*Sqrt[1 - c^2*x^2])/(16*c) + (b*e^2*h*x^4*Sq
rt[1 - c^2*x^2])/(25*c) + (b*(32*(225*c^4*d^2*f + 24*e^2*h + 50*c^2*(e^2*f
+ 2*d*e*g + d^2*h)) + 225*c^2*(8*c^2*d*(2*e*f + d*g) + 3*e*(e*g + 2*d*h))*x
)*Sqrt[1 - c^2*x^2])/(7200*c^5) - (b*(8*c^2*d*(2*e*f + d*g) + 3*e*(e*g + 2*
d*h))*ArcSin[c*x])/(32*c^4) + d^2*f*x*(a + b*ArcSin[c*x]) + (d*(2*e*f + d*g
)*x^2*(a + b*ArcSin[c*x]))/2 + ((e^2*f + 2*d*e*g + d^2*h)*x^3*(a + b*ArcSin
[c*x]))/3 + (e*(e*g + 2*d*h)*x^4*(a + b*ArcSin[c*x]))/4 + (e^2*h*x^5*(a + b
*ArcSin[c*x]))/5
```


Rule 4749

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_), x_Symbol] :> With[{u = IntHid
e[ExpandExpression[Px, x], x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, I
```

```
nt[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[{a, b, c}, x
] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1809

```
Int[(Pq_)*((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2)^(p_), x_Symbol] :> With[
{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[(f*(c*x)^(m + q -
1)*(a + b*x^2)^(p + 1))/(b*c^(q - 1)*(m + q + 2*p + 1)), x] + Dist[1/(b*(m
+ q + 2*p + 1)), Int[(c*x)^m*(a + b*x^2)^p*ExpandToSum[b*(m + q + 2*p + 1)*
Pq - b*f*(m + q + 2*p + 1)*x^q - a*f*(m + q - 1)*x^(q - 2), x], x], x] /; G
tQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, m, p}, x] && PolyQ[
Pq, x] && ( !IGtQ[m, 0] || IGtQ[p + 1/2, -1])
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 216

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

Rubi steps

$$\int (d+ex)^2\left(f+gx+hx^2\right)\left(a+b\sin^{-1}(cx)\right)\,dx = d^2fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d(2ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}\left(e^2f+2\right.$$

$$= d^2fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d(2ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}\left(e^2f+2\right.$$

$$= \frac{be^2hx^4\sqrt{1-c^2x^2}}{25c}+d^2fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d(2ef+dg)x^2\left(a+b\sin\right.$$

$$= \frac{be(eg+2dh)x^3\sqrt{1-c^2x^2}}{16c}+\frac{be^2hx^4\sqrt{1-c^2x^2}}{25c}+d^2fx\left(a+b\sin^{-1}(cx)\right)$$

$$= \frac{b\left(12e^2h+25c^2\left(e^2f+2deg+d^2h\right)\right)x^2\sqrt{1-c^2x^2}}{225c^3}+\frac{be(eg+2dh)x^3\sqrt{1}}{16c}$$

$$= \frac{b\left(12e^2h+25c^2\left(e^2f+2deg+d^2h\right)\right)x^2\sqrt{1-c^2x^2}}{225c^3}+\frac{be(eg+2dh)x^3\sqrt{1}}{16c}$$

$$= \frac{b\left(12e^2h+25c^2\left(e^2f+2deg+d^2h\right)\right)x^2\sqrt{1-c^2x^2}}{225c^3}+\frac{be(eg+2dh)x^3\sqrt{1}}{16c}$$

Mathematica [A] time = 0.500644, size = 307, normalized size = 0.85

$$\frac{120ac^5x\left(10d^2(6f+x(3g+2hx))+10dex(6f+x(4g+3hx))+e^2x^2(20f+3x(5g+4hx))\right)+b\sqrt{1-c^2x^2}\left(2c^4\left(100d^2(36f\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^2*(f + g*x + h*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (120*a*c^5*x*(10*d^2*(6*f + x*(3*g + 2*h*x)) + 10*d*e*x*(6*f + x*(4*g + 3*h
*x)) + e^2*x^2*(20*f + 3*x*(5*g + 4*h*x))) + b*Sqrt[1 - c^2*x^2]*(768*e^2*h
 + c^2*(1600*d^2*h + 50*d*e*(64*g + 27*h*x) + e^2*(1600*f + 675*g*x + 384*h
*x^2)) + 2*c^4*(100*d^2*(36*f + x*(9*g + 4*h*x)) + 50*d*e*x*(36*f + x*(16*g
 + 9*h*x)) + e^2*x^2*(400*f + 9*x*(25*g + 16*h*x)))) + 15*b*c*(-120*c^2*d*(
2*e*f + d*g) - 45*e*(e*g + 2*d*h) + 8*c^4*x*(10*d^2*(6*f + x*(3*g + 2*h*x))
 + 10*d*e*x*(6*f + x*(4*g + 3*h*x)) + e^2*x^2*(20*f + 3*x*(5*g + 4*h*x))))*
ArcSin[c*x])/(7200*c^5)
```

Maple [A] time = 0.005, size = 502, normalized size = 1.4

$$\frac{1}{c}\left(\frac{a}{c^4}\left(\frac{e^2hc^5x^5}{5}+\frac{\left(2\,cdeh+e^2cg\right)c^4x^4}{4}+\frac{\left(c^2d^2h+2\,c^2deg+e^2fc^2\right)c^3x^3}{3}+\frac{\left(c^3d^2g+2\,c^3def\right)c^2x^2}{2}+c^5d^2fx\right)+\frac{b}{c^4}\left(\mathrm{arcs}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^2*(h*x^2+g*x+f)*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c*(a/c^4*(1/5*e^2*h*c^5*x^5+1/4*(2*c*d*e*h+c*e^2*g)*c^4*x^4+1/3*(c^2*d^2*
h+2*c^2*d*e*g+c^2*e^2*f)*c^3*x^3+1/2*(c^3*d^2*g+2*c^3*d*e*f)*c^2*x^2+c^5*d^
2*f*x)+b/c^4*(1/5*arcsin(c*x)*e^2*h*c^5*x^5+1/2*arcsin(c*x)*c^5*x^4*d*e*h+1
/4*arcsin(c*x)*c^5*x^4*e^2*g+1/3*arcsin(c*x)*c^5*x^3*d^2*h+2/3*arcsin(c*x)*
c^5*x^3*d*e*g+1/3*arcsin(c*x)*c^5*x^3*e^2*f+1/2*arcsin(c*x)*c^5*x^2*d^2*g+a
rcsin(c*x)*c^5*x^2*d*e*f+arcsin(c*x)*c^5*d^2*f*x-1/5*e^2*h*(-1/5*c^4*x^4*(-
c^2*x^2+1)^(1/2)-4/15*c^2*x^2*(-c^2*x^2+1)^(1/2)-8/15*(-c^2*x^2+1)^(1/2))-1
/60*(30*c*d*e*h+15*c*e^2*g)*(-1/4*c^3*x^3*(-c^2*x^2+1)^(1/2)-3/8*c*x*(-c^2*
x^2+1)^(1/2)+3/8*arcsin(c*x))-1/60*(20*c^2*d^2*h+40*c^2*d*e*g+20*c^2*e^2*f)
*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-c^2*x^2+1)^(1/2))-1/60*(30*c^3*d^2*
g+60*c^3*d*e*f)*(-1/2*c*x*(-c^2*x^2+1)^(1/2)+1/2*arcsin(c*x))+c^4*d^2*f*(-c
^2*x^2+1)^(1/2)))
```

Maxima [A] time = 1.65624, size = 849, normalized size = 2.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/5*a*e^2*h*x^5 + 1/4*a*e^2*g*x^4 + 1/2*a*d*e*h*x^4 + 1/3*a*e^2*f*x^3 + 2/3
*a*d*e*g*x^3 + 1/3*a*d^2*h*x^3 + a*d*e*f*x^2 + 1/2*a*d^2*g*x^2 + 1/2*(2*x^2
*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c^2*x/sqrt(c^2))/(sqrt(
c^2)*c^2)))*b*d*e*f + 1/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^
2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*e^2*f + 1/4*(2*x^2*arcsin(c*x) + c*(sqrt(-
c^2*x^2 + 1)*x/c^2 - arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^2)))*b*d^2*g + 2/
9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)
/c^4))*b*d*e*g + 1/32*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 +
3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^4))*c)*
b*e^2*g + 1/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-
c^2*x^2 + 1)/c^4))*b*d^2*h + 1/16*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1
```

```
)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c^2*x/sqrt(c^2))/(sqrt(c^
2)*c^4))*c)*b*d*e*h + 1/75*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/
c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*b*e^2*h +
 a*d^2*f*x + (c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*b*d^2*f/c
```

Fricas [A] time = 3.91403, size = 1042, normalized size = 2.89

$$\frac{1440\,ac^5e^2hx^5 + 7200\,ac^5d^2fx + 1800\left(ac^5e^2g + 2\,ac^5deh\right)x^4 + 2400\left(ac^5e^2f + 2\,ac^5deg + ac^5d^2h\right)x^3 + 3600\left(2\,ac^5def + \ldots\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/7200*(1440*a*c^5*e^2*h*x^5 + 7200*a*c^5*d^2*f*x + 1800*(a*c^5*e^2*g + 2*a
*c^5*d*e*h)*x^4 + 2400*(a*c^5*e^2*f + 2*a*c^5*d*e*g + a*c^5*d^2*h)*x^3 + 36
00*(2*a*c^5*d*e*f + a*c^5*d^2*g)*x^2 + 15*(96*b*c^5*e^2*h*x^5 + 480*b*c^5*d
^2*f*x - 240*b*c^3*d*e*f - 90*b*c*d*e*h + 120*(b*c^5*e^2*g + 2*b*c^5*d*e*h)
*x^4 + 160*(b*c^5*e^2*f + 2*b*c^5*d*e*g + b*c^5*d^2*h)*x^3 + 240*(2*b*c^5*d
*e*f + b*c^5*d^2*g)*x^2 - 15*(8*b*c^3*d^2 + 3*b*c*e^2)*g)*arcsin(c*x) + (28
8*b*c^4*e^2*h*x^4 + 3200*b*c^2*d*e*g + 450*(b*c^4*e^2*g + 2*b*c^4*d*e*h)*x^
3 + 32*(25*b*c^4*e^2*f + 50*b*c^4*d*e*g + (25*b*c^4*d^2 + 12*b*c^2*e^2)*h)*
x^2 + 800*(9*b*c^4*d^2 + 2*b*c^2*e^2)*f + 64*(25*b*c^2*d^2 + 12*b*e^2)*h +
225*(16*b*c^4*d*e*f + 6*b*c^2*d*e*h + (8*b*c^4*d^2 + 3*b*c^2*e^2)*g)*x)*sqr
t(-c^2*x^2 + 1))/c^5
```

Sympy [A] time = 5.68296, size = 821, normalized size = 2.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**2*(h*x**2+g*x+f)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d**2*f*x + a*d**2*g*x**2/2 + a*d**2*h*x**3/3 + a*d*e*f*x**2 +
2*a*d*e*g*x**3/3 + a*d*e*h*x**4/2 + a*e**2*f*x**3/3 + a*e**2*g*x**4/4 + a*e
**2*h*x**5/5 + b*d**2*f*x*asin(c*x) + b*d**2*g*x**2*asin(c*x)/2 + b*d**2*h*
x**3*asin(c*x)/3 + b*d*e*f*x**2*asin(c*x) + 2*b*d*e*g*x**3*asin(c*x)/3 + b*
d*e*h*x**4*asin(c*x)/2 + b*e**2*f*x**3*asin(c*x)/3 + b*e**2*g*x**4*asin(c*x
```

```
)/4 + b*e**2*h*x**5*asin(c*x)/5 + b*d**2*f*sqrt(-c**2*x**2 + 1)/c + b*d**2*
g*x*sqrt(-c**2*x**2 + 1)/(4*c) + b*d**2*h*x**2*sqrt(-c**2*x**2 + 1)/(9*c) +
 b*d*e*f*x*sqrt(-c**2*x**2 + 1)/(2*c) + 2*b*d*e*g*x**2*sqrt(-c**2*x**2 + 1)
/(9*c) + b*d*e*h*x**3*sqrt(-c**2*x**2 + 1)/(8*c) + b*e**2*f*x**2*sqrt(-c**2
*x**2 + 1)/(9*c) + b*e**2*g*x**3*sqrt(-c**2*x**2 + 1)/(16*c) + b*e**2*h*x**
4*sqrt(-c**2*x**2 + 1)/(25*c) - b*d**2*g*asin(c*x)/(4*c**2) - b*d*e*f*asin(
c*x)/(2*c**2) + 2*b*d**2*h*sqrt(-c**2*x**2 + 1)/(9*c**3) + 4*b*d*e*g*sqrt(-
c**2*x**2 + 1)/(9*c**3) + 3*b*d*e*h*x*sqrt(-c**2*x**2 + 1)/(16*c**3) + 2*b*
e**2*f*sqrt(-c**2*x**2 + 1)/(9*c**3) + 3*b*e**2*g*x*sqrt(-c**2*x**2 + 1)/(3
2*c**3) + 4*b*e**2*h*x**2*sqrt(-c**2*x**2 + 1)/(75*c**3) - 3*b*d*e*h*asin(c
*x)/(16*c**4) - 3*b*e**2*g*asin(c*x)/(32*c**4) + 8*b*e**2*h*sqrt(-c**2*x**2
 + 1)/(75*c**5), Ne(c, 0)), (a*(d**2*f*x + d**2*g*x**2/2 + d**2*h*x**3/3 +
d*e*f*x**2 + 2*d*e*g*x**3/3 + d*e*h*x**4/2 + e**2*f*x**3/3 + e**2*g*x**4/4
+ e**2*h*x**5/5), True))
```

Giac [B] time = 1.30556, size = 1218, normalized size = 3.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/5*a*h*x^5*e^2 + 1/3*a*d^2*h*x^3 + 2/3*a*d*g*x^3*e + b*d^2*f*x*arcsin(c*x)
 + 1/3*a*f*x^3*e^2 + a*d^2*f*x + 1/3*(c^2*x^2 - 1)*b*d^2*h*x*arcsin(c*x)/c^
2 + 2/3*(c^2*x^2 - 1)*b*d*g*x*arcsin(c*x)*e/c^2 + 1/4*sqrt(-c^2*x^2 + 1)*b*
d^2*g*x/c + 1/2*sqrt(-c^2*x^2 + 1)*b*d*f*x*e/c + 1/2*(c^2*x^2 - 1)*b*d^2*g*
arcsin(c*x)/c^2 + 1/3*b*d^2*h*x*arcsin(c*x)/c^2 + 1/3*(c^2*x^2 - 1)*b*f*x*a
rcsin(c*x)*e^2/c^2 + (c^2*x^2 - 1)*b*d*f*arcsin(c*x)*e/c^2 + 2/3*b*d*g*x*ar
csin(c*x)*e/c^2 + sqrt(-c^2*x^2 + 1)*b*d^2*f/c - 1/8*(-c^2*x^2 + 1)^(3/2)*b
*d*h*x*e/c^3 + 1/2*(c^2*x^2 - 1)*a*d^2*g/c^2 + 1/4*b*d^2*g*arcsin(c*x)/c^2
+ 1/3*b*f*x*arcsin(c*x)*e^2/c^2 + 1/5*(c^2*x^2 - 1)^2*b*h*x*arcsin(c*x)*e^2
/c^4 + (c^2*x^2 - 1)*a*d*f*e/c^2 + 1/2*b*d*f*arcsin(c*x)*e/c^2 + 1/2*(c^2*x
^2 - 1)^2*b*d*h*arcsin(c*x)*e/c^4 - 1/9*(-c^2*x^2 + 1)^(3/2)*b*d^2*h/c^3 -
1/16*(-c^2*x^2 + 1)^(3/2)*b*g*x*e^2/c^3 - 2/9*(-c^2*x^2 + 1)^(3/2)*b*d*g*e/
c^3 + 5/16*sqrt(-c^2*x^2 + 1)*b*d*h*x*e/c^3 + 1/4*(c^2*x^2 - 1)^2*b*g*arcsi
n(c*x)*e^2/c^4 + 2/5*(c^2*x^2 - 1)*b*h*x*arcsin(c*x)*e^2/c^4 + 1/2*(c^2*x^2
 - 1)^2*a*d*h*e/c^4 + (c^2*x^2 - 1)*b*d*h*arcsin(c*x)*e/c^4 + 1/3*sqrt(-c^2
*x^2 + 1)*b*d^2*h/c^3 - 1/9*(-c^2*x^2 + 1)^(3/2)*b*f*e^2/c^3 + 5/32*sqrt(-c
^2*x^2 + 1)*b*g*x*e^2/c^3 + 2/3*sqrt(-c^2*x^2 + 1)*b*d*g*e/c^3 + 1/4*(c^2*x
^2 - 1)^2*a*g*e^2/c^4 + 1/2*(c^2*x^2 - 1)*b*g*arcsin(c*x)*e^2/c^4 + 1/5*b*h
*x*arcsin(c*x)*e^2/c^4 + (c^2*x^2 - 1)*a*d*h*e/c^4 + 5/16*b*d*h*arcsin(c*x)
```

```
*e/c^4 + 1/3*sqrt(-c^2*x^2 + 1)*b*f*e^2/c^3 + 1/25*(c^2*x^2 - 1)^2*sqrt(-c^
2*x^2 + 1)*b*h*e^2/c^5 + 1/2*(c^2*x^2 - 1)*a*g*e^2/c^4 + 5/32*b*g*arcsin(c*
x)*e^2/c^4 - 2/15*(-c^2*x^2 + 1)^(3/2)*b*h*e^2/c^5 + 1/5*sqrt(-c^2*x^2 + 1)
*b*h*e^2/c^5
```

3.99 $\int (d+ex)\left(f+gx+hx^2\right)\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=223

$$\frac{1}{2}x^2(dg+ef)\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}x^3(dh+eg)\left(a+b\sin^{-1}(cx)\right)+dfx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}ehx^4\left(a+b\sin^{-1}(cx)\right)+\frac{b\sqrt{}}{}$$

```
[Out] (b*(e*g + d*h)*x^2*Sqrt[1 - c^2*x^2])/(9*c) + (b*e*h*x^3*Sqrt[1 - c^2*x^2])
/(16*c) + (b*(32*(9*c^2*d*f + 2*e*g + 2*d*h) + 9*(8*c^2*(e*f + d*g) + 3*e*h
)*x)*Sqrt[1 - c^2*x^2])/(288*c^3) - (b*(8*c^2*(e*f + d*g) + 3*e*h)*ArcSin[c
*x])/(32*c^4) + d*f*x*(a + b*ArcSin[c*x]) + ((e*f + d*g)*x^2*(a + b*ArcSin[
c*x]))/2 + ((e*g + d*h)*x^3*(a + b*ArcSin[c*x]))/3 + (e*h*x^4*(a + b*ArcSin
[c*x]))/4
```

Rubi [A] time = 0.447616, antiderivative size = 223, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {4749, 12, 1809, 780, 216}

$$\frac{1}{2}x^2(dg+ef)\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}x^3(dh+eg)\left(a+b\sin^{-1}(cx)\right)+dfx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}ehx^4\left(a+b\sin^{-1}(cx)\right)+\frac{b\sqrt{}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)*(f + g*x + h*x^2)*(a + b*ArcSin[c*x]),x]
```


```
[Out] (b*(e*g + d*h)*x^2*Sqrt[1 - c^2*x^2])/(9*c) + (b*e*h*x^3*Sqrt[1 - c^2*x^2])
/(16*c) + (b*(32*(9*c^2*d*f + 2*e*g + 2*d*h) + 9*(8*c^2*(e*f + d*g) + 3*e*h
)*x)*Sqrt[1 - c^2*x^2])/(288*c^3) - (b*(8*c^2*(e*f + d*g) + 3*e*h)*ArcSin[c
*x])/(32*c^4) + d*f*x*(a + b*ArcSin[c*x]) + ((e*f + d*g)*x^2*(a + b*ArcSin[
c*x]))/2 + ((e*g + d*h)*x^3*(a + b*ArcSin[c*x]))/3 + (e*h*x^4*(a + b*ArcSin
[c*x]))/4
```


Rule 4749

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_), x_Symbol] :> With[{u = IntHid
e[ExpandExpression[Px, x], x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, I
nt[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[{a, b, c}, x
] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1809

```
Int[(Pq_)*((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2)^(p_), x_Symbol] :> With[
{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[(f*(c*x)^(m + q -
1)*(a + b*x^2)^(p + 1))/(b*c^(q - 1)*(m + q + 2*p + 1)), x] + Dist[1/(b*(m
+ q + 2*p + 1)), Int[(c*x)^m*(a + b*x^2)^p*ExpandToSum[b*(m + q + 2*p + 1)*
Pq - b*f*(m + q + 2*p + 1)*x^q - a*f*(m + q - 1)*x^(q - 2), x], x], x] /; G
tQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, m, p}, x] && PolyQ[
Pq, x] && ( !IGtQ[m, 0] || IGtQ[p + 1/2, -1])
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 216

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

Rubi steps

$$\int (d+ex)\left(f+gx+hx^2\right)\left(a+b\sin^{-1}(cx)\right)\,dx = dfx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}(ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}(eg+dh)x^3$$

$$= dfx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}(ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}(eg+dh)x^3$$

$$= \frac{behx^3\sqrt{1-c^2x^2}}{16c}+dfx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}(ef+dg)x^2\left(a+b\sin^{-1}(c\right.$$

$$= \frac{b(eg+dh)x^2\sqrt{1-c^2x^2}}{9c}+\frac{behx^3\sqrt{1-c^2x^2}}{16c}+dfx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}$$

$$= \frac{b(eg+dh)x^2\sqrt{1-c^2x^2}}{9c}+\frac{behx^3\sqrt{1-c^2x^2}}{16c}+\frac{b\left(32\left(9c^2df+2eg+2dh\right.\right.}{}$$

$$= \frac{b(eg+dh)x^2\sqrt{1-c^2x^2}}{9c}+\frac{behx^3\sqrt{1-c^2x^2}}{16c}+\frac{b\left(32\left(9c^2df+2eg+2dh\right.\right.}{}$$

Mathematica [A] time = 0.299223, size = 186, normalized size = 0.83

$$\frac{24ac^4x(2d(6f+x(3g+2hx))+ex(6f+x(4g+3hx)))+bc\sqrt{1-c^2x^2}\left(2c^2\left(4d\left(36f+9gx+4hx^2\right)+ex\left(36f+16gx+9\right.\right.\right.}{2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)*(f + g*x + h*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (24*a*c^4*x*(2*d*(6*f + x*(3*g + 2*h*x)) + e*x*(6*f + x*(4*g + 3*h*x))) + b
*c*Sqrt[1 - c^2*x^2]*(64*e*g + 64*d*h + 27*e*h*x + 2*c^2*(4*d*(36*f + 9*g*x
 + 4*h*x^2) + e*x*(36*f + 16*g*x + 9*h*x^2))) + 3*b*(-24*c^2*(e*f + d*g) -
9*e*h + 8*c^4*x*(2*d*(6*f + 3*g*x + 2*h*x^2) + e*x*(6*f + 4*g*x + 3*h*x^2))
)*ArcSin[c*x])/(288*c^4)
```

Maple [A] time = 0.005, size = 307, normalized size = 1.4

$$\frac{1}{c}\left(\frac{a}{c^3}\left(\frac{ehc^4x^4}{4}+\frac{\left(dch+ecg\right)c^3x^3}{3}+\frac{\left(dc^2g+efc^2\right)c^2x^2}{2}+c^4fdx\right)+\frac{b}{c^3}\left(\frac{\arcsin(cx)\,ehc^4x^4}{4}+\frac{\arcsin(cx)\,c^4x^3dh}{3}+\operatorname{arcs}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(h*x^2+g*x+f)*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c*(a/c^3*(1/4*e*h*c^4*x^4+1/3*(c*d*h+c*e*g)*c^3*x^3+1/2*(c^2*d*g+c^2*e*f)
*c^2*x^2+c^4*f*d*x)+b/c^3*(1/4*arcsin(c*x)*e*h*c^4*x^4+1/3*arcsin(c*x)*c^4*
x^3*d*h+1/3*arcsin(c*x)*c^4*x^3*e*g+1/2*arcsin(c*x)*c^4*x^2*d*g+1/2*arcsin(
c*x)*c^4*x^2*e*f+arcsin(c*x)*c^4*f*d*x-1/4*e*h*(-1/4*c^3*x^3*(-c^2*x^2+1)^(
1/2)-3/8*c*x*(-c^2*x^2+1)^(1/2)+3/8*arcsin(c*x))-1/12*(4*c*d*h+4*c*e*g)*(-1
/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-c^2*x^2+1)^(1/2))-1/12*(6*c^2*d*g+6*c^2
*e*f)*(-1/2*c*x*(-c^2*x^2+1)^(1/2)+1/2*arcsin(c*x))+d*c^3*f*(-c^2*x^2+1)^(1
/2)))
```

Maxima [A] time = 1.67339, size = 500, normalized size = 2.24

$$\frac{1}{4}\,aehx^4 + \frac{1}{3}\,aegx^3 + \frac{1}{3}\,adhx^3 + \frac{1}{2}\,aefx^2 + \frac{1}{2}\,adgx^2 + \frac{1}{4}\left(2\,x^2\arcsin\left(cx\right) + c\left(\frac{\sqrt{-c^2x^2+1}x}{c^2} - \frac{\arcsin\left(\frac{c^2x}{\sqrt{c^2}}\right)}{\sqrt{c^2}c^2}\right)\right)bef + \frac{1}{4}\left(2\,x\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/4*a*e*h*x^4 + 1/3*a*e*g*x^3 + 1/3*a*d*h*x^3 + 1/2*a*e*f*x^2 + 1/2*a*d*g*x
^2 + 1/4*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c^2*x/sq
rt(c^2))/(sqrt(c^2)*c^2)))*b*e*f + 1/4*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^
2 + 1)*x/c^2 - arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^2)))*b*d*g + 1/9*(3*x^3
*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b
*e*g + 1/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2
*x^2 + 1)/c^4))*b*d*h + 1/32*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3
/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^
4))*c)*b*e*h + a*d*f*x + (c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*b*d*f/c
```

Fricas [A] time = 3.00993, size = 586, normalized size = 2.63

$$\frac{72\,ac^4ehx^4 + 288\,ac^4dfx + 96\left(ac^4eg + ac^4dh\right)x^3 + 144\left(ac^4ef + ac^4dg\right)x^2 + 3\left(24\,bc^4ehx^4 + 96\,bc^4dfx - 24\,bc^2ef - 24\,bc\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/288*(72*a*c^4*e*h*x^4 + 288*a*c^4*d*f*x + 96*(a*c^4*e*g + a*c^4*d*h)*x^3
+ 144*(a*c^4*e*f + a*c^4*d*g)*x^2 + 3*(24*b*c^4*e*h*x^4 + 96*b*c^4*d*f*x -
24*b*c^2*e*f - 24*b*c^2*d*g + 32*(b*c^4*e*g + b*c^4*d*h)*x^3 - 9*b*e*h + 48
*(b*c^4*e*f + b*c^4*d*g)*x^2)*arcsin(c*x) + (18*b*c^3*e*h*x^3 + 288*b*c^3*d
*f + 64*b*c*e*g + 64*b*c*d*h + 32*(b*c^3*e*g + b*c^3*d*h)*x^2 + 9*(8*b*c^3*
e*f + 8*b*c^3*d*g + 3*b*c*e*h)*x)*sqrt(-c^2*x^2 + 1))/c^4
```

Sympy [A] time = 2.68895, size = 449, normalized size = 2.01

$$\begin{cases} adfx + \frac{adgx^2}{2} + \frac{adhx^3}{3} + \frac{aefx^2}{2} + \frac{aegx^3}{3} + \frac{aehx^4}{4} + bdfx\operatorname{asin}(cx) + \frac{bdgx^2\operatorname{asin}(cx)}{2} + \frac{bdhx^3\operatorname{asin}(cx)}{3} + \frac{befx^2\operatorname{asin}(cx)}{2} + \frac{begx^3\operatorname{asin}(cx)}{3} \\ a\left(dfx + \frac{dgx^2}{2} + \frac{dhx^3}{3} + \frac{efx^2}{2} + \frac{egx^3}{3} + \frac{ehx^4}{4}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(h*x**2+g*x+f)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d*f*x + a*d*g*x**2/2 + a*d*h*x**3/3 + a*e*f*x**2/2 + a*e*g*x**
3/3 + a*e*h*x**4/4 + b*d*f*x*asin(c*x) + b*d*g*x**2*asin(c*x)/2 + b*d*h*x**
3*asin(c*x)/3 + b*e*f*x**2*asin(c*x)/2 + b*e*g*x**3*asin(c*x)/3 + b*e*h*x**
4*asin(c*x)/4 + b*d*f*sqrt(-c**2*x**2 + 1)/c + b*d*g*x*sqrt(-c**2*x**2 + 1)
/(4*c) + b*d*h*x**2*sqrt(-c**2*x**2 + 1)/(9*c) + b*e*f*x*sqrt(-c**2*x**2 +
1)/(4*c) + b*e*g*x**2*sqrt(-c**2*x**2 + 1)/(9*c) + b*e*h*x**3*sqrt(-c**2*x*
*2 + 1)/(16*c) - b*d*g*asin(c*x)/(4*c**2) - b*e*f*asin(c*x)/(4*c**2) + 2*b*
d*h*sqrt(-c**2*x**2 + 1)/(9*c**3) + 2*b*e*g*sqrt(-c**2*x**2 + 1)/(9*c**3) +
 3*b*e*h*x*sqrt(-c**2*x**2 + 1)/(32*c**3) - 3*b*e*h*asin(c*x)/(32*c**4), Ne
(c, 0)), (a*(d*f*x + d*g*x**2/2 + d*h*x**3/3 + e*f*x**2/2 + e*g*x**3/3 + e*
h*x**4/4), True))
```

Giac [B] time = 1.26511, size = 664, normalized size = 2.98

$$\frac{1}{3}\,adhx^3 + \frac{1}{3}\,agx^3e + bdfx\arcsin(cx) + adfx + \frac{\left(c^2x^2-1\right)bdhx\arcsin(cx)}{3\,c^2} + \frac{\left(c^2x^2-1\right)bgx\arcsin(cx)\,e}{3\,c^2} + \frac{\sqrt{-c^2x^2+1}}{4\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

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

```
+ 1/4*sqrt(-c^2*x^2 + 1)*b*d*g*x/c + 1/4*sqrt(-c^2*x^2 + 1)*b*f*x*e/c + 1/2
*(c^2*x^2 - 1)*b*d*g*arcsin(c*x)/c^2 + 1/3*b*d*h*x*arcsin(c*x)/c^2 + 1/2*(c
^2*x^2 - 1)*b*f*arcsin(c*x)*e/c^2 + 1/3*b*g*x*arcsin(c*x)*e/c^2 + sqrt(-c^2
*x^2 + 1)*b*d*f/c - 1/16*(-c^2*x^2 + 1)^(3/2)*b*h*x*e/c^3 + 1/2*(c^2*x^2 -
1)*a*d*g/c^2 + 1/4*b*d*g*arcsin(c*x)/c^2 + 1/2*(c^2*x^2 - 1)*a*f*e/c^2 + 1/
4*b*f*arcsin(c*x)*e/c^2 + 1/4*(c^2*x^2 - 1)^2*b*h*arcsin(c*x)*e/c^4 - 1/9*(
-c^2*x^2 + 1)^(3/2)*b*d*h/c^3 - 1/9*(-c^2*x^2 + 1)^(3/2)*b*g*e/c^3 + 5/32*s
qrt(-c^2*x^2 + 1)*b*h*x*e/c^3 + 1/4*(c^2*x^2 - 1)^2*a*h*e/c^4 + 1/2*(c^2*x^
2 - 1)*b*h*arcsin(c*x)*e/c^4 + 1/3*sqrt(-c^2*x^2 + 1)*b*d*h/c^3 + 1/3*sqrt(
-c^2*x^2 + 1)*b*g*e/c^3 + 1/2*(c^2*x^2 - 1)*a*h*e/c^4 + 5/32*b*h*arcsin(c*x
)*e/c^4
```

3.100 $\int \frac{(f+gx+hx^2)(a+b\sin^{-1}(cx))}{d+ex}\,dx$

Optimal. Leaf size=459

$$-\frac{ib\left(d^2h-deg+e^2f\right)\mathrm{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^3}-\frac{ib\left(d^2h-deg+e^2f\right)\mathrm{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e^3}+\frac{\log(d+ex)\left(a+b\sin\right.}{}$$

```
[Out] (b*(4*(e*g - d*h) + e*h*x)*Sqrt[1 - c^2*x^2])/(4*c*e^2) - (b*h*ArcSin[c*x])
/(4*c^2*e) - ((I/2)*b*(e^2*f - d*e*g + d^2*h)*ArcSin[c*x]^2)/e^3 + ((e*g -
d*h)*x*(a + b*ArcSin[c*x]))/e^2 + (h*x^2*(a + b*ArcSin[c*x]))/(2*e) + (b*(e
^2*f - d*e*g + d^2*h)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sq
rt[c^2*d^2 - e^2])])/e^3 + (b*(e^2*f - d*e*g + d^2*h)*ArcSin[c*x]*Log[1 - (
I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^3 - (b*(e^2*f - d*e*
g + d^2*h)*ArcSin[c*x]*Log[d + e*x])/e^3 + ((e^2*f - d*e*g + d^2*h)*(a + b*
ArcSin[c*x])*Log[d + e*x])/e^3 - (I*b*(e^2*f - d*e*g + d^2*h)*PolyLog[2, (I
*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^3 - (I*b*(e^2*f - d*e
*g + d^2*h)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]
)/e^3
```

Rubi [A] time = 0.786699, antiderivative size = 459, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 12, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.462, Rules used = {698, 4753, 12, 6742, 780, 216, 2404, 4741, 4519, 2190, 2279, 2391}

$$-\frac{ib\left(d^2h-deg+e^2f\right)\mathrm{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^3}-\frac{ib\left(d^2h-deg+e^2f\right)\mathrm{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e^3}+\frac{\log(d+ex)\left(a+b\sin\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x + h*x^2)*(a + b*ArcSin[c*x]))/(d + e*x),x]
```

```
[Out] (b*(4*(e*g - d*h) + e*h*x)*Sqrt[1 - c^2*x^2])/(4*c*e^2) - (b*h*ArcSin[c*x])
/(4*c^2*e) - ((I/2)*b*(e^2*f - d*e*g + d^2*h)*ArcSin[c*x]^2)/e^3 + ((e*g -
d*h)*x*(a + b*ArcSin[c*x]))/e^2 + (h*x^2*(a + b*ArcSin[c*x]))/(2*e) + (b*(e
^2*f - d*e*g + d^2*h)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sq
rt[c^2*d^2 - e^2])])/e^3 + (b*(e^2*f - d*e*g + d^2*h)*ArcSin[c*x]*Log[1 - (
I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^3 - (b*(e^2*f - d*e*
g + d^2*h)*ArcSin[c*x]*Log[d + e*x])/e^3 + ((e^2*f - d*e*g + d^2*h)*(a + b*
ArcSin[c*x])*Log[d + e*x])/e^3 - (I*b*(e^2*f - d*e*g + d^2*h)*PolyLog[2, (I
*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^3 - (I*b*(e^2*f - d*e
```

```
*g + d^2*h)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]
)/e^3
```

Rule 698

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 4753

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 216

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

Rule 2404

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
```

```
b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rubi steps

$$\int \frac{(f+gx+hx^2)(a+b\sin^{-1}(cx))}{d+ex}\,dx = \frac{(eg-dh)x(a+b\sin^{-1}(cx))}{e^2} + \frac{hx^2(a+b\sin^{-1}(cx))}{2e} + \frac{(e^2f-deg+d^2h)(a+b}{e^3}$$

$$= \frac{(eg-dh)x(a+b\sin^{-1}(cx))}{e^2} + \frac{hx^2(a+b\sin^{-1}(cx))}{2e} + \frac{(e^2f-deg+d^2h)(a+b}{e^3}$$

$$= \frac{(eg-dh)x(a+b\sin^{-1}(cx))}{e^2} + \frac{hx^2(a+b\sin^{-1}(cx))}{2e} + \frac{(e^2f-deg+d^2h)(a+b}{e^3}$$

$$= \frac{(eg-dh)x(a+b\sin^{-1}(cx))}{e^2} + \frac{hx^2(a+b\sin^{-1}(cx))}{2e} + \frac{(e^2f-deg+d^2h)(a+b}{e^3}$$

$$= \frac{b(4(eg-dh)+ehx)\sqrt{1-c^2x^2}}{4ce^2} + \frac{(eg-dh)x(a+b\sin^{-1}(cx))}{e^2} + \frac{hx^2(a+b\sin^{-1}}{2e}$$

$$= \frac{b(4(eg-dh)+ehx)\sqrt{1-c^2x^2}}{4ce^2} - \frac{bh\sin^{-1}(cx)}{4c^2e} + \frac{(eg-dh)x(a+b\sin^{-1}(cx))}{e^2} + $$

$$= \frac{b(4(eg-dh)+ehx)\sqrt{1-c^2x^2}}{4ce^2} - \frac{bh\sin^{-1}(cx)}{4c^2e} - \frac{ib(e^2f-deg+d^2h)\sin^{-1}(cx)^2}{2e^3}$$

$$= \frac{b(4(eg-dh)+ehx)\sqrt{1-c^2x^2}}{4ce^2} - \frac{bh\sin^{-1}(cx)}{4c^2e} - \frac{ib(e^2f-deg+d^2h)\sin^{-1}(cx)^2}{2e^3}$$

$$= \frac{b(4(eg-dh)+ehx)\sqrt{1-c^2x^2}}{4ce^2} - \frac{bh\sin^{-1}(cx)}{4c^2e} - \frac{ib(e^2f-deg+d^2h)\sin^{-1}(cx)^2}{2e^3}$$

$$= \frac{b(4(eg-dh)+ehx)\sqrt{1-c^2x^2}}{4ce^2} - \frac{bh\sin^{-1}(cx)}{4c^2e} - \frac{ib(e^2f-deg+d^2h)\sin^{-1}(cx)^2}{2e^3}$$

Mathematica [A] time = 0.635477, size = 381, normalized size = 0.83

$$\frac{b\left(-2ic^2(d^2h-deg+e^2f)\left(2\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)+2\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)+\sin^{-1}(cx)\left(\sin^{-1}(cx)+2i\left(\log\left(1+\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}-cd}\right)+\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)\right)\right)\right)-4c^2\sin^{-1}}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x + h*x^2)*(a + b*ArcSin[c*x]))/(d + e*x),x]
```

```
[Out] (2*e*(e*g - d*h)*x*(a + b*ArcSin[c*x]) + e^2*h*x^2*(a + b*ArcSin[c*x]) + 2*
(e^2*f - d*e*g + d^2*h)*(a + b*ArcSin[c*x])*Log[d + e*x] + (b*(4*c*e*(e*g -
```

```
 d*h)*Sqrt[1 - c^2*x^2] + c*e^2*h*x*Sqrt[1 - c^2*x^2] - e^2*h*ArcSin[c*x] -
 4*c^2*(e^2*f - d*e*g + d^2*h)*ArcSin[c*x]*Log[d + e*x] - (2*I)*c^2*(e^2*f
- d*e*g + d^2*h)*(ArcSin[c*x]*(ArcSin[c*x] + (2*I)*(Log[1 + (I*e*E^(I*ArcSi
n[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] + Log[1 - (I*e*E^(I*ArcSin[c*x]))/
(c*d + Sqrt[c^2*d^2 - e^2])])) + 2*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d
- Sqrt[c^2*d^2 - e^2])] + 2*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[
c^2*d^2 - e^2])])))/(2*c^2))/(2*e^3)
```

Maple [B] time = 0.464, size = 2477, normalized size = 5.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d),x)
```

```
[Out] b*g*(-c^2*x^2+1)^(1/2)/c/e-I*b*d*g/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*
x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+b*arcsi
n(c*x)*g/e*x-1/2*I*b*arcsin(c*x)^2/e*f-a/e^2*ln(c*e*x+c*d)*d*g+c^2*b/e*f*ar
csin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^
2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*d^2+I*c^2*b/e^2*d^3*g/(c^2*d^2-e^2)
*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c
^2*d^2+e^2)^(1/2)))-I*c^2*b/e*f/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2
+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*d^2-c^2*b/
e^2*d^3*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+
(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-c^2*b/e^2*d^3*g*arcsin(
c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1
/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-I*c^2*b/e*f/(c^2*d^2-e^2)*dilog((I*d*c+(
I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/
2)))*d^2+I*c^2*b/e^2*d^3*g/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(
1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+c^2*b/e*f*arcsi
n(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^
(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*d^2-1/4*b*h*arcsin(c*x)/c^2/e-b*e*f*ar
csin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^
2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+b*d*g*arcsin(c*x)/(c^2*d^2-e^2)*ln(
(I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+
e^2)^(1/2)))+I*b*e*f/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*
e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+I*b*e*f/(c^2*d^2-e^2)
*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c
^2*d^2+e^2)^(1/2)))+1/2*I*b*arcsin(c*x)^2/e^2*d*g-I*b*d*g/(c^2*d^2-e^2)*dil
og((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d
^2+e^2)^(1/2)))+b*d*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+
```

```
1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-b*e*f*arcsi
n(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^
(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+a*g/e*x+a/e*ln(c*e*x+c*d)*f+1/4/c*b/e*
h*(-c^2*x^2+1)^(1/2)*x-1/c*b/e^2*(-c^2*x^2+1)^(1/2)*d*h-b*arcsin(c*x)/e^2*d
*h*x-1/2*I*b*arcsin(c*x)^2/e^3*d^2*h+1/2*a/e*h*x^2-a/e^2*d*h*x+1/2*b*arcsin
(c*x)/e*h*x^2+a/e^3*ln(c*e*x+c*d)*d^2*h-b/e*d^2*h*arcsin(c*x)/(c^2*d^2-e^2)
*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*
d^2+e^2)^(1/2)))-b/e*d^2*h*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2
*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+I*b/e*
d^2*h/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2
)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+I*b/e*d^2*h/(c^2*d^2-e^2)*dilog((I*d
*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)
^(1/2)))+c^2*b/e^3*d^4*h*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x
^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+c^2*b/e^
3*d^4*h*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-
c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-I*c^2*b/e^3*d^4*h/(c^2*d^
2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d
*c-(-c^2*d^2+e^2)^(1/2)))-I*c^2*b/e^3*d^4*h/(c^2*d^2-e^2)*dilog((I*d*c+(I*c
*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2))
)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$ag\left(\frac{x}{e} - \frac{d\log\left(ex+d\right)}{e^2}\right) + \frac{1}{2}ah\left(\frac{2\,d^2\log\left(ex+d\right)}{e^3} + \frac{ex^2 - 2\,dx}{e^2}\right) + \frac{af\log\left(ex+d\right)}{e} + \int \frac{\left(bhx^2 + bgx + bf\right)\arctan\left(cx, \sqrt{cx}\right.}{ex+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d),x, algorithm="maxima")
```

```
[Out] a*g*(x/e - d*log(e*x + d)/e^2) + 1/2*a*h*(2*d^2*log(e*x + d)/e^3 + (e*x^2 -
 2*d*x)/e^2) + a*f*log(e*x + d)/e + integrate((b*h*x^2 + b*g*x + b*f)*arcta
n2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(e*x + d), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{ahx^2 + agx + af + \left(bhx^2 + bgx + bf\right)\arcsin\left(cx\right)}{ex+d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d),x, algorithm="fricas")
```

```
[Out] integral((a*h*x^2 + a*g*x + a*f + (b*h*x^2 + b*g*x + b*f)*arcsin(c*x))/(e*x
 + d), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + b \operatorname{asin}(cx)) \left(f + gx + hx^2\right)}{d + ex}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x**2+g*x+f)*(a+b*asin(c*x))/(e*x+d),x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x + h*x**2)/(d + e*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(hx^2 + gx + f\right)(b \arcsin(cx) + a)}{ex + d}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d),x, algorithm="giac")
```

```
[Out] integrate((h*x^2 + g*x + f)*(b*arcsin(c*x) + a)/(e*x + d), x)
```

3.101 $\int \frac{(f+gx+hx^2)(a+b\sin^{-1}(cx))}{(d+ex)^2}\,dx$

Optimal. Leaf size=460

$$-\frac{ib(eg-2dh)\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^3}-\frac{ib(eg-2dh)\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e^3}-\frac{\left(a+b\sin^{-1}(cx)\right)\left(d^2h-deg+e^2f\right)}{e^3(d+ex)}+$$

```
[Out] (b*h*Sqrt[1 - c^2*x^2])/(c*e^2) - ((I/2)*b*(e*g - 2*d*h)*ArcSin[c*x]^2)/e^3
 + (h*x*(a + b*ArcSin[c*x]))/e^2 - ((e^2*f - d*e*g + d^2*h)*(a + b*ArcSin[c
*x]))/(e^3*(d + e*x)) + (b*c*(e^2*f - d*e*g + d^2*h)*ArcTan[(e + c^2*d*x)/(
Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(e^3*Sqrt[c^2*d^2 - e^2]) + (b*(e*
g - 2*d*h)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2
- e^2])])/e^3 + (b*(e*g - 2*d*h)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x])
)/(c*d + Sqrt[c^2*d^2 - e^2])])/e^3 - (b*(e*g - 2*d*h)*ArcSin[c*x]*Log[d +
e*x])/e^3 + ((e*g - 2*d*h)*(a + b*ArcSin[c*x])*Log[d + e*x])/e^3 - (I*b*(e*
g - 2*d*h)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])
/e^3 - (I*b*(e*g - 2*d*h)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^
2*d^2 - e^2])])/e^3
```

Rubi [A] time = 0.847327, antiderivative size = 460, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 14, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.538, Rules used = {698, 4753, 12, 6742, 261, 725, 204, 216, 2404, 4741, 4519, 2190, 2279, 2391}

$$-\frac{ib(eg-2dh)\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^3}-\frac{ib(eg-2dh)\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e^3}-\frac{\left(a+b\sin^{-1}(cx)\right)\left(d^2h-deg+e^2f\right)}{e^3(d+ex)}+$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x + h*x^2)*(a + b*ArcSin[c*x]))/(d + e*x)^2,x]
```

```
[Out] (b*h*Sqrt[1 - c^2*x^2])/(c*e^2) - ((I/2)*b*(e*g - 2*d*h)*ArcSin[c*x]^2)/e^3
 + (h*x*(a + b*ArcSin[c*x]))/e^2 - ((e^2*f - d*e*g + d^2*h)*(a + b*ArcSin[c
*x]))/(e^3*(d + e*x)) + (b*c*(e^2*f - d*e*g + d^2*h)*ArcTan[(e + c^2*d*x)/(
Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(e^3*Sqrt[c^2*d^2 - e^2]) + (b*(e*
g - 2*d*h)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2
- e^2])])/e^3 + (b*(e*g - 2*d*h)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x])
)/(c*d + Sqrt[c^2*d^2 - e^2])])/e^3 - (b*(e*g - 2*d*h)*ArcSin[c*x]*Log[d +
e*x])/e^3 + ((e*g - 2*d*h)*(a + b*ArcSin[c*x])*Log[d + e*x])/e^3 - (I*b*(e*
```

```
g - 2*d*h)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])
/e^3 - (I*b*(e*g - 2*d*h)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^
2*d^2 - e^2])])/e^3
```

Rule 698

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 4753

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 261

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

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

```
a, 0] || LtQ[b, 0])
```

Rule 216

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

Rule 2404

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rubi steps

$$\int \frac{\left(f+gx+hx^2\right)\left(a+b\sin^{-1}(cx)\right)}{(d+ex)^2}\,dx = \frac{hx\left(a+b\sin^{-1}(cx)\right)}{e^2} - \frac{\left(e^2f-deg+d^2h\right)\left(a+b\sin^{-1}(cx)\right)}{e^3(d+ex)} + \frac{(eg-2dh)\left(a+\right.}{}$$

$$= \frac{hx\left(a+b\sin^{-1}(cx)\right)}{e^2} - \frac{\left(e^2f-deg+d^2h\right)\left(a+b\sin^{-1}(cx)\right)}{e^3(d+ex)} + \frac{(eg-2dh)\left(a+b\right.}{}$$

$$= \frac{hx\left(a+b\sin^{-1}(cx)\right)}{e^2} - \frac{\left(e^2f-deg+d^2h\right)\left(a+b\sin^{-1}(cx)\right)}{e^3(d+ex)} + \frac{(eg-2dh)\left(a+b\right.}{}$$

$$= \frac{hx\left(a+b\sin^{-1}(cx)\right)}{e^2} - \frac{\left(e^2f-deg+d^2h\right)\left(a+b\sin^{-1}(cx)\right)}{e^3(d+ex)} + \frac{(eg-2dh)\left(a+b\right.}{}$$

$$= \frac{bh\sqrt{1-c^2x^2}}{ce^2} + \frac{hx\left(a+b\sin^{-1}(cx)\right)}{e^2} - \frac{\left(e^2f-deg+d^2h\right)\left(a+b\sin^{-1}(cx)\right)}{e^3(d+ex)} - \frac{b}{}$$

$$= \frac{bh\sqrt{1-c^2x^2}}{ce^2} + \frac{hx\left(a+b\sin^{-1}(cx)\right)}{e^2} - \frac{\left(e^2f-deg+d^2h\right)\left(a+b\sin^{-1}(cx)\right)}{e^3(d+ex)} + \frac{b}{}$$

$$= \frac{bh\sqrt{1-c^2x^2}}{ce^2} - \frac{ib(eg-2dh)\sin^{-1}(cx)^2}{2e^3} + \frac{hx\left(a+b\sin^{-1}(cx)\right)}{e^2} - \frac{\left(e^2f-deg+\right.}{e}$$

$$= \frac{bh\sqrt{1-c^2x^2}}{ce^2} - \frac{ib(eg-2dh)\sin^{-1}(cx)^2}{2e^3} + \frac{hx\left(a+b\sin^{-1}(cx)\right)}{e^2} - \frac{\left(e^2f-deg+\right.}{e}$$

$$= \frac{bh\sqrt{1-c^2x^2}}{ce^2} - \frac{ib(eg-2dh)\sin^{-1}(cx)^2}{2e^3} + \frac{hx\left(a+b\sin^{-1}(cx)\right)}{e^2} - \frac{\left(e^2f-deg+\right.}{e}$$

$$= \frac{bh\sqrt{1-c^2x^2}}{ce^2} - \frac{ib(eg-2dh)\sin^{-1}(cx)^2}{2e^3} + \frac{hx\left(a+b\sin^{-1}(cx)\right)}{e^2} - \frac{\left(e^2f-deg+\right.}{e}$$

Mathematica [A] time = 0.968613, size = 392, normalized size = 0.85

$$-\frac{1}{2}ib(eg-2dh)\left(2\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)+2\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)+\sin^{-1}(cx)\left(\sin^{-1}(cx)+2i\left(\log\left(1+\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2-c}}\right.\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x + h*x^2)*(a + b*ArcSin[c*x]))/(d + e*x)^2,x]
```

```
[Out] ((b*e*h*Sqrt[1 - c^2*x^2])/c + e*h*x*(a + b*ArcSin[c*x]) - ((e^2*f - d*e*g
+ d^2*h)*(a + b*ArcSin[c*x]))/(d + e*x) + (b*c*(e^2*f - d*e*g + d^2*h)*ArcT
an[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/Sqrt[c^2*d^2 - e
^2] - b*(e*g - 2*d*h)*ArcSin[c*x]*Log[d + e*x] + (e*g - 2*d*h)*(a + b*ArcSi
n[c*x])*Log[d + e*x] - (I/2)*b*(e*g - 2*d*h)*(ArcSin[c*x]*(ArcSin[c*x] + (2
*I)*(Log[1 + (I*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] + Log[
1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])) + 2*PolyLog[2, (
I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])] + 2*PolyLog[2, (I*e*E^(
I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]))/e^3
```

Maple [B] time = 1.245, size = 1922, normalized size = 4.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^2,x)
```

```
[Out] -c*a/e/(c*e*x+c*d)*f-2*c^2*b/e^3*d^3*h*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+
(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1
/2)))-2*c^2*b/e^3*d^3*h*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^
2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+2*I*c^2*b
/e^3*d^3*h/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^
2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+2*I*c^2*b/e^3*d^3*h/(c^2*d^2-e^
2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(
-c^2*d^2+e^2)^(1/2)))+c*a/e^2/(c*e*x+c*d)*d*g-I*c^2*b/e^2*g/(c^2*d^2-e^2)*d
ilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2
*d^2+e^2)^(1/2)))*d^2+c^2*b/e^2*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*
x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))
*d^2+c^2*b/e^2*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1
/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*d^2-I*c^2*b/e^2*
g/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1
/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*d^2-1/2*I*b*g*arcsin(c*x)^2/e^2+2*b/e*d*
h*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^
2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+2*b/e*d*h*arcsin(c*x)/(c^2*d^2-
e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-
c^2*d^2+e^2)^(1/2)))+2*c*b/e^3*d^2*h/(c^2*d^2-e^2)^(1/2)*arctan(1/2*(2*(I*c
*x+(-c^2*x^2+1)^(1/2))*e+2*I*d*c)/(c^2*d^2-e^2)^(1/2))-c*b*arcsin(c*x)/e^3/
```

```
(c*e*x+c*d)*d^2*h-2*I*b/e*d*h/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1
)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-2*I*b/e*d*h/
(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2
))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-c*b*arcsin(c*x)/e/(c*e*x+c*d)*f+2*c*b/e*f/
(c^2*d^2-e^2)^(1/2)*arctan(1/2*(2*(I*c*x+(-c^2*x^2+1)^(1/2))*e+2*I*d*c)/(c^
2*d^2-e^2)^(1/2))+b*h*(-c^2*x^2+1)^(1/2)/c/e^2+c*b*arcsin(c*x)/e^2/(c*e*x+c
*d)*d*g-c*a/e^3/(c*e*x+c*d)*d^2*h+I*b*arcsin(c*x)^2/e^3*d*h-b*arcsin(c*x)*g
/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))
/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-b*arcsin(c*x)*g/(c^2*d^2-e^2)*ln((I*d*c+(I*c
*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2))
)+I*b*g/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e
^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+I*b*g/(c^2*d^2-e^2)*dilog((I*d*c+(
I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/
2)))-2*c*b/e^2*d*g/(c^2*d^2-e^2)^(1/2)*arctan(1/2*(2*(I*c*x+(-c^2*x^2+1)^(1
/2))*e+2*I*d*c)/(c^2*d^2-e^2)^(1/2))-2*a/e^3*ln(c*e*x+c*d)*d*h+b*arcsin(c*x
)*h/e^2*x+a*g/e^2*ln(c*e*x+c*d)+a*h/e^2*x
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{ahx^2 + agx + af + \left(bhx^2 + bgx + bf\right)\arcsin(cx)}{e^2x^2 + 2\,dex + d^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] integral((a*h*x^2 + a*g*x + a*f + (b*h*x^2 + b*g*x + b*f)*arcsin(c*x))/(e^2
*x^2 + 2*d*e*x + d^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + b\,\mathrm{asin}\,(cx))\left(f + gx + hx^2\right)}{(d + ex)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x**2+g*x+f)*(a+b*asin(c*x))/(e*x+d)**2,x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x + h*x**2)/(d + e*x)**2, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(hx^2 + gx + f\right)(b\arcsin\,(cx) + a)}{(ex + d)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] integrate((h*x^2 + g*x + f)*(b*arcsin(c*x) + a)/(e*x + d)^2, x)
```

3.102 $\int \frac{\left(f+gx+hx^2\right)\left(a+b\sin^{-1}(cx)\right)}{(d+ex)^3}\,dx$

Optimal. Leaf size=488

$$-\frac{ibh\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^3}-\frac{ibh\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e^3}-\frac{\left(a+b\sin^{-1}(cx)\right)\left(d^2h-deg+e^2f\right)}{2e^3(d+ex)^2}-\frac{(eg-2dh)\left(a+b\right.}{e^3(d+ex}$$

```
[Out] (b*c*(e^2*f - d*e*g + d^2*h)*Sqrt[1 - c^2*x^2])/(2*e^2*(c^2*d^2 - e^2)*(d +
 e*x)) - ((I/2)*b*h*ArcSin[c*x]^2)/e^3 - ((e^2*f - d*e*g + d^2*h)*(a + b*Ar
cSin[c*x]))/(2*e^3*(d + e*x)^2) - ((e*g - 2*d*h)*(a + b*ArcSin[c*x]))/(e^3*
(d + e*x)) - (b*c*(2*e^2*(e*g - 2*d*h) - c^2*d*(e^2*f + d*e*g - 3*d^2*h))*A
rcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(2*e^3*(c^2*d
^2 - e^2)^(3/2)) + (b*h*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d -
Sqrt[c^2*d^2 - e^2])])/e^3 + (b*h*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]
))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^3 - (b*h*ArcSin[c*x]*Log[d + e*x])/e^3 +
 (h*(a + b*ArcSin[c*x])*Log[d + e*x])/e^3 - (I*b*h*PolyLog[2, (I*e*E^(I*Arc
Sin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^3 - (I*b*h*PolyLog[2, (I*e*E^(I*
ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^3
```

Rubi [A] time = 1.26207, antiderivative size = 488, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 14, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.538, Rules used = {698, 4753, 12, 6742, 807, 725, 204, 216, 2404, 4741, 4519, 2190, 2279, 2391}

$$-\frac{ibh\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^3}-\frac{ibh\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e^3}-\frac{\left(a+b\sin^{-1}(cx)\right)\left(d^2h-deg+e^2f\right)}{2e^3(d+ex)^2}-\frac{(eg-2dh)\left(a+b\right.}{e^3(d+ex}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x + h*x^2)*(a + b*ArcSin[c*x]))/(d + e*x)^3,x]
```



```
[Out] (b*c*(e^2*f - d*e*g + d^2*h)*Sqrt[1 - c^2*x^2])/(2*e^2*(c^2*d^2 - e^2)*(d +
 e*x)) - ((I/2)*b*h*ArcSin[c*x]^2)/e^3 - ((e^2*f - d*e*g + d^2*h)*(a + b*Ar
cSin[c*x]))/(2*e^3*(d + e*x)^2) - ((e*g - 2*d*h)*(a + b*ArcSin[c*x]))/(e^3*
(d + e*x)) - (b*c*(2*e^2*(e*g - 2*d*h) - c^2*d*(e^2*f + d*e*g - 3*d^2*h))*A
rcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(2*e^3*(c^2*d
^2 - e^2)^(3/2)) + (b*h*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d -
Sqrt[c^2*d^2 - e^2])])/e^3 + (b*h*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]
```

```
))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^3 - (b*h*ArcSin[c*x]*Log[d + e*x])/e^3 +
 (h*(a + b*ArcSin[c*x])*Log[d + e*x])/e^3 - (I*b*h*PolyLog[2, (I*e*E^(I*Arc
Sin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^3 - (I*b*h*PolyLog[2, (I*e*E^(I*
ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^3
```

Rule 698

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 4753

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

Rule 216

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

Rule 2404

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
```

```
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rubi steps

$$\int \frac{\left(f+gx+hx^2\right)\left(a+b\sin^{-1}(cx)\right)}{(d+ex)^3}\,dx = -\frac{\left(e^2f-deg+d^2h\right)\left(a+b\sin^{-1}(cx)\right)}{2e^3(d+ex)^2} - \frac{(eg-2dh)\left(a+b\sin^{-1}(cx)\right)}{e^3(d+ex)} + \frac{h\left(a+b\,\mathrm{s}\cdots\right.}{\cdots}$$

$$= -\frac{\left(e^2f-deg+d^2h\right)\left(a+b\sin^{-1}(cx)\right)}{2e^3(d+ex)^2} - \frac{(eg-2dh)\left(a+b\sin^{-1}(cx)\right)}{e^3(d+ex)} + \frac{h\left(a+b\,\mathrm{s}\cdots\right.}{\cdots}$$

$$= -\frac{\left(e^2f-deg+d^2h\right)\left(a+b\sin^{-1}(cx)\right)}{2e^3(d+ex)^2} - \frac{(eg-2dh)\left(a+b\sin^{-1}(cx)\right)}{e^3(d+ex)} + \frac{h\left(a+b\,\mathrm{s}\cdots\right.}{\cdots}$$

$$= -\frac{\left(e^2f-deg+d^2h\right)\left(a+b\sin^{-1}(cx)\right)}{2e^3(d+ex)^2} - \frac{(eg-2dh)\left(a+b\sin^{-1}(cx)\right)}{e^3(d+ex)} + \frac{h\left(a+b\,\mathrm{s}\cdots\right.}{\cdots}$$

$$= \frac{bc\left(e^2f-deg+d^2h\right)\sqrt{1-c^2x^2}}{2e^2\left(c^2d^2-e^2\right)(d+ex)} - \frac{\left(e^2f-deg+d^2h\right)\left(a+b\sin^{-1}(cx)\right)}{2e^3(d+ex)^2} - \frac{(eg-2\cdots}{\cdots}$$

$$= \frac{bc\left(e^2f-deg+d^2h\right)\sqrt{1-c^2x^2}}{2e^2\left(c^2d^2-e^2\right)(d+ex)} - \frac{\left(e^2f-deg+d^2h\right)\left(a+b\sin^{-1}(cx)\right)}{2e^3(d+ex)^2} - \frac{(eg-2\cdots}{\cdots}$$

$$= \frac{bc\left(e^2f-deg+d^2h\right)\sqrt{1-c^2x^2}}{2e^2\left(c^2d^2-e^2\right)(d+ex)} - \frac{ibh\sin^{-1}(cx)^2}{2e^3} - \frac{\left(e^2f-deg+d^2h\right)\left(a+b\sin\cdots\right.}{2e^3(d+ex)^2}$$

$$= \frac{bc\left(e^2f-deg+d^2h\right)\sqrt{1-c^2x^2}}{2e^2\left(c^2d^2-e^2\right)(d+ex)} - \frac{ibh\sin^{-1}(cx)^2}{2e^3} - \frac{\left(e^2f-deg+d^2h\right)\left(a+b\sin\cdots\right.}{2e^3(d+ex)^2}$$

$$= \frac{bc\left(e^2f-deg+d^2h\right)\sqrt{1-c^2x^2}}{2e^2\left(c^2d^2-e^2\right)(d+ex)} - \frac{ibh\sin^{-1}(cx)^2}{2e^3} - \frac{\left(e^2f-deg+d^2h\right)\left(a+b\sin\cdots\right.}{2e^3(d+ex)^2}$$

$$= \frac{bc\left(e^2f-deg+d^2h\right)\sqrt{1-c^2x^2}}{2e^2\left(c^2d^2-e^2\right)(d+ex)} - \frac{ibh\sin^{-1}(cx)^2}{2e^3} - \frac{\left(e^2f-deg+d^2h\right)\left(a+b\sin\cdots\right.}{2e^3(d+ex)^2}$$

Mathematica [C] time = 6.64507, size = 996, normalized size = 2.04

$$\frac{2adh-aeg}{e^3(d+ex)}+bf\left(-\frac{c\sqrt{\frac{-d-\sqrt{\frac{1}{c^2}}e}{d+ex}+1}\sqrt{\frac{\sqrt{\frac{1}{c^2}}e-d}{d+ex}+1}F_1\left(2;\frac{1}{2},\frac{1}{2};3;-\frac{\sqrt{\frac{1}{c^2}}e-d}{d+ex},-\frac{-d-\sqrt{\frac{1}{c^2}}e}{d+ex}\right)}{4e^2(d+ex)\sqrt{1-c^2x^2}}-\frac{\sin^{-1}(cx)}{2e(d+ex)^2}\right)+\frac{ah\log(d+ex)}{e^3}+b$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((f + g*x + h*x^2)*(a + b*ArcSin[c*x]))/(d + e*x)^3,x]
```

```
[Out] (-(a*e^2*f) + a*d*e*g - a*d^2*h)/(2*e^3*(d + e*x)^2) + (-(a*e*g) + 2*a*d*h)
/(e^3*(d + e*x)) + b*f*(-(c*Sqrt[1 + (-d - Sqrt[c^(-2)]*e)/(d + e*x)]*Sqrt[
1 + (-d + Sqrt[c^(-2)]*e)/(d + e*x)]*AppellF1[2, 1/2, 1/2, 3, -((-d + Sqrt[
c^(-2)]*e)/(d + e*x)), -((-d - Sqrt[c^(-2)]*e)/(d + e*x))])/(4*e^2*(d + e*x
)*Sqrt[1 - c^2*x^2]) - ArcSin[c*x]/(2*e*(d + e*x)^2)) + (a*h*Log[d + e*x])/
e^3 + b*g*((-(ArcSin[c*x]/(d + e*x)) + (c*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^
2 - e^2]*Sqrt[1 - c^2*x^2])])/Sqrt[c^2*d^2 - e^2])/e^2 - (d*((c*Sqrt[1 - c^
2*x^2])/((c^2*d^2 - e^2)*(d + e*x)) - ArcSin[c*x]/(e*(d + e*x)^2) - (I*c^3*
d*(Log[4] + Log[(e^2*Sqrt[c^2*d^2 - e^2]*(I*e + I*c^2*d*x + Sqrt[c^2*d^2 -
e^2]*Sqrt[1 - c^2*x^2]))/(c^3*d*(d + e*x))]))/((c*d - e)*e*(c*d + e)*Sqrt[c
^2*d^2 - e^2])))/(2*e)) + b*h*((-2*d*(-(ArcSin[c*x]/(d + e*x)) + (c*ArcTan[
(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/Sqrt[c^2*d^2 - e^2]
))/e^3 + (d^2*((c*Sqrt[1 - c^2*x^2])/((c^2*d^2 - e^2)*(d + e*x)) - ArcSin[c
*x]/(e*(d + e*x)^2) - (I*c^3*d*(Log[4] + Log[(e^2*Sqrt[c^2*d^2 - e^2]*(I*e
+ I*c^2*d*x + Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2]))/(c^3*d*(d + e*x))]))/
((c*d - e)*e*(c*d + e)*Sqrt[c^2*d^2 - e^2])))/(2*e^2) + (((-I/2)*ArcSin[c*x
]^2)/e + (ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 -
 e^2])])/e + (ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d
^2 - e^2])])/e - (I*PolyLog[2, ((-I)*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^
2*d^2 - e^2])])/e - (I*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d
^2 - e^2])])/e)/e^2)
```

Maple [B] time = 1.641, size = 2706, normalized size = 5.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^3,x)
```

```
[Out] 1/2*I*b*arcsin(c*x)^2*h/e^3+1/2*c^2*a/e^2/(c*e*x+c*d)^2*d*g-1/2*c^2*a/e/(c*
e*x+c*d)^2*f-c*a*g/e^2/(c*e*x+c*d)-c^4*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e*arcs
in(c*x)*x*d^2*g+I*c^4*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e*x*d^2*g+1/2*c^3*b/(c^
2*d^2-e^2)/(c*e*x+c*d)^2/e*(-c^2*x^2+1)^(1/2)*x*d^2*h+2*c^4*b/(c^2*d^2-e^2)
/(c*e*x+c*d)^2/e^2*arcsin(c*x)*x*d^3*h-1/2*I*c^4*b/(c^2*d^2-e^2)/(c*e*x+c*d
)^2/e*x^2*d^2*h-I*c^4*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^2*x*d^3*h+1/2*c^2*b/(
c^2*d^2-e^2)/(c*e*x+c*d)^2*arcsin(c*x)*g*d+1/2*c^2*b/(c^2*d^2-e^2)/(c*e*x+c
*d)^2*e*arcsin(c*x)*f+1/2*c^3*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2*(-c^2*x^2+1)^(1
/2)*d*f+c^3*b/(c^2*d^2-e^2)^(3/2)/e*d*f*arctan(1/2*(2*(I*c*x+(-c^2*x^2+1)^(
1/2))*e+2*I*d*c)/(c^2*d^2-e^2)^(1/2))-3*c^3*b/(c^2*d^2-e^2)^(3/2)/e^3*d^3*h
*arctan(1/2*(2*(I*c*x+(-c^2*x^2+1)^(1/2))*e+2*I*d*c)/(c^2*d^2-e^2)^(1/2))+c
^3*b/(c^2*d^2-e^2)^(3/2)/e^2*d^2*g*arctan(1/2*(2*(I*c*x+(-c^2*x^2+1)^(1/2))
*e+2*I*d*c)/(c^2*d^2-e^2)^(1/2))+4*c*b/(c^2*d^2-e^2)^(3/2)/e*d*h*arctan(1/2
*(2*(I*c*x+(-c^2*x^2+1)^(1/2))*e+2*I*d*c)/(c^2*d^2-e^2)^(1/2))-2*c*b/(c^2*d
^2-e^2)^(3/2)*g*arctan(1/2*(2*(I*c*x+(-c^2*x^2+1)^(1/2))*e+2*I*d*c)/(c^2*d^
2-e^2)^(1/2))-3/2*c^2*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e*arcsin(c*x)*d^2*h-I*c
^2*b/(c^2*d^2-e^2)/e^3*d^2*h*arcsin(c*x)^2-1/2*I*c^4*b/(c^2*d^2-e^2)/(c*e*x
+c*d)^2/e^3*d^4*h+1/2*I*c^4*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^2*d^3*g-1/2*I*c
^4*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e*d^2*f+2*I*c^2*b/(c^2*d^2-e^2)^2/e*h*dilo
g((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^
2+e^2)^(1/2)))*d^2+2*I*c^2*b/(c^2*d^2-e^2)^2/e*h*dilog((I*d*c+(I*c*x+(-c^2*
x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*d^2-I*c
^4*b/(c^2*d^2-e^2)^2/e^3*d^4*h*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-
c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-I*c^4*b/(c^2*d^2-e^2)^2/e
^3*d^4*h*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I
*d*c+(-c^2*d^2+e^2)^(1/2)))+1/2*I*c^4*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2*x^2*d*g
-I*c^4*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2*x*d*f-1/2*I*c^4*b/(c^2*d^2-e^2)/(c*e*x
+c*d)^2*e*x^2*f+c^4*b/(c^2*d^2-e^2)^2/e^3*d^4*h*arcsin(c*x)*ln((I*d*c+(I*c*
x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))
+c^4*b/(c^2*d^2-e^2)^2/e^3*d^4*h*arcsin(c*x)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^
(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-2*c^2*b/(c^2*d
^2-e^2)^2/e*h*arcsin(c*x)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+
e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*d^2-2*c^2*b/(c^2*d^2-e^2)^2/e*h*a
rcsin(c*x)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*
d*c+(-c^2*d^2+e^2)^(1/2)))*d^2+3/2*c^4*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^3*ar
csin(c*x)*d^4*h-1/2*c^4*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^2*arcsin(c*x)*d^3*g
-1/2*c^4*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e*arcsin(c*x)*d^2*f+1/2*c^3*b/(c^2*d
^2-e^2)/(c*e*x+c*d)^2*e*(-c^2*x^2+1)^(1/2)*x*f+c^2*b/(c^2*d^2-e^2)/(c*e*x+c
*d)^2*e*arcsin(c*x)*x*g-1/2*c^3*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2*(-c^2*x^2+1)^
(1/2)*x*d*g-2*c^2*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2*arcsin(c*x)*x*d*h+1/2*c^3*b
/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^2*(-c^2*x^2+1)^(1/2)*d^3*h-1/2*c^3*b/(c^2*d^
2-e^2)/(c*e*x+c*d)^2/e*(-c^2*x^2+1)^(1/2)*d^2*g+2*c*a/e^3/(c*e*x+c*d)*d*h-1
```

```
/2*c^2*a/e^3/(c*e*x+c*d)^2*d^2*h+b/(c^2*d^2-e^2)^2*e*h*arcsin(c*x)*ln((I*d*
c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^
(1/2)))+b/(c^2*d^2-e^2)^2*e*h*arcsin(c*x)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/
2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+I*b/(c^2*d^2-e^2)
/e*h*arcsin(c*x)^2-I*b/(c^2*d^2-e^2)^2*e*h*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)
^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-I*b/(c^2*d^2-
e^2)^2*e*h*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/
(I*d*c+(-c^2*d^2+e^2)^(1/2)))+a*h/e^3*ln(c*e*x+c*d)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{ahx^2 + agx + af + \left(bhx^2 + bgx + bf\right)\arcsin\left(cx\right)}{e^3x^3 + 3\,de^2x^2 + 3\,d^2ex + d^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] integral((a*h*x^2 + a*g*x + a*f + (b*h*x^2 + b*g*x + b*f)*arcsin(c*x))/(e^3
*x^3 + 3*d*e^2*x^2 + 3*d^2*e*x + d^3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a + b\,\mathrm{asin}\left(cx\right)\right)\left(f + gx + hx^2\right)}{\left(d + ex\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x**2+g*x+f)*(a+b*asin(c*x))/(e*x+d)**3,x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x + h*x**2)/(d + e*x)**3, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(hx^2 + gx + f)(b \arcsin(cx) + a)}{(ex + d)^3} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] integrate((h*x^2 + g*x + f)*(b*arcsin(c*x) + a)/(e*x + d)^3, x)
```

3.103 $\int \frac{(f+gx+hx^2)(a+b\sin^{-1}(cx))}{(d+ex)^4} dx$

Optimal. Leaf size=349

$$-\frac{(a+b\sin^{-1}(cx))(d^2h-deg+e^2f)}{3e^3(d+ex)^3}-\frac{(eg-2dh)(a+b\sin^{-1}(cx))}{2e^3(d+ex)^2}-\frac{h(a+b\sin^{-1}(cx))}{e^3(d+ex)}+\frac{bc\sqrt{1-c^2x^2}(d^2h-deg+e^2}{6e^2(c^2d^2-e^2)(d+ex)^2}$$

```
[Out] (b*c*(e^2*f - d*e*g + d^2*h)*Sqrt[1 - c^2*x^2])/(6*e^2*(c^2*d^2 - e^2)*(d +
 e*x)^2) - (b*c*(e^2*(e*g - 2*d*h) - c^2*(d*e^2*f - d^3*h))*Sqrt[1 - c^2*x^
2])/(2*e^2*(c^2*d^2 - e^2)^2*(d + e*x)) - ((e^2*f - d*e*g + d^2*h)*(a + b*A
rcSin[c*x]))/(3*e^3*(d + e*x)^3) - ((e*g - 2*d*h)*(a + b*ArcSin[c*x]))/(2*e
^3*(d + e*x)^2) - (h*(a + b*ArcSin[c*x]))/(e^3*(d + e*x)) + (b*c*(6*e^4*h +
 c^2*e^2*(e^2*f - 4*d*e*g - 5*d^2*h) + c^4*d^2*(2*e^2*f + d*e*g + 2*d^2*h))
*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(6*e^3*(c^2
*d^2 - e^2)^(5/2))
```

Rubi [A] time = 0.617012, antiderivative size = 349, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.269, Rules used = {698, 4753, 12, 1651, 807, 725, 204}

$$-\frac{(a+b\sin^{-1}(cx))(d^2h-deg+e^2f)}{3e^3(d+ex)^3}-\frac{(eg-2dh)(a+b\sin^{-1}(cx))}{2e^3(d+ex)^2}-\frac{h(a+b\sin^{-1}(cx))}{e^3(d+ex)}+\frac{bc\sqrt{1-c^2x^2}(d^2h-deg+e^2}{6e^2(c^2d^2-e^2)(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x + h*x^2)*(a + b*ArcSin[c*x]))/(d + e*x)^4,x]
```


```
[Out] (b*c*(e^2*f - d*e*g + d^2*h)*Sqrt[1 - c^2*x^2])/(6*e^2*(c^2*d^2 - e^2)*(d +
 e*x)^2) - (b*c*(e^2*(e*g - 2*d*h) - c^2*(d*e^2*f - d^3*h))*Sqrt[1 - c^2*x^
2])/(2*e^2*(c^2*d^2 - e^2)^2*(d + e*x)) - ((e^2*f - d*e*g + d^2*h)*(a + b*A
rcSin[c*x]))/(3*e^3*(d + e*x)^3) - ((e*g - 2*d*h)*(a + b*ArcSin[c*x]))/(2*e
^3*(d + e*x)^2) - (h*(a + b*ArcSin[c*x]))/(e^3*(d + e*x)) + (b*c*(6*e^4*h +
 c^2*e^2*(e^2*f - 4*d*e*g - 5*d^2*h) + c^4*d^2*(2*e^2*f + d*e*g + 2*d^2*h))
*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(6*e^3*(c^2
*d^2 - e^2)^(5/2))
```


Rule 698

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 4753

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1651

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :>
 With[{Q = PolynomialQuotient[Pq, d + e*x, x], R = PolynomialRemainder[Pq,
d + e*x, x]}, Simp[(e*R*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*
d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)
*(a + c*x^2)^p*ExpandToSum[(m + 1)*(c*d^2 + a*e^2)*Q + c*d*R*(m + 1) - c*e*
R*(m + 2*p + 3)*x, x], x], x]] /; FreeQ[{a, c, d, e, p}, x] && PolyQ[Pq, x]
 && NeQ[c*d^2 + a*e^2, 0] && LtQ[m, -1]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

Rubi steps

$$\int \frac{\left(f+gx+hx^2\right)\left(a+b\sin^{-1}(cx)\right)}{(d+ex)^4}\,dx = -\frac{\left(e^2f-deg+d^2h\right)\left(a+b\sin^{-1}(cx)\right)}{3e^3(d+ex)^3} - \frac{(eg-2dh)\left(a+b\sin^{-1}(cx)\right)}{2e^3(d+ex)^2} - \frac{h\left(a+b\right.}{e^3(}$$

$$= -\frac{\left(e^2f-deg+d^2h\right)\left(a+b\sin^{-1}(cx)\right)}{3e^3(d+ex)^3} - \frac{(eg-2dh)\left(a+b\sin^{-1}(cx)\right)}{2e^3(d+ex)^2} - \frac{h\left(a+b\right.}{e^3(}$$

$$= \frac{bc\left(e^2f-deg+d^2h\right)\sqrt{1-c^2x^2}}{6e^2\left(c^2d^2-e^2\right)(d+ex)^2} - \frac{\left(e^2f-deg+d^2h\right)\left(a+b\sin^{-1}(cx)\right)}{3e^3(d+ex)^3} - \frac{(eg-}{}$$

$$= \frac{bc\left(e^2f-deg+d^2h\right)\sqrt{1-c^2x^2}}{6e^2\left(c^2d^2-e^2\right)(d+ex)^2} - \frac{bc\left(e^2(eg-2dh)-c^2\left(de^2f-d^3h\right)\right)\sqrt{1-c^2x}}{2e^2\left(c^2d^2-e^2\right)^2(d+ex)}$$

$$= \frac{bc\left(e^2f-deg+d^2h\right)\sqrt{1-c^2x^2}}{6e^2\left(c^2d^2-e^2\right)(d+ex)^2} - \frac{bc\left(e^2(eg-2dh)-c^2\left(de^2f-d^3h\right)\right)\sqrt{1-c^2x}}{2e^2\left(c^2d^2-e^2\right)^2(d+ex)}$$

$$= \frac{bc\left(e^2f-deg+d^2h\right)\sqrt{1-c^2x^2}}{6e^2\left(c^2d^2-e^2\right)(d+ex)^2} - \frac{bc\left(e^2(eg-2dh)-c^2\left(de^2f-d^3h\right)\right)\sqrt{1-c^2x}}{2e^2\left(c^2d^2-e^2\right)^2(d+ex)}$$

Mathematica [A] time = 1.82451, size = 442, normalized size = 1.27

$$-\frac{\frac{2a\left(d^2h-deg+e^2f\right)}{(d+ex)^3}+\frac{3a(eg-2dh)}{(d+ex)^2}+\frac{6ah}{d+ex}+\frac{bce\sqrt{1-c^2x^2}\left(c^2d\left(d^2e(g+3hx)+2d^3h-4de^2f-3e^3fx\right)+e^2\left(-5d^2h+2de(g-3hx)+e^2(f+3gx)\right)\right)}{\left(e^2-c^2d^2\right)^2(d+ex)^2}+\frac{bc\log\left(\sqrt{1-c^2x^2}\right.}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x + h*x^2)*(a + b*ArcSin[c*x]))/(d + e*x)^4,x]
```

```
[Out] -((2*a*(e^2*f - d*e*g + d^2*h))/(d + e*x)^3 + (3*a*(e*g - 2*d*h))/(d + e*x)
^2 + (6*a*h)/(d + e*x) + (b*c*e*Sqrt[1 - c^2*x^2]*(e^2*(-5*d^2*h + e^2*(f +
 3*g*x) + 2*d*e*(g - 3*h*x)) + c^2*d*(-4*d*e^2*f + 2*d^3*h - 3*e^3*f*x + d^
2*e*(g + 3*h*x))))/((-(c^2*d^2) + e^2)^2*(d + e*x)^2) + (b*(2*d^2*h + d*e*(
g + 6*h*x) + e^2*(2*f + 3*x*(g + 2*h*x)))*ArcSin[c*x])/(d + e*x)^3 - (b*c*(
```

```
6*e^4*h + c^2*e^2*(e^2*f - 4*d*e*g - 5*d^2*h) + c^4*d^2*(2*e^2*f + d*e*g +
2*d^2*h))*Log[d + e*x])/((-(c*d) + e)^2*(c*d + e)^2*Sqrt[-(c^2*d^2) + e^2])
 + (b*c*(6*e^4*h + c^2*e^2*(e^2*f - 4*d*e*g - 5*d^2*h) + c^4*d^2*(2*e^2*f +
 d*e*g + 2*d^2*h))*Log[e + c^2*d*x + Sqrt[-(c^2*d^2) + e^2]*Sqrt[1 - c^2*x^
2]])/((-(c*d) + e)^2*(c*d + e)^2*Sqrt[-(c^2*d^2) + e^2]))/(6*e^3)
```

Maple [B] time = 0.015, size = 2173, normalized size = 6.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^4,x)
```

```
[Out] -1/6*c^3*b/e^3/(c^2*d^2-e^2)/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c
/e)-(c^2*d^2-e^2)/e^2)^(1/2)*d*g-1/2*c^4*b/e^2*d^2/(c^2*d^2-e^2)^2/(c*x+d*c
/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*g+1/2*c^4*
b/e*d/(c^2*d^2-e^2)^2/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*
d^2-e^2)/e^2)^(1/2)*f-c*b*arcsin(c*x)*h/e^3/(c*e*x+c*d)-c*b/e^4*h/(-(c^2*d^
2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2
-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/
2))/(c*x+d*c/e))+c^2*a/e^3/(c*e*x+c*d)^2*d*h-1/3*c^3*a/e^3/(c*e*x+c*d)^3*d^
2*h+1/3*c^3*a/e^2/(c*e*x+c*d)^3*d*g-1/2*c^2*b*arcsin(c*x)*g/e^2/(c*e*x+c*d)
^2-1/3*c^3*b*arcsin(c*x)/e/(c*e*x+c*d)^3*f-c*a*h/e^3/(c*e*x+c*d)-2/3*c^3*b/
e^3/(c^2*d^2-e^2)/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c
/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*
c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*d*g+7/6*c^3*b/e^4/(c^2*d^2-e^2)
/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*
(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2
)/e^2)^(1/2))/(c*x+d*c/e))*d^2*h-1/2*c^5*b/e^4*d^4/(c^2*d^2-e^2)^2/(-(c^2*d
^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^
2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1
/2))/(c*x+d*c/e))*h-c^2*b/e^3/(c^2*d^2-e^2)/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d
*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*d*h+1/3*c^3*b*arcsin(c*x)/e^2/(c*
e*x+c*d)^3*d*g+1/6*c^3*b/e^2/(c^2*d^2-e^2)/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*
d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f+1/6*c^3*b/e^2/(c^2*d^2-e^2)/(-
(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(
c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e
^2)^(1/2))/(c*x+d*c/e))*f+1/2*c^2*b/e^2*g/(c^2*d^2-e^2)/(c*x+d*c/e)*(-(c*x+
d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)+1/2*c^5*b/e^3*d^3/(c^
2*d^2-e^2)^2/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c
*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-
```

```
(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*g-1/2*c^5*b/e^2*d^2/(c^2*d^2-e^2)^2/
(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(
-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)
/e^2)^(1/2))/(c*x+d*c/e))*f+1/6*c^3*b/e^4/(c^2*d^2-e^2)/(c*x+d*c/e)^2*(-(c*
x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*d^2*h+1/2*c^4*b/e^3
*d^3/(c^2*d^2-e^2)^2/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d
^2-e^2)/e^2)^(1/2)*h-1/2*c^2*a*g/e^2/(c*e*x+c*d)^2-1/3*c^3*a/e/(c*e*x+c*d)^
3*f-1/3*c^3*b*arcsin(c*x)/e^3/(c*e*x+c*d)^3*d^2*h+c^2*b*arcsin(c*x)/e^3/(c*
e*x+c*d)^2*d*h
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{(3\,ex+d)ag}{6\left(e^5x^3+3\,de^4x^2+3\,d^2e^3x+d^3e^2\right)}-\frac{\left(3\,e^2x^2+3\,dex+d^2\right)ah}{3\left(e^6x^3+3\,de^5x^2+3\,d^2e^4x+d^3e^3\right)}-\frac{af}{3\left(e^4x^3+3\,de^3x^2+3\,d^2e^2x+d^3e\right)}-\frac{\left(6\,be\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] -1/6*(3*e*x + d)*a*g/(e^5*x^3 + 3*d*e^4*x^2 + 3*d^2*e^3*x + d^3*e^2) - 1/3*
(3*e^2*x^2 + 3*d*e*x + d^2)*a*h/(e^6*x^3 + 3*d*e^5*x^2 + 3*d^2*e^4*x + d^3*
e^3) - 1/3*a*f/(e^4*x^3 + 3*d*e^3*x^2 + 3*d^2*e^2*x + d^3*e) - 1/6*((6*b*e^
2*h*x^2 + 2*b*e^2*f + b*d*e*g + 2*b*d^2*h + 3*(b*e^2*g + 2*b*d*e*h)*x)*arct
an2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + 6*(e^6*x^3 + 3*d*e^5*x^2 + 3*d^2*e
^4*x + d^3*e^3)*integrate(1/6*(6*b*c*e^2*h*x^2 + 2*b*c*e^2*f + b*c*d*e*g +
2*b*c*d^2*h + 3*(b*c*e^2*g + 2*b*c*d*e*h)*x)*e^(1/2*log(c*x + 1) + 1/2*log(
-c*x + 1))/(c^4*e^6*x^7 + 3*c^4*d*e^5*x^6 - 3*c^2*d^2*e^4*x^3 - c^2*d^3*e^3
*x^2 + (3*c^4*d^2*e^4 - c^2*e^6)*x^5 + (c^4*d^3*e^3 - 3*c^2*d*e^5)*x^4 + (c
^2*e^6*x^5 + 3*c^2*d*e^5*x^4 - 3*d^2*e^4*x - d^3*e^3 + (3*c^2*d^2*e^4 - e^6
)*x^3 + (c^2*d^3*e^3 - 3*d*e^5)*x^2)*e^(log(c*x + 1) + log(-c*x + 1))), x))
/(e^6*x^3 + 3*d*e^5*x^2 + 3*d^2*e^4*x + d^3*e^3)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + b\,\mathrm{asin}\,(cx))\left(f + gx + hx^2\right)}{(d + ex)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x**2+g*x+f)*(a+b*asin(c*x))/(e*x+d)**4,x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x + h*x**2)/(d + e*x)**4, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(hx^2 + gx + f\right)(b\arcsin\,(cx) + a)}{(ex + d)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] integrate((h*x^2 + g*x + f)*(b*arcsin(c*x) + a)/(e*x + d)^4, x)
```

3.104 $\int \frac{(f+gx+hx^2)(a+b\sin^{-1}(cx))}{(d+ex)^5}\,dx$

Optimal. Leaf size=470

$$-\frac{\left(a+b\sin^{-1}(cx)\right)\left(d^2h-deg+e^2f\right)}{4e^3(d+ex)^4}-\frac{(eg-2dh)\left(a+b\sin^{-1}(cx)\right)}{3e^3(d+ex)^3}-\frac{h\left(a+b\sin^{-1}(cx)\right)}{2e^3(d+ex)^2}+\frac{bc\sqrt{1-c^2x^2}\left(c^4d^2\left(d^2(-h)\right.\right.}{2}$$

```
[Out] (b*c*(e^2*f - d*e*g + d^2*h)*Sqrt[1 - c^2*x^2])/(12*e^2*(c^2*d^2 - e^2)*(d
+ e*x)^3) - (b*c*(4*e^2*(e*g - 2*d*h) - c^2*d*(5*e^2*f - d*e*g - 3*d^2*h))*
Sqrt[1 - c^2*x^2])/(24*e^2*(c^2*d^2 - e^2)^2*(d + e*x)^2) + (b*c*(12*e^4*h
+ c^4*d^2*(11*e^2*f + d*e*g - d^2*h) + 4*c^2*e^2*(e^2*f - 4*d*e*g + d^2*h))
*Sqrt[1 - c^2*x^2])/(24*e^2*(c^2*d^2 - e^2)^3*(d + e*x)) - ((e^2*f - d*e*g
+ d^2*h)*(a + b*ArcSin[c*x]))/(4*e^3*(d + e*x)^4) - ((e*g - 2*d*h)*(a + b*A
rcSin[c*x]))/(3*e^3*(d + e*x)^3) - (h*(a + b*ArcSin[c*x]))/(2*e^3*(d + e*x)
^2) - (b*c^3*(4*e^4*(e*g - 5*d*h) - c^2*d*e^2*(9*e^2*f - 13*d*e*g - 7*d^2*h
) - 2*c^4*d^3*(3*e^2*f + d*e*g + d^2*h))*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2
 - e^2]*Sqrt[1 - c^2*x^2])])/(24*e^3*(c^2*d^2 - e^2)^(7/2))
```

Rubi [A] time = 0.943502, antiderivative size = 470, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {698, 4753, 12, 1651, 835, 807, 725, 204}

$$-\frac{\left(a+b\sin^{-1}(cx)\right)\left(d^2h-deg+e^2f\right)}{4e^3(d+ex)^4}-\frac{(eg-2dh)\left(a+b\sin^{-1}(cx)\right)}{3e^3(d+ex)^3}-\frac{h\left(a+b\sin^{-1}(cx)\right)}{2e^3(d+ex)^2}+\frac{bc\sqrt{1-c^2x^2}\left(c^4d^2\left(d^2(-h)\right.\right.}{2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x + h*x^2)*(a + b*ArcSin[c*x]))/(d + e*x)^5,x]
```


```
[Out] (b*c*(e^2*f - d*e*g + d^2*h)*Sqrt[1 - c^2*x^2])/(12*e^2*(c^2*d^2 - e^2)*(d
+ e*x)^3) - (b*c*(4*e^2*(e*g - 2*d*h) - c^2*d*(5*e^2*f - d*e*g - 3*d^2*h))*
Sqrt[1 - c^2*x^2])/(24*e^2*(c^2*d^2 - e^2)^2*(d + e*x)^2) + (b*c*(12*e^4*h
+ c^4*d^2*(11*e^2*f + d*e*g - d^2*h) + 4*c^2*e^2*(e^2*f - 4*d*e*g + d^2*h))
*Sqrt[1 - c^2*x^2])/(24*e^2*(c^2*d^2 - e^2)^3*(d + e*x)) - ((e^2*f - d*e*g
+ d^2*h)*(a + b*ArcSin[c*x]))/(4*e^3*(d + e*x)^4) - ((e*g - 2*d*h)*(a + b*A
rcSin[c*x]))/(3*e^3*(d + e*x)^3) - (h*(a + b*ArcSin[c*x]))/(2*e^3*(d + e*x)
^2) - (b*c^3*(4*e^4*(e*g - 5*d*h) - c^2*d*e^2*(9*e^2*f - 13*d*e*g - 7*d^2*h
) - 2*c^4*d^3*(3*e^2*f + d*e*g + d^2*h))*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2
```

```
 - e^2]*Sqrt[1 - c^2*x^2])])/(24*e^3*(c^2*d^2 - e^2)^(7/2))
```

Rule 698

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 4753

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1651

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :>
 With[{Q = PolynomialQuotient[Pq, d + e*x, x], R = PolynomialRemainder[Pq,
d + e*x, x]}, Simp[(e*R*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*
d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)
*(a + c*x^2)^p*ExpandToSum[(m + 1)*(c*d^2 + a*e^2)*Q + c*d*R*(m + 1) - c*e*
R*(m + 2*p + 3)*x, x], x], x]] /; FreeQ[{a, c, d, e, p}, x] && PolyQ[Pq, x]
 && NeQ[c*d^2 + a*e^2, 0] && LtQ[m, -1]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

Rubi steps

$$\int \frac{(f+gx+hx^2)(a+b\sin^{-1}(cx))}{(d+ex)^5}\,dx = -\frac{(e^2f-deg+d^2h)(a+b\sin^{-1}(cx))}{4e^3(d+ex)^4} - \frac{(eg-2dh)(a+b\sin^{-1}(cx))}{3e^3(d+ex)^3} - \frac{h(a+b\,\mathrm{s}}{2e^3(d}$$

$$= -\frac{(e^2f-deg+d^2h)(a+b\sin^{-1}(cx))}{4e^3(d+ex)^4} - \frac{(eg-2dh)(a+b\sin^{-1}(cx))}{3e^3(d+ex)^3} - \frac{h(a+b\,\mathrm{s}}{2e^3(d}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{12e^2(c^2d^2-e^2)(d+ex)^3} - \frac{(e^2f-deg+d^2h)(a+b\sin^{-1}(cx))}{4e^3(d+ex)^4} - \frac{(eg-2}{}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{12e^2(c^2d^2-e^2)(d+ex)^3} - \frac{bc(4e^2(eg-2dh)-c^2d(5e^2f-deg-3d^2h))}{24e^2(c^2d^2-e^2)^2(d+ex)^2}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{12e^2(c^2d^2-e^2)(d+ex)^3} - \frac{bc(4e^2(eg-2dh)-c^2d(5e^2f-deg-3d^2h))}{24e^2(c^2d^2-e^2)^2(d+ex)^2}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{12e^2(c^2d^2-e^2)(d+ex)^3} - \frac{bc(4e^2(eg-2dh)-c^2d(5e^2f-deg-3d^2h))}{24e^2(c^2d^2-e^2)^2(d+ex)^2}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{12e^2(c^2d^2-e^2)(d+ex)^3} - \frac{bc(4e^2(eg-2dh)-c^2d(5e^2f-deg-3d^2h))}{24e^2(c^2d^2-e^2)^2(d+ex)^2}$$

Mathematica [A] time = 2.93473, size = 575, normalized size = 1.22

$$-\frac{\frac{6a(d^2h-deg+e^2f)}{(d+ex)^4} + \frac{8a(eg-2dh)}{(d+ex)^3} + \frac{12ah}{(d+ex)^2} + \frac{bce\sqrt{1-c^2x^2}(c^4d^2(d^2e^2(18f+x(g-hx))-d^3e(2g+5hx)-2d^4h+de^3x(27f+gx)+11e^4fx^2)+c^2e^2(d^2e^2(x(4hx-35g)-}{(e^2-c^2d^2)^3(d+}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x + h*x^2)*(a + b*ArcSin[c*x]))/(d + e*x)^5,x]
```

```
[Out] -((6*a*(e^2*f - d*e*g + d^2*h))/(d + e*x)^4 + (8*a*(e*g - 2*d*h))/(d + e*x)
^3 + (12*a*h)/(d + e*x)^2 + (b*c*e*Sqrt[1 - c^2*x^2]*(c^4*d^2*(-2*d^4*h + 1
1*e^4*f*x^2 + d*e^3*x*(27*f + g*x) - d^3*e*(2*g + 5*h*x) + d^2*e^2*(18*f +
x*(g - h*x))) + 2*e^4*(3*d^2*h + d*e*(g + 8*h*x) + e^2*(f + 2*x*(g + 3*h*x)
)) + c^2*e^2*(11*d^4*h + 4*e^4*f*x^2 + d*e^3*x*(3*f - 16*g*x) + d^3*e*(-15*
g + 19*h*x) + d^2*e^2*(-5*f + x*(-35*g + 4*h*x)))))/((-(c^2*d^2) + e^2)^3*(
d + e*x)^3) + (2*b*(d^2*h + d*e*(g + 4*h*x) + e^2*(3*f + 4*g*x + 6*h*x^2))*
```

```
ArcSin[c*x])/(d + e*x)^4 - (b*c^3*(-4*e^4*(e*g - 5*d*h) + c^2*d*e^2*(9*e^2*
f - 13*d*e*g - 7*d^2*h) + 2*c^4*d^3*(3*e^2*f + d*e*g + d^2*h))*Log[d + e*x]
)/((c*d - e)^3*(c*d + e)^3*Sqrt[-(c^2*d^2) + e^2]) + (b*c^3*(-4*e^4*(e*g -
5*d*h) + c^2*d*e^2*(9*e^2*f - 13*d*e*g - 7*d^2*h) + 2*c^4*d^3*(3*e^2*f + d*
e*g + d^2*h))*Log[e + c^2*d*x + Sqrt[-(c^2*d^2) + e^2]*Sqrt[1 - c^2*x^2]])/
((c*d - e)^3*(c*d + e)^3*Sqrt[-(c^2*d^2) + e^2]))/(24*e^3)
```

Maple [B] time = 0.013, size = 3005, normalized size = 6.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^5,x)
```

```
[Out] 2/3*c^4*b/e^2*g*d/(c^2*d^2-e^2)^2/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+
d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)-7/8*c^5*b/e^3*g*d^2/(c^2*d^2-e^2)^2/(-(c^2*
d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d
^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(
1/2))/(c*x+d*c/e))-1/12*c^4*b/e^4/(c^2*d^2-e^2)/(c*x+d*c/e)^3*(-(c*x+d*c/e)
^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*d*g-5/24*c^5*b/e^3*d^2/(c^2
*d^2-e^2)^2/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)
/e^2)^(1/2)*g-1/4*c^4*a/e^3/(c*e*x+c*d)^4*d^2*h+2/3*c^3*a/e^3/(c*e*x+c*d)^3
*d*h-1/2*c^2*b*arcsin(c*x)*h/e^3/(c*e*x+c*d)^2-1/2*c^2*a*h/e^3/(c*e*x+c*d)^
2-1/3*c^3*b/e^4/(c^2*d^2-e^2)/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*
c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*d*h+5/24*c^5*b/e^4*d^3/(c^2*d^2-e^2)^2/(c*x+d
*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*h+1/12
*c^4*b/e^5/(c^2*d^2-e^2)/(c*x+d*c/e)^3*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-
(c^2*d^2-e^2)/e^2)^(1/2)*d^2*h-5/8*c^7*b/e^4*d^5/(c^2*d^2-e^2)^3/(-(c^2*d^2
-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-
e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2
))/(c*x+d*c/e))*h+5/8*c^6*b/e^3*d^4/(c^2*d^2-e^2)^3/(c*x+d*c/e)*(-(c*x+d*c/
e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*h+11/8*c^5*b/e^4*d^3/(c^2
*d^2-e^2)^2/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*
x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(
c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*h+5/24*c^5*b/e^2*d/(c^2*d^2-e^2)^2/(c
*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f-
5/8*c^6*b/e^2*d^3/(c^2*d^2-e^2)^3/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+
d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*g+5/8*c^6*b/e*d^2/(c^2*d^2-e^2)^3/(c*x+d*c/
e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f+5/8*c^7*b
/e^3*d^4/(c^2*d^2-e^2)^3/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^
2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*
```

```
(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*g-5/6*c^3*b/e^4/(c^2*d^2
-e^2)/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/
e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^
2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*d*h-7/6*c^4*b/e^3*d^2/(c^2*d^2-e^2)^2/(c*x+
d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*h-5/8*c
^7*b/e^2*d^3/(c^2*d^2-e^2)^3/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2
)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*
c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*f+3/8*c^5*b/e^2*d/(c
^2*d^2-e^2)^2/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(
c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)
-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*f-1/4*c^4*b*arcsin(c*x)/e/(c*e*x+c*
d)^4*f-1/3*c^3*b*arcsin(c*x)*g/e^2/(c*e*x+c*d)^3+1/4*c^4*a/e^2/(c*e*x+c*d)^
4*d*g+1/2*c^2*b/e^3*h/(c^2*d^2-e^2)/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*
x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)-1/4*c^4*b*arcsin(c*x)/e^3/(c*e*x+c*d)^4*d
^2*h+2/3*c^3*b*arcsin(c*x)/e^3/(c*e*x+c*d)^3*d*h-1/3*c^3*a*g/e^2/(c*e*x+c*d
)^3-1/4*c^4*a/e/(c*e*x+c*d)^4*f+1/4*c^4*b*arcsin(c*x)/e^2/(c*e*x+c*d)^4*d*g
+1/6*c^3*b/e^3*g/(c^2*d^2-e^2)/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d
*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)+1/6*c^3*b/e^3*g/(c^2*d^2-e^2)/(-(c^2*d^2-e^2
)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)
/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(
c*x+d*c/e))+1/12*c^4*b/e^3/(c^2*d^2-e^2)/(c*x+d*c/e)^3*(-(c*x+d*c/e)^2+2*d*
c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f-1/6*c^4*b/e/(c^2*d^2-e^2)^2/(c*x
+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{(4\,ex+d)ag}{12\left(e^6x^4+4\,de^5x^3+6\,d^2e^4x^2+4\,d^3e^3x+d^4e^2\right)}-\frac{\left(6\,e^2x^2+4\,dex+d^2\right)ah}{12\left(e^7x^4+4\,de^6x^3+6\,d^2e^5x^2+4\,d^3e^4x+d^4e^3\right)}-\frac{}{4\left(e^5x^4+4\,de^4x^3+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(4*e*x + d)*a*g/(e^6*x^4 + 4*d*e^5*x^3 + 6*d^2*e^4*x^2 + 4*d^3*e^3*x
+ d^4*e^2) - 1/12*(6*e^2*x^2 + 4*d*e*x + d^2)*a*h/(e^7*x^4 + 4*d*e^6*x^3 +
6*d^2*e^5*x^2 + 4*d^3*e^4*x + d^4*e^3) - 1/4*a*f/(e^5*x^4 + 4*d*e^4*x^3 + 6
*d^2*e^3*x^2 + 4*d^3*e^2*x + d^4*e) - 1/12*((6*b*e^2*h*x^2 + 3*b*e^2*f + b*
d*e*g + b*d^2*h + 4*(b*e^2*g + b*d*e*h)*x)*arctan2(c*x, sqrt(c*x + 1)*sqrt(
-c*x + 1)) + 12*(e^7*x^4 + 4*d*e^6*x^3 + 6*d^2*e^5*x^2 + 4*d^3*e^4*x + d^4*
e^3)*integrate(1/12*(6*b*c*e^2*h*x^2 + 3*b*c*e^2*f + b*c*d*e*g + b*c*d^2*h
+ 4*(b*c*e^2*g + b*c*d*e*h)*x)*e^(1/2*log(c*x + 1) + 1/2*log(-c*x + 1))/(c^
```

```
4*e^7*x^8 + 4*c^4*d*e^6*x^7 - 4*c^2*d^3*e^4*x^3 - c^2*d^4*e^3*x^2 + (6*c^4*
d^2*e^5 - c^2*e^7)*x^6 + 4*(c^4*d^3*e^4 - c^2*d*e^6)*x^5 + (c^4*d^4*e^3 - 6
*c^2*d^2*e^5)*x^4 + (c^2*e^7*x^6 + 4*c^2*d*e^6*x^5 - 4*d^3*e^4*x - d^4*e^3
+ (6*c^2*d^2*e^5 - e^7)*x^4 + 4*(c^2*d^3*e^4 - d*e^6)*x^3 + (c^2*d^4*e^3 -
6*d^2*e^5)*x^2)*e^(log(c*x + 1) + log(-c*x + 1))), x))/(e^7*x^4 + 4*d*e^6*x
^3 + 6*d^2*e^5*x^2 + 4*d^3*e^4*x + d^4*e^3)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + b \operatorname{asin}(cx)) \left(f + gx + hx^2\right)}{(d + ex)^5}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x**2+g*x+f)*(a+b*asin(c*x))/(e*x+d)**5,x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x + h*x**2)/(d + e*x)**5, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(hx^2 + gx + f\right)(b \arcsin(cx) + a)}{(ex + d)^5}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] integrate((h*x^2 + g*x + f)*(b*arcsin(c*x) + a)/(e*x + d)^5, x)
```

3.105 $\int \frac{(f+gx+hx^2)(a+b\sin^{-1}(cx))}{(d+ex)^6}\,dx$

Optimal. Leaf size=593

$$-\frac{\left(a+b\sin^{-1}(cx)\right)\left(d^2h-deg+e^2f\right)}{5e^3(d+ex)^5}-\frac{(eg-2dh)\left(a+b\sin^{-1}(cx)\right)}{4e^3(d+ex)^4}-\frac{h\left(a+b\sin^{-1}(cx)\right)}{3e^3(d+ex)^3}+\frac{bc^3\sqrt{1-c^2x^2}\left(c^2de\left(d^2h-18\right.\right.}{24}$$

```
[Out] (b*c*(e^2*f - d*e*g + d^2*h)*Sqrt[1 - c^2*x^2])/(20*e^2*(c^2*d^2 - e^2)*(d
+ e*x)^4) - (b*c*(5*e^2*(e*g - 2*d*h) - c^2*d*(7*e^2*f - 2*d*e*g - 3*d^2*h)
)*Sqrt[1 - c^2*x^2])/(60*e^2*(c^2*d^2 - e^2)^2*(d + e*x)^3) + (b*c*(20*e^4*
h + c^4*d^2*(26*e^2*f - d*e*g - 4*d^2*h) + c^2*e^2*(9*e^2*f - 34*d*e*g + 19
*d^2*h))*Sqrt[1 - c^2*x^2])/(120*e^2*(c^2*d^2 - e^2)^3*(d + e*x)^2) + (b*c^
3*(c^4*d^3*(10*e*f + d*g) - 4*e^3*(e*g - 5*d*h) + c^2*d*e*(11*e^2*f - 18*d*
e*g + d^2*h))*Sqrt[1 - c^2*x^2])/(24*e*(c^2*d^2 - e^2)^4*(d + e*x)) - ((e^2
*f - d*e*g + d^2*h)*(a + b*ArcSin[c*x]))/(5*e^3*(d + e*x)^5) - ((e*g - 2*d*
h)*(a + b*ArcSin[c*x]))/(4*e^3*(d + e*x)^4) - (h*(a + b*ArcSin[c*x]))/(3*e^
3*(d + e*x)^3) + (b*c^3*(20*e^6*h + 3*c^4*d^2*e^2*(24*e^2*f - 19*d*e*g - 6*
d^2*h) + 2*c^6*d^4*(12*e^2*f + 3*d*e*g + 2*d^2*h) + 9*c^2*e^4*(e^2*f - 6*d*
e*g + 11*d^2*h))*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2
])])/(120*e^3*(c^2*d^2 - e^2)^(9/2))
```

Rubi [A] time = 1.25549, antiderivative size = 593, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {698, 4753, 12, 1651, 835, 807, 725, 204}

$$-\frac{\left(a+b\sin^{-1}(cx)\right)\left(d^2h-deg+e^2f\right)}{5e^3(d+ex)^5}-\frac{(eg-2dh)\left(a+b\sin^{-1}(cx)\right)}{4e^3(d+ex)^4}-\frac{h\left(a+b\sin^{-1}(cx)\right)}{3e^3(d+ex)^3}+\frac{bc^3\sqrt{1-c^2x^2}\left(c^2de\left(d^2h-18\right.\right.}{24}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x + h*x^2)*(a + b*ArcSin[c*x]))/(d + e*x)^6,x]
```


```
[Out] (b*c*(e^2*f - d*e*g + d^2*h)*Sqrt[1 - c^2*x^2])/(20*e^2*(c^2*d^2 - e^2)*(d
+ e*x)^4) - (b*c*(5*e^2*(e*g - 2*d*h) - c^2*d*(7*e^2*f - 2*d*e*g - 3*d^2*h)
)*Sqrt[1 - c^2*x^2])/(60*e^2*(c^2*d^2 - e^2)^2*(d + e*x)^3) + (b*c*(20*e^4*
h + c^4*d^2*(26*e^2*f - d*e*g - 4*d^2*h) + c^2*e^2*(9*e^2*f - 34*d*e*g + 19
*d^2*h))*Sqrt[1 - c^2*x^2])/(120*e^2*(c^2*d^2 - e^2)^3*(d + e*x)^2) + (b*c^
3*(c^4*d^3*(10*e*f + d*g) - 4*e^3*(e*g - 5*d*h) + c^2*d*e*(11*e^2*f - 18*d*
```

```
e*g + d^2*h))*Sqrt[1 - c^2*x^2])/(24*e*(c^2*d^2 - e^2)^4*(d + e*x)) - ((e^2
*f - d*e*g + d^2*h)*(a + b*ArcSin[c*x]))/(5*e^3*(d + e*x)^5) - ((e*g - 2*d*
h)*(a + b*ArcSin[c*x]))/(4*e^3*(d + e*x)^4) - (h*(a + b*ArcSin[c*x]))/(3*e^
3*(d + e*x)^3) + (b*c^3*(20*e^6*h + 3*c^4*d^2*e^2*(24*e^2*f - 19*d*e*g - 6*
d^2*h) + 2*c^6*d^4*(12*e^2*f + 3*d*e*g + 2*d^2*h) + 9*c^2*e^4*(e^2*f - 6*d*
e*g + 11*d^2*h))*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2
])])/(120*e^3*(c^2*d^2 - e^2)^(9/2))
```

Rule 698

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 4753

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1651

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :>
 With[{Q = PolynomialQuotient[Pq, d + e*x, x], R = PolynomialRemainder[Pq,
d + e*x, x]}, Simp[(e*R*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*
d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)
*(a + c*x^2)^p*ExpandToSum[(m + 1)*(c*d^2 + a*e^2)*Q + c*d*R*(m + 1) - c*e*
R*(m + 2*p + 3)*x, x], x], x]] /; FreeQ[{a, c, d, e, p}, x] && PolyQ[Pq, x]
 && NeQ[c*d^2 + a*e^2, 0] && LtQ[m, -1]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
```

```
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

Rubi steps

$$\int \frac{(f+gx+hx^2)(a+b\sin^{-1}(cx))}{(d+ex)^6}\,dx = -\frac{(e^2f-deg+d^2h)(a+b\sin^{-1}(cx))}{5e^3(d+ex)^5} - \frac{(eg-2dh)(a+b\sin^{-1}(cx))}{4e^3(d+ex)^4} - \frac{h(a+b}{3e^3(}$$

$$= -\frac{(e^2f-deg+d^2h)(a+b\sin^{-1}(cx))}{5e^3(d+ex)^5} - \frac{(eg-2dh)(a+b\sin^{-1}(cx))}{4e^3(d+ex)^4} - \frac{h(a+b}{3e^3(}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{20e^2(c^2d^2-e^2)(d+ex)^4} - \frac{(e^2f-deg+d^2h)(a+b\sin^{-1}(cx))}{5e^3(d+ex)^5} - \frac{(eg-}{}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{20e^2(c^2d^2-e^2)(d+ex)^4} - \frac{bc(5e^2(eg-2dh)-c^2d(7e^2f-2deg-3d^2h}{60e^2(c^2d^2-e^2)^2(d+ex)^3}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{20e^2(c^2d^2-e^2)(d+ex)^4} - \frac{bc(5e^2(eg-2dh)-c^2d(7e^2f-2deg-3d^2h}{60e^2(c^2d^2-e^2)^2(d+ex)^3}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{20e^2(c^2d^2-e^2)(d+ex)^4} - \frac{bc(5e^2(eg-2dh)-c^2d(7e^2f-2deg-3d^2h}{60e^2(c^2d^2-e^2)^2(d+ex)^3}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{20e^2(c^2d^2-e^2)(d+ex)^4} - \frac{bc(5e^2(eg-2dh)-c^2d(7e^2f-2deg-3d^2h}{60e^2(c^2d^2-e^2)^2(d+ex)^3}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{20e^2(c^2d^2-e^2)(d+ex)^4} - \frac{bc(5e^2(eg-2dh)-c^2d(7e^2f-2deg-3d^2h}{60e^2(c^2d^2-e^2)^2(d+ex)^3}$$

Mathematica [A] time = 2.66865, size = 682, normalized size = 1.15

$$-\frac{\frac{24a(d^2h-deg+e^2f)}{(d+ex)^5} + \frac{30a(eg-2dh)}{(d+ex)^4} + \frac{40ah}{(d+ex)^3} - \frac{bce\sqrt{1-c^2x^2}\left(5c^2e(d+ex)^3\left(c^2de\left(d^2h-18deg+11e^2f\right)+c^4d^3(dg+10ef)-4e^3(eg-5dh)\right)-\left(e^2-c^2d^2\right)(d+ex)^2\left(c^4\right.\right.}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x + h*x^2)*(a + b*ArcSin[c*x]))/(d + e*x)^6,x]
```

```
[Out] -((24*a*(e^2*f - d*e*g + d^2*h))/(d + e*x)^5 + (30*a*(e*g - 2*d*h))/(d + e*
x)^4 + (40*a*h)/(d + e*x)^3 - (b*c*e*Sqrt[1 - c^2*x^2]*(6*(c^2*d^2 - e^2)^3
*(e^2*f - d*e*g + d^2*h) - 2*(-(c^2*d^2) + e^2)^2*(5*e^2*(e*g - 2*d*h) + c^
2*d*(-7*e^2*f + 2*d*e*g + 3*d^2*h))*(d + e*x) - (-(c^2*d^2) + e^2)*(20*e^4*
```

```
h - c^4*d^2*(-26*e^2*f + d*e*g + 4*d^2*h) + c^2*e^2*(9*e^2*f - 34*d*e*g + 1
9*d^2*h))*(d + e*x)^2 + 5*c^2*e*(c^4*d^3*(10*e*f + d*g) - 4*e^3*(e*g - 5*d*
h) + c^2*d*e*(11*e^2*f - 18*d*e*g + d^2*h))*(d + e*x)^3))/((-(c^2*d^2) + e^
2)^4*(d + e*x)^4) + (2*b*(2*d^2*h + d*e*(3*g + 10*h*x) + e^2*(12*f + 5*x*(3
*g + 4*h*x)))*ArcSin[c*x])/(d + e*x)^5 - (b*c^3*(20*e^6*h + 2*c^6*d^4*(12*e
^2*f + 3*d*e*g + 2*d^2*h) - 3*c^4*d^2*e^2*(-24*e^2*f + 19*d*e*g + 6*d^2*h)
+ 9*c^2*e^4*(e^2*f - 6*d*e*g + 11*d^2*h))*Log[d + e*x])/((-(c*d) + e)^4*(c*
d + e)^4*Sqrt[-(c^2*d^2) + e^2]) + (b*c^3*(20*e^6*h + 2*c^6*d^4*(12*e^2*f +
 3*d*e*g + 2*d^2*h) - 3*c^4*d^2*e^2*(-24*e^2*f + 19*d*e*g + 6*d^2*h) + 9*c^
2*e^4*(e^2*f - 6*d*e*g + 11*d^2*h))*Log[e + c^2*d*x + Sqrt[-(c^2*d^2) + e^2
]*Sqrt[1 - c^2*x^2]])/((-(c*d) + e)^4*(c*d + e)^4*Sqrt[-(c^2*d^2) + e^2]))/
(120*e^3)
```

Maple [B] time = 0.014, size = 4077, normalized size = 6.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^6,x)
```

```
[Out] -1/4*c^4*b*arcsin(c*x)*g/e^2/(c*e*x+c*d)^4+1/5*c^5*a/e^2/(c*e*x+c*d)^5*d*g-
11/24*c^6*b/e*d/(c^2*d^2-e^2)^3/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*
c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f+7/24*c^7*b/e^4*d^4/(c^2*d^2-e^2)^3/(c*x+d*c
/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*h+5/6*c^
4*b/e^3*h*d/(c^2*d^2-e^2)^2/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)
-(c^2*d^2-e^2)/e^2)^(1/2)-59/120*c^5*b/e^4/(c^2*d^2-e^2)^2/(c*x+d*c/e)^2*(-
(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*d^2*h-1/6*c^4*b/
e^5/(c^2*d^2-e^2)/(c*x+d*c/e)^3*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^
2-e^2)/e^2)^(1/2)*d*h+1/20*c^5*b/e^6/(c^2*d^2-e^2)/(c*x+d*c/e)^4*(-(c*x+d*c
/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*d^2*h-41/24*c^6*b/e^3*d^
3/(c^2*d^2-e^2)^3/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-
e^2)/e^2)^(1/2)*h+7/8*c^8*b/e^3*d^5/(c^2*d^2-e^2)^4/(c*x+d*c/e)*(-(c*x+d*c/
e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*h+2*c^7*b/e^4*d^4/(c^2*d^
2-e^2)^3/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d
*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2
*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*h-53/40*c^5*b/e^4*h*d^2/(c^2*d^2-e^2)^2/
(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(
-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)
/e^2)^(1/2))/(c*x+d*c/e))-7/8*c^9*b/e^4*d^6/(c^2*d^2-e^2)^4/(-(c^2*d^2-e^2)
/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/
e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c
```

*x+d*c/e))*h+7/60*c^6*b/e^5*d^3/(c^2*d^2-e^2)^2/(c*x+d*c/e)^3*(-(c*x+d*c/e)
^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*h-1/3*c^3*a*h/e^3/(c*e*x+c*
d)^3-7/8*c^9*b/e^2*d^4/(c^2*d^2-e^2)^4/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c
^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c
/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*f+7/8*c^9*
b/e^3*d^5/(c^2*d^2-e^2)^4/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e
^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e
*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*g+9/20*c^5*b/e^3/(c^2*d
^2-e^2)^2/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+
d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^
2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*d*g+13/12*c^6*b/e^2*d^2/(c^2*d^2-e^2)^3
/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*g
-7/60*c^6*b/e^4*d^2/(c^2*d^2-e^2)^2/(c*x+d*c/e)^3*(-(c*x+d*c/e)^2+2*d*c/e*(
c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*g+7/60*c^6*b/e^3*d/(c^2*d^2-e^2)^2/(c*x
+d*c/e)^3*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f-7/
24*c^7*b/e^3*d^3/(c^2*d^2-e^2)^3/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x
+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*g+7/24*c^7*b/e^2*d^2/(c^2*d^2-e^2)^3/(c*x+
d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f+3/4
*c^7*b/e^2*d^2/(c^2*d^2-e^2)^3/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e
^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*
d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*f-11/8*c^7*b/e^3*d
^3/(c^2*d^2-e^2)^3/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*
c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d
*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*g+7/8*c^8*b/e*d^3/(c^2*d^2-e^2
)^4/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2
)*f-7/8*c^8*b/e^2*d^4/(c^2*d^2-e^2)^4/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(
c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*g-1/20*c^5*b/e^5/(c^2*d^2-e^2)/(c*x+d*c
/e)^4*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*d*g+17/6
0*c^5*b/e^3/(c^2*d^2-e^2)^2/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/
e)-(c^2*d^2-e^2)/e^2)^(1/2)*d*g-1/5*c^5*a/e/(c*e*x+c*d)^5*f-1/5*c^5*b*arcsi
n(c*x)/e/(c*e*x+c*d)^5*f+1/2*c^4*a/e^3/(c*e*x+c*d)^4*d*h-1/5*c^5*a/e^3/(c*e
*x+c*d)^5*d^2*h-1/3*c^3*b*arcsin(c*x)*h/e^3/(c*e*x+c*d)^3+1/6*c^3*b/e^4*h/(
c^2*d^2-e^2)/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c
*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-
(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))-1/5*c^5*b*arcsin(c*x)/e^3/(c*e*x+c*d
)^5*d^2*h+1/6*c^3*b/e^4*h/(c^2*d^2-e^2)/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c
/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)+1/2*c^4*b*arcsin(c*x)/e^3/(c*e*x+c*
d)^4*d*h-1/4*c^4*a*g/e^2/(c*e*x+c*d)^4-1/6*c^4*b/e^2*g/(c^2*d^2-e^2)^2/(c*x
+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)-3/40*c
^5*b/e^2/(c^2*d^2-e^2)^2/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^
2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*
(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*f+1/5*c^5*b*arcsin(c*x)/
e^2/(c*e*x+c*d)^5*d*g+1/20*c^5*b/e^4/(c^2*d^2-e^2)/(c*x+d*c/e)^4*(-(c*x+d*c
/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f-3/40*c^5*b/e^2/(c^2*d^
2-e^2)^2/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^

```
2)^(1/2)*f+1/12*c^4*b/e^4*g/(c^2*d^2-e^2)/(c*x+d*c/e)^3*(-(c*x+d*c/e)^2+2*d
*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] -1/20*(5*e*x + d)*a*g/(e^7*x^5 + 5*d*e^6*x^4 + 10*d^2*e^5*x^3 + 10*d^3*e^4*
x^2 + 5*d^4*e^3*x + d^5*e^2) - 1/30*(10*e^2*x^2 + 5*d*e*x + d^2)*a*h/(e^8*x
^5 + 5*d*e^7*x^4 + 10*d^2*e^6*x^3 + 10*d^3*e^5*x^2 + 5*d^4*e^4*x + d^5*e^3)
 - 1/5*a*f/(e^6*x^5 + 5*d*e^5*x^4 + 10*d^2*e^4*x^3 + 10*d^3*e^3*x^2 + 5*d^4
*e^2*x + d^5*e) - 1/60*((20*b*e^2*h*x^2 + 12*b*e^2*f + 3*b*d*e*g + 2*b*d^2*
h + 5*(3*b*e^2*g + 2*b*d*e*h)*x)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))
 + 60*(e^8*x^5 + 5*d*e^7*x^4 + 10*d^2*e^6*x^3 + 10*d^3*e^5*x^2 + 5*d^4*e^4*
x + d^5*e^3)*integrate(1/60*(20*b*c*e^2*h*x^2 + 12*b*c*e^2*f + 3*b*c*d*e*g
+ 2*b*c*d^2*h + 5*(3*b*c*e^2*g + 2*b*c*d*e*h)*x)*e^(1/2*log(c*x + 1) + 1/2*
log(-c*x + 1))/(c^4*e^8*x^9 + 5*c^4*d*e^7*x^8 - 5*c^2*d^4*e^4*x^3 - c^2*d^5
*e^3*x^2 + (10*c^4*d^2*e^6 - c^2*e^8)*x^7 + 5*(2*c^4*d^3*e^5 - c^2*d*e^7)*x
^6 + 5*(c^4*d^4*e^4 - 2*c^2*d^2*e^6)*x^5 + (c^4*d^5*e^3 - 10*c^2*d^3*e^5)*x
^4 + (c^2*e^8*x^7 + 5*c^2*d*e^7*x^6 - 5*d^4*e^4*x - d^5*e^3 + (10*c^2*d^2*e
^6 - e^8)*x^5 + 5*(2*c^2*d^3*e^5 - d*e^7)*x^4 + 5*(c^2*d^4*e^4 - 2*d^2*e^6)
*x^3 + (c^2*d^5*e^3 - 10*d^3*e^5)*x^2)*e^(log(c*x + 1) + log(-c*x + 1))), x
))/(e^8*x^5 + 5*d*e^7*x^4 + 10*d^2*e^6*x^3 + 10*d^3*e^5*x^2 + 5*d^4*e^4*x +
 d^5*e^3)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+b\,\mathrm{asin}\,(cx))\left(f+gx+hx^2\right)}{(d+ex)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x**2+g*x+f)*(a+b*asin(c*x))/(e*x+d)**6,x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x + h*x**2)/(d + e*x)**6, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(hx^2+gx+f\right)(b\arcsin\,(cx)+a)}{(ex+d)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] integrate((h*x^2 + g*x + f)*(b*arcsin(c*x) + a)/(e*x + d)^6, x)
```

3.106 $\int (d+ex)^3 \left(f+gx+hx^2+ix^3\right) \left(a+b\sin^{-1}(cx)\right) dx$

Optimal. Leaf size=684

$$\frac{1}{4}x^4\left(a+b\sin^{-1}(cx)\right)\left(3d^2eh+d^3i+3de^2g+e^3f\right)+\frac{1}{3}dx^3\left(a+b\sin^{-1}(cx)\right)\left(d^2h+3deg+3e^2f\right)+\frac{1}{5}ex^5\left(a+b\sin^{-1}(cx)\right)$$

```
[Out] (b*(1225*c^4*d*(3*e^2*f + 3*d*e*g + d^2*h) + 360*e^3*i + 588*c^2*e*(e^2*g +
 3*d*e*h + 3*d^2*i))*x^2*Sqrt[1 - c^2*x^2])/(11025*c^5) + (b*(5*e^2*(e*h +
3*d*i) + 9*c^2*(e^3*f + 3*d*e^2*g + 3*d^2*e*h + d^3*i))*x^3*Sqrt[1 - c^2*x^
2])/(144*c^3) + (b*e*(30*e^2*i + 49*c^2*(e^2*g + 3*d*e*h + 3*d^2*i))*x^4*Sq
rt[1 - c^2*x^2])/(1225*c^3) + (b*e^2*(e*h + 3*d*i)*x^5*Sqrt[1 - c^2*x^2])/(
36*c) + (b*e^3*i*x^6*Sqrt[1 - c^2*x^2])/(49*c) + (b*(32*(11025*c^6*d^3*f +
2450*c^4*d*(3*e^2*f + 3*d*e*g + d^2*h) + 720*e^3*i + 1176*c^2*e*(e^2*g + 3*
d*e*h + 3*d^2*i)) + 3675*c^2*(24*c^4*d^2*(3*e*f + d*g) + 5*e^2*(e*h + 3*d*i
) + 9*c^2*(e^3*f + 3*d*e^2*g + 3*d^2*e*h + d^3*i))*x)*Sqrt[1 - c^2*x^2])/(3
52800*c^7) - (b*(24*c^4*d^2*(3*e*f + d*g) + 5*e^2*(e*h + 3*d*i) + 9*c^2*(e^
3*f + 3*d*e^2*g + 3*d^2*e*h + d^3*i))*ArcSin[c*x])/(96*c^6) + d^3*f*x*(a +
b*ArcSin[c*x]) + (d^2*(3*e*f + d*g)*x^2*(a + b*ArcSin[c*x]))/2 + (d*(3*e^2*
f + 3*d*e*g + d^2*h)*x^3*(a + b*ArcSin[c*x]))/3 + ((e^3*f + 3*d*e^2*g + 3*d
^2*e*h + d^3*i)*x^4*(a + b*ArcSin[c*x]))/4 + (e*(e^2*g + 3*d*e*h + 3*d^2*i)
*x^5*(a + b*ArcSin[c*x]))/5 + (e^2*(e*h + 3*d*i)*x^6*(a + b*ArcSin[c*x]))/6
 + (e^3*i*x^7*(a + b*ArcSin[c*x]))/7
```

Rubi [A] time = 6.26409, antiderivative size = 684, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {4749, 12, 1809, 780, 216}

$$\frac{1}{4}x^4\left(a+b\sin^{-1}(cx)\right)\left(3d^2eh+d^3i+3de^2g+e^3f\right)+\frac{1}{3}dx^3\left(a+b\sin^{-1}(cx)\right)\left(d^2h+3deg+3e^2f\right)+\frac{1}{5}ex^5\left(a+b\sin^{-1}(cx)\right)$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^3*(f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]),x]
```


```
[Out] (b*(1225*c^4*d*(3*e^2*f + 3*d*e*g + d^2*h) + 360*e^3*i + 588*c^2*e*(e^2*g +
 3*d*e*h + 3*d^2*i))*x^2*Sqrt[1 - c^2*x^2])/(11025*c^5) + (b*(5*e^2*(e*h +
3*d*i) + 9*c^2*(e^3*f + 3*d*e^2*g + 3*d^2*e*h + d^3*i))*x^3*Sqrt[1 - c^2*x^
2])/(144*c^3) + (b*e*(30*e^2*i + 49*c^2*(e^2*g + 3*d*e*h + 3*d^2*i))*x^4*Sq
rt[1 - c^2*x^2])/(1225*c^3) + (b*e^2*(e*h + 3*d*i)*x^5*Sqrt[1 - c^2*x^2])/(
36*c) + (b*e^3*i*x^6*Sqrt[1 - c^2*x^2])/(49*c) + (b*(32*(11025*c^6*d^3*f +
```

```
2450*c^4*d*(3*e^2*f + 3*d*e*g + d^2*h) + 720*e^3*i + 1176*c^2*e*(e^2*g + 3*
d*e*h + 3*d^2*i)) + 3675*c^2*(24*c^4*d^2*(3*e*f + d*g) + 5*e^2*(e*h + 3*d*i
) + 9*c^2*(e^3*f + 3*d*e^2*g + 3*d^2*e*h + d^3*i))*x)*Sqrt[1 - c^2*x^2])/(3
52800*c^7) - (b*(24*c^4*d^2*(3*e*f + d*g) + 5*e^2*(e*h + 3*d*i) + 9*c^2*(e^
3*f + 3*d*e^2*g + 3*d^2*e*h + d^3*i))*ArcSin[c*x])/(96*c^6) + d^3*f*x*(a +
b*ArcSin[c*x]) + (d^2*(3*e*f + d*g)*x^2*(a + b*ArcSin[c*x]))/2 + (d*(3*e^2*
f + 3*d*e*g + d^2*h)*x^3*(a + b*ArcSin[c*x]))/3 + ((e^3*f + 3*d*e^2*g + 3*d
^2*e*h + d^3*i)*x^4*(a + b*ArcSin[c*x]))/4 + (e*(e^2*g + 3*d*e*h + 3*d^2*i)
*x^5*(a + b*ArcSin[c*x]))/5 + (e^2*(e*h + 3*d*i)*x^6*(a + b*ArcSin[c*x]))/6
 + (e^3*i*x^7*(a + b*ArcSin[c*x]))/7
```

Rule 4749

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_), x_Symbol] :> With[{u = IntHid
e[ExpandExpression[Px, x], x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, I
nt[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[{a, b, c}, x
] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1809

```
Int[(Pq_)*((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2)^(p_), x_Symbol] :> With[
{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[(f*(c*x)^(m + q -
1)*(a + b*x^2)^(p + 1))/(b*c^(q - 1)*(m + q + 2*p + 1)), x] + Dist[1/(b*(m
+ q + 2*p + 1)), Int[(c*x)^m*(a + b*x^2)^p*ExpandToSum[b*(m + q + 2*p + 1)*
Pq - b*f*(m + q + 2*p + 1)*x^q - a*f*(m + q - 1)*x^(q - 2), x], x], x] /; G
tQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, m, p}, x] && PolyQ[
Pq, x] && ( !IGtQ[m, 0] || IGtQ[p + 1/2, -1])
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 216

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

Rubi steps

$$\int (d+ex)^3\left(f+gx+hx^2+106x^3\right)\left(a+b\sin^{-1}(cx)\right)\,dx = d^3fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d^2(3ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)+$$

$$= d^3fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d^2(3ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)+$$

$$= \frac{106be^3x^6\sqrt{1-c^2x^2}}{49c}+d^3fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d^2(3ef+dg)$$

$$= \frac{be^2(318d+eh)x^5\sqrt{1-c^2x^2}}{36c}+\frac{106be^3x^6\sqrt{1-c^2x^2}}{49c}+d^3fx\left(a+\right.$$

$$= \frac{be\left(3180e^2+49c^2\left(318d^2+e^2g+3deh\right)\right)x^4\sqrt{1-c^2x^2}}{1225c^3}+\frac{be^2(3}{}$$

$$= \frac{b\left(5e^2(318d+eh)+9c^2\left(106d^3+e^3f+3de^2g+3d^2eh\right)\right)x^3\sqrt{1}}{144c^3}$$

$$= \frac{b\left(38160e^3+1225c^4d\left(3e^2f+3deg+d^2h\right)+588c^2e\left(318d^2+\right.\right.}{11025c^5}$$

$$= \frac{b\left(38160e^3+1225c^4d\left(3e^2f+3deg+d^2h\right)+588c^2e\left(318d^2+\right.\right.}{11025c^5}$$

$$= \frac{b\left(38160e^3+1225c^4d\left(3e^2f+3deg+d^2h\right)+588c^2e\left(318d^2+\right.\right.}{11025c^5}$$

Mathematica [A] time = 0.916419, size = 619, normalized size = 0.9

$$\frac{1}{4}ax^4\left(3d^2eh+d^3i+3de^2g+e^3f\right)+\frac{1}{3}adx^3\left(d^2h+3deg+3e^2f\right)+\frac{1}{5}aex^5\left(3d^2i+3deh+e^2g\right)+\frac{1}{2}ad^2x^2(dg+3ef)+ad^3f$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^3*(f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]),x]
```

```
[Out] a*d^3*f*x + (a*d^2*(3*e*f + d*g)*x^2)/2 + (a*d*(3*e^2*f + 3*d*e*g + d^2*h)*
x^3)/3 + (a*(e^3*f + 3*d*e^2*g + 3*d^2*e*h + d^3*i)*x^4)/4 + (a*e*(e^2*g +
3*d*e*h + 3*d^2*i)*x^5)/5 + (a*e^2*(e*h + 3*d*i)*x^6)/6 + (a*e^3*i*x^7)/7 +
 (b*Sqrt[1 - c^2*x^2]*(23040*e^3*i + 3*c^2*e*(37632*d^2*i + 147*d*e*(256*h
```

```
+ 125*i*x) + e^2*(12544*g + 5*x*(1225*h + 768*i*x))) + c^4*(1225*d^3*(64*h
+ 27*i*x) + 147*d^2*e*(1600*g + 675*h*x + 384*i*x^2) + 147*d*e^2*(1600*f +
x*(675*g + 384*h*x + 250*i*x^2)) + e^3*x*(33075*f + 2*x*(9408*g + 6125*h*x
+ 4320*i*x^2))) + 2*c^6*(1225*d^3*(144*f + x*(36*g + x*(16*h + 9*i*x))) + 1
47*d^2*e*x*(900*f + x*(400*g + 9*x*(25*h + 16*i*x))) + 147*d*e^2*x^2*(400*f
 + x*(225*g + 4*x*(36*h + 25*i*x))) + e^3*x^3*(11025*f + 4*x*(1764*g + 25*x
*(49*h + 36*i*x))))))/(352800*c^7) - (b*(24*c^4*d^2*(3*e*f + d*g) + 5*e^2*(
e*h + 3*d*i) + 9*c^2*(e^3*f + 3*d*e^2*g + 3*d^2*e*h + d^3*i))*ArcSin[c*x])/
(96*c^6) + (b*x*(35*d^3*(12*f + x*(6*g + x*(4*h + 3*i*x))) + 21*d^2*e*x*(30
*f + x*(20*g + 3*x*(5*h + 4*i*x))) + 21*d*e^2*x^2*(20*f + x*(15*g + 2*x*(6*
h + 5*i*x))) + e^3*x^3*(105*f + 2*x*(42*g + 5*x*(7*h + 6*i*x))))*ArcSin[c*x
])/420
```

Maple [A] time = 0.016, size = 932, normalized size = 1.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^3*(i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c*(a/c^6*(1/7*e^3*i*c^7*x^7+1/6*(3*c*d*e^2*i+c*e^3*h)*c^6*x^6+1/5*(3*c^2*
d^2*e*i+3*c^2*d*e^2*h+c^2*e^3*g)*c^5*x^5+1/4*(c^3*d^3*i+3*c^3*d^2*e*h+3*c^3
*d*e^2*g+c^3*e^3*f)*c^4*x^4+1/3*(c^4*d^3*h+3*c^4*d^2*e*g+3*c^4*d*e^2*f)*c^3
*x^3+1/2*(c^5*d^3*g+3*c^5*d^2*e*f)*c^2*x^2+c^7*d^3*f*x)+b/c^6*(1/7*arcsin(c
*x)*e^3*i*c^7*x^7+1/2*arcsin(c*x)*c^7*x^6*d*e^2*i+1/6*arcsin(c*x)*c^7*x^6*e
^3*h+3/5*arcsin(c*x)*c^7*x^5*d^2*e*i+3/5*arcsin(c*x)*c^7*x^5*d*e^2*h+1/5*ar
csin(c*x)*c^7*x^5*e^3*g+1/4*arcsin(c*x)*c^7*x^4*d^3*i+3/4*arcsin(c*x)*c^7*x
^4*d^2*e*h+3/4*arcsin(c*x)*c^7*x^4*d*e^2*g+1/4*arcsin(c*x)*c^7*x^4*e^3*f+1/
3*arcsin(c*x)*c^7*x^3*d^3*h+arcsin(c*x)*c^7*x^3*d^2*e*g+arcsin(c*x)*c^7*x^3
*d*e^2*f+1/2*arcsin(c*x)*c^7*x^2*d^3*g+3/2*arcsin(c*x)*c^7*x^2*d^2*e*f+arcs
in(c*x)*c^7*d^3*f*x-1/7*e^3*i*(-1/7*c^6*x^6*(-c^2*x^2+1)^(1/2)-6/35*c^4*x^4
*(-c^2*x^2+1)^(1/2)-8/35*c^2*x^2*(-c^2*x^2+1)^(1/2)-16/35*(-c^2*x^2+1)^(1/2
))-1/420*(210*c*d*e^2*i+70*c*e^3*h)*(-1/6*c^5*x^5*(-c^2*x^2+1)^(1/2)-5/24*c
^3*x^3*(-c^2*x^2+1)^(1/2)-5/16*c*x*(-c^2*x^2+1)^(1/2)+5/16*arcsin(c*x))-1/4
20*(252*c^2*d^2*e*i+252*c^2*d*e^2*h+84*c^2*e^3*g)*(-1/5*c^4*x^4*(-c^2*x^2+1
)^(1/2)-4/15*c^2*x^2*(-c^2*x^2+1)^(1/2)-8/15*(-c^2*x^2+1)^(1/2))-1/420*(105
*c^3*d^3*i+315*c^3*d^2*e*h+315*c^3*d*e^2*g+105*c^3*e^3*f)*(-1/4*c^3*x^3*(-c
^2*x^2+1)^(1/2)-3/8*c*x*(-c^2*x^2+1)^(1/2)+3/8*arcsin(c*x))-1/420*(140*c^4*
d^3*h+420*c^4*d^2*e*g+420*c^4*d*e^2*f)*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3
*(-c^2*x^2+1)^(1/2))-1/420*(210*c^5*d^3*g+630*c^5*d^2*e*f)*(-1/2*c*x*(-c^2*
x^2+1)^(1/2)+1/2*arcsin(c*x))+c^6*d^3*f*(-c^2*x^2+1)^(1/2)))
```

Maxima [B] time = 1.58133, size = 1791, normalized size = 2.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="max
ima")
```

```
[Out] 1/7*a*e^3*i*x^7 + 1/6*a*e^3*h*x^6 + 1/2*a*d*e^2*i*x^6 + 1/5*a*e^3*g*x^5 + 3
/5*a*d*e^2*h*x^5 + 3/5*a*d^2*e*i*x^5 + 1/4*a*e^3*f*x^4 + 3/4*a*d*e^2*g*x^4
+ 3/4*a*d^2*e*h*x^4 + 1/4*a*d^3*i*x^4 + a*d*e^2*f*x^3 + a*d^2*e*g*x^3 + 1/3
*a*d^3*h*x^3 + 3/2*a*d^2*e*f*x^2 + 1/2*a*d^3*g*x^2 + 3/4*(2*x^2*arcsin(c*x)
 + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^2)))*
b*d^2*e*f + 1/3*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt
(-c^2*x^2 + 1)/c^4))*b*d*e^2*f + 1/32*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2
 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c^2*x/sqrt(c^2))/(sqr
t(c^2)*c^4))*c)*b*e^3*f + 1/4*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/
c^2 - arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^2)))*b*d^3*g + 1/3*(3*x^3*arcsin
(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*d^2*e*
g + 3/32*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x
^2 + 1)*x/c^4 - 3*arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^4))*c)*b*d*e^2*g + 1
/75*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 +
 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*b*e^3*g + 1/9*(3*x^3*arcsin(c*x)
 + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*d^3*h + 3/3
2*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)
*x/c^4 - 3*arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^4))*c)*b*d^2*e*h + 1/25*(15
*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2
/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*b*d*e^2*h + 1/288*(48*x^6*arcsin(c*x) +
 (8*sqrt(-c^2*x^2 + 1)*x^5/c^2 + 10*sqrt(-c^2*x^2 + 1)*x^3/c^4 + 15*sqrt(-c
^2*x^2 + 1)*x/c^6 - 15*arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^6))*c)*b*e^3*h
+ 1/32*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2
 + 1)*x/c^4 - 3*arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^4))*c)*b*d^3*i + 1/25*
(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*
x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*b*d^2*e*i + 1/96*(48*x^6*arcsin(c*x)
 + (8*sqrt(-c^2*x^2 + 1)*x^5/c^2 + 10*sqrt(-c^2*x^2 + 1)*x^3/c^4 + 15*sqrt(
-c^2*x^2 + 1)*x/c^6 - 15*arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^6))*c)*b*d*e^
2*i + 1/245*(35*x^7*arcsin(c*x) + (5*sqrt(-c^2*x^2 + 1)*x^6/c^2 + 6*sqrt(-c
^2*x^2 + 1)*x^4/c^4 + 8*sqrt(-c^2*x^2 + 1)*x^2/c^6 + 16*sqrt(-c^2*x^2 + 1)/
c^8)*c)*b*e^3*i + a*d^3*f*x + (c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*b*d^3*
f/c
```

Fricas [A] time = 3.8586, size = 2137, normalized size = 3.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="fri
cas")
```

```
[Out] 1/352800*(50400*a*c^7*e^3*i*x^7 + 352800*a*c^7*d^3*f*x + 58800*(a*c^7*e^3*h
 + 3*a*c^7*d*e^2*i)*x^6 + 70560*(a*c^7*e^3*g + 3*a*c^7*d*e^2*h + 3*a*c^7*d^
2*e*i)*x^5 + 88200*(a*c^7*e^3*f + 3*a*c^7*d*e^2*g + 3*a*c^7*d^2*e*h + a*c^7
*d^3*i)*x^4 + 117600*(3*a*c^7*d*e^2*f + 3*a*c^7*d^2*e*g + a*c^7*d^3*h)*x^3
+ 176400*(3*a*c^7*d^2*e*f + a*c^7*d^3*g)*x^2 + 105*(480*b*c^7*e^3*i*x^7 + 3
360*b*c^7*d^3*f*x + 560*(b*c^7*e^3*h + 3*b*c^7*d*e^2*i)*x^6 + 672*(b*c^7*e^
3*g + 3*b*c^7*d*e^2*h + 3*b*c^7*d^2*e*i)*x^5 + 840*(b*c^7*e^3*f + 3*b*c^7*d
*e^2*g + 3*b*c^7*d^2*e*h + b*c^7*d^3*i)*x^4 + 1120*(3*b*c^7*d*e^2*f + 3*b*c
^7*d^2*e*g + b*c^7*d^3*h)*x^3 + 1680*(3*b*c^7*d^2*e*f + b*c^7*d^3*g)*x^2 -
315*(8*b*c^5*d^2*e + b*c^3*e^3)*f - 105*(8*b*c^5*d^3 + 9*b*c^3*d*e^2)*g - 3
5*(27*b*c^3*d^2*e + 5*b*c*e^3)*h - 105*(3*b*c^3*d^3 + 5*b*c*d*e^2)*i)*arcsi
n(c*x) + (7200*b*c^6*e^3*i*x^6 + 9800*(b*c^6*e^3*h + 3*b*c^6*d*e^2*i)*x^5 +
 288*(49*b*c^6*e^3*g + 147*b*c^6*d*e^2*h + 3*(49*b*c^6*d^2*e + 10*b*c^4*e^3
)*i)*x^4 + 2450*(9*b*c^6*e^3*f + 27*b*c^6*d*e^2*g + (27*b*c^6*d^2*e + 5*b*c
^4*e^3)*h + 3*(3*b*c^6*d^3 + 5*b*c^4*d*e^2)*i)*x^3 + 32*(3675*b*c^6*d*e^2*f
 + 147*(25*b*c^6*d^2*e + 4*b*c^4*e^3)*g + 49*(25*b*c^6*d^3 + 36*b*c^4*d*e^2
)*h + 36*(49*b*c^4*d^2*e + 10*b*c^2*e^3)*i)*x^2 + 117600*(3*b*c^6*d^3 + 2*b
*c^4*d*e^2)*f + 9408*(25*b*c^4*d^2*e + 4*b*c^2*e^3)*g + 3136*(25*b*c^4*d^3
+ 36*b*c^2*d*e^2)*h + 2304*(49*b*c^2*d^2*e + 10*b*e^3)*i + 3675*(9*(8*b*c^6
*d^2*e + b*c^4*e^3)*f + 3*(8*b*c^6*d^3 + 9*b*c^4*d*e^2)*g + (27*b*c^4*d^2*e
 + 5*b*c^2*e^3)*h + 3*(3*b*c^4*d^3 + 5*b*c^2*d*e^2)*i)*x)*sqrt(-c^2*x^2 + 1
))/c^7
```

Sympy [A] time = 19.1895, size = 1809, normalized size = 2.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**3*(i*x**3+h*x**2+g*x+f)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d**3*f*x + a*d**3*g*x**2/2 + a*d**3*h*x**3/3 + a*d**3*i*x**4/4
 + 3*a*d**2*e*f*x**2/2 + a*d**2*e*g*x**3 + 3*a*d**2*e*h*x**4/4 + 3*a*d**2*e
```

```
*i*x**5/5 + a*d*e**2*f*x**3 + 3*a*d*e**2*g*x**4/4 + 3*a*d*e**2*h*x**5/5 + a
*d*e**2*i*x**6/2 + a*e**3*f*x**4/4 + a*e**3*g*x**5/5 + a*e**3*h*x**6/6 + a*
e**3*i*x**7/7 + b*d**3*f*x*asin(c*x) + b*d**3*g*x**2*asin(c*x)/2 + b*d**3*h
*x**3*asin(c*x)/3 + b*d**3*i*x**4*asin(c*x)/4 + 3*b*d**2*e*f*x**2*asin(c*x)
/2 + b*d**2*e*g*x**3*asin(c*x) + 3*b*d**2*e*h*x**4*asin(c*x)/4 + 3*b*d**2*e
*i*x**5*asin(c*x)/5 + b*d*e**2*f*x**3*asin(c*x) + 3*b*d*e**2*g*x**4*asin(c*
x)/4 + 3*b*d*e**2*h*x**5*asin(c*x)/5 + b*d*e**2*i*x**6*asin(c*x)/2 + b*e**3
*f*x**4*asin(c*x)/4 + b*e**3*g*x**5*asin(c*x)/5 + b*e**3*h*x**6*asin(c*x)/6
 + b*e**3*i*x**7*asin(c*x)/7 + b*d**3*f*sqrt(-c**2*x**2 + 1)/c + b*d**3*g*x
*sqrt(-c**2*x**2 + 1)/(4*c) + b*d**3*h*x**2*sqrt(-c**2*x**2 + 1)/(9*c) + b*
d**3*i*x**3*sqrt(-c**2*x**2 + 1)/(16*c) + 3*b*d**2*e*f*x*sqrt(-c**2*x**2 +
1)/(4*c) + b*d**2*e*g*x**2*sqrt(-c**2*x**2 + 1)/(3*c) + 3*b*d**2*e*h*x**3*s
qrt(-c**2*x**2 + 1)/(16*c) + 3*b*d**2*e*i*x**4*sqrt(-c**2*x**2 + 1)/(25*c)
+ b*d*e**2*f*x**2*sqrt(-c**2*x**2 + 1)/(3*c) + 3*b*d*e**2*g*x**3*sqrt(-c**2
*x**2 + 1)/(16*c) + 3*b*d*e**2*h*x**4*sqrt(-c**2*x**2 + 1)/(25*c) + b*d*e**
2*i*x**5*sqrt(-c**2*x**2 + 1)/(12*c) + b*e**3*f*x**3*sqrt(-c**2*x**2 + 1)/(
16*c) + b*e**3*g*x**4*sqrt(-c**2*x**2 + 1)/(25*c) + b*e**3*h*x**5*sqrt(-c**
2*x**2 + 1)/(36*c) + b*e**3*i*x**6*sqrt(-c**2*x**2 + 1)/(49*c) - b*d**3*g*a
sin(c*x)/(4*c**2) - 3*b*d**2*e*f*asin(c*x)/(4*c**2) + 2*b*d**3*h*sqrt(-c**2
*x**2 + 1)/(9*c**3) + 3*b*d**3*i*x*sqrt(-c**2*x**2 + 1)/(32*c**3) + 2*b*d**
2*e*g*sqrt(-c**2*x**2 + 1)/(3*c**3) + 9*b*d**2*e*h*x*sqrt(-c**2*x**2 + 1)/(
32*c**3) + 4*b*d**2*e*i*x**2*sqrt(-c**2*x**2 + 1)/(25*c**3) + 2*b*d*e**2*f*
sqrt(-c**2*x**2 + 1)/(3*c**3) + 9*b*d*e**2*g*x*sqrt(-c**2*x**2 + 1)/(32*c**
3) + 4*b*d*e**2*h*x**2*sqrt(-c**2*x**2 + 1)/(25*c**3) + 5*b*d*e**2*i*x**3*s
qrt(-c**2*x**2 + 1)/(48*c**3) + 3*b*e**3*f*x*sqrt(-c**2*x**2 + 1)/(32*c**3)
 + 4*b*e**3*g*x**2*sqrt(-c**2*x**2 + 1)/(75*c**3) + 5*b*e**3*h*x**3*sqrt(-c
**2*x**2 + 1)/(144*c**3) + 6*b*e**3*i*x**4*sqrt(-c**2*x**2 + 1)/(245*c**3)
- 3*b*d**3*i*asin(c*x)/(32*c**4) - 9*b*d**2*e*h*asin(c*x)/(32*c**4) - 9*b*d
*e**2*g*asin(c*x)/(32*c**4) - 3*b*e**3*f*asin(c*x)/(32*c**4) + 8*b*d**2*e*i
*sqrt(-c**2*x**2 + 1)/(25*c**5) + 8*b*d*e**2*h*sqrt(-c**2*x**2 + 1)/(25*c**
5) + 5*b*d*e**2*i*x*sqrt(-c**2*x**2 + 1)/(32*c**5) + 8*b*e**3*g*sqrt(-c**2*
x**2 + 1)/(75*c**5) + 5*b*e**3*h*x*sqrt(-c**2*x**2 + 1)/(96*c**5) + 8*b*e**
3*i*x**2*sqrt(-c**2*x**2 + 1)/(245*c**5) - 5*b*d*e**2*i*asin(c*x)/(32*c**6)
 - 5*b*e**3*h*asin(c*x)/(96*c**6) + 16*b*e**3*i*sqrt(-c**2*x**2 + 1)/(245*c
**7), Ne(c, 0)), (a*(d**3*f*x + d**3*g*x**2/2 + d**3*h*x**3/3 + d**3*i*x**4
/4 + 3*d**2*e*f*x**2/2 + d**2*e*g*x**3 + 3*d**2*e*h*x**4/4 + 3*d**2*e*i*x**
5/5 + d*e**2*f*x**3 + 3*d*e**2*g*x**4/4 + 3*d*e**2*h*x**5/5 + d*e**2*i*x**6
/2 + e**3*f*x**4/4 + e**3*g*x**5/5 + e**3*h*x**6/6 + e**3*i*x**7/7), True))
```

Giac [B] time = 1.36336, size = 2966, normalized size = 4.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="gia
c")
```

```
[Out] 1/7*a*i*x^7*e^3 + 3/5*a*d^2*i*x^5*e + 3/5*a*d*h*x^5*e^2 + 1/3*a*d^3*h*x^3 +
 1/5*a*g*x^5*e^3 + a*d^2*g*x^3*e + b*d^3*f*x*arcsin(c*x) + a*d*f*x^3*e^2 +
a*d^3*f*x + 1/3*(c^2*x^2 - 1)*b*d^3*h*x*arcsin(c*x)/c^2 + (c^2*x^2 - 1)*b*d
^2*g*x*arcsin(c*x)*e/c^2 + 1/4*sqrt(-c^2*x^2 + 1)*b*d^3*g*x/c + 3/4*sqrt(-c
^2*x^2 + 1)*b*d^2*f*x*e/c + 1/2*(c^2*x^2 - 1)*b*d^3*g*arcsin(c*x)/c^2 + 1/3
*b*d^3*h*x*arcsin(c*x)/c^2 + (c^2*x^2 - 1)*b*d*f*x*arcsin(c*x)*e^2/c^2 + 3/
2*(c^2*x^2 - 1)*b*d^2*f*arcsin(c*x)*e/c^2 + b*d^2*g*x*arcsin(c*x)*e/c^2 + 3
/5*(c^2*x^2 - 1)^2*b*d^2*i*x*arcsin(c*x)*e/c^4 + sqrt(-c^2*x^2 + 1)*b*d^3*f
/c - 1/16*(-c^2*x^2 + 1)^(3/2)*b*d^3*i*x/c^3 - 3/16*(-c^2*x^2 + 1)^(3/2)*b*
d^2*h*x*e/c^3 + 1/2*(c^2*x^2 - 1)*a*d^3*g/c^2 + 1/4*b*d^3*g*arcsin(c*x)/c^2
 + 1/4*(c^2*x^2 - 1)^2*b*d^3*i*arcsin(c*x)/c^4 + b*d*f*x*arcsin(c*x)*e^2/c^
2 + 3/5*(c^2*x^2 - 1)^2*b*d*h*x*arcsin(c*x)*e^2/c^4 + 3/2*(c^2*x^2 - 1)*a*d
^2*f*e/c^2 + 3/4*b*d^2*f*arcsin(c*x)*e/c^2 + 3/4*(c^2*x^2 - 1)^2*b*d^2*h*ar
csin(c*x)*e/c^4 + 6/5*(c^2*x^2 - 1)*b*d^2*i*x*arcsin(c*x)*e/c^4 - 1/9*(-c^2
*x^2 + 1)^(3/2)*b*d^3*h/c^3 + 5/32*sqrt(-c^2*x^2 + 1)*b*d^3*i*x/c^3 - 3/16*
(-c^2*x^2 + 1)^(3/2)*b*d*g*x*e^2/c^3 - 1/3*(-c^2*x^2 + 1)^(3/2)*b*d^2*g*e/c
^3 + 15/32*sqrt(-c^2*x^2 + 1)*b*d^2*h*x*e/c^3 + 1/4*(c^2*x^2 - 1)^2*a*d^3*i
/c^4 + 1/2*(c^2*x^2 - 1)*b*d^3*i*arcsin(c*x)/c^4 + 1/5*(c^2*x^2 - 1)^2*b*g*
x*arcsin(c*x)*e^3/c^4 + 3/4*(c^2*x^2 - 1)^2*b*d*g*arcsin(c*x)*e^2/c^4 + 6/5
*(c^2*x^2 - 1)*b*d*h*x*arcsin(c*x)*e^2/c^4 + 3/4*(c^2*x^2 - 1)^2*a*d^2*h*e/
c^4 + 3/2*(c^2*x^2 - 1)*b*d^2*h*arcsin(c*x)*e/c^4 + 3/5*b*d^2*i*x*arcsin(c*
x)*e/c^4 + 1/3*sqrt(-c^2*x^2 + 1)*b*d^3*h/c^3 - 1/16*(-c^2*x^2 + 1)^(3/2)*b
*f*x*e^3/c^3 - 1/3*(-c^2*x^2 + 1)^(3/2)*b*d*f*e^2/c^3 + 15/32*sqrt(-c^2*x^2
 + 1)*b*d*g*x*e^2/c^3 + 1/12*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*d*i*x*e^2
/c^5 + sqrt(-c^2*x^2 + 1)*b*d^2*g*e/c^3 + 3/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^
2 + 1)*b*d^2*i*e/c^5 + 1/2*(c^2*x^2 - 1)*a*d^3*i/c^4 + 5/32*b*d^3*i*arcsin(
c*x)/c^4 + 1/4*(c^2*x^2 - 1)^2*b*f*arcsin(c*x)*e^3/c^4 + 2/5*(c^2*x^2 - 1)*
b*g*x*arcsin(c*x)*e^3/c^4 + 1/7*(c^2*x^2 - 1)^3*b*i*x*arcsin(c*x)*e^3/c^6 +
 3/4*(c^2*x^2 - 1)^2*a*d*g*e^2/c^4 + 3/2*(c^2*x^2 - 1)*b*d*g*arcsin(c*x)*e^
2/c^4 + 1/2*(c^2*x^2 - 1)^3*b*d*i*arcsin(c*x)*e^2/c^6 + 3/5*b*d*h*x*arcsin(
c*x)*e^2/c^4 + 3/2*(c^2*x^2 - 1)*a*d^2*h*e/c^4 + 15/32*b*d^2*h*arcsin(c*x)*
e/c^4 + 5/32*sqrt(-c^2*x^2 + 1)*b*f*x*e^3/c^3 + 1/36*(c^2*x^2 - 1)^2*sqrt(-
c^2*x^2 + 1)*b*h*x*e^3/c^5 + sqrt(-c^2*x^2 + 1)*b*d*f*e^2/c^3 + 3/25*(c^2*x
^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*d*h*e^2/c^5 - 13/48*(-c^2*x^2 + 1)^(3/2)*b*d
*i*x*e^2/c^5 - 2/5*(-c^2*x^2 + 1)^(3/2)*b*d^2*i*e/c^5 + 1/4*(c^2*x^2 - 1)^2
*a*f*e^3/c^4 + 1/2*(c^2*x^2 - 1)*b*f*arcsin(c*x)*e^3/c^4 + 1/6*(c^2*x^2 - 1
)^3*b*h*arcsin(c*x)*e^3/c^6 + 1/5*b*g*x*arcsin(c*x)*e^3/c^4 + 3/7*(c^2*x^2
- 1)^2*b*i*x*arcsin(c*x)*e^3/c^6 + 3/2*(c^2*x^2 - 1)*a*d*g*e^2/c^4 + 1/2*(c
^2*x^2 - 1)^3*a*d*i*e^2/c^6 + 15/32*b*d*g*arcsin(c*x)*e^2/c^4 + 3/2*(c^2*x^
```

```
2 - 1)^2*b*d*i*arcsin(c*x)*e^2/c^6 + 1/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1
)*b*g*e^3/c^5 - 13/144*(-c^2*x^2 + 1)^(3/2)*b*h*x*e^3/c^5 - 2/5*(-c^2*x^2 +
 1)^(3/2)*b*d*h*e^2/c^5 + 11/32*sqrt(-c^2*x^2 + 1)*b*d*i*x*e^2/c^5 + 3/5*sq
rt(-c^2*x^2 + 1)*b*d^2*i*e/c^5 + 1/2*(c^2*x^2 - 1)*a*f*e^3/c^4 + 1/6*(c^2*x
^2 - 1)^3*a*h*e^3/c^6 + 5/32*b*f*arcsin(c*x)*e^3/c^4 + 1/2*(c^2*x^2 - 1)^2*
b*h*arcsin(c*x)*e^3/c^6 + 3/7*(c^2*x^2 - 1)*b*i*x*arcsin(c*x)*e^3/c^6 + 3/2
*(c^2*x^2 - 1)^2*a*d*i*e^2/c^6 + 3/2*(c^2*x^2 - 1)*b*d*i*arcsin(c*x)*e^2/c^
6 - 2/15*(-c^2*x^2 + 1)^(3/2)*b*g*e^3/c^5 + 1/49*(c^2*x^2 - 1)^3*sqrt(-c^2*
x^2 + 1)*b*i*e^3/c^7 + 11/96*sqrt(-c^2*x^2 + 1)*b*h*x*e^3/c^5 + 3/5*sqrt(-c
^2*x^2 + 1)*b*d*h*e^2/c^5 + 1/2*(c^2*x^2 - 1)^2*a*h*e^3/c^6 + 1/2*(c^2*x^2
- 1)*b*h*arcsin(c*x)*e^3/c^6 + 1/7*b*i*x*arcsin(c*x)*e^3/c^6 + 3/2*(c^2*x^2
 - 1)*a*d*i*e^2/c^6 + 11/32*b*d*i*arcsin(c*x)*e^2/c^6 + 1/5*sqrt(-c^2*x^2 +
 1)*b*g*e^3/c^5 + 3/35*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*i*e^3/c^7 + 1/2
*(c^2*x^2 - 1)*a*h*e^3/c^6 + 11/96*b*h*arcsin(c*x)*e^3/c^6 - 1/7*(-c^2*x^2
+ 1)^(3/2)*b*i*e^3/c^7 + 1/7*sqrt(-c^2*x^2 + 1)*b*i*e^3/c^7
```

3.107 $\int (d+ex)^2\left(f+gx+hx^2+ix^3\right)\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=484

$$\frac{1}{3}x^3\left(a+b\sin^{-1}(cx)\right)\left(d^2h+2deg+e^2f\right)+\frac{1}{4}x^4\left(a+b\sin^{-1}(cx)\right)\left(d^2i+2deh+e^2g\right)+d^2fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}dx^2(dg$$

```
[Out] (b*(25*c^2*(e^2*f + 2*d*e*g + d^2*h) + 12*e*(e*h + 2*d*i))*x^2*Sqrt[1 - c^2
*x^2])/(225*c^3) + (b*(5*e^2*i + 9*c^2*(e^2*g + 2*d*e*h + d^2*i))*x^3*Sqrt[
1 - c^2*x^2])/(144*c^3) + (b*e*(e*h + 2*d*i)*x^4*Sqrt[1 - c^2*x^2])/(25*c)
+ (b*e^2*i*x^5*Sqrt[1 - c^2*x^2])/(36*c) + (b*(32*(225*c^4*d^2*f + 50*c^2*(
e^2*f + 2*d*e*g + d^2*h) + 24*e*(e*h + 2*d*i)) + 75*(24*c^4*d*(2*e*f + d*g)
 + 5*e^2*i + 9*c^2*(e^2*g + 2*d*e*h + d^2*i))*x)*Sqrt[1 - c^2*x^2])/(7200*c
^5) - (b*(24*c^4*d*(2*e*f + d*g) + 5*e^2*i + 9*c^2*(e^2*g + 2*d*e*h + d^2*i
))*ArcSin[c*x])/(96*c^6) + d^2*f*x*(a + b*ArcSin[c*x]) + (d*(2*e*f + d*g)*x
^2*(a + b*ArcSin[c*x]))/2 + ((e^2*f + 2*d*e*g + d^2*h)*x^3*(a + b*ArcSin[c*
x]))/3 + ((e^2*g + 2*d*e*h + d^2*i)*x^4*(a + b*ArcSin[c*x]))/4 + (e*(e*h +
2*d*i)*x^5*(a + b*ArcSin[c*x]))/5 + (e^2*i*x^6*(a + b*ArcSin[c*x]))/6
```

Rubi [A] time = 2.54995, antiderivative size = 482, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {4749, 12, 1809, 780, 216}

$$\frac{1}{3}x^3\left(a+b\sin^{-1}(cx)\right)\left(d^2h+2deg+e^2f\right)+\frac{1}{4}x^4\left(a+b\sin^{-1}(cx)\right)\left(d^2i+2deh+e^2g\right)+d^2fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}dx^2(dg$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^2*(f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*(25*c^2*(e^2*f + 2*d*e*g + d^2*h) + 12*e*(e*h + 2*d*i))*x^2*Sqrt[1 - c^2
*x^2])/(225*c^3) + (b*(18*d*e*h + 9*d^2*i + e^2*(9*g + (5*i)/c^2))*x^3*Sqrt
[1 - c^2*x^2])/(144*c) + (b*e*(e*h + 2*d*i)*x^4*Sqrt[1 - c^2*x^2])/(25*c) +
 (b*e^2*i*x^5*Sqrt[1 - c^2*x^2])/(36*c) + (b*(32*(225*c^4*d^2*f + 50*c^2*(e
^2*f + 2*d*e*g + d^2*h) + 24*e*(e*h + 2*d*i)) + 75*(24*c^4*d*(2*e*f + d*g)
+ 5*e^2*i + 9*c^2*(e^2*g + 2*d*e*h + d^2*i))*x)*Sqrt[1 - c^2*x^2])/(7200*c^
5) - (b*(24*c^4*d*(2*e*f + d*g) + 5*e^2*i + 9*c^2*(e^2*g + 2*d*e*h + d^2*i)
)*ArcSin[c*x])/(96*c^6) + d^2*f*x*(a + b*ArcSin[c*x]) + (d*(2*e*f + d*g)*x^
2*(a + b*ArcSin[c*x]))/2 + ((e^2*f + 2*d*e*g + d^2*h)*x^3*(a + b*ArcSin[c*x
]))/3 + ((e^2*g + 2*d*e*h + d^2*i)*x^4*(a + b*ArcSin[c*x]))/4 + (e*(e*h + 2
*d*i)*x^5*(a + b*ArcSin[c*x]))/5 + (e^2*i*x^6*(a + b*ArcSin[c*x]))/6
```

Rule 4749

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_), x_Symbol] :> With[{u = IntHid
e[ExpandExpression[Px, x], x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, I
nt[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[{a, b, c}, x
] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1809

```
Int[(Pq_)*((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2)^(p_), x_Symbol] :> With[
{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[(f*(c*x)^(m + q -
1)*(a + b*x^2)^(p + 1))/(b*c^(q - 1)*(m + q + 2*p + 1)), x] + Dist[1/(b*(m
+ q + 2*p + 1)), Int[(c*x)^m*(a + b*x^2)^p*ExpandToSum[b*(m + q + 2*p + 1)*
Pq - b*f*(m + q + 2*p + 1)*x^q - a*f*(m + q - 1)*x^(q - 2), x], x], x] /; G
tQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, m, p}, x] && PolyQ[
Pq, x] && ( !IGtQ[m, 0] || IGtQ[p + 1/2, -1])
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 216

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

Rubi steps

$$\int (d+ex)^2\left(f+gx+hx^2+107x^3\right)\left(a+b\sin^{-1}(cx)\right)\,dx = d^2fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d(2ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)+$$

$$= d^2fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d(2ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)+$$

$$= \frac{107be^2x^5\sqrt{1-c^2x^2}}{36c}+d^2fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d(2ef+dg)$$

$$= \frac{be(214d+eh)x^4\sqrt{1-c^2x^2}}{25c}+\frac{107be^2x^5\sqrt{1-c^2x^2}}{36c}+d^2fx\left(a+\right.$$

$$= \frac{b\left(535e^2+9c^2\left(107d^2+e^2g+2deh\right)\right)x^3\sqrt{1-c^2x^2}}{144c^3}+\frac{be(214d}{}$$

$$= \frac{b\left(2de\left(1284+25c^2g\right)+25c^2d^2h+e^2\left(25c^2f+12h\right)\right)x^2\sqrt{1-}}{225c^3}$$

$$= \frac{b\left(2de\left(1284+25c^2g\right)+25c^2d^2h+e^2\left(25c^2f+12h\right)\right)x^2\sqrt{1-}}{225c^3}$$

$$= \frac{b\left(2de\left(1284+25c^2g\right)+25c^2d^2h+e^2\left(25c^2f+12h\right)\right)x^2\sqrt{1-}}{225c^3}$$

Mathematica [A] time = 0.905933, size = 380, normalized size = 0.79

$$\frac{1}{3}x^3\left(a+b\sin^{-1}(cx)\right)\left(d^2h+2deg+e^2f\right)+\frac{1}{4}x^4\left(a+b\sin^{-1}(cx)\right)\left(d^2i+2deh+e^2g\right)+d^2fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}dx^2(dg$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^2*(f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]),x]
```

```
[Out] d^2*f*x*(a + b*ArcSin[c*x]) + (d*(2*e*f + d*g)*x^2*(a + b*ArcSin[c*x]))/2 +
 ((e^2*f + 2*d*e*g + d^2*h)*x^3*(a + b*ArcSin[c*x]))/3 + ((e^2*g + 2*d*e*h
+ d^2*i)*x^4*(a + b*ArcSin[c*x]))/4 + (e*(e*h + 2*d*i)*x^5*(a + b*ArcSin[c*
x]))/5 + (e^2*i*x^6*(a + b*ArcSin[c*x]))/6 + (b*(c*Sqrt[1 - c^2*x^2]*(3*e*(
256*e*h + 512*d*i + 125*e*i*x) + c^2*(25*d^2*(64*h + 27*i*x) + 2*d*e*(1600*
g + 675*h*x + 384*i*x^2) + e^2*(1600*f + x*(675*g + 384*h*x + 250*i*x^2)))
+ 2*c^4*(25*d^2*(144*f + x*(36*g + x*(16*h + 9*i*x))) + 2*d*e*x*(900*f + x*
(400*g + 9*x*(25*h + 16*i*x))) + e^2*x^2*(400*f + x*(225*g + 4*x*(36*h + 25
*i*x))))) - 75*(24*c^4*d*(2*e*f + d*g) + 5*e^2*i + 9*c^2*(e^2*g + 2*d*e*h +
```

```
d^2*i))*ArcSin[c*x]))/(7200*c^6)
```

Maple [A] time = 0.006, size = 674, normalized size = 1.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^2*(i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c*(a/c^5*(1/6*e^2*i*c^6*x^6+1/5*(2*c*d*e*i+c*e^2*h)*c^5*x^5+1/4*(c^2*d^2*
i+2*c^2*d*e*h+c^2*e^2*g)*c^4*x^4+1/3*(c^3*d^2*h+2*c^3*d*e*g+c^3*e^2*f)*c^3*
x^3+1/2*(c^4*d^2*g+2*c^4*d*e*f)*c^2*x^2+c^6*d^2*f*x)+b/c^5*(1/6*arcsin(c*x)
*e^2*i*c^6*x^6+2/5*arcsin(c*x)*c^6*x^5*d*e*i+1/5*arcsin(c*x)*c^6*x^5*e^2*h+
1/4*arcsin(c*x)*c^6*x^4*d^2*i+1/2*arcsin(c*x)*c^6*x^4*d*e*h+1/4*arcsin(c*x)
*c^6*x^4*e^2*g+1/3*arcsin(c*x)*c^6*x^3*d^2*h+2/3*arcsin(c*x)*c^6*x^3*d*e*g+
1/3*arcsin(c*x)*c^6*x^3*e^2*f+1/2*arcsin(c*x)*c^6*x^2*d^2*g+arcsin(c*x)*c^6
*x^2*d*e*f+arcsin(c*x)*c^6*d^2*f*x-1/6*e^2*i*(-1/6*c^5*x^5*(-c^2*x^2+1)^(1/
2)-5/24*c^3*x^3*(-c^2*x^2+1)^(1/2)-5/16*c*x*(-c^2*x^2+1)^(1/2)+5/16*arcsin(
c*x))-1/60*(24*c*d*e*i+12*c*e^2*h)*(-1/5*c^4*x^4*(-c^2*x^2+1)^(1/2)-4/15*c^
2*x^2*(-c^2*x^2+1)^(1/2)-8/15*(-c^2*x^2+1)^(1/2))-1/60*(15*c^2*d^2*i+30*c^2
*d*e*h+15*c^2*e^2*g)*(-1/4*c^3*x^3*(-c^2*x^2+1)^(1/2)-3/8*c*x*(-c^2*x^2+1)^
(1/2)+3/8*arcsin(c*x))-1/60*(20*c^3*d^2*h+40*c^3*d*e*g+20*c^3*e^2*f)*(-1/3*
c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-c^2*x^2+1)^(1/2))-1/60*(30*c^4*d^2*g+60*c^
4*d*e*f)*(-1/2*c*x*(-c^2*x^2+1)^(1/2)+1/2*arcsin(c*x))+c^5*d^2*f*(-c^2*x^2+
1)^(1/2)))
```

Maxima [B] time = 1.54514, size = 1231, normalized size = 2.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="max
ima")
```

```
[Out] 1/6*a*e^2*i*x^6 + 1/5*a*e^2*h*x^5 + 2/5*a*d*e*i*x^5 + 1/4*a*e^2*g*x^4 + 1/2
*a*d*e*h*x^4 + 1/4*a*d^2*i*x^4 + 1/3*a*e^2*f*x^3 + 2/3*a*d*e*g*x^3 + 1/3*a*
d^2*h*x^3 + a*d*e*f*x^2 + 1/2*a*d^2*g*x^2 + 1/2*(2*x^2*arcsin(c*x) + c*(sqr
```

```
t(-c^2*x^2 + 1)*x/c^2 - arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^2)))*b*d*e*f +
 1/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 +
 1)/c^4))*b*e^2*f + 1/4*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 -
arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^2)))*b*d^2*g + 2/9*(3*x^3*arcsin(c*x)
+ c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*d*e*g + 1/32
*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*
x/c^4 - 3*arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^4))*c)*b*e^2*g + 1/9*(3*x^3*
arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*
d^2*h + 1/16*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c
^2*x^2 + 1)*x/c^4 - 3*arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^4))*c)*b*d*e*h +
 1/75*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2
 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*b*e^2*h + 1/32*(8*x^4*arcsin(c
*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin
(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^4))*c)*b*d^2*i + 2/75*(15*x^5*arcsin(c*x) +
(3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*
x^2 + 1)/c^6)*c)*b*d*e*i + 1/288*(48*x^6*arcsin(c*x) + (8*sqrt(-c^2*x^2 + 1
)*x^5/c^2 + 10*sqrt(-c^2*x^2 + 1)*x^3/c^4 + 15*sqrt(-c^2*x^2 + 1)*x/c^6 - 1
5*arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^6))*c)*b*e^2*i + a*d^2*f*x + (c*x*ar
csin(c*x) + sqrt(-c^2*x^2 + 1))*b*d^2*f/c
```

Fricas [A] time = 3.46506, size = 1426, normalized size = 2.95

$$1200\,ac^6e^2ix^6 + 7200\,ac^6d^2fx + 1440\left(ac^6e^2h + 2\,ac^6dei\right)x^5 + 1800\left(ac^6e^2g + 2\,ac^6deh + ac^6d^2i\right)x^4 + 2400\left(ac^6e^2f + 2\,a\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="fri
cas")
```

```
[Out] 1/7200*(1200*a*c^6*e^2*i*x^6 + 7200*a*c^6*d^2*f*x + 1440*(a*c^6*e^2*h + 2*a
*c^6*d*e*i)*x^5 + 1800*(a*c^6*e^2*g + 2*a*c^6*d*e*h + a*c^6*d^2*i)*x^4 + 24
00*(a*c^6*e^2*f + 2*a*c^6*d*e*g + a*c^6*d^2*h)*x^3 + 3600*(2*a*c^6*d*e*f +
a*c^6*d^2*g)*x^2 + 15*(80*b*c^6*e^2*i*x^6 + 480*b*c^6*d^2*f*x - 240*b*c^4*d
*e*f - 90*b*c^2*d*e*h + 96*(b*c^6*e^2*h + 2*b*c^6*d*e*i)*x^5 + 120*(b*c^6*e
^2*g + 2*b*c^6*d*e*h + b*c^6*d^2*i)*x^4 + 160*(b*c^6*e^2*f + 2*b*c^6*d*e*g
+ b*c^6*d^2*h)*x^3 + 240*(2*b*c^6*d*e*f + b*c^6*d^2*g)*x^2 - 15*(8*b*c^4*d^
2 + 3*b*c^2*e^2)*g - 5*(9*b*c^2*d^2 + 5*b*e^2)*i)*arcsin(c*x) + (200*b*c^5*
e^2*i*x^5 + 3200*b*c^3*d*e*g + 1536*b*c*d*e*i + 288*(b*c^5*e^2*h + 2*b*c^5*
d*e*i)*x^4 + 50*(9*b*c^5*e^2*g + 18*b*c^5*d*e*h + (9*b*c^5*d^2 + 5*b*c^3*e^
2)*i)*x^3 + 32*(25*b*c^5*e^2*f + 50*b*c^5*d*e*g + 24*b*c^3*d*e*i + (25*b*c^
5*d^2 + 12*b*c^3*e^2)*h)*x^2 + 800*(9*b*c^5*d^2 + 2*b*c^3*e^2)*f + 64*(25*b
```

```
*c^3*d^2 + 12*b*c*e^2)*h + 75*(48*b*c^5*d*e*f + 18*b*c^3*d*e*h + 3*(8*b*c^5
*d^2 + 3*b*c^3*e^2)*g + (9*b*c^3*d^2 + 5*b*c*e^2)*i)*x)*sqrt(-c^2*x^2 + 1))
/c^6
```

Sympy [A] time = 10.5868, size = 1197, normalized size = 2.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**2*(i*x**3+h*x**2+g*x+f)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d**2*f*x + a*d**2*g*x**2/2 + a*d**2*h*x**3/3 + a*d**2*i*x**4/4
 + a*d*e*f*x**2 + 2*a*d*e*g*x**3/3 + a*d*e*h*x**4/2 + 2*a*d*e*i*x**5/5 + a*
e**2*f*x**3/3 + a*e**2*g*x**4/4 + a*e**2*h*x**5/5 + a*e**2*i*x**6/6 + b*d**
2*f*x*asin(c*x) + b*d**2*g*x**2*asin(c*x)/2 + b*d**2*h*x**3*asin(c*x)/3 + b
*d**2*i*x**4*asin(c*x)/4 + b*d*e*f*x**2*asin(c*x) + 2*b*d*e*g*x**3*asin(c*x
)/3 + b*d*e*h*x**4*asin(c*x)/2 + 2*b*d*e*i*x**5*asin(c*x)/5 + b*e**2*f*x**3
*asin(c*x)/3 + b*e**2*g*x**4*asin(c*x)/4 + b*e**2*h*x**5*asin(c*x)/5 + b*e*
*2*i*x**6*asin(c*x)/6 + b*d**2*f*sqrt(-c**2*x**2 + 1)/c + b*d**2*g*x*sqrt(-
c**2*x**2 + 1)/(4*c) + b*d**2*h*x**2*sqrt(-c**2*x**2 + 1)/(9*c) + b*d**2*i*
x**3*sqrt(-c**2*x**2 + 1)/(16*c) + b*d*e*f*x*sqrt(-c**2*x**2 + 1)/(2*c) + 2
*b*d*e*g*x**2*sqrt(-c**2*x**2 + 1)/(9*c) + b*d*e*h*x**3*sqrt(-c**2*x**2 + 1
)/(8*c) + 2*b*d*e*i*x**4*sqrt(-c**2*x**2 + 1)/(25*c) + b*e**2*f*x**2*sqrt(-
c**2*x**2 + 1)/(9*c) + b*e**2*g*x**3*sqrt(-c**2*x**2 + 1)/(16*c) + b*e**2*h
*x**4*sqrt(-c**2*x**2 + 1)/(25*c) + b*e**2*i*x**5*sqrt(-c**2*x**2 + 1)/(36*
c) - b*d**2*g*asin(c*x)/(4*c**2) - b*d*e*f*asin(c*x)/(2*c**2) + 2*b*d**2*h*
sqrt(-c**2*x**2 + 1)/(9*c**3) + 3*b*d**2*i*x*sqrt(-c**2*x**2 + 1)/(32*c**3)
 + 4*b*d*e*g*sqrt(-c**2*x**2 + 1)/(9*c**3) + 3*b*d*e*h*x*sqrt(-c**2*x**2 +
1)/(16*c**3) + 8*b*d*e*i*x**2*sqrt(-c**2*x**2 + 1)/(75*c**3) + 2*b*e**2*f*s
qrt(-c**2*x**2 + 1)/(9*c**3) + 3*b*e**2*g*x*sqrt(-c**2*x**2 + 1)/(32*c**3)
+ 4*b*e**2*h*x**2*sqrt(-c**2*x**2 + 1)/(75*c**3) + 5*b*e**2*i*x**3*sqrt(-c*
*2*x**2 + 1)/(144*c**3) - 3*b*d**2*i*asin(c*x)/(32*c**4) - 3*b*d*e*h*asin(c
*x)/(16*c**4) - 3*b*e**2*g*asin(c*x)/(32*c**4) + 16*b*d*e*i*sqrt(-c**2*x**2
 + 1)/(75*c**5) + 8*b*e**2*h*sqrt(-c**2*x**2 + 1)/(75*c**5) + 5*b*e**2*i*x*
sqrt(-c**2*x**2 + 1)/(96*c**5) - 5*b*e**2*i*asin(c*x)/(96*c**6), Ne(c, 0)),
 (a*(d**2*f*x + d**2*g*x**2/2 + d**2*h*x**3/3 + d**2*i*x**4/4 + d*e*f*x**2
+ 2*d*e*g*x**3/3 + d*e*h*x**4/2 + 2*d*e*i*x**5/5 + e**2*f*x**3/3 + e**2*g*x
**4/4 + e**2*h*x**5/5 + e**2*i*x**6/6), True))
```

Giac [B] time = 1.42659, size = 1917, normalized size = 3.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="gia
c")
```

```
[Out] 2/5*a*d*i*x^5*e + 1/5*a*h*x^5*e^2 + 1/3*a*d^2*h*x^3 + 2/3*a*d*g*x^3*e + b*d
^2*f*x*arcsin(c*x) + 1/3*a*f*x^3*e^2 + a*d^2*f*x + 1/3*(c^2*x^2 - 1)*b*d^2*
h*x*arcsin(c*x)/c^2 + 2/3*(c^2*x^2 - 1)*b*d*g*x*arcsin(c*x)*e/c^2 + 1/4*sqr
t(-c^2*x^2 + 1)*b*d^2*g*x/c + 1/2*sqrt(-c^2*x^2 + 1)*b*d*f*x*e/c + 1/2*(c^2
*x^2 - 1)*b*d^2*g*arcsin(c*x)/c^2 + 1/3*b*d^2*h*x*arcsin(c*x)/c^2 + 1/3*(c^
2*x^2 - 1)*b*f*x*arcsin(c*x)*e^2/c^2 + (c^2*x^2 - 1)*b*d*f*arcsin(c*x)*e/c^
2 + 2/3*b*d*g*x*arcsin(c*x)*e/c^2 + 2/5*(c^2*x^2 - 1)^2*b*d*i*x*arcsin(c*x)
*e/c^4 + sqrt(-c^2*x^2 + 1)*b*d^2*f/c - 1/16*(-c^2*x^2 + 1)^(3/2)*b*d^2*i*x
/c^3 - 1/8*(-c^2*x^2 + 1)^(3/2)*b*d*h*x*e/c^3 + 1/2*(c^2*x^2 - 1)*a*d^2*g/c
^2 + 1/4*b*d^2*g*arcsin(c*x)/c^2 + 1/4*(c^2*x^2 - 1)^2*b*d^2*i*arcsin(c*x)/
c^4 + 1/3*b*f*x*arcsin(c*x)*e^2/c^2 + 1/5*(c^2*x^2 - 1)^2*b*h*x*arcsin(c*x)
*e^2/c^4 + (c^2*x^2 - 1)*a*d*f*e/c^2 + 1/2*b*d*f*arcsin(c*x)*e/c^2 + 1/2*(c
^2*x^2 - 1)^2*b*d*h*arcsin(c*x)*e/c^4 + 4/5*(c^2*x^2 - 1)*b*d*i*x*arcsin(c*
x)*e/c^4 - 1/9*(-c^2*x^2 + 1)^(3/2)*b*d^2*h/c^3 + 5/32*sqrt(-c^2*x^2 + 1)*b
*d^2*i*x/c^3 - 1/16*(-c^2*x^2 + 1)^(3/2)*b*g*x*e^2/c^3 - 2/9*(-c^2*x^2 + 1)
^(3/2)*b*d*g*e/c^3 + 5/16*sqrt(-c^2*x^2 + 1)*b*d*h*x*e/c^3 + 1/4*(c^2*x^2 -
 1)^2*a*d^2*i/c^4 + 1/2*(c^2*x^2 - 1)*b*d^2*i*arcsin(c*x)/c^4 + 1/4*(c^2*x^
2 - 1)^2*b*g*arcsin(c*x)*e^2/c^4 + 2/5*(c^2*x^2 - 1)*b*h*x*arcsin(c*x)*e^2/
c^4 + 1/2*(c^2*x^2 - 1)^2*a*d*h*e/c^4 + (c^2*x^2 - 1)*b*d*h*arcsin(c*x)*e/c
^4 + 2/5*b*d*i*x*arcsin(c*x)*e/c^4 + 1/3*sqrt(-c^2*x^2 + 1)*b*d^2*h/c^3 - 1
/9*(-c^2*x^2 + 1)^(3/2)*b*f*e^2/c^3 + 5/32*sqrt(-c^2*x^2 + 1)*b*g*x*e^2/c^3
 + 1/36*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*i*x*e^2/c^5 + 2/3*sqrt(-c^2*x^
2 + 1)*b*d*g*e/c^3 + 2/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*d*i*e/c^5 +
1/2*(c^2*x^2 - 1)*a*d^2*i/c^4 + 5/32*b*d^2*i*arcsin(c*x)/c^4 + 1/4*(c^2*x^2
 - 1)^2*a*g*e^2/c^4 + 1/2*(c^2*x^2 - 1)*b*g*arcsin(c*x)*e^2/c^4 + 1/6*(c^2*
x^2 - 1)^3*b*i*arcsin(c*x)*e^2/c^6 + 1/5*b*h*x*arcsin(c*x)*e^2/c^4 + (c^2*x
^2 - 1)*a*d*h*e/c^4 + 5/16*b*d*h*arcsin(c*x)*e/c^4 + 1/3*sqrt(-c^2*x^2 + 1)
*b*f*e^2/c^3 + 1/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*h*e^2/c^5 - 13/144
*(-c^2*x^2 + 1)^(3/2)*b*i*x*e^2/c^5 - 4/15*(-c^2*x^2 + 1)^(3/2)*b*d*i*e/c^5
 + 1/2*(c^2*x^2 - 1)*a*g*e^2/c^4 + 1/6*(c^2*x^2 - 1)^3*a*i*e^2/c^6 + 5/32*b
*g*arcsin(c*x)*e^2/c^4 + 1/2*(c^2*x^2 - 1)^2*b*i*arcsin(c*x)*e^2/c^6 - 2/15
*(-c^2*x^2 + 1)^(3/2)*b*h*e^2/c^5 + 11/96*sqrt(-c^2*x^2 + 1)*b*i*x*e^2/c^5
+ 2/5*sqrt(-c^2*x^2 + 1)*b*d*i*e/c^5 + 1/2*(c^2*x^2 - 1)^2*a*i*e^2/c^6 + 1/
2*(c^2*x^2 - 1)*b*i*arcsin(c*x)*e^2/c^6 + 1/5*sqrt(-c^2*x^2 + 1)*b*h*e^2/c^
5 + 1/2*(c^2*x^2 - 1)*a*i*e^2/c^6 + 11/96*b*i*arcsin(c*x)*e^2/c^6
```

3.108 $\int (d+ex)\left(f+gx+hx^2+ix^3\right)\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=308

$$\frac{1}{2}x^2(dg+ef)\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}x^3(dh+eg)\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}x^4(di+eh)\left(a+b\sin^{-1}(cx)\right)+dfx\left(a+b\sin^{-1}(cx)\right)$$

```
[Out] (b*(25*c^2*(e*g + d*h) + 12*e*i)*x^2*Sqrt[1 - c^2*x^2])/(225*c^3) + (b*(e*h
 + d*i)*x^3*Sqrt[1 - c^2*x^2])/(16*c) + (b*e*i*x^4*Sqrt[1 - c^2*x^2])/(25*c
) + (b*(32*(225*c^4*d*f + 50*c^2*(e*g + d*h) + 24*e*i) + 225*c^2*(8*c^2*(e*
f + d*g) + 3*(e*h + d*i))*x)*Sqrt[1 - c^2*x^2])/(7200*c^5) - (b*(8*c^2*(e*f
 + d*g) + 3*(e*h + d*i))*ArcSin[c*x])/(32*c^4) + d*f*x*(a + b*ArcSin[c*x])
+ ((e*f + d*g)*x^2*(a + b*ArcSin[c*x]))/2 + ((e*g + d*h)*x^3*(a + b*ArcSin[
c*x]))/3 + ((e*h + d*i)*x^4*(a + b*ArcSin[c*x]))/4 + (e*i*x^5*(a + b*ArcSin
[c*x]))/5
```

Rubi [A] time = 0.948063, antiderivative size = 308, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {4749, 12, 1809, 780, 216}

$$\frac{1}{2}x^2(dg+ef)\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}x^3(dh+eg)\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}x^4(di+eh)\left(a+b\sin^{-1}(cx)\right)+dfx\left(a+b\sin^{-1}(cx)\right)$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)*(f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]),x]
```



```
[Out] (b*(25*c^2*(e*g + d*h) + 12*e*i)*x^2*Sqrt[1 - c^2*x^2])/(225*c^3) + (b*(e*h
 + d*i)*x^3*Sqrt[1 - c^2*x^2])/(16*c) + (b*e*i*x^4*Sqrt[1 - c^2*x^2])/(25*c
) + (b*(32*(225*c^4*d*f + 50*c^2*(e*g + d*h) + 24*e*i) + 225*c^2*(8*c^2*(e*
f + d*g) + 3*(e*h + d*i))*x)*Sqrt[1 - c^2*x^2])/(7200*c^5) - (b*(8*c^2*(e*f
 + d*g) + 3*(e*h + d*i))*ArcSin[c*x])/(32*c^4) + d*f*x*(a + b*ArcSin[c*x])
+ ((e*f + d*g)*x^2*(a + b*ArcSin[c*x]))/2 + ((e*g + d*h)*x^3*(a + b*ArcSin[
c*x]))/3 + ((e*h + d*i)*x^4*(a + b*ArcSin[c*x]))/4 + (e*i*x^5*(a + b*ArcSin
[c*x]))/5
```


Rule 4749

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_), x_Symbol] :> With[{u = IntHid
e[ExpandExpression[Px, x], x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, I
nt[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[{a, b, c}, x
```

```
] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1809

```
Int[(Pq_)*((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2)^(p_), x_Symbol] :> With[
{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[(f*(c*x)^(m + q -
1)*(a + b*x^2)^(p + 1))/(b*c^(q - 1)*(m + q + 2*p + 1)), x] + Dist[1/(b*(m
+ q + 2*p + 1)), Int[(c*x)^m*(a + b*x^2)^p*ExpandToSum[b*(m + q + 2*p + 1)*
Pq - b*f*(m + q + 2*p + 1)*x^q - a*f*(m + q - 1)*x^(q - 2), x], x], x] /; G
tQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, m, p}, x] && PolyQ[
Pq, x] && ( !IGtQ[m, 0] || IGtQ[p + 1/2, -1])
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 216

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

Rubi steps

$$\int (d+ex)\left(f+gx+hx^2+108x^3\right)\left(a+b\sin^{-1}(cx)\right)\,dx = dfx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}(ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}(eg$$

$$= dfx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}(ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}(eg$$

$$= \frac{108bex^4\sqrt{1-c^2x^2}}{25c}+dfx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}(ef+dg)x^2\left(a+\right.$$

$$= \frac{b(108d+eh)x^3\sqrt{1-c^2x^2}}{16c}+\frac{108bex^4\sqrt{1-c^2x^2}}{25c}+dfx\left(a+b\sin\right.$$

$$= \frac{b\left(e\left(1296+25c^2g\right)+25c^2dh\right)x^2\sqrt{1-c^2x^2}}{225c^3}+\frac{b(108d+eh)x^3\sqrt{}}{16c}$$

$$= \frac{b\left(e\left(1296+25c^2g\right)+25c^2dh\right)x^2\sqrt{1-c^2x^2}}{225c^3}+\frac{b(108d+eh)x^3\sqrt{}}{16c}$$

$$= \frac{b\left(e\left(1296+25c^2g\right)+25c^2dh\right)x^2\sqrt{1-c^2x^2}}{225c^3}+\frac{b(108d+eh)x^3\sqrt{}}{16c}$$

Mathematica [A] time = 0.465432, size = 253, normalized size = 0.82

$$\frac{120ac^5x(5d(12f+x(6g+x(4h+3ix)))+ex(30f+x(20g+3x(5h+4ix))))+b\sqrt{1-c^2x^2}\left(2c^4(25d(144f+x(36g+x(16h\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)*(f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (120*a*c^5*x*(5*d*(12*f + x*(6*g + x*(4*h + 3*i*x))) + e*x*(30*f + x*(20*g
+ 3*x*(5*h + 4*i*x)))) + b*Sqrt[1 - c^2*x^2]*(768*e*i + c^2*(25*d*(64*h + 2
7*i*x) + e*(1600*g + 675*h*x + 384*i*x^2)) + 2*c^4*(25*d*(144*f + x*(36*g +
 x*(16*h + 9*i*x))) + e*x*(900*f + x*(400*g + 9*x*(25*h + 16*i*x))))) + 15*
b*c*(-120*c^2*(e*f + d*g) - 45*(e*h + d*i) + 8*c^4*x*(5*d*(12*f + x*(6*g +
x*(4*h + 3*i*x))) + e*x*(30*f + x*(20*g + 3*x*(5*h + 4*i*x)))))*ArcSin[c*x]
)/(7200*c^5)
```

Maple [A] time = 0.005, size = 428, normalized size = 1.4

$$\frac{1}{c}\left(\frac{a}{c^4}\left(\frac{eic^5x^5}{5}+\frac{(dci+ech)\,c^4x^4}{4}+\frac{\left(dc^2h+ec^2g\right)c^3x^3}{3}+\frac{\left(dc^3g+efc^3\right)c^2x^2}{2}+c^5fdx\right)+\frac{b}{c^4}\left(\frac{\arcsin(cx)\,eic^5x^5}{5}+\frac{\arcsin(}{}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c*(a/c^4*(1/5*e*i*c^5*x^5+1/4*(c*d*i+c*e*h)*c^4*x^4+1/3*(c^2*d*h+c^2*e*g)
*c^3*x^3+1/2*(c^3*d*g+c^3*e*f)*c^2*x^2+c^5*f*d*x)+b/c^4*(1/5*arcsin(c*x)*e*
i*c^5*x^5+1/4*arcsin(c*x)*c^5*x^4*d*i+1/4*arcsin(c*x)*c^5*x^4*e*h+1/3*arcsi
n(c*x)*c^5*x^3*d*h+1/3*arcsin(c*x)*c^5*x^3*e*g+1/2*arcsin(c*x)*c^5*x^2*d*g+
1/2*arcsin(c*x)*c^5*x^2*e*f+arcsin(c*x)*c^5*f*d*x-1/5*e*i*(-1/5*c^4*x^4*(-c
^2*x^2+1)^(1/2)-4/15*c^2*x^2*(-c^2*x^2+1)^(1/2)-8/15*(-c^2*x^2+1)^(1/2))-1/
60*(15*c*d*i+15*c*e*h)*(-1/4*c^3*x^3*(-c^2*x^2+1)^(1/2)-3/8*c*x*(-c^2*x^2+1
)^(1/2)+3/8*arcsin(c*x))-1/60*(20*c^2*d*h+20*c^2*e*g)*(-1/3*c^2*x^2*(-c^2*x
^2+1)^(1/2)-2/3*(-c^2*x^2+1)^(1/2))-1/60*(30*c^3*d*g+30*c^3*e*f)*(-1/2*c*x*
(-c^2*x^2+1)^(1/2)+1/2*arcsin(c*x))+c^4*d*f*(-c^2*x^2+1)^(1/2)))
```

Maxima [A] time = 1.49323, size = 726, normalized size = 2.36

$$\frac{1}{5}\,aeix^5+\frac{1}{4}\,aehx^4+\frac{1}{4}\,adix^4+\frac{1}{3}\,aegx^3+\frac{1}{3}\,adhx^3+\frac{1}{2}\,aefx^2+\frac{1}{2}\,adgx^2+\frac{1}{4}\left(2\,x^2\arcsin\left(cx\right)+c\left(\frac{\sqrt{-c^2x^2+1}x}{c^2}-\frac{\mathrm{arcsi}}{\sqrt{}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="maxim
a")
```

```
[Out] 1/5*a*e*i*x^5 + 1/4*a*e*h*x^4 + 1/4*a*d*i*x^4 + 1/3*a*e*g*x^3 + 1/3*a*d*h*x
^3 + 1/2*a*e*f*x^2 + 1/2*a*d*g*x^2 + 1/4*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*
x^2 + 1)*x/c^2 - arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^2)))*b*e*f + 1/4*(2*x
^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c^2*x/sqrt(c^2))/(sqr
t(c^2)*c^2)))*b*d*g + 1/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^
2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*e*g + 1/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^
2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*d*h + 1/32*(8*x^4*arcsin(
c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsi
n(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^4))*c)*b*e*h + 1/32*(8*x^4*arcsin(c*x) + (2
*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c^2*x/s
qrt(c^2))/(sqrt(c^2)*c^4))*c)*b*d*i + 1/75*(15*x^5*arcsin(c*x) + (3*sqrt(-c
^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c
^6)*c)*b*e*i + a*d*f*x + (c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*b*d*f/c
```

Fricas [A] time = 2.80817, size = 846, normalized size = 2.75

$$\frac{1440\,ac^5eix^5 + 7200\,ac^5dfx + 1800\left(ac^5eh + ac^5di\right)x^4 + 2400\left(ac^5eg + ac^5dh\right)x^3 + 3600\left(ac^5ef + ac^5dg\right)x^2 + 15\left(96\,bc^5ei\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="frica
s")
```

```
[Out] 1/7200*(1440*a*c^5*e*i*x^5 + 7200*a*c^5*d*f*x + 1800*(a*c^5*e*h + a*c^5*d*i
)*x^4 + 2400*(a*c^5*e*g + a*c^5*d*h)*x^3 + 3600*(a*c^5*e*f + a*c^5*d*g)*x^2
 + 15*(96*b*c^5*e*i*x^5 + 480*b*c^5*d*f*x - 120*b*c^3*e*f - 120*b*c^3*d*g +
 120*(b*c^5*e*h + b*c^5*d*i)*x^4 - 45*b*c*e*h - 45*b*c*d*i + 160*(b*c^5*e*g
 + b*c^5*d*h)*x^3 + 240*(b*c^5*e*f + b*c^5*d*g)*x^2)*arcsin(c*x) + (288*b*c
^4*e*i*x^4 + 7200*b*c^4*d*f + 1600*b*c^2*e*g + 1600*b*c^2*d*h + 450*(b*c^4*
e*h + b*c^4*d*i)*x^3 + 768*b*e*i + 32*(25*b*c^4*e*g + 25*b*c^4*d*h + 12*b*c
^2*e*i)*x^2 + 225*(8*b*c^4*e*f + 8*b*c^4*d*g + 3*b*c^2*e*h + 3*b*c^2*d*i)*x
)*sqrt(-c^2*x^2 + 1))/c^5
```

Sympy [A] time = 6.03738, size = 658, normalized size = 2.14

$$\begin{cases} adfx + \frac{adgx^2}{2} + \frac{adhx^3}{3} + \frac{adix^4}{4} + \frac{aefx^2}{2} + \frac{aegx^3}{3} + \frac{aehx^4}{4} + \frac{aeix^5}{5} + bdfx\operatorname{asin}(cx) + \frac{bdgx^2\operatorname{asin}(cx)}{2} + \frac{bdhx^3\operatorname{asin}(cx)}{3} + \frac{bdix^4\operatorname{asin}(cx)}{4} \\ a\left(dfx + \frac{dgx^2}{2} + \frac{dhx^3}{3} + \frac{dix^4}{4} + \frac{efx^2}{2} + \frac{egx^3}{3} + \frac{ehx^4}{4} + \frac{eix^5}{5}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(i*x**3+h*x**2+g*x+f)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d*f*x + a*d*g*x**2/2 + a*d*h*x**3/3 + a*d*i*x**4/4 + a*e*f*x**
2/2 + a*e*g*x**3/3 + a*e*h*x**4/4 + a*e*i*x**5/5 + b*d*f*x*asin(c*x) + b*d*
g*x**2*asin(c*x)/2 + b*d*h*x**3*asin(c*x)/3 + b*d*i*x**4*asin(c*x)/4 + b*e*
f*x**2*asin(c*x)/2 + b*e*g*x**3*asin(c*x)/3 + b*e*h*x**4*asin(c*x)/4 + b*e*
i*x**5*asin(c*x)/5 + b*d*f*sqrt(-c**2*x**2 + 1)/c + b*d*g*x*sqrt(-c**2*x**2
 + 1)/(4*c) + b*d*h*x**2*sqrt(-c**2*x**2 + 1)/(9*c) + b*d*i*x**3*sqrt(-c**2
*x**2 + 1)/(16*c) + b*e*f*x*sqrt(-c**2*x**2 + 1)/(4*c) + b*e*g*x**2*sqrt(-c
**2*x**2 + 1)/(9*c) + b*e*h*x**3*sqrt(-c**2*x**2 + 1)/(16*c) + b*e*i*x**4*s
qrt(-c**2*x**2 + 1)/(25*c) - b*d*g*asin(c*x)/(4*c**2) - b*e*f*asin(c*x)/(4*
c**2) + 2*b*d*h*sqrt(-c**2*x**2 + 1)/(9*c**3) + 3*b*d*i*x*sqrt(-c**2*x**2 +
 1)/(32*c**3) + 2*b*e*g*sqrt(-c**2*x**2 + 1)/(9*c**3) + 3*b*e*h*x*sqrt(-c**
```

```
2*x**2 + 1)/(32*c**3) + 4*b*e*i*x**2*sqrt(-c**2*x**2 + 1)/(75*c**3) - 3*b*d
*i*asin(c*x)/(32*c**4) - 3*b*e*h*asin(c*x)/(32*c**4) + 8*b*e*i*sqrt(-c**2*x
**2 + 1)/(75*c**5), Ne(c, 0)), (a*(d*f*x + d*g*x**2/2 + d*h*x**3/3 + d*i*x*
*4/4 + e*f*x**2/2 + e*g*x**3/3 + e*h*x**4/4 + e*i*x**5/5), True))
```

Giac [B] time = 1.19007, size = 1041, normalized size = 3.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="giac"
)
```

```
[Out] 1/5*a*i*x^5*e + 1/3*a*d*h*x^3 + 1/3*a*g*x^3*e + b*d*f*x*arcsin(c*x) + a*d*f
*x + 1/3*(c^2*x^2 - 1)*b*d*h*x*arcsin(c*x)/c^2 + 1/3*(c^2*x^2 - 1)*b*g*x*ar
csin(c*x)*e/c^2 + 1/4*sqrt(-c^2*x^2 + 1)*b*d*g*x/c + 1/4*sqrt(-c^2*x^2 + 1)
*b*f*x*e/c + 1/2*(c^2*x^2 - 1)*b*d*g*arcsin(c*x)/c^2 + 1/3*b*d*h*x*arcsin(c
*x)/c^2 + 1/2*(c^2*x^2 - 1)*b*f*arcsin(c*x)*e/c^2 + 1/3*b*g*x*arcsin(c*x)*e
/c^2 + 1/5*(c^2*x^2 - 1)^2*b*i*x*arcsin(c*x)*e/c^4 + sqrt(-c^2*x^2 + 1)*b*d
*f/c - 1/16*(-c^2*x^2 + 1)^(3/2)*b*d*i*x/c^3 - 1/16*(-c^2*x^2 + 1)^(3/2)*b*
h*x*e/c^3 + 1/2*(c^2*x^2 - 1)*a*d*g/c^2 + 1/4*b*d*g*arcsin(c*x)/c^2 + 1/4*(
c^2*x^2 - 1)^2*b*d*i*arcsin(c*x)/c^4 + 1/2*(c^2*x^2 - 1)*a*f*e/c^2 + 1/4*b*
f*arcsin(c*x)*e/c^2 + 1/4*(c^2*x^2 - 1)^2*b*h*arcsin(c*x)*e/c^4 + 2/5*(c^2*
x^2 - 1)*b*i*x*arcsin(c*x)*e/c^4 - 1/9*(-c^2*x^2 + 1)^(3/2)*b*d*h/c^3 + 5/3
2*sqrt(-c^2*x^2 + 1)*b*d*i*x/c^3 - 1/9*(-c^2*x^2 + 1)^(3/2)*b*g*e/c^3 + 5/3
2*sqrt(-c^2*x^2 + 1)*b*h*x*e/c^3 + 1/4*(c^2*x^2 - 1)^2*a*d*i/c^4 + 1/2*(c^2
*x^2 - 1)*b*d*i*arcsin(c*x)/c^4 + 1/4*(c^2*x^2 - 1)^2*a*h*e/c^4 + 1/2*(c^2*
x^2 - 1)*b*h*arcsin(c*x)*e/c^4 + 1/5*b*i*x*arcsin(c*x)*e/c^4 + 1/3*sqrt(-c^
2*x^2 + 1)*b*d*h/c^3 + 1/3*sqrt(-c^2*x^2 + 1)*b*g*e/c^3 + 1/25*(c^2*x^2 - 1
)^2*sqrt(-c^2*x^2 + 1)*b*i*e/c^5 + 1/2*(c^2*x^2 - 1)*a*d*i/c^4 + 5/32*b*d*i
*arcsin(c*x)/c^4 + 1/2*(c^2*x^2 - 1)*a*h*e/c^4 + 5/32*b*h*arcsin(c*x)*e/c^4
 - 2/15*(-c^2*x^2 + 1)^(3/2)*b*i*e/c^5 + 1/5*sqrt(-c^2*x^2 + 1)*b*i*e/c^5
```

3.109 $\int \frac{(f+gx+hx^2+ix^3)(a+b\sin^{-1}(cx))}{d+ex}\,dx$

Optimal. Leaf size=623

$$-\frac{ib\left(d^2eh+d^3(-i)-de^2g+e^3f\right)\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^4}-\frac{ib\left(d^2eh+d^3(-i)-de^2g+e^3f\right)\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e^4}+$$

```
[Out] (b*i*x^2*Sqrt[1 - c^2*x^2])/(9*c*e) + (b*(4*(2*e^2*i + 9*c^2*(e^2*g - d*e*h
 + d^2*i)) + 9*c^2*e*(e*h - d*i)*x)*Sqrt[1 - c^2*x^2])/(36*c^3*e^3) - (b*(e
*h - d*i)*ArcSin[c*x])/(4*c^2*e^2) - ((I/2)*b*(e^3*f - d*e^2*g + d^2*e*h -
d^3*i)*ArcSin[c*x]^2)/e^4 + ((e^2*g - d*e*h + d^2*i)*x*(a + b*ArcSin[c*x]))
/e^3 + ((e*h - d*i)*x^2*(a + b*ArcSin[c*x]))/(2*e^2) + (i*x^3*(a + b*ArcSin
[c*x]))/(3*e) + (b*(e^3*f - d*e^2*g + d^2*e*h - d^3*i)*ArcSin[c*x]*Log[1 -
(I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^4 + (b*(e^3*f - d*e
^2*g + d^2*e*h - d^3*i)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d +
Sqrt[c^2*d^2 - e^2])])/e^4 - (b*(e^3*f - d*e^2*g + d^2*e*h - d^3*i)*ArcSin[
c*x]*Log[d + e*x])/e^4 + ((e^3*f - d*e^2*g + d^2*e*h - d^3*i)*(a + b*ArcSin
[c*x])*Log[d + e*x])/e^4 - (I*b*(e^3*f - d*e^2*g + d^2*e*h - d^3*i)*PolyLog
[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^4 - (I*b*(e^3*f
 - d*e^2*g + d^2*e*h - d^3*i)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqr
t[c^2*d^2 - e^2])])/e^4
```

Rubi [A] time = 1.1357, antiderivative size = 623, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 13, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.419, Rules used = {1850, 4753, 12, 6742, 1809, 780, 216, 2404, 4741, 4519, 2190, 2279, 2391}

$$-\frac{ib\left(d^2eh+d^3(-i)-de^2g+e^3f\right)\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^4}-\frac{ib\left(d^2eh+d^3(-i)-de^2g+e^3f\right)\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e^4}+$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]))/(d + e*x),x]
```


```
[Out] (b*i*x^2*Sqrt[1 - c^2*x^2])/(9*c*e) + (b*(4*(2*e^2*i + 9*c^2*(e^2*g - d*e*h
 + d^2*i)) + 9*c^2*e*(e*h - d*i)*x)*Sqrt[1 - c^2*x^2])/(36*c^3*e^3) - (b*(e
*h - d*i)*ArcSin[c*x])/(4*c^2*e^2) - ((I/2)*b*(e^3*f - d*e^2*g + d^2*e*h -
d^3*i)*ArcSin[c*x]^2)/e^4 + ((e^2*g - d*e*h + d^2*i)*x*(a + b*ArcSin[c*x]))
/e^3 + ((e*h - d*i)*x^2*(a + b*ArcSin[c*x]))/(2*e^2) + (i*x^3*(a + b*ArcSin
```

```
[c*x]))/(3*e) + (b*(e^3*f - d*e^2*g + d^2*e*h - d^3*i)*ArcSin[c*x]*Log[1 -
(I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^4 + (b*(e^3*f - d*e
^2*g + d^2*e*h - d^3*i)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d +
Sqrt[c^2*d^2 - e^2])])/e^4 - (b*(e^3*f - d*e^2*g + d^2*e*h - d^3*i)*ArcSin[
c*x]*Log[d + e*x])/e^4 + ((e^3*f - d*e^2*g + d^2*e*h - d^3*i)*(a + b*ArcSin
[c*x])*Log[d + e*x])/e^4 - (I*b*(e^3*f - d*e^2*g + d^2*e*h - d^3*i)*PolyLog
[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^4 - (I*b*(e^3*f
 - d*e^2*g + d^2*e*h - d^3*i)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqr
t[c^2*d^2 - e^2])])/e^4
```

Rule 1850

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_.), x_Symbol] :> Int[ExpandIntegrand
[Pq*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, n}, x] && PolyQ[Pq, x] && (IGtQ[p
, 0] || EqQ[n, 1])
```

Rule 4753

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 1809

```
Int[(Pq_)*((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2)^(p_), x_Symbol] :> With[
{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[(f*(c*x)^(m + q -
1)*(a + b*x^2)^(p + 1))/(b*c^(q - 1)*(m + q + 2*p + 1)), x] + Dist[1/(b*(m
+ q + 2*p + 1)), Int[(c*x)^m*(a + b*x^2)^p*ExpandToSum[b*(m + q + 2*p + 1)*
Pq - b*f*(m + q + 2*p + 1)*x^q - a*f*(m + q - 1)*x^(q - 2), x], x], x] /; G
tQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, m, p}, x] && PolyQ[
Pq, x] && ( !IGtQ[m, 0] || IGtQ[p + 1/2, -1])
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 216

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

Rule 2404

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
```

```
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rubi steps

$$\int \frac{\left(f+gx+hx^2+109x^3\right)\left(a+b\sin^{-1}(cx)\right)}{d+ex}\,dx = \frac{\left(109d^2+e^2g-deh\right)x\left(a+b\sin^{-1}(cx)\right)}{e^3} - \frac{(109d-eh)x^2\left(a+b\sin^{-1}(\right.}{2e^2}$$

$$= \frac{\left(109d^2+e^2g-deh\right)x\left(a+b\sin^{-1}(cx)\right)}{e^3} - \frac{(109d-eh)x^2\left(a+b\sin^{-1}(\right.}{2e^2}$$

$$= \frac{\left(109d^2+e^2g-deh\right)x\left(a+b\sin^{-1}(cx)\right)}{e^3} - \frac{(109d-eh)x^2\left(a+b\sin^{-1}(\right.}{2e^2}$$

$$= \frac{\left(109d^2+e^2g-deh\right)x\left(a+b\sin^{-1}(cx)\right)}{e^3} - \frac{(109d-eh)x^2\left(a+b\sin^{-1}(\right.}{2e^2}$$

$$= \frac{109bx^2\sqrt{1-c^2x^2}}{9ce} + \frac{\left(109d^2+e^2g-deh\right)x\left(a+b\sin^{-1}(cx)\right)}{e^3} - \frac{(109d\ }{}$$

$$= \frac{109bx^2\sqrt{1-c^2x^2}}{9ce} + \frac{b\left(4\left(218e^2+9c^2\left(109d^2+e^2g-deh\right)\right)-9c^2e(10\right.}{36c^3e^3}$$

$$= \frac{109bx^2\sqrt{1-c^2x^2}}{9ce} + \frac{b\left(4\left(218e^2+9c^2\left(109d^2+e^2g-deh\right)\right)-9c^2e(10\right.}{36c^3e^3}$$

$$= \frac{109bx^2\sqrt{1-c^2x^2}}{9ce} + \frac{b\left(4\left(218e^2+9c^2\left(109d^2+e^2g-deh\right)\right)-9c^2e(10\right.}{36c^3e^3}$$

$$= \frac{109bx^2\sqrt{1-c^2x^2}}{9ce} + \frac{b\left(4\left(218e^2+9c^2\left(109d^2+e^2g-deh\right)\right)-9c^2e(10\right.}{36c^3e^3}$$

$$= \frac{109bx^2\sqrt{1-c^2x^2}}{9ce} + \frac{b\left(4\left(218e^2+9c^2\left(109d^2+e^2g-deh\right)\right)-9c^2e(10\right.}{36c^3e^3}$$

Mathematica [A] time = 1.00474, size = 498, normalized size = 0.8

$$\frac{b\left(-18ic^3\left(d^2eh+d^3(-i)-de^2g+e^3f\right)\left(2\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)+2\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)+\sin^{-1}(cx)\left(\sin^{-1}(cx)+2i\left(\log\left(1+\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}-cd}\right)+\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)\right)\right)\right)}{6c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]))/(d + e*x),x]
```

```
[Out] (6*e*(e^2*g - d*e*h + d^2*i)*x*(a + b*ArcSin[c*x]) + 3*e^2*(e*h - d*i)*x^2*
(a + b*ArcSin[c*x]) + 2*e^3*i*x^3*(a + b*ArcSin[c*x]) + 6*(e^3*f - d*e^2*g
+ d^2*e*h - d^3*i)*(a + b*ArcSin[c*x])*Log[d + e*x] + (b*(36*c^2*e*(e^2*g -
 d*e*h + d^2*i)*Sqrt[1 - c^2*x^2] + 9*c^2*e^2*(e*h - d*i)*x*Sqrt[1 - c^2*x^
2] + 4*e^3*i*Sqrt[1 - c^2*x^2]*(2 + c^2*x^2) - 9*c*e^2*(e*h - d*i)*ArcSin[c
*x] - 36*c^3*(e^3*f - d*e^2*g + d^2*e*h - d^3*i)*ArcSin[c*x]*Log[d + e*x] -
 (18*I)*c^3*(e^3*f - d*e^2*g + d^2*e*h - d^3*i)*(ArcSin[c*x]*(ArcSin[c*x] +
 (2*I)*(Log[1 + (I*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] + L
og[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])) + 2*PolyLog[2
, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])] + 2*PolyLog[2, (I*e*
E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])))/(6*c^3))/(6*e^4)
```

Maple [B] time = 0.709, size = 3455, normalized size = 5.6

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d),x)
```

```
[Out] -1/4/c*b/e^2*(-c^2*x^2+1)^(1/2)*x*d*i+b/e^2*d^3*i*arcsin(c*x)/(c^2*d^2-e^2)
*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*
d^2+e^2)^(1/2)))+b/e^2*d^3*i*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c
^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-I*b/
e^2*d^3*i/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2
+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-I*b/e^2*d^3*i/(c^2*d^2-e^2)*dilo
g((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^
2+e^2)^(1/2)))+b*g*(-c^2*x^2+1)^(1/2)/c/e-I*b*d*g/(c^2*d^2-e^2)*dilog((I*d*
c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^
(1/2)))+b*arcsin(c*x)*g/e*x-1/2*I*b*arcsin(c*x)^2/e*f-a/e^2*ln(c*e*x+c*d)*d
*g+c^2*b/e*f*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))
```

```
*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*d^2+I*c^2*b/e^2*d^3*
g/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1
/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-I*c^2*b/e*f/(c^2*d^2-e^2)*dilog((I*d*c+(
I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/
2)))*d^2-c^2*b/e^2*d^3*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x
^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-c^2*b/e^
2*d^3*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-
c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-I*c^2*b/e*f/(c^2*d^2-e^2)
*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c
^2*d^2+e^2)^(1/2)))*d^2+I*c^2*b/e^2*d^3*g/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x
+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+
c^2*b/e*f*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-
(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*d^2-1/4*b*h*arcsin(c*x)
/c^2/e-b*e*f*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))
*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+b*d*g*arcsin(c*x)/(c
^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I
*d*c-(-c^2*d^2+e^2)^(1/2)))+I*b*e*f/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2
*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+I*b*e*
f/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1
/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+1/2*I*b*arcsin(c*x)^2/e^2*d*g-I*b*d*g/(c
^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))
/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+b*d*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I
*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2
)))-b*e*f*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-
(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+a*g/e*x+a/e*ln(c*e*x+c*
d)*f+1/4/c*b/e*h*(-c^2*x^2+1)^(1/2)*x-1/c*b/e^2*(-c^2*x^2+1)^(1/2)*d*h-b*ar
csin(c*x)/e^2*d*h*x-1/2*I*b*arcsin(c*x)^2/e^3*d^2*h+I*c^2*b/e^4*d^5*i/(c^2*
d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I
*d*c-(-c^2*d^2+e^2)^(1/2)))+I*c^2*b/e^4*d^5*i/(c^2*d^2-e^2)*dilog((I*d*c+(I
*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2
)))-c^2*b/e^4*d^5*i*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)
^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-c^2*b/e^4*d^5
*i*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d
^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+1/3*a/e*i*x^3+1/9*b*i*x^2*(-c^
2*x^2+1)^(1/2)/c/e+1/2*a/e*h*x^2-a/e^2*d*h*x+1/2*b*arcsin(c*x)/e*h*x^2+a/e^
3*ln(c*e*x+c*d)*d^2*h-b/e*d^2*h*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+
(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-b
/e*d^2*h*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(
-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+I*b/e*d^2*h/(c^2*d^2-e^2
)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-
c^2*d^2+e^2)^(1/2)))+I*b/e*d^2*h/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^
2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+c^2*b/e^3
*d^4*h*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c
^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+c^2*b/e^3*d^4*h*arcsin(c*x
)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2)
```

```
)/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-I*c^2*b/e^3*d^4*h/(c^2*d^2-e^2)*dilog((I*d*
c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^
(1/2)))-I*c^2*b/e^3*d^4*h/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1
/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+1/4/c^2*b/e^2*ar
csin(c*x)*d*i-1/2*b*arcsin(c*x)/e^2*x^2*d*i+b*arcsin(c*x)/e^3*d^2*i*x+1/c*b
/e^3*(-c^2*x^2+1)^(1/2)*d^2*i+1/2*I*b*arcsin(c*x)^2/e^4*d^3*i+a/e^3*d^2*i*x
+1/3*b*arcsin(c*x)/e*i*x^3+2/9/c^3*b/e*i*(-c^2*x^2+1)^(1/2)-a/e^4*ln(c*e*x+
c*d)*d^3*i-1/2*a/e^2*x^2*d*i
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$ag\left(\frac{x}{e}-\frac{d\log\left(ex+d\right)}{e^2}\right)-\frac{1}{6}\,ai\left(\frac{6\,d^3\log\left(ex+d\right)}{e^4}-\frac{2\,e^2x^3-3\,dex^2+6\,d^2x}{e^3}\right)+\frac{1}{2}\,ah\left(\frac{2\,d^2\log\left(ex+d\right)}{e^3}+\frac{ex^2-2\,dx}{e^2}\right)+\frac{af\log}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d),x, algorithm="maxim
a")
```

```
[Out] a*g*(x/e - d*log(e*x + d)/e^2) - 1/6*a*i*(6*d^3*log(e*x + d)/e^4 - (2*e^2*x
^3 - 3*d*e*x^2 + 6*d^2*x)/e^3) + 1/2*a*h*(2*d^2*log(e*x + d)/e^3 + (e*x^2 -
 2*d*x)/e^2) + a*f*log(e*x + d)/e + integrate((b*i*x^3 + b*h*x^2 + b*g*x +
b*f)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(e*x + d), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{aix^3+ahx^2+agx+af+\left(bix^3+bhx^2+bgx+bf\right)\arcsin\left(cx\right)}{ex+d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d),x, algorithm="frica
s")
```

```
[Out] integral((a*i*x^3 + a*h*x^2 + a*g*x + a*f + (b*i*x^3 + b*h*x^2 + b*g*x + b*
f)*arcsin(c*x))/(e*x + d), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + b\operatorname{asin}(cx))\left(f + gx + hx^2 + ix^3\right)}{d + ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x**3+h*x**2+g*x+f)*(a+b*asin(c*x))/(e*x+d),x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x + h*x**2 + i*x**3)/(d + e*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(ix^3 + hx^2 + gx + f\right)(b\arcsin(cx) + a)}{ex + d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d),x, algorithm="giac"
)
```

```
[Out] integrate((i*x^3 + h*x^2 + g*x + f)*(b*arcsin(c*x) + a)/(e*x + d), x)
```

3.110 $\int \frac{(f+gx+hx^2+ix^3)(a+b\sin^{-1}(cx))}{(d+ex)^2}\,dx$

Optimal. Leaf size=617

$$-\frac{ib\left(3d^2i-2deh+e^2g\right)\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^4}-\frac{ib\left(3d^2i-2deh+e^2g\right)\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e^4}-\frac{\left(a+b\sin^{-1}(cx)\right)\left(a\right.}{e}$$

```
[Out] (b*(e*h - 2*d*i)*Sqrt[1 - c^2*x^2])/(c*e^3) + (b*i*x*Sqrt[1 - c^2*x^2])/(4*
c*e^2) - (b*i*ArcSin[c*x])/(4*c^2*e^2) - ((I/2)*b*(e^2*g - 2*d*e*h + 3*d^2*
i)*ArcSin[c*x]^2)/e^4 + ((e*h - 2*d*i)*x*(a + b*ArcSin[c*x]))/e^3 + (i*x^2*
(a + b*ArcSin[c*x]))/(2*e^2) - ((e^3*f - d*e^2*g + d^2*e*h - d^3*i)*(a + b*
ArcSin[c*x]))/(e^4*(d + e*x)) + (b*c*(e^3*f - d*e^2*g + d^2*e*h - d^3*i)*Ar
cTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(e^4*Sqrt[c^2*
d^2 - e^2]) + (b*(e^2*g - 2*d*e*h + 3*d^2*i)*ArcSin[c*x]*Log[1 - (I*e*E^(I*
ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^4 + (b*(e^2*g - 2*d*e*h + 3*d
^2*i)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2
])])/e^4 - (b*(e^2*g - 2*d*e*h + 3*d^2*i)*ArcSin[c*x]*Log[d + e*x])/e^4 + (
(e^2*g - 2*d*e*h + 3*d^2*i)*(a + b*ArcSin[c*x])*Log[d + e*x])/e^4 - (I*b*(e
^2*g - 2*d*e*h + 3*d^2*i)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^
2*d^2 - e^2])])/e^4 - (I*b*(e^2*g - 2*d*e*h + 3*d^2*i)*PolyLog[2, (I*e*E^(I
*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^4
```

Rubi [A] time = 1.74197, antiderivative size = 617, normalized size of antiderivative = 1., number of steps used = 18, number of rules used = 15, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.484, Rules used = {1850, 4753, 12, 6742, 261, 321, 216, 725, 204, 2404, 4741, 4519, 2190, 2279, 2391}

$$-\frac{ib\left(3d^2i-2deh+e^2g\right)\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^4}-\frac{ib\left(3d^2i-2deh+e^2g\right)\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e^4}-\frac{\left(a+b\sin^{-1}(cx)\right)\left(a\right.}{e}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]))/(d + e*x)^2,x]
```



```
[Out] (b*(e*h - 2*d*i)*Sqrt[1 - c^2*x^2])/(c*e^3) + (b*i*x*Sqrt[1 - c^2*x^2])/(4*
c*e^2) - (b*i*ArcSin[c*x])/(4*c^2*e^2) - ((I/2)*b*(e^2*g - 2*d*e*h + 3*d^2*
i)*ArcSin[c*x]^2)/e^4 + ((e*h - 2*d*i)*x*(a + b*ArcSin[c*x]))/e^3 + (i*x^2*
(a + b*ArcSin[c*x]))/(2*e^2) - ((e^3*f - d*e^2*g + d^2*e*h - d^3*i)*(a + b*
ArcSin[c*x]))/(e^4*(d + e*x)) + (b*c*(e^3*f - d*e^2*g + d^2*e*h - d^3*i)*Ar
```

```
cTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(e^4*Sqrt[c^2*
d^2 - e^2]) + (b*(e^2*g - 2*d*e*h + 3*d^2*i)*ArcSin[c*x]*Log[1 - (I*e*E^(I*
ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^4 + (b*(e^2*g - 2*d*e*h + 3*d
^2*i)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2
])])/e^4 - (b*(e^2*g - 2*d*e*h + 3*d^2*i)*ArcSin[c*x]*Log[d + e*x])/e^4 + (
(e^2*g - 2*d*e*h + 3*d^2*i)*(a + b*ArcSin[c*x])*Log[d + e*x])/e^4 - (I*b*(e
^2*g - 2*d*e*h + 3*d^2*i)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^
2*d^2 - e^2])])/e^4 - (I*b*(e^2*g - 2*d*e*h + 3*d^2*i)*PolyLog[2, (I*e*E^(I
*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^4
```

Rule 1850

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_.), x_Symbol] :> Int[ExpandIntegrand
[Pq*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, n}, x] && PolyQ[Pq, x] && (IGtQ[p
, 0] || EqQ[n, 1])
```

Rule 4753

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 261

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

Rule 321

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

```
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 216

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

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

Rule 2404

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rubi steps

$$\int \frac{(f+gx+hx^2+110x^3)\left(a+b\sin^{-1}(cx)\right)}{(d+ex)^2}\,dx = -\frac{(220d-eh)x\left(a+b\sin^{-1}(cx)\right)}{e^3}+\frac{55x^2\left(a+b\sin^{-1}(cx)\right)}{e^2}+\frac{\left(110d^3-e\right.}{}$$

$$= -\frac{(220d-eh)x\left(a+b\sin^{-1}(cx)\right)}{e^3}+\frac{55x^2\left(a+b\sin^{-1}(cx)\right)}{e^2}+\frac{\left(110d^3-e\right.}{}$$

$$= -\frac{(220d-eh)x\left(a+b\sin^{-1}(cx)\right)}{e^3}+\frac{55x^2\left(a+b\sin^{-1}(cx)\right)}{e^2}+\frac{\left(110d^3-e\right.}{}$$

$$= -\frac{(220d-eh)x\left(a+b\sin^{-1}(cx)\right)}{e^3}+\frac{55x^2\left(a+b\sin^{-1}(cx)\right)}{e^2}+\frac{\left(110d^3-e\right.}{}$$

$$= \frac{55b(d+ex)\sqrt{1-c^2x^2}}{2ce^3}-\frac{(220d-eh)x\left(a+b\sin^{-1}(cx)\right)}{e^3}+\frac{55x^2\left(a+b\,s\right.}{e^2}$$

$$= -\frac{b(495d-2eh)\sqrt{1-c^2x^2}}{2ce^3}+\frac{55b(d+ex)\sqrt{1-c^2x^2}}{2ce^3}-\frac{(220d-eh)x\left(a+\right.}{e^3}$$

$$= -\frac{b(495d-2eh)\sqrt{1-c^2x^2}}{2ce^3}+\frac{55b(d+ex)\sqrt{1-c^2x^2}}{2ce^3}-\frac{ib\left(330d^2+e^2g-\right.}{2e}$$

$$= -\frac{b(495d-2eh)\sqrt{1-c^2x^2}}{2ce^3}+\frac{55b(d+ex)\sqrt{1-c^2x^2}}{2ce^3}-\frac{55b\sin^{-1}(cx)}{2c^2e^2}-\frac{i}{}$$

$$= -\frac{b(495d-2eh)\sqrt{1-c^2x^2}}{2ce^3}+\frac{55b(d+ex)\sqrt{1-c^2x^2}}{2ce^3}-\frac{55b\sin^{-1}(cx)}{2c^2e^2}-\frac{i}{}$$

$$= -\frac{b(495d-2eh)\sqrt{1-c^2x^2}}{2ce^3}+\frac{55b(d+ex)\sqrt{1-c^2x^2}}{2ce^3}-\frac{55b\sin^{-1}(cx)}{2c^2e^2}-\frac{i}{}$$

Mathematica [A] time = 1.43079, size = 515, normalized size = 0.83

$$\frac{-ib\left(3d^2i-2deh+e^2g\right)\left(2\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)+2\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)+\sin^{-1}(cx)\left(\sin^{-1}(cx)+2i\left(\log\left(1+\frac{iee^{i}}{\sqrt{c^2}}\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]))/(d + e*x)^2,x]
```

```
[Out] ((2*b*e*(e*h - 2*d*i)*Sqrt[1 - c^2*x^2])/c + (b*e^2*i*x*Sqrt[1 - c^2*x^2])/
(2*c) - (b*e^2*i*ArcSin[c*x])/(2*c^2) + 2*e*(e*h - 2*d*i)*x*(a + b*ArcSin[c
*x]) + e^2*i*x^2*(a + b*ArcSin[c*x]) - (2*(e^3*f - d*e^2*g + d^2*e*h - d^3*
i)*(a + b*ArcSin[c*x]))/(d + e*x) + (2*b*c*(e^3*f - d*e^2*g + d^2*e*h - d^3
*i)*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/Sqrt[c^2
*d^2 - e^2] - 2*b*(e^2*g - 2*d*e*h + 3*d^2*i)*ArcSin[c*x]*Log[d + e*x] + 2*
(e^2*g - 2*d*e*h + 3*d^2*i)*(a + b*ArcSin[c*x])*Log[d + e*x] - I*b*(e^2*g -
 2*d*e*h + 3*d^2*i)*(ArcSin[c*x]*(ArcSin[c*x] + (2*I)*(Log[1 + (I*e*E^(I*Ar
cSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] + Log[1 - (I*e*E^(I*ArcSin[c*x]
))/(c*d + Sqrt[c^2*d^2 - e^2])])) + 2*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c
*d - Sqrt[c^2*d^2 - e^2])] + 2*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sq
rt[c^2*d^2 - e^2])]))/(2*e^4)
```

Maple [B] time = 1.714, size = 2939, normalized size = 4.8

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^2,x)
```

```
[Out] -c*a/e/(c*e*x+c*d)*f+c*a/e^4/(c*e*x+c*d)*d^3*i-2/c*b/e^3*(-c^2*x^2+1)^(1/2)
*d*i-2*b*arcsin(c*x)/e^3*d*i*x-3/2*I*b*arcsin(c*x)^2/e^4*d^2*i-2*c^2*b/e^3*
d^3*h*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^
2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-2*c^2*b/e^3*d^3*h*arcsin(c*
x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2
))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+2*I*c^2*b/e^3*d^3*h/(c^2*d^2-e^2)*dilog((I
*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^
2)^(1/2)))+2*I*c^2*b/e^3*d^3*h/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+
1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-1/4*b*i*arc
sin(c*x)/c^2/e^2-2*a/e^3*d*i*x+1/2*b*arcsin(c*x)/e^2*i*x^2+3*a/e^4*ln(c*e*x
+c*d)*d^2*i+c*a/e^2/(c*e*x+c*d)*d*g-I*c^2*b/e^2*g/(c^2*d^2-e^2)*dilog((I*d*
c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^
(1/2)))*d^2+c^2*b/e^2*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^
2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*d^2+c^2*b
/e^2*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c
^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*d^2-I*c^2*b/e^2*g/(c^2*d^2
-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*
c-(-c^2*d^2+e^2)^(1/2)))*d^2-1/2*I*b*g*arcsin(c*x)^2/e^2+2*b/e*d*h*arcsin(c
*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/
2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+2*b/e*d*h*arcsin(c*x)/(c^2*d^2-e^2)*ln((I
*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^
```

```
2)^(1/2)))+2*c*b/e^3*d^2*h/(c^2*d^2-e^2)^(1/2)*arctan(1/2*(2*(I*c*x+(-c^2*x
^2+1)^(1/2))*e+2*I*d*c)/(c^2*d^2-e^2)^(1/2))-c*b*arcsin(c*x)/e^3/(c*e*x+c*d
)*d^2*h-2*I*b/e*d*h/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e
-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-2*I*b/e*d*h/(c^2*d^2-e
^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+
(-c^2*d^2+e^2)^(1/2)))-c*b*arcsin(c*x)/e/(c*e*x+c*d)*f+2*c*b/e*f/(c^2*d^2-e
^2)^(1/2)*arctan(1/2*(2*(I*c*x+(-c^2*x^2+1)^(1/2))*e+2*I*d*c)/(c^2*d^2-e^2)
^(1/2))+1/2*a/e^2*i*x^2+b*h*(-c^2*x^2+1)^(1/2)/c/e^2+1/4*b*i*x*(-c^2*x^2+1)
^(1/2)/c/e^2+c*b*arcsin(c*x)/e^2/(c*e*x+c*d)*d*g-c*a/e^3/(c*e*x+c*d)*d^2*h+
I*b*arcsin(c*x)^2/e^3*d*h-b*arcsin(c*x)*g/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-
c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-b*a
rcsin(c*x)*g/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2
+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+I*b*g/(c^2*d^2-e^2)*dilog((I*d*c
+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(
1/2)))+I*b*g/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*
d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-2*c*b/e^2*d*g/(c^2*d^2-e^2)^(
1/2)*arctan(1/2*(2*(I*c*x+(-c^2*x^2+1)^(1/2))*e+2*I*d*c)/(c^2*d^2-e^2)^(1/2
))+c*b*arcsin(c*x)/e^4/(c*e*x+c*d)*d^3*i-2*c*b/e^4*d^3*i/(c^2*d^2-e^2)^(1/2
)*arctan(1/2*(2*(I*c*x+(-c^2*x^2+1)^(1/2))*e+2*I*d*c)/(c^2*d^2-e^2)^(1/2))-
3*b/e^2*d^2*i*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2)
)*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-3*b/e^2*d^2*i*arcsi
n(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^
(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+3*I*b/e^2*d^2*i/(c^2*d^2-e^2)*dilog((I
*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^
2)^(1/2)))+3*I*b/e^2*d^2*i/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(
1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-2*a/e^3*ln(c*e*
x+c*d)*d*h+b*arcsin(c*x)*h/e^2*x+a*g/e^2*ln(c*e*x+c*d)+a*h/e^2*x+3*c^2*b/e^
4*d^4*i*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-
c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+3*c^2*b/e^4*d^4*i*arcsin(
c*x)/(c^2*d^2-e^2)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1
/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-3*I*c^2*b/e^4*d^4*i/(c^2*d^2-e^2)*dilog(
(I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+
e^2)^(1/2)))-3*I*c^2*b/e^4*d^4*i/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^
2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^2,x, algorithm="max
ima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{aix^3 + ahx^2 + agx + af + \left(bix^3 + bhx^2 + bgx + bf\right)\arcsin\left(cx\right)}{e^2x^2 + 2\,dex + d^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^2,x, algorithm="fri
cas")
```

```
[Out] integral((a*i*x^3 + a*h*x^2 + a*g*x + a*f + (b*i*x^3 + b*h*x^2 + b*g*x + b*
f)*arcsin(c*x))/(e^2*x^2 + 2*d*e*x + d^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + b\,\text{asin}\,(cx))\left(f + gx + hx^2 + ix^3\right)}{(d + ex)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x**3+h*x**2+g*x+f)*(a+b*asin(c*x))/(e*x+d)**2,x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x + h*x**2 + i*x**3)/(d + e*x)**2, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(ix^3 + hx^2 + gx + f\right)(b\arcsin\left(cx\right) + a)}{(ex + d)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^2,x, algorithm="gia
c")
```

```
[Out] integrate((i*x^3 + h*x^2 + g*x + f)*(b*arcsin(c*x) + a)/(e*x + d)^2, x)
```

3.111 $\int \frac{(f+gx+hx^2+ix^3)(a+b\sin^{-1}(cx))}{(d+ex)^3}\,dx$

Optimal. Leaf size=1016

$$\frac{5bc^3i\tan^{-1}\left(\frac{dxc^2+e}{\sqrt{c^2d^2-e^2}\sqrt{1-c^2x^2}}\right)d^4}{2e^4\left(c^2d^2-e^2\right)^{3/2}}+\frac{5bci\sqrt{1-c^2x^2}d^3}{2e^3\left(c^2d^2-e^2\right)(d+ex)}-\frac{bc\left(3dhc^2+4ei\right)\tan^{-1}\left(\frac{dxc^2+e}{\sqrt{c^2d^2-e^2}\sqrt{1-c^2x^2}}\right)d^2}{2e^3\left(c^2d^2-e^2\right)^{3/2}}-\frac{bc(3eh+4di)}{2e^3\left(c^2d^2-e\right.}$$

```
[Out] (b*i*Sqrt[1 - c^2*x^2])/(c*e^3) + (5*b*c*d^3*i*Sqrt[1 - c^2*x^2])/(2*e^3*(c
^2*d^2 - e^2)*(d + e*x)) - (b*c*d^2*(3*e*h + 4*d*i)*Sqrt[1 - c^2*x^2])/(2*e
^3*(c^2*d^2 - e^2)*(d + e*x)) + (b*c*d*(e^2*g + 4*d*e*h - 4*d^2*i)*Sqrt[1 -
 c^2*x^2])/(2*e^3*(c^2*d^2 - e^2)*(d + e*x)) + (b*c*(e^3*f - 2*d*e^2*g + 2*
d^3*i)*Sqrt[1 - c^2*x^2])/(2*e^3*(c^2*d^2 - e^2)*(d + e*x)) - ((I/2)*b*(e*h
 - 3*d*i)*ArcSin[c*x]^2)/e^4 + (i*x*(a + b*ArcSin[c*x]))/e^3 - ((e^3*f - d*
e^2*g + d^2*e*h - d^3*i)*(a + b*ArcSin[c*x]))/(2*e^4*(d + e*x)^2) - ((e^2*g
 - 2*d*e*h + 3*d^2*i)*(a + b*ArcSin[c*x]))/(e^4*(d + e*x)) + (5*b*c^3*d^4*i
*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(2*e^4*(c^2
*d^2 - e^2)^(3/2)) - (b*c*d^2*(3*c^2*d*h + 4*e*i)*ArcTan[(e + c^2*d*x)/(Sqr
t[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(2*e^3*(c^2*d^2 - e^2)^(3/2)) + (b*c*
d*(4*e^2*(e*h - 2*d*i) + c^2*(d*e^2*g + 4*d^3*i))*ArcTan[(e + c^2*d*x)/(Sqr
t[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(2*e^4*(c^2*d^2 - e^2)^(3/2)) - (b*c*
(2*e^4*g - 6*d^2*e^2*i - c^2*(d*e^3*f - 4*d^4*i))*ArcTan[(e + c^2*d*x)/(Sqr
t[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(2*e^4*(c^2*d^2 - e^2)^(3/2)) + (b*(e
*h - 3*d*i)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2
 - e^2])])/e^4 + (b*(e*h - 3*d*i)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]
))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^4 - (b*(e*h - 3*d*i)*ArcSin[c*x]*Log[d +
 e*x])/e^4 + ((e*h - 3*d*i)*(a + b*ArcSin[c*x])*Log[d + e*x])/e^4 - (I*b*(e
*h - 3*d*i)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])]
)/e^4 - (I*b*(e*h - 3*d*i)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c
^2*d^2 - e^2])])/e^4
```

Rubi [A] time = 2.61818, antiderivative size = 1016, normalized size of antiderivative = 1., number of steps used = 30, number of rules used = 18, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.581, Rules used = {1850, 4753, 12, 6742, 731, 725, 204, 807, 1651, 844, 216, 1654, 2404, 4741, 4519, 2190, 2279, 2391}

$$\frac{5bc^3i\tan^{-1}\left(\frac{dxc^2+e}{\sqrt{c^2d^2-e^2}\sqrt{1-c^2x^2}}\right)d^4}{2e^4\left(c^2d^2-e^2\right)^{3/2}}+\frac{5bci\sqrt{1-c^2x^2}d^3}{2e^3\left(c^2d^2-e^2\right)(d+ex)}-\frac{bc\left(3dhc^2+4ei\right)\tan^{-1}\left(\frac{dxc^2+e}{\sqrt{c^2d^2-e^2}\sqrt{1-c^2x^2}}\right)d^2}{2e^3\left(c^2d^2-e^2\right)^{3/2}}-\frac{bc(3eh+4di)}{2e^3\left(c^2d^2-e\right.}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]))/(d + e*x)^3,x]
```

```
[Out] (b*i*Sqrt[1 - c^2*x^2])/(c*e^3) + (5*b*c*d^3*i*Sqrt[1 - c^2*x^2])/(2*e^3*(c
^2*d^2 - e^2)*(d + e*x)) - (b*c*d^2*(3*e*h + 4*d*i)*Sqrt[1 - c^2*x^2])/(2*e
^3*(c^2*d^2 - e^2)*(d + e*x)) + (b*c*d*(e^2*g + 4*d*e*h - 4*d^2*i)*Sqrt[1 -
 c^2*x^2])/(2*e^3*(c^2*d^2 - e^2)*(d + e*x)) + (b*c*(e^3*f - 2*d*e^2*g + 2*
d^3*i)*Sqrt[1 - c^2*x^2])/(2*e^3*(c^2*d^2 - e^2)*(d + e*x)) - ((I/2)*b*(e*h
 - 3*d*i)*ArcSin[c*x]^2)/e^4 + (i*x*(a + b*ArcSin[c*x]))/e^3 - ((e^3*f - d*
e^2*g + d^2*e*h - d^3*i)*(a + b*ArcSin[c*x]))/(2*e^4*(d + e*x)^2) - ((e^2*g
 - 2*d*e*h + 3*d^2*i)*(a + b*ArcSin[c*x]))/(e^4*(d + e*x)) + (5*b*c^3*d^4*i
*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(2*e^4*(c^2
*d^2 - e^2)^(3/2)) - (b*c*d^2*(3*c^2*d*h + 4*e*i)*ArcTan[(e + c^2*d*x)/(Sqr
t[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(2*e^3*(c^2*d^2 - e^2)^(3/2)) + (b*c*
d*(4*e^2*(e*h - 2*d*i) + c^2*(d*e^2*g + 4*d^3*i))*ArcTan[(e + c^2*d*x)/(Sqr
t[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(2*e^4*(c^2*d^2 - e^2)^(3/2)) - (b*c*
(2*e^4*g - 6*d^2*e^2*i - c^2*(d*e^3*f - 4*d^4*i))*ArcTan[(e + c^2*d*x)/(Sqr
t[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(2*e^4*(c^2*d^2 - e^2)^(3/2)) + (b*(e
*h - 3*d*i)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2
 - e^2])])/e^4 + (b*(e*h - 3*d*i)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]
))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^4 - (b*(e*h - 3*d*i)*ArcSin[c*x]*Log[d +
 e*x])/e^4 + ((e*h - 3*d*i)*(a + b*ArcSin[c*x])*Log[d + e*x])/e^4 - (I*b*(e
*h - 3*d*i)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])]
)/e^4 - (I*b*(e*h - 3*d*i)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c
^2*d^2 - e^2])])/e^4
```

Rule 1850

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_.), x_Symbol] :> Int[ExpandIntegrand
[Pq*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, n}, x] && PolyQ[Pq, x] && (IGtQ[p
, 0] || EqQ[n, 1])
```

Rule 4753

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 731

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*d^2 + a*e^2)), x] + D
ist[(c*d)/(c*d^2 + a*e^2), Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, d, e, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[m + 2*p + 3, 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 1651

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :>
 With[{Q = PolynomialQuotient[Pq, d + e*x, x], R = PolynomialRemainder[Pq,
d + e*x, x]}, Simp[(e*R*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*
d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)
*(a + c*x^2)^p*ExpandToSum[(m + 1)*(c*d^2 + a*e^2)*Q + c*d*R*(m + 1) - c*e*
R*(m + 2*p + 3)*x, x], x], x]] /; FreeQ[{a, c, d, e, p}, x] && PolyQ[Pq, x]
 && NeQ[c*d^2 + a*e^2, 0] && LtQ[m, -1]
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
```

```
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rule 216

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

Rule 1654

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :
> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[(f*(d + e*x
)^(m + q - 1)*(a + c*x^2)^(p + 1))/(c*e^(q - 1)*(m + q + 2*p + 1)), x] + Di
st[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + c*x^2)^p*ExpandToSum[c
*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1)*(d + e*x)^q - f*(d + e*x)
^(q - 2)*(a*e^2*(m + q - 1) - c*d^2*(m + q + 2*p + 1) - 2*c*d*e*(m + q + p)
*x), x], x], x] /; GtQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, c, d,
 e, m, p}, x] && PolyQ[Pq, x] && NeQ[c*d^2 + a*e^2, 0] &&  !(EqQ[d, 0] && T
rue) &&  !(IGtQ[m, 0] && RationalQ[a, c, d, e] && (IntegerQ[p] || ILtQ[p +
1/2, 0]))
```

Rule 2404

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rubi steps

$$\int \frac{\left(f+gx+hx^2+111x^3\right)\left(a+b\sin^{-1}(cx)\right)}{(d+ex)^3}\,dx = \frac{111x\left(a+b\sin^{-1}(cx)\right)}{e^3} + \frac{\left(111d^3-e^3f+de^2g-d^2eh\right)\left(a+b\sin^{-1}(cx)\right)}{2e^4(d+ex)^2}$$

$$= \frac{111x\left(a+b\sin^{-1}(cx)\right)}{e^3} + \frac{\left(111d^3-e^3f+de^2g-d^2eh\right)\left(a+b\sin^{-1}(cx)\right)}{2e^4(d+ex)^2}$$

$$= \frac{111x\left(a+b\sin^{-1}(cx)\right)}{e^3} + \frac{\left(111d^3-e^3f+de^2g-d^2eh\right)\left(a+b\sin^{-1}(cx)\right)}{2e^4(d+ex)^2}$$

$$= \frac{111x\left(a+b\sin^{-1}(cx)\right)}{e^3} + \frac{\left(111d^3-e^3f+de^2g-d^2eh\right)\left(a+b\sin^{-1}(cx)\right)}{2e^4(d+ex)^2}$$

$$= \frac{555bcd^3\sqrt{1-c^2x^2}}{2e^3\left(c^2d^2-e^2\right)(d+ex)} + \frac{bc\left(222d^3+e^3f-2de^2g\right)\sqrt{1-c^2x^2}}{2e^3\left(c^2d^2-e^2\right)(d+ex)} - \frac{3bcd^2(}{2e^3}$$

$$= \frac{111b\sqrt{1-c^2x^2}}{ce^3} + \frac{555bcd^3\sqrt{1-c^2x^2}}{2e^3\left(c^2d^2-e^2\right)(d+ex)} + \frac{bc\left(222d^3+e^3f-2de^2g\right)\sqrt{}}{2e^3\left(c^2d^2-e^2\right)(d+e}$$

$$= \frac{111b\sqrt{1-c^2x^2}}{ce^3} + \frac{555bcd^3\sqrt{1-c^2x^2}}{2e^3\left(c^2d^2-e^2\right)(d+ex)} + \frac{bc\left(222d^3+e^3f-2de^2g\right)\sqrt{}}{2e^3\left(c^2d^2-e^2\right)(d+e}$$

$$= \frac{111b\sqrt{1-c^2x^2}}{ce^3} + \frac{555bcd^3\sqrt{1-c^2x^2}}{2e^3\left(c^2d^2-e^2\right)(d+ex)} + \frac{bc\left(222d^3+e^3f-2de^2g\right)\sqrt{}}{2e^3\left(c^2d^2-e^2\right)(d+e}$$

$$= \frac{111b\sqrt{1-c^2x^2}}{ce^3} + \frac{555bcd^3\sqrt{1-c^2x^2}}{2e^3\left(c^2d^2-e^2\right)(d+ex)} + \frac{bc\left(222d^3+e^3f-2de^2g\right)\sqrt{}}{2e^3\left(c^2d^2-e^2\right)(d+e}$$

$$= \frac{111b\sqrt{1-c^2x^2}}{ce^3} + \frac{555bcd^3\sqrt{1-c^2x^2}}{2e^3\left(c^2d^2-e^2\right)(d+ex)} + \frac{bc\left(222d^3+e^3f-2de^2g\right)\sqrt{}}{2e^3\left(c^2d^2-e^2\right)(d+e}$$

Mathematica [C] time = 6.45517, size = 1556, normalized size = 1.53

$$\frac{-3aid^2+2aehd-ae^2g}{e^4(d+ex)}+\frac{aix}{e^3}+bf\left(-\frac{c\sqrt{\frac{-d-\sqrt{\frac{1}{c^2}}e}{d+ex}+1}\sqrt{\frac{\sqrt{\frac{1}{c^2}}e-d}{d+ex}+1}F_1\left(2;\frac{1}{2},\frac{1}{2};3;-\frac{\sqrt{\frac{1}{c^2}}e-d}{d+ex},-\frac{-d-\sqrt{\frac{1}{c^2}}e}{d+ex}\right)}{4e^2(d+ex)\sqrt{1-c^2x^2}}-\frac{\sin^{-1}(cx)}{2e(d+ex)^2}\right)+\cdots$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]))/(d + e*x)^3,x]
```

```
[Out] (a*i*x)/e^3 + (-(a*e^3*f) + a*d*e^2*g - a*d^2*e*h + a*d^3*i)/(2*e^4*(d + e*
x)^2) + (-(a*e^2*g) + 2*a*d*e*h - 3*a*d^2*i)/(e^4*(d + e*x)) + b*f*(-(c*Sqr
t[1 + (-d - Sqrt[c^(-2)]*e)/(d + e*x)]*Sqrt[1 + (-d + Sqrt[c^(-2)]*e)/(d +
e*x)]*AppellF1[2, 1/2, 1/2, 3, -((-d + Sqrt[c^(-2)]*e)/(d + e*x)), -((-d -
Sqrt[c^(-2)]*e)/(d + e*x))])/(4*e^2*(d + e*x)*Sqrt[1 - c^2*x^2]) - ArcSin[c
*x]/(2*e*(d + e*x)^2)) + ((a*e*h - 3*a*d*i)*Log[d + e*x])/e^4 + b*g*((-(Arc
Sin[c*x]/(d + e*x)) + (c*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 -
 c^2*x^2])])/Sqrt[c^2*d^2 - e^2])/e^2 - (d*((c*Sqrt[1 - c^2*x^2])/((c^2*d^2
 - e^2)*(d + e*x)) - ArcSin[c*x]/(e*(d + e*x)^2) - (I*c^3*d*(Log[4] + Log[(
e^2*Sqrt[c^2*d^2 - e^2]*(I*e + I*c^2*d*x + Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2
*x^2]))/(c^3*d*(d + e*x))]))/((c*d - e)*e*(c*d + e)*Sqrt[c^2*d^2 - e^2])))/
(2*e)) + b*i*((Sqrt[1 - c^2*x^2] + c*x*ArcSin[c*x])/(c*e^3) + (3*d^2*(-(Arc
Sin[c*x]/(d + e*x)) + (c*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 -
 c^2*x^2])])/Sqrt[c^2*d^2 - e^2]))/e^4 - (d^3*((c*Sqrt[1 - c^2*x^2])/((c^2*
d^2 - e^2)*(d + e*x)) - ArcSin[c*x]/(e*(d + e*x)^2) - (I*c^3*d*(Log[4] + Lo
g[(e^2*Sqrt[c^2*d^2 - e^2]*(I*e + I*c^2*d*x + Sqrt[c^2*d^2 - e^2]*Sqrt[1 -
c^2*x^2]))/(c^3*d*(d + e*x))]))/((c*d - e)*e*(c*d + e)*Sqrt[c^2*d^2 - e^2])
))/(2*e^3) - (3*d*(((-I/2)*ArcSin[c*x]^2)/e + (ArcSin[c*x]*Log[1 - (I*e*E^(
I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e + (ArcSin[c*x]*Log[1 - (I*e
*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e - (I*PolyLog[2, ((-I)*e
*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])])/e - (I*PolyLog[2, (I*e
*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e))/e^3) + b*h*((-2*d*(-(
ArcSin[c*x]/(d + e*x)) + (c*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[
1 - c^2*x^2])])/Sqrt[c^2*d^2 - e^2]))/e^3 + (d^2*((c*Sqrt[1 - c^2*x^2])/((c
^2*d^2 - e^2)*(d + e*x)) - ArcSin[c*x]/(e*(d + e*x)^2) - (I*c^3*d*(Log[4] +
 Log[(e^2*Sqrt[c^2*d^2 - e^2]*(I*e + I*c^2*d*x + Sqrt[c^2*d^2 - e^2]*Sqrt[1
 - c^2*x^2]))/(c^3*d*(d + e*x))]))/((c*d - e)*e*(c*d + e)*Sqrt[c^2*d^2 - e^
2])))/(2*e^2) + (((-I/2)*ArcSin[c*x]^2)/e + (ArcSin[c*x]*Log[1 - (I*e*E^(I*
ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e + (ArcSin[c*x]*Log[1 - (I*e*E
```

```
^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e - (I*PolyLog[2, ((-I)*e*E
^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])])/e - (I*PolyLog[2, (I*e*E
^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e)/e^2)
```

Maple [B] time = 1.173, size = 4548, normalized size = 4.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^3,x)
```

```
[Out] 1/2*I*b*arcsin(c*x)^2*h/e^3+1/2*c^2*a/e^2/(c*e*x+c*d)^2*d*g-1/2*c^2*a/e/(c*
e*x+c*d)^2*f-c*a*g/e^2/(c*e*x+c*d)+1/2*I*c^4*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/
e^4*d^5*i-6*I*c^2*b/(c^2*d^2-e^2)^2/e^2*d^3*i*dilog((I*d*c+(I*c*x+(-c^2*x^2
+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-6*I*c^2*b/
(c^2*d^2-e^2)^2/e^2*d^3*i*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d
^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+3*I*c^4*b/(c^2*d^2-e^2)^2/e^4*
d^5*i*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*
c-(-c^2*d^2+e^2)^(1/2)))+3*I*c^4*b/(c^2*d^2-e^2)^2/e^4*d^5*i*dilog((I*d*c+(
I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/
2)))-1/2*c^3*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^3*(-c^2*x^2+1)^(1/2)*d^4*i-3*c
^4*b/(c^2*d^2-e^2)^2/e^4*d^5*i*arcsin(c*x)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1
/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+6*c^2*b/(c^2*d^2
-e^2)^2/e^2*d^3*i*arcsin(c*x)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*
d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-3*c^4*b/(c^2*d^2-e^2)^2/e^4*d
^5*i*arcsin(c*x)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2
))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+5/2*c^2*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^2*
arcsin(c*x)*d^3*i+6*c^2*b/(c^2*d^2-e^2)^2/e^2*d^3*i*arcsin(c*x)*ln((I*d*c+(
I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/
2)))-5/2*c^4*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^4*arcsin(c*x)*d^5*i+3*I*c^2*b/
(c^2*d^2-e^2)/e^4*d^3*i*arcsin(c*x)^2+3*c^2*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e
*arcsin(c*x)*x*d^2*i-3*c^4*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^3*arcsin(c*x)*x*
d^4*i+I*c^4*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^3*x*d^4*i+b*i*(-c^2*x^2+1)^(1/2
)/c/e^3+a*i/e^3*x-c^4*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e*arcsin(c*x)*x*d^2*g+I
*c^4*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e*x*d^2*g+1/2*c^3*b/(c^2*d^2-e^2)/(c*e*x
+c*d)^2/e*(-c^2*x^2+1)^(1/2)*x*d^2*h+2*c^4*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^
2*arcsin(c*x)*x*d^3*h-1/2*I*c^4*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e*x^2*d^2*h-I
*c^4*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^2*x*d^3*h+1/2*c^2*b/(c^2*d^2-e^2)/(c*e
*x+c*d)^2*arcsin(c*x)*g*d+1/2*c^2*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2*e*arcsin(c*
x)*f+1/2*c^3*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2*(-c^2*x^2+1)^(1/2)*d*f+c^3*b/(c^
2*d^2-e^2)^(3/2)/e*d*f*arctan(1/2*(2*(I*c*x+(-c^2*x^2+1)^(1/2))*e+2*I*d*c)/
```

(c^2*d^2-e^2)^(1/2))-3*c^3*b/(c^2*d^2-e^2)^(3/2)/e^3*d^3*h*arctan(1/2*(2*(I
*c*x+(-c^2*x^2+1)^(1/2))*e+2*I*d*c)/(c^2*d^2-e^2)^(1/2))+c^3*b/(c^2*d^2-e^2
)^(3/2)/e^2*d^2*g*arctan(1/2*(2*(I*c*x+(-c^2*x^2+1)^(1/2))*e+2*I*d*c)/(c^2*
d^2-e^2)^(1/2))+4*c*b/(c^2*d^2-e^2)^(3/2)/e*d*h*arctan(1/2*(2*(I*c*x+(-c^2*
x^2+1)^(1/2))*e+2*I*d*c)/(c^2*d^2-e^2)^(1/2))-2*c*b/(c^2*d^2-e^2)^(3/2)*g*a
rctan(1/2*(2*(I*c*x+(-c^2*x^2+1)^(1/2))*e+2*I*d*c)/(c^2*d^2-e^2)^(1/2))-6*c
*b/(c^2*d^2-e^2)^(3/2)/e^2*d^2*i*arctan(1/2*(2*(I*c*x+(-c^2*x^2+1)^(1/2))*e
+2*I*d*c)/(c^2*d^2-e^2)^(1/2))+5*c^3*b/(c^2*d^2-e^2)^(3/2)/e^4*d^4*i*arctan
(1/2*(2*(I*c*x+(-c^2*x^2+1)^(1/2))*e+2*I*d*c)/(c^2*d^2-e^2)^(1/2))-3*I*b/(c
^2*d^2-e^2)/e^2*d*i*arcsin(c*x)^2-3/2*c^2*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e*a
rcsin(c*x)*d^2*h-I*c^2*b/(c^2*d^2-e^2)/e^3*d^2*h*arcsin(c*x)^2-1/2*I*c^4*b/
(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^3*d^4*h+1/2*I*c^4*b/(c^2*d^2-e^2)/(c*e*x+c*d)
^2/e^2*d^3*g-1/2*I*c^4*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e*d^2*f+2*I*c^2*b/(c^2
*d^2-e^2)^2/e*h*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1
/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*d^2+2*I*c^2*b/(c^2*d^2-e^2)^2/e*h*dilog(
(I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+
e^2)^(1/2)))*d^2-I*c^4*b/(c^2*d^2-e^2)^2/e^3*d^4*h*dilog((I*d*c+(I*c*x+(-c^
2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-I*c^4
*b/(c^2*d^2-e^2)^2/e^3*d^4*h*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^
2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+1/2*I*c^4*b/(c^2*d^2-e^2)/(
c*e*x+c*d)^2*x^2*d*g-I*c^4*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2*x*d*f-1/2*I*c^4*b/
(c^2*d^2-e^2)/(c*e*x+c*d)^2*e*x^2*f-1/2*c^3*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e
^2*(-c^2*x^2+1)^(1/2)*x*d^3*i+1/2*I*c^4*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^2*x
^2*d^3*i+c^4*b/(c^2*d^2-e^2)^2/e^3*d^4*h*arcsin(c*x)*ln((I*d*c+(I*c*x+(-c^2
*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+c^4*b/
(c^2*d^2-e^2)^2/e^3*d^4*h*arcsin(c*x)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*
e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-2*c^2*b/(c^2*d^2-e^2)
^2/e*h*arcsin(c*x)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1
/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*d^2-2*c^2*b/(c^2*d^2-e^2)^2/e*h*arcsin(c
*x)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c
^2*d^2+e^2)^(1/2)))*d^2+3/2*c^4*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^3*arcsin(c*
x)*d^4*h-1/2*c^4*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^2*arcsin(c*x)*d^3*g-1/2*c^
4*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e*arcsin(c*x)*d^2*f+1/2*c^3*b/(c^2*d^2-e^2)
/(c*e*x+c*d)^2*e*(-c^2*x^2+1)^(1/2)*x*f+c^2*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2*e
*arcsin(c*x)*x*g-1/2*c^3*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2*(-c^2*x^2+1)^(1/2)*x
*d*g-2*c^2*b/(c^2*d^2-e^2)/(c*e*x+c*d)^2*arcsin(c*x)*x*d*h+1/2*c^3*b/(c^2*d
^2-e^2)/(c*e*x+c*d)^2/e^2*(-c^2*x^2+1)^(1/2)*d^3*h-1/2*c^3*b/(c^2*d^2-e^2)/
(c*e*x+c*d)^2/e*(-c^2*x^2+1)^(1/2)*d^2*g-3*a/e^4*ln(c*e*x+c*d)*d*i+b*arcsin
(c*x)*i/e^3*x+2*c*a/e^3/(c*e*x+c*d)*d*h-1/2*c^2*a/e^3/(c*e*x+c*d)^2*d^2*h+b
/(c^2*d^2-e^2)^2*e*h*arcsin(c*x)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c
^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+b/(c^2*d^2-e^2)^2*e*h*arcs
in(c*x)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c
-(-c^2*d^2+e^2)^(1/2)))+I*b/(c^2*d^2-e^2)/e*h*arcsin(c*x)^2-I*b/(c^2*d^2-e^
2)^2*e*h*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I
*d*c-(-c^2*d^2+e^2)^(1/2)))-I*b/(c^2*d^2-e^2)^2*e*h*dilog((I*d*c+(I*c*x+(-c

```
^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+3*I*
b/(c^2*d^2-e^2)^2*d*i*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e
^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+3*I*b/(c^2*d^2-e^2)^2*d*i*dilog((I
*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^
2)^(1/2)))-3/2*I*b*arcsin(c*x)^2/e^4*d*i-3*c*a/e^4/(c*e*x+c*d)*d^2*i+1/2*c^
2*a/e^4/(c*e*x+c*d)^2*d^3*i-3*b/(c^2*d^2-e^2)^2*d*i*arcsin(c*x)*ln((I*d*c+(
I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/
2)))-3*b/(c^2*d^2-e^2)^2*d*i*arcsin(c*x)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2
))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+a*h/e^3*ln(c*e*x+c
*d)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^3,x, algorithm="max
ima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{aix^3 + ahx^2 + agx + af + \left(bix^3 + bhx^2 + bgx + bf\right)\arcsin\left(cx\right)}{e^3x^3 + 3\,de^2x^2 + 3\,d^2ex + d^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^3,x, algorithm="fri
cas")
```

```
[Out] integral((a*i*x^3 + a*h*x^2 + a*g*x + a*f + (b*i*x^3 + b*h*x^2 + b*g*x + b*
f)*arcsin(c*x))/(e^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*x + d^3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a + b\,\text{asin}\left(cx\right)\right)\left(f + gx + hx^2 + ix^3\right)}{\left(d + ex\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x**3+h*x**2+g*x+f)*(a+b*asin(c*x))/(e*x+d)**3,x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x + h*x**2 + i*x**3)/(d + e*x)**3, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(ix^3 + hx^2 + gx + f\right)(b \arcsin{(cx)} + a)}{(ex + d)^3} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^3,x, algorithm="gia
c")
```

```
[Out] integrate((i*x^3 + h*x^2 + g*x + f)*(b*arcsin(c*x) + a)/(e*x + d)^3, x)
```

3.112 $\int \frac{(f+gx+hx^2+ix^3)(a+b\sin^{-1}(cx))}{(d+ex)^4}\,dx$

Optimal. Leaf size=1278

result too large to display

```
[Out] (b*c*(2*e^2*f - 3*d*e*g + 6*d^2*h)*Sqrt[1 - c^2*x^2])/(12*e^2*(c^2*d^2 - e^
2)*(d + e*x)^2) - (11*b*c*d^3*i*Sqrt[1 - c^2*x^2])/(12*e^3*(c^2*d^2 - e^2)*
(d + e*x)^2) + (b*c*d^2*(2*e*h + 27*d*i)*Sqrt[1 - c^2*x^2])/(12*e^3*(c^2*d^
2 - e^2)*(d + e*x)^2) + (b*c*d*(e^2*g - 6*d*e*h - 18*d^2*i)*Sqrt[1 - c^2*x^
2])/(12*e^3*(c^2*d^2 - e^2)*(d + e*x)^2) - (b*c*(2*e^2*(e*g - 4*d*h) - c^2*
d*(2*e^2*f - d*e*g - 2*d^2*h))*Sqrt[1 - c^2*x^2])/(4*e^2*(c^2*d^2 - e^2)^2*
(d + e*x)) - (11*b*c^3*d^4*i*Sqrt[1 - c^2*x^2])/(4*e^3*(c^2*d^2 - e^2)^2*(d
 + e*x)) + (b*c*d^2*(18*e^2*i + c^2*d*(2*e*h + 9*d*i))*Sqrt[1 - c^2*x^2])/(
4*e^3*(c^2*d^2 - e^2)^2*(d + e*x)) - (b*c*d*(4*e^2*(e*h + 6*d*i) - c^2*d*(e
^2*g - 2*d*e*h + 6*d^2*i))*Sqrt[1 - c^2*x^2])/(4*e^3*(c^2*d^2 - e^2)^2*(d +
 e*x)) - ((I/2)*b*i*ArcSin[c*x]^2)/e^4 - ((e^3*f - d*e^2*g + d^2*e*h - d^3*
i)*(a + b*ArcSin[c*x]))/(3*e^4*(d + e*x)^3) - ((e^2*g - 2*d*e*h + 3*d^2*i)*
(a + b*ArcSin[c*x]))/(2*e^4*(d + e*x)^2) - ((e*h - 3*d*i)*(a + b*ArcSin[c*x
]))/(e^4*(d + e*x)) + (b*c*(4*c^4*d^2*f + 12*e^2*h + c^2*(2*e^2*f - 9*d*e*g
 + 6*d^2*h))*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])
/(12*e*(c^2*d^2 - e^2)^(5/2)) - (11*b*c^3*d^3*(2*c^2*d^2 + e^2)*i*ArcTan[(e
 + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(12*e^4*(c^2*d^2 - e^
2)^(5/2)) + (b*c^3*d^2*(4*c^2*d^2*h + e*(2*e*h + 81*d*i))*ArcTan[(e + c^2*d
*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(12*e^3*(c^2*d^2 - e^2)^(5/2)
) + (b*c*d*(2*c^4*d^2*g - 36*e^2*i + c^2*(e^2*g - 18*d*e*h - 18*d^2*i))*Arc
Tan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(12*e^2*(c^2*d^
2 - e^2)^(5/2)) + (b*i*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - S
qrt[c^2*d^2 - e^2])])/e^4 + (b*i*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x])
)/(c*d + Sqrt[c^2*d^2 - e^2])])/e^4 - (b*i*ArcSin[c*x]*Log[d + e*x])/e^4 +
(i*(a + b*ArcSin[c*x])*Log[d + e*x])/e^4 - (I*b*i*PolyLog[2, (I*e*E^(I*ArcS
in[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^4 - (I*b*i*PolyLog[2, (I*e*E^(I*A
rcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^4
```

Rubi [A] time = 2.85874, antiderivative size = 1278, normalized size of antiderivative = 1., number of steps used = 29, number of rules used = 17, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.548, Rules used = {1850, 4753, 12, 6742, 745, 807, 725, 204, 835, 1651, 216, 2404, 4741,

4519, 2190, 2279, 2391}

$$-\frac{11bc^3 i\sqrt{1-c^2x^2}d^4}{4e^3\left(c^2d^2-e^2\right)^2(d+ex)}-\frac{11bc^3\left(2c^2d^2+e^2\right)i\tan^{-1}\left(\frac{dxc^2+e}{\sqrt{c^2d^2-e^2}\sqrt{1-c^2x^2}}\right)d^3}{12e^4\left(c^2d^2-e^2\right)^{5/2}}-\frac{11bci\sqrt{1-c^2x^2}d^3}{12e^3\left(c^2d^2-e^2\right)(d+ex)^2}+\frac{bc^3\left(4c^2hd^2+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]))/(d + e*x)^4,x]
```

```
[Out] (b*c*(2*e^2*f - 3*d*e*g + 6*d^2*h)*Sqrt[1 - c^2*x^2])/(12*e^2*(c^2*d^2 - e^
2)*(d + e*x)^2) - (11*b*c*d^3*i*Sqrt[1 - c^2*x^2])/(12*e^3*(c^2*d^2 - e^2)*
(d + e*x)^2) + (b*c*d^2*(2*e*h + 27*d*i)*Sqrt[1 - c^2*x^2])/(12*e^3*(c^2*d^
2 - e^2)*(d + e*x)^2) + (b*c*d*(e^2*g - 6*d*e*h - 18*d^2*i)*Sqrt[1 - c^2*x^
2])/(12*e^3*(c^2*d^2 - e^2)*(d + e*x)^2) - (b*c*(2*e^2*(e*g - 4*d*h) - c^2*
d*(2*e^2*f - d*e*g - 2*d^2*h))*Sqrt[1 - c^2*x^2])/(4*e^2*(c^2*d^2 - e^2)^2*
(d + e*x)) - (11*b*c^3*d^4*i*Sqrt[1 - c^2*x^2])/(4*e^3*(c^2*d^2 - e^2)^2*(d
 + e*x)) + (b*c*d^2*(18*e^2*i + c^2*d*(2*e*h + 9*d*i))*Sqrt[1 - c^2*x^2])/(
4*e^3*(c^2*d^2 - e^2)^2*(d + e*x)) - (b*c*d*(4*e^2*(e*h + 6*d*i) - c^2*d*(e
^2*g - 2*d*e*h + 6*d^2*i))*Sqrt[1 - c^2*x^2])/(4*e^3*(c^2*d^2 - e^2)^2*(d +
 e*x)) - ((I/2)*b*i*ArcSin[c*x]^2)/e^4 - ((e^3*f - d*e^2*g + d^2*e*h - d^3*
i)*(a + b*ArcSin[c*x]))/(3*e^4*(d + e*x)^3) - ((e^2*g - 2*d*e*h + 3*d^2*i)*
(a + b*ArcSin[c*x]))/(2*e^4*(d + e*x)^2) - ((e*h - 3*d*i)*(a + b*ArcSin[c*x
]))/(e^4*(d + e*x)) + (b*c*(4*c^4*d^2*f + 12*e^2*h + c^2*(2*e^2*f - 9*d*e*g
 + 6*d^2*h))*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])
/(12*e*(c^2*d^2 - e^2)^(5/2)) - (11*b*c^3*d^3*(2*c^2*d^2 + e^2)*i*ArcTan[(e
 + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(12*e^4*(c^2*d^2 - e^
2)^(5/2)) + (b*c^3*d^2*(4*c^2*d^2*h + e*(2*e*h + 81*d*i))*ArcTan[(e + c^2*d
*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(12*e^3*(c^2*d^2 - e^2)^(5/2)
) + (b*c*d*(2*c^4*d^2*g - 36*e^2*i + c^2*(e^2*g - 18*d*e*h - 18*d^2*i))*Arc
Tan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(12*e^2*(c^2*d^
2 - e^2)^(5/2)) + (b*i*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - S
qrt[c^2*d^2 - e^2])])/e^4 + (b*i*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x])
)/(c*d + Sqrt[c^2*d^2 - e^2])])/e^4 - (b*i*ArcSin[c*x]*Log[d + e*x])/e^4 +
(i*(a + b*ArcSin[c*x])*Log[d + e*x])/e^4 - (I*b*i*PolyLog[2, (I*e*E^(I*ArcS
in[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^4 - (I*b*i*PolyLog[2, (I*e*E^(I*A
rcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^4
```

Rule 1850

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_.), x_Symbol] :> Int[ExpandIntegrand
[Pq*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, n}, x] && PolyQ[Pq, x] && (IGtQ[p
, 0] || EqQ[n, 1])
```

Rule 4753

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 745

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*d^2 + a*e^2)), x] + D
ist[c/((m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)*Simp[d*(m + 1) - e*(
m + 2*p + 3)*x, x]*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, m, p}, x] &&
 NeQ[c*d^2 + a*e^2, 0] && NeQ[m, -1] && ((LtQ[m, -1] && IntQuadraticQ[a, 0,
 c, d, e, m, p, x]) || (SumSimplerQ[m, 1] && IntegerQ[p]) || ILtQ[Simplify[
m + 2*p + 3], 0])
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

```
a, 0] || LtQ[b, 0])
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 1651

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :>
 With[{Q = PolynomialQuotient[Pq, d + e*x, x], R = PolynomialRemainder[Pq,
d + e*x, x]}, Simp[(e*R*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*
d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)
*(a + c*x^2)^p*ExpandToSum[(m + 1)*(c*d^2 + a*e^2)*Q + c*d*R*(m + 1) - c*e*
R*(m + 2*p + 3)*x, x], x], x]] /; FreeQ[{a, c, d, e, p}, x] && PolyQ[Pq, x]
 && NeQ[c*d^2 + a*e^2, 0] && LtQ[m, -1]
```

Rule 216

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

Rule 2404

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
```

```
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rubi steps

$$\int \frac{\left(f+gx+hx^2+112x^3\right)\left(a+b\sin^{-1}(cx)\right)}{(d+ex)^4}\,dx = \frac{\left(112d^3-e^3f+de^2g-d^2eh\right)\left(a+b\sin^{-1}(cx)\right)}{3e^4(d+ex)^3} - \frac{\left(336d^2+e^2g-2deh\right.}{2e^4(d+}$$

$$= \frac{\left(112d^3-e^3f+de^2g-d^2eh\right)\left(a+b\sin^{-1}(cx)\right)}{3e^4(d+ex)^3} - \frac{\left(336d^2+e^2g-2deh\right.}{2e^4(d+}$$

$$= \frac{\left(112d^3-e^3f+de^2g-d^2eh\right)\left(a+b\sin^{-1}(cx)\right)}{3e^4(d+ex)^3} - \frac{\left(336d^2+e^2g-2deh\right.}{2e^4(d+}$$

$$= \frac{\left(112d^3-e^3f+de^2g-d^2eh\right)\left(a+b\sin^{-1}(cx)\right)}{3e^4(d+ex)^3} - \frac{\left(336d^2+e^2g-2deh\right.}{2e^4(d+}$$

$$= -\frac{308bcd^3\sqrt{1-c^2x^2}}{3e^3\left(c^2d^2-e^2\right)(d+ex)^2} + \frac{bc\left(2e^2f-3deg+6d^2h\right)\sqrt{1-c^2x^2}}{12e^2\left(c^2d^2-e^2\right)(d+ex)^2} + \frac{bc}{6}$$

$$= -\frac{308bcd^3\sqrt{1-c^2x^2}}{3e^3\left(c^2d^2-e^2\right)(d+ex)^2} + \frac{bc\left(2e^2f-3deg+6d^2h\right)\sqrt{1-c^2x^2}}{12e^2\left(c^2d^2-e^2\right)(d+ex)^2} + \frac{bc}{6}$$

$$= -\frac{308bcd^3\sqrt{1-c^2x^2}}{3e^3\left(c^2d^2-e^2\right)(d+ex)^2} + \frac{bc\left(2e^2f-3deg+6d^2h\right)\sqrt{1-c^2x^2}}{12e^2\left(c^2d^2-e^2\right)(d+ex)^2} + \frac{bc}{6}$$

$$= -\frac{308bcd^3\sqrt{1-c^2x^2}}{3e^3\left(c^2d^2-e^2\right)(d+ex)^2} + \frac{bc\left(2e^2f-3deg+6d^2h\right)\sqrt{1-c^2x^2}}{12e^2\left(c^2d^2-e^2\right)(d+ex)^2} + \frac{bc}{6}$$

$$= -\frac{308bcd^3\sqrt{1-c^2x^2}}{3e^3\left(c^2d^2-e^2\right)(d+ex)^2} + \frac{bc\left(2e^2f-3deg+6d^2h\right)\sqrt{1-c^2x^2}}{12e^2\left(c^2d^2-e^2\right)(d+ex)^2} + \frac{bc}{6}$$

$$= -\frac{308bcd^3\sqrt{1-c^2x^2}}{3e^3\left(c^2d^2-e^2\right)(d+ex)^2} + \frac{bc\left(2e^2f-3deg+6d^2h\right)\sqrt{1-c^2x^2}}{12e^2\left(c^2d^2-e^2\right)(d+ex)^2} + \frac{bc}{6}$$

Mathematica [C] time = 6.95594, size = 1921, normalized size = 1.5

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[((f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]))/(d + e*x)^4,x]
```

```
[Out] (-(a*e^3*f) + a*d*e^2*g - a*d^2*e*h + a*d^3*i)/(3*e^4*(d + e*x)^3) + (-(a*e
^2*g) + 2*a*d*e*h - 3*a*d^2*i)/(2*e^4*(d + e*x)^2) + (-(a*e*h) + 3*a*d*i)/(
e^4*(d + e*x)) + b*f*(-(c*Sqrt[1 + (-d - Sqrt[c^(-2)]*e)/(d + e*x)]*Sqrt[1
+ (-d + Sqrt[c^(-2)]*e)/(d + e*x)]*AppellF1[3, 1/2, 1/2, 4, -((-d + Sqrt[c^
(-2)]*e)/(d + e*x)), -((-d - Sqrt[c^(-2)]*e)/(d + e*x))])/(9*e^2*(d + e*x)^
2*Sqrt[1 - c^2*x^2]) - ArcSin[c*x]/(3*e*(d + e*x)^3)) + (a*i*Log[d + e*x])/
e^4 + b*h*((-(ArcSin[c*x]/(d + e*x)) + (c*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^
2 - e^2]*Sqrt[1 - c^2*x^2])])/Sqrt[c^2*d^2 - e^2])/e^3 - (d*((c*Sqrt[1 - c^
2*x^2])/((c^2*d^2 - e^2)*(d + e*x)) - ArcSin[c*x]/(e*(d + e*x)^2) - (I*c^3*
d*(Log[4] + Log[(e^2*Sqrt[c^2*d^2 - e^2]*(I*e + I*c^2*d*x + Sqrt[c^2*d^2 -
e^2]*Sqrt[1 - c^2*x^2]))/(c^3*d*(d + e*x))]))/((c*d - e)*e*(c*d + e)*Sqrt[c
^2*d^2 - e^2])))/e^2 + (d^2*((Sqrt[1 - c^2*x^2]*(-(c*e^2) + c^3*d*(4*d + 3*
e*x)))/((-(c^2*d^2) + e^2)^2*(d + e*x)^2) - (2*ArcSin[c*x])/(e*(d + e*x)^3)
 + (c^3*(2*c^2*d^2 + e^2)*Log[d + e*x])/(e*(-(c*d) + e)^2*(c*d + e)^2*Sqrt[
-(c^2*d^2) + e^2]) - (c^3*(2*c^2*d^2 + e^2)*Log[e + c^2*d*x + Sqrt[-(c^2*d^
2) + e^2]*Sqrt[1 - c^2*x^2]])/(e*(-(c*d) + e)^2*(c*d + e)^2*Sqrt[-(c^2*d^2)
 + e^2])))/(6*e^2)) + b*g*(((c*Sqrt[1 - c^2*x^2])/((c^2*d^2 - e^2)*(d + e*x
)) - ArcSin[c*x]/(e*(d + e*x)^2) - (I*c^3*d*(Log[4] + Log[(e^2*Sqrt[c^2*d^2
 - e^2]*(I*e + I*c^2*d*x + Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2]))/(c^3*d*(
d + e*x))]))/((c*d - e)*e*(c*d + e)*Sqrt[c^2*d^2 - e^2]))/(2*e) - (d*((Sqrt
[1 - c^2*x^2]*(-(c*e^2) + c^3*d*(4*d + 3*e*x)))/((-(c^2*d^2) + e^2)^2*(d +
e*x)^2) - (2*ArcSin[c*x])/(e*(d + e*x)^3) + (c^3*(2*c^2*d^2 + e^2)*Log[d +
e*x])/(e*(-(c*d) + e)^2*(c*d + e)^2*Sqrt[-(c^2*d^2) + e^2]) - (c^3*(2*c^2*d
^2 + e^2)*Log[e + c^2*d*x + Sqrt[-(c^2*d^2) + e^2]*Sqrt[1 - c^2*x^2]])/(e*(
-(c*d) + e)^2*(c*d + e)^2*Sqrt[-(c^2*d^2) + e^2])))/(6*e)) + b*i*((-3*d*(-(
ArcSin[c*x]/(d + e*x)) + (c*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[
1 - c^2*x^2])])/Sqrt[c^2*d^2 - e^2]))/e^4 + (3*d^2*((c*Sqrt[1 - c^2*x^2])/(
(c^2*d^2 - e^2)*(d + e*x)) - ArcSin[c*x]/(e*(d + e*x)^2) - (I*c^3*d*(Log[4]
 + Log[(e^2*Sqrt[c^2*d^2 - e^2]*(I*e + I*c^2*d*x + Sqrt[c^2*d^2 - e^2]*Sqrt
[1 - c^2*x^2]))/(c^3*d*(d + e*x))]))/((c*d - e)*e*(c*d + e)*Sqrt[c^2*d^2 -
e^2])))/(2*e^3) - (d^3*((Sqrt[1 - c^2*x^2]*(-(c*e^2) + c^3*d*(4*d + 3*e*x))
)/((-(c^2*d^2) + e^2)^2*(d + e*x)^2) - (2*ArcSin[c*x])/(e*(d + e*x)^3) + (c
^3*(2*c^2*d^2 + e^2)*Log[d + e*x])/(e*(-(c*d) + e)^2*(c*d + e)^2*Sqrt[-(c^2
*d^2) + e^2]) - (c^3*(2*c^2*d^2 + e^2)*Log[e + c^2*d*x + Sqrt[-(c^2*d^2) +
e^2]*Sqrt[1 - c^2*x^2]])/(e*(-(c*d) + e)^2*(c*d + e)^2*Sqrt[-(c^2*d^2) + e^
2])))/(6*e^3) + (((-I/2)*ArcSin[c*x]^2)/e + (ArcSin[c*x]*Log[1 - (I*e*E^(I*
ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e + (ArcSin[c*x]*Log[1 - (I*e*E
^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e - (I*PolyLog[2, ((-I)*e*E
^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])])/e - (I*PolyLog[2, (I*e*E
^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e)/e^3)
```

Maple [B] time = 2.217, size = 5682, normalized size = 4.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^4,x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{6}ai\left(\frac{18\,de^2x^2+27\,d^2ex+11\,d^3}{e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4}+\frac{6\,\log\left(ex+d\right)}{e^4}\right)-\frac{(3\,ex+d)ag}{6\left(e^5x^3+3\,de^4x^2+3\,d^2e^3x+d^3e^2\right)}-\frac{\left(3\,e^2x^2+3\,dex+\right.}{3\left(e^6x^3+3\,de^5x^2+3\,d^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^4,x, algorithm="max
ima")
```

```
[Out] 1/6*a*i*((18*d*e^2*x^2 + 27*d^2*e*x + 11*d^3)/(e^7*x^3 + 3*d*e^6*x^2 + 3*d^
2*e^5*x + d^3*e^4) + 6*log(e*x + d)/e^4) - 1/6*(3*e*x + d)*a*g/(e^5*x^3 + 3
*d*e^4*x^2 + 3*d^2*e^3*x + d^3*e^2) - 1/3*(3*e^2*x^2 + 3*d*e*x + d^2)*a*h/(
e^6*x^3 + 3*d*e^5*x^2 + 3*d^2*e^4*x + d^3*e^3) - 1/3*a*f/(e^4*x^3 + 3*d*e^3
*x^2 + 3*d^2*e^2*x + d^3*e) + integrate((b*i*x^3 + b*h*x^2 + b*g*x + b*f)*a
rctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(e^4*x^4 + 4*d*e^3*x^3 + 6*d^2*e^
2*x^2 + 4*d^3*e*x + d^4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{aix^3+ahx^2+agx+af+\left(bix^3+bhx^2+bgx+bf\right)\arcsin\left(cx\right)}{e^4x^4+4\,de^3x^3+6\,d^2e^2x^2+4\,d^3ex+d^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^4,x, algorithm="fri
cas")
```

```
[Out] integral((a*i*x^3 + a*h*x^2 + a*g*x + a*f + (b*i*x^3 + b*h*x^2 + b*g*x + b*
f)*arcsin(c*x))/(e^4*x^4 + 4*d*e^3*x^3 + 6*d^2*e^2*x^2 + 4*d^3*e*x + d^4),
x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x**3+h*x**2+g*x+f)*(a+b*asin(c*x))/(e*x+d)**4,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(ix^3 + hx^2 + gx + f\right)(b \arcsin(cx) + a)}{(ex + d)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^4,x, algorithm="gia
c")
```

```
[Out] integrate((i*x^3 + h*x^2 + g*x + f)*(b*arcsin(c*x) + a)/(e*x + d)^4, x)
```

3.113 $\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)^2}{(d+ex)^3}\,dx$

Optimal. Leaf size=935

$$-\frac{ib^2d(ef-dg)\sin^{-1}(cx)\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)c^3}{e^2\left(c^2d^2-e^2\right)^{3/2}}+\frac{ib^2d(ef-dg)\sin^{-1}(cx)\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)c^3}{e^2\left(c^2d^2-e^2\right)^{3/2}}-\frac{b^2d(ef-dg)\text{PolyL}}{e^2\left(c^2d\right.}$$

```
[Out] (a*b*c*(e*f - d*g)*Sqrt[1 - c^2*x^2])/(e*(c^2*d^2 - e^2)*(d + e*x)) + (a*b*
g^2*ArcSin[c*x])/(e^2*(e*f - d*g)) + (b^2*c*(e*f - d*g)*Sqrt[1 - c^2*x^2]*A
rcSin[c*x])/(e*(c^2*d^2 - e^2)*(d + e*x)) + (b^2*g^2*ArcSin[c*x]^2)/(2*e^2*
(e*f - d*g)) - ((f + g*x)^2*(a + b*ArcSin[c*x])^2)/(2*(e*f - d*g)*(d + e*x)
^2) - (a*b*c*(2*e^2*g - c^2*d*(e*f + d*g))*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d
^2 - e^2]*Sqrt[1 - c^2*x^2])])/(e^2*(c^2*d^2 - e^2)^(3/2)) - ((2*I)*b^2*c*g
*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/
(e^2*Sqrt[c^2*d^2 - e^2]) - (I*b^2*c^3*d*(e*f - d*g)*ArcSin[c*x]*Log[1 - (I
*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/(e^2*(c^2*d^2 - e^2)^(3
/2)) + ((2*I)*b^2*c*g*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sq
rt[c^2*d^2 - e^2])])/(e^2*Sqrt[c^2*d^2 - e^2]) + (I*b^2*c^3*d*(e*f - d*g)*A
rcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/(e
^2*(c^2*d^2 - e^2)^(3/2)) - (b^2*c^2*(e*f - d*g)*Log[d + e*x])/(e^2*(c^2*d^
2 - e^2)) - (2*b^2*c*g*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d
^2 - e^2])])/(e^2*Sqrt[c^2*d^2 - e^2]) - (b^2*c^3*d*(e*f - d*g)*PolyLog[2,
(I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/(e^2*(c^2*d^2 - e^2)^
(3/2)) + (2*b^2*c*g*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2
- e^2])])/(e^2*Sqrt[c^2*d^2 - e^2]) + (b^2*c^3*d*(e*f - d*g)*PolyLog[2, (I*
e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/(e^2*(c^2*d^2 - e^2)^(3/
2))
```

Rubi [A] time = 2.93444, antiderivative size = 935, normalized size of antiderivative = 1., number of steps used = 33, number of rules used = 20, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.87, Rules used = {37, 4755, 12, 1651, 844, 216, 725, 204, 4799, 4797, 4641, 4773, 3324, 3323, 2264, 2190, 2279, 2391, 2668, 31}

$$-\frac{ib^2d(ef-dg)\sin^{-1}(cx)\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)c^3}{e^2\left(c^2d^2-e^2\right)^{3/2}}+\frac{ib^2d(ef-dg)\sin^{-1}(cx)\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)c^3}{e^2\left(c^2d^2-e^2\right)^{3/2}}-\frac{b^2d(ef-dg)\text{PolyL}}{e^2\left(c^2d\right.}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x])^2)/(d + e*x)^3,x]
```

```
[Out] (a*b*c*(e*f - d*g)*Sqrt[1 - c^2*x^2])/(e*(c^2*d^2 - e^2)*(d + e*x)) + (a*b*
g^2*ArcSin[c*x])/(e^2*(e*f - d*g)) + (b^2*c*(e*f - d*g)*Sqrt[1 - c^2*x^2]*A
rcSin[c*x])/(e*(c^2*d^2 - e^2)*(d + e*x)) + (b^2*g^2*ArcSin[c*x]^2)/(2*e^2*
(e*f - d*g)) - ((f + g*x)^2*(a + b*ArcSin[c*x])^2)/(2*(e*f - d*g)*(d + e*x)
^2) - (a*b*c*(2*e^2*g - c^2*d*(e*f + d*g))*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d
^2 - e^2]*Sqrt[1 - c^2*x^2])])/(e^2*(c^2*d^2 - e^2)^(3/2)) - ((2*I)*b^2*c*g
*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/
(e^2*Sqrt[c^2*d^2 - e^2]) - (I*b^2*c^3*d*(e*f - d*g)*ArcSin[c*x]*Log[1 - (I
*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/(e^2*(c^2*d^2 - e^2)^(3
/2)) + ((2*I)*b^2*c*g*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sq
rt[c^2*d^2 - e^2])])/(e^2*Sqrt[c^2*d^2 - e^2]) + (I*b^2*c^3*d*(e*f - d*g)*A
rcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/(e
^2*(c^2*d^2 - e^2)^(3/2)) - (b^2*c^2*(e*f - d*g)*Log[d + e*x])/(e^2*(c^2*d^
2 - e^2)) - (2*b^2*c*g*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d
^2 - e^2])])/(e^2*Sqrt[c^2*d^2 - e^2]) - (b^2*c^3*d*(e*f - d*g)*PolyLog[2,
(I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/(e^2*(c^2*d^2 - e^2)^
(3/2)) + (2*b^2*c*g*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2
- e^2])])/(e^2*Sqrt[c^2*d^2 - e^2]) + (b^2*c^3*d*(e*f - d*g)*PolyLog[2, (I*
e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/(e^2*(c^2*d^2 - e^2)^(3/
2))
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 4755

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_))^(m_)*((f_.)
 + (g_.)*(x_))^(p_.), x_Symbol] :> With[{u = IntHide[(f + g*x)^p*(d + e*x)^
m, x]}, Dist[(a + b*ArcSin[c*x])^n, u, x] - Dist[b*c*n, Int[SimplifyIntegra
nd[(u*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e, f, g}, x] && IGtQ[n, 0] && IGtQ[p, 0] && ILtQ[m, 0] && LtQ[
m + p + 1, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1651

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :>
 With[{Q = PolynomialQuotient[Pq, d + e*x, x], R = PolynomialRemainder[Pq,
d + e*x, x]}, Simp[(e*R*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*
d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)
*(a + c*x^2)^p*ExpandToSum[(m + 1)*(c*d^2 + a*e^2)*Q + c*d*R*(m + 1) - c*e*
R*(m + 2*p + 3)*x, x], x], x]] /; FreeQ[{a, c, d, e, p}, x] && PolyQ[Pq, x]
 && NeQ[c*d^2 + a*e^2, 0] && LtQ[m, -1]
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rule 216

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

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

Rule 4799

```
Int[(ArcSin[(c_.)*(x_)]*(b_.) + (a_))^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p
_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p, RFx*(a + b*ArcSin[c*x])
^n, x], x] /; FreeQ[{a, b, c, d, e}, x] && RationalFunctionQ[RFx, x] && IGt
Q[n, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 4797

```
Int[ArcSin[(c_.)*(x_)]^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p_), x_Symbol] :
> With[{u = ExpandIntegrand[(d + e*x^2)^p*ArcSin[c*x]^n, RFx, x]}, Int[u, x
```

```
] /; SumQ[u]] /; FreeQ[{c, d, e}, x] && RationalFunctionQ[RFx, x] && IGtQ[n
, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3324

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[(b*(c + d*x)^m*Cos[e + f*x])/(f*(a^2 - b^2)*(a + b*Sin[e +
f*x])), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[(b*d*m)/(f*(a^2 - b^2)), Int[((c + d*x)^(m - 1)*Cos[e + f*x])/(a
 + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 2668

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rule 31

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

Rubi steps

$$\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)^2}{(d+ex)^3}\,dx = -\frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{2(ef-dg)(d+ex)^2} - (2bc)\int -\frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)}{2(ef-dg)(d+ex)^2\sqrt{1-c^2x^2}}\,dx$$

$$= -\frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{2(ef-dg)(d+ex)^2} + \frac{(bc)\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)}{(d+ex)^2\sqrt{1-c^2x^2}}\,dx}{ef-dg}$$

$$= -\frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{2(ef-dg)(d+ex)^2} + \frac{(bc)\int \left(\frac{a(f+gx)^2}{(d+ex)^2\sqrt{1-c^2x^2}} + \frac{b(f+gx)^2\sin^{-1}(cx)}{(d+ex)^2\sqrt{1-c^2x^2}}\right)dx}{ef-dg}$$

$$= -\frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{2(ef-dg)(d+ex)^2} + \frac{(abc)\int \frac{(f+gx)^2}{(d+ex)^2\sqrt{1-c^2x^2}}\,dx}{ef-dg} + \frac{\left(b^2c\right)\int \frac{(f+gx)^2\sin^{-1}(cx)}{(d+ex)^2\sqrt{1-c^2x^2}}\,dx}{ef-dg}$$

$$= \frac{abc(ef-dg)\sqrt{1-c^2x^2}}{e\left(c^2d^2-e^2\right)(d+ex)} - \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{2(ef-dg)(d+ex)^2} + \frac{\left(b^2c\right)\int \left(\frac{g^2\sin^{-1}(cx)}{e^2\sqrt{1-c^2x^2}} + \frac{(ef-dg)^2}{e^2(d+ex)}\right.}{ef}$$

$$= \frac{abc(ef-dg)\sqrt{1-c^2x^2}}{e\left(c^2d^2-e^2\right)(d+ex)} - \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{2(ef-dg)(d+ex)^2} + \frac{\left(2b^2cg\right)\int \frac{\sin^{-1}(cx)}{(d+ex)\sqrt{1-c^2x^2}}\,dx}{e^2} +$$

$$= \frac{abc(ef-dg)\sqrt{1-c^2x^2}}{e\left(c^2d^2-e^2\right)(d+ex)} + \frac{abg^2\sin^{-1}(cx)}{e^2(ef-dg)} + \frac{b^2g^2\sin^{-1}(cx)^2}{2e^2(ef-dg)} - \frac{(f+gx)^2\left(a+b\sin^{-1}(c\right.}{2(ef-dg)(d+ex)^2}$$

$$= \frac{abc(ef-dg)\sqrt{1-c^2x^2}}{e\left(c^2d^2-e^2\right)(d+ex)} + \frac{abg^2\sin^{-1}(cx)}{e^2(ef-dg)} + \frac{b^2c(ef-dg)\sqrt{1-c^2x^2}\sin^{-1}(cx)}{e\left(c^2d^2-e^2\right)(d+ex)} + \frac{b^2g^2\,\mathrm{s}}{2e^2(e}$$

$$= \frac{abc(ef-dg)\sqrt{1-c^2x^2}}{e\left(c^2d^2-e^2\right)(d+ex)} + \frac{abg^2\sin^{-1}(cx)}{e^2(ef-dg)} + \frac{b^2c(ef-dg)\sqrt{1-c^2x^2}\sin^{-1}(cx)}{e\left(c^2d^2-e^2\right)(d+ex)} + \frac{b^2g^2\,\mathrm{s}}{2e^2(e}$$

$$= \frac{abc(ef-dg)\sqrt{1-c^2x^2}}{e\left(c^2d^2-e^2\right)(d+ex)} + \frac{abg^2\sin^{-1}(cx)}{e^2(ef-dg)} + \frac{b^2c(ef-dg)\sqrt{1-c^2x^2}\sin^{-1}(cx)}{e\left(c^2d^2-e^2\right)(d+ex)} + \frac{b^2g^2\,\mathrm{s}}{2e^2(e}$$

$$= \frac{abc(ef-dg)\sqrt{1-c^2x^2}}{e\left(c^2d^2-e^2\right)(d+ex)} + \frac{abg^2\sin^{-1}(cx)}{e^2(ef-dg)} + \frac{b^2c(ef-dg)\sqrt{1-c^2x^2}\sin^{-1}(cx)}{e\left(c^2d^2-e^2\right)(d+ex)} + \frac{b^2g^2\,\mathrm{s}}{2e^2(e}$$

$$= \frac{abc(ef-dg)\sqrt{1-c^2x^2}}{e\left(c^2d^2-e^2\right)(d+ex)} + \frac{abg^2\sin^{-1}(cx)}{e^2(ef-dg)} + \frac{b^2c(ef-dg)\sqrt{1-c^2x^2}\sin^{-1}(cx)}{e\left(c^2d^2-e^2\right)(d+ex)} + \frac{b^2g^2\,\mathrm{s}}{2e^2(e}$$

$$= \frac{abc(ef-dg)\sqrt{1-c^2x^2}}{e\left(c^2d^2-e^2\right)(d+ex)} + \frac{abg^2\sin^{-1}(cx)}{e^2(ef-dg)} + \frac{b^2c(ef-dg)\sqrt{1-c^2x^2}\sin^{-1}(cx)}{e\left(c^2d^2-e^2\right)(d+ex)} + \frac{b^2g^2\,\mathrm{s}}{2e^2(e}$$

Mathematica [A] time = 1.60271, size = 574, normalized size = 0.61

$$\frac{2bc(ef-dg)\left(-ic^2d(d+ex)\left(-ib\,\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)+ib\,\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)+\left(a+b\sin^{-1}(cx)\right)\left(\log\left(1+\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}-cd}\right)-\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)\right)\right)+e\sqrt{1-c^2x^2}\sqrt{\cdots}}{\left(c^2d^2-e^2\right)^{3/2}(d+ex)}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x])^2)/(d + e*x)^3,x]
```

```
[Out] (-(((e*f - d*g)*(a + b*ArcSin[c*x])^2)/(d + e*x)^2) - (2*g*(a + b*ArcSin[c*
x])^2)/(d + e*x) + (4*b*c*g*((-I)*(a + b*ArcSin[c*x])*(Log[1 + (I*e*E^(I*Ar
cSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] - Log[1 - (I*e*E^(I*ArcSin[c*x]
))/(c*d + Sqrt[c^2*d^2 - e^2])]) - b*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*
d - Sqrt[c^2*d^2 - e^2])] + b*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqr
t[c^2*d^2 - e^2])]))/Sqrt[c^2*d^2 - e^2] + (2*b*c*(e*f - d*g)*(e*Sqrt[c^2*d
^2 - e^2]*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) - b*c*Sqrt[c^2*d^2 - e^2]*(
d + e*x)*Log[d + e*x] - I*c^2*d*(d + e*x)*((a + b*ArcSin[c*x])*(Log[1 + (I*
e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] - Log[1 - (I*e*E^(I*Ar
cSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]) - I*b*PolyLog[2, (I*e*E^(I*ArcSin
[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])] + I*b*PolyLog[2, (I*e*E^(I*ArcSin[c*x]
))/(c*d + Sqrt[c^2*d^2 - e^2])])))/((c^2*d^2 - e^2)^(3/2)*(d + e*x)))/(2*e^
2)
```

Maple [B] time = 0.931, size = 3105, normalized size = 3.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))^2/(e*x+d)^3,x)
```

```
[Out] -1/2*c^2*a^2/e/(c*e*x+c*d)^2*f-1/2*c^4*b^2*arcsin(c*x)^2/(c^2*d^2-e^2)/(c*e
*x+c*d)^2/e^2*d^3*g-1/2*c^4*b^2*arcsin(c*x)^2/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e
*d^2*f+c^3*b^2*arcsin(c*x)/(c^2*d^2-e^2)/(c*e*x+c*d)^2*(-c^2*x^2+1)^(1/2)*d
*f+c^2*a*b*arcsin(c*x)/e^2/(c*e*x+c*d)^2*d*g+c^2*a*b/e/(c^2*d^2-e^2)/(c*x+d
*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f+c^2*b^
2*arcsin(c*x)^2/(c^2*d^2-e^2)/(c*e*x+c*d)^2*e*x*g+1/2*c^2*a^2/e^2/(c*e*x+c*
d)^2*d*g+2*c^2*b^2/(c^2*d^2-e^2)/e*f*ln(I*c*x+(-c^2*x^2+1)^(1/2))-c^2*b^2/(
c^2*d^2-e^2)/e*f*ln((I*c*x+(-c^2*x^2+1)^(1/2))^2*e+2*I*d*c*(I*c*x+(-c^2*x^2
+1)^(1/2))-e)+c^3*b^2*(-c^2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)^2/e*d*f*arcsin(c*x
```

```
)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2
*d^2+e^2)^(1/2)))+c^3*a*b/e^3*d^2/(c^2*d^2-e^2)/(-(c^2*d^2-e^2)/e^2)^(1/2)*
ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(
-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*g
-c^3*a*b/e^2*d/(c^2*d^2-e^2)/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2
)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*
c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*f+I*c^3*b^2*(-c^2*d^
2+e^2)^(1/2)/(c^2*d^2-e^2)^2/e*d*f*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*
e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+I*c^3*b^2*(-c^2*d^2+e
^2)^(1/2)/(c^2*d^2-e^2)^2/e^2*g*d^2*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))
*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-c^2*a*b/e^2/(c^2*d^2
-e^2)/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1
/2)*d*g+c^3*b^2*arcsin(c*x)/(c^2*d^2-e^2)/(c*e*x+c*d)^2*e*(-c^2*x^2+1)^(1/2
)*x*f-c^3*b^2*arcsin(c*x)/(c^2*d^2-e^2)/(c*e*x+c*d)^2*(-c^2*x^2+1)^(1/2)*x*
d*g+I*c^4*b^2*arcsin(c*x)/(c^2*d^2-e^2)/(c*e*x+c*d)^2*x^2*d*g-c^4*b^2*arcsi
n(c*x)^2/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e*x*d^2*g+I*c^4*b^2*arcsin(c*x)/(c^2*d
^2-e^2)/(c*e*x+c*d)^2/e^2*d^3*g-c^3*b^2*arcsin(c*x)/(c^2*d^2-e^2)/(c*e*x+c*
d)^2/e*(-c^2*x^2+1)^(1/2)*d^2*g-2*c*a*b/e^3*g/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln
((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(
c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))+1/2
*c^2*b^2*arcsin(c*x)^2/(c^2*d^2-e^2)/(c*e*x+c*d)^2*d*g+2*c*b^2*(-c^2*d^2+e^
2)^(1/2)/(c^2*d^2-e^2)^2*g*arcsin(c*x)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))
*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+1/2*c^2*b^2*arcsin(c
*x)^2/(c^2*d^2-e^2)/(c*e*x+c*d)^2*e*f-2*c*b^2*(-c^2*d^2+e^2)^(1/2)/(c^2*d^2
-e^2)^2*g*arcsin(c*x)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)
^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-c^2*a*b*arcsin(c*x)/e/(c*e*x+c*d)^2*f
-2*c*a*b*arcsin(c*x)*g/e^2/(c*e*x+c*d)+c^2*b^2/(c^2*d^2-e^2)/e^2*d*g*ln((I*
c*x+(-c^2*x^2+1)^(1/2))^2*e+2*I*d*c*(I*c*x+(-c^2*x^2+1)^(1/2))-e)-2*c^2*b^2
/(c^2*d^2-e^2)/e^2*d*g*ln(I*c*x+(-c^2*x^2+1)^(1/2))+2*I*c*b^2*(-c^2*d^2+e^2
)^(1/2)/(c^2*d^2-e^2)^2*g*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d
^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-2*I*c*b^2*(-c^2*d^2+e^2)^(1/2)
/(c^2*d^2-e^2)^2*g*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)
^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-c*a^2*g/e^2/(c*e*x+c*d)-I*c^3*b^2*(-c
^2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)^2/e*d*f*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1
/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-I*c^3*b^2*(-c^2*
d^2+e^2)^(1/2)/(c^2*d^2-e^2)^2/e^2*g*d^2*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(
1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-2*I*c^4*b^2*arc
sin(c*x)/(c^2*d^2-e^2)/(c*e*x+c*d)^2*x*d*f-I*c^4*b^2*arcsin(c*x)/(c^2*d^2-e
^2)/(c*e*x+c*d)^2*e*x^2*f-I*c^4*b^2*arcsin(c*x)/(c^2*d^2-e^2)/(c*e*x+c*d)^2
/e*d^2*f-c^3*b^2*(-c^2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)^2/e*d*f*arcsin(c*x)*ln(
(I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+
e^2)^(1/2)))-c^3*b^2*(-c^2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)^2/e^2*g*d^2*arcsin(
c*x)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-
c^2*d^2+e^2)^(1/2)))+c^3*b^2*(-c^2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)^2/e^2*g*d^2
*arcsin(c*x)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(
```

```
I*d*c+(-c^2*d^2+e^2)^(1/2)))+2*I*c^4*b^2*arcsin(c*x)/(c^2*d^2-e^2)/(c*e*x+c
*d)^2/e*x*d^2*g
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{a^2gx + a^2f + \left(b^2gx + b^2f\right)\arcsin\left(cx\right)^2 + 2\left(abgx + abf\right)\arcsin\left(cx\right)}{e^3x^3 + 3\,de^2x^2 + 3\,d^2ex + d^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] integral((a^2*g*x + a^2*f + (b^2*g*x + b^2*f)*arcsin(c*x)^2 + 2*(a*b*g*x +
a*b*f)*arcsin(c*x))/(e^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*x + d^3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a + b\operatorname{asin}\left(cx\right)\right)^2\left(f + gx\right)}{\left(d + ex\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))**2/(e*x+d)**3,x)
```

```
[Out] Integral((a + b*asin(c*x))**2*(f + g*x)/(d + e*x)**3, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)(b\arcsin(cx)+a)^2}{(ex+d)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] integrate((g*x + f)*(b*arcsin(c*x) + a)^2/(e*x + d)^3, x)
```

3.114 $\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{(d+ex)^3}\,dx$

Optimal. Leaf size=1678

result too large to display

```
[Out] -(a^2*(e*f - d*g)^2)/(2*e^3*(d + e*x)^2) - (2*a^2*g*(e*f - d*g))/(e^3*(d +
e*x)) + (a*b*c*(e*f - d*g)^2*Sqrt[1 - c^2*x^2])/(e^2*(c^2*d^2 - e^2)*(d + e
*x)) - (a*b*(e*f - d*g)^2*ArcSin[c*x])/(e^3*(d + e*x)^2) - (4*a*b*g*(e*f -
d*g)*ArcSin[c*x])/(e^3*(d + e*x)) + (b^2*c*(e*f - d*g)^2*Sqrt[1 - c^2*x^2]*
ArcSin[c*x])/(e^2*(c^2*d^2 - e^2)*(d + e*x)) - (I*a*b*g^2*ArcSin[c*x]^2)/e^
3 - (b^2*(e*f - d*g)^2*ArcSin[c*x]^2)/(2*e^3*(d + e*x)^2) - (2*b^2*g*(e*f -
 d*g)*ArcSin[c*x]^2)/(e^3*(d + e*x)) - ((I/3)*b^2*g^2*ArcSin[c*x]^3)/e^3 -
(a*b*c*(e*f - d*g)*(4*e^2*g - c^2*d*(e*f + 3*d*g))*ArcTan[(e + c^2*d*x)/(Sq
rt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(e^3*(c^2*d^2 - e^2)^(3/2)) + (2*a*b
*g^2*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2]
)])/e^3 - ((4*I)*b^2*c*g*(e*f - d*g)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c
*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/(e^3*Sqrt[c^2*d^2 - e^2]) - (I*b^2*c^3*
d*(e*f - d*g)^2*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2
*d^2 - e^2])])/(e^3*(c^2*d^2 - e^2)^(3/2)) + (b^2*g^2*ArcSin[c*x]^2*Log[1 -
 (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^3 + (2*a*b*g^2*Arc
Sin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^3
+ ((4*I)*b^2*c*g*(e*f - d*g)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c
*d + Sqrt[c^2*d^2 - e^2])])/(e^3*Sqrt[c^2*d^2 - e^2]) + (I*b^2*c^3*d*(e*f -
 d*g)^2*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e
^2])])/(e^3*(c^2*d^2 - e^2)^(3/2)) + (b^2*g^2*ArcSin[c*x]^2*Log[1 - (I*e*E^
(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^3 + (a^2*g^2*Log[d + e*x])
/e^3 - (b^2*c^2*(e*f - d*g)^2*Log[d + e*x])/(e^3*(c^2*d^2 - e^2)) - ((2*I)*
a*b*g^2*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^
3 - (4*b^2*c*g*(e*f - d*g)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c
^2*d^2 - e^2])])/(e^3*Sqrt[c^2*d^2 - e^2]) - (b^2*c^3*d*(e*f - d*g)^2*PolyL
og[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/(e^3*(c^2*d^2 -
 e^2)^(3/2)) - ((2*I)*b^2*g^2*ArcSin[c*x]*PolyLog[2, (I*e*E^(I*ArcSin[c*x])
)/(c*d - Sqrt[c^2*d^2 - e^2])])/e^3 - ((2*I)*a*b*g^2*PolyLog[2, (I*e*E^(I*A
rcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^3 + (4*b^2*c*g*(e*f - d*g)*Pol
yLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/(e^3*Sqrt[c^2
*d^2 - e^2]) + (b^2*c^3*d*(e*f - d*g)^2*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/
(c*d + Sqrt[c^2*d^2 - e^2])])/(e^3*(c^2*d^2 - e^2)^(3/2)) - ((2*I)*b^2*g^2*
ArcSin[c*x]*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]
)/e^3 + (2*b^2*g^2*PolyLog[3, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 -
 e^2])])/e^3 + (2*b^2*g^2*PolyLog[3, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^
2*d^2 - e^2])])/e^3
```

Rubi [A] time = 3.70931, antiderivative size = 1678, normalized size of antiderivative = 1., number of steps used = 55, number of rules used = 25, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1., Rules used = {4759, 43, 4753, 12, 6742, 807, 725, 204, 216, 2404, 4741, 4519, 2190, 2279, 2391, 4743, 4773, 3324, 3323, 2264, 2668, 31, 2531, 2282, 6589}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^2*(a + b*ArcSin[c*x])^2)/(d + e*x)^3,x]
```

```
[Out] -(a^2*(e*f - d*g)^2)/(2*e^3*(d + e*x)^2) - (2*a^2*g*(e*f - d*g))/(e^3*(d +
e*x)) + (a*b*c*(e*f - d*g)^2*Sqrt[1 - c^2*x^2])/(e^2*(c^2*d^2 - e^2)*(d + e
*x)) - (a*b*(e*f - d*g)^2*ArcSin[c*x])/(e^3*(d + e*x)^2) - (4*a*b*g*(e*f -
d*g)*ArcSin[c*x])/(e^3*(d + e*x)) + (b^2*c*(e*f - d*g)^2*Sqrt[1 - c^2*x^2]*
ArcSin[c*x])/(e^2*(c^2*d^2 - e^2)*(d + e*x)) - (I*a*b*g^2*ArcSin[c*x]^2)/e^
3 - (b^2*(e*f - d*g)^2*ArcSin[c*x]^2)/(2*e^3*(d + e*x)^2) - (2*b^2*g*(e*f -
 d*g)*ArcSin[c*x]^2)/(e^3*(d + e*x)) - ((I/3)*b^2*g^2*ArcSin[c*x]^3)/e^3 -
(a*b*c*(e*f - d*g)*(4*e^2*g - c^2*d*(e*f + 3*d*g))*ArcTan[(e + c^2*d*x)/(Sq
rt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(e^3*(c^2*d^2 - e^2)^(3/2)) + (2*a*b
*g^2*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2]
)])/e^3 - ((4*I)*b^2*c*g*(e*f - d*g)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c
*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/(e^3*Sqrt[c^2*d^2 - e^2]) - (I*b^2*c^3*
d*(e*f - d*g)^2*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2
*d^2 - e^2])])/(e^3*(c^2*d^2 - e^2)^(3/2)) + (b^2*g^2*ArcSin[c*x]^2*Log[1 -
 (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^3 + (2*a*b*g^2*Arc
Sin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^3
+ ((4*I)*b^2*c*g*(e*f - d*g)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c
*d + Sqrt[c^2*d^2 - e^2])])/(e^3*Sqrt[c^2*d^2 - e^2]) + (I*b^2*c^3*d*(e*f -
 d*g)^2*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e
^2])])/(e^3*(c^2*d^2 - e^2)^(3/2)) + (b^2*g^2*ArcSin[c*x]^2*Log[1 - (I*e*E^
(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^3 + (a^2*g^2*Log[d + e*x])
/e^3 - (b^2*c^2*(e*f - d*g)^2*Log[d + e*x])/(e^3*(c^2*d^2 - e^2)) - ((2*I)*
a*b*g^2*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^
3 - (4*b^2*c*g*(e*f - d*g)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c
^2*d^2 - e^2])])/(e^3*Sqrt[c^2*d^2 - e^2]) - (b^2*c^3*d*(e*f - d*g)^2*PolyL
og[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/(e^3*(c^2*d^2 -
 e^2)^(3/2)) - ((2*I)*b^2*g^2*ArcSin[c*x]*PolyLog[2, (I*e*E^(I*ArcSin[c*x])
)/(c*d - Sqrt[c^2*d^2 - e^2])])/e^3 - ((2*I)*a*b*g^2*PolyLog[2, (I*e*E^(I*A
rcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^3 + (4*b^2*c*g*(e*f - d*g)*Pol
yLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/(e^3*Sqrt[c^2
*d^2 - e^2]) + (b^2*c^3*d*(e*f - d*g)^2*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/
(c*d + Sqrt[c^2*d^2 - e^2])])/(e^3*(c^2*d^2 - e^2)^(3/2)) - ((2*I)*b^2*g^2*
```

```
ArcSin[c*x]*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]
)/e^3 + (2*b^2*g^2*PolyLog[3, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 -
 e^2])])/e^3 + (2*b^2*g^2*PolyLog[3, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^
2*d^2 - e^2])])/e^3
```

Rule 4759

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(Px_)*((d_) + (e_.)*(x_))^(m_.)
, x_Symbol] :> Int[ExpandIntegrand[Px*(d + e*x)^m*(a + b*ArcSin[c*x])^n, x]
, x] /; FreeQ[{a, b, c, d, e}, x] && PolynomialQ[Px, x] && IGtQ[n, 0] && In
tegerQ[m]
```

Rule 43

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

Rule 4753

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

Rule 216

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

Rule 2404

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
```

```
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3324

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[(b*(c + d*x)^m*Cos[e + f*x])/(f*(a^2 - b^2)*(a + b*Sin[e +
f*x])), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[(b*d*m)/(f*(a^2 - b^2)), Int[((c + d*x)^(m - 1)*Cos[e + f*x])/(a
 + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2668

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rule 31

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

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{(d+ex)^3}\,dx = \int\left(\frac{a^2(f+gx)^2}{(d+ex)^3}+\frac{2ab(f+gx)^2\sin^{-1}(cx)}{(d+ex)^3}+\frac{b^2(f+gx)^2\sin^{-1}(cx)^2}{(d+ex)^3}\right)dx$$

$$= a^2\int\frac{(f+gx)^2}{(d+ex)^3}\,dx+(2ab)\int\frac{(f+gx)^2\sin^{-1}(cx)}{(d+ex)^3}\,dx+b^2\int\frac{(f+gx)^2\sin^{-1}(cx)^2}{(d+ex)^3}\,d$$

$$= -\frac{ab(ef-dg)^2\sin^{-1}(cx)}{e^3(d+ex)^2}-\frac{4abg(ef-dg)\sin^{-1}(cx)}{e^3(d+ex)}+\frac{2abg^2\sin^{-1}(cx)\log(d+ex)}{e^3}$$

$$= -\frac{a^2(ef-dg)^2}{2e^3(d+ex)^2}-\frac{2a^2g(ef-dg)}{e^3(d+ex)}-\frac{ab(ef-dg)^2\sin^{-1}(cx)}{e^3(d+ex)^2}-\frac{4abg(ef-dg)\sin^{-1}(cx}{e^3(d+ex)}$$

$$= -\frac{a^2(ef-dg)^2}{2e^3(d+ex)^2}-\frac{2a^2g(ef-dg)}{e^3(d+ex)}-\frac{ab(ef-dg)^2\sin^{-1}(cx)}{e^3(d+ex)^2}-\frac{4abg(ef-dg)\sin^{-1}(cx}{e^3(d+ex)}$$

$$= -\frac{a^2(ef-dg)^2}{2e^3(d+ex)^2}-\frac{2a^2g(ef-dg)}{e^3(d+ex)}-\frac{ab(ef-dg)^2\sin^{-1}(cx)}{e^3(d+ex)^2}-\frac{4abg(ef-dg)\sin^{-1}(cx}{e^3(d+ex)}$$

$$= -\frac{a^2(ef-dg)^2}{2e^3(d+ex)^2}-\frac{2a^2g(ef-dg)}{e^3(d+ex)}+\frac{abc(ef-dg)^2\sqrt{1-c^2x^2}}{e^2\left(c^2d^2-e^2\right)(d+ex)}-\frac{ab(ef-dg)^2\sin^{-1}(cx}{e^3(d+ex)^2}$$

$$= -\frac{a^2(ef-dg)^2}{2e^3(d+ex)^2}-\frac{2a^2g(ef-dg)}{e^3(d+ex)}+\frac{abc(ef-dg)^2\sqrt{1-c^2x^2}}{e^2\left(c^2d^2-e^2\right)(d+ex)}-\frac{ab(ef-dg)^2\sin^{-1}(cx}{e^3(d+ex)^2}$$

$$= -\frac{a^2(ef-dg)^2}{2e^3(d+ex)^2}-\frac{2a^2g(ef-dg)}{e^3(d+ex)}+\frac{abc(ef-dg)^2\sqrt{1-c^2x^2}}{e^2\left(c^2d^2-e^2\right)(d+ex)}-\frac{ab(ef-dg)^2\sin^{-1}(cx}{e^3(d+ex)^2}$$

$$= -\frac{a^2(ef-dg)^2}{2e^3(d+ex)^2}-\frac{2a^2g(ef-dg)}{e^3(d+ex)}+\frac{abc(ef-dg)^2\sqrt{1-c^2x^2}}{e^2\left(c^2d^2-e^2\right)(d+ex)}-\frac{ab(ef-dg)^2\sin^{-1}(cx}{e^3(d+ex)^2}$$

$$= -\frac{a^2(ef-dg)^2}{2e^3(d+ex)^2}-\frac{2a^2g(ef-dg)}{e^3(d+ex)}+\frac{abc(ef-dg)^2\sqrt{1-c^2x^2}}{e^2\left(c^2d^2-e^2\right)(d+ex)}-\frac{ab(ef-dg)^2\sin^{-1}(cx}{e^3(d+ex)^2}$$

$$= -\frac{a^2(ef-dg)^2}{2e^3(d+ex)^2}-\frac{2a^2g(ef-dg)}{e^3(d+ex)}+\frac{abc(ef-dg)^2\sqrt{1-c^2x^2}}{e^2\left(c^2d^2-e^2\right)(d+ex)}-\frac{ab(ef-dg)^2\sin^{-1}(cx}{e^3(d+ex)^2}$$

Mathematica [A] time = 4.31378, size = 903, normalized size = 0.54

$$\frac{-\frac{2ig^2\left(a+b\sin^{-1}(cx)\right)^3}{b}+6g^2\log\left(\frac{ie^{i\sin^{-1}(cx)}e}{\sqrt{c^2d^2-e^2}-cd}+1\right)\left(a+b\sin^{-1}(cx)\right)^2+6g^2\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)\left(a+b\sin^{-1}(cx)\right)^2+\frac{12g(dg-ef)(}{}}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((f + g*x)^2*(a + b*ArcSin[c*x])^2)/(d + e*x)^3,x]
```

```
[Out] ((-3*(e*f - d*g)^2*(a + b*ArcSin[c*x])^2)/(d + e*x)^2 + (12*g*(-(e*f) + d*g
)*(a + b*ArcSin[c*x])^2)/(d + e*x) - ((2*I)*g^2*(a + b*ArcSin[c*x])^3)/b +
6*g^2*(a + b*ArcSin[c*x])^2*Log[1 + (I*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[
c^2*d^2 - e^2])] + 6*g^2*(a + b*ArcSin[c*x])^2*Log[1 - (I*e*E^(I*ArcSin[c*x
]))/(c*d + Sqrt[c^2*d^2 - e^2])] + (24*b*c*g*(-(e*f) + d*g)*(I*(a + b*ArcSi
n[c*x])*(Log[1 + (I*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] -
Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]) + b*PolyLog[2
, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])] - b*PolyLog[2, (I*e*
E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]))/Sqrt[c^2*d^2 - e^2] + (6*
b*c^2*(e*f - d*g)^2*((e*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(c*d + c*e*x
) - b*Log[d + e*x] + (c*d*((-I)*(a + b*ArcSin[c*x])*(Log[1 + (I*e*E^(I*ArcS
in[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] - Log[1 - (I*e*E^(I*ArcSin[c*x]))
/(c*d + Sqrt[c^2*d^2 - e^2])]) - b*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d
- Sqrt[c^2*d^2 - e^2])] + b*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[
c^2*d^2 - e^2])]))/Sqrt[c^2*d^2 - e^2]))/(c^2*d^2 - e^2) - 12*b*g^2*(I*(a +
 b*ArcSin[c*x])*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^
2])] - b*PolyLog[3, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])]) -
 12*b*g^2*(I*(a + b*ArcSin[c*x])*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d +
Sqrt[c^2*d^2 - e^2])] - b*PolyLog[3, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^
2*d^2 - e^2])]))/(6*e^3)
```

Maple [F] time = 5.037, size = 0, normalized size = 0.

$$\int \frac{\left(gx+f\right)^2\left(a+b\arcsin\left(cx\right)\right)^2}{\left(ex+d\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*arcsin(c*x))^2/(e*x+d)^3,x)
```

```
[Out] int((g*x+f)^2*(a+b*arcsin(c*x))^2/(e*x+d)^3,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{a^2g^2x^2 + 2\,a^2fgx + a^2f^2 + \left(b^2g^2x^2 + 2\,b^2fgx + b^2f^2\right)\arcsin\left(cx\right)^2 + 2\left(abg^2x^2 + 2\,abfgx + abf^2\right)\arcsin\left(cx\right.}{e^3x^3 + 3\,de^2x^2 + 3\,d^2ex + d^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] integral((a^2*g^2*x^2 + 2*a^2*f*g*x + a^2*f^2 + (b^2*g^2*x^2 + 2*b^2*f*g*x
+ b^2*f^2)*arcsin(c*x)^2 + 2*(a*b*g^2*x^2 + 2*a*b*f*g*x + a*b*f^2)*arcsin(c
*x))/(e^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*x + d^3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a + b\operatorname{asin}\left(cx\right)\right)^2\left(f + gx\right)^2}{\left(d + ex\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*asin(c*x))**2/(e*x+d)**3,x)
```

```
[Out] Integral((a + b*asin(c*x))**2*(f + g*x)**2/(d + e*x)**3, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^2 (b\arcsin(cx)+a)^2}{(ex+d)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^2*(b*arcsin(c*x) + a)^2/(e*x + d)^3, x)
```

3.115 $\int (g+hx)^3 \left(d+ex+fx^2\right) \left(a+b\sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=1016

result too large to display

```
[Out] -2*b^2*d*g^3*x - (16*b^2*h^2*(3*f*g + e*h)*x)/(75*c^4) - (4*b^2*g*(f*g^2 +
3*h*(e*g + d*h))*x)/(9*c^2) - (5*b^2*f*h^3*x^2)/(96*c^4) - (b^2*g^2*(e*g +
3*d*h)*x^2)/4 - (3*b^2*h*(3*f*g^2 + h*(3*e*g + d*h))*x^2)/(32*c^2) - (8*b^2
*h^2*(3*f*g + e*h)*x^3)/(225*c^2) - (2*b^2*g*(f*g^2 + 3*h*(e*g + d*h))*x^3)
/27 - (5*b^2*f*h^3*x^4)/(288*c^2) - (b^2*h*(3*f*g^2 + h*(3*e*g + d*h))*x^4)
/32 - (2*b^2*h^2*(3*f*g + e*h)*x^5)/125 - (b^2*f*h^3*x^6)/108 + (2*b*d*g^3*
Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c + (16*b*h^2*(3*f*g + e*h)*Sqrt[1 -
 c^2*x^2]*(a + b*ArcSin[c*x]))/(75*c^5) + (4*b*g*(f*g^2 + 3*h*(e*g + d*h))*
Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(9*c^3) + (5*b*f*h^3*x*Sqrt[1 - c^2*
x^2]*(a + b*ArcSin[c*x]))/(48*c^5) + (b*g^2*(e*g + 3*d*h)*x*Sqrt[1 - c^2*x^
2]*(a + b*ArcSin[c*x]))/(2*c) + (3*b*h*(3*f*g^2 + h*(3*e*g + d*h))*x*Sqrt[1
 - c^2*x^2]*(a + b*ArcSin[c*x]))/(16*c^3) + (8*b*h^2*(3*f*g + e*h)*x^2*Sqrt
[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(75*c^3) + (2*b*g*(f*g^2 + 3*h*(e*g + d*
h))*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(9*c) + (5*b*f*h^3*x^3*Sqrt[
1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(72*c^3) + (b*h*(3*f*g^2 + h*(3*e*g + d*h
))*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(8*c) + (2*b*h^2*(3*f*g + e*h
)*x^4*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(25*c) + (b*f*h^3*x^5*Sqrt[1 -
 c^2*x^2]*(a + b*ArcSin[c*x]))/(18*c) - (5*f*h^3*(a + b*ArcSin[c*x])^2)/(96
*c^6) - (g^2*(e*g + 3*d*h)*(a + b*ArcSin[c*x])^2)/(4*c^2) - (3*h*(3*f*g^2 +
 h*(3*e*g + d*h))*(a + b*ArcSin[c*x])^2)/(32*c^4) + d*g^3*x*(a + b*ArcSin[c
*x])^2 + (g^2*(e*g + 3*d*h)*x^2*(a + b*ArcSin[c*x])^2)/2 + (g*(f*g^2 + 3*h*
(e*g + d*h))*x^3*(a + b*ArcSin[c*x])^2)/3 + (h*(3*f*g^2 + h*(3*e*g + d*h))*
x^4*(a + b*ArcSin[c*x])^2)/4 + (h^2*(3*f*g + e*h)*x^5*(a + b*ArcSin[c*x])^2
)/5 + (f*h^3*x^6*(a + b*ArcSin[c*x])^2)/6
```

Rubi [A] time = 1.58017, antiderivative size = 1016, normalized size of antiderivative = 1., number of steps used = 35, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4751, 4619, 4677, 8, 4627, 4707, 4641, 30}

$$-\frac{1}{108}b^2fh^3x^6+\frac{1}{6}fh^3\left(a+b\sin^{-1}(cx)\right)^2x^6+\frac{1}{5}h^2(3fg+eh)\left(a+b\sin^{-1}(cx)\right)^2x^5-\frac{2}{125}b^2h^2(3fg+eh)x^5+\frac{bfh^3\sqrt{1-c}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^3*(d + e*x + f*x^2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -2*b^2*d*g^3*x - (16*b^2*h^2*(3*f*g + e*h)*x)/(75*c^4) - (4*b^2*g*(f*g^2 +
3*h*(e*g + d*h))*x)/(9*c^2) - (5*b^2*f*h^3*x^2)/(96*c^4) - (b^2*g^2*(e*g +
3*d*h)*x^2)/4 - (3*b^2*h*(3*f*g^2 + h*(3*e*g + d*h))*x^2)/(32*c^2) - (8*b^2
*h^2*(3*f*g + e*h)*x^3)/(225*c^2) - (2*b^2*g*(f*g^2 + 3*h*(e*g + d*h))*x^3)
/27 - (5*b^2*f*h^3*x^4)/(288*c^2) - (b^2*h*(3*f*g^2 + h*(3*e*g + d*h))*x^4)
/32 - (2*b^2*h^2*(3*f*g + e*h)*x^5)/125 - (b^2*f*h^3*x^6)/108 + (2*b*d*g^3*
Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c + (16*b*h^2*(3*f*g + e*h)*Sqrt[1 -
 c^2*x^2]*(a + b*ArcSin[c*x]))/(75*c^5) + (4*b*g*(f*g^2 + 3*h*(e*g + d*h))*
Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(9*c^3) + (5*b*f*h^3*x*Sqrt[1 - c^2*
x^2]*(a + b*ArcSin[c*x]))/(48*c^5) + (b*g^2*(e*g + 3*d*h)*x*Sqrt[1 - c^2*x^
2]*(a + b*ArcSin[c*x]))/(2*c) + (3*b*h*(3*f*g^2 + h*(3*e*g + d*h))*x*Sqrt[1
 - c^2*x^2]*(a + b*ArcSin[c*x]))/(16*c^3) + (8*b*h^2*(3*f*g + e*h)*x^2*Sqrt
[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(75*c^3) + (2*b*g*(f*g^2 + 3*h*(e*g + d*
h))*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(9*c) + (5*b*f*h^3*x^3*Sqrt[
1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(72*c^3) + (b*h*(3*f*g^2 + h*(3*e*g + d*h
))*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(8*c) + (2*b*h^2*(3*f*g + e*h
)*x^4*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(25*c) + (b*f*h^3*x^5*Sqrt[1 -
 c^2*x^2]*(a + b*ArcSin[c*x]))/(18*c) - (5*f*h^3*(a + b*ArcSin[c*x])^2)/(96
*c^6) - (g^2*(e*g + 3*d*h)*(a + b*ArcSin[c*x])^2)/(4*c^2) - (3*h*(3*f*g^2 +
 h*(3*e*g + d*h))*(a + b*ArcSin[c*x])^2)/(32*c^4) + d*g^3*x*(a + b*ArcSin[c
*x])^2 + (g^2*(e*g + 3*d*h)*x^2*(a + b*ArcSin[c*x])^2)/2 + (g*(f*g^2 + 3*h*
(e*g + d*h))*x^3*(a + b*ArcSin[c*x])^2)/3 + (h*(3*f*g^2 + h*(3*e*g + d*h))*
x^4*(a + b*ArcSin[c*x])^2)/4 + (h^2*(3*f*g + e*h)*x^5*(a + b*ArcSin[c*x])^2
)/5 + (f*h^3*x^6*(a + b*ArcSin[c*x])^2)/6
```

Rule 4751

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(Px_), x_Symbol] :> Int[ExpandI
ntegrand[Px*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[{a, b, c, n}, x] && Poly
nomialQ[Px, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4677

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

Rule 8

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

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4707

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

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 30

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

Rubi steps

$$\int (g+hx)^3 \left(d+ex+fx^2\right) \left(a+b\sin^{-1}(cx)\right)^2 \, dx = \int \left(dg^3 \left(a+b\sin^{-1}(cx)\right)^2 + g^2(eg+3dh)x \left(a+b\sin^{-1}(cx)\right)^2 + g \left(fg^2\right.\right.$$
$$= \left(dg^3\right) \int \left(a+b\sin^{-1}(cx)\right)^2 \, dx + \left(fh^3\right) \int x^5 \left(a+b\sin^{-1}(cx)\right)^2 \, dx + \left(\right.$$
$$= dg^3x \left(a+b\sin^{-1}(cx)\right)^2 + \frac{1}{2}g^2(eg+3dh)x^2 \left(a+b\sin^{-1}(cx)\right)^2 + \frac{1}{3}g \left(f\right.$$
$$= \frac{2bdg^3\sqrt{1-c^2x^2} \left(a+b\sin^{-1}(cx)\right)}{c} + \frac{bg^2(eg+3dh)x\sqrt{1-c^2x^2} \left(a+b\,\mathrm{s}\right.}{2c}$$
$$= -2b^2dg^3x - \frac{1}{4}b^2g^2(eg+3dh)x^2 - \frac{2}{27}b^2g \left(fg^2+3h(eg+dh)\right) x^3 - \frac{1}{32}b$$
$$= -2b^2dg^3x - \frac{4b^2g \left(fg^2+3h(eg+dh)\right) x}{9c^2} - \frac{1}{4}b^2g^2(eg+3dh)x^2 - \frac{3b^2h\left(\right.}{}$$
$$= -2b^2dg^3x - \frac{16b^2h^2(3fg+eh)x}{75c^4} - \frac{4b^2g \left(fg^2+3h(eg+dh)\right) x}{9c^2} - \frac{5b^2f}{96}$$

<u>Mathematica</u> [A] time = 1.0357, size = 734, normalized size = 0.72

$$-\frac{fh^3 \left(45a^2 - 6abcx\sqrt{1-c^2x^2} \left(8c^4x^4+10c^2x^2+15\right) - 6b\sin^{-1}(cx) \left(bcx\sqrt{1-c^2x^2} \left(8c^4x^4+10c^2x^2+15\right) - 15a\right) + b^2c^2x^2\right.}{864c^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^3*(d + e*x + f*x^2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] d*g^3*x*(a + b*ArcSin[c*x])^2 + (g^2*(e*g + 3*d*h)*x^2*(a + b*ArcSin[c*x])^
2)/2 + (g*(f*g^2 + 3*h*(e*g + d*h))*x^3*(a + b*ArcSin[c*x])^2)/3 + (h*(3*f*
g^2 + h*(3*e*g + d*h))*x^4*(a + b*ArcSin[c*x])^2)/4 + (h^2*(3*f*g + e*h)*x^
5*(a + b*ArcSin[c*x])^2)/5 + (f*h^3*x^6*(a + b*ArcSin[c*x])^2)/6 - (2*b*g*(
f*g^2 + 3*h*(e*g + d*h))*(-3*a*Sqrt[1 - c^2*x^2]*(2 + c^2*x^2) + b*c*x*(6 +
 c^2*x^2) - 3*b*Sqrt[1 - c^2*x^2]*(2 + c^2*x^2)*ArcSin[c*x]))/(27*c^3) - (2
*b*h^2*(3*f*g + e*h)*(-15*a*Sqrt[1 - c^2*x^2]*(8 + 4*c^2*x^2 + 3*c^4*x^4) +
 b*c*x*(120 + 20*c^2*x^2 + 9*c^4*x^4) - 15*b*Sqrt[1 - c^2*x^2]*(8 + 4*c^2*x
^2 + 3*c^4*x^4)*ArcSin[c*x]))/(1125*c^5) - (f*h^3*(45*a^2 - 6*a*b*c*x*Sqrt[
1 - c^2*x^2]*(15 + 10*c^2*x^2 + 8*c^4*x^4) + b^2*c^2*x^2*(45 + 15*c^2*x^2 +
 8*c^4*x^4) - 6*b*(-15*a + b*c*x*Sqrt[1 - c^2*x^2]*(15 + 10*c^2*x^2 + 8*c^4
*x^4))*ArcSin[c*x] + 45*b^2*ArcSin[c*x]^2))/(864*c^6) - 2*b*d*g^3*(b*x - (S
qrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c) - (b*h*(3*f*g^2 + h*(3*e*g + d*h))
```

```
*((3*b*x^2)/c^2 + b*x^4 - (6*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c^3 -
 (4*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c + (3*(a + b*ArcSin[c*x])^2
)/(b*c^4)))/32 - (b*g^2*(e*g + 3*d*h)*(b*x^2 - (2*x*Sqrt[1 - c^2*x^2]*(a +
b*ArcSin[c*x]))/c + (a + b*ArcSin[c*x])^2/(b*c^2)))/4
```

Maple [B] time = 0.268, size = 2600, normalized size = 2.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^3*(f*x^2+e*x+d)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/c*(a^2/c^5*(1/6*h^3*f*c^6*x^6+1/5*(c*e*h^3+3*c*f*g*h^2)*c^5*x^5+1/4*(c^2*
d*h^3+3*c^2*e*g*h^2+3*c^2*f*g^2*h)*c^4*x^4+1/3*(3*c^3*d*g*h^2+3*c^3*e*g^2*h
+c^3*f*g^3)*c^3*x^3+1/2*(3*c^4*d*g^2*h+c^4*e*g^3)*c^2*x^2+c^6*g^3*d*x)+b^2/
c^5*(c^5*g^3*d*(arcsin(c*x)^2*c*x-2*c*x+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2))+3
/4*c^4*g^2*h*d*(2*arcsin(c*x)^2*c^2*x^2+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*
x-arcsin(c*x)^2-c^2*x^2)+1/4*c^4*g^3*e*(2*arcsin(c*x)^2*c^2*x^2+2*arcsin(c*
x)*(-c^2*x^2+1)^(1/2)*c*x-arcsin(c*x)^2-c^2*x^2)+1/9*c^3*g*h^2*d*(9*c^3*x^3
*arcsin(c*x)^2+6*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x^2-27*arcsin(c*x)^2*c*
x-2*c^3*x^3-42*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+42*c*x)+1/9*c^3*g^2*h*e*(9*c^
3*x^3*arcsin(c*x)^2+6*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x^2-27*arcsin(c*x)
^2*c*x-2*c^3*x^3-42*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+42*c*x)+1/27*c^3*g^3*f*(
9*c^3*x^3*arcsin(c*x)^2+6*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x^2-27*arcsin(
c*x)^2*c*x-2*c^3*x^3-42*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+42*c*x)+1/32*h^3*c^2
*d*(8*arcsin(c*x)^2*c^4*x^4+4*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^3*x^3-16*arc
sin(c*x)^2*c^2*x^2-c^4*x^4-10*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*x+5*arcsin(c
*x)^2+5*c^2*x^2-4)+3/32*c^2*g*h^2*e*(8*arcsin(c*x)^2*c^4*x^4+4*arcsin(c*x)*
(-c^2*x^2+1)^(1/2)*c^3*x^3-16*arcsin(c*x)^2*c^2*x^2-c^4*x^4-10*arcsin(c*x)*
(-c^2*x^2+1)^(1/2)*c*x+5*arcsin(c*x)^2+5*c^2*x^2-4)+3/32*c^2*g^2*h*f*(8*arc
sin(c*x)^2*c^4*x^4+4*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^3*x^3-16*arcsin(c*x)^
2*c^2*x^2-c^4*x^4-10*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*x+5*arcsin(c*x)^2+5*c
^2*x^2-4)+1/3375*h^3*c*e*(675*arcsin(c*x)^2*c^5*x^5+270*arcsin(c*x)*(-c^2*x
^2+1)^(1/2)*c^4*x^4-2250*c^3*x^3*arcsin(c*x)^2-54*c^5*x^5-1140*arcsin(c*x)*
(-c^2*x^2+1)^(1/2)*c^2*x^2+3375*arcsin(c*x)^2*c*x+380*c^3*x^3+4470*arcsin(c
*x)*(-c^2*x^2+1)^(1/2)-4470*c*x)+1/1125*c*g*h^2*f*(675*arcsin(c*x)^2*c^5*x^
5+270*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^4*x^4-2250*c^3*x^3*arcsin(c*x)^2-54*
c^5*x^5-1140*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x^2+3375*arcsin(c*x)^2*c*x+
380*c^3*x^3+4470*arcsin(c*x)*(-c^2*x^2+1)^(1/2)-4470*c*x)+1/864*h^3*f*(144*
arcsin(c*x)^2*c^6*x^6+48*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^5*x^5-432*arcsin(
c*x)^2*c^4*x^4-8*c^6*x^6-156*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^3*x^3+432*arc
```

```
sin(c*x)^2*c^2*x^2+39*c^4*x^4+198*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*x-99*arc
sin(c*x)^2-99*c^2*x^2+68)+3*c^3*g*h^2*d*(arcsin(c*x)^2*c*x-2*c*x+2*arcsin(c
*x)*(-c^2*x^2+1)^(1/2))+3*c^3*g^2*h*e*(arcsin(c*x)^2*c*x-2*c*x+2*arcsin(c*x
)*(-c^2*x^2+1)^(1/2))+c^3*g^3*f*(arcsin(c*x)^2*c*x-2*c*x+2*arcsin(c*x)*(-c^
2*x^2+1)^(1/2))+1/4*h^3*c^2*d*(2*arcsin(c*x)^2*c^2*x^2+2*arcsin(c*x)*(-c^2*
x^2+1)^(1/2)*c*x-arcsin(c*x)^2-c^2*x^2)+3/4*c^2*g*h^2*e*(2*arcsin(c*x)^2*c^
2*x^2+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*x-arcsin(c*x)^2-c^2*x^2)+3/4*c^2*g
^2*h*f*(2*arcsin(c*x)^2*c^2*x^2+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*x-arcsin
(c*x)^2-c^2*x^2)+2/27*h^3*c*e*(9*c^3*x^3*arcsin(c*x)^2+6*arcsin(c*x)*(-c^2*
x^2+1)^(1/2)*c^2*x^2-27*arcsin(c*x)^2*c*x-2*c^3*x^3-42*arcsin(c*x)*(-c^2*x^
2+1)^(1/2)+42*c*x)+2/9*c*g*h^2*f*(9*c^3*x^3*arcsin(c*x)^2+6*arcsin(c*x)*(-c
^2*x^2+1)^(1/2)*c^2*x^2-27*arcsin(c*x)^2*c*x-2*c^3*x^3-42*arcsin(c*x)*(-c^2
*x^2+1)^(1/2)+42*c*x)+1/16*h^3*f*(8*arcsin(c*x)^2*c^4*x^4+4*arcsin(c*x)*(-c
^2*x^2+1)^(1/2)*c^3*x^3-16*arcsin(c*x)^2*c^2*x^2-c^4*x^4-10*arcsin(c*x)*(-c
^2*x^2+1)^(1/2)*c*x+5*arcsin(c*x)^2+5*c^2*x^2-4)+h^3*c*e*(arcsin(c*x)^2*c*x
-2*c*x+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2))+3*c*g*h^2*f*(arcsin(c*x)^2*c*x-2*c
*x+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2))+1/4*h^3*f*(2*arcsin(c*x)^2*c^2*x^2+2*a
rcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*x-arcsin(c*x)^2-c^2*x^2))+2*a*b/c^5*(1/6*ar
csin(c*x)*h^3*f*c^6*x^6+1/5*arcsin(c*x)*c^6*x^5*e*h^3+3/5*arcsin(c*x)*c^6*x
^5*f*g*h^2+1/4*arcsin(c*x)*c^6*x^4*d*h^3+3/4*arcsin(c*x)*c^6*x^4*e*g*h^2+3/
4*arcsin(c*x)*c^6*x^4*f*g^2*h+arcsin(c*x)*c^6*x^3*d*g*h^2+arcsin(c*x)*c^6*x
^3*e*g^2*h+1/3*arcsin(c*x)*c^6*x^3*f*g^3+3/2*arcsin(c*x)*c^6*x^2*d*g^2*h+1/
2*arcsin(c*x)*c^6*x^2*e*g^3+arcsin(c*x)*c^6*g^3*d*x-1/6*h^3*f*(-1/6*c^5*x^5
*(-c^2*x^2+1)^(1/2)-5/24*c^3*x^3*(-c^2*x^2+1)^(1/2)-5/16*c*x*(-c^2*x^2+1)^(
1/2)+5/16*arcsin(c*x))-1/60*(12*c*e*h^3+36*c*f*g*h^2)*(-1/5*c^4*x^4*(-c^2*x
^2+1)^(1/2)-4/15*c^2*x^2*(-c^2*x^2+1)^(1/2)-8/15*(-c^2*x^2+1)^(1/2))-1/60*(
15*c^2*d*h^3+45*c^2*e*g*h^2+45*c^2*f*g^2*h)*(-1/4*c^3*x^3*(-c^2*x^2+1)^(1/2
)-3/8*c*x*(-c^2*x^2+1)^(1/2)+3/8*arcsin(c*x))-1/60*(60*c^3*d*g*h^2+60*c^3*e
*g^2*h+20*c^3*f*g^3)*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-c^2*x^2+1)^(1/2
))-1/60*(90*c^4*d*g^2*h+30*c^4*e*g^3)*(-1/2*c*x*(-c^2*x^2+1)^(1/2)+1/2*arcs
in(c*x))+c^5*g^3*d*(-c^2*x^2+1)^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^3*(f*x^2+e*x+d)*(a+b*arcsin(c*x))^2,x, algorithm="maxima"
)
```

```
[Out] 1/6*a^2*f*h^3*x^6 + 3/5*a^2*f*g*h^2*x^5 + 1/5*a^2*e*h^3*x^5 + 3/4*a^2*f*g^2
*h*x^4 + 3/4*a^2*e*g*h^2*x^4 + 1/4*a^2*d*h^3*x^4 + 1/3*a^2*f*g^3*x^3 + a^2*
```

```
e*g^2*h*x^3 + a^2*d*g*h^2*x^3 + b^2*d*g^3*x*arcsin(c*x)^2 + 1/2*a^2*e*g^3*x
^2 + 3/2*a^2*d*g^2*h*x^2 + 1/2*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x
/c^2 - arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^2)))*a*b*e*g^3 + 2/9*(3*x^3*arc
sin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*f
*g^3 + 3/2*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c^2*x/
sqrt(c^2))/(sqrt(c^2)*c^2)))*a*b*d*g^2*h + 2/3*(3*x^3*arcsin(c*x) + c*(sqrt
(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*e*g^2*h + 3/16*(8*x
^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4
 - 3*arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^4))*c)*a*b*f*g^2*h + 2/3*(3*x^3*a
rcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b
*d*g*h^2 + 3/16*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt
(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^4))*c)*a*b*e*
g*h^2 + 2/25*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-
c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*a*b*f*g*h^2 + 1/16*(8*x
^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4
 - 3*arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^4))*c)*a*b*d*h^3 + 2/75*(15*x^5*a
rcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 +
 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*a*b*e*h^3 + 1/144*(48*x^6*arcsin(c*x) + (8*sq
rt(-c^2*x^2 + 1)*x^5/c^2 + 10*sqrt(-c^2*x^2 + 1)*x^3/c^4 + 15*sqrt(-c^2*x^2
 + 1)*x/c^6 - 15*arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^6))*c)*a*b*f*h^3 - 2*
b^2*d*g^3*(x - sqrt(-c^2*x^2 + 1)*arcsin(c*x)/c) + a^2*d*g^3*x + 2*(c*x*arc
sin(c*x) + sqrt(-c^2*x^2 + 1))*a*b*d*g^3/c + 1/60*(10*b^2*f*h^3*x^6 + 12*(3
*b^2*f*g*h^2 + b^2*e*h^3)*x^5 + 15*(3*b^2*f*g^2*h + 3*b^2*e*g*h^2 + b^2*d*h
^3)*x^4 + 20*(b^2*f*g^3 + 3*b^2*e*g^2*h + 3*b^2*d*g*h^2)*x^3 + 30*(b^2*e*g^
3 + 3*b^2*d*g^2*h)*x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + inte
grate(1/30*(10*b^2*c*f*h^3*x^6 + 12*(3*b^2*c*f*g*h^2 + b^2*c*e*h^3)*x^5 + 1
5*(3*b^2*c*f*g^2*h + 3*b^2*c*e*g*h^2 + b^2*c*d*h^3)*x^4 + 20*(b^2*c*f*g^3 +
 3*b^2*c*e*g^2*h + 3*b^2*c*d*g*h^2)*x^3 + 30*(b^2*c*e*g^3 + 3*b^2*c*d*g^2*h
)*x^2)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x +
1))/(c^2*x^2 - 1), x)
```

Fricas [A] time = 4.06177, size = 3374, normalized size = 3.32

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^3*(f*x^2+e*x+d)*(a+b*arcsin(c*x))^2,x, algorithm="fricas"
)
```

```
[Out] 1/108000*(1000*(18*a^2 - b^2)*c^6*f*h^3*x^6 + 864*(3*(25*a^2 - 2*b^2)*c^6*f
*g*h^2 + (25*a^2 - 2*b^2)*c^6*e*h^3)*x^5 + 375*(27*(8*a^2 - b^2)*c^6*f*g^2*
```

```
h + 27*(8*a^2 - b^2)*c^6*e*g*h^2 + (9*(8*a^2 - b^2)*c^6*d - 5*b^2*c^4*f)*h^
3)*x^4 + 160*(25*(9*a^2 - 2*b^2)*c^6*f*g^3 + 75*(9*a^2 - 2*b^2)*c^6*e*g^2*h
 - 24*b^2*c^4*e*h^3 + 3*(25*(9*a^2 - 2*b^2)*c^6*d - 24*b^2*c^4*f)*g*h^2)*x^
3 + 1125*(24*(2*a^2 - b^2)*c^6*e*g^3 - 27*b^2*c^4*e*g*h^2 + 9*(8*(2*a^2 - b
^2)*c^6*d - 3*b^2*c^4*f)*g^2*h - (9*b^2*c^4*d + 5*b^2*c^2*f)*h^3)*x^2 + 225
*(80*b^2*c^6*f*h^3*x^6 + 480*b^2*c^6*d*g^3*x - 120*b^2*c^4*e*g^3 - 135*b^2*
c^2*e*g*h^2 + 96*(3*b^2*c^6*f*g*h^2 + b^2*c^6*e*h^3)*x^5 + 120*(3*b^2*c^6*f
*g^2*h + 3*b^2*c^6*e*g*h^2 + b^2*c^6*d*h^3)*x^4 - 45*(8*b^2*c^4*d + 3*b^2*c
^2*f)*g^2*h - 5*(9*b^2*c^2*d + 5*b^2*f)*h^3 + 160*(b^2*c^6*f*g^3 + 3*b^2*c^
6*e*g^2*h + 3*b^2*c^6*d*g*h^2)*x^3 + 240*(b^2*c^6*e*g^3 + 3*b^2*c^6*d*g^2*h
)*x^2)*arcsin(c*x)^2 - 480*(300*b^2*c^4*e*g^2*h + 48*b^2*c^2*e*h^3 - 25*(9*
(a^2 - 2*b^2)*c^6*d - 4*b^2*c^4*f)*g^3 + 12*(25*b^2*c^4*d + 12*b^2*c^2*f)*g
*h^2)*x + 450*(80*a*b*c^6*f*h^3*x^6 + 480*a*b*c^6*d*g^3*x - 120*a*b*c^4*e*g
^3 - 135*a*b*c^2*e*g*h^2 + 96*(3*a*b*c^6*f*g*h^2 + a*b*c^6*e*h^3)*x^5 + 120
*(3*a*b*c^6*f*g^2*h + 3*a*b*c^6*e*g*h^2 + a*b*c^6*d*h^3)*x^4 - 45*(8*a*b*c^
4*d + 3*a*b*c^2*f)*g^2*h - 5*(9*a*b*c^2*d + 5*a*b*f)*h^3 + 160*(a*b*c^6*f*g
^3 + 3*a*b*c^6*e*g^2*h + 3*a*b*c^6*d*g*h^2)*x^3 + 240*(a*b*c^6*e*g^3 + 3*a*
b*c^6*d*g^2*h)*x^2)*arcsin(c*x) + 30*(200*a*b*c^5*f*h^3*x^5 + 4800*a*b*c^3*
e*g^2*h + 768*a*b*c*e*h^3 + 288*(3*a*b*c^5*f*g*h^2 + a*b*c^5*e*h^3)*x^4 + 8
00*(9*a*b*c^5*d + 2*a*b*c^3*f)*g^3 + 192*(25*a*b*c^3*d + 12*a*b*c*f)*g*h^2
+ 50*(27*a*b*c^5*f*g^2*h + 27*a*b*c^5*e*g*h^2 + (9*a*b*c^5*d + 5*a*b*c^3*f)
*h^3)*x^3 + 32*(25*a*b*c^5*f*g^3 + 75*a*b*c^5*e*g^2*h + 12*a*b*c^3*e*h^3 +
3*(25*a*b*c^5*d + 12*a*b*c^3*f)*g*h^2)*x^2 + 75*(24*a*b*c^5*e*g^3 + 27*a*b*
c^3*e*g*h^2 + 9*(8*a*b*c^5*d + 3*a*b*c^3*f)*g^2*h + (9*a*b*c^3*d + 5*a*b*c*
f)*h^3)*x + (200*b^2*c^5*f*h^3*x^5 + 4800*b^2*c^3*e*g^2*h + 768*b^2*c*e*h^3
 + 288*(3*b^2*c^5*f*g*h^2 + b^2*c^5*e*h^3)*x^4 + 800*(9*b^2*c^5*d + 2*b^2*c
^3*f)*g^3 + 192*(25*b^2*c^3*d + 12*b^2*c*f)*g*h^2 + 50*(27*b^2*c^5*f*g^2*h
+ 27*b^2*c^5*e*g*h^2 + (9*b^2*c^5*d + 5*b^2*c^3*f)*h^3)*x^3 + 32*(25*b^2*c^
5*f*g^3 + 75*b^2*c^5*e*g^2*h + 12*b^2*c^3*e*h^3 + 3*(25*b^2*c^5*d + 12*b^2*
c^3*f)*g*h^2)*x^2 + 75*(24*b^2*c^5*e*g^3 + 27*b^2*c^3*e*g*h^2 + 9*(8*b^2*c^
5*d + 3*b^2*c^3*f)*g^2*h + (9*b^2*c^3*d + 5*b^2*c*f)*h^3)*x)*arcsin(c*x))*s
qrt(-c^2*x^2 + 1))/c^6
```

Sympy [A] time = 25.7425, size = 2992, normalized size = 2.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**3*(f*x**2+e*x+d)*(a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((a**2*d*g**3*x + 3*a**2*d*g**2*h*x**2/2 + a**2*d*g*h**2*x**3 + a*
*2*d*h**3*x**4/4 + a**2*e*g**3*x**2/2 + a**2*e*g**2*h*x**3 + 3*a**2*e*g*h**
```

```
2*x**4/4 + a**2*e*h**3*x**5/5 + a**2*f*g**3*x**3/3 + 3*a**2*f*g**2*h*x**4/4
 + 3*a**2*f*g*h**2*x**5/5 + a**2*f*h**3*x**6/6 + 2*a*b*d*g**3*x*asin(c*x) +
 3*a*b*d*g**2*h*x**2*asin(c*x) + 2*a*b*d*g*h**2*x**3*asin(c*x) + a*b*d*h**3
*x**4*asin(c*x)/2 + a*b*e*g**3*x**2*asin(c*x) + 2*a*b*e*g**2*h*x**3*asin(c*
x) + 3*a*b*e*g*h**2*x**4*asin(c*x)/2 + 2*a*b*e*h**3*x**5*asin(c*x)/5 + 2*a*
b*f*g**3*x**3*asin(c*x)/3 + 3*a*b*f*g**2*h*x**4*asin(c*x)/2 + 6*a*b*f*g*h**
2*x**5*asin(c*x)/5 + a*b*f*h**3*x**6*asin(c*x)/3 + 2*a*b*d*g**3*sqrt(-c**2*
x**2 + 1)/c + 3*a*b*d*g**2*h*x*sqrt(-c**2*x**2 + 1)/(2*c) + 2*a*b*d*g*h**2*
x**2*sqrt(-c**2*x**2 + 1)/(3*c) + a*b*d*h**3*x**3*sqrt(-c**2*x**2 + 1)/(8*c
) + a*b*e*g**3*x*sqrt(-c**2*x**2 + 1)/(2*c) + 2*a*b*e*g**2*h*x**2*sqrt(-c**
2*x**2 + 1)/(3*c) + 3*a*b*e*g*h**2*x**3*sqrt(-c**2*x**2 + 1)/(8*c) + 2*a*b*
e*h**3*x**4*sqrt(-c**2*x**2 + 1)/(25*c) + 2*a*b*f*g**3*x**2*sqrt(-c**2*x**2
 + 1)/(9*c) + 3*a*b*f*g**2*h*x**3*sqrt(-c**2*x**2 + 1)/(8*c) + 6*a*b*f*g*h*
*2*x**4*sqrt(-c**2*x**2 + 1)/(25*c) + a*b*f*h**3*x**5*sqrt(-c**2*x**2 + 1)/
(18*c) - 3*a*b*d*g**2*h*asin(c*x)/(2*c**2) - a*b*e*g**3*asin(c*x)/(2*c**2)
+ 4*a*b*d*g*h**2*sqrt(-c**2*x**2 + 1)/(3*c**3) + 3*a*b*d*h**3*x*sqrt(-c**2*
x**2 + 1)/(16*c**3) + 4*a*b*e*g**2*h*sqrt(-c**2*x**2 + 1)/(3*c**3) + 9*a*b*
e*g*h**2*x*sqrt(-c**2*x**2 + 1)/(16*c**3) + 8*a*b*e*h**3*x**2*sqrt(-c**2*x*
*2 + 1)/(75*c**3) + 4*a*b*f*g**3*sqrt(-c**2*x**2 + 1)/(9*c**3) + 9*a*b*f*g*
*2*h*x*sqrt(-c**2*x**2 + 1)/(16*c**3) + 8*a*b*f*g*h**2*x**2*sqrt(-c**2*x**2
 + 1)/(25*c**3) + 5*a*b*f*h**3*x**3*sqrt(-c**2*x**2 + 1)/(72*c**3) - 3*a*b*
d*h**3*asin(c*x)/(16*c**4) - 9*a*b*e*g*h**2*asin(c*x)/(16*c**4) - 9*a*b*f*g
**2*h*asin(c*x)/(16*c**4) + 16*a*b*e*h**3*sqrt(-c**2*x**2 + 1)/(75*c**5) +
16*a*b*f*g*h**2*sqrt(-c**2*x**2 + 1)/(25*c**5) + 5*a*b*f*h**3*x*sqrt(-c**2*
x**2 + 1)/(48*c**5) - 5*a*b*f*h**3*asin(c*x)/(48*c**6) + b**2*d*g**3*x*asin
(c*x)**2 - 2*b**2*d*g**3*x + 3*b**2*d*g**2*h*x**2*asin(c*x)**2/2 - 3*b**2*d
*g**2*h*x**2/4 + b**2*d*g*h**2*x**3*asin(c*x)**2 - 2*b**2*d*g*h**2*x**3/9 +
 b**2*d*h**3*x**4*asin(c*x)**2/4 - b**2*d*h**3*x**4/32 + b**2*e*g**3*x**2*a
sin(c*x)**2/2 - b**2*e*g**3*x**2/4 + b**2*e*g**2*h*x**3*asin(c*x)**2 - 2*b*
*2*e*g**2*h*x**3/9 + 3*b**2*e*g*h**2*x**4*asin(c*x)**2/4 - 3*b**2*e*g*h**2*
x**4/32 + b**2*e*h**3*x**5*asin(c*x)**2/5 - 2*b**2*e*h**3*x**5/125 + b**2*f
*g**3*x**3*asin(c*x)**2/3 - 2*b**2*f*g**3*x**3/27 + 3*b**2*f*g**2*h*x**4*as
in(c*x)**2/4 - 3*b**2*f*g**2*h*x**4/32 + 3*b**2*f*g*h**2*x**5*asin(c*x)**2/
5 - 6*b**2*f*g*h**2*x**5/125 + b**2*f*h**3*x**6*asin(c*x)**2/6 - b**2*f*h**
3*x**6/108 + 2*b**2*d*g**3*sqrt(-c**2*x**2 + 1)*asin(c*x)/c + 3*b**2*d*g**2
*h*x*sqrt(-c**2*x**2 + 1)*asin(c*x)/(2*c) + 2*b**2*d*g*h**2*x**2*sqrt(-c**2
*x**2 + 1)*asin(c*x)/(3*c) + b**2*d*h**3*x**3*sqrt(-c**2*x**2 + 1)*asin(c*x
)/(8*c) + b**2*e*g**3*x*sqrt(-c**2*x**2 + 1)*asin(c*x)/(2*c) + 2*b**2*e*g**
2*h*x**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(3*c) + 3*b**2*e*g*h**2*x**3*sqrt(-
c**2*x**2 + 1)*asin(c*x)/(8*c) + 2*b**2*e*h**3*x**4*sqrt(-c**2*x**2 + 1)*as
in(c*x)/(25*c) + 2*b**2*f*g**3*x**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(9*c) +
3*b**2*f*g**2*h*x**3*sqrt(-c**2*x**2 + 1)*asin(c*x)/(8*c) + 6*b**2*f*g*h**2
*x**4*sqrt(-c**2*x**2 + 1)*asin(c*x)/(25*c) + b**2*f*h**3*x**5*sqrt(-c**2*x
**2 + 1)*asin(c*x)/(18*c) - 3*b**2*d*g**2*h*asin(c*x)**2/(4*c**2) - 4*b**2*
d*g*h**2*x/(3*c**2) - 3*b**2*d*h**3*x**2/(32*c**2) - b**2*e*g**3*asin(c*x)*
```

```
*2/(4*c**2) - 4*b**2*e*g**2*h*x/(3*c**2) - 9*b**2*e*g*h**2*x**2/(32*c**2) -
 8*b**2*e*h**3*x**3/(225*c**2) - 4*b**2*f*g**3*x/(9*c**2) - 9*b**2*f*g**2*h
*x**2/(32*c**2) - 8*b**2*f*g*h**2*x**3/(75*c**2) - 5*b**2*f*h**3*x**4/(288*
c**2) + 4*b**2*d*g*h**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(3*c**3) + 3*b**2*d*
h**3*x*sqrt(-c**2*x**2 + 1)*asin(c*x)/(16*c**3) + 4*b**2*e*g**2*h*sqrt(-c**
2*x**2 + 1)*asin(c*x)/(3*c**3) + 9*b**2*e*g*h**2*x*sqrt(-c**2*x**2 + 1)*asi
n(c*x)/(16*c**3) + 8*b**2*e*h**3*x**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(75*c*
*3) + 4*b**2*f*g**3*sqrt(-c**2*x**2 + 1)*asin(c*x)/(9*c**3) + 9*b**2*f*g**2
*h*x*sqrt(-c**2*x**2 + 1)*asin(c*x)/(16*c**3) + 8*b**2*f*g*h**2*x**2*sqrt(-
c**2*x**2 + 1)*asin(c*x)/(25*c**3) + 5*b**2*f*h**3*x**3*sqrt(-c**2*x**2 + 1
)*asin(c*x)/(72*c**3) - 3*b**2*d*h**3*asin(c*x)**2/(32*c**4) - 9*b**2*e*g*h
**2*asin(c*x)**2/(32*c**4) - 16*b**2*e*h**3*x/(75*c**4) - 9*b**2*f*g**2*h*a
sin(c*x)**2/(32*c**4) - 16*b**2*f*g*h**2*x/(25*c**4) - 5*b**2*f*h**3*x**2/(
96*c**4) + 16*b**2*e*h**3*sqrt(-c**2*x**2 + 1)*asin(c*x)/(75*c**5) + 16*b**
2*f*g*h**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(25*c**5) + 5*b**2*f*h**3*x*sqrt(
-c**2*x**2 + 1)*asin(c*x)/(48*c**5) - 5*b**2*f*h**3*asin(c*x)**2/(96*c**6),
 Ne(c, 0)), (a**2*(d*g**3*x + 3*d*g**2*h*x**2/2 + d*g*h**2*x**3 + d*h**3*x*
*4/4 + e*g**3*x**2/2 + e*g**2*h*x**3 + 3*e*g*h**2*x**4/4 + e*h**3*x**5/5 +
f*g**3*x**3/3 + 3*f*g**2*h*x**4/4 + 3*f*g*h**2*x**5/5 + f*h**3*x**6/6), Tru
e))
```

Giac [B] time = 1.47464, size = 4925, normalized size = 4.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^3*(f*x^2+e*x+d)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] 3/5*a^2*f*g*h^2*x^5 + 1/5*a^2*h^3*x^5*e + 1/3*a^2*f*g^3*x^3 + a^2*d*g*h^2*x
^3 + b^2*d*g^3*x*arcsin(c*x)^2 + a^2*g^2*h*x^3*e + 2*a*b*d*g^3*x*arcsin(c*x
) + 1/3*(c^2*x^2 - 1)*b^2*f*g^3*x*arcsin(c*x)^2/c^2 + (c^2*x^2 - 1)*b^2*d*g
*h^2*x*arcsin(c*x)^2/c^2 + (c^2*x^2 - 1)*b^2*g^2*h*x*arcsin(c*x)^2*e/c^2 +
3/2*sqrt(-c^2*x^2 + 1)*b^2*d*g^2*h*x*arcsin(c*x)/c + 1/2*sqrt(-c^2*x^2 + 1)
*b^2*g^3*x*arcsin(c*x)*e/c + a^2*d*g^3*x - 2*b^2*d*g^3*x + 2/3*(c^2*x^2 - 1
)*a*b*f*g^3*x*arcsin(c*x)/c^2 + 2*(c^2*x^2 - 1)*a*b*d*g*h^2*x*arcsin(c*x)/c
^2 + 3/2*(c^2*x^2 - 1)*b^2*d*g^2*h*arcsin(c*x)^2/c^2 + 1/3*b^2*f*g^3*x*arcs
in(c*x)^2/c^2 + b^2*d*g*h^2*x*arcsin(c*x)^2/c^2 + 3/5*(c^2*x^2 - 1)^2*b^2*f
*g*h^2*x*arcsin(c*x)^2/c^4 + 2*(c^2*x^2 - 1)*a*b*g^2*h*x*arcsin(c*x)*e/c^2
+ 1/2*(c^2*x^2 - 1)*b^2*g^3*arcsin(c*x)^2*e/c^2 + b^2*g^2*h*x*arcsin(c*x)^2
*e/c^2 + 1/5*(c^2*x^2 - 1)^2*b^2*h^3*x*arcsin(c*x)^2*e/c^4 + 3/2*sqrt(-c^2*
x^2 + 1)*a*b*d*g^2*h*x/c + 2*sqrt(-c^2*x^2 + 1)*b^2*d*g^3*arcsin(c*x)/c - 3
```

```
/8*(-c^2*x^2 + 1)^(3/2)*b^2*f*g^2*h*x*arcsin(c*x)/c^3 - 1/8*(-c^2*x^2 + 1)^
(3/2)*b^2*d*h^3*x*arcsin(c*x)/c^3 + 1/2*sqrt(-c^2*x^2 + 1)*a*b*g^3*x*e/c -
3/8*(-c^2*x^2 + 1)^(3/2)*b^2*g*h^2*x*arcsin(c*x)*e/c^3 - 2/27*(c^2*x^2 - 1)
*b^2*f*g^3*x/c^2 - 2/9*(c^2*x^2 - 1)*b^2*d*g*h^2*x/c^2 + 3*(c^2*x^2 - 1)*a*
b*d*g^2*h*arcsin(c*x)/c^2 + 2/3*a*b*f*g^3*x*arcsin(c*x)/c^2 + 2*a*b*d*g*h^2
*x*arcsin(c*x)/c^2 + 6/5*(c^2*x^2 - 1)^2*a*b*f*g*h^2*x*arcsin(c*x)/c^4 + 3/
4*b^2*d*g^2*h*arcsin(c*x)^2/c^2 + 3/4*(c^2*x^2 - 1)^2*b^2*f*g^2*h*arcsin(c*
x)^2/c^4 + 1/4*(c^2*x^2 - 1)^2*b^2*d*h^3*arcsin(c*x)^2/c^4 + 6/5*(c^2*x^2 -
 1)*b^2*f*g*h^2*x*arcsin(c*x)^2/c^4 - 2/9*(c^2*x^2 - 1)*b^2*g^2*h*x*e/c^2 +
 (c^2*x^2 - 1)*a*b*g^3*arcsin(c*x)*e/c^2 + 2*a*b*g^2*h*x*arcsin(c*x)*e/c^2
+ 2/5*(c^2*x^2 - 1)^2*a*b*h^3*x*arcsin(c*x)*e/c^4 + 1/4*b^2*g^3*arcsin(c*x)
^2*e/c^2 + 3/4*(c^2*x^2 - 1)^2*b^2*g*h^2*arcsin(c*x)^2*e/c^4 + 2/5*(c^2*x^2
 - 1)*b^2*h^3*x*arcsin(c*x)^2*e/c^4 + 2*sqrt(-c^2*x^2 + 1)*a*b*d*g^3/c - 3/
8*(-c^2*x^2 + 1)^(3/2)*a*b*f*g^2*h*x/c^3 - 1/8*(-c^2*x^2 + 1)^(3/2)*a*b*d*h
^3*x/c^3 - 2/9*(-c^2*x^2 + 1)^(3/2)*b^2*f*g^3*arcsin(c*x)/c^3 - 2/3*(-c^2*x
^2 + 1)^(3/2)*b^2*d*g*h^2*arcsin(c*x)/c^3 + 15/16*sqrt(-c^2*x^2 + 1)*b^2*f*
g^2*h*x*arcsin(c*x)/c^3 + 5/16*sqrt(-c^2*x^2 + 1)*b^2*d*h^3*x*arcsin(c*x)/c
^3 + 1/18*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b^2*f*h^3*x*arcsin(c*x)/c^5 -
3/8*(-c^2*x^2 + 1)^(3/2)*a*b*g*h^2*x*e/c^3 - 2/3*(-c^2*x^2 + 1)^(3/2)*b^2*g
^2*h*arcsin(c*x)*e/c^3 + 15/16*sqrt(-c^2*x^2 + 1)*b^2*g*h^2*x*arcsin(c*x)*e
/c^3 + 3/2*(c^2*x^2 - 1)*a^2*d*g^2*h/c^2 - 3/4*(c^2*x^2 - 1)*b^2*d*g^2*h/c^
2 - 14/27*b^2*f*g^3*x/c^2 - 14/9*b^2*d*g*h^2*x/c^2 - 6/125*(c^2*x^2 - 1)^2*
b^2*f*g*h^2*x/c^4 + 3/2*a*b*d*g^2*h*arcsin(c*x)/c^2 + 3/2*(c^2*x^2 - 1)^2*a
*b*f*g^2*h*arcsin(c*x)/c^4 + 1/2*(c^2*x^2 - 1)^2*a*b*d*h^3*arcsin(c*x)/c^4
+ 12/5*(c^2*x^2 - 1)*a*b*f*g*h^2*x*arcsin(c*x)/c^4 + 3/2*(c^2*x^2 - 1)*b^2*
f*g^2*h*arcsin(c*x)^2/c^4 + 1/2*(c^2*x^2 - 1)*b^2*d*h^3*arcsin(c*x)^2/c^4 +
 1/6*(c^2*x^2 - 1)^3*b^2*f*h^3*arcsin(c*x)^2/c^6 + 3/5*b^2*f*g*h^2*x*arcsin
(c*x)^2/c^4 + 1/2*(c^2*x^2 - 1)*a^2*g^3*e/c^2 - 1/4*(c^2*x^2 - 1)*b^2*g^3*e
/c^2 - 14/9*b^2*g^2*h*x*e/c^2 - 2/125*(c^2*x^2 - 1)^2*b^2*h^3*x*e/c^4 + 1/2
*a*b*g^3*arcsin(c*x)*e/c^2 + 3/2*(c^2*x^2 - 1)^2*a*b*g*h^2*arcsin(c*x)*e/c^
4 + 4/5*(c^2*x^2 - 1)*a*b*h^3*x*arcsin(c*x)*e/c^4 + 3/2*(c^2*x^2 - 1)*b^2*g
*h^2*arcsin(c*x)^2*e/c^4 + 1/5*b^2*h^3*x*arcsin(c*x)^2*e/c^4 - 2/9*(-c^2*x^
2 + 1)^(3/2)*a*b*f*g^3/c^3 - 2/3*(-c^2*x^2 + 1)^(3/2)*a*b*d*g*h^2/c^3 + 15/
16*sqrt(-c^2*x^2 + 1)*a*b*f*g^2*h*x/c^3 + 5/16*sqrt(-c^2*x^2 + 1)*a*b*d*h^3
*x/c^3 + 1/18*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*a*b*f*h^3*x/c^5 + 2/3*sqrt
(-c^2*x^2 + 1)*b^2*f*g^3*arcsin(c*x)/c^3 + 2*sqrt(-c^2*x^2 + 1)*b^2*d*g*h^2
*arcsin(c*x)/c^3 + 6/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b^2*f*g*h^2*arcs
in(c*x)/c^5 - 13/72*(-c^2*x^2 + 1)^(3/2)*b^2*f*h^3*x*arcsin(c*x)/c^5 - 2/3*
(-c^2*x^2 + 1)^(3/2)*a*b*g^2*h*e/c^3 + 15/16*sqrt(-c^2*x^2 + 1)*a*b*g*h^2*x
*e/c^3 + 2*sqrt(-c^2*x^2 + 1)*b^2*g^2*h*arcsin(c*x)*e/c^3 + 2/25*(c^2*x^2 -
 1)^2*sqrt(-c^2*x^2 + 1)*b^2*h^3*arcsin(c*x)*e/c^5 - 3/8*b^2*d*g^2*h/c^2 +
3/4*(c^2*x^2 - 1)^2*a^2*f*g^2*h/c^4 - 3/32*(c^2*x^2 - 1)^2*b^2*f*g^2*h/c^4
+ 1/4*(c^2*x^2 - 1)^2*a^2*d*h^3/c^4 - 1/32*(c^2*x^2 - 1)^2*b^2*d*h^3/c^4 -
76/375*(c^2*x^2 - 1)*b^2*f*g*h^2*x/c^4 + 3*(c^2*x^2 - 1)*a*b*f*g^2*h*arcsin
(c*x)/c^4 + (c^2*x^2 - 1)*a*b*d*h^3*arcsin(c*x)/c^4 + 1/3*(c^2*x^2 - 1)^3*a
```

*b*f*h^3*arcsin(c*x)/c^6 + 6/5*a*b*f*g*h^2*x*arcsin(c*x)/c^4 + 15/32*b^2*f*
g^2*h*arcsin(c*x)^2/c^4 + 5/32*b^2*d*h^3*arcsin(c*x)^2/c^4 + 1/2*(c^2*x^2 -
 1)^2*b^2*f*h^3*arcsin(c*x)^2/c^6 - 1/8*b^2*g^3*e/c^2 + 3/4*(c^2*x^2 - 1)^2
*a^2*g*h^2*e/c^4 - 3/32*(c^2*x^2 - 1)^2*b^2*g*h^2*e/c^4 - 76/1125*(c^2*x^2
- 1)*b^2*h^3*x*e/c^4 + 3*(c^2*x^2 - 1)*a*b*g*h^2*arcsin(c*x)*e/c^4 + 2/5*a*
b*h^3*x*arcsin(c*x)*e/c^4 + 15/32*b^2*g*h^2*arcsin(c*x)^2*e/c^4 + 2/3*sqrt(
-c^2*x^2 + 1)*a*b*f*g^3/c^3 + 2*sqrt(-c^2*x^2 + 1)*a*b*d*g*h^2/c^3 + 6/25*(
c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*a*b*f*g*h^2/c^5 - 13/72*(-c^2*x^2 + 1)^(3
/2)*a*b*f*h^3*x/c^5 - 4/5*(-c^2*x^2 + 1)^(3/2)*b^2*f*g*h^2*arcsin(c*x)/c^5
+ 11/48*sqrt(-c^2*x^2 + 1)*b^2*f*h^3*x*arcsin(c*x)/c^5 + 2*sqrt(-c^2*x^2 +
1)*a*b*g^2*h*e/c^3 + 2/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*a*b*h^3*e/c^5
- 4/15*(-c^2*x^2 + 1)^(3/2)*b^2*h^3*arcsin(c*x)*e/c^5 + 3/2*(c^2*x^2 - 1)*a
^2*f*g^2*h/c^4 - 15/32*(c^2*x^2 - 1)*b^2*f*g^2*h/c^4 + 1/2*(c^2*x^2 - 1)*a^
2*d*h^3/c^4 - 5/32*(c^2*x^2 - 1)*b^2*d*h^3/c^4 + 1/6*(c^2*x^2 - 1)^3*a^2*f*
h^3/c^6 - 1/108*(c^2*x^2 - 1)^3*b^2*f*h^3/c^6 - 298/375*b^2*f*g*h^2*x/c^4 +
 15/16*a*b*f*g^2*h*arcsin(c*x)/c^4 + 5/16*a*b*d*h^3*arcsin(c*x)/c^4 + (c^2*
x^2 - 1)^2*a*b*f*h^3*arcsin(c*x)/c^6 + 1/2*(c^2*x^2 - 1)*b^2*f*h^3*arcsin(c
x)^2/c^6 + 3/2(c^2*x^2 - 1)*a^2*g*h^2*e/c^4 - 15/32*(c^2*x^2 - 1)*b^2*g*h
^2*e/c^4 - 298/1125*b^2*h^3*x*e/c^4 + 15/16*a*b*g*h^2*arcsin(c*x)*e/c^4 - 4
/5*(-c^2*x^2 + 1)^(3/2)*a*b*f*g*h^2/c^5 + 11/48*sqrt(-c^2*x^2 + 1)*a*b*f*h^
3*x/c^5 + 6/5*sqrt(-c^2*x^2 + 1)*b^2*f*g*h^2*arcsin(c*x)/c^5 - 4/15*(-c^2*x
^2 + 1)^(3/2)*a*b*h^3*e/c^5 + 2/5*sqrt(-c^2*x^2 + 1)*b^2*h^3*arcsin(c*x)*e/
c^5 - 51/256*b^2*f*g^2*h/c^4 - 17/256*b^2*d*h^3/c^4 + 1/2*(c^2*x^2 - 1)^2*a
^2*f*h^3/c^6 - 13/288*(c^2*x^2 - 1)^2*b^2*f*h^3/c^6 + (c^2*x^2 - 1)*a*b*f*h
^3*arcsin(c*x)/c^6 + 11/96*b^2*f*h^3*arcsin(c*x)^2/c^6 - 51/256*b^2*g*h^2*e
/c^4 + 6/5*sqrt(-c^2*x^2 + 1)*a*b*f*g*h^2/c^5 + 2/5*sqrt(-c^2*x^2 + 1)*a*b*
h^3*e/c^5 + 1/2*(c^2*x^2 - 1)*a^2*f*h^3/c^6 - 11/96*(c^2*x^2 - 1)*b^2*f*h^3
/c^6 + 11/48*a*b*f*h^3*arcsin(c*x)/c^6 - 299/6912*b^2*f*h^3/c^6

3.116 $\int (g+hx)^2 \left(d+ex+fx^2\right) \left(a+b\sin^{-1}(cx)\right)^2 dx$

Optimal. Leaf size=701

$$\frac{2bx^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\left(h(dh+2eg)+fg^2\right)}{9c}+\frac{4b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\left(h(dh+2eg)+fg^2\right)}{9c^3}+\frac{bgx\sqrt{1-c}}{}$$

```
[Out] -2*b^2*d*g^2*x - (16*b^2*f*h^2*x)/(75*c^4) - (4*b^2*(f*g^2 + h*(2*e*g + d*h
))*x)/(9*c^2) - (b^2*g*(e*g + 2*d*h)*x^2)/4 - (3*b^2*h*(2*f*g + e*h)*x^2)/(
32*c^2) - (8*b^2*f*h^2*x^3)/(225*c^2) - (2*b^2*(f*g^2 + h*(2*e*g + d*h))*x^
3)/27 - (b^2*h*(2*f*g + e*h)*x^4)/32 - (2*b^2*f*h^2*x^5)/125 + (2*b*d*g^2*S
qrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c + (16*b*f*h^2*Sqrt[1 - c^2*x^2]*(a
+ b*ArcSin[c*x]))/(75*c^5) + (4*b*(f*g^2 + h*(2*e*g + d*h))*Sqrt[1 - c^2*x^
2]*(a + b*ArcSin[c*x]))/(9*c^3) + (b*g*(e*g + 2*d*h)*x*Sqrt[1 - c^2*x^2]*(a
 + b*ArcSin[c*x]))/(2*c) + (3*b*h*(2*f*g + e*h)*x*Sqrt[1 - c^2*x^2]*(a + b*
ArcSin[c*x]))/(16*c^3) + (8*b*f*h^2*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x
]))/(75*c^3) + (2*b*(f*g^2 + h*(2*e*g + d*h))*x^2*Sqrt[1 - c^2*x^2]*(a + b*
ArcSin[c*x]))/(9*c) + (b*h*(2*f*g + e*h)*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSi
n[c*x]))/(8*c) + (2*b*f*h^2*x^4*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(25*
c) - (g*(e*g + 2*d*h)*(a + b*ArcSin[c*x])^2)/(4*c^2) - (3*h*(2*f*g + e*h)*(
a + b*ArcSin[c*x])^2)/(32*c^4) + d*g^2*x*(a + b*ArcSin[c*x])^2 + (g*(e*g +
2*d*h)*x^2*(a + b*ArcSin[c*x])^2)/2 + ((f*g^2 + h*(2*e*g + d*h))*x^3*(a + b
*ArcSin[c*x])^2)/3 + (h*(2*f*g + e*h)*x^4*(a + b*ArcSin[c*x])^2)/4 + (f*h^2
*x^5*(a + b*ArcSin[c*x])^2)/5
```

Rubi [A] time = 1.12291, antiderivative size = 701, normalized size of antiderivative = 1., number of steps used = 27, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4751, 4619, 4677, 8, 4627, 4707, 4641, 30}

$$\frac{2bx^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\left(h(dh+2eg)+fg^2\right)}{9c}+\frac{4b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\left(h(dh+2eg)+fg^2\right)}{9c^3}+\frac{bgx\sqrt{1-c}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2*(d + e*x + f*x^2)*(a + b*ArcSin[c*x])^2,x]
```


```
[Out] -2*b^2*d*g^2*x - (16*b^2*f*h^2*x)/(75*c^4) - (4*b^2*(f*g^2 + h*(2*e*g + d*h
))*x)/(9*c^2) - (b^2*g*(e*g + 2*d*h)*x^2)/4 - (3*b^2*h*(2*f*g + e*h)*x^2)/(
32*c^2) - (8*b^2*f*h^2*x^3)/(225*c^2) - (2*b^2*(f*g^2 + h*(2*e*g + d*h))*x^
3)/27 - (b^2*h*(2*f*g + e*h)*x^4)/32 - (2*b^2*f*h^2*x^5)/125 + (2*b*d*g^2*S
qrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c + (16*b*f*h^2*Sqrt[1 - c^2*x^2]*(a
```

```
+ b*ArcSin[c*x]))/(75*c^5) + (4*b*(f*g^2 + h*(2*e*g + d*h))*Sqrt[1 - c^2*x^
2]*(a + b*ArcSin[c*x]))/(9*c^3) + (b*g*(e*g + 2*d*h)*x*Sqrt[1 - c^2*x^2]*(a
 + b*ArcSin[c*x]))/(2*c) + (3*b*h*(2*f*g + e*h)*x*Sqrt[1 - c^2*x^2]*(a + b*
ArcSin[c*x]))/(16*c^3) + (8*b*f*h^2*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x
]))/(75*c^3) + (2*b*(f*g^2 + h*(2*e*g + d*h))*x^2*Sqrt[1 - c^2*x^2]*(a + b*
ArcSin[c*x]))/(9*c) + (b*h*(2*f*g + e*h)*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSi
n[c*x]))/(8*c) + (2*b*f*h^2*x^4*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(25*
c) - (g*(e*g + 2*d*h)*(a + b*ArcSin[c*x])^2)/(4*c^2) - (3*h*(2*f*g + e*h)*(
a + b*ArcSin[c*x])^2)/(32*c^4) + d*g^2*x*(a + b*ArcSin[c*x])^2 + (g*(e*g +
2*d*h)*x^2*(a + b*ArcSin[c*x])^2)/2 + ((f*g^2 + h*(2*e*g + d*h))*x^3*(a + b
*ArcSin[c*x])^2)/3 + (h*(2*f*g + e*h)*x^4*(a + b*ArcSin[c*x])^2)/4 + (f*h^2
*x^5*(a + b*ArcSin[c*x])^2)/5
```

Rule 4751

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(Px_), x_Symbol] :> Int[ExpandI
ntegrand[Px*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[{a, b, c, n}, x] && Poly
nomialQ[Px, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4677

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

Rule 8

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

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4707

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

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 30

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

Rubi steps

$$\int (g+hx)^2\left(d+ex+fx^2\right)\left(a+b\sin^{-1}(cx)\right)^2\,dx = \int \left(dg^2\left(a+b\sin^{-1}(cx)\right)^2+g(eg+2dh)x\left(a+b\sin^{-1}(cx)\right)^2+\left(fg^2\right.\right.$$

$$= \left(dg^2\right)\int \left(a+b\sin^{-1}(cx)\right)^2\,dx+\left(fh^2\right)\int x^4\left(a+b\sin^{-1}(cx)\right)^2\,dx+$$

$$= dg^2x\left(a+b\sin^{-1}(cx)\right)^2+\frac{1}{2}g(eg+2dh)x^2\left(a+b\sin^{-1}(cx)\right)^2+\frac{1}{3}\left(fg\right.$$

$$= \frac{2bdg^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+\frac{bg(eg+2dh)x\sqrt{1-c^2x^2}\left(a+b\right.}{2c}$$

$$= -2b^2dg^2x-\frac{1}{4}b^2g(eg+2dh)x^2-\frac{2}{27}b^2\left(fg^2+h(2eg+dh)\right)x^3-\frac{1}{32}b$$

$$= -2b^2dg^2x-\frac{4b^2\left(fg^2+h(2eg+dh)\right)x}{9c^2}-\frac{1}{4}b^2g(eg+2dh)x^2-\frac{3b^2h(2}{}$$

$$= -2b^2dg^2x-\frac{16b^2fh^2x}{75c^4}-\frac{4b^2\left(fg^2+h(2eg+dh)\right)x}{9c^2}-\frac{1}{4}b^2g(eg+2dh$$

Mathematica [A] time = 0.579099, size = 534, normalized size = 0.76

$$-\frac{2b\left(-3a\sqrt{1-c^2x^2}\left(c^2x^2+2\right)+bcx\left(c^2x^2+6\right)-3b\sqrt{1-c^2x^2}\left(c^2x^2+2\right)\sin^{-1}(cx)\right)\left(h(dh+2eg)+fg^2\right)}{27c^3}-\frac{1}{4}bg(2dh+eg)$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2*(d + e*x + f*x^2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] d*g^2*x*(a + b*ArcSin[c*x])^2 + (g*(e*g + 2*d*h)*x^2*(a + b*ArcSin[c*x])^2)
/2 + ((f*g^2 + h*(2*e*g + d*h))*x^3*(a + b*ArcSin[c*x])^2)/3 + (h*(2*f*g +
e*h)*x^4*(a + b*ArcSin[c*x])^2)/4 + (f*h^2*x^5*(a + b*ArcSin[c*x])^2)/5 - (
2*b*(f*g^2 + h*(2*e*g + d*h))*(-3*a*Sqrt[1 - c^2*x^2]*(2 + c^2*x^2) + b*c*x
*(6 + c^2*x^2) - 3*b*Sqrt[1 - c^2*x^2]*(2 + c^2*x^2)*ArcSin[c*x]))/(27*c^3)
 - (2*b*f*h^2*(-15*a*Sqrt[1 - c^2*x^2]*(8 + 4*c^2*x^2 + 3*c^4*x^4) + b*c*x*
(120 + 20*c^2*x^2 + 9*c^4*x^4) - 15*b*Sqrt[1 - c^2*x^2]*(8 + 4*c^2*x^2 + 3*
c^4*x^4)*ArcSin[c*x]))/(1125*c^5) - 2*b*d*g^2*(b*x - (Sqrt[1 - c^2*x^2]*(a
+ b*ArcSin[c*x]))/c) - (b*h*(2*f*g + e*h)*((3*b*x^2)/c^2 + b*x^4 - (6*x*Sqr
t[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c^3 - (4*x^3*Sqrt[1 - c^2*x^2]*(a + b*A
rcSin[c*x]))/c + (3*(a + b*ArcSin[c*x])^2)/(b*c^4)))/32 - (b*g*(e*g + 2*d*h
)*(b*x^2 - (2*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c + (a + b*ArcSin[c*
x])^2/(b*c^2)))/4
```

Maple [B] time = 0.177, size = 1633, normalized size = 2.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2*(f*x^2+e*x+d)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/c*(a^2/c^4*(1/5*h^2*f*c^5*x^5+1/4*(c*e*h^2+2*c*f*g*h)*c^4*x^4+1/3*(c^2*d*
h^2+2*c^2*e*g*h+c^2*f*g^2)*c^3*x^3+1/2*(2*c^3*d*g*h+c^3*e*g^2)*c^2*x^2+c^5*
g^2*d*x)+b^2/c^4*(1/32*h^2*c*e*(8*arcsin(c*x)^2*c^4*x^4+4*arcsin(c*x)*(-c^2
*x^2+1)^(1/2)*c^3*x^3-16*arcsin(c*x)^2*c^2*x^2-c^4*x^4-10*arcsin(c*x)*(-c^2
*x^2+1)^(1/2)*c*x+5*arcsin(c*x)^2+5*c^2*x^2-4)+1/16*c*g*h*f*(8*arcsin(c*x)^
2*c^4*x^4+4*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^3*x^3-16*arcsin(c*x)^2*c^2*x^2
-c^4*x^4-10*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*x+5*arcsin(c*x)^2+5*c^2*x^2-4)
+1/2*c^3*g*h*d*(2*arcsin(c*x)^2*c^2*x^2+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*
x-arcsin(c*x)^2-c^2*x^2)+1/4*c^3*g^2*e*(2*arcsin(c*x)^2*c^2*x^2+2*arcsin(c*
```

```
x)*(-c^2*x^2+1)^(1/2)*c*x-arcsin(c*x)^2-c^2*x^2)+1/3375*h^2*f*(675*arcsin(c
*x)^2*c^5*x^5+270*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^4*x^4-2250*c^3*x^3*arcsi
n(c*x)^2-54*c^5*x^5-1140*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x^2+3375*arcsin
(c*x)^2*c*x+380*c^3*x^3+4470*arcsin(c*x)*(-c^2*x^2+1)^(1/2)-4470*c*x)+1/27*
h^2*c^2*d*(9*c^3*x^3*arcsin(c*x)^2+6*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x^2
-27*arcsin(c*x)^2*c*x-2*c^3*x^3-42*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+42*c*x)+2
/27*c^2*g*h*e*(9*c^3*x^3*arcsin(c*x)^2+6*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^2
*x^2-27*arcsin(c*x)^2*c*x-2*c^3*x^3-42*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+42*c*
x)+1/27*c^2*g^2*f*(9*c^3*x^3*arcsin(c*x)^2+6*arcsin(c*x)*(-c^2*x^2+1)^(1/2)
*c^2*x^2-27*arcsin(c*x)^2*c*x-2*c^3*x^3-42*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+4
2*c*x)+c^4*g^2*d*(arcsin(c*x)^2*c*x-2*c*x+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2))
+1/4*h^2*c*e*(2*arcsin(c*x)^2*c^2*x^2+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*x-
arcsin(c*x)^2-c^2*x^2)+1/2*c*g*h*f*(2*arcsin(c*x)^2*c^2*x^2+2*arcsin(c*x)*(
-c^2*x^2+1)^(1/2)*c*x-arcsin(c*x)^2-c^2*x^2)+2/27*h^2*f*(9*c^3*x^3*arcsin(c
*x)^2+6*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x^2-27*arcsin(c*x)^2*c*x-2*c^3*x
^3-42*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+42*c*x)+h^2*c^2*d*(arcsin(c*x)^2*c*x-2
*c*x+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2))+2*c^2*g*h*e*(arcsin(c*x)^2*c*x-2*c*x
+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2))+c^2*g^2*f*(arcsin(c*x)^2*c*x-2*c*x+2*arc
sin(c*x)*(-c^2*x^2+1)^(1/2))+h^2*f*(arcsin(c*x)^2*c*x-2*c*x+2*arcsin(c*x)*(
-c^2*x^2+1)^(1/2)))+2*a*b/c^4*(1/5*arcsin(c*x)*h^2*f*c^5*x^5+1/4*arcsin(c*x
)*c^5*x^4*e*h^2+1/2*arcsin(c*x)*c^5*x^4*f*g*h+1/3*arcsin(c*x)*c^5*x^3*d*h^2
+2/3*arcsin(c*x)*c^5*x^3*e*g*h+1/3*arcsin(c*x)*c^5*x^3*f*g^2+arcsin(c*x)*c^
5*x^2*d*g*h+1/2*arcsin(c*x)*c^5*x^2*e*g^2+arcsin(c*x)*c^5*g^2*d*x-1/5*h^2*f
*(-1/5*c^4*x^4*(-c^2*x^2+1)^(1/2)-4/15*c^2*x^2*(-c^2*x^2+1)^(1/2)-8/15*(-c^
2*x^2+1)^(1/2))-1/60*(15*c*e*h^2+30*c*f*g*h)*(-1/4*c^3*x^3*(-c^2*x^2+1)^(1/
2)-3/8*c*x*(-c^2*x^2+1)^(1/2)+3/8*arcsin(c*x))-1/60*(20*c^2*d*h^2+40*c^2*e*
g*h+20*c^2*f*g^2)*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-c^2*x^2+1)^(1/2))-
1/60*(60*c^3*d*g*h+30*c^3*e*g^2)*(-1/2*c*x*(-c^2*x^2+1)^(1/2)+1/2*arcsin(c*
x))+c^4*g^2*d*(-c^2*x^2+1)^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(f*x^2+e*x+d)*(a+b*arcsin(c*x))^2,x, algorithm="maxima"
)
```

```
[Out] 1/5*a^2*f*h^2*x^5 + 1/2*a^2*f*g*h*x^4 + 1/4*a^2*e*h^2*x^4 + 1/3*a^2*f*g^2*x
^3 + 2/3*a^2*e*g*h*x^3 + 1/3*a^2*d*h^2*x^3 + b^2*d*g^2*x*arcsin(c*x)^2 + 1/
2*a^2*e*g^2*x^2 + a^2*d*g*h*x^2 + 1/2*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2
```

```
 + 1)*x/c^2 - arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^2)))*a*b*e*g^2 + 2/9*(3*
x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4)
)*a*b*f*g^2 + (2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c^2
*x/sqrt(c^2))/(sqrt(c^2)*c^2)))*a*b*d*g*h + 4/9*(3*x^3*arcsin(c*x) + c*(sqr
t(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*e*g*h + 1/8*(8*x^4
*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 -
 3*arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^4))*c)*a*b*f*g*h + 2/9*(3*x^3*arcsi
n(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*d*h
^2 + 1/16*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*
x^2 + 1)*x/c^4 - 3*arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^4))*c)*a*b*e*h^2 +
2/75*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2
+ 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*a*b*f*h^2 - 2*b^2*d*g^2*(x - sq
rt(-c^2*x^2 + 1)*arcsin(c*x)/c) + a^2*d*g^2*x + 2*(c*x*arcsin(c*x) + sqrt(-
c^2*x^2 + 1))*a*b*d*g^2/c + 1/60*(12*b^2*f*h^2*x^5 + 15*(2*b^2*f*g*h + b^2*
e*h^2)*x^4 + 20*(b^2*f*g^2 + 2*b^2*e*g*h + b^2*d*h^2)*x^3 + 30*(b^2*e*g^2 +
 2*b^2*d*g*h)*x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + integrate
(1/30*(12*b^2*c*f*h^2*x^5 + 15*(2*b^2*c*f*g*h + b^2*c*e*h^2)*x^4 + 20*(b^2*
c*f*g^2 + 2*b^2*c*e*g*h + b^2*c*d*h^2)*x^3 + 30*(b^2*c*e*g^2 + 2*b^2*c*d*g*
h)*x^2)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x +
 1))/(c^2*x^2 - 1), x)
```

Fricas [A] time = 3.70757, size = 2303, normalized size = 3.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(f*x^2+e*x+d)*(a+b*arcsin(c*x))^2,x, algorithm="fricas"
)
```

```
[Out] 1/108000*(864*(25*a^2 - 2*b^2)*c^5*f*h^2*x^5 + 3375*(2*(8*a^2 - b^2)*c^5*f*
g*h + (8*a^2 - b^2)*c^5*e*h^2)*x^4 + 160*(25*(9*a^2 - 2*b^2)*c^5*f*g^2 + 50
*(9*a^2 - 2*b^2)*c^5*e*g*h + (25*(9*a^2 - 2*b^2)*c^5*d - 24*b^2*c^3*f)*h^2)
*x^3 + 3375*(8*(2*a^2 - b^2)*c^5*e*g^2 - 3*b^2*c^3*e*h^2 + 2*(8*(2*a^2 - b^
2)*c^5*d - 3*b^2*c^3*f)*g*h)*x^2 + 225*(96*b^2*c^5*f*h^2*x^5 + 480*b^2*c^5*
d*g^2*x - 120*b^2*c^3*e*g^2 - 45*b^2*c*e*h^2 + 120*(2*b^2*c^5*f*g*h + b^2*c
^5*e*h^2)*x^4 + 160*(b^2*c^5*f*g^2 + 2*b^2*c^5*e*g*h + b^2*c^5*d*h^2)*x^3 -
 30*(8*b^2*c^3*d + 3*b^2*c*f)*g*h + 240*(b^2*c^5*e*g^2 + 2*b^2*c^5*d*g*h)*x
^2)*arcsin(c*x)^2 - 480*(200*b^2*c^3*e*g*h - 25*(9*(a^2 - 2*b^2)*c^5*d - 4*
b^2*c^3*f)*g^2 + 4*(25*b^2*c^3*d + 12*b^2*c*f)*h^2)*x + 450*(96*a*b*c^5*f*h
^2*x^5 + 480*a*b*c^5*d*g^2*x - 120*a*b*c^3*e*g^2 - 45*a*b*c*e*h^2 + 120*(2*
a*b*c^5*f*g*h + a*b*c^5*e*h^2)*x^4 + 160*(a*b*c^5*f*g^2 + 2*a*b*c^5*e*g*h +
```

```
 a*b*c^5*d*h^2)*x^3 - 30*(8*a*b*c^3*d + 3*a*b*c*f)*g*h + 240*(a*b*c^5*e*g^2
 + 2*a*b*c^5*d*g*h)*x^2)*arcsin(c*x) + 30*(288*a*b*c^4*f*h^2*x^4 + 3200*a*b
*c^2*e*g*h + 450*(2*a*b*c^4*f*g*h + a*b*c^4*e*h^2)*x^3 + 800*(9*a*b*c^4*d +
 2*a*b*c^2*f)*g^2 + 64*(25*a*b*c^2*d + 12*a*b*f)*h^2 + 32*(25*a*b*c^4*f*g^2
 + 50*a*b*c^4*e*g*h + (25*a*b*c^4*d + 12*a*b*c^2*f)*h^2)*x^2 + 225*(8*a*b*c
^4*e*g^2 + 3*a*b*c^2*e*h^2 + 2*(8*a*b*c^4*d + 3*a*b*c^2*f)*g*h)*x + (288*b^
2*c^4*f*h^2*x^4 + 3200*b^2*c^2*e*g*h + 450*(2*b^2*c^4*f*g*h + b^2*c^4*e*h^2
)*x^3 + 800*(9*b^2*c^4*d + 2*b^2*c^2*f)*g^2 + 64*(25*b^2*c^2*d + 12*b^2*f)*
h^2 + 32*(25*b^2*c^4*f*g^2 + 50*b^2*c^4*e*g*h + (25*b^2*c^4*d + 12*b^2*c^2*
f)*h^2)*x^2 + 225*(8*b^2*c^4*e*g^2 + 3*b^2*c^2*e*h^2 + 2*(8*b^2*c^4*d + 3*b
^2*c^2*f)*g*h)*x)*arcsin(c*x))*sqrt(-c^2*x^2 + 1))/c^5
```

Sympy [A] time = 12.9761, size = 1935, normalized size = 2.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2*(f*x**2+e*x+d)*(a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((a**2*d*g**2*x + a**2*d*g*h*x**2 + a**2*d*h**2*x**3/3 + a**2*e*g*
*2*x**2/2 + 2*a**2*e*g*h*x**3/3 + a**2*e*h**2*x**4/4 + a**2*f*g**2*x**3/3 +
 a**2*f*g*h*x**4/2 + a**2*f*h**2*x**5/5 + 2*a*b*d*g**2*x*asin(c*x) + 2*a*b*
d*g*h*x**2*asin(c*x) + 2*a*b*d*h**2*x**3*asin(c*x)/3 + a*b*e*g**2*x**2*asin
(c*x) + 4*a*b*e*g*h*x**3*asin(c*x)/3 + a*b*e*h**2*x**4*asin(c*x)/2 + 2*a*b*
f*g**2*x**3*asin(c*x)/3 + a*b*f*g*h*x**4*asin(c*x) + 2*a*b*f*h**2*x**5*asin
(c*x)/5 + 2*a*b*d*g**2*sqrt(-c**2*x**2 + 1)/c + a*b*d*g*h*x*sqrt(-c**2*x**2
 + 1)/c + 2*a*b*d*h**2*x**2*sqrt(-c**2*x**2 + 1)/(9*c) + a*b*e*g**2*x*sqrt(
-c**2*x**2 + 1)/(2*c) + 4*a*b*e*g*h*x**2*sqrt(-c**2*x**2 + 1)/(9*c) + a*b*e
*h**2*x**3*sqrt(-c**2*x**2 + 1)/(8*c) + 2*a*b*f*g**2*x**2*sqrt(-c**2*x**2 +
 1)/(9*c) + a*b*f*g*h*x**3*sqrt(-c**2*x**2 + 1)/(4*c) + 2*a*b*f*h**2*x**4*s
qrt(-c**2*x**2 + 1)/(25*c) - a*b*d*g*h*asin(c*x)/c**2 - a*b*e*g**2*asin(c*x
)/(2*c**2) + 4*a*b*d*h**2*sqrt(-c**2*x**2 + 1)/(9*c**3) + 8*a*b*e*g*h*sqrt(
-c**2*x**2 + 1)/(9*c**3) + 3*a*b*e*h**2*x*sqrt(-c**2*x**2 + 1)/(16*c**3) +
4*a*b*f*g**2*sqrt(-c**2*x**2 + 1)/(9*c**3) + 3*a*b*f*g*h*x*sqrt(-c**2*x**2
+ 1)/(8*c**3) + 8*a*b*f*h**2*x**2*sqrt(-c**2*x**2 + 1)/(75*c**3) - 3*a*b*e*
h**2*asin(c*x)/(16*c**4) - 3*a*b*f*g*h*asin(c*x)/(8*c**4) + 16*a*b*f*h**2*s
qrt(-c**2*x**2 + 1)/(75*c**5) + b**2*d*g**2*x*asin(c*x)**2 - 2*b**2*d*g**2*
x + b**2*d*g*h*x**2*asin(c*x)**2 - b**2*d*g*h*x**2/2 + b**2*d*h**2*x**3*asi
n(c*x)**2/3 - 2*b**2*d*h**2*x**3/27 + b**2*e*g**2*x**2*asin(c*x)**2/2 - b**
2*e*g**2*x**2/4 + 2*b**2*e*g*h*x**3*asin(c*x)**2/3 - 4*b**2*e*g*h*x**3/27 +
 b**2*e*h**2*x**4*asin(c*x)**2/4 - b**2*e*h**2*x**4/32 + b**2*f*g**2*x**3*a
```

```
sin(c*x)**2/3 - 2*b**2*f*g**2*x**3/27 + b**2*f*g*h*x**4*asin(c*x)**2/2 - b*
*2*f*g*h*x**4/16 + b**2*f*h**2*x**5*asin(c*x)**2/5 - 2*b**2*f*h**2*x**5/125
 + 2*b**2*d*g**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/c + b**2*d*g*h*x*sqrt(-c**2
*x**2 + 1)*asin(c*x)/c + 2*b**2*d*h**2*x**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/
(9*c) + b**2*e*g**2*x*sqrt(-c**2*x**2 + 1)*asin(c*x)/(2*c) + 4*b**2*e*g*h*x
**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(9*c) + b**2*e*h**2*x**3*sqrt(-c**2*x**2
 + 1)*asin(c*x)/(8*c) + 2*b**2*f*g**2*x**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(
9*c) + b**2*f*g*h*x**3*sqrt(-c**2*x**2 + 1)*asin(c*x)/(4*c) + 2*b**2*f*h**2
*x**4*sqrt(-c**2*x**2 + 1)*asin(c*x)/(25*c) - b**2*d*g*h*asin(c*x)**2/(2*c*
*2) - 4*b**2*d*h**2*x/(9*c**2) - b**2*e*g**2*asin(c*x)**2/(4*c**2) - 8*b**2
*e*g*h*x/(9*c**2) - 3*b**2*e*h**2*x**2/(32*c**2) - 4*b**2*f*g**2*x/(9*c**2)
 - 3*b**2*f*g*h*x**2/(16*c**2) - 8*b**2*f*h**2*x**3/(225*c**2) + 4*b**2*d*h
**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(9*c**3) + 8*b**2*e*g*h*sqrt(-c**2*x**2
+ 1)*asin(c*x)/(9*c**3) + 3*b**2*e*h**2*x*sqrt(-c**2*x**2 + 1)*asin(c*x)/(1
6*c**3) + 4*b**2*f*g**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(9*c**3) + 3*b**2*f*
g*h*x*sqrt(-c**2*x**2 + 1)*asin(c*x)/(8*c**3) + 8*b**2*f*h**2*x**2*sqrt(-c*
*2*x**2 + 1)*asin(c*x)/(75*c**3) - 3*b**2*e*h**2*asin(c*x)**2/(32*c**4) - 3
*b**2*f*g*h*asin(c*x)**2/(16*c**4) - 16*b**2*f*h**2*x/(75*c**4) + 16*b**2*f
*h**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(75*c**5), Ne(c, 0)), (a**2*(d*g**2*x
+ d*g*h*x**2 + d*h**2*x**3/3 + e*g**2*x**2/2 + 2*e*g*h*x**3/3 + e*h**2*x**4
/4 + f*g**2*x**3/3 + f*g*h*x**4/2 + f*h**2*x**5/5), True))
```

Giac [B] time = 1.39061, size = 3055, normalized size = 4.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(f*x^2+e*x+d)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] 1/5*a^2*f*h^2*x^5 + 1/3*a^2*f*g^2*x^3 + 1/3*a^2*d*h^2*x^3 + b^2*d*g^2*x*arc
sin(c*x)^2 + 2/3*a^2*g*h*x^3*e + 2*a*b*d*g^2*x*arcsin(c*x) + 1/3*(c^2*x^2 -
 1)*b^2*f*g^2*x*arcsin(c*x)^2/c^2 + 1/3*(c^2*x^2 - 1)*b^2*d*h^2*x*arcsin(c*
x)^2/c^2 + 2/3*(c^2*x^2 - 1)*b^2*g*h*x*arcsin(c*x)^2*e/c^2 + sqrt(-c^2*x^2
+ 1)*b^2*d*g*h*x*arcsin(c*x)/c + 1/2*sqrt(-c^2*x^2 + 1)*b^2*g^2*x*arcsin(c*
x)*e/c + a^2*d*g^2*x - 2*b^2*d*g^2*x + 2/3*(c^2*x^2 - 1)*a*b*f*g^2*x*arcsin
(c*x)/c^2 + 2/3*(c^2*x^2 - 1)*a*b*d*h^2*x*arcsin(c*x)/c^2 + (c^2*x^2 - 1)*b
^2*d*g*h*arcsin(c*x)^2/c^2 + 1/3*b^2*f*g^2*x*arcsin(c*x)^2/c^2 + 1/3*b^2*d*
h^2*x*arcsin(c*x)^2/c^2 + 1/5*(c^2*x^2 - 1)^2*b^2*f*h^2*x*arcsin(c*x)^2/c^4
 + 4/3*(c^2*x^2 - 1)*a*b*g*h*x*arcsin(c*x)*e/c^2 + 1/2*(c^2*x^2 - 1)*b^2*g^
2*arcsin(c*x)^2*e/c^2 + 2/3*b^2*g*h*x*arcsin(c*x)^2*e/c^2 + sqrt(-c^2*x^2 +
 1)*a*b*d*g*h*x/c + 2*sqrt(-c^2*x^2 + 1)*b^2*d*g^2*arcsin(c*x)/c - 1/4*(-c^
```

2*x^2 + 1)^(3/2)*b^2*f*g*h*x*arcsin(c*x)/c^3 + 1/2*sqrt(-c^2*x^2 + 1)*a*b*g ^2*x*e/c - 1/8*(-c^2*x^2 + 1)^(3/2)*b^2*h^2*x*arcsin(c*x)*e/c^3 - 2/27*(c^2 *x^2 - 1)*b^2*f*g^2*x/c^2 - 2/27*(c^2*x^2 - 1)*b^2*d*h^2*x/c^2 + 2*(c^2*x^2 - 1)*a*b*d*g*h*arcsin(c*x)/c^2 + 2/3*a*b*f*g^2*x*arcsin(c*x)/c^2 + 2/3*a*b *d*h^2*x*arcsin(c*x)/c^2 + 2/5*(c^2*x^2 - 1)^2*a*b*f*h^2*x*arcsin(c*x)/c^4 + 1/2*b^2*d*g*h*arcsin(c*x)^2/c^2 + 1/2*(c^2*x^2 - 1)^2*b^2*f*g*h*arcsin(c* x)^2/c^4 + 2/5*(c^2*x^2 - 1)*b^2*f*h^2*x*arcsin(c*x)^2/c^4 - 4/27*(c^2*x^2 - 1)*b^2*g*h*x*e/c^2 + (c^2*x^2 - 1)*a*b*g^2*arcsin(c*x)*e/c^2 + 4/3*a*b*g* h*x*arcsin(c*x)*e/c^2 + 1/4*b^2*g^2*arcsin(c*x)^2*e/c^2 + 1/4*(c^2*x^2 - 1) ^2*b^2*h^2*arcsin(c*x)^2*e/c^4 + 2*sqrt(-c^2*x^2 + 1)*a*b*d*g^2/c - 1/4*(-c ^2*x^2 + 1)^(3/2)*a*b*f*g*h*x/c^3 - 2/9*(-c^2*x^2 + 1)^(3/2)*b^2*f*g^2*arcs in(c*x)/c^3 - 2/9*(-c^2*x^2 + 1)^(3/2)*b^2*d*h^2*arcsin(c*x)/c^3 + 5/8*sqrt (-c^2*x^2 + 1)*b^2*f*g*h*x*arcsin(c*x)/c^3 - 1/8*(-c^2*x^2 + 1)^(3/2)*a*b*h ^2*x*e/c^3 - 4/9*(-c^2*x^2 + 1)^(3/2)*b^2*g*h*arcsin(c*x)*e/c^3 + 5/16*sqrt (-c^2*x^2 + 1)*b^2*h^2*x*arcsin(c*x)*e/c^3 + (c^2*x^2 - 1)*a^2*d*g*h/c^2 - 1/2*(c^2*x^2 - 1)*b^2*d*g*h/c^2 - 14/27*b^2*f*g^2*x/c^2 - 14/27*b^2*d*h^2*x /c^2 - 2/125*(c^2*x^2 - 1)^2*b^2*f*h^2*x/c^4 + a*b*d*g*h*arcsin(c*x)/c^2 + (c^2*x^2 - 1)^2*a*b*f*g*h*arcsin(c*x)/c^4 + 4/5*(c^2*x^2 - 1)*a*b*f*h^2*x*a rcsin(c*x)/c^4 + (c^2*x^2 - 1)*b^2*f*g*h*arcsin(c*x)^2/c^4 + 1/5*b^2*f*h^2* x*arcsin(c*x)^2/c^4 + 1/2*(c^2*x^2 - 1)*a^2*g^2*e/c^2 - 1/4*(c^2*x^2 - 1)*b ^2*g^2*e/c^2 - 28/27*b^2*g*h*x*e/c^2 + 1/2*a*b*g^2*arcsin(c*x)*e/c^2 + 1/2* (c^2*x^2 - 1)^2*a*b*h^2*arcsin(c*x)*e/c^4 + 1/2*(c^2*x^2 - 1)*b^2*h^2*arcsi n(c*x)^2*e/c^4 - 2/9*(-c^2*x^2 + 1)^(3/2)*a*b*f*g^2/c^3 - 2/9*(-c^2*x^2 + 1)^(3/2)*a*b*d*h^2/c^3 + 5/8*sqrt(-c^2*x^2 + 1)*a*b*f*g*h*x/c^3 + 2/3*sqrt(- c^2*x^2 + 1)*b^2*f*g^2*arcsin(c*x)/c^3 + 2/3*sqrt(-c^2*x^2 + 1)*b^2*d*h^2*a rcsin(c*x)/c^3 + 2/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b^2*f*h^2*arcsin(c *x)/c^5 - 4/9*(-c^2*x^2 + 1)^(3/2)*a*b*g*h*e/c^3 + 5/16*sqrt(-c^2*x^2 + 1)* a*b*h^2*x*e/c^3 + 4/3*sqrt(-c^2*x^2 + 1)*b^2*g*h*arcsin(c*x)*e/c^3 - 1/4*b^ 2*d*g*h/c^2 + 1/2*(c^2*x^2 - 1)^2*a^2*f*g*h/c^4 - 1/16*(c^2*x^2 - 1)^2*b^2* f*g*h/c^4 - 76/1125*(c^2*x^2 - 1)*b^2*f*h^2*x/c^4 + 2*(c^2*x^2 - 1)*a*b*f*g *h*arcsin(c*x)/c^4 + 2/5*a*b*f*h^2*x*arcsin(c*x)/c^4 + 5/16*b^2*f*g*h*arcsi n(c*x)^2/c^4 - 1/8*b^2*g^2*e/c^2 + 1/4*(c^2*x^2 - 1)^2*a^2*h^2*e/c^4 - 1/32 *(c^2*x^2 - 1)^2*b^2*h^2*e/c^4 + (c^2*x^2 - 1)*a*b*h^2*arcsin(c*x)*e/c^4 + 5/32*b^2*h^2*arcsin(c*x)^2*e/c^4 + 2/3*sqrt(-c^2*x^2 + 1)*a*b*f*g^2/c^3 + 2 /3*sqrt(-c^2*x^2 + 1)*a*b*d*h^2/c^3 + 2/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*a*b*f*h^2/c^5 - 4/15*(-c^2*x^2 + 1)^(3/2)*b^2*f*h^2*arcsin(c*x)/c^5 + 4/ 3*sqrt(-c^2*x^2 + 1)*a*b*g*h*e/c^3 + (c^2*x^2 - 1)*a^2*f*g*h/c^4 - 5/16*(c^ 2*x^2 - 1)*b^2*f*g*h/c^4 - 298/1125*b^2*f*h^2*x/c^4 + 5/8*a*b*f*g*h*arcsin(c*x)/c^4 + 1/2*(c^2*x^2 - 1)*a^2*h^2*e/c^4 - 5/32*(c^2*x^2 - 1)*b^2*h^2*e/c ^4 + 5/16*a*b*h^2*arcsin(c*x)*e/c^4 - 4/15*(-c^2*x^2 + 1)^(3/2)*a*b*f*h^2/c ^5 + 2/5*sqrt(-c^2*x^2 + 1)*b^2*f*h^2*arcsin(c*x)/c^5 - 17/128*b^2*f*g*h/c^ 4 - 17/256*b^2*h^2*e/c^4 + 2/5*sqrt(-c^2*x^2 + 1)*a*b*f*h^2/c^5

3.117 $\int (g+hx)\left(d+ex+fx^2\right)\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=425

$$\frac{bx\sqrt{1-c^2x^2}(dh+eg)\left(a+b\sin^{-1}(cx)\right)}{2c}-\frac{(dh+eg)\left(a+b\sin^{-1}(cx)\right)^2}{4c^2}+\frac{2bdg\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+\frac{2bx^2\sqrt{1-c^2x^2}}{}$$

```
[Out] -2*b^2*d*g*x - (4*b^2*(f*g + e*h)*x)/(9*c^2) - (3*b^2*f*h*x^2)/(32*c^2) - (
b^2*(e*g + d*h)*x^2)/4 - (2*b^2*(f*g + e*h)*x^3)/27 - (b^2*f*h*x^4)/32 + (2
*b*d*g*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c + (4*b*(f*g + e*h)*Sqrt[1 -
 c^2*x^2]*(a + b*ArcSin[c*x]))/(9*c^3) + (3*b*f*h*x*Sqrt[1 - c^2*x^2]*(a +
b*ArcSin[c*x]))/(16*c^3) + (b*(e*g + d*h)*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin
[c*x]))/(2*c) + (2*b*(f*g + e*h)*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))
/(9*c) + (b*f*h*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(8*c) - (3*f*h*(
a + b*ArcSin[c*x])^2)/(32*c^4) - ((e*g + d*h)*(a + b*ArcSin[c*x])^2)/(4*c^2
) + d*g*x*(a + b*ArcSin[c*x])^2 + ((e*g + d*h)*x^2*(a + b*ArcSin[c*x])^2)/2
 + ((f*g + e*h)*x^3*(a + b*ArcSin[c*x])^2)/3 + (f*h*x^4*(a + b*ArcSin[c*x])
^2)/4
```

Rubi [A] time = 0.698374, antiderivative size = 425, normalized size of antiderivative = 1., number of steps used = 20, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {4751, 4619, 4677, 8, 4627, 4707, 4641, 30}

$$\frac{bx\sqrt{1-c^2x^2}(dh+eg)\left(a+b\sin^{-1}(cx)\right)}{2c}-\frac{(dh+eg)\left(a+b\sin^{-1}(cx)\right)^2}{4c^2}+\frac{2bdg\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+\frac{2bx^2\sqrt{1-c^2x^2}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)*(d + e*x + f*x^2)*(a + b*ArcSin[c*x])^2,x]
```


```
[Out] -2*b^2*d*g*x - (4*b^2*(f*g + e*h)*x)/(9*c^2) - (3*b^2*f*h*x^2)/(32*c^2) - (
b^2*(e*g + d*h)*x^2)/4 - (2*b^2*(f*g + e*h)*x^3)/27 - (b^2*f*h*x^4)/32 + (2
*b*d*g*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c + (4*b*(f*g + e*h)*Sqrt[1 -
 c^2*x^2]*(a + b*ArcSin[c*x]))/(9*c^3) + (3*b*f*h*x*Sqrt[1 - c^2*x^2]*(a +
b*ArcSin[c*x]))/(16*c^3) + (b*(e*g + d*h)*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin
[c*x]))/(2*c) + (2*b*(f*g + e*h)*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))
/(9*c) + (b*f*h*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(8*c) - (3*f*h*(
a + b*ArcSin[c*x])^2)/(32*c^4) - ((e*g + d*h)*(a + b*ArcSin[c*x])^2)/(4*c^2
) + d*g*x*(a + b*ArcSin[c*x])^2 + ((e*g + d*h)*x^2*(a + b*ArcSin[c*x])^2)/2
 + ((f*g + e*h)*x^3*(a + b*ArcSin[c*x])^2)/3 + (f*h*x^4*(a + b*ArcSin[c*x])
```

```
^2)/4
```

Rule 4751

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(Px_), x_Symbol] :> Int[ExpandI
ntegrand[Px*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[{a, b, c, n}, x] && Poly
nomialQ[Px, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4677

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

Rule 8

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

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4707

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

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 30

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

Rubi steps

$$\int (g+hx)\left(d+ex+fx^2\right)\left(a+b\sin^{-1}(cx)\right)^2\,dx = \int \left(dg\left(a+b\sin^{-1}(cx)\right)^2+(eg+dh)x\left(a+b\sin^{-1}(cx)\right)^2+(fg+eh)x^2\right.$$

$$=(dg)\int \left(a+b\sin^{-1}(cx)\right)^2\,dx+(fh)\int x^3\left(a+b\sin^{-1}(cx)\right)^2\,dx+(eg+$$

$$=dgx\left(a+b\sin^{-1}(cx)\right)^2+\frac{1}{2}(eg+dh)x^2\left(a+b\sin^{-1}(cx)\right)^2+\frac{1}{3}(fg+eh)x$$

$$=\frac{2bdg\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+\frac{b(eg+dh)x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(c\right.}{2c}$$

$$=-2b^2dgx-\frac{1}{4}b^2(eg+dh)x^2-\frac{2}{27}b^2(fg+eh)x^3-\frac{1}{32}b^2fhx^4+\frac{2bdg\sqrt{1-}}{}$$

$$=-2b^2dgx-\frac{4b^2(fg+eh)x}{9c^2}-\frac{3b^2fhx^2}{32c^2}-\frac{1}{4}b^2(eg+dh)x^2-\frac{2}{27}b^2(fg+e$$

Mathematica [A] time = 0.332326, size = 364, normalized size = 0.86

$$-\frac{1}{4}b(dh+eg)\left(-\frac{2x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+\frac{\left(a+b\sin^{-1}(cx)\right)^2}{bc^2}+bx^2\right)-2bdg\left(bx-\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}\right)-$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)*(d + e*x + f*x^2)*(a + b*ArcSin[c*x])^2,x]
```

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

```
*x^2) - 3*b*Sqrt[1 - c^2*x^2]*(2 + c^2*x^2)*ArcSin[c*x]))/(27*c^3) - 2*b*d*
g*(b*x - (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c) - (b*f*h*((3*b*x^2)/c^2
 + b*x^4 - (6*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c^3 - (4*x^3*Sqrt[1
- c^2*x^2]*(a + b*ArcSin[c*x]))/c + (3*(a + b*ArcSin[c*x])^2)/(b*c^4)))/32
- (b*(e*g + d*h)*(b*x^2 - (2*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c + (
a + b*ArcSin[c*x])^2/(b*c^2)))/4
```

Maple [B] time = 0.114, size = 870, normalized size = 2.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)*(f*x^2+e*x+d)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/c*(a^2/c^3*(1/4*h*f*c^4*x^4+1/3*(c*e*h+c*f*g)*c^3*x^3+1/2*(c^2*d*h+c^2*e*
g)*c^2*x^2+c^4*g*d*x)+b^2/c^3*(1/32*h*f*(8*arcsin(c*x)^2*c^4*x^4+4*arcsin(c
*x)*(-c^2*x^2+1)^(1/2)*c^3*x^3-16*arcsin(c*x)^2*c^2*x^2-c^4*x^4-10*arcsin(c
*x)*(-c^2*x^2+1)^(1/2)*c*x+5*arcsin(c*x)^2+5*c^2*x^2-4)+1/4*h*c^2*d*(2*arcs
in(c*x)^2*c^2*x^2+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*x-arcsin(c*x)^2-c^2*x^
2)+1/4*c^2*g*e*(2*arcsin(c*x)^2*c^2*x^2+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*
x-arcsin(c*x)^2-c^2*x^2)+1/27*h*c*e*(9*c^3*x^3*arcsin(c*x)^2+6*arcsin(c*x)*
(-c^2*x^2+1)^(1/2)*c^2*x^2-27*arcsin(c*x)^2*c*x-2*c^3*x^3-42*arcsin(c*x)*(-
c^2*x^2+1)^(1/2)+42*c*x)+1/27*c*f*g*(9*c^3*x^3*arcsin(c*x)^2+6*arcsin(c*x)*
(-c^2*x^2+1)^(1/2)*c^2*x^2-27*arcsin(c*x)^2*c*x-2*c^3*x^3-42*arcsin(c*x)*(-
c^2*x^2+1)^(1/2)+42*c*x)+c^3*g*d*(arcsin(c*x)^2*c*x-2*c*x+2*arcsin(c*x)*(-c
^2*x^2+1)^(1/2))+1/4*h*f*(2*arcsin(c*x)^2*c^2*x^2+2*arcsin(c*x)*(-c^2*x^2+1
)^(1/2)*c*x-arcsin(c*x)^2-c^2*x^2)+h*c*e*(arcsin(c*x)^2*c*x-2*c*x+2*arcsin(
c*x)*(-c^2*x^2+1)^(1/2))+c*f*g*(arcsin(c*x)^2*c*x-2*c*x+2*arcsin(c*x)*(-c^2
*x^2+1)^(1/2)))+2*a*b/c^3*(1/4*arcsin(c*x)*h*f*c^4*x^4+1/3*arcsin(c*x)*c^4*
x^3*e*h+1/3*arcsin(c*x)*c^4*x^3*f*g+1/2*arcsin(c*x)*c^4*x^2*d*h+1/2*arcsin(
c*x)*c^4*x^2*e*g+arcsin(c*x)*c^4*g*d*x-1/4*h*f*(-1/4*c^3*x^3*(-c^2*x^2+1)^(
1/2)-3/8*c*x*(-c^2*x^2+1)^(1/2)+3/8*arcsin(c*x))-1/12*(4*c*e*h+4*c*f*g)*(-1
/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-c^2*x^2+1)^(1/2))-1/12*(6*c^2*d*h+6*c^2
*e*g)*(-1/2*c*x*(-c^2*x^2+1)^(1/2)+1/2*arcsin(c*x))+c^3*g*d*(-c^2*x^2+1)^(1
/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{4}a^2fhx^4+\frac{1}{3}a^2fgx^3+\frac{1}{3}a^2ehx^3+b^2dgx\arcsin(cx)^2+\frac{1}{2}a^2egx^2+\frac{1}{2}a^2dhx^2+\frac{1}{2}\left(2x^2\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}x}{c^2}-\cdots\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(f*x^2+e*x+d)*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] 1/4*a^2*f*h*x^4 + 1/3*a^2*f*g*x^3 + 1/3*a^2*e*h*x^3 + b^2*d*g*x*arcsin(c*x)
^2 + 1/2*a^2*e*g*x^2 + 1/2*a^2*d*h*x^2 + 1/2*(2*x^2*arcsin(c*x) + c*(sqrt(-
c^2*x^2 + 1)*x/c^2 - arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^2)))*a*b*e*g + 2/
9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)
/c^4))*a*b*f*g + 1/2*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arc
sin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^2)))*a*b*d*h + 2/9*(3*x^3*arcsin(c*x) + c
*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*e*h + 1/16*(8
*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c
^4 - 3*arcsin(c^2*x/sqrt(c^2))/(sqrt(c^2)*c^4))*c)*a*b*f*h - 2*b^2*d*g*(x -
 sqrt(-c^2*x^2 + 1)*arcsin(c*x)/c) + a^2*d*g*x + 2*(c*x*arcsin(c*x) + sqrt(
-c^2*x^2 + 1))*a*b*d*g/c + 1/12*(3*b^2*f*h*x^4 + 4*(b^2*f*g + b^2*e*h)*x^3
+ 6*(b^2*e*g + b^2*d*h)*x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 +
 integrate(1/6*(3*b^2*c*f*h*x^4 + 4*(b^2*c*f*g + b^2*c*e*h)*x^3 + 6*(b^2*c*
e*g + b^2*c*d*h)*x^2)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x +
1)*sqrt(-c*x + 1))/(c^2*x^2 - 1), x)
```

Fricas [A] time = 3.19133, size = 1289, normalized size = 3.03

$$\frac{27\left(8a^2-b^2\right)c^4fhx^4+32\left(\left(9a^2-2b^2\right)c^4fg+\left(9a^2-2b^2\right)c^4eh\right)x^3+27\left(8\left(2a^2-b^2\right)c^4eg+\left(8\left(2a^2-b^2\right)c^4d-3b^2c^2f\right)h\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(f*x^2+e*x+d)*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] 1/864*(27*(8*a^2 - b^2)*c^4*f*h*x^4 + 32*((9*a^2 - 2*b^2)*c^4*f*g + (9*a^2
- 2*b^2)*c^4*e*h)*x^3 + 27*(8*(2*a^2 - b^2)*c^4*e*g + (8*(2*a^2 - b^2)*c^4*
d - 3*b^2*c^2*f)*h)*x^2 + 9*(24*b^2*c^4*f*h*x^4 + 96*b^2*c^4*d*g*x - 24*b^2
*c^2*e*g + 32*(b^2*c^4*f*g + b^2*c^4*e*h)*x^3 + 48*(b^2*c^4*e*g + b^2*c^4*d
*h)*x^2 - 3*(8*b^2*c^2*d + 3*b^2*f)*h)*arcsin(c*x)^2 - 96*(4*b^2*c^2*e*h -
(9*(a^2 - 2*b^2)*c^4*d - 4*b^2*c^2*f)*g)*x + 18*(24*a*b*c^4*f*h*x^4 + 96*a*
```

```
b*c^4*d*g*x - 24*a*b*c^2*e*g + 32*(a*b*c^4*f*g + a*b*c^4*e*h)*x^3 + 48*(a*b
*c^4*e*g + a*b*c^4*d*h)*x^2 - 3*(8*a*b*c^2*d + 3*a*b*f)*h)*arcsin(c*x) + 6*
(18*a*b*c^3*f*h*x^3 + 64*a*b*c*e*h + 32*(a*b*c^3*f*g + a*b*c^3*e*h)*x^2 + 3
2*(9*a*b*c^3*d + 2*a*b*c*f)*g + 9*(8*a*b*c^3*e*g + (8*a*b*c^3*d + 3*a*b*c*f
)*h)*x + (18*b^2*c^3*f*h*x^3 + 64*b^2*c*e*h + 32*(b^2*c^3*f*g + b^2*c^3*e*h
)*x^2 + 32*(9*b^2*c^3*d + 2*b^2*c*f)*g + 9*(8*b^2*c^3*e*g + (8*b^2*c^3*d +
3*b^2*c*f)*h)*x)*arcsin(c*x))*sqrt(-c^2*x^2 + 1))/c^4
```

Sympy [A] time = 6.11447, size = 1059, normalized size = 2.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(f*x**2+e*x+d)*(a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((a**2*d*g*x + a**2*d*h*x**2/2 + a**2*e*g*x**2/2 + a**2*e*h*x**3/3
 + a**2*f*g*x**3/3 + a**2*f*h*x**4/4 + 2*a*b*d*g*x*asin(c*x) + a*b*d*h*x**2
*asin(c*x) + a*b*e*g*x**2*asin(c*x) + 2*a*b*e*h*x**3*asin(c*x)/3 + 2*a*b*f*
g*x**3*asin(c*x)/3 + a*b*f*h*x**4*asin(c*x)/2 + 2*a*b*d*g*sqrt(-c**2*x**2 +
 1)/c + a*b*d*h*x*sqrt(-c**2*x**2 + 1)/(2*c) + a*b*e*g*x*sqrt(-c**2*x**2 +
1)/(2*c) + 2*a*b*e*h*x**2*sqrt(-c**2*x**2 + 1)/(9*c) + 2*a*b*f*g*x**2*sqrt(
-c**2*x**2 + 1)/(9*c) + a*b*f*h*x**3*sqrt(-c**2*x**2 + 1)/(8*c) - a*b*d*h*a
sin(c*x)/(2*c**2) - a*b*e*g*asin(c*x)/(2*c**2) + 4*a*b*e*h*sqrt(-c**2*x**2
+ 1)/(9*c**3) + 4*a*b*f*g*sqrt(-c**2*x**2 + 1)/(9*c**3) + 3*a*b*f*h*x*sqrt(
-c**2*x**2 + 1)/(16*c**3) - 3*a*b*f*h*asin(c*x)/(16*c**4) + b**2*d*g*x*asin
(c*x)**2 - 2*b**2*d*g*x + b**2*d*h*x**2*asin(c*x)**2/2 - b**2*d*h*x**2/4 +
b**2*e*g*x**2*asin(c*x)**2/2 - b**2*e*g*x**2/4 + b**2*e*h*x**3*asin(c*x)**2
/3 - 2*b**2*e*h*x**3/27 + b**2*f*g*x**3*asin(c*x)**2/3 - 2*b**2*f*g*x**3/27
 + b**2*f*h*x**4*asin(c*x)**2/4 - b**2*f*h*x**4/32 + 2*b**2*d*g*sqrt(-c**2*
x**2 + 1)*asin(c*x)/c + b**2*d*h*x*sqrt(-c**2*x**2 + 1)*asin(c*x)/(2*c) + b
**2*e*g*x*sqrt(-c**2*x**2 + 1)*asin(c*x)/(2*c) + 2*b**2*e*h*x**2*sqrt(-c**2
*x**2 + 1)*asin(c*x)/(9*c) + 2*b**2*f*g*x**2*sqrt(-c**2*x**2 + 1)*asin(c*x)
/(9*c) + b**2*f*h*x**3*sqrt(-c**2*x**2 + 1)*asin(c*x)/(8*c) - b**2*d*h*asin
(c*x)**2/(4*c**2) - b**2*e*g*asin(c*x)**2/(4*c**2) - 4*b**2*e*h*x/(9*c**2)
- 4*b**2*f*g*x/(9*c**2) - 3*b**2*f*h*x**2/(32*c**2) + 4*b**2*e*h*sqrt(-c**2
*x**2 + 1)*asin(c*x)/(9*c**3) + 4*b**2*f*g*sqrt(-c**2*x**2 + 1)*asin(c*x)/(
9*c**3) + 3*b**2*f*h*x*sqrt(-c**2*x**2 + 1)*asin(c*x)/(16*c**3) - 3*b**2*f*
h*asin(c*x)**2/(32*c**4), Ne(c, 0)), (a**2*(d*g*x + d*h*x**2/2 + e*g*x**2/2
 + e*h*x**3/3 + f*g*x**3/3 + f*h*x**4/4), True))
```

Giac [B] time = 1.32244, size = 1613, normalized size = 3.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(f*x^2+e*x+d)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] 1/3*a^2*f*g*x^3 + b^2*d*g*x*arcsin(c*x)^2 + 1/3*a^2*h*x^3*e + 2*a*b*d*g*x*a
rcsin(c*x) + 1/3*(c^2*x^2 - 1)*b^2*f*g*x*arcsin(c*x)^2/c^2 + 1/3*(c^2*x^2 -
 1)*b^2*h*x*arcsin(c*x)^2*e/c^2 + 1/2*sqrt(-c^2*x^2 + 1)*b^2*d*h*x*arcsin(c
*x)/c + 1/2*sqrt(-c^2*x^2 + 1)*b^2*g*x*arcsin(c*x)*e/c + a^2*d*g*x - 2*b^2*
d*g*x + 2/3*(c^2*x^2 - 1)*a*b*f*g*x*arcsin(c*x)/c^2 + 1/2*(c^2*x^2 - 1)*b^2
*d*h*arcsin(c*x)^2/c^2 + 1/3*b^2*f*g*x*arcsin(c*x)^2/c^2 + 2/3*(c^2*x^2 - 1
)*a*b*h*x*arcsin(c*x)*e/c^2 + 1/2*(c^2*x^2 - 1)*b^2*g*arcsin(c*x)^2*e/c^2 +
 1/3*b^2*h*x*arcsin(c*x)^2*e/c^2 + 1/2*sqrt(-c^2*x^2 + 1)*a*b*d*h*x/c + 2*s
qrt(-c^2*x^2 + 1)*b^2*d*g*arcsin(c*x)/c - 1/8*(-c^2*x^2 + 1)^(3/2)*b^2*f*h*
x*arcsin(c*x)/c^3 + 1/2*sqrt(-c^2*x^2 + 1)*a*b*g*x*e/c - 2/27*(c^2*x^2 - 1)
*b^2*f*g*x/c^2 + (c^2*x^2 - 1)*a*b*d*h*arcsin(c*x)/c^2 + 2/3*a*b*f*g*x*arcs
in(c*x)/c^2 + 1/4*b^2*d*h*arcsin(c*x)^2/c^2 + 1/4*(c^2*x^2 - 1)^2*b^2*f*h*a
rcsin(c*x)^2/c^4 - 2/27*(c^2*x^2 - 1)*b^2*h*x*e/c^2 + (c^2*x^2 - 1)*a*b*g*a
rcsin(c*x)*e/c^2 + 2/3*a*b*h*x*arcsin(c*x)*e/c^2 + 1/4*b^2*g*arcsin(c*x)^2*
e/c^2 + 2*sqrt(-c^2*x^2 + 1)*a*b*d*g/c - 1/8*(-c^2*x^2 + 1)^(3/2)*a*b*f*h*x
/c^3 - 2/9*(-c^2*x^2 + 1)^(3/2)*b^2*f*g*arcsin(c*x)/c^3 + 5/16*sqrt(-c^2*x^
2 + 1)*b^2*f*h*x*arcsin(c*x)/c^3 - 2/9*(-c^2*x^2 + 1)^(3/2)*b^2*h*arcsin(c*
x)*e/c^3 + 1/2*(c^2*x^2 - 1)*a^2*d*h/c^2 - 1/4*(c^2*x^2 - 1)*b^2*d*h/c^2 -
14/27*b^2*f*g*x/c^2 + 1/2*a*b*d*h*arcsin(c*x)/c^2 + 1/2*(c^2*x^2 - 1)^2*a*b
*f*h*arcsin(c*x)/c^4 + 1/2*(c^2*x^2 - 1)*b^2*f*h*arcsin(c*x)^2/c^4 + 1/2*(c
^2*x^2 - 1)*a^2*g*e/c^2 - 1/4*(c^2*x^2 - 1)*b^2*g*e/c^2 - 14/27*b^2*h*x*e/c
^2 + 1/2*a*b*g*arcsin(c*x)*e/c^2 - 2/9*(-c^2*x^2 + 1)^(3/2)*a*b*f*g/c^3 + 5
/16*sqrt(-c^2*x^2 + 1)*a*b*f*h*x/c^3 + 2/3*sqrt(-c^2*x^2 + 1)*b^2*f*g*arcsi
n(c*x)/c^3 - 2/9*(-c^2*x^2 + 1)^(3/2)*a*b*h*e/c^3 + 2/3*sqrt(-c^2*x^2 + 1)*
b^2*h*arcsin(c*x)*e/c^3 - 1/8*b^2*d*h/c^2 + 1/4*(c^2*x^2 - 1)^2*a^2*f*h/c^4
 - 1/32*(c^2*x^2 - 1)^2*b^2*f*h/c^4 + (c^2*x^2 - 1)*a*b*f*h*arcsin(c*x)/c^4
 + 5/32*b^2*f*h*arcsin(c*x)^2/c^4 - 1/8*b^2*g*e/c^2 + 2/3*sqrt(-c^2*x^2 + 1
)*a*b*f*g/c^3 + 2/3*sqrt(-c^2*x^2 + 1)*a*b*h*e/c^3 + 1/2*(c^2*x^2 - 1)*a^2*
f*h/c^4 - 5/32*(c^2*x^2 - 1)*b^2*f*h/c^4 + 5/16*a*b*f*h*arcsin(c*x)/c^4 - 1
7/256*b^2*f*h/c^4
```

3.118 $\int \frac{\left(d+ex+fx^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{g+hx}\,dx$

Optimal. Leaf size=1067

result too large to display

```
[Out] -((a^2*(f*g - e*h)*x)/h^2) + (2*b^2*(f*g - e*h)*x)/h^2 + (a^2*f*x^2)/(2*h)
- (b^2*f*x^2)/(4*h) - (a*b*(4*(f*g - e*h) - f*h*x)*Sqrt[1 - c^2*x^2])/(2*c*
h^2) - (a*b*f*ArcSin[c*x])/(2*c^2*h) - (2*a*b*(f*g - e*h)*x*ArcSin[c*x])/h^
2 + (a*b*f*x^2*ArcSin[c*x])/h - (2*b^2*(f*g - e*h)*Sqrt[1 - c^2*x^2]*ArcSin
[c*x])/(c*h^2) + (b^2*f*x*Sqrt[1 - c^2*x^2]*ArcSin[c*x])/(2*c*h) - (b^2*f*A
rcSin[c*x]^2)/(4*c^2*h) - (I*a*b*(f*g^2 - e*g*h + d*h^2)*ArcSin[c*x]^2)/h^3
 - (b^2*(f*g - e*h)*x*ArcSin[c*x]^2)/h^2 + (b^2*f*x^2*ArcSin[c*x]^2)/(2*h)
- ((I/3)*b^2*(f*g^2 - e*g*h + d*h^2)*ArcSin[c*x]^3)/h^3 + (2*a*b*(f*g^2 - e
*g*h + d*h^2)*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g
^2 - h^2])])/h^3 + (b^2*(f*g^2 - e*g*h + d*h^2)*ArcSin[c*x]^2*Log[1 - (I*E^
(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])])/h^3 + (2*a*b*(f*g^2 - e*g*
h + d*h^2)*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2
- h^2])])/h^3 + (b^2*(f*g^2 - e*g*h + d*h^2)*ArcSin[c*x]^2*Log[1 - (I*E^(I*
ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])])/h^3 + (a^2*(f*g^2 - e*g*h + d
*h^2)*Log[g + h*x])/h^3 - ((2*I)*a*b*(f*g^2 - e*g*h + d*h^2)*PolyLog[2, (I*
E^(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])])/h^3 - ((2*I)*b^2*(f*g^2
- e*g*h + d*h^2)*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin[c*x])*h)/(c*g - Sqrt
[c^2*g^2 - h^2])])/h^3 - ((2*I)*a*b*(f*g^2 - e*g*h + d*h^2)*PolyLog[2, (I*E
^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])])/h^3 - ((2*I)*b^2*(f*g^2 -
 e*g*h + d*h^2)*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[
c^2*g^2 - h^2])])/h^3 + (2*b^2*(f*g^2 - e*g*h + d*h^2)*PolyLog[3, (I*E^(I*A
rcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])])/h^3 + (2*b^2*(f*g^2 - e*g*h +
d*h^2)*PolyLog[3, (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])])/h^3
```

Rubi [A] time = 1.94796, antiderivative size = 1067, normalized size of antiderivative = 1., number of steps used = 38, number of rules used = 23, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.821, Rules used = {4759, 698, 4753, 12, 6742, 780, 216, 2404, 4741, 4519, 2190, 2279, 2391, 4619, 4677, 8, 4627, 4707, 4641, 30, 2531, 2282, 6589}

$$-\frac{ib^2\left(fg^2-ehg+dh^2\right)\sin^{-1}(cx)^3}{3h^3}+\frac{b^2fx^2\sin^{-1}(cx)^2}{2h}-\frac{iab\left(fg^2-ehg+dh^2\right)\sin^{-1}(cx)^2}{h^3}-\frac{b^2(fg-eh)x\sin^{-1}(cx)^2}{h^2}+\cdots$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x + f*x^2)*(a + b*ArcSin[c*x])^2)/(g + h*x),x]
```

```
[Out] -((a^2*(f*g - e*h)*x)/h^2) + (2*b^2*(f*g - e*h)*x)/h^2 + (a^2*f*x^2)/(2*h)
- (b^2*f*x^2)/(4*h) - (a*b*(4*(f*g - e*h) - f*h*x)*Sqrt[1 - c^2*x^2])/(2*c*
h^2) - (a*b*f*ArcSin[c*x])/(2*c^2*h) - (2*a*b*(f*g - e*h)*x*ArcSin[c*x])/h^
2 + (a*b*f*x^2*ArcSin[c*x])/h - (2*b^2*(f*g - e*h)*Sqrt[1 - c^2*x^2]*ArcSin
[c*x])/(c*h^2) + (b^2*f*x*Sqrt[1 - c^2*x^2]*ArcSin[c*x])/(2*c*h) - (b^2*f*A
rcSin[c*x]^2)/(4*c^2*h) - (I*a*b*(f*g^2 - e*g*h + d*h^2)*ArcSin[c*x]^2)/h^3
 - (b^2*(f*g - e*h)*x*ArcSin[c*x]^2)/h^2 + (b^2*f*x^2*ArcSin[c*x]^2)/(2*h)
- ((I/3)*b^2*(f*g^2 - e*g*h + d*h^2)*ArcSin[c*x]^3)/h^3 + (2*a*b*(f*g^2 - e
*g*h + d*h^2)*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g
^2 - h^2])])/h^3 + (b^2*(f*g^2 - e*g*h + d*h^2)*ArcSin[c*x]^2*Log[1 - (I*E^
(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])])/h^3 + (2*a*b*(f*g^2 - e*g*
h + d*h^2)*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2
- h^2])])/h^3 + (b^2*(f*g^2 - e*g*h + d*h^2)*ArcSin[c*x]^2*Log[1 - (I*E^(I*
ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])])/h^3 + (a^2*(f*g^2 - e*g*h + d
*h^2)*Log[g + h*x])/h^3 - ((2*I)*a*b*(f*g^2 - e*g*h + d*h^2)*PolyLog[2, (I*
E^(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])])/h^3 - ((2*I)*b^2*(f*g^2
- e*g*h + d*h^2)*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin[c*x])*h)/(c*g - Sqrt
[c^2*g^2 - h^2])])/h^3 - ((2*I)*a*b*(f*g^2 - e*g*h + d*h^2)*PolyLog[2, (I*E
^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])])/h^3 - ((2*I)*b^2*(f*g^2 -
 e*g*h + d*h^2)*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[
c^2*g^2 - h^2])])/h^3 + (2*b^2*(f*g^2 - e*g*h + d*h^2)*PolyLog[3, (I*E^(I*A
rcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])])/h^3 + (2*b^2*(f*g^2 - e*g*h +
d*h^2)*PolyLog[3, (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])])/h^3
```

Rule 4759

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(Px_)*((d_) + (e_.)*(x_))^(m_.)
, x_Symbol] :> Int[ExpandIntegrand[Px*(d + e*x)^m*(a + b*ArcSin[c*x])^n, x]
, x] /; FreeQ[{a, b, c, d, e}, x] && PolynomialQ[Px, x] && IGtQ[n, 0] && In
tegerQ[m]
```

Rule 698

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 4753

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
```

```
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && !Le
Q[p, -1]
```

Rule 216

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

Rule 2404

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
```

```
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4677

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

Rule 8

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

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4707

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

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 30

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

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(d+ex+fx^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{g+hx}\,dx = \int\left(\frac{a^2\left(d+ex+fx^2\right)}{g+hx} + \frac{2ab\left(d+ex+fx^2\right)\sin^{-1}(cx)}{g+hx} + \frac{b^2\left(d+ex+fx^2\right)\sin\right.$$

$$= a^2\int \frac{d+ex+fx^2}{g+hx}\,dx + (2ab)\int \frac{\left(d+ex+fx^2\right)\sin^{-1}(cx)}{g+hx}\,dx + b^2\int \frac{\left(d+ex\right.}{}$$

$$= -\frac{2ab(fg-eh)x\sin^{-1}(cx)}{h^2} + \frac{abfx^2\sin^{-1}(cx)}{h} + \frac{2ab\left(fg^2-egh+dh^2\right)\sin^{-1}(c}{h^3}$$

$$= -\frac{a^2(fg-eh)x}{h^2} + \frac{a^2fx^2}{2h} - \frac{2ab(fg-eh)x\sin^{-1}(cx)}{h^2} + \frac{abfx^2\sin^{-1}(cx)}{h} + \frac{a^2\left(\right.}{}$$

$$= -\frac{a^2(fg-eh)x}{h^2} + \frac{a^2fx^2}{2h} - \frac{2ab(fg-eh)x\sin^{-1}(cx)}{h^2} + \frac{abfx^2\sin^{-1}(cx)}{h} - \frac{b^2(f}{}$$

$$= -\frac{a^2(fg-eh)x}{h^2} + \frac{a^2fx^2}{2h} - \frac{2ab(fg-eh)x\sin^{-1}(cx)}{h^2} + \frac{abfx^2\sin^{-1}(cx)}{h} - \frac{2b^2(}{}$$

$$= -\frac{a^2(fg-eh)x}{h^2} + \frac{2b^2(fg-eh)x}{h^2} + \frac{a^2fx^2}{2h} - \frac{b^2fx^2}{4h} - \frac{ab(4(fg-eh)-fhx)\sqrt{1}}{2ch^2}$$

$$= -\frac{a^2(fg-eh)x}{h^2} + \frac{2b^2(fg-eh)x}{h^2} + \frac{a^2fx^2}{2h} - \frac{b^2fx^2}{4h} - \frac{ab(4(fg-eh)-fhx)\sqrt{1}}{2ch^2}$$

$$= -\frac{a^2(fg-eh)x}{h^2} + \frac{2b^2(fg-eh)x}{h^2} + \frac{a^2fx^2}{2h} - \frac{b^2fx^2}{4h} - \frac{ab(4(fg-eh)-fhx)\sqrt{1}}{2ch^2}$$

$$= -\frac{a^2(fg-eh)x}{h^2} + \frac{2b^2(fg-eh)x}{h^2} + \frac{a^2fx^2}{2h} - \frac{b^2fx^2}{4h} - \frac{ab(4(fg-eh)-fhx)\sqrt{1}}{2ch^2}$$

$$= -\frac{a^2(fg-eh)x}{h^2} + \frac{2b^2(fg-eh)x}{h^2} + \frac{a^2fx^2}{2h} - \frac{b^2fx^2}{4h} - \frac{ab(4(fg-eh)-fhx)\sqrt{1}}{2ch^2}$$

$$= -\frac{a^2(fg-eh)x}{h^2} + \frac{2b^2(fg-eh)x}{h^2} + \frac{a^2fx^2}{2h} - \frac{b^2fx^2}{4h} - \frac{ab(4(fg-eh)-fhx)\sqrt{1}}{2ch^2}$$

Mathematica [A] time = 0.677825, size = 556, normalized size = 0.52

$$-24b\left(h(dh-eg)+fg^2\right)\left(i\left(a+b\sin^{-1}(cx)\right)\text{PolyLog}\left(2,\frac{ihe^{i\sin^{-1}(cx)}}{cg-\sqrt{c^2g^2-h^2}}\right)-b\text{PolyLog}\left(3,\frac{ihe^{i\sin^{-1}(cx)}}{cg-\sqrt{c^2g^2-h^2}}\right)\right)-24b\left(h(dh-eg)+f\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d + e*x + f*x^2)*(a + b*ArcSin[c*x])^2)/(g + h*x),x]
```

```
[Out] (12*h*(-(f*g) + e*h)*x*(a + b*ArcSin[c*x])^2 + 6*f*h^2*x^2*(a + b*ArcSin[c*
x])^2 - ((4*I)*(f*g^2 + h*(-(e*g) + d*h))*(a + b*ArcSin[c*x])^3)/b + 24*b*h
*(f*g - e*h)*(b*x - (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c) - 3*b*f*h^2*
(b*x^2 - (2*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c + (a + b*ArcSin[c*x]
)^2/(b*c^2)) + 12*(f*g^2 + h*(-(e*g) + d*h))*(a + b*ArcSin[c*x])^2*Log[1 +
(I*E^(I*ArcSin[c*x])*h)/(-(c*g) + Sqrt[c^2*g^2 - h^2])] + 12*(f*g^2 + h*(-(
e*g) + d*h))*(a + b*ArcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*h)/(c*g + S
qrt[c^2*g^2 - h^2])] - 24*b*(f*g^2 + h*(-(e*g) + d*h))*(I*(a + b*ArcSin[c*x
])*PolyLog[2, (I*E^(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])] - b*Poly
Log[3, (I*E^(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])]) - 24*b*(f*g^2
+ h*(-(e*g) + d*h))*(I*(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])*
h)/(c*g + Sqrt[c^2*g^2 - h^2])] - b*PolyLog[3, (I*E^(I*ArcSin[c*x])*h)/(c*g
 + Sqrt[c^2*g^2 - h^2])]))/(12*h^3)
```

Maple [F] time = 2.546, size = 0, normalized size = 0.

$$\int \frac{\left(fx^2+ex+d\right)\left(a+b\arcsin(cx)\right)^2}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x^2+e*x+d)*(a+b*arcsin(c*x))^2/(h*x+g),x)
```

```
[Out] int((f*x^2+e*x+d)*(a+b*arcsin(c*x))^2/(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a^2e\left(\frac{x}{h}-\frac{g\log\left(hx+g\right)}{h^2}\right)+\frac{1}{2}a^2f\left(\frac{2g^2\log\left(hx+g\right)}{h^3}+\frac{hx^2-2gx}{h^2}\right)+\frac{a^2d\log\left(hx+g\right)}{h}+\int\frac{\left(b^2fx^2+b^2ex+b^2d\right)\arctan\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x^2+e*x+d)*(a+b*arcsin(c*x))^2/(h*x+g),x, algorithm="maxima")
```

```
[Out] a^2*e*(x/h - g*log(h*x + g)/h^2) + 1/2*a^2*f*(2*g^2*log(h*x + g)/h^3 + (h*x
^2 - 2*g*x)/h^2) + a^2*d*log(h*x + g)/h + integrate(((b^2*f*x^2 + b^2*e*x +
 b^2*d)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*f*x^2 + a*b*e
*x + a*b*d)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))/(h*x + g), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{a^2fx^2 + a^2ex + a^2d + \left(b^2fx^2 + b^2ex + b^2d\right)\arcsin\left(cx\right)^2 + 2\left(abfx^2 + abex + abd\right)\arcsin\left(cx\right)}{hx + g}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x^2+e*x+d)*(a+b*arcsin(c*x))^2/(h*x+g),x, algorithm="fricas")
```

```
[Out] integral((a^2*f*x^2 + a^2*e*x + a^2*d + (b^2*f*x^2 + b^2*e*x + b^2*d)*arcsi
n(c*x)^2 + 2*(a*b*f*x^2 + a*b*e*x + a*b*d)*arcsin(c*x))/(h*x + g), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a + b\,\mathrm{asin}\left(cx\right)\right)^2\left(d + ex + fx^2\right)}{g + hx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x**2+e*x+d)*(a+b*asin(c*x))**2/(h*x+g),x)
```

```
[Out] Integral((a + b*asin(c*x))**2*(d + e*x + f*x**2)/(g + h*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(fx^2 + ex + d\right)\left(b\arcsin\left(cx\right) + a\right)^2}{hx + g}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x^2+e*x+d)*(a+b*arcsin(c*x))^2/(h*x+g),x, algorithm="giac")
```

```
[Out] integrate((f*x^2 + e*x + d)*(b*arcsin(c*x) + a)^2/(h*x + g), x)
```

3.119 $\int \frac{(d+ex+fx^2)(a+b\sin^{-1}(cx))^2}{(g+hx)^2}\,dx$

Optimal. Leaf size=1323

result too large to display

```
[Out] (a^2*f*x)/h^2 - (2*b^2*f*x)/h^2 - (a^2*(f*g^2 - e*g*h + d*h^2))/(h^3*(g + h
*x)) + (2*a*b*f*Sqrt[1 - c^2*x^2])/(c*h^2) + (2*a*b*f*x*ArcSin[c*x])/h^2 -
(2*a*b*(f*g^2 - e*g*h + d*h^2)*ArcSin[c*x])/(h^3*(g + h*x)) + (2*b^2*f*Sqrt
[1 - c^2*x^2]*ArcSin[c*x])/(c*h^2) + (I*a*b*(2*f*g - e*h)*ArcSin[c*x]^2)/h^
3 + (b^2*f*x*ArcSin[c*x]^2)/h^2 - (b^2*(f*g^2 - e*g*h + d*h^2)*ArcSin[c*x]^
2)/(h^3*(g + h*x)) + ((I/3)*b^2*(2*f*g - e*h)*ArcSin[c*x]^3)/h^3 + (2*a*b*c
*(f*g^2 - e*g*h + d*h^2)*ArcTan[(h + c^2*g*x)/(Sqrt[c^2*g^2 - h^2]*Sqrt[1 -
 c^2*x^2])])/(h^3*Sqrt[c^2*g^2 - h^2]) - (2*a*b*(2*f*g - e*h)*ArcSin[c*x]*L
og[1 - (I*E^(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])])/h^3 - ((2*I)*b
^2*c*(f*g^2 - e*g*h + d*h^2)*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*h)/(c
*g - Sqrt[c^2*g^2 - h^2])])/(h^3*Sqrt[c^2*g^2 - h^2]) - (b^2*(2*f*g - e*h)*
ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])])
/h^3 - (2*a*b*(2*f*g - e*h)*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*h)/(c*
g + Sqrt[c^2*g^2 - h^2])])/h^3 + ((2*I)*b^2*c*(f*g^2 - e*g*h + d*h^2)*ArcSi
n[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])])/(h^3*S
qrt[c^2*g^2 - h^2]) - (b^2*(2*f*g - e*h)*ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcS
in[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])])/h^3 - (a^2*(2*f*g - e*h)*Log[g +
h*x])/h^3 + ((2*I)*a*b*(2*f*g - e*h)*PolyLog[2, (I*E^(I*ArcSin[c*x])*h)/(c*
g - Sqrt[c^2*g^2 - h^2])])/h^3 - (2*b^2*c*(f*g^2 - e*g*h + d*h^2)*PolyLog[2
, (I*E^(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])])/(h^3*Sqrt[c^2*g^2 -
 h^2]) + ((2*I)*b^2*(2*f*g - e*h)*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin[c*x
])*h)/(c*g - Sqrt[c^2*g^2 - h^2])])/h^3 + ((2*I)*a*b*(2*f*g - e*h)*PolyLog[
2, (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])])/h^3 + (2*b^2*c*(f*
g^2 - e*g*h + d*h^2)*PolyLog[2, (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2
 - h^2])])/(h^3*Sqrt[c^2*g^2 - h^2]) + ((2*I)*b^2*(2*f*g - e*h)*ArcSin[c*x]
*PolyLog[2, (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])])/h^3 - (2*
b^2*(2*f*g - e*h)*PolyLog[3, (I*E^(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 -
h^2])])/h^3 - (2*b^2*(2*f*g - e*h)*PolyLog[3, (I*E^(I*ArcSin[c*x])*h)/(c*g
+ Sqrt[c^2*g^2 - h^2])])/h^3
```

Rubi [A] time = 2.47346, antiderivative size = 1323, normalized size of antiderivative = 1., number of steps used = 45, number of rules used = 25, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.893, Rules used = {4759, 698, 4753, 12, 6742, 261, 725, 204, 216, 2404, 4741, 4519, 2190,

2279, 2391, 4619, 4677, 8, 4743, 4773, 3323, 2264, 2531, 2282, 6589}

$$\frac{ib^2(2fg-eh)\sin^{-1}(cx)^3}{3h^3}+\frac{iab(2fg-eh)\sin^{-1}(cx)^2}{h^3}+\frac{b^2fx\sin^{-1}(cx)^2}{h^2}-\frac{b^2(2fg-eh)\log\left(1-\frac{ie^{i\sin^{-1}(cx)}h}{cg-\sqrt{c^2g^2-h^2}}\right)\sin^{-1}(cx)^2}{h^3}-$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x + f*x^2)*(a + b*ArcSin[c*x])^2)/(g + h*x)^2,x]
```

```
[Out] (a^2*f*x)/h^2 - (2*b^2*f*x)/h^2 - (a^2*(f*g^2 - e*g*h + d*h^2))/(h^3*(g + h
*x)) + (2*a*b*f*Sqrt[1 - c^2*x^2])/(c*h^2) + (2*a*b*f*x*ArcSin[c*x])/h^2 -
(2*a*b*(f*g^2 - e*g*h + d*h^2)*ArcSin[c*x])/(h^3*(g + h*x)) + (2*b^2*f*Sqrt
[1 - c^2*x^2]*ArcSin[c*x])/(c*h^2) + (I*a*b*(2*f*g - e*h)*ArcSin[c*x]^2)/h^
3 + (b^2*f*x*ArcSin[c*x]^2)/h^2 - (b^2*(f*g^2 - e*g*h + d*h^2)*ArcSin[c*x]^
2)/(h^3*(g + h*x)) + ((I/3)*b^2*(2*f*g - e*h)*ArcSin[c*x]^3)/h^3 + (2*a*b*c
*(f*g^2 - e*g*h + d*h^2)*ArcTan[(h + c^2*g*x)/(Sqrt[c^2*g^2 - h^2]*Sqrt[1 -
 c^2*x^2])])/(h^3*Sqrt[c^2*g^2 - h^2]) - (2*a*b*(2*f*g - e*h)*ArcSin[c*x]*L
og[1 - (I*E^(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])])/h^3 - ((2*I)*b
^2*c*(f*g^2 - e*g*h + d*h^2)*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*h)/(c
*g - Sqrt[c^2*g^2 - h^2])])/(h^3*Sqrt[c^2*g^2 - h^2]) - (b^2*(2*f*g - e*h)*
ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])])
/h^3 - (2*a*b*(2*f*g - e*h)*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*h)/(c*
g + Sqrt[c^2*g^2 - h^2])])/h^3 + ((2*I)*b^2*c*(f*g^2 - e*g*h + d*h^2)*ArcSi
n[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])])/(h^3*S
qrt[c^2*g^2 - h^2]) - (b^2*(2*f*g - e*h)*ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcS
in[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])])/h^3 - (a^2*(2*f*g - e*h)*Log[g +
h*x])/h^3 + ((2*I)*a*b*(2*f*g - e*h)*PolyLog[2, (I*E^(I*ArcSin[c*x])*h)/(c*
g - Sqrt[c^2*g^2 - h^2])])/h^3 - (2*b^2*c*(f*g^2 - e*g*h + d*h^2)*PolyLog[2
, (I*E^(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])])/(h^3*Sqrt[c^2*g^2 -
 h^2]) + ((2*I)*b^2*(2*f*g - e*h)*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin[c*x
])*h)/(c*g - Sqrt[c^2*g^2 - h^2])])/h^3 + ((2*I)*a*b*(2*f*g - e*h)*PolyLog[
2, (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])])/h^3 + (2*b^2*c*(f*
g^2 - e*g*h + d*h^2)*PolyLog[2, (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2
 - h^2])])/(h^3*Sqrt[c^2*g^2 - h^2]) + ((2*I)*b^2*(2*f*g - e*h)*ArcSin[c*x]
*PolyLog[2, (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])])/h^3 - (2*
b^2*(2*f*g - e*h)*PolyLog[3, (I*E^(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 -
h^2])])/h^3 - (2*b^2*(2*f*g - e*h)*PolyLog[3, (I*E^(I*ArcSin[c*x])*h)/(c*g
+ Sqrt[c^2*g^2 - h^2])])/h^3
```

Rule 4759

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

```
tegerQ[m]
```

Rule 698

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 4753

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 261

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

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

Rule 216

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

Rule 2404

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4677

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

Rule 8

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

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(d+ex+fx^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(g+hx)^2}\,dx = \int\left(\frac{a^2\left(d+ex+fx^2\right)}{(g+hx)^2} + \frac{2ab\left(d+ex+fx^2\right)\sin^{-1}(cx)}{(g+hx)^2} + \frac{b^2\left(d+ex+fx^2\right)\sin\right.$$

$$= a^2\int \frac{d+ex+fx^2}{(g+hx)^2}\,dx + (2ab)\int \frac{\left(d+ex+fx^2\right)\sin^{-1}(cx)}{(g+hx)^2}\,dx + b^2\int \frac{\left(d+ex\right.}{}$$

$$= \frac{2abfx\sin^{-1}(cx)}{h^2} - \frac{2ab\left(fg^2-egh+dh^2\right)\sin^{-1}(cx)}{h^3(g+hx)} - \frac{2ab(2fg-eh)\sin^{-1}(cx}{h^3}$$

$$= \frac{a^2fx}{h^2} - \frac{a^2\left(fg^2-egh+dh^2\right)}{h^3(g+hx)} + \frac{2abfx\sin^{-1}(cx)}{h^2} - \frac{2ab\left(fg^2-egh+dh^2\right)\sin}{h^3(g+hx)}$$

$$= \frac{a^2fx}{h^2} - \frac{a^2\left(fg^2-egh+dh^2\right)}{h^3(g+hx)} + \frac{2abfx\sin^{-1}(cx)}{h^2} - \frac{2ab\left(fg^2-egh+dh^2\right)\sin}{h^3(g+hx)}$$

$$= \frac{a^2fx}{h^2} - \frac{a^2\left(fg^2-egh+dh^2\right)}{h^3(g+hx)} + \frac{2abfx\sin^{-1}(cx)}{h^2} - \frac{2ab\left(fg^2-egh+dh^2\right)\sin}{h^3(g+hx)}$$

$$= \frac{a^2fx}{h^2} - \frac{2b^2fx}{h^2} - \frac{a^2\left(fg^2-egh+dh^2\right)}{h^3(g+hx)} + \frac{2abf\sqrt{1-c^2x^2}}{ch^2} + \frac{2abfx\sin^{-1}(cx)}{h^2}$$

$$= \frac{a^2fx}{h^2} - \frac{2b^2fx}{h^2} - \frac{a^2\left(fg^2-egh+dh^2\right)}{h^3(g+hx)} + \frac{2abf\sqrt{1-c^2x^2}}{ch^2} + \frac{2abfx\sin^{-1}(cx)}{h^2}$$

$$= \frac{a^2fx}{h^2} - \frac{2b^2fx}{h^2} - \frac{a^2\left(fg^2-egh+dh^2\right)}{h^3(g+hx)} + \frac{2abf\sqrt{1-c^2x^2}}{ch^2} + \frac{2abfx\sin^{-1}(cx)}{h^2}$$

$$= \frac{a^2fx}{h^2} - \frac{2b^2fx}{h^2} - \frac{a^2\left(fg^2-egh+dh^2\right)}{h^3(g+hx)} + \frac{2abf\sqrt{1-c^2x^2}}{ch^2} + \frac{2abfx\sin^{-1}(cx)}{h^2}$$

$$= \frac{a^2fx}{h^2} - \frac{2b^2fx}{h^2} - \frac{a^2\left(fg^2-egh+dh^2\right)}{h^3(g+hx)} + \frac{2abf\sqrt{1-c^2x^2}}{ch^2} + \frac{2abfx\sin^{-1}(cx)}{h^2}$$

$$= \frac{a^2fx}{h^2} - \frac{2b^2fx}{h^2} - \frac{a^2\left(fg^2-egh+dh^2\right)}{h^3(g+hx)} + \frac{2abf\sqrt{1-c^2x^2}}{ch^2} + \frac{2abfx\sin^{-1}(cx)}{h^2}$$

Mathematica [A] time = 1.2666, size = 688, normalized size = 0.52

$$\frac{\frac{6bc\left(h(dh-eg)+fg^2\right)\left(-b\text{PolyLog}\left(2,\frac{ihe^{i\sin^{-1}(cx)}}{cg-\sqrt{c^2g^2-h^2}}\right)+b\text{PolyLog}\left(2,\frac{ihe^{i\sin^{-1}(cx)}}{\sqrt{c^2g^2-h^2}+cg}\right)-i\left(a+b\sin^{-1}(cx)\right)\left(\log\left(1+\frac{ihe^{i\sin^{-1}(cx)}}{\sqrt{c^2g^2-h^2}-cg}\right)-\log\left(1-\frac{ihe^{i\sin^{-1}(cx)}}{\sqrt{c^2g^2-h^2}+cg}\right)\right)\right)}{\sqrt{c^2g^2-h^2}}+6b(2fg-e}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d + e*x + f*x^2)*(a + b*ArcSin[c*x])^2)/(g + h*x)^2,x]
```

```
[Out] (3*f*h*x*(a + b*ArcSin[c*x])^2 - (3*(f*g^2 + h*(-(e*g) + d*h))*(a + b*ArcSi
n[c*x])^2)/(g + h*x) + (I*(2*f*g - e*h)*(a + b*ArcSin[c*x])^3)/b - 6*b*f*h*
(b*x - (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c) - 3*(2*f*g - e*h)*(a + b*
ArcSin[c*x])^2*Log[1 + (I*E^(I*ArcSin[c*x])*h)/(-(c*g) + Sqrt[c^2*g^2 - h^2
])] - 3*(2*f*g - e*h)*(a + b*ArcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*h)
/(c*g + Sqrt[c^2*g^2 - h^2])] + (6*b*c*(f*g^2 + h*(-(e*g) + d*h))*((-I)*(a
+ b*ArcSin[c*x])*(Log[1 + (I*E^(I*ArcSin[c*x])*h)/(-(c*g) + Sqrt[c^2*g^2 -
h^2])] - Log[1 - (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])]) - b*
PolyLog[2, (I*E^(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])] + b*PolyLog
[2, (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])]))/Sqrt[c^2*g^2 - h
^2] + 6*b*(2*f*g - e*h)*(I*(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*
x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])] - b*PolyLog[3, (I*E^(I*ArcSin[c*x])*h)/
(c*g - Sqrt[c^2*g^2 - h^2])]) + 6*b*(2*f*g - e*h)*(I*(a + b*ArcSin[c*x])*Po
lyLog[2, (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])] - b*PolyLog[3
, (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])]))/(3*h^3)
```

Maple [F] time = 3.88, size = 0, normalized size = 0.

$$\int \frac{\left(fx^2+ex+d\right)\left(a+b\arcsin\left(cx\right)\right)^2}{\left(hx+g\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x^2+e*x+d)*(a+b*arcsin(c*x))^2/(h*x+g)^2,x)
```

```
[Out] int((f*x^2+e*x+d)*(a+b*arcsin(c*x))^2/(h*x+g)^2,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x^2+e*x+d)*(a+b*arcsin(c*x))^2/(h*x+g)^2,x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{a^2fx^2 + a^2ex + a^2d + \left(b^2fx^2 + b^2ex + b^2d\right)\arcsin\left(cx\right)^2 + 2\left(abfx^2 + abex + abd\right)\arcsin\left(cx\right)}{h^2x^2 + 2\,ghx + g^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x^2+e*x+d)*(a+b*arcsin(c*x))^2/(h*x+g)^2,x, algorithm="fricas"
)
```

```
[Out] integral((a^2*f*x^2 + a^2*e*x + a^2*d + (b^2*f*x^2 + b^2*e*x + b^2*d)*arcsi
n(c*x)^2 + 2*(a*b*f*x^2 + a*b*e*x + a*b*d)*arcsin(c*x))/(h^2*x^2 + 2*g*h*x
+ g^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a + b\,\text{asin}\left(cx\right)\right)^2\left(d + ex + fx^2\right)}{\left(g + hx\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x**2+e*x+d)*(a+b*asin(c*x))**2/(h*x+g)**2,x)
```

```
[Out] Integral((a + b*asin(c*x))**2*(d + e*x + f*x**2)/(g + h*x)**2, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(fx^2 + ex + d\right)(b \arcsin(cx) + a)^2}{\left(hx + g\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x^2+e*x+d)*(a+b*arcsin(c*x))^2/(h*x+g)^2,x, algorithm="giac")
```

```
[Out] integrate((f*x^2 + e*x + d)*(b*arcsin(c*x) + a)^2/(h*x + g)^2, x)
```

3.120 $\int \frac{\left(ef+2dhx+ehx^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+ex)^2}\,dx$

Optimal. Leaf size=520

$$-\frac{2b^2c\left(e^2f-d^2h\right)\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^2\sqrt{c^2d^2-e^2}}+\frac{2b^2c\left(e^2f-d^2h\right)\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e^2\sqrt{c^2d^2-e^2}}+\frac{2abc\left(e^2f-d^2h\right)\tan^{-1}\left(\frac{}{\sqrt{1-}}\right.}{e^2\sqrt{c^2d^2-e^2}}$$

```
[Out] (-2*b^2*h*x)/e + (2*a*b*h*Sqrt[1 - c^2*x^2])/(c*e) + (2*b^2*h*Sqrt[1 - c^2*
x^2]*ArcSin[c*x])/(c*e) + (h*x*(a + b*ArcSin[c*x])^2)/e - ((f - (d^2*h)/e^2
)*(a + b*ArcSin[c*x])^2)/(d + e*x) + (2*a*b*c*(e^2*f - d^2*h)*ArcTan[(e + c
^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(e^2*Sqrt[c^2*d^2 - e^2])
 - ((2*I)*b^2*c*(e^2*f - d^2*h)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))
/(c*d - Sqrt[c^2*d^2 - e^2])])/(e^2*Sqrt[c^2*d^2 - e^2]) + ((2*I)*b^2*c*(e^
2*f - d^2*h)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^
2 - e^2])])/(e^2*Sqrt[c^2*d^2 - e^2]) - (2*b^2*c*(e^2*f - d^2*h)*PolyLog[2,
 (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/(e^2*Sqrt[c^2*d^2 -
e^2]) + (2*b^2*c*(e^2*f - d^2*h)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d +
Sqrt[c^2*d^2 - e^2])])/(e^2*Sqrt[c^2*d^2 - e^2])
```

Rubi [A] time = 1.64463, antiderivative size = 520, normalized size of antiderivative = 1., number of steps used = 20, number of rules used = 18, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.546, Rules used = {683, 4757, 6742, 261, 725, 204, 4799, 1654, 12, 4797, 4677, 8, 4773, 3323, 2264, 2190, 2279, 2391}

$$-\frac{2b^2c\left(e^2f-d^2h\right)\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^2\sqrt{c^2d^2-e^2}}+\frac{2b^2c\left(e^2f-d^2h\right)\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e^2\sqrt{c^2d^2-e^2}}+\frac{2abc\left(e^2f-d^2h\right)\tan^{-1}\left(\frac{}{\sqrt{1-}}\right.}{e^2\sqrt{c^2d^2-e^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((e*f + 2*d*h*x + e*h*x^2)*(a + b*ArcSin[c*x])^2)/(d + e*x)^2,x]
```

```
[Out] (-2*b^2*h*x)/e + (2*a*b*h*Sqrt[1 - c^2*x^2])/(c*e) + (2*b^2*h*Sqrt[1 - c^2*
x^2]*ArcSin[c*x])/(c*e) + (h*x*(a + b*ArcSin[c*x])^2)/e - ((f - (d^2*h)/e^2
)*(a + b*ArcSin[c*x])^2)/(d + e*x) + (2*a*b*c*(e^2*f - d^2*h)*ArcTan[(e + c
^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(e^2*Sqrt[c^2*d^2 - e^2])
 - ((2*I)*b^2*c*(e^2*f - d^2*h)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))
/(c*d - Sqrt[c^2*d^2 - e^2])])/(e^2*Sqrt[c^2*d^2 - e^2]) + ((2*I)*b^2*c*(e^
2*f - d^2*h)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^
```

```
2 - e^2])])/(e^2*Sqrt[c^2*d^2 - e^2]) - (2*b^2*c*(e^2*f - d^2*h)*PolyLog[2,
 (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/(e^2*Sqrt[c^2*d^2 -
e^2]) + (2*b^2*c*(e^2*f - d^2*h)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d +
Sqrt[c^2*d^2 - e^2])])/(e^2*Sqrt[c^2*d^2 - e^2])
```

Rule 683

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[2*c*d - b*e, 0] &
& IGtQ[p, 0] &&  !(EqQ[m, 3] && NeQ[p, 1])
```

Rule 4757

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.) + (g_.)*(x_) + (h_.)*(x
_)^2)^(p_.))/((d_) + (e_.)*(x_))^2, x_Symbol] :> With[{u = IntHide[(f + g*x
 + h*x^2)^p/(d + e*x)^2, x]}, Dist[(a + b*ArcSin[c*x])^n, u, x] - Dist[b*c*
n, Int[SimplifyIntegrand[(u*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2],
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, h}, x] && IGtQ[n, 0] && IGtQ[p,
 0] && EqQ[e*g - 2*d*h, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 261

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

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

Rule 4799

```
Int[(ArcSin[(c_.)*(x_)]*(b_.) + (a_))^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p
_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p, RFx*(a + b*ArcSin[c*x])
^n, x], x] /; FreeQ[{a, b, c, d, e}, x] && RationalFunctionQ[RFx, x] && IGt
Q[n, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 1654

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :
> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[(f*(d + e*x
)^(m + q - 1)*(a + c*x^2)^(p + 1))/(c*e^(q - 1)*(m + q + 2*p + 1)), x] + Di
st[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + c*x^2)^p*ExpandToSum[c
*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1)*(d + e*x)^q - f*(d + e*x)
^(q - 2)*(a*e^2*(m + q - 1) - c*d^2*(m + q + 2*p + 1) - 2*c*d*e*(m + q + p)
*x), x], x], x] /; GtQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, c, d,
 e, m, p}, x] && PolyQ[Pq, x] && NeQ[c*d^2 + a*e^2, 0] &&  !(EqQ[d, 0] && T
rue) &&  !(IGtQ[m, 0] && RationalQ[a, c, d, e] && (IntegerQ[p] || ILtQ[p +
1/2, 0]))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4797

```
Int[ArcSin[(c_.)*(x_)]^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p_), x_Symbol] :
> With[{u = ExpandIntegrand[(d + e*x^2)^p*ArcSin[c*x]^n, RFx, x]}, Int[u, x
] /; SumQ[u]] /; FreeQ[{c, d, e}, x] && RationalFunctionQ[RFx, x] && IGtQ[n
, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 4677

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

Rule 8

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

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rubi steps

$$\int \frac{\left(ef+2dhx+ehx^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+ex)^2}\,dx = \frac{hx\left(a+b\sin^{-1}(cx)\right)^2}{e} - \frac{\left(f-\frac{d^2h}{e^2}\right)\left(a+b\sin^{-1}(cx)\right)^2}{d+ex} - (2bc)\int \frac{\left(\frac{hx}{e} - \frac{f-\cdots}{d+\cdots}\right.}{\cdots}$$

$$= \frac{hx\left(a+b\sin^{-1}(cx)\right)^2}{e} - \frac{\left(f-\frac{d^2h}{e^2}\right)\left(a+b\sin^{-1}(cx)\right)^2}{d+ex} - (2bc)\int\left(\frac{a\left(-e^2f\cdots\right.}{e^2(\cdots}\right.$$

$$= \frac{hx\left(a+b\sin^{-1}(cx)\right)^2}{e} - \frac{\left(f-\frac{d^2h}{e^2}\right)\left(a+b\sin^{-1}(cx)\right)^2}{d+ex} - \frac{(2abc)\int \frac{-e^2f+d^2h+\cdots}{(d+ex)\cdots}}{e^2}$$

$$= \frac{2abh\sqrt{1-c^2x^2}}{ce} + \frac{hx\left(a+b\sin^{-1}(cx)\right)^2}{e} - \frac{\left(f-\frac{d^2h}{e^2}\right)\left(a+b\sin^{-1}(cx)\right)^2}{d+ex} + \cdots$$

$$= \frac{2abh\sqrt{1-c^2x^2}}{ce} + \frac{hx\left(a+b\sin^{-1}(cx)\right)^2}{e} - \frac{\left(f-\frac{d^2h}{e^2}\right)\left(a+b\sin^{-1}(cx)\right)^2}{d+ex} - \cdots$$

$$= \frac{2abh\sqrt{1-c^2x^2}}{ce} + \frac{2b^2h\sqrt{1-c^2x^2}\sin^{-1}(cx)}{ce} + \frac{hx\left(a+b\sin^{-1}(cx)\right)^2}{e} - \frac{\left(f\cdots\right.}{\cdots}$$

$$= -\frac{2b^2hx}{e} + \frac{2abh\sqrt{1-c^2x^2}}{ce} + \frac{2b^2h\sqrt{1-c^2x^2}\sin^{-1}(cx)}{ce} + \frac{hx\left(a+b\sin^{-1}(\cdots\right.}{e}$$

$$= -\frac{2b^2hx}{e} + \frac{2abh\sqrt{1-c^2x^2}}{ce} + \frac{2b^2h\sqrt{1-c^2x^2}\sin^{-1}(cx)}{ce} + \frac{hx\left(a+b\sin^{-1}(\cdots\right.}{e}$$

$$= -\frac{2b^2hx}{e} + \frac{2abh\sqrt{1-c^2x^2}}{ce} + \frac{2b^2h\sqrt{1-c^2x^2}\sin^{-1}(cx)}{ce} + \frac{hx\left(a+b\sin^{-1}(\cdots\right.}{e}$$

$$= -\frac{2b^2hx}{e} + \frac{2abh\sqrt{1-c^2x^2}}{ce} + \frac{2b^2h\sqrt{1-c^2x^2}\sin^{-1}(cx)}{ce} + \frac{hx\left(a+b\sin^{-1}(\cdots\right.}{e}$$

$$= -\frac{2b^2hx}{e} + \frac{2abh\sqrt{1-c^2x^2}}{ce} + \frac{2b^2h\sqrt{1-c^2x^2}\sin^{-1}(cx)}{ce} + \frac{hx\left(a+b\sin^{-1}(\cdots\right.}{e}$$

Mathematica [A] time = 0.470451, size = 307, normalized size = 0.59

$$\frac{2bc\left(e^2f-d^2h\right)\left(-b\,\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)+b\,\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)-i\left(a+b\sin^{-1}(cx)\right)\left(\log\left(1+\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}-cd}\right)-\cdots\right.\right.}{e^2\sqrt{c^2d^2-e^2}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e*f + 2*d*h*x + e*h*x^2)*(a + b*ArcSin[c*x])^2)/(d + e*x)^2,x]
```

```
[Out] (h*x*(a + b*ArcSin[c*x])^2)/e - ((f - (d^2*h)/e^2)*(a + b*ArcSin[c*x])^2)/(
d + e*x) - (2*b*h*(b*x - (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c))/e + (2
*b*c*(e^2*f - d^2*h)*((-I)*(a + b*ArcSin[c*x])*(Log[1 + (I*e*E^(I*ArcSin[c*
x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] - Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d
 + Sqrt[c^2*d^2 - e^2])]) - b*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqr
t[c^2*d^2 - e^2])] + b*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d
^2 - e^2])]))/(e^2*Sqrt[c^2*d^2 - e^2])
```

Maple [B] time = 0.932, size = 1405, normalized size = 2.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*h*x^2+2*d*h*x+e*f)*(a+b*arcsin(c*x))^2/(e*x+d)^2,x)
```

```
[Out] a^2*h/e*x+c*a^2/e^2/(c*e*x+c*d)*d^2*h-c*a^2/(c*e*x+c*d)*f+2*b^2*h*arcsin(c*
x)*(-c^2*x^2+1)^(1/2)/c/e+b^2*h/e*arcsin(c*x)^2*x-2*b^2*h*x/e+c*b^2*arcsin(
c*x)^2/e^2/(c*e*x+c*d)*d^2*h-c*b^2*arcsin(c*x)^2/(c*e*x+c*d)*f-2*c*b^2*(-c^
2*d^2+e^2)^(1/2)/e^2/(c^2*d^2-e^2)*arcsin(c*x)*ln((I*d*c+(I*c*x+(-c^2*x^2+1
)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*d^2*h+2*c*b^
2*(-c^2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)*arcsin(c*x)*ln((I*d*c+(I*c*x+(-c^2*x^2
+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*f+2*c*b^2*
(-c^2*d^2+e^2)^(1/2)/e^2/(c^2*d^2-e^2)*arcsin(c*x)*ln((I*d*c+(I*c*x+(-c^2*x
^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*d^2*h-2*
c*b^2*(-c^2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)*arcsin(c*x)*ln((I*d*c+(I*c*x+(-c^2
*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*f+2*I*
c*b^2*(-c^2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(
1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*f-2*I*c*b^2*(-c
^2*d^2+e^2)^(1/2)/e^2/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))
*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*h*d^2-2*I*c*b^2*(-c^
2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-
c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*f+2*I*c*b^2*(-c^2*d^2+e^2
)^(1/2)/e^2/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d
^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*h*d^2+2*a*b*arcsin(c*x)*h/e*x+
2*c*a*b*arcsin(c*x)/e^2/(c*e*x+c*d)*d^2*h-2*c*a*b*arcsin(c*x)/(c*e*x+c*d)*f
+2*a*b*h*(-c^2*x^2+1)^(1/2)/c/e+2*c*a*b/e^3/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((
-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*
```

```
x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*d^2*h
-2*c*a*b/e/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x
+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c
^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*f
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{a^2ehx^2 + 2\,a^2dhx + a^2ef + \left(b^2ehx^2 + 2\,b^2dhx + b^2ef\right)\arcsin\left(cx\right)^2 + 2\left(abehx^2 + 2\,abdhx + abef\right)\arcsin\left(cx\right)}{e^2x^2 + 2\,dex + d^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral((a^2*e*h*x^2 + 2*a^2*d*h*x + a^2*e*f + (b^2*e*h*x^2 + 2*b^2*d*h*x
+ b^2*e*f)*arcsin(c*x)^2 + 2*(a*b*e*h*x^2 + 2*a*b*d*h*x + a*b*e*f)*arcsin(c
*x))/(e^2*x^2 + 2*d*e*x + d^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a + b\,\text{asin}\left(cx\right)\right)^2\left(2dhx + ef + ehx^2\right)}{\left(d + ex\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*h*x**2+2*d*h*x+e*f)*(a+b*asin(c*x))**2/(e*x+d)**2,x)
```

```
[Out] Integral((a + b*asin(c*x))**2*(2*d*h*x + e*f + e*h*x**2)/(d + e*x)**2, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(ehx^2 + 2\,dhx + ef\right)(b\arcsin\left(cx\right) + a)^2}{(ex + d)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((e*h*x^2 + 2*d*h*x + e*f)*(b*arcsin(c*x) + a)^2/(e*x + d)^2, x)
```

3.121 $\int \frac{\left(ef+2dhx+ehx^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{(d+ex)^2}\,dx$

Optimal. Leaf size=920

$$-\frac{b^2h^2\sin^{-1}(cx)^2d^3}{3e^3}-\frac{b^2h^2x^2d}{2e}-\frac{b^2h^2\sin^{-1}(cx)^2d}{2c^2e}-\frac{ab\left(2c^2d^2+3e^2\right)h^2\sin^{-1}(cx)d}{3c^2e^3}+\frac{b^2h^2x\sqrt{1-c^2x^2}\sin^{-1}(cx)d}{ce}+\frac{5ab}{}$$

```
[Out] (-4*b^2*h^2*x)/(9*c^2) - (2*b^2*h*(2*e^2*f - d^2*h)*x)/e^2 - (b^2*d*h^2*x^2
)/(2*e) - (2*b^2*h^2*x^3)/27 + (a*b*h*(4*e^2*h + c^2*(36*e^2*f - 25*d^2*h))
*Sqrt[1 - c^2*x^2])/(9*c^3*e^2) + (5*a*b*d*h^2*(d + e*x)*Sqrt[1 - c^2*x^2])
/(9*c*e^2) + (2*a*b*h^2*(d + e*x)^2*Sqrt[1 - c^2*x^2])/(9*c*e^2) - (a*b*d*(
2*c^2*d^2 + 3*e^2)*h^2*ArcSin[c*x])/(3*c^2*e^3) + (4*b^2*h^2*Sqrt[1 - c^2*x
^2]*ArcSin[c*x])/(9*c^3) + (2*b^2*h*(2*e^2*f - d^2*h)*Sqrt[1 - c^2*x^2]*Arc
Sin[c*x])/(c*e^2) + (b^2*d*h^2*x*Sqrt[1 - c^2*x^2]*ArcSin[c*x])/(c*e) + (2*
b^2*h^2*x^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x])/(9*c) - (b^2*d^3*h^2*ArcSin[c*x]
^2)/(3*e^3) - (b^2*d*h^2*ArcSin[c*x]^2)/(2*c^2*e) + (2*h*(e^2*f - d^2*h)*x*
(a + b*ArcSin[c*x])^2)/e^2 - ((e^2*f - d^2*h)^2*(a + b*ArcSin[c*x])^2)/(e^3
*(d + e*x)) + (h^2*(d + e*x)^3*(a + b*ArcSin[c*x])^2)/(3*e^3) + (2*a*b*c*(e
^2*f - d^2*h)^2*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2]
)])/(e^3*Sqrt[c^2*d^2 - e^2]) - ((2*I)*b^2*c*(e^2*f - d^2*h)^2*ArcSin[c*x]*
Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/(e^3*Sqrt[c^2
*d^2 - e^2]) + ((2*I)*b^2*c*(e^2*f - d^2*h)^2*ArcSin[c*x]*Log[1 - (I*e*E^(I
*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/(e^3*Sqrt[c^2*d^2 - e^2]) - (2
*b^2*c*(e^2*f - d^2*h)^2*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2
*d^2 - e^2])])/(e^3*Sqrt[c^2*d^2 - e^2]) + (2*b^2*c*(e^2*f - d^2*h)^2*PolyL
og[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/(e^3*Sqrt[c^2*d
^2 - e^2])
```

Rubi [A] time = 4.24394, antiderivative size = 920, normalized size of antiderivative = 1., number of steps used = 32, number of rules used = 25, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.714, Rules used = {683, 4757, 12, 6742, 261, 725, 204, 743, 780, 216, 4799, 1654, 844, 4797, 4641, 4677, 8, 4707, 30, 4773, 3323, 2264, 2190, 2279, 2391}

$$-\frac{b^2h^2\sin^{-1}(cx)^2d^3}{3e^3}-\frac{b^2h^2x^2d}{2e}-\frac{b^2h^2\sin^{-1}(cx)^2d}{2c^2e}-\frac{ab\left(2c^2d^2+3e^2\right)h^2\sin^{-1}(cx)d}{3c^2e^3}+\frac{b^2h^2x\sqrt{1-c^2x^2}\sin^{-1}(cx)d}{ce}+\frac{5ab}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e*f + 2*d*h*x + e*h*x^2)^2*(a + b*ArcSin[c*x])^2)/(d + e*x)^2,x]
```

```
[Out] (-4*b^2*h^2*x)/(9*c^2) - (2*b^2*h*(2*e^2*f - d^2*h)*x)/e^2 - (b^2*d*h^2*x^2
)/(2*e) - (2*b^2*h^2*x^3)/27 + (a*b*h*(4*e^2*h + c^2*(36*e^2*f - 25*d^2*h))
*Sqrt[1 - c^2*x^2])/(9*c^3*e^2) + (5*a*b*d*h^2*(d + e*x)*Sqrt[1 - c^2*x^2])
/(9*c*e^2) + (2*a*b*h^2*(d + e*x)^2*Sqrt[1 - c^2*x^2])/(9*c*e^2) - (a*b*d*(
2*c^2*d^2 + 3*e^2)*h^2*ArcSin[c*x])/(3*c^2*e^3) + (4*b^2*h^2*Sqrt[1 - c^2*x
^2]*ArcSin[c*x])/(9*c^3) + (2*b^2*h*(2*e^2*f - d^2*h)*Sqrt[1 - c^2*x^2]*Arc
Sin[c*x])/(c*e^2) + (b^2*d*h^2*x*Sqrt[1 - c^2*x^2]*ArcSin[c*x])/(c*e) + (2*
b^2*h^2*x^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x])/(9*c) - (b^2*d^3*h^2*ArcSin[c*x]
^2)/(3*e^3) - (b^2*d*h^2*ArcSin[c*x]^2)/(2*c^2*e) + (2*h*(e^2*f - d^2*h)*x*
(a + b*ArcSin[c*x])^2)/e^2 - ((e^2*f - d^2*h)^2*(a + b*ArcSin[c*x])^2)/(e^3
*(d + e*x)) + (h^2*(d + e*x)^3*(a + b*ArcSin[c*x])^2)/(3*e^3) + (2*a*b*c*(e
^2*f - d^2*h)^2*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2]
)])/(e^3*Sqrt[c^2*d^2 - e^2]) - ((2*I)*b^2*c*(e^2*f - d^2*h)^2*ArcSin[c*x]*
Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/(e^3*Sqrt[c^2
*d^2 - e^2]) + ((2*I)*b^2*c*(e^2*f - d^2*h)^2*ArcSin[c*x]*Log[1 - (I*e*E^(I
*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/(e^3*Sqrt[c^2*d^2 - e^2]) - (2
*b^2*c*(e^2*f - d^2*h)^2*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2
*d^2 - e^2])])/(e^3*Sqrt[c^2*d^2 - e^2]) + (2*b^2*c*(e^2*f - d^2*h)^2*PolyL
og[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/(e^3*Sqrt[c^2*d
^2 - e^2])
```

Rule 683

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[2*c*d - b*e, 0] &
& IGtQ[p, 0] &&  !(EqQ[m, 3] && NeQ[p, 1])
```

Rule 4757

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.) + (g_.)*(x_) + (h_.)*(x
_)^2)^(p_.))/((d_) + (e_.)*(x_))^2, x_Symbol] :> With[{u = IntHide[(f + g*x
 + h*x^2)^p/(d + e*x)^2, x]}, Dist[(a + b*ArcSin[c*x])^n, u, x] - Dist[b*c*
n, Int[SimplifyIntegrand[(u*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2],
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, h}, x] && IGtQ[n, 0] && IGtQ[p,
 0] && EqQ[e*g - 2*d*h, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
```

```
]
```

Rule 261

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

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 204

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

Rule 743

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^(m - 1)*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 1)), x] + Dist[1/(c
*(m + 2*p + 1)), Int[(d + e*x)^(m - 2)*Simp[c*d^2*(m + 2*p + 1) - a*e^2*(m
- 1) + 2*c*d*e*(m + p)*x, x]*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, m,
 p}, x] && NeQ[c*d^2 + a*e^2, 0] && If[RationalQ[m], GtQ[m, 1], SumSimplerQ
[m, -2]] && NeQ[m + 2*p + 1, 0] && IntQuadraticQ[a, 0, c, d, e, m, p, x]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 216

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

Rule 4799

```
Int[(ArcSin[(c_.)*(x_)]*(b_.) + (a_))^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p
_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p, RFx*(a + b*ArcSin[c*x])
^n, x], x] /; FreeQ[{a, b, c, d, e}, x] && RationalFunctionQ[RFx, x] && IGt
Q[n, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 1654

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :
> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[(f*(d + e*x
)^(m + q - 1)*(a + c*x^2)^(p + 1))/(c*e^(q - 1)*(m + q + 2*p + 1)), x] + Di
st[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + c*x^2)^p*ExpandToSum[c
*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1)*(d + e*x)^q - f*(d + e*x)
^(q - 2)*(a*e^2*(m + q - 1) - c*d^2*(m + q + 2*p + 1) - 2*c*d*e*(m + q + p)
*x), x], x], x] /; GtQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, c, d,
 e, m, p}, x] && PolyQ[Pq, x] && NeQ[c*d^2 + a*e^2, 0] &&  !(EqQ[d, 0] && T
rue) &&  !(IGtQ[m, 0] && RationalQ[a, c, d, e] && (IntegerQ[p] || ILtQ[p +
1/2, 0]))
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rule 4797

```
Int[ArcSin[(c_.)*(x_)]^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p_), x_Symbol] :
> With[{u = ExpandIntegrand[(d + e*x^2)^p*ArcSin[c*x]^n, RFx, x]}, Int[u, x
] /; SumQ[u]] /; FreeQ[{c, d, e}, x] && RationalFunctionQ[RFx, x] && IGtQ[n
, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4677

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

```
, 0] && NeQ[p, -1]
```

Rule 8

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

Rule 4707

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

Rule 30

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

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rubi steps

$$\int \frac{\left(ef+2dhx+ehx^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{(d+ex)^2}\,dx = \frac{2h\left(e^2f-d^2h\right)x\left(a+b\sin^{-1}(cx)\right)^2}{e^2} - \frac{\left(e^2f-d^2h\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{e^3(d+ex)} +$$

$$= \frac{2h\left(e^2f-d^2h\right)x\left(a+b\sin^{-1}(cx)\right)^2}{e^2} - \frac{\left(e^2f-d^2h\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{e^3(d+ex)} +$$

$$= \frac{2h\left(e^2f-d^2h\right)x\left(a+b\sin^{-1}(cx)\right)^2}{e^2} - \frac{\left(e^2f-d^2h\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{e^3(d+ex)} +$$

$$= \frac{2h\left(e^2f-d^2h\right)x\left(a+b\sin^{-1}(cx)\right)^2}{e^2} - \frac{\left(e^2f-d^2h\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{e^3(d+ex)} +$$

$$= \frac{2abh^2(d+ex)^2\sqrt{1-c^2x^2}}{9ce^2} + \frac{2h\left(e^2f-d^2h\right)x\left(a+b\sin^{-1}(cx)\right)^2}{e^2} - \frac{\left(e^2f\right.}{}$$

$$= \frac{5abdh^2(d+ex)\sqrt{1-c^2x^2}}{9ce^2} + \frac{2abh^2(d+ex)^2\sqrt{1-c^2x^2}}{9ce^2} + \frac{2h\left(e^2f-d^2h\right)}{}$$

$$= \frac{abh\left(4e^2h+c^2\left(36e^2f-25d^2h\right)\right)\sqrt{1-c^2x^2}}{9c^3e^2} + \frac{5abdh^2(d+ex)\sqrt{1-c^2x^2}}{9ce^2}$$

$$= -\frac{2b^2h\left(2e^2f-d^2h\right)x}{e^2} - \frac{b^2dh^2x^2}{2e} - \frac{2}{27}b^2h^2x^3 + \frac{abh\left(4e^2h+c^2\left(36e^2f-\right.\right.}{9c^3e^2}$$

$$= -\frac{4b^2h^2x}{9c^2} - \frac{2b^2h\left(2e^2f-d^2h\right)x}{e^2} - \frac{b^2dh^2x^2}{2e} - \frac{2}{27}b^2h^2x^3 + \frac{abh\left(4e^2h+c\right.}{}$$

$$= -\frac{4b^2h^2x}{9c^2} - \frac{2b^2h\left(2e^2f-d^2h\right)x}{e^2} - \frac{b^2dh^2x^2}{2e} - \frac{2}{27}b^2h^2x^3 + \frac{abh\left(4e^2h+c\right.}{}$$

$$= -\frac{4b^2h^2x}{9c^2} - \frac{2b^2h\left(2e^2f-d^2h\right)x}{e^2} - \frac{b^2dh^2x^2}{2e} - \frac{2}{27}b^2h^2x^3 + \frac{abh\left(4e^2h+c\right.}{}$$

$$= -\frac{4b^2h^2x}{9c^2} - \frac{2b^2h\left(2e^2f-d^2h\right)x}{e^2} - \frac{b^2dh^2x^2}{2e} - \frac{2}{27}b^2h^2x^3 + \frac{abh\left(4e^2h+c\right.}{}$$

Mathematica [A] time = 0.828811, size = 526, normalized size = 0.57

$$\frac{2bc\left(e^2f-d^2h\right)^2\left(-b\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)+b\text{PolyLog}\left(2,\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)-i\left(a+b\sin^{-1}(cx)\right)\left(\log\left(1+\frac{iee^{i\sin^{-1}(cx)}}{\sqrt{c^2d^2-e^2}-cd}\right)-\text{lo}\right.\right.}{e^3\sqrt{c^2d^2-e^2}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e*f + 2*d*h*x + e*h*x^2)^2*(a + b*ArcSin[c*x])^2)/(d + e*x)^2,x
]
```

```
[Out] (h*(2*e^2*f - d^2*h)*x*(a + b*ArcSin[c*x])^2)/e^2 + (d*h^2*x^2*(a + b*ArcSi
n[c*x])^2)/e + (h^2*x^3*(a + b*ArcSin[c*x])^2)/3 - ((e^2*f - d^2*h)^2*(a +
b*ArcSin[c*x])^2)/(e^3*(d + e*x)) - (2*b*h^2*(-3*a*Sqrt[1 - c^2*x^2]*(2 + c
^2*x^2) + b*c*x*(6 + c^2*x^2) - 3*b*Sqrt[1 - c^2*x^2]*(2 + c^2*x^2)*ArcSin[
c*x]))/(27*c^3) - (2*b*h*(2*e^2*f - d^2*h)*(b*x - (Sqrt[1 - c^2*x^2]*(a + b
*ArcSin[c*x]))/c))/e^2 - (b*d*h^2*(b*x^2 - (2*x*Sqrt[1 - c^2*x^2]*(a + b*Ar
cSin[c*x]))/c + (a + b*ArcSin[c*x])^2/(b*c^2)))/(2*e) + (2*b*c*(e^2*f - d^2
*h)^2*((-I)*(a + b*ArcSin[c*x])*(Log[1 + (I*e*E^(I*ArcSin[c*x]))/(-(c*d) +
Sqrt[c^2*d^2 - e^2])] - Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2
 - e^2])]) - b*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2
])] + b*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]))/(
e^3*Sqrt[c^2*d^2 - e^2])
```

Maple [B] time = 0.903, size = 2594, normalized size = 2.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*h*x^2+2*d*h*x+e*f)^2*(a+b*arcsin(c*x))^2/(e*x+d)^2,x)
```

```
[Out] -2*c*a*b/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d
*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2
*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*f^2-c*b^2*arcsin(c*x)^2*e/(c*e*x+c*d)*f^
2-b^2*h^2/e^2*arcsin(c*x)^2*x*d^2+b^2*d/e*h^2*arcsin(c*x)^2*x^2+4*a*b*arcsi
n(c*x)*h*f*x+4/c*a*b*f*h*(-c^2*x^2+1)^(1/2)+4/c*b^2*h*arcsin(c*x)*(-c^2*x^2
+1)^(1/2)*f+2/9/c*a*b*h^2*x^2*(-c^2*x^2+1)^(1/2)-c*a^2/e^3/(c*e*x+c*d)*d^4*
h^2+1/3*a^2*h^2*x^3+4/9*b^2*h^2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)/c^3-2*c*b^2*
(-c^2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)*e*arcsin(c*x)*ln((I*d*c+(I*c*x+(-c^2*x^2
+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*f^2-2*c*a*
```

b*arcsin(c*x)/e^3/(c*e*x+c*d)*d^4*h^2+1/c*a*b/e*d*h^2*(-c^2*x^2+1)^(1/2)*x-2*c*a*b/e^4/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*d^4*h^2+2*c*b^2*arcsin(c*x)^2/e/(c*e*x+c*d)*d^2*f*h+2/9*b^2*h^2*x^2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)/c-2/27*b^2*h^2*x^3-4/9*b^2*h^2*x/c^2-c*a^2*e/(c*e*x+c*d)*f^2-1/2*b^2*d*h^2*x^2/e-1/2*b^2*d*h^2*arcsin(c*x)^2/c^2/e-4*b^2*h*f*x+1/4/c^2*b^2*d/e*h^2+2/3*a*b*arcsin(c*x)*x^3*h^2+2*b^2*h*arcsin(c*x)^2*x*f+4/9/c^3*a*b*h^2*(-c^2*x^2+1)^(1/2)+a^2*h^2/e*d*x^2-a^2*h^2/e^2*d^2*x+2*b^2*h^2/e^2*d^2*x-2*a*b*arcsin(c*x)*h^2/e^2*d^2*x+2*a*b*arcsin(c*x)/e*d*h^2*x^2-c*b^2*arcsin(c*x)^2/e^3/(c*e*x+c*d)*d^4*h^2-2/c*b^2*h^2/e^2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*d^2-2/c*a*b/e^2*d^2*h^2*(-c^2*x^2+1)^(1/2)-1/c^2*a*b/e*d*h^2*arcsin(c*x)-2*c*a*b*arcsin(c*x)*e/(c*e*x+c*d)*f^2+2*c*a^2/e/(c*e*x+c*d)*d^2*f*h+2*a^2*h*f*x+1/3*b^2*arcsin(c*x)^2*x^3*h^2+b^2*d*h^2*x*arcsin(c*x)*(-c^2*x^2+1)^(1/2)/c/e+4*c*a*b*arcsin(c*x)/e/(c*e*x+c*d)*d^2*f*h-2*c*b^2*(-c^2*d^2+e^2)^(1/2)/e^3/(c^2*d^2-e^2)*arcsin(c*x)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*d^4*h^2+2*c*b^2*(-c^2*d^2+e^2)^(1/2)/e^3/(c^2*d^2-e^2)*arcsin(c*x)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*d^4*h^2+4*c*a*b/e^2/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*d^2*f*h+2*I*c*b^2*(-c^2*d^2+e^2)^(1/2)/e^3/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*h^2*d^4-2*I*c*b^2*(-c^2*d^2+e^2)^(1/2)/e^3/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*h^2*d^4+4*c*b^2*(-c^2*d^2+e^2)^(1/2)/e/(c^2*d^2-e^2)*arcsin(c*x)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*d^2*f*h-4*c*b^2*(-c^2*d^2+e^2)^(1/2)/e/(c^2*d^2-e^2)*arcsin(c*x)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*d^2*f*h+4*I*c*b^2*(-c^2*d^2+e^2)^(1/2)/e/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*f*h*d^2-4*I*c*b^2*(-c^2*d^2+e^2)^(1/2)/e/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*f*h*d^2+2*c*b^2*(-c^2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)*e*arcsin(c*x)*ln((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*f^2-2*I*c*b^2*(-c^2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*f^2*e+2*I*c*b^2*(-c^2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)*dilog((I*d*c+(I*c*x+(-c^2*x^2+1)^(1/2))*e-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*f^2*e

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*h*x^2+2*d*h*x+e*f)^2*(a+b*arcsin(c*x))^2/(e*x+d)^2,x, algorith
m="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{a^2e^2h^2x^4 + 4\,a^2deh^2x^3 + 4\,a^2defhx + a^2e^2f^2 + 2\left(a^2e^2fh + 2\,a^2d^2h^2\right)x^2 + \left(b^2e^2h^2x^4 + 4\,b^2deh^2x^3 + 4\,b^2defhx\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*h*x^2+2*d*h*x+e*f)^2*(a+b*arcsin(c*x))^2/(e*x+d)^2,x, algorith
m="fricas")
```

```
[Out] integral((a^2*e^2*h^2*x^4 + 4*a^2*d*e*h^2*x^3 + 4*a^2*d*e*f*h*x + a^2*e^2*f
^2 + 2*(a^2*e^2*f*h + 2*a^2*d^2*h^2)*x^2 + (b^2*e^2*h^2*x^4 + 4*b^2*d*e*h^2
*x^3 + 4*b^2*d*e*f*h*x + b^2*e^2*f^2 + 2*(b^2*e^2*f*h + 2*b^2*d^2*h^2)*x^2)
*arcsin(c*x)^2 + 2*(a*b*e^2*h^2*x^4 + 4*a*b*d*e*h^2*x^3 + 4*a*b*d*e*f*h*x +
 a*b*e^2*f^2 + 2*(a*b*e^2*f*h + 2*a*b*d^2*h^2)*x^2)*arcsin(c*x))/(e^2*x^2 +
 2*d*e*x + d^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*h*x**2+2*d*h*x+e*f)**2*(a+b*asin(c*x))**2/(e*x+d)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(ehx^2+2\,dhx+ef\right)^2(b\arcsin\left(cx\right)+a)^2}{(ex+d)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*h*x^2+2*d*h*x+e*f)^2*(a+b*arcsin(c*x))^2/(e*x+d)^2,x, algorith
m="giac")
```

```
[Out] integrate((e*h*x^2 + 2*d*h*x + e*f)^2*(b*arcsin(c*x) + a)^2/(e*x + d)^2, x)
```

3.122 $\int x^3 \sin^{-1}(a+bx)\,dx$

Optimal. Leaf size=137

$$-\frac{\left(4a\left(19a^2+16\right)-\left(26a^2+9\right)(a+bx)\right)\sqrt{1-(a+bx)^2}}{96b^4}-\frac{\left(8a^4+24a^2+3\right)\sin^{-1}(a+bx)}{32b^4}-\frac{7ax^2\sqrt{1-(a+bx)^2}}{48b^2}+\frac{x^3\sqrt{1}}{}$$

```
[Out] (-7*a*x^2*Sqrt[1 - (a + b*x)^2])/(48*b^2) + (x^3*Sqrt[1 - (a + b*x)^2])/(16
*b) - ((4*a*(16 + 19*a^2) - (9 + 26*a^2)*(a + b*x))*Sqrt[1 - (a + b*x)^2])/
(96*b^4) - ((3 + 24*a^2 + 8*a^4)*ArcSin[a + b*x])/(32*b^4) + (x^4*ArcSin[a
+ b*x])/4
```

Rubi [A] time = 0.199654, antiderivative size = 137, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.6, Rules used = {4805, 4743, 743, 833, 780, 216}

$$-\frac{\left(4a\left(19a^2+16\right)-\left(26a^2+9\right)(a+bx)\right)\sqrt{1-(a+bx)^2}}{96b^4}-\frac{\left(8a^4+24a^2+3\right)\sin^{-1}(a+bx)}{32b^4}-\frac{7ax^2\sqrt{1-(a+bx)^2}}{48b^2}+\frac{x^3\sqrt{1}}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*ArcSin[a + b*x],x]
```

```
[Out] (-7*a*x^2*Sqrt[1 - (a + b*x)^2])/(48*b^2) + (x^3*Sqrt[1 - (a + b*x)^2])/(16
*b) - ((4*a*(16 + 19*a^2) - (9 + 26*a^2)*(a + b*x))*Sqrt[1 - (a + b*x)^2])/
(96*b^4) - ((3 + 24*a^2 + 8*a^4)*ArcSin[a + b*x])/(32*b^4) + (x^4*ArcSin[a
+ b*x])/4
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 743

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^(m - 1)*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 1)), x] + Dist[1/(c
*(m + 2*p + 1)), Int[(d + e*x)^(m - 2)*Simp[c*d^2*(m + 2*p + 1) - a*e^2*(m
- 1) + 2*c*d*e*(m + p)*x, x]*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, m,
 p}, x] && NeQ[c*d^2 + a*e^2, 0] && If[RationalQ[m], GtQ[m, 1], SumSimplerQ
[m, -2]] && NeQ[m + 2*p + 1, 0] && IntQuadraticQ[a, 0, c, d, e, m, p, x]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 216

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

Rubi steps

$$\int x^3 \sin^{-1}(a+bx)\,dx = \frac{\text{Subst}\left(\int \left(-\frac{a}{b}+\frac{x}{b}\right)^3 \sin^{-1}(x)\,dx, x, a+bx\right)}{b}$$

$$= \frac{1}{4}x^4 \sin^{-1}(a+bx) - \frac{1}{4}\text{Subst}\left(\int \frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^4}{\sqrt{1-x^2}}\,dx, x, a+bx\right)$$

$$= \frac{x^3\sqrt{1-(a+bx)^2}}{16b} + \frac{1}{4}x^4 \sin^{-1}(a+bx) + \frac{1}{16}\text{Subst}\left(\int \frac{\left(-\frac{3+4a^2}{b^2}+\frac{7ax}{b^2}\right)\left(-\frac{a}{b}+\frac{x}{b}\right)^2}{\sqrt{1-x^2}}\,dx, x, a+bx\right)$$

$$= -\frac{7ax^2\sqrt{1-(a+bx)^2}}{48b^2} + \frac{x^3\sqrt{1-(a+bx)^2}}{16b} + \frac{1}{4}x^4 \sin^{-1}(a+bx) - \frac{1}{48}\text{Subst}\left(\int \frac{\left(-\frac{a(23+12a^2)}{b^3} + (9\right.}{\sqrt{1}}\right.$$

$$= -\frac{7ax^2\sqrt{1-(a+bx)^2}}{48b^2} + \frac{x^3\sqrt{1-(a+bx)^2}}{16b} - \frac{\left(4a\left(16+19a^2\right)-\left(9+26a^2\right)(a+bx)\right)\sqrt{1-(a+bx}}{96b^4}$$

$$= -\frac{7ax^2\sqrt{1-(a+bx)^2}}{48b^2} + \frac{x^3\sqrt{1-(a+bx)^2}}{16b} - \frac{\left(4a\left(16+19a^2\right)-\left(9+26a^2\right)(a+bx)\right)\sqrt{1-(a+bx}}{96b^4}$$

Mathematica [A] time = 0.0884133, size = 99, normalized size = 0.72

$$\frac{\sqrt{-a^2-2abx-b^2x^2+1}\left(26a^2bx-50a^3-a\left(14b^2x^2+55\right)+6b^3x^3+9bx\right)-3\left(8a^4+24a^2-8b^4x^4+3\right)\sin^{-1}(a+bx)}{96b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*ArcSin[a + b*x],x]
```

```
[Out] (Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*(-50*a^3 + 9*b*x + 26*a^2*b*x + 6*b^3*x^
3 - a*(55 + 14*b^2*x^2)) - 3*(3 + 24*a^2 + 8*a^4 - 8*b^4*x^4)*ArcSin[a + b*
x])/(96*b^4)
```

Maple [A] time = 0.016, size = 213, normalized size = 1.6

$$\frac{1}{b^4}\left(\frac{\arcsin(bx+a)(bx+a)^4}{4} - \arcsin(bx+a)(bx+a)^3 a + \frac{3\arcsin(bx+a)(bx+a)^2 a^2}{2} - \arcsin(bx+a)(bx+a)a^3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*arcsin(b*x+a),x)
```

```
[Out] 1/b^4*(1/4*arcsin(b*x+a)*(b*x+a)^4-arcsin(b*x+a)*(b*x+a)^3*a+3/2*arcsin(b*x
+a)*(b*x+a)^2*a^2-arcsin(b*x+a)*(b*x+a)*a^3+1/16*(b*x+a)^3*(1-(b*x+a)^2)^(1
/2)+3/32*(b*x+a)*(1-(b*x+a)^2)^(1/2)-3/32*arcsin(b*x+a)+a*(-1/3*(b*x+a)^2*(
1-(b*x+a)^2)^(1/2)-2/3*(1-(b*x+a)^2)^(1/2))-3/2*a^2*(-1/2*(b*x+a)*(1-(b*x+a
)^2)^(1/2)+1/2*arcsin(b*x+a))-a^3*(1-(b*x+a)^2)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.75963, size = 219, normalized size = 1.6

$$\frac{3\left(8\,b^4x^4 - 8\,a^4 - 24\,a^2 - 3\right)\arcsin\left(bx + a\right) + \left(6\,b^3x^3 - 14\,ab^2x^2 - 50\,a^3 + \left(26\,a^2 + 9\right)bx - 55\,a\right)\sqrt{-b^2x^2 - 2\,abx - a^2 +}}{96\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/96*(3*(8*b^4*x^4 - 8*a^4 - 24*a^2 - 3)*arcsin(b*x + a) + (6*b^3*x^3 - 14*
a*b^2*x^2 - 50*a^3 + (26*a^2 + 9)*b*x - 55*a)*sqrt(-b^2*x^2 - 2*a*b*x - a^2
 + 1))/b^4
```

Sympy [A] time = 1.85865, size = 255, normalized size = 1.86

$$\begin{cases} -\frac{a^4 \operatorname{asin}(a+bx)}{4b^4} - \frac{25a^3\sqrt{-a^2-2abx-b^2x^2+1}}{48b^4} + \frac{13a^2x\sqrt{-a^2-2abx-b^2x^2+1}}{48b^3} - \frac{3a^2 \operatorname{asin}(a+bx)}{4b^4} - \frac{7ax^2\sqrt{-a^2-2abx-b^2x^2+1}}{48b^2} - \frac{55a\sqrt{-a^2-2abx-b^2x^2+1}}{96b^4} + \\ \frac{x^4 \operatorname{asin}(a)}{4} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*asin(b*x+a),x)
```

```
[Out] Piecewise((-a**4*asin(a + b*x)/(4*b**4) - 25*a**3*sqrt(-a**2 - 2*a*b*x - b*
*2*x**2 + 1)/(48*b**4) + 13*a**2*x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/(4
8*b**3) - 3*a**2*asin(a + b*x)/(4*b**4) - 7*a*x**2*sqrt(-a**2 - 2*a*b*x - b
**2*x**2 + 1)/(48*b**2) - 55*a*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/(96*b*
*4) + x**4*asin(a + b*x)/4 + x**3*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/(16
*b) + 3*x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/(32*b**3) - 3*asin(a + b*x)
/(32*b**4), Ne(b, 0)), (x**4*asin(a)/4, True))
```

Giac [B] time = 1.20477, size = 383, normalized size = 2.8

$$-\frac{(bx+a)a^3\arcsin(bx+a)}{b^4}-\frac{\left((bx+a)^2-1\right)(bx+a)a\arcsin(bx+a)}{b^4}+\frac{3\left((bx+a)^2-1\right)a^2\arcsin(bx+a)}{2\,b^4}+\frac{3\sqrt{-(bx+}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(b*x + a)*a^3*arcsin(b*x + a)/b^4 - ((b*x + a)^2 - 1)*(b*x + a)*a*arcsin(b
*x + a)/b^4 + 3/2*((b*x + a)^2 - 1)*a^2*arcsin(b*x + a)/b^4 + 3/4*sqrt(-(b*
x + a)^2 + 1)*(b*x + a)*a^2/b^4 - sqrt(-(b*x + a)^2 + 1)*a^3/b^4 + 1/4*((b*
x + a)^2 - 1)^2*arcsin(b*x + a)/b^4 - (b*x + a)*a*arcsin(b*x + a)/b^4 + 3/4
*a^2*arcsin(b*x + a)/b^4 - 1/16*(-(b*x + a)^2 + 1)^(3/2)*(b*x + a)/b^4 + 1/
3*(-(b*x + a)^2 + 1)^(3/2)*a/b^4 + 1/2*((b*x + a)^2 - 1)*arcsin(b*x + a)/b^
4 + 5/32*sqrt(-(b*x + a)^2 + 1)*(b*x + a)/b^4 - sqrt(-(b*x + a)^2 + 1)*a/b^
4 + 5/32*arcsin(b*x + a)/b^4
```

3.123 $\int x^2 \sin^{-1}(a+bx)\,dx$

Optimal. Leaf size=94

$$\frac{(11a^2-5abx+4)\sqrt{1-(a+bx)^2}}{18b^3}+\frac{a(2a^2+3)\sin^{-1}(a+bx)}{6b^3}+\frac{x^2\sqrt{1-(a+bx)^2}}{9b}+\frac{1}{3}x^3\sin^{-1}(a+bx)$$

```
[Out] (x^2*Sqrt[1 - (a + b*x)^2])/(9*b) + ((4 + 11*a^2 - 5*a*b*x)*Sqrt[1 - (a + b
*x)^2])/(18*b^3) + (a*(3 + 2*a^2)*ArcSin[a + b*x])/(6*b^3) + (x^3*ArcSin[a
+ b*x])/3
```

Rubi [A] time = 0.118412, antiderivative size = 94, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {4805, 4743, 743, 780, 216}

$$\frac{(11a^2-5abx+4)\sqrt{1-(a+bx)^2}}{18b^3}+\frac{a(2a^2+3)\sin^{-1}(a+bx)}{6b^3}+\frac{x^2\sqrt{1-(a+bx)^2}}{9b}+\frac{1}{3}x^3\sin^{-1}(a+bx)$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcSin[a + b*x],x]
```

```
[Out] (x^2*Sqrt[1 - (a + b*x)^2])/(9*b) + ((4 + 11*a^2 - 5*a*b*x)*Sqrt[1 - (a + b
*x)^2])/(18*b^3) + (a*(3 + 2*a^2)*ArcSin[a + b*x])/(6*b^3) + (x^3*ArcSin[a
+ b*x])/3
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 743

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^(m - 1)*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 1)), x] + Dist[1/(c
*(m + 2*p + 1)), Int[(d + e*x)^(m - 2)*Simp[c*d^2*(m + 2*p + 1) - a*e^2*(m
- 1) + 2*c*d*e*(m + p)*x, x]*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, m,
 p}, x] && NeQ[c*d^2 + a*e^2, 0] && If[RationalQ[m], GtQ[m, 1], SumSimplerQ
[m, -2]] && NeQ[m + 2*p + 1, 0] && IntQuadraticQ[a, 0, c, d, e, m, p, x]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 216

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

Rubi steps

$$
\begin{aligned}
\int x^2 \sin^{-1}(a+bx)\,dx &= \frac{\text{Subst}\left(\int \left(-\frac{a}{b}+\frac{x}{b}\right)^2 \sin^{-1}(x)\,dx, x, a+bx\right)}{b}\\
&= \frac{1}{3}x^3\sin^{-1}(a+bx) - \frac{1}{3}\text{Subst}\left(\int \frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^3}{\sqrt{1-x^2}}\,dx, x, a+bx\right)\\
&= \frac{x^2\sqrt{1-(a+bx)^2}}{9b} + \frac{1}{3}x^3\sin^{-1}(a+bx) + \frac{1}{9}\text{Subst}\left(\int \frac{\left(-\frac{2+3a^2}{b^2}+\frac{5ax}{b^2}\right)\left(-\frac{a}{b}+\frac{x}{b}\right)}{\sqrt{1-x^2}}\,dx, x, a+bx\right)\\
&= \frac{x^2\sqrt{1-(a+bx)^2}}{9b} + \frac{\left(4+11a^2-5abx\right)\sqrt{1-(a+bx)^2}}{18b^3} + \frac{1}{3}x^3\sin^{-1}(a+bx) + \frac{\left(a\left(3+2a^2\right)\right)\text{Subs}}{}\\
&= \frac{x^2\sqrt{1-(a+bx)^2}}{9b} + \frac{\left(4+11a^2-5abx\right)\sqrt{1-(a+bx)^2}}{18b^3} + \frac{a\left(3+2a^2\right)\sin^{-1}(a+bx)}{6b^3} + \frac{1}{3}x^3\sin^{-1}(a
\end{aligned}
$$

Mathematica [A] time = 0.0604195, size = 77, normalized size = 0.82

$$
\frac{\sqrt{-a^2-2abx-b^2x^2+1}\left(11a^2-5abx+2b^2x^2+4\right)+\left(6a^3+9a+6b^3x^3\right)\sin^{-1}(a+bx)}{18b^3}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcSin[a + b*x],x]
```

```
[Out] (Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*(4 + 11*a^2 - 5*a*b*x + 2*b^2*x^2) + (9*
a + 6*a^3 + 6*b^3*x^3)*ArcSin[a + b*x])/(18*b^3)
```

Maple [A] time = 0.003, size = 137, normalized size = 1.5

$$\frac{1}{b^3}\left(\frac{\arcsin(bx+a)(bx+a)^3}{3} - \arcsin(bx+a)(bx+a)^2 a + \arcsin(bx+a)(bx+a)a^2 + \frac{(bx+a)^2}{9}\sqrt{1-(bx+a)^2} + \frac{2}{9}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arcsin(b*x+a),x)
```

```
[Out] 1/b^3*(1/3*arcsin(b*x+a)*(b*x+a)^3-arcsin(b*x+a)*(b*x+a)^2*a+arcsin(b*x+a)*
(b*x+a)*a^2+1/9*(b*x+a)^2*(1-(b*x+a)^2)^(1/2)+2/9*(1-(b*x+a)^2)^(1/2)+a*(-1
/2*(b*x+a)*(1-(b*x+a)^2)^(1/2)+1/2*arcsin(b*x+a))+a^2*(1-(b*x+a)^2)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.81581, size = 173, normalized size = 1.84

$$\frac{3\left(2\,b^3x^3+2\,a^3+3\,a\right)\arcsin(bx+a)+\left(2\,b^2x^2-5\,abx+11\,a^2+4\right)\sqrt{-b^2x^2-2\,abx-a^2+1}}{18\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/18*(3*(2*b^3*x^3 + 2*a^3 + 3*a)*arcsin(b*x + a) + (2*b^2*x^2 - 5*a*b*x +
11*a^2 + 4)*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1))/b^3
```

Sympy [A] time = 0.898557, size = 170, normalized size = 1.81

$$\begin{cases} \frac{a^3 \operatorname{asin}(a+bx)}{3b^3} + \frac{11a^2\sqrt{-a^2-2abx-b^2x^2+1}}{18b^3} - \frac{5ax\sqrt{-a^2-2abx-b^2x^2+1}}{18b^2} + \frac{a \operatorname{asin}(a+bx)}{2b^3} + \frac{x^3 \operatorname{asin}(a+bx)}{3} + \frac{x^2\sqrt{-a^2-2abx-b^2x^2+1}}{9b} + \frac{2\sqrt{-a^2-2abx-b^2x^2+1}}{9b^3} \\ \frac{x^3 \operatorname{asin}(a)}{3} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*asin(b*x+a),x)
```

```
[Out] Piecewise((a**3*asin(a + b*x)/(3*b**3) + 11*a**2*sqrt(-a**2 - 2*a*b*x - b**
2*x**2 + 1)/(18*b**3) - 5*a*x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/(18*b**
2) + a*asin(a + b*x)/(2*b**3) + x**3*asin(a + b*x)/3 + x**2*sqrt(-a**2 - 2*
a*b*x - b**2*x**2 + 1)/(9*b) + 2*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/(9*b
**3), Ne(b, 0)), (x**3*asin(a)/3, True))
```

Giac [B] time = 1.16971, size = 234, normalized size = 2.49

$$\frac{(bx+a)a^2 \arcsin(bx+a)}{b^3} + \frac{\left((bx+a)^2-1\right)(bx+a)\arcsin(bx+a)}{3\,b^3} - \frac{\left((bx+a)^2-1\right)a \arcsin(bx+a)}{b^3} - \frac{\sqrt{-(bx+a)^2 +}}{2\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (b*x + a)*a^2*arcsin(b*x + a)/b^3 + 1/3*((b*x + a)^2 - 1)*(b*x + a)*arcsin(
b*x + a)/b^3 - ((b*x + a)^2 - 1)*a*arcsin(b*x + a)/b^3 - 1/2*sqrt(-(b*x + a
)^2 + 1)*(b*x + a)*a/b^3 + sqrt(-(b*x + a)^2 + 1)*a^2/b^3 + 1/3*(b*x + a)*a
rcsin(b*x + a)/b^3 - 1/2*a*arcsin(b*x + a)/b^3 - 1/9*(-(b*x + a)^2 + 1)^(3/
2)/b^3 + 1/3*sqrt(-(b*x + a)^2 + 1)/b^3
```

3.124 $\int x\sin^{-1}(a+bx)\,dx$

Optimal. Leaf size=80

$$-\frac{(2a^2+1)\sin^{-1}(a+bx)}{4b^2}-\frac{3a\sqrt{1-(a+bx)^2}}{4b^2}+\frac{1}{2}x^2\sin^{-1}(a+bx)+\frac{x\sqrt{1-(a+bx)^2}}{4b}$$

```
[Out] (-3*a*Sqrt[1 - (a + b*x)^2])/(4*b^2) + (x*Sqrt[1 - (a + b*x)^2])/(4*b) - ((
1 + 2*a^2)*ArcSin[a + b*x])/(4*b^2) + (x^2*ArcSin[a + b*x])/2
```

Rubi [A] time = 0.077375, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.625, Rules used = {4805, 4743, 743, 641, 216}

$$-\frac{(2a^2+1)\sin^{-1}(a+bx)}{4b^2}-\frac{3a\sqrt{1-(a+bx)^2}}{4b^2}+\frac{1}{2}x^2\sin^{-1}(a+bx)+\frac{x\sqrt{1-(a+bx)^2}}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcSin[a + b*x],x]
```

```
[Out] (-3*a*Sqrt[1 - (a + b*x)^2])/(4*b^2) + (x*Sqrt[1 - (a + b*x)^2])/(4*b) - ((
1 + 2*a^2)*ArcSin[a + b*x])/(4*b^2) + (x^2*ArcSin[a + b*x])/2
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 743

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^(m - 1)*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 1)), x] + Dist[1/(c
```

```
*(m + 2*p + 1)), Int[(d + e*x)^(m - 2)*Simp[c*d^2*(m + 2*p + 1) - a*e^2*(m
- 1) + 2*c*d*e*(m + p)*x, x]*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, m,
 p}, x] && NeQ[c*d^2 + a*e^2, 0] && If[RationalQ[m], GtQ[m, 1], SumSimplerQ
[m, -2]] && NeQ[m + 2*p + 1, 0] && IntQuadraticQ[a, 0, c, d, e, m, p, x]
```

Rule 641

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

Rule 216

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

Rubi steps

$$\int x\sin^{-1}(a+bx)\,dx = \frac{\text{Subst}\left(\int\left(-\frac{a}{b}+\frac{x}{b}\right)\sin^{-1}(x)\,dx,x,a+bx\right)}{b}$$
$$=\frac{1}{2}x^2\sin^{-1}(a+bx)-\frac{1}{2}\text{Subst}\left(\int\frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^2}{\sqrt{1-x^2}}\,dx,x,a+bx\right)$$
$$=\frac{x\sqrt{1-(a+bx)^2}}{4b}+\frac{1}{2}x^2\sin^{-1}(a+bx)+\frac{1}{4}\text{Subst}\left(\int\frac{-\frac{1+2a^2}{b^2}+\frac{3ax}{b^2}}{\sqrt{1-x^2}}\,dx,x,a+bx\right)$$
$$=-\frac{3a\sqrt{1-(a+bx)^2}}{4b^2}+\frac{x\sqrt{1-(a+bx)^2}}{4b}+\frac{1}{2}x^2\sin^{-1}(a+bx)-\frac{\left(1+2a^2\right)\text{Subst}\left(\int\frac{1}{\sqrt{1-x^2}}\,dx,x,a+\right.}{4b^2}$$
$$=-\frac{3a\sqrt{1-(a+bx)^2}}{4b^2}+\frac{x\sqrt{1-(a+bx)^2}}{4b}-\frac{\left(1+2a^2\right)\sin^{-1}(a+bx)}{4b^2}+\frac{1}{2}x^2\sin^{-1}(a+bx)$$

Mathematica [A] time = 0.0443971, size = 62, normalized size = 0.78

$$\frac{\sqrt{-a^2-2abx-b^2x^2+1}(bx-3a)+\left(-2a^2+2b^2x^2-1\right)\sin^{-1}(a+bx)}{4b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcSin[a + b*x],x]
```

```
[Out] ((-3*a + b*x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2] + (-1 - 2*a^2 + 2*b^2*x^2)*
ArcSin[a + b*x])/(4*b^2)
```

Maple [A] time = 0.003, size = 79, normalized size = 1.

$$\frac{1}{b^2}\left(\frac{\arcsin(bx+a)(bx+a)^2}{2} - \arcsin(bx+a)\,a\,(bx+a) + \frac{bx+a}{4}\sqrt{1-(bx+a)^2} - \frac{\arcsin(bx+a)}{4} - a\sqrt{1-(bx+a)^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arcsin(b*x+a),x)
```

```
[Out] 1/b^2*(1/2*arcsin(b*x+a)*(b*x+a)^2-arcsin(b*x+a)*a*(b*x+a)+1/4*(b*x+a)*(1-(
b*x+a)^2)^(1/2)-1/4*arcsin(b*x+a)-a*(1-(b*x+a)^2)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.78054, size = 135, normalized size = 1.69

$$\frac{\left(2\,b^2x^2 - 2\,a^2 - 1\right)\arcsin(bx+a) + \sqrt{-b^2x^2 - 2\,abx - a^2 + 1}(bx - 3\,a)}{4\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*((2*b^2*x^2 - 2*a^2 - 1)*arcsin(b*x + a) + sqrt(-b^2*x^2 - 2*a*b*x - a^
2 + 1)*(b*x - 3*a))/b^2
```

Sympy [A] time = 0.360982, size = 104, normalized size = 1.3

$$\begin{cases} -\frac{a^2 \operatorname{asin}(a+bx)}{2b^2} - \frac{3a\sqrt{-a^2-2abx-b^2x^2+1}}{4b^2} + \frac{x^2 \operatorname{asin}(a+bx)}{2} + \frac{x\sqrt{-a^2-2abx-b^2x^2+1}}{4b} - \frac{\operatorname{asin}(a+bx)}{4b^2} & \text{for } b \neq 0 \\ \frac{x^2 \operatorname{asin}(a)}{2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*asin(b*x+a),x)
```

```
[Out] Piecewise((-a**2*asin(a + b*x)/(2*b**2) - 3*a*sqrt(-a**2 - 2*a*b*x - b**2*x
**2 + 1)/(4*b**2) + x**2*asin(a + b*x)/2 + x*sqrt(-a**2 - 2*a*b*x - b**2*x*
*2 + 1)/(4*b) - asin(a + b*x)/(4*b**2), Ne(b, 0)), (x**2*asin(a)/2, True))
```

Giac [A] time = 1.15702, size = 123, normalized size = 1.54

$$-\frac{(bx+a)a \arcsin(bx+a)}{b^2} + \frac{\left((bx+a)^2-1\right)\arcsin(bx+a)}{2\,b^2} + \frac{\sqrt{-(bx+a)^2+1}(bx+a)}{4\,b^2} - \frac{\sqrt{-(bx+a)^2+1}a}{b^2} + \frac{\arcsin(bx+a)}{4\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(b*x + a)*a*arcsin(b*x + a)/b^2 + 1/2*((b*x + a)^2 - 1)*arcsin(b*x + a)/b^
2 + 1/4*sqrt(-(b*x + a)^2 + 1)*(b*x + a)/b^2 - sqrt(-(b*x + a)^2 + 1)*a/b^2
 + 1/4*arcsin(b*x + a)/b^2
```

3.125 $\int \sin^{-1}(a+bx)\,dx$

Optimal. Leaf size=35

$$\frac{\sqrt{1-(a+bx)^2}}{b}+\frac{(a+bx)\sin^{-1}(a+bx)}{b}$$

```
[Out] Sqrt[1 - (a + b*x)^2]/b + ((a + b*x)*ArcSin[a + b*x])/b
```

Rubi [A] time = 0.0155002, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 6, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {4803, 4619, 261}

$$\frac{\sqrt{1-(a+bx)^2}}{b}+\frac{(a+bx)\sin^{-1}(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x],x]
```

```
[Out] Sqrt[1 - (a + b*x)^2]/b + ((a + b*x)*ArcSin[a + b*x])/b
```

Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 261

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

Rubi steps

$$
\begin{aligned}
\int \sin^{-1}(a+bx)\,dx &= \frac{\text{Subst}\left(\int \sin^{-1}(x)\,dx, x, a+bx\right)}{b} \\
&= \frac{(a+bx)\sin^{-1}(a+bx)}{b} - \frac{\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}}\,dx, x, a+bx\right)}{b} \\
&= \frac{\sqrt{1-(a+bx)^2}}{b} + \frac{(a+bx)\sin^{-1}(a+bx)}{b}
\end{aligned}
$$

Mathematica [A] time = 0.03416, size = 41, normalized size = 1.17

$$
\frac{\sqrt{-a^2-2abx-b^2x^2+1}+(a+bx)\sin^{-1}(a+bx)}{b}
$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x],x]
```

```
[Out] (Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2] + (a + b*x)*ArcSin[a + b*x])/b
```

Maple [A] time = 0.001, size = 31, normalized size = 0.9

$$
\frac{1}{b}\left((bx+a)\arcsin(bx+a)+\sqrt{1-(bx+a)^2}\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a),x)
```

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

Maxima [A] time = 1.46266, size = 41, normalized size = 1.17

$$
\frac{(bx+a)\arcsin(bx+a)+\sqrt{-(bx+a)^2+1}}{b}
$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] ((b*x + a)*arcsin(b*x + a) + sqrt(-(b*x + a)^2 + 1))/b
```

Fricas [A] time = 2.88263, size = 92, normalized size = 2.63

$$\frac{(bx+a)\arcsin(bx+a)+\sqrt{-b^2x^2-2\,abx-a^2+1}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] ((b*x + a)*arcsin(b*x + a) + sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1))/b
```

Sympy [A] time = 0.186078, size = 46, normalized size = 1.31

$$\begin{cases} \frac{a\operatorname{asin}(a+bx)}{b}+x\operatorname{asin}(a+bx)+\frac{\sqrt{-a^2-2abx-b^2x^2+1}}{b} & \text{for } b\neq 0 \\ x\operatorname{asin}(a) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a),x)
```

```
[Out] Piecewise((a*asin(a + b*x)/b + x*asin(a + b*x) + sqrt(-a**2 - 2*a*b*x - b**
2*x**2 + 1)/b, Ne(b, 0)), (x*asin(a), True))
```

Giac [A] time = 1.17596, size = 41, normalized size = 1.17

$$\frac{(bx+a)\arcsin(bx+a)+\sqrt{-(bx+a)^2+1}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] ((b*x + a)*arcsin(b*x + a) + sqrt(-(b*x + a)^2 + 1))/b
```

3.126 $\int \frac{\sin^{-1}(a+bx)}{x}\,dx$

Optimal. Leaf size=181

$$-i\text{PolyLog}\left(2,\frac{e^{i\sin^{-1}(a+bx)}}{-\sqrt{1-a^2}+ia}\right)-i\text{PolyLog}\left(2,\frac{e^{i\sin^{-1}(a+bx)}}{\sqrt{1-a^2}+ia}\right)+\sin^{-1}(a+bx)\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{-\sqrt{1-a^2}+ia}\right)+\sin^{-1}(a+bx)\log$$

```
[Out] (-I/2)*ArcSin[a + b*x]^2 + ArcSin[a + b*x]*Log[1 - E^(I*ArcSin[a + b*x])/(I
*a - Sqrt[1 - a^2])] + ArcSin[a + b*x]*Log[1 - E^(I*ArcSin[a + b*x])/(I*a +
 Sqrt[1 - a^2])] - I*PolyLog[2, E^(I*ArcSin[a + b*x])/(I*a - Sqrt[1 - a^2])
] - I*PolyLog[2, E^(I*ArcSin[a + b*x])/(I*a + Sqrt[1 - a^2])]
```

Rubi [A] time = 0.278964, antiderivative size = 181, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 6, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.6, Rules used = {4805, 4741, 4521, 2190, 2279, 2391}

$$-i\text{PolyLog}\left(2,\frac{e^{i\sin^{-1}(a+bx)}}{-\sqrt{1-a^2}+ia}\right)-i\text{PolyLog}\left(2,\frac{e^{i\sin^{-1}(a+bx)}}{\sqrt{1-a^2}+ia}\right)+\sin^{-1}(a+bx)\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{-\sqrt{1-a^2}+ia}\right)+\sin^{-1}(a+bx)\log$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]/x,x]
```

```
[Out] (-I/2)*ArcSin[a + b*x]^2 + ArcSin[a + b*x]*Log[1 - E^(I*ArcSin[a + b*x])/(I
*a - Sqrt[1 - a^2])] + ArcSin[a + b*x]*Log[1 - E^(I*ArcSin[a + b*x])/(I*a +
 Sqrt[1 - a^2])] - I*PolyLog[2, E^(I*ArcSin[a + b*x])/(I*a - Sqrt[1 - a^2])
] - I*PolyLog[2, E^(I*ArcSin[a + b*x])/(I*a + Sqrt[1 - a^2])]
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rubi steps

$$\int \frac{\sin^{-1}(a+bx)}{x}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)}{-\frac{a}{b}+\frac{x}{b}}\,dx, x, a+bx\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \frac{x\cos(x)}{-\frac{a}{b}+\frac{\sin(x)}{b}}\,dx, x, \sin^{-1}(a+bx)\right)}{b}$$
$$= -\frac{1}{2}i\sin^{-1}(a+bx)^2 + \frac{i\,\text{Subst}\left(\int \frac{e^{ix}x}{-\frac{ia}{b}-\frac{\sqrt{1-a^2}}{b}+\frac{e^{ix}}{b}}\,dx, x, \sin^{-1}(a+bx)\right)}{b} + \frac{i\,\text{Subst}\left(\int \frac{e^{ix}x}{-\frac{ia}{b}+\frac{\sqrt{1-a^2}}{b}+\frac{e^{ix}}{b}}\,dx, x\right.}{b}$$
$$= -\frac{1}{2}i\sin^{-1}(a+bx)^2 + \sin^{-1}(a+bx)\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + \sin^{-1}(a+bx)\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia+\sqrt{1-a^2}}\right)$$
$$= -\frac{1}{2}i\sin^{-1}(a+bx)^2 + \sin^{-1}(a+bx)\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + \sin^{-1}(a+bx)\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia+\sqrt{1-a^2}}\right)$$
$$= -\frac{1}{2}i\sin^{-1}(a+bx)^2 + \sin^{-1}(a+bx)\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + \sin^{-1}(a+bx)\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia+\sqrt{1-a^2}}\right)$$

Mathematica [A] time = 0.0159664, size = 197, normalized size = 1.09

$$-i\text{PolyLog}\left(2,-\frac{e^{i\sin^{-1}(a+bx)}}{\sqrt{1-a^2}-ia}\right) - i\text{PolyLog}\left(2,\frac{e^{i\sin^{-1}(a+bx)}}{\sqrt{1-a^2}+ia}\right) + \sin^{-1}(a+bx)\log\left(1+\frac{e^{i\sin^{-1}(a+bx)}}{b\left(-\frac{\sqrt{1-a^2}}{b}-\frac{ia}{b}\right)}\right) + \sin^{-1}(a+bx)\,\text{lo}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]/x,x]
```

```
[Out] (-I/2)*ArcSin[a + b*x]^2 + ArcSin[a + b*x]*Log[1 + E^(I*ArcSin[a + b*x])/((
((-I)*a)/b - Sqrt[1 - a^2]/b)*b)] + ArcSin[a + b*x]*Log[1 + E^(I*ArcSin[a +
 b*x])/((((-I)*a)/b + Sqrt[1 - a^2]/b)*b)] - I*PolyLog[2, -(E^(I*ArcSin[a +
 b*x])/((-I)*a + Sqrt[1 - a^2]))] - I*PolyLog[2, E^(I*ArcSin[a + b*x])/(I*a
 + Sqrt[1 - a^2])]
```

Maple [B] time = 0.128, size = 579, normalized size = 3.2

$$-\frac{i}{2}(\arcsin(bx+a))^2+\frac{\arcsin(bx+a)\,a^2}{a^2-1}\ln\left(\left(ia+\sqrt{-a^2+1}-i(bx+a)-\sqrt{1-(bx+a)^2}\right)\left(ia+\sqrt{-a^2+1}\right)^{-1}\right)+\frac{\mathrm{arcs}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)/x,x)
```

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

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\arcsin(bx+a)}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(arcsin(b*x + a)/x, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\operatorname{asin}(a+bx)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)/x,x)
```

```
[Out] Integral(asin(a + b*x)/x, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\arcsin(bx+a)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(arcsin(b*x + a)/x, x)
```

3.127 $\int \frac{\sin^{-1}(a+bx)}{x^2} dx$

Optimal. Leaf size=64

$$-\frac{b \tanh^{-1}\left(\frac{1-a(a+bx)}{\sqrt{1-a^2}\sqrt{1-(a+bx)^2}}\right)}{\sqrt{1-a^2}}-\frac{\sin^{-1}(a+bx)}{x}$$

```
[Out] -(ArcSin[a + b*x]/x) - (b*ArcTanh[(1 - a*(a + b*x))/(Sqrt[1 - a^2]*Sqrt[1 -
 (a + b*x)^2])])/Sqrt[1 - a^2]
```

Rubi [A] time = 0.0754341, antiderivative size = 64, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.4, Rules used = {4805, 4743, 725, 206}

$$-\frac{b \tanh^{-1}\left(\frac{1-a(a+bx)}{\sqrt{1-a^2}\sqrt{1-(a+bx)^2}}\right)}{\sqrt{1-a^2}}-\frac{\sin^{-1}(a+bx)}{x}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]/x^2,x]
```

```
[Out] -(ArcSin[a + b*x]/x) - (b*ArcTanh[(1 - a*(a + b*x))/(Sqrt[1 - a^2]*Sqrt[1 -
 (a + b*x)^2])])/Sqrt[1 - a^2]
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 206

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

Rubi steps

$$
\begin{aligned}
\int \frac{\sin^{-1}(a+bx)}{x^2}\,dx &= \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)}{\left(-\frac{a}{b}+\frac{x}{b}\right)^2}\,dx, x, a+bx\right)}{b} \\
&= -\frac{\sin^{-1}(a+bx)}{x} + \text{Subst}\left(\int \frac{1}{\left(-\frac{a}{b}+\frac{x}{b}\right)\sqrt{1-x^2}}\,dx, x, a+bx\right) \\
&= -\frac{\sin^{-1}(a+bx)}{x} - \text{Subst}\left(\int \frac{1}{\frac{1}{b^2}-\frac{a^2}{b^2}-x^2}\,dx, x, \frac{\frac{1}{b}-\frac{a(a+bx)}{b}}{\sqrt{1-(a+bx)^2}}\right) \\
&= -\frac{\sin^{-1}(a+bx)}{x} - \frac{b\tanh^{-1}\left(\frac{b\left(\frac{1}{b}-\frac{a(a+bx)}{b}\right)}{\sqrt{1-a^2}\sqrt{1-(a+bx)^2}}\right)}{\sqrt{1-a^2}}
\end{aligned}
$$

Mathematica [A] time = 0.04984, size = 66, normalized size = 1.03

$$
-\frac{b\tanh^{-1}\left(\frac{-a^2-abx+1}{\sqrt{1-a^2}\sqrt{1-(a+bx)^2}}\right)}{\sqrt{1-a^2}} - \frac{\sin^{-1}(a+bx)}{x}
$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]/x^2,x]
```

```
[Out] -(ArcSin[a + b*x]/x) - (b*ArcTanh[(1 - a^2 - a*b*x)/(Sqrt[1 - a^2]*Sqrt[1 -
 (a + b*x)^2])])/Sqrt[1 - a^2]
```

Maple [A] time = 0.011, size = 78, normalized size = 1.2

$$-\frac{\arcsin(bx+a)}{x}-b\ln\left(\frac{1}{bx}\left(-2a^2+2-2xab+2\sqrt{-a^2+1}\sqrt{-b^2x^2-2xab-a^2+1}\right)\right)\frac{1}{\sqrt{-a^2+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 3.10816, size = 554, normalized size = 8.66

$$\left[-\frac{\sqrt{-a^2+1}bx\log\left(\frac{(2a^2-1)b^2x^2+2a^4+4(a^3-a)bx+2\sqrt{-b^2x^2-2abx-a^2+1}(abx+a^2-1)\sqrt{-a^2+1}-4a^2+2}{x^2}\right)+2(a^2-1)\arcsin(bx+a)}{2(a^2-1)x}, \sqrt{a^2 -$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] [-1/2*(sqrt(-a^2 + 1)*b*x*log(((2*a^2 - 1)*b^2*x^2 + 2*a^4 + 4*(a^3 - a)*b*
x + 2*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(a*b*x + a^2 - 1)*sqrt(-a^2 + 1) -
 4*a^2 + 2)/x^2) + 2*(a^2 - 1)*arcsin(b*x + a))/((a^2 - 1)*x), (sqrt(a^2 -
1)*b*x*arctan(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(a*b*x + a^2 - 1)*sqrt(a^2
 - 1)/((a^2 - 1)*b^2*x^2 + a^4 + 2*(a^3 - a)*b*x - 2*a^2 + 1)) - (a^2 - 1)*
```

```
arcsin(b*x + a))/((a^2 - 1)*x)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\operatorname{asin}(a+bx)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)/x**2,x)
```

```
[Out] Integral(asin(a + b*x)/x**2, x)
```

Giac [A] time = 1.21543, size = 107, normalized size = 1.67

$$\frac{2\,b^2\arctan\left(\frac{\frac{\left(\sqrt{-b^2x^2-2\,abx-a^2+1}|b|+b\right)a}{b^2x+ab}-1}{\sqrt{a^2-1}}\right)}{\sqrt{a^2-1}|b|}-\frac{\arcsin(bx+a)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 2*b^2*arctan(((sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)*a/(b^2*x + a*
b) - 1)/sqrt(a^2 - 1))/(sqrt(a^2 - 1)*abs(b)) - arcsin(b*x + a)/x
```

3.128 $\int \frac{\sin^{-1}(a+bx)}{x^3} dx$

Optimal. Leaf size=103

$$-\frac{ab^2\tanh^{-1}\left(\frac{1-a(a+bx)}{\sqrt{1-a^2}\sqrt{1-(a+bx)^2}}\right)}{2\left(1-a^2\right)^{3/2}}-\frac{b\sqrt{1-(a+bx)^2}}{2\left(1-a^2\right)x}-\frac{\sin^{-1}(a+bx)}{2x^2}$$

```
[Out] -(b*Sqrt[1 - (a + b*x)^2])/(2*(1 - a^2)*x) - ArcSin[a + b*x]/(2*x^2) - (a*b
^2*ArcTanh[(1 - a*(a + b*x))/(Sqrt[1 - a^2]*Sqrt[1 - (a + b*x)^2])])/(2*(1
- a^2)^(3/2))
```

Rubi [A] time = 0.116231, antiderivative size = 103, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {4805, 4743, 731, 725, 206}

$$-\frac{ab^2\tanh^{-1}\left(\frac{1-a(a+bx)}{\sqrt{1-a^2}\sqrt{1-(a+bx)^2}}\right)}{2\left(1-a^2\right)^{3/2}}-\frac{b\sqrt{1-(a+bx)^2}}{2\left(1-a^2\right)x}-\frac{\sin^{-1}(a+bx)}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]/x^3,x]
```

```
[Out] -(b*Sqrt[1 - (a + b*x)^2])/(2*(1 - a^2)*x) - ArcSin[a + b*x]/(2*x^2) - (a*b
^2*ArcTanh[(1 - a*(a + b*x))/(Sqrt[1 - a^2]*Sqrt[1 - (a + b*x)^2])])/(2*(1
- a^2)^(3/2))
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
```

```
&& NeQ[m, -1]
```

Rule 731

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*d^2 + a*e^2)), x] + D
ist[(c*d)/(c*d^2 + a*e^2), Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, d, e, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[m + 2*p + 3, 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 206

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

Rubi steps

$$\begin{aligned}
\int \frac{\sin^{-1}(a+bx)}{x^3}\,dx &= \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)}{\left(-\frac{a}{b}+\frac{x}{b}\right)^3}\,dx, x, a+bx\right)}{b}\\
&= -\frac{\sin^{-1}(a+bx)}{2x^2}+\frac{1}{2}\,\text{Subst}\left(\int \frac{1}{\left(-\frac{a}{b}+\frac{x}{b}\right)^2\sqrt{1-x^2}}\,dx, x, a+bx\right)\\
&= -\frac{b\sqrt{1-(a+bx)^2}}{2\left(1-a^2\right)x}-\frac{\sin^{-1}(a+bx)}{2x^2}+\frac{(ab)\,\text{Subst}\left(\int \frac{1}{\left(-\frac{a}{b}+\frac{x}{b}\right)\sqrt{1-x^2}}\,dx, x, a+bx\right)}{2\left(1-a^2\right)}\\
&= -\frac{b\sqrt{1-(a+bx)^2}}{2\left(1-a^2\right)x}-\frac{\sin^{-1}(a+bx)}{2x^2}-\frac{(ab)\,\text{Subst}\left(\int \frac{1}{\frac{1}{b^2}-\frac{a^2}{b^2}-x^2}\,dx, x, \frac{\frac{1}{b}-\frac{a(a+bx)}{b}}{\sqrt{1-(a+bx)^2}}\right)}{2\left(1-a^2\right)}\\
&= -\frac{b\sqrt{1-(a+bx)^2}}{2\left(1-a^2\right)x}-\frac{\sin^{-1}(a+bx)}{2x^2}-\frac{ab^2\tanh^{-1}\left(\frac{1-a(a+bx)}{\sqrt{1-a^2}\sqrt{1-(a+bx)^2}}\right)}{2\left(1-a^2\right)^{3/2}}
\end{aligned}$$

Mathematica [A] time = 0.199077, size = 125, normalized size = 1.21

$$-\frac{\frac{bx\left(\sqrt{1-a^2}\sqrt{-a^2-2abx-b^2x^2+1}+abx\log\left(\sqrt{1-a^2}\sqrt{-a^2-2abx-b^2x^2+1}-a^2-abx+1\right)-abx\log(x)\right)}{\left(1-a^2\right)^{3/2}}+\sin^{-1}(a+bx)}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]/x^3,x]
```

```
[Out] -(ArcSin[a + b*x] + (b*x*(Sqrt[1 - a^2]*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2] -
 a*b*x*Log[x] + a*b*x*Log[1 - a^2 - a*b*x + Sqrt[1 - a^2]*Sqrt[1 - a^2 - 2*
a*b*x - b^2*x^2]]))/(1 - a^2)^(3/2))/(2*x^2)
```

Maple [A] time = 0.007, size = 118, normalized size = 1.2

$$-\frac{\arcsin(bx+a)}{2x^2}-\frac{b}{\left(-2a^2+2\right)x}\sqrt{-b^2x^2-2xab-a^2+1}-\frac{b^2a}{2}\ln\left(\frac{1}{bx}\left(-2a^2+2-2xab+2\sqrt{-a^2+1}\sqrt{-b^2x^2-2xab}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 3.43971, size = 765, normalized size = 7.43

$$\left[-\frac{\sqrt{-a^2+1}ab^2x^2\log\left(\frac{(2a^2-1)b^2x^2+2a^4+4(a^3-a)bx-2\sqrt{-b^2x^2-2abx-a^2+1}(abx+a^2-1)\sqrt{-a^2+1}-4a^2+2}{x^2}\right)-2\sqrt{-b^2x^2-2abx-a^2+1}(a^2-}{4(a^4-2a^2+1)x^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] [-1/4*(sqrt(-a^2 + 1)*a*b^2*x^2*log(((2*a^2 - 1)*b^2*x^2 + 2*a^4 + 4*(a^3 -
 a)*b*x - 2*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(a*b*x + a^2 - 1)*sqrt(-a^2
+ 1) - 4*a^2 + 2)/x^2) - 2*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(a^2 - 1)*b*x
 + 2*(a^4 - 2*a^2 + 1)*arcsin(b*x + a))/((a^4 - 2*a^2 + 1)*x^2), -1/2*(sqrt
(a^2 - 1)*a*b^2*x^2*arctan(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(a*b*x + a^2
- 1)*sqrt(a^2 - 1)/((a^2 - 1)*b^2*x^2 + a^4 + 2*(a^3 - a)*b*x - 2*a^2 + 1))
 - sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(a^2 - 1)*b*x + (a^4 - 2*a^2 + 1)*arc
sin(b*x + a))/((a^4 - 2*a^2 + 1)*x^2)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\operatorname{asin}(a+bx)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)/x**3,x)
```

```
[Out] Integral(asin(a + b*x)/x**3, x)
```

Giac [B] time = 1.22368, size = 328, normalized size = 3.18

$$-\left(\frac{ab^2\arctan\left(\frac{\frac{\left(\sqrt{-b^2x^2-2abx-a^2+1}|b|+b\right)a}{b^2x+ab}-1}{\sqrt{a^2-1}}\right)}{(a^2|b|-|b|)\sqrt{a^2-1}}-\frac{ab^2-\frac{\left(\sqrt{-b^2x^2-2abx-a^2+1}|b|+b\right)b^2}{b^2x+ab}}{(a^3|b|-a|b|)\left(\frac{\left(\sqrt{-b^2x^2-2abx-a^2+1}|b|+b\right)^2a}{(b^2x+ab)^2}+a-\frac{2\left(\sqrt{-b^2x^2-2abx-a^2+1}|b|+b\right)}{b^2x+ab}\right)}\right)b-\frac{\arcsin(}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.129 $\int \frac{\sin^{-1}(a+bx)}{x^4} dx$

Optimal. Leaf size=144

$$-\frac{ab^2\sqrt{1-(a+bx)^2}}{2\left(1-a^2\right)^2 x}-\frac{\left(2a^2+1\right)b^3\tanh^{-1}\left(\frac{1-a(a+bx)}{\sqrt{1-a^2}\sqrt{1-(a+bx)^2}}\right)}{6\left(1-a^2\right)^{5/2}}-\frac{b\sqrt{1-(a+bx)^2}}{6\left(1-a^2\right)x^2}-\frac{\sin^{-1}(a+bx)}{3x^3}$$

```
[Out] -(b*Sqrt[1 - (a + b*x)^2])/(6*(1 - a^2)*x^2) - (a*b^2*Sqrt[1 - (a + b*x)^2]
)/(2*(1 - a^2)^2*x) - ArcSin[a + b*x]/(3*x^3) - ((1 + 2*a^2)*b^3*ArcTanh[(1
 - a*(a + b*x))/(Sqrt[1 - a^2]*Sqrt[1 - (a + b*x)^2])])/(6*(1 - a^2)^(5/2))
```

Rubi [A] time = 0.18048, antiderivative size = 144, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.6, Rules used = {4805, 4743, 745, 807, 725, 206}

$$-\frac{ab^2\sqrt{1-(a+bx)^2}}{2\left(1-a^2\right)^2 x}-\frac{\left(2a^2+1\right)b^3\tanh^{-1}\left(\frac{1-a(a+bx)}{\sqrt{1-a^2}\sqrt{1-(a+bx)^2}}\right)}{6\left(1-a^2\right)^{5/2}}-\frac{b\sqrt{1-(a+bx)^2}}{6\left(1-a^2\right)x^2}-\frac{\sin^{-1}(a+bx)}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]/x^4,x]
```

```
[Out] -(b*Sqrt[1 - (a + b*x)^2])/(6*(1 - a^2)*x^2) - (a*b^2*Sqrt[1 - (a + b*x)^2]
)/(2*(1 - a^2)^2*x) - ArcSin[a + b*x]/(3*x^3) - ((1 + 2*a^2)*b^3*ArcTanh[(1
 - a*(a + b*x))/(Sqrt[1 - a^2]*Sqrt[1 - (a + b*x)^2])])/(6*(1 - a^2)^(5/2))
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
```

```
&& NeQ[m, -1]
```

Rule 745

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*d^2 + a*e^2)), x] + D
ist[c/((m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)*Simp[d*(m + 1) - e*(
m + 2*p + 3)*x, x]*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, m, p}, x] &&
 NeQ[c*d^2 + a*e^2, 0] && NeQ[m, -1] && ((LtQ[m, -1] && IntQuadraticQ[a, 0,
 c, d, e, m, p, x]) || (SumSimplerQ[m, 1] && IntegerQ[p]) || ILtQ[Simplify[
m + 2*p + 3], 0])
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 206

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

Rubi steps

$$\int \frac{\sin^{-1}(a+bx)}{x^4}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)}{\left(-\frac{a}{b}+\frac{x}{b}\right)^4}\,dx, x, a+bx\right)}{b}$$
$$= -\frac{\sin^{-1}(a+bx)}{3x^3} + \frac{1}{3}\,\text{Subst}\left(\int \frac{1}{\left(-\frac{a}{b}+\frac{x}{b}\right)^3\sqrt{1-x^2}}\,dx, x, a+bx\right)$$
$$= -\frac{b\sqrt{1-(a+bx)^2}}{6(1-a^2)x^2} - \frac{\sin^{-1}(a+bx)}{3x^3} + \frac{b^2\,\text{Subst}\left(\int \frac{\frac{2a}{b}+\frac{x}{b}}{\left(-\frac{a}{b}+\frac{x}{b}\right)^2\sqrt{1-x^2}}\,dx, x, a+bx\right)}{6(1-a^2)}$$
$$= -\frac{b\sqrt{1-(a+bx)^2}}{6(1-a^2)x^2} - \frac{ab^2\sqrt{1-(a+bx)^2}}{2(1-a^2)^2x} - \frac{\sin^{-1}(a+bx)}{3x^3} + \frac{\left(\left(1+2a^2\right)b^2\right)\text{Subst}\left(\int \frac{1}{\left(-\frac{a}{b}+\frac{x}{b}\right)\sqrt{1-x^2}}\,dx, \ldots\right.}{6(1-a^2)^2}$$
$$= -\frac{b\sqrt{1-(a+bx)^2}}{6(1-a^2)x^2} - \frac{ab^2\sqrt{1-(a+bx)^2}}{2(1-a^2)^2x} - \frac{\sin^{-1}(a+bx)}{3x^3} - \frac{\left(\left(1+2a^2\right)b^2\right)\text{Subst}\left(\int \frac{1}{\frac{1}{b^2}-\frac{a^2}{b^2}-x^2}\,dx, x, \ldots\right.}{6(1-a^2)^2}$$
$$= -\frac{b\sqrt{1-(a+bx)^2}}{6(1-a^2)x^2} - \frac{ab^2\sqrt{1-(a+bx)^2}}{2(1-a^2)^2x} - \frac{\sin^{-1}(a+bx)}{3x^3} - \frac{\left(1+2a^2\right)b^3\tanh^{-1}\left(\frac{1-a(a+bx)}{\sqrt{1-a^2}\sqrt{1-(a+bx)^2}}\right)}{6(1-a^2)^{5/2}}$$

Mathematica [A] time = 0.20994, size = 166, normalized size = 1.15

$$\frac{\sqrt{1-a^2}bx\left(a^2-3abx-1\right)\sqrt{-a^2-2abx-b^2x^2+1}+\left(2a^2+1\right)b^3x^3\log(x)-\left(2a^2+1\right)b^3x^3\log\left(\sqrt{1-a^2}\sqrt{-a^2-2abx-b\ldots}\right.}{6\left(1-a^2\right)^{5/2}x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]/x^4,x]
```

```
[Out] (Sqrt[1 - a^2]*b*x*(-1 + a^2 - 3*a*b*x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2] -
 2*(1 - a^2)^(5/2)*ArcSin[a + b*x] + (1 + 2*a^2)*b^3*x^3*Log[x] - (1 + 2*a^
2)*b^3*x^3*Log[1 - a^2 - a*b*x + Sqrt[1 - a^2]*Sqrt[1 - a^2 - 2*a*b*x - b^2
*x^2]])/(6*(1 - a^2)^(5/2)*x^3)
```

Maple [A] time = 0.008, size = 227, normalized size = 1.6

$$-\frac{\arcsin(bx+a)}{3x^3}-\frac{b}{(-6a^2+6)x^2}\sqrt{-b^2x^2-2xab-a^2+1}-\frac{b^2a}{2(-a^2+1)^2x}\sqrt{-b^2x^2-2xab-a^2+1}-\frac{b^3a^2}{2}\ln\left(\frac{1}{bx}\left(-2\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)/x^4,x)
```

```
[Out] -1/3*arcsin(b*x+a)/x^3-1/6*b/(-a^2+1)/x^2*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)-1/
2*b^2*a/(-a^2+1)^2/x*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)-1/2*b^3*a^2/(-a^2+1)^(5
/2)*ln((-2*a^2+2-2*x*a*b+2*(-a^2+1)^(1/2)*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2))/b
/x)-1/6*b^3/(-a^2+1)^(3/2)*ln((-2*a^2+2-2*x*a*b+2*(-a^2+1)^(1/2)*(-b^2*x^2-
2*a*b*x-a^2+1)^(1/2))/b/x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 3.60826, size = 925, normalized size = 6.42

$$\left[-\frac{(2a^2+1)\sqrt{-a^2+1}b^3x^3\log\left(\frac{(2a^2-1)b^2x^2+2a^4+4(a^3-a)bx+2\sqrt{-b^2x^2-2abx-a^2+1}(abx+a^2-1)\sqrt{-a^2+1}-4a^2+2}{x^2}\right)+4\left(a^6-3a^4+3a^2-\right.}{12(a^6-3a^4+3a^2-1)x^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] [-1/12*((2*a^2 + 1)*sqrt(-a^2 + 1)*b^3*x^3*log(((2*a^2 - 1)*b^2*x^2 + 2*a^4
 + 4*(a^3 - a)*b*x + 2*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(a*b*x + a^2 - 1)
```

```
*sqrt(-a^2 + 1) - 4*a^2 + 2)/x^2) + 4*(a^6 - 3*a^4 + 3*a^2 - 1)*arcsin(b*x
+ a) + 2*(3*(a^3 - a)*b^2*x^2 - (a^4 - 2*a^2 + 1)*b*x)*sqrt(-b^2*x^2 - 2*a*
b*x - a^2 + 1))/((a^6 - 3*a^4 + 3*a^2 - 1)*x^3), 1/6*((2*a^2 + 1)*sqrt(a^2
- 1)*b^3*x^3*arctan(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(a*b*x + a^2 - 1)*sq
rt(a^2 - 1)/((a^2 - 1)*b^2*x^2 + a^4 + 2*(a^3 - a)*b*x - 2*a^2 + 1)) - 2*(a
^6 - 3*a^4 + 3*a^2 - 1)*arcsin(b*x + a) - (3*(a^3 - a)*b^2*x^2 - (a^4 - 2*a
^2 + 1)*b*x)*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1))/((a^6 - 3*a^4 + 3*a^2 - 1)
*x^3)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\operatorname{asin}(a+bx)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)/x**4,x)
```

```
[Out] Integral(asin(a + b*x)/x**4, x)
```

Giac [B] time = 1.21661, size = 752, normalized size = 5.22

$$\frac{1}{3}\,b\left(\frac{\left(2\,a^{2}b^{3}+b^{3}\right)\arctan\left(\frac{\frac{\left(\sqrt{-b^{2}x^{2}-2\,abx-a^{2}+1}|b|+b\right)a}{b^{2}x+ab}-1}{\sqrt{a^{2}-1}}\right)}{\left(a^{4}|b|-2\,a^{2}|b|+|b|\right)\sqrt{a^{2}-1}}-\frac{\frac{4\left(\sqrt{-b^{2}x^{2}-2\,abx-a^{2}+1}|b|+b\right)^{2}a^{4}b^{3}}{\left(b^{2}x+ab\right)^{2}}+4\,a^{4}b^{3}-\frac{11\left(\sqrt{-b^{2}x^{2}-2\,abx-a^{2}+1}|b|+b\right)a^{3}b^{3}}{b^{2}x+ab}-\cdots}{\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/3*b*((2*a^2*b^3 + b^3)*arctan(((sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b)
 + b)*a/(b^2*x + a*b) - 1)/sqrt(a^2 - 1))/((a^4*abs(b) - 2*a^2*abs(b) + abs
(b))*sqrt(a^2 - 1)) - (4*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)^2*
a^4*b^3/(b^2*x + a*b)^2 + 4*a^4*b^3 - 11*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1
)*abs(b) + b)*a^3*b^3/(b^2*x + a*b) - 5*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)
*abs(b) + b)^3*a^3*b^3/(b^2*x + a*b)^3 + 7*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 +
```

```
 1)*abs(b) + b)^2*a^2*b^3/(b^2*x + a*b)^2 - a^2*b^3 + 2*(sqrt(-b^2*x^2 - 2*
a*b*x - a^2 + 1)*abs(b) + b)*a*b^3/(b^2*x + a*b) + 2*(sqrt(-b^2*x^2 - 2*a*b
*x - a^2 + 1)*abs(b) + b)^3*a*b^3/(b^2*x + a*b)^3 - 2*(sqrt(-b^2*x^2 - 2*a*
b*x - a^2 + 1)*abs(b) + b)^2*b^3/(b^2*x + a*b)^2)/((a^6*abs(b) - 2*a^4*abs(
b) + a^2*abs(b))*((sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)^2*a/(b^2*
x + a*b)^2 + a - 2*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)/(b^2*x +
 a*b))^2)) - 1/3*arcsin(b*x + a)/x^3
```

3.130 $\int \frac{\sin^{-1}(a+bx)}{x^5}\,dx$

Optimal. Leaf size=186

$$-\frac{5ab^2\sqrt{1-(a+bx)^2}}{24\left(1-a^2\right)^2x^2}-\frac{\left(11a^2+4\right)b^3\sqrt{1-(a+bx)^2}}{24\left(1-a^2\right)^3x}-\frac{a\left(2a^2+3\right)b^4\tanh^{-1}\left(\frac{1-a(a+bx)}{\sqrt{1-a^2}\sqrt{1-(a+bx)^2}}\right)}{8\left(1-a^2\right)^{7/2}}-\frac{b\sqrt{1-(a+bx)^2}}{12\left(1-a^2\right)x^3}-\frac{\sin^{-1}}{}$$

```
[Out] -(b*Sqrt[1 - (a + b*x)^2])/(12*(1 - a^2)*x^3) - (5*a*b^2*Sqrt[1 - (a + b*x)
^2])/(24*(1 - a^2)^2*x^2) - ((4 + 11*a^2)*b^3*Sqrt[1 - (a + b*x)^2])/(24*(1
 - a^2)^3*x) - ArcSin[a + b*x]/(4*x^4) - (a*(3 + 2*a^2)*b^4*ArcTanh[(1 - a*
(a + b*x))/(Sqrt[1 - a^2]*Sqrt[1 - (a + b*x)^2])])/(8*(1 - a^2)^(7/2))
```

Rubi [A] time = 0.274316, antiderivative size = 186, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.7, Rules used = {4805, 4743, 745, 835, 807, 725, 206}

$$-\frac{5ab^2\sqrt{1-(a+bx)^2}}{24\left(1-a^2\right)^2x^2}-\frac{\left(11a^2+4\right)b^3\sqrt{1-(a+bx)^2}}{24\left(1-a^2\right)^3x}-\frac{a\left(2a^2+3\right)b^4\tanh^{-1}\left(\frac{1-a(a+bx)}{\sqrt{1-a^2}\sqrt{1-(a+bx)^2}}\right)}{8\left(1-a^2\right)^{7/2}}-\frac{b\sqrt{1-(a+bx)^2}}{12\left(1-a^2\right)x^3}-\frac{\sin^{-1}}{}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]/x^5,x]
```

```
[Out] -(b*Sqrt[1 - (a + b*x)^2])/(12*(1 - a^2)*x^3) - (5*a*b^2*Sqrt[1 - (a + b*x)
^2])/(24*(1 - a^2)^2*x^2) - ((4 + 11*a^2)*b^3*Sqrt[1 - (a + b*x)^2])/(24*(1
 - a^2)^3*x) - ArcSin[a + b*x]/(4*x^4) - (a*(3 + 2*a^2)*b^4*ArcTanh[(1 - a*
(a + b*x))/(Sqrt[1 - a^2]*Sqrt[1 - (a + b*x)^2])])/(8*(1 - a^2)^(7/2))
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
```

```
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 745

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*d^2 + a*e^2)), x] + D
ist[c/((m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)*Simp[d*(m + 1) - e*(
m + 2*p + 3)*x, x]*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, m, p}, x] &&
 NeQ[c*d^2 + a*e^2, 0] && NeQ[m, -1] && ((LtQ[m, -1] && IntQuadraticQ[a, 0,
 c, d, e, m, p, x]) || (SumSimplerQ[m, 1] && IntegerQ[p]) || ILtQ[Simplify[
m + 2*p + 3], 0])
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 206

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

Rubi steps

$$\int \frac{\sin^{-1}(a+bx)}{x^5}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)}{\left(-\frac{a}{b}+\frac{x}{b}\right)^5}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{\sin^{-1}(a+bx)}{4x^4} + \frac{1}{4}\,\text{Subst}\left(\int \frac{1}{\left(-\frac{a}{b}+\frac{x}{b}\right)^4\sqrt{1-x^2}}\,dx, x, a+bx\right)$$

$$= -\frac{b\sqrt{1-(a+bx)^2}}{12\left(1-a^2\right)x^3} - \frac{\sin^{-1}(a+bx)}{4x^4} + \frac{b^2\,\text{Subst}\left(\int \frac{\frac{3a}{b}+\frac{2x}{b}}{\left(-\frac{a}{b}+\frac{x}{b}\right)^3\sqrt{1-x^2}}\,dx, x, a+bx\right)}{12\left(1-a^2\right)}$$

$$= -\frac{b\sqrt{1-(a+bx)^2}}{12\left(1-a^2\right)x^3} - \frac{5ab^2\sqrt{1-(a+bx)^2}}{24\left(1-a^2\right)^2x^2} - \frac{\sin^{-1}(a+bx)}{4x^4} - \frac{b^4\,\text{Subst}\left(\int \frac{-\frac{2\left(2+3a^2\right)}{b^2}-\frac{5ax}{b^2}}{\left(-\frac{a}{b}+\frac{x}{b}\right)^2\sqrt{1-x^2}}\,dx, x, a+bx\right.}{24\left(1-a^2\right)^2}$$

$$= -\frac{b\sqrt{1-(a+bx)^2}}{12\left(1-a^2\right)x^3} - \frac{5ab^2\sqrt{1-(a+bx)^2}}{24\left(1-a^2\right)^2x^2} - \frac{\left(4+11a^2\right)b^3\sqrt{1-(a+bx)^2}}{24\left(1-a^2\right)^3x} - \frac{\sin^{-1}(a+bx)}{4x^4} + \frac{\left(a\left(3+\right.\right.}{}$$

$$= -\frac{b\sqrt{1-(a+bx)^2}}{12\left(1-a^2\right)x^3} - \frac{5ab^2\sqrt{1-(a+bx)^2}}{24\left(1-a^2\right)^2x^2} - \frac{\left(4+11a^2\right)b^3\sqrt{1-(a+bx)^2}}{24\left(1-a^2\right)^3x} - \frac{\sin^{-1}(a+bx)}{4x^4} - \frac{\left(a\left(3+\right.\right.}{}$$

$$= -\frac{b\sqrt{1-(a+bx)^2}}{12\left(1-a^2\right)x^3} - \frac{5ab^2\sqrt{1-(a+bx)^2}}{24\left(1-a^2\right)^2x^2} - \frac{\left(4+11a^2\right)b^3\sqrt{1-(a+bx)^2}}{24\left(1-a^2\right)^3x} - \frac{\sin^{-1}(a+bx)}{4x^4} - \frac{a\left(3+2\right.}{}$$

Mathematica [A] time = 0.225893, size = 194, normalized size = 1.04

$$\frac{1}{8}\left(\frac{b\sqrt{-a^2-2abx-b^2x^2+1}\left(a^2\left(11b^2x^2-4\right)-5a^3bx+2a^4+5abx+4b^2x^2+2\right)}{3\left(a^2-1\right)^3x^3} - \frac{a\left(2a^2+3\right)b^4\log\left(\sqrt{1-a^2}\sqrt{-a^2-2a\right.}{\left(1-a^2\right)^7}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]/x^5,x]
```

```
[Out] ((b*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*(2 + 2*a^4 + 5*a*b*x - 5*a^3*b*x + 4*
b^2*x^2 + a^2*(-4 + 11*b^2*x^2)))/(3*(-1 + a^2)^3*x^3) - (2*ArcSin[a + b*x]
```

```
)/x^4 + (a*(3 + 2*a^2)*b^4*Log[x])/(1 - a^2)^(7/2) - (a*(3 + 2*a^2)*b^4*Log
[1 - a^2 - a*b*x + Sqrt[1 - a^2]*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]])/(1 - a
^2)^(7/2))/8
```

Maple [A] time = 0.007, size = 309, normalized size = 1.7

$$-\frac{\arcsin(bx+a)}{4x^4}-\frac{b}{(-12a^2+12)x^3}\sqrt{-b^2x^2-2xab-a^2+1}-\frac{5b^2a}{24(-a^2+1)^2x^2}\sqrt{-b^2x^2-2xab-a^2+1}-\frac{5b^3a^2}{8(-a^2+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)/x^5,x)
```

```
[Out] -1/4*arcsin(b*x+a)/x^4-1/12*b/(-a^2+1)/x^3*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)-5
/24*b^2*a/(-a^2+1)^2/x^2*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)-5/8*b^3*a^2/(-a^2+1
)^3/x*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)-5/8*b^4*a^3/(-a^2+1)^(7/2)*ln((-2*a^2+
2-2*x*a*b+2*(-a^2+1)^(1/2)*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2))/b/x)-3/8*b^4*a/(
-a^2+1)^(5/2)*ln((-2*a^2+2-2*x*a*b+2*(-a^2+1)^(1/2)*(-b^2*x^2-2*a*b*x-a^2+1
)^(1/2))/b/x)-1/6*b^3/(-a^2+1)^2/x*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 3.98883, size = 1115, normalized size = 5.99

$$\left[-\frac{3\left(2a^3+3a\right)\sqrt{-a^2+1}b^4x^4\log\left(\frac{(2a^2-1)b^2x^2+2a^4+4\left(a^3-a\right)bx-2\sqrt{-b^2x^2-2abx-a^2+1}\left(abx+a^2-1\right)\sqrt{-a^2+1}-4a^2+2}{x^2}\right)+12\left(a^8-4a^6+6\right.}{48\left(a^8-\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] [-1/48*(3*(2*a^3 + 3*a)*sqrt(-a^2 + 1)*b^4*x^4*log(((2*a^2 - 1)*b^2*x^2 + 2
*a^4 + 4*(a^3 - a)*b*x - 2*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(a*b*x + a^2
- 1)*sqrt(-a^2 + 1) - 4*a^2 + 2)/x^2) + 12*(a^8 - 4*a^6 + 6*a^4 - 4*a^2 + 1
)*arcsin(b*x + a) - 2*((11*a^4 - 7*a^2 - 4)*b^3*x^3 - 5*(a^5 - 2*a^3 + a)*b
^2*x^2 + 2*(a^6 - 3*a^4 + 3*a^2 - 1)*b*x)*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1
))/((a^8 - 4*a^6 + 6*a^4 - 4*a^2 + 1)*x^4), -1/24*(3*(2*a^3 + 3*a)*sqrt(a^2
 - 1)*b^4*x^4*arctan(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(a*b*x + a^2 - 1)*s
qrt(a^2 - 1)/((a^2 - 1)*b^2*x^2 + a^4 + 2*(a^3 - a)*b*x - 2*a^2 + 1)) + 6*(
a^8 - 4*a^6 + 6*a^4 - 4*a^2 + 1)*arcsin(b*x + a) - ((11*a^4 - 7*a^2 - 4)*b^
3*x^3 - 5*(a^5 - 2*a^3 + a)*b^2*x^2 + 2*(a^6 - 3*a^4 + 3*a^2 - 1)*b*x)*sqrt
(-b^2*x^2 - 2*a*b*x - a^2 + 1))/((a^8 - 4*a^6 + 6*a^4 - 4*a^2 + 1)*x^4)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\operatorname{asin}(a + bx)}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)/x**5,x)
```

```
[Out] Integral(asin(a + b*x)/x**5, x)
```

Giac [B] time = 1.28311, size = 1501, normalized size = 8.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/12*b*(3*(2*a^3*b^4 + 3*a*b^4)*arctan(((sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1
)*abs(b) + b)*a/(b^2*x + a*b) - 1)/sqrt(a^2 - 1))/((a^6*abs(b) - 3*a^4*abs(
b) + 3*a^2*abs(b) - abs(b))*sqrt(a^2 - 1)) - (36*(sqrt(-b^2*x^2 - 2*a*b*x -
 a^2 + 1)*abs(b) + b)^2*a^7*b^4/(b^2*x + a*b)^2 + 18*(sqrt(-b^2*x^2 - 2*a*b
```

```
*x - a^2 + 1)*abs(b) + b)^4*a^7*b^4/(b^2*x + a*b)^4 + 18*a^7*b^4 - 81*(sqrt
(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)*a^6*b^4/(b^2*x + a*b) - 108*(sqr
t(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)^3*a^6*b^4/(b^2*x + a*b)^3 - 27*
(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)^5*a^6*b^4/(b^2*x + a*b)^5 +
 120*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)^2*a^5*b^4/(b^2*x + a*b
)^2 + 81*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)^4*a^5*b^4/(b^2*x +
 a*b)^4 - 5*a^5*b^4 + 12*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)*a^
4*b^4/(b^2*x + a*b) - 42*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)^3*
a^4*b^4/(b^2*x + a*b)^3 + 18*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b
)^5*a^4*b^4/(b^2*x + a*b)^5 - 18*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b)
 + b)^2*a^3*b^4/(b^2*x + a*b)^2 - 36*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*ab
s(b) + b)^4*a^3*b^4/(b^2*x + a*b)^4 + 2*a^3*b^4 - 6*(sqrt(-b^2*x^2 - 2*a*b*
x - a^2 + 1)*abs(b) + b)*a^2*b^4/(b^2*x + a*b) + 8*(sqrt(-b^2*x^2 - 2*a*b*x
 - a^2 + 1)*abs(b) + b)^3*a^2*b^4/(b^2*x + a*b)^3 - 6*(sqrt(-b^2*x^2 - 2*a*
b*x - a^2 + 1)*abs(b) + b)^5*a^2*b^4/(b^2*x + a*b)^5 + 12*(sqrt(-b^2*x^2 -
2*a*b*x - a^2 + 1)*abs(b) + b)^2*a*b^4/(b^2*x + a*b)^2 + 12*(sqrt(-b^2*x^2
- 2*a*b*x - a^2 + 1)*abs(b) + b)^4*a*b^4/(b^2*x + a*b)^4 - 8*(sqrt(-b^2*x^2
 - 2*a*b*x - a^2 + 1)*abs(b) + b)^3*b^4/(b^2*x + a*b)^3)/((a^9*abs(b) - 3*a
^7*abs(b) + 3*a^5*abs(b) - a^3*abs(b))*((sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)
*abs(b) + b)^2*a/(b^2*x + a*b)^2 + a - 2*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1
)*abs(b) + b)/(b^2*x + a*b))^3)) - 1/4*arcsin(b*x + a)/x^4
```

3.131 $\int x^3 \sin^{-1}(a+bx)^2\,dx$

Optimal. Leaf size=343

$$\frac{2a^3x}{b^3}-\frac{3a^2(a+bx)^2}{4b^4}-\frac{a^4\sin^{-1}(a+bx)^2}{4b^4}-\frac{2a^3\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{b^4}-\frac{3a^2\sin^{-1}(a+bx)^2}{4b^4}+\frac{3a^2(a+bx)\sqrt{1-(a-}{2b}$$

```
[Out] (4*a*x)/(3*b^3) + (2*a^3*x)/b^3 - (3*(a + b*x)^2)/(32*b^4) - (3*a^2*(a + b*
x)^2)/(4*b^4) + (2*a*(a + b*x)^3)/(9*b^4) - (a + b*x)^4/(32*b^4) - (4*a*Sqr
t[1 - (a + b*x)^2]*ArcSin[a + b*x])/(3*b^4) - (2*a^3*Sqrt[1 - (a + b*x)^2]*
ArcSin[a + b*x])/b^4 + (3*(a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/
(16*b^4) + (3*a^2*(a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/(2*b^4)
- (2*a*(a + b*x)^2*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/(3*b^4) + ((a + b
*x)^3*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/(8*b^4) - (3*ArcSin[a + b*x]^2
)/(32*b^4) - (3*a^2*ArcSin[a + b*x]^2)/(4*b^4) - (a^4*ArcSin[a + b*x]^2)/(4
*b^4) + (x^4*ArcSin[a + b*x]^2)/4
```

Rubi [A] time = 0.595695, antiderivative size = 343, normalized size of antiderivative = 1., number of steps used = 19, number of rules used = 8, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667, Rules used = {4805, 4743, 4763, 4641, 4677, 8, 4707, 30}

$$\frac{2a^3x}{b^3}-\frac{3a^2(a+bx)^2}{4b^4}-\frac{a^4\sin^{-1}(a+bx)^2}{4b^4}-\frac{2a^3\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{b^4}-\frac{3a^2\sin^{-1}(a+bx)^2}{4b^4}+\frac{3a^2(a+bx)\sqrt{1-(a-}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*ArcSin[a + b*x]^2,x]
```


```
[Out] (4*a*x)/(3*b^3) + (2*a^3*x)/b^3 - (3*(a + b*x)^2)/(32*b^4) - (3*a^2*(a + b*
x)^2)/(4*b^4) + (2*a*(a + b*x)^3)/(9*b^4) - (a + b*x)^4/(32*b^4) - (4*a*Sqr
t[1 - (a + b*x)^2]*ArcSin[a + b*x])/(3*b^4) - (2*a^3*Sqrt[1 - (a + b*x)^2]*
ArcSin[a + b*x])/b^4 + (3*(a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/
(16*b^4) + (3*a^2*(a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/(2*b^4)
- (2*a*(a + b*x)^2*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/(3*b^4) + ((a + b
*x)^3*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/(8*b^4) - (3*ArcSin[a + b*x]^2
)/(32*b^4) - (3*a^2*ArcSin[a + b*x]^2)/(4*b^4) - (a^4*ArcSin[a + b*x]^2)/(4
*b^4) + (x^4*ArcSin[a + b*x]^2)/4
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
```

```
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4677

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

Rule 8

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

Rule 4707

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

```
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 30

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

Rubi steps

$$\int x^3 \sin^{-1}(a+bx)^2\,dx = \frac{\text{Subst}\left(\int \left(-\frac{a}{b}+\frac{x}{b}\right)^3 \sin^{-1}(x)^2\,dx, x, a+bx\right)}{b}$$
$$= \frac{1}{4}x^4\sin^{-1}(a+bx)^2 - \frac{1}{2}\text{Subst}\left(\int \frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^4 \sin^{-1}(x)}{\sqrt{1-x^2}}\,dx, x, a+bx\right)$$
$$= \frac{1}{4}x^4\sin^{-1}(a+bx)^2 - \frac{1}{2}\text{Subst}\left(\int \left(\frac{a^4\sin^{-1}(x)}{b^4\sqrt{1-x^2}} - \frac{4a^3x\sin^{-1}(x)}{b^4\sqrt{1-x^2}} + \frac{6a^2x^2\sin^{-1}(x)}{b^4\sqrt{1-x^2}} - \frac{4ax^3\sin^{-1}(}{b^4\sqrt{1-x^2}}\right.\right.$$
$$= \frac{1}{4}x^4\sin^{-1}(a+bx)^2 - \frac{\text{Subst}\left(\int \frac{x^4\sin^{-1}(x)}{\sqrt{1-x^2}}\,dx, x, a+bx\right)}{2b^4} + \frac{(2a)\,\text{Subst}\left(\int \frac{x^3\sin^{-1}(x)}{\sqrt{1-x^2}}\,dx, x, a+bx\right)}{b^4}$$
$$= -\frac{2a^3\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{b^4} + \frac{3a^2(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{2b^4} - \frac{2a(a+bx)^2\sqrt{1}}{}$$
$$= \frac{2a^3x}{b^3} - \frac{3a^2(a+bx)^2}{4b^4} + \frac{2a(a+bx)^3}{9b^4} - \frac{(a+bx)^4}{32b^4} - \frac{4a\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{3b^4} - \frac{2a^3\sqrt{1-(}}{}$$
$$= \frac{4ax}{3b^3} + \frac{2a^3x}{b^3} - \frac{3(a+bx)^2}{32b^4} - \frac{3a^2(a+bx)^2}{4b^4} + \frac{2a(a+bx)^3}{9b^4} - \frac{(a+bx)^4}{32b^4} - \frac{4a\sqrt{1-(a+bx)^2}\sin^{-1}(}{3b^4}$$

Mathematica [A] time = 0.2067, size = 148, normalized size = 0.43

$$\frac{bx\left(-78a^2bx+300a^3+a\left(28b^2x^2+330\right)-9bx\left(b^2x^2+3\right)\right)-9\left(8a^4+24a^2-8b^4x^4+3\right)\sin^{-1}(a+bx)^2-6\sqrt{-a^2-2abx}}{288b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*ArcSin[a + b*x]^2,x]
```

```
[Out] (b*x*(300*a^3 - 78*a^2*b*x - 9*b*x*(3 + b^2*x^2) + a*(330 + 28*b^2*x^2)) -
6*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*(55*a + 50*a^3 - 9*b*x - 26*a^2*b*x + 1
4*a*b^2*x^2 - 6*b^3*x^3)*ArcSin[a + b*x] - 9*(3 + 24*a^2 + 8*a^4 - 8*b^4*x^
```

```
4)*ArcSin[a + b*x]^2)/(288*b^4)
```

Maple [A] time = 0.084, size = 435, normalized size = 1.3

$$\frac{1}{b^4}\left(\frac{(\arcsin(bx+a))^2\left(-1+(bx+a)^2\right)^2}{4}-\frac{\arcsin(bx+a)}{16}\left(-2\,(bx+a)^3\sqrt{1-(bx+a)^2}+5\,(bx+a)\sqrt{1-(bx+a)^2}+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/b^4*(1/4*arcsin(b*x+a)^2*(-1+(b*x+a)^2)^2-1/16*arcsin(b*x+a)*(-2*(b*x+a)^
3*(1-(b*x+a)^2)^(1/2)+5*(b*x+a)*(1-(b*x+a)^2)^(1/2)+3*arcsin(b*x+a))-5/32*a
rcsin(b*x+a)^2-1/32*(-1+(b*x+a)^2)^2-5/32*(b*x+a)^2-3/32+3/4*a^2*(2*arcsin(
b*x+a)^2*(b*x+a)^2+2*arcsin(b*x+a)*(1-(b*x+a)^2)^(1/2)*(b*x+a)-arcsin(b*x+a
)^2-(b*x+a)^2)-1/9*a*(9*arcsin(b*x+a)^2*(b*x+a)^3+6*arcsin(b*x+a)*(1-(b*x+a
)^2)^(1/2)*(b*x+a)^2-27*arcsin(b*x+a)^2*(b*x+a)-2*(b*x+a)^3-42*(1-(b*x+a)^2
)^(1/2)*arcsin(b*x+a)+42*b*x+42*a)-a^3*(arcsin(b*x+a)^2*(b*x+a)-2*b*x-2*a+2
*(1-(b*x+a)^2)^(1/2)*arcsin(b*x+a))+1/2*arcsin(b*x+a)^2*(-1+(b*x+a)^2)+1/2*
arcsin(b*x+a)*((b*x+a)*(1-(b*x+a)^2)^(1/2)+arcsin(b*x+a))-3*a*(arcsin(b*x+a
)^2*(b*x+a)-2*b*x-2*a+2*(1-(b*x+a)^2)^(1/2)*arcsin(b*x+a)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.65182, size = 352, normalized size = 1.03

$$-\frac{9\,b^4x^4-28\,ab^3x^3+3\left(26\,a^2+9\right)b^2x^2-30\left(10\,a^3+11\,a\right)bx-9\left(8\,b^4x^4-8\,a^4-24\,a^2-3\right)\arcsin(bx+a)^2-6\left(6\,b^3x^3\right.}{288\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/288*(9*b^4*x^4 - 28*a*b^3*x^3 + 3*(26*a^2 + 9)*b^2*x^2 - 30*(10*a^3 + 11
*a)*b*x - 9*(8*b^4*x^4 - 8*a^4 - 24*a^2 - 3)*arcsin(b*x + a)^2 - 6*(6*b^3*x
^3 - 14*a*b^2*x^2 - 50*a^3 + (26*a^2 + 9)*b*x - 55*a)*sqrt(-b^2*x^2 - 2*a*b
*x - a^2 + 1)*arcsin(b*x + a))/b^4
```

Sympy [A] time = 4.15582, size = 366, normalized size = 1.07

$$\begin{cases} -\frac{a^4 \operatorname{asin}^2(a+bx)}{4b^4} + \frac{25a^3x}{24b^3} - \frac{25a^3\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}(a+bx)}{24b^4} - \frac{13a^2x^2}{48b^2} + \frac{13a^2x\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}(a+bx)}{24b^3} - \frac{3a^2\operatorname{asin}^2(a+bx)}{4b^4} + \frac{7ax^3}{72b} - \frac{7 \\ \frac{x^4\operatorname{asin}^2(a)}{4} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*asin(b*x+a)**2,x)
```

```
[Out] Piecewise((-a**4*asin(a + b*x)**2/(4*b**4) + 25*a**3*x/(24*b**3) - 25*a**3*
sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/(24*b**4) - 13*a**2*x**
2/(48*b**2) + 13*a**2*x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)
/(24*b**3) - 3*a**2*asin(a + b*x)**2/(4*b**4) + 7*a*x**3/(72*b) - 7*a*x**2*
sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/(24*b**2) + 55*a*x/(48*
b**3) - 55*a*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/(48*b**4)
+ x**4*asin(a + b*x)**2/4 - x**4/32 + x**3*sqrt(-a**2 - 2*a*b*x - b**2*x**2
 + 1)*asin(a + b*x)/(8*b) - 3*x**2/(32*b**2) + 3*x*sqrt(-a**2 - 2*a*b*x - b
**2*x**2 + 1)*asin(a + b*x)/(16*b**3) - 3*asin(a + b*x)**2/(32*b**4), Ne(b,
 0)), (x**4*asin(a)**2/4, True))
```

Giac [A] time = 1.25373, size = 594, normalized size = 1.73

$$-\frac{(bx+a)a^3 \arcsin(bx+a)^2}{b^4} - \frac{\left((bx+a)^2-1\right)(bx+a)a \arcsin(bx+a)^2}{b^4} + \frac{3\left((bx+a)^2-1\right)a^2 \arcsin(bx+a)^2}{2\,b^4} + \frac{3\sqrt{-(b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(b*x + a)*a^3*arcsin(b*x + a)^2/b^4 - ((b*x + a)^2 - 1)*(b*x + a)*a*arcsin
(b*x + a)^2/b^4 + 3/2*((b*x + a)^2 - 1)*a^2*arcsin(b*x + a)^2/b^4 + 3/2*sqr
t(-(b*x + a)^2 + 1)*(b*x + a)*a^2*arcsin(b*x + a)/b^4 - 2*sqrt(-(b*x + a)^2
 + 1)*a^3*arcsin(b*x + a)/b^4 + 2*(b*x + a)*a^3/b^4 + 1/4*((b*x + a)^2 - 1)
^2*arcsin(b*x + a)^2/b^4 - (b*x + a)*a*arcsin(b*x + a)^2/b^4 + 3/4*a^2*arcs
in(b*x + a)^2/b^4 - 1/8*(-(b*x + a)^2 + 1)^(3/2)*(b*x + a)*arcsin(b*x + a)/
b^4 + 2/3*(-(b*x + a)^2 + 1)^(3/2)*a*arcsin(b*x + a)/b^4 + 2/9*((b*x + a)^2
 - 1)*(b*x + a)*a/b^4 - 3/4*((b*x + a)^2 - 1)*a^2/b^4 + 1/2*((b*x + a)^2 -
1)*arcsin(b*x + a)^2/b^4 + 5/16*sqrt(-(b*x + a)^2 + 1)*(b*x + a)*arcsin(b*x
 + a)/b^4 - 2*sqrt(-(b*x + a)^2 + 1)*a*arcsin(b*x + a)/b^4 - 1/32*((b*x + a
)^2 - 1)^2/b^4 + 14/9*(b*x + a)*a/b^4 - 3/8*a^2/b^4 + 5/32*arcsin(b*x + a)^
2/b^4 - 5/32*((b*x + a)^2 - 1)/b^4 - 17/256/b^4
```

3.132 $\int x^2 \sin^{-1}(a+bx)^2 \, dx$

Optimal. Leaf size=220

$$-\frac{2a^2x}{b^2}+\frac{a^3\sin^{-1}(a+bx)^2}{3b^3}+\frac{2a^2\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{b^3}+\frac{a(a+bx)^2}{2b^3}-\frac{2(a+bx)^3}{27b^3}+\frac{a\sin^{-1}(a+bx)^2}{2b^3}-\frac{a(a+bx)}{}$$

```
[Out] (-4*x)/(9*b^2) - (2*a^2*x)/b^2 + (a*(a + b*x)^2)/(2*b^3) - (2*(a + b*x)^3)/
(27*b^3) + (4*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/(9*b^3) + (2*a^2*Sqrt[
1 - (a + b*x)^2]*ArcSin[a + b*x])/b^3 - (a*(a + b*x)*Sqrt[1 - (a + b*x)^2]*
ArcSin[a + b*x])/b^3 + (2*(a + b*x)^2*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]
)/(9*b^3) + (a*ArcSin[a + b*x]^2)/(2*b^3) + (a^3*ArcSin[a + b*x]^2)/(3*b^3)
 + (x^3*ArcSin[a + b*x]^2)/3
```

Rubi [A] time = 0.39453, antiderivative size = 220, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 8, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667, Rules used = {4805, 4743, 4763, 4641, 4677, 8, 4707, 30}

$$-\frac{2a^2x}{b^2}+\frac{a^3\sin^{-1}(a+bx)^2}{3b^3}+\frac{2a^2\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{b^3}+\frac{a(a+bx)^2}{2b^3}-\frac{2(a+bx)^3}{27b^3}+\frac{a\sin^{-1}(a+bx)^2}{2b^3}-\frac{a(a+bx)}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcSin[a + b*x]^2,x]
```

```
[Out] (-4*x)/(9*b^2) - (2*a^2*x)/b^2 + (a*(a + b*x)^2)/(2*b^3) - (2*(a + b*x)^3)/
(27*b^3) + (4*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/(9*b^3) + (2*a^2*Sqrt[
1 - (a + b*x)^2]*ArcSin[a + b*x])/b^3 - (a*(a + b*x)*Sqrt[1 - (a + b*x)^2]*
ArcSin[a + b*x])/b^3 + (2*(a + b*x)^2*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]
)/(9*b^3) + (a*ArcSin[a + b*x]^2)/(2*b^3) + (a^3*ArcSin[a + b*x]^2)/(3*b^3)
 + (x^3*ArcSin[a + b*x]^2)/3
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
```

```
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4677

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

Rule 8

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

Rule 4707

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

Rule 30

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

Rubi steps

$$\int x^2 \sin^{-1}(a+bx)^2\,dx = \frac{\text{Subst}\left(\int \left(-\frac{a}{b}+\frac{x}{b}\right)^2 \sin^{-1}(x)^2\,dx, x, a+bx\right)}{b}$$

$$= \frac{1}{3}x^3\sin^{-1}(a+bx)^2 - \frac{2}{3}\text{Subst}\left(\int \frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^3 \sin^{-1}(x)}{\sqrt{1-x^2}}\,dx, x, a+bx\right)$$

$$= \frac{1}{3}x^3\sin^{-1}(a+bx)^2 - \frac{2}{3}\text{Subst}\left(\int \left(-\frac{a^3\sin^{-1}(x)}{b^3\sqrt{1-x^2}} + \frac{3a^2x\sin^{-1}(x)}{b^3\sqrt{1-x^2}} - \frac{3ax^2\sin^{-1}(x)}{b^3\sqrt{1-x^2}} + \frac{x^3\sin^{-1}(x)}{b^3\sqrt{1-x^2}}\right.\right.$$

$$= \frac{1}{3}x^3\sin^{-1}(a+bx)^2 - \frac{2\,\text{Subst}\left(\int \frac{x^3\sin^{-1}(x)}{\sqrt{1-x^2}}\,dx, x, a+bx\right)}{3b^3} + \frac{(2a)\,\text{Subst}\left(\int \frac{x^2\sin^{-1}(x)}{\sqrt{1-x^2}}\,dx, x, a+bx\right)}{b^3}$$

$$= \frac{2a^2\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{b^3} - \frac{a(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{b^3} + \frac{2(a+bx)^2\sqrt{1-(a}{9}$$

$$= -\frac{2a^2x}{b^2} + \frac{a(a+bx)^2}{2b^3} - \frac{2(a+bx)^3}{27b^3} + \frac{4\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{9b^3} + \frac{2a^2\sqrt{1-(a+bx)^2}\sin^{-1}(a}{b^3}$$

$$= -\frac{4x}{9b^2} - \frac{2a^2x}{b^2} + \frac{a(a+bx)^2}{2b^3} - \frac{2(a+bx)^3}{27b^3} + \frac{4\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{9b^3} + \frac{2a^2\sqrt{1-(a+bx)^2}}{b^3}$$

Mathematica [A] time = 0.154691, size = 111, normalized size = 0.5

$$\frac{-bx\left(66a^2-15abx+4b^2x^2+24\right)+9\left(2a^3+3a+2b^3x^3\right)\sin^{-1}(a+bx)^2+6\sqrt{-a^2-2abx-b^2x^2+1}\left(11a^2-5abx+2b^2x^2\right.}{54b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcSin[a + b*x]^2,x]
```

```
[Out] (-(b*x*(24 + 66*a^2 - 15*a*b*x + 4*b^2*x^2)) + 6*Sqrt[1 - a^2 - 2*a*b*x - b
^2*x^2]*(4 + 11*a^2 - 5*a*b*x + 2*b^2*x^2)*ArcSin[a + b*x] + 9*(3*a + 2*a^3
 + 2*b^3*x^3)*ArcSin[a + b*x]^2)/(54*b^3)
```

Maple [A] time = 0.061, size = 231, normalized size = 1.1

$$\frac{1}{b^3}\left(-\frac{a}{2}\left(2\,(\arcsin(bx+a))^2(bx+a)^2+2\,\arcsin(bx+a)\sqrt{1-(bx+a)^2}(bx+a)-(\arcsin(bx+a))^2-(bx+a)^2\right)+\frac{(\mathrm{ar}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arcsin(b*x+a)^2,x)
```

```
[Out] 1/b^3*(-1/2*a*(2*arcsin(b*x+a)^2*(b*x+a)^2+2*arcsin(b*x+a)*(1-(b*x+a)^2)^(1
/2)*(b*x+a)-arcsin(b*x+a)^2-(b*x+a)^2)+1/3*arcsin(b*x+a)^2*((b*x+a)^2-3)*(b
*x+a)-2/3*b*x-2/3*a+2/3*(1-(b*x+a)^2)^(1/2)*arcsin(b*x+a)+2/9*arcsin(b*x+a)
*(-1+(b*x+a)^2)*(1-(b*x+a)^2)^(1/2)-2/27*((b*x+a)^2-3)*(b*x+a)+a^2*(arcsin(
b*x+a)^2*(b*x+a)-2*b*x-2*a+2*(1-(b*x+a)^2)^(1/2)*arcsin(b*x+a))+arcsin(b*x+
a)^2*(b*x+a))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.77983, size = 266, normalized size = 1.21

$$-\frac{4\,b^3x^3-15\,ab^2x^2+6\left(11\,a^2+4\right)bx-9\left(2\,b^3x^3+2\,a^3+3\,a\right)\arcsin\left(bx+a\right)^2-6\left(2\,b^2x^2-5\,abx+11\,a^2+4\right)\sqrt{-b^2x^2-}}{54\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/54*(4*b^3*x^3 - 15*a*b^2*x^2 + 6*(11*a^2 + 4)*b*x - 9*(2*b^3*x^3 + 2*a^3
 + 3*a)*arcsin(b*x + a)^2 - 6*(2*b^2*x^2 - 5*a*b*x + 11*a^2 + 4)*sqrt(-b^2*
x^2 - 2*a*b*x - a^2 + 1)*arcsin(b*x + a))/b^3
```

Sympy [A] time = 1.81073, size = 243, normalized size = 1.1

$$\begin{cases}\frac{a^3\operatorname{asin}^2(a+bx)}{3b^3}-\frac{11a^2x}{9b^2}+\frac{11a^2\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}(a+bx)}{9b^3}+\frac{5ax^2}{18b}-\frac{5ax\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}(a+bx)}{9b^2}+\frac{a\operatorname{asin}^2(a+bx)}{2b^3}+\frac{x^3\operatorname{asin}^2(a+bx)}{3} \\ \frac{x^3\operatorname{asin}^2(a)}{3}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*asin(b*x+a)**2,x)
```

```
[Out] Piecewise((a**3*asin(a + b*x)**2/(3*b**3) - 11*a**2*x/(9*b**2) + 11*a**2*sq
rt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/(9*b**3) + 5*a*x**2/(18*b
) - 5*a*x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/(9*b**2) + a*
asin(a + b*x)**2/(2*b**3) + x**3*asin(a + b*x)**2/3 - 2*x**3/27 + 2*x**2*sq
rt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/(9*b) - 4*x/(9*b**2) + 4*
sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/(9*b**3), Ne(b, 0)), (x
**3*asin(a)**2/3, True))
```

Giac [A] time = 1.2404, size = 366, normalized size = 1.66

$$\frac{(bx+a)a^2\arcsin(bx+a)^2}{b^3}+\frac{\left((bx+a)^2-1\right)(bx+a)\arcsin(bx+a)^2}{3\,b^3}-\frac{\left((bx+a)^2-1\right)a\arcsin(bx+a)^2}{b^3}-\frac{\sqrt{-(bx+a)^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (b*x + a)*a^2*arcsin(b*x + a)^2/b^3 + 1/3*((b*x + a)^2 - 1)*(b*x + a)*arcsi
n(b*x + a)^2/b^3 - ((b*x + a)^2 - 1)*a*arcsin(b*x + a)^2/b^3 - sqrt(-(b*x +
 a)^2 + 1)*(b*x + a)*a*arcsin(b*x + a)/b^3 + 2*sqrt(-(b*x + a)^2 + 1)*a^2*a
rcsin(b*x + a)/b^3 - 2*(b*x + a)*a^2/b^3 + 1/3*(b*x + a)*arcsin(b*x + a)^2/
b^3 - 1/2*a*arcsin(b*x + a)^2/b^3 - 2/9*(-(b*x + a)^2 + 1)^(3/2)*arcsin(b*x
 + a)/b^3 - 2/27*((b*x + a)^2 - 1)*(b*x + a)/b^3 + 1/2*((b*x + a)^2 - 1)*a/
b^3 + 2/3*sqrt(-(b*x + a)^2 + 1)*arcsin(b*x + a)/b^3 - 14/27*(b*x + a)/b^3
+ 1/4*a/b^3
```

3.133 $\int x \sin^{-1}(a+bx)^2 \, dx$

Optimal. Leaf size=130

$$-\frac{a^2 \sin^{-1}(a+bx)^2}{2b^2}-\frac{(a+bx)^2}{4b^2}+\frac{\sqrt{1-(a+bx)^2}(a+bx)\sin^{-1}(a+bx)}{2b^2}-\frac{\sin^{-1}(a+bx)^2}{4b^2}-\frac{2a\sqrt{1-(a+bx)^2}\sin^{-1}(a+}{b^2}$$

```
[Out] (2*a*x)/b - (a + b*x)^2/(4*b^2) - (2*a*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x
])/b^2 + ((a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/(2*b^2) - ArcSin
[a + b*x]^2/(4*b^2) - (a^2*ArcSin[a + b*x]^2)/(2*b^2) + (x^2*ArcSin[a + b*x
]^2)/2
```

Rubi [A] time = 0.248699, antiderivative size = 130, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.8, Rules used = {4805, 4743, 4763, 4641, 4677, 8, 4707, 30}

$$-\frac{a^2 \sin^{-1}(a+bx)^2}{2b^2}-\frac{(a+bx)^2}{4b^2}+\frac{\sqrt{1-(a+bx)^2}(a+bx)\sin^{-1}(a+bx)}{2b^2}-\frac{\sin^{-1}(a+bx)^2}{4b^2}-\frac{2a\sqrt{1-(a+bx)^2}\sin^{-1}(a+}{b^2}$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcSin[a + b*x]^2,x]
```



```
[Out] (2*a*x)/b - (a + b*x)^2/(4*b^2) - (2*a*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x
])/b^2 + ((a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/(2*b^2) - ArcSin
[a + b*x]^2/(4*b^2) - (a^2*ArcSin[a + b*x]^2)/(2*b^2) + (x^2*ArcSin[a + b*x
]^2)/2
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4677

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

Rule 8

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

Rule 4707

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

Rule 30

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

Rubi steps

$$\int x\sin^{-1}(a+bx)^2\,dx = \frac{\text{Subst}\left(\int\left(-\frac{a}{b}+\frac{x}{b}\right)\sin^{-1}(x)^2\,dx,x,a+bx\right)}{b}$$
$$=\frac{1}{2}x^2\sin^{-1}(a+bx)^2-\text{Subst}\left(\int\frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^2\sin^{-1}(x)}{\sqrt{1-x^2}}\,dx,x,a+bx\right)$$
$$=\frac{1}{2}x^2\sin^{-1}(a+bx)^2-\text{Subst}\left(\int\left(\frac{a^2\sin^{-1}(x)}{b^2\sqrt{1-x^2}}-\frac{2ax\sin^{-1}(x)}{b^2\sqrt{1-x^2}}+\frac{x^2\sin^{-1}(x)}{b^2\sqrt{1-x^2}}\right)dx,x,a+bx\right)$$
$$=\frac{1}{2}x^2\sin^{-1}(a+bx)^2-\frac{\text{Subst}\left(\int\frac{x^2\sin^{-1}(x)}{\sqrt{1-x^2}}\,dx,x,a+bx\right)}{b^2}+\frac{(2a)\,\text{Subst}\left(\int\frac{x\sin^{-1}(x)}{\sqrt{1-x^2}}\,dx,x,a+bx\right)}{b^2}$$
$$=-\frac{2a\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{b^2}+\frac{(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{2b^2}-\frac{a^2\sin^{-1}(a+bx)^2}{2b^2}+$$
$$=\frac{2ax}{b}-\frac{(a+bx)^2}{4b^2}-\frac{2a\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{b^2}+\frac{(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{2b^2}-$$

Mathematica [A] time = 0.0901196, size = 83, normalized size = 0.64

$$\frac{\left(-2a^2+2b^2x^2-1\right)\sin^{-1}(a+bx)^2-2(3a-bx)\sqrt{-a^2-2abx-b^2x^2+1}\sin^{-1}(a+bx)+bx(6a-bx)}{4b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcSin[a + b*x]^2,x]
```

```
[Out] (b*x*(6*a - b*x) - 2*(3*a - b*x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a
 + b*x] + (-1 - 2*a^2 + 2*b^2*x^2)*ArcSin[a + b*x]^2)/(4*b^2)
```

Maple [A] time = 0.042, size = 124, normalized size = 1.

$$\frac{1}{b^2}\left(\frac{(\arcsin(bx+a))^2\left(-1+(bx+a)^2\right)}{2}+\frac{\arcsin(bx+a)}{2}\left((bx+a)\sqrt{1-(bx+a)^2}+\arcsin(bx+a)\right)-\frac{(\arcsin(bx+a}{4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arcsin(b*x+a)^2,x)
```

```
[Out] 1/b^2*(1/2*arcsin(b*x+a)^2*(-1+(b*x+a)^2)+1/2*arcsin(b*x+a)*((b*x+a)*(1-(b*
x+a)^2)^(1/2)+arcsin(b*x+a))-1/4*arcsin(b*x+a)^2-1/4*(b*x+a)^2-a*(arcsin(b*
x+a)^2*(b*x+a)-2*b*x-2*a+2*(1-(b*x+a)^2)^(1/2)*arcsin(b*x+a)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.81804, size = 190, normalized size = 1.46

$$-\frac{b^2x^2 - 6\,abx - \left(2\,b^2x^2 - 2\,a^2 - 1\right)\arcsin\left(bx + a\right)^2 - 2\,\sqrt{-b^2x^2 - 2\,abx - a^2 + 1}(bx - 3\,a)\arcsin\left(bx + a\right)}{4\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/4*(b^2*x^2 - 6*a*b*x - (2*b^2*x^2 - 2*a^2 - 1)*arcsin(b*x + a)^2 - 2*sqr
t(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*x - 3*a)*arcsin(b*x + a))/b^2
```

Sympy [A] time = 1.0149, size = 138, normalized size = 1.06

$$\begin{cases} -\frac{a^2\operatorname{asin}^2(a+bx)}{2b^2} + \frac{3ax}{2b} - \frac{3a\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}(a+bx)}{2b^2} + \frac{x^2\operatorname{asin}^2(a+bx)}{2} - \frac{x^2}{4} + \frac{x\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}(a+bx)}{2b} - \frac{\operatorname{asin}^2(a+bx)}{4b^2} & \text{for } b \ne \\ \frac{x^2\operatorname{asin}^2(a)}{2} & \text{other} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*asin(b*x+a)**2,x)
```

```
[Out] Piecewise((-a**2*asin(a + b*x)**2/(2*b**2) + 3*a*x/(2*b) - 3*a*sqrt(-a**2 -
 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/(2*b**2) + x**2*asin(a + b*x)**2/2
- x**2/4 + x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/(2*b) - as
in(a + b*x)**2/(4*b**2), Ne(b, 0)), (x**2*asin(a)**2/2, True))
```

Giac [A] time = 1.22604, size = 188, normalized size = 1.45

$$-\frac{(bx+a)a\arcsin(bx+a)^2}{b^2}+\frac{\left((bx+a)^2-1\right)\arcsin(bx+a)^2}{2\,b^2}+\frac{\sqrt{-(bx+a)^2+1}(bx+a)\arcsin(bx+a)}{2\,b^2}-\frac{2\sqrt{-(bx+}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(b*x + a)*a*arcsin(b*x + a)^2/b^2 + 1/2*((b*x + a)^2 - 1)*arcsin(b*x + a)^
2/b^2 + 1/2*sqrt(-(b*x + a)^2 + 1)*(b*x + a)*arcsin(b*x + a)/b^2 - 2*sqrt(-
(b*x + a)^2 + 1)*a*arcsin(b*x + a)/b^2 + 2*(b*x + a)*a/b^2 + 1/4*arcsin(b*x
 + a)^2/b^2 - 1/4*((b*x + a)^2 - 1)/b^2 - 1/8/b^2
```

3.134 $\int \sin^{-1}(a+bx)^2\,dx$

Optimal. Leaf size=47

$$\frac{(a+bx)\sin^{-1}(a+bx)^2}{b}+\frac{2\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{b}-2x$$

```
[Out] -2*x + (2*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/b + ((a + b*x)*ArcSin[a +
b*x]^2)/b
```

Rubi [A] time = 0.0553923, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {4803, 4619, 4677, 8}

$$\frac{(a+bx)\sin^{-1}(a+bx)^2}{b}+\frac{2\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{b}-2x$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^2,x]
```

```
[Out] -2*x + (2*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/b + ((a + b*x)*ArcSin[a +
b*x]^2)/b
```

Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
```

```
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 8

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

Rubi steps

$$\begin{aligned}
\int \sin^{-1}(a+bx)^2\,dx &= \frac{\text{Subst}\left(\int \sin^{-1}(x)^2\,dx,x,a+bx\right)}{b}\\
&= \frac{(a+bx)\sin^{-1}(a+bx)^2}{b} - \frac{2\,\text{Subst}\left(\int \frac{x\sin^{-1}(x)}{\sqrt{1-x^2}}\,dx,x,a+bx\right)}{b}\\
&= \frac{2\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{b} + \frac{(a+bx)\sin^{-1}(a+bx)^2}{b} - \frac{2\,\text{Subst}(\int 1\,dx,x,a+bx)}{b}\\
&= -2x + \frac{2\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{b} + \frac{(a+bx)\sin^{-1}(a+bx)^2}{b}
\end{aligned}$$

Mathematica [A] time = 0.0246657, size = 49, normalized size = 1.04

$$\frac{-2(a+bx)+(a+bx)\sin^{-1}(a+bx)^2+2\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^2,x]
```

```
[Out] (-2*(a + b*x) + 2*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x] + (a + b*x)*ArcSin[
a + b*x]^2)/b
```

Maple [A] time = 0.031, size = 48, normalized size = 1.

$$\frac{1}{b}\left((\arcsin(bx+a))^2(bx+a)-2\,bx-2\,a+2\,\sqrt{1-(bx+a)^2}\arcsin(bx+a)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)^2,x)
```

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

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.70601, size = 130, normalized size = 2.77

$$\frac{(bx+a)\arcsin(bx+a)^2 - 2\,bx + 2\sqrt{-b^2x^2 - 2\,abx - a^2 + 1}\arcsin(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] ((b*x + a)*arcsin(b*x + a)^2 - 2*b*x + 2*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)
*arcsin(b*x + a))/b
```

Sympy [A] time = 0.383344, size = 63, normalized size = 1.34

$$\begin{cases} \frac{a\,\mathrm{asin}^2(a+bx)}{b} + x\,\mathrm{asin}^2(a+bx) - 2x + \frac{2\sqrt{-a^2-2abx-b^2x^2+1}\,\mathrm{asin}(a+bx)}{b} & \text{for } b \neq 0 \\ x\,\mathrm{asin}^2(a) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**2,x)
```

```
[Out] Piecewise((a*asin(a + b*x)**2/b + x*asin(a + b*x)**2 - 2*x + 2*sqrt(-a**2 -
 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/b, Ne(b, 0)), (x*asin(a)**2, True))
```

Giac [A] time = 1.1754, size = 70, normalized size = 1.49

$$\frac{(bx+a)\arcsin(bx+a)^2}{b}+\frac{2\sqrt{-(bx+a)^2+1}\arcsin(bx+a)}{b}-\frac{2(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (b*x + a)*arcsin(b*x + a)^2/b + 2*sqrt(-(b*x + a)^2 + 1)*arcsin(b*x + a)/b
- 2*(b*x + a)/b
```

3.135 $\int \frac{\sin^{-1}(a+bx)^2}{x}\,dx$

Optimal. Leaf size=271

$$-2i\sin^{-1}(a+bx)\text{PolyLog}\left(2,\frac{e^{i\sin^{-1}(a+bx)}}{-\sqrt{1-a^2}+ia}\right)-2i\sin^{-1}(a+bx)\text{PolyLog}\left(2,\frac{e^{i\sin^{-1}(a+bx)}}{\sqrt{1-a^2}+ia}\right)+2\text{PolyLog}\left(3,\frac{e^{i\sin^{-1}(a+bx)}}{-\sqrt{1-a^2}+\right.$$

```
[Out] (-I/3)*ArcSin[a + b*x]^3 + ArcSin[a + b*x]^2*Log[1 - E^(I*ArcSin[a + b*x])/
(I*a - Sqrt[1 - a^2])] + ArcSin[a + b*x]^2*Log[1 - E^(I*ArcSin[a + b*x])/(I
*a + Sqrt[1 - a^2])] - (2*I)*ArcSin[a + b*x]*PolyLog[2, E^(I*ArcSin[a + b*x
])/(I*a - Sqrt[1 - a^2])] - (2*I)*ArcSin[a + b*x]*PolyLog[2, E^(I*ArcSin[a
+ b*x])/(I*a + Sqrt[1 - a^2])] + 2*PolyLog[3, E^(I*ArcSin[a + b*x])/(I*a -
Sqrt[1 - a^2])] + 2*PolyLog[3, E^(I*ArcSin[a + b*x])/(I*a + Sqrt[1 - a^2])]
```

Rubi [A] time = 0.410025, antiderivative size = 271, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 7, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.583, Rules used = {4805, 4741, 4521, 2190, 2531, 2282, 6589}

$$-2i\sin^{-1}(a+bx)\text{PolyLog}\left(2,\frac{e^{i\sin^{-1}(a+bx)}}{-\sqrt{1-a^2}+ia}\right)-2i\sin^{-1}(a+bx)\text{PolyLog}\left(2,\frac{e^{i\sin^{-1}(a+bx)}}{\sqrt{1-a^2}+ia}\right)+2\text{PolyLog}\left(3,\frac{e^{i\sin^{-1}(a+bx)}}{-\sqrt{1-a^2}+\right.$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^2/x,x]
```

```
[Out] (-I/3)*ArcSin[a + b*x]^3 + ArcSin[a + b*x]^2*Log[1 - E^(I*ArcSin[a + b*x])/
(I*a - Sqrt[1 - a^2])] + ArcSin[a + b*x]^2*Log[1 - E^(I*ArcSin[a + b*x])/(I
*a + Sqrt[1 - a^2])] - (2*I)*ArcSin[a + b*x]*PolyLog[2, E^(I*ArcSin[a + b*x
])/(I*a - Sqrt[1 - a^2])] - (2*I)*ArcSin[a + b*x]*PolyLog[2, E^(I*ArcSin[a
+ b*x])/(I*a + Sqrt[1 - a^2])] + 2*PolyLog[3, E^(I*ArcSin[a + b*x])/(I*a -
Sqrt[1 - a^2])] + 2*PolyLog[3, E^(I*ArcSin[a + b*x])/(I*a + Sqrt[1 - a^2])]
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\sin^{-1}(a+bx)^2}{x}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)^2}{-\frac{a}{b}+\frac{x}{b}}\,dx, x, a+bx\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \frac{x^2\cos(x)}{-\frac{a}{b}+\frac{\sin(x)}{b}}\,dx, x, \sin^{-1}(a+bx)\right)}{b}$$

$$= -\frac{1}{3}i\sin^{-1}(a+bx)^3 + \frac{i\,\text{Subst}\left(\int \frac{e^{ix}x^2}{-\frac{ia}{b}-\frac{\sqrt{1-a^2}}{b}+\frac{e^{ix}}{b}}\,dx, x, \sin^{-1}(a+bx)\right)}{b} + \frac{i\,\text{Subst}\left(\int \frac{e^{ix}x^2}{-\frac{ia}{b}+\frac{\sqrt{1-a^2}}{b}+\frac{e^{ix}}{b}}\,dx,\right.}{b}$$

$$= -\frac{1}{3}i\sin^{-1}(a+bx)^3 + \sin^{-1}(a+bx)^2\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + \sin^{-1}(a+bx)^2\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia+\sqrt{1-a^2}}\right.$$

$$= -\frac{1}{3}i\sin^{-1}(a+bx)^3 + \sin^{-1}(a+bx)^2\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + \sin^{-1}(a+bx)^2\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia+\sqrt{1-a^2}}\right.$$

$$= -\frac{1}{3}i\sin^{-1}(a+bx)^3 + \sin^{-1}(a+bx)^2\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + \sin^{-1}(a+bx)^2\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia+\sqrt{1-a^2}}\right.$$

$$= -\frac{1}{3}i\sin^{-1}(a+bx)^3 + \sin^{-1}(a+bx)^2\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + \sin^{-1}(a+bx)^2\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia+\sqrt{1-a^2}}\right.$$

Mathematica [A] time = 0.0354203, size = 309, normalized size = 1.14

$$-2i\sin^{-1}(a+bx)\text{PolyLog}\left(2, -\frac{e^{i\sin^{-1}(a+bx)}}{b\left(-\frac{\sqrt{1-a^2}}{b}-\frac{ia}{b}\right)}\right) - 2i\sin^{-1}(a+bx)\text{PolyLog}\left(2, -\frac{e^{i\sin^{-1}(a+bx)}}{b\left(\frac{\sqrt{1-a^2}}{b}-\frac{ia}{b}\right)}\right) + 2\text{PolyLog}\left(3, \frac{e^{i\sin^{-1}}}{-\sqrt{1-}}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^2/x,x]
```

```
[Out] (-I/3)*ArcSin[a + b*x]^3 + ArcSin[a + b*x]^2*Log[1 + E^(I*ArcSin[a + b*x])/
((((-I)*a)/b - Sqrt[1 - a^2]/b)*b)] + ArcSin[a + b*x]^2*Log[1 + E^(I*ArcSin
[a + b*x])/((((-I)*a)/b + Sqrt[1 - a^2]/b)*b)] - (2*I)*ArcSin[a + b*x]*Poly
Log[2, -(E^(I*ArcSin[a + b*x])/((((-I)*a)/b - Sqrt[1 - a^2]/b)*b))] - (2*I)
```

```
*ArcSin[a + b*x]*PolyLog[2, -(E^(I*ArcSin[a + b*x])/((((-I)*a)/b + Sqrt[1 -
 a^2]/b)*b))] + 2*PolyLog[3, E^(I*ArcSin[a + b*x])/(I*a - Sqrt[1 - a^2])] +
 2*PolyLog[3, E^(I*ArcSin[a + b*x])/(I*a + Sqrt[1 - a^2])]
```

Maple [F] time = 0.84, size = 0, normalized size = 0.

$$\int \frac{\left(\arcsin \left(b x + a\right)\right)^{2}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\arcsin \left(b x + a\right)^{2}}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(arcsin(b*x + a)^2/x, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\operatorname{asin}^2(a+bx)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**2/x,x)
```

```
[Out] Integral(asin(a + b*x)**2/x, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\arcsin(bx+a)^2}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(arcsin(b*x + a)^2/x, x)
```

3.136 $\int \frac{\sin^{-1}(a+bx)^2}{x^2}\,dx$

Optimal. Leaf size=230

$$\frac{2ib\text{PolyLog}\left(2,\frac{e^{i\sin^{-1}(a+bx)}}{-\sqrt{1-a^2}+ia}\right)}{\sqrt{1-a^2}}-\frac{2ib\text{PolyLog}\left(2,\frac{e^{i\sin^{-1}(a+bx)}}{\sqrt{1-a^2}+ia}\right)}{\sqrt{1-a^2}}-\frac{2b\sin^{-1}(a+bx)\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{-\sqrt{1-a^2}+ia}\right)}{\sqrt{1-a^2}}+\frac{2b\sin^{-1}(a+bx)\,\text{lo}}{\sqrt{1-}}$$

```
[Out] -(ArcSin[a + b*x]^2/x) - (2*b*ArcSin[a + b*x]*Log[1 - E^(I*ArcSin[a + b*x])
/(I*a - Sqrt[1 - a^2])])/Sqrt[1 - a^2] + (2*b*ArcSin[a + b*x]*Log[1 - E^(I*
ArcSin[a + b*x])/(I*a + Sqrt[1 - a^2])])/Sqrt[1 - a^2] + ((2*I)*b*PolyLog[2
, E^(I*ArcSin[a + b*x])/(I*a - Sqrt[1 - a^2])])/Sqrt[1 - a^2] - ((2*I)*b*Po
lyLog[2, E^(I*ArcSin[a + b*x])/(I*a + Sqrt[1 - a^2])])/Sqrt[1 - a^2]
```

Rubi [A] time = 0.446628, antiderivative size = 208, normalized size of antiderivative = 0.9, number of steps used = 11, number of rules used = 8, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667, Rules used = {4805, 4743, 4773, 3323, 2264, 2190, 2279, 2391}

$$\frac{2b\text{PolyLog}\left(2,-\frac{ie^{i\sin^{-1}(a+bx)}}{a-\sqrt{a^2-1}}\right)}{\sqrt{a^2-1}}-\frac{2b\text{PolyLog}\left(2,-\frac{ie^{i\sin^{-1}(a+bx)}}{\sqrt{a^2-1}+a}\right)}{\sqrt{a^2-1}}+\frac{2ib\sin^{-1}(a+bx)\log\left(1+\frac{ie^{i\sin^{-1}(a+bx)}}{a-\sqrt{a^2-1}}\right)}{\sqrt{a^2-1}}-\frac{2ib\sin^{-1}(a+b}{}$$

Warning: Unable to verify antiderivative.

```
[In] Int[ArcSin[a + b*x]^2/x^2,x]
```

```
[Out] -(ArcSin[a + b*x]^2/x) + ((2*I)*b*ArcSin[a + b*x]*Log[1 + (I*E^(I*ArcSin[a
+ b*x]))/(a - Sqrt[-1 + a^2])])/Sqrt[-1 + a^2] - ((2*I)*b*ArcSin[a + b*x]*L
og[1 + (I*E^(I*ArcSin[a + b*x]))/(a + Sqrt[-1 + a^2])])/Sqrt[-1 + a^2] + (2
*b*PolyLog[2, ((-I)*E^(I*ArcSin[a + b*x]))/(a - Sqrt[-1 + a^2])])/Sqrt[-1 +
 a^2] - (2*b*PolyLog[2, ((-I)*E^(I*ArcSin[a + b*x]))/(a + Sqrt[-1 + a^2])])
/Sqrt[-1 + a^2]
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rubi steps

$$\int \frac{\sin^{-1}(a+bx)^2}{x^2}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)^2}{\left(-\frac{a}{b}+\frac{x}{b}\right)^2}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{\sin^{-1}(a+bx)^2}{x} + 2\,\text{Subst}\left(\int \frac{\sin^{-1}(x)}{\left(-\frac{a}{b}+\frac{x}{b}\right)\sqrt{1-x^2}}\,dx, x, a+bx\right)$$

$$= -\frac{\sin^{-1}(a+bx)^2}{x} + 2\,\text{Subst}\left(\int \frac{x}{-\frac{a}{b}+\frac{\sin(x)}{b}}\,dx, x, \sin^{-1}(a+bx)\right)$$

$$= -\frac{\sin^{-1}(a+bx)^2}{x} + 4\,\text{Subst}\left(\int \frac{e^{ix}x}{\frac{i}{b}-\frac{2ae^{ix}}{b}-\frac{ie^{2ix}}{b}}\,dx, x, \sin^{-1}(a+bx)\right)$$

$$= -\frac{\sin^{-1}(a+bx)^2}{x} - \frac{(4i)\,\text{Subst}\left(\int \frac{e^{ix}x}{-\frac{2a}{b}-\frac{2\sqrt{-1+a^2}}{b}-\frac{2ie^{ix}}{b}}\,dx, x, \sin^{-1}(a+bx)\right)}{\sqrt{-1+a^2}} + \frac{(4i)\,\text{Subst}\left(\int \frac{e^{ix}}{-\frac{2a}{b}+\frac{2\sqrt{-1}}{b}}\right.}{\sqrt{}}$$

$$= -\frac{\sin^{-1}(a+bx)^2}{x} + \frac{2ib\sin^{-1}(a+bx)\log\left(1+\frac{ie^{i\sin^{-1}(a+bx)}}{a-\sqrt{-1+a^2}}\right)}{\sqrt{-1+a^2}} - \frac{2ib\sin^{-1}(a+bx)\log\left(1+\frac{ie^{i\sin^{-1}(a+b}}{a+\sqrt{-1+a^2}}\right.}{\sqrt{-1+a^2}}$$

$$= -\frac{\sin^{-1}(a+bx)^2}{x} + \frac{2ib\sin^{-1}(a+bx)\log\left(1+\frac{ie^{i\sin^{-1}(a+bx)}}{a-\sqrt{-1+a^2}}\right)}{\sqrt{-1+a^2}} - \frac{2ib\sin^{-1}(a+bx)\log\left(1+\frac{ie^{i\sin^{-1}(a+b}}{a+\sqrt{-1+a^2}}\right.}{\sqrt{-1+a^2}}$$

$$= -\frac{\sin^{-1}(a+bx)^2}{x} + \frac{2ib\sin^{-1}(a+bx)\log\left(1+\frac{ie^{i\sin^{-1}(a+bx)}}{a-\sqrt{-1+a^2}}\right)}{\sqrt{-1+a^2}} - \frac{2ib\sin^{-1}(a+bx)\log\left(1+\frac{ie^{i\sin^{-1}(a+b}}{a+\sqrt{-1+a^2}}\right.}{\sqrt{-1+a^2}}$$

Mathematica [A] time = 0.130079, size = 208, normalized size = 0.9

$$\frac{2bx\text{PolyLog}\left(2,\frac{ie^{i\sin^{-1}(a+bx)}}{\sqrt{a^2-1}-a}\right) - 2bx\text{PolyLog}\left(2,-\frac{ie^{i\sin^{-1}(a+bx)}}{\sqrt{a^2-1}+a}\right) - \sqrt{a^2-1}\sin^{-1}(a+bx)^2 + 2ibx\sin^{-1}(a+bx)\left(\log\left(\frac{-\sqrt{a^2-}}{}\right.\right.}{\sqrt{a^2-1}x}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcSin[a + b*x]^2/x^2,x]
```

```
[Out] (-(Sqrt[-1 + a^2]*ArcSin[a + b*x]^2) + (2*I)*b*x*ArcSin[a + b*x]*(Log[(a -
Sqrt[-1 + a^2] + I*E^(I*ArcSin[a + b*x]))/(a - Sqrt[-1 + a^2])] - Log[(a +
Sqrt[-1 + a^2] + I*E^(I*ArcSin[a + b*x]))/(a + Sqrt[-1 + a^2])]) + 2*b*x*Po
lyLog[2, (I*E^(I*ArcSin[a + b*x]))/(-a + Sqrt[-1 + a^2])] - 2*b*x*PolyLog[2
, ((-I)*E^(I*ArcSin[a + b*x]))/(a + Sqrt[-1 + a^2])])/(Sqrt[-1 + a^2]*x)
```

Maple [A] time = 0.282, size = 333, normalized size = 1.5

$$-\frac{(\arcsin(bx+a))^2}{x}-2\,\frac{b\sqrt{-a^2+1}\arcsin(bx+a)}{a^2-1}\ln\left(\frac{ia+\sqrt{-a^2+1}-i(bx+a)-\sqrt{1-(bx+a)^2}}{ia+\sqrt{-a^2+1}}\right)+2\,\frac{b\sqrt{-a^2+1}\,\mathrm{arcsi}}{a^2-1}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\arcsin(bx+a)^2}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(arcsin(b*x + a)^2/x^2, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\operatorname{asin}^2(a+bx)}{x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**2/x**2,x)
```

```
[Out] Integral(asin(a + b*x)**2/x**2, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\arcsin(bx+a)^2}{x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(arcsin(b*x + a)^2/x^2, x)
```

3.137 $\int \frac{\sin^{-1}(a+bx)^2}{x^3}\,dx$

Optimal. Leaf size=272

$$-\frac{ab^2\text{PolyLog}\left(2,-\frac{ie^{i\sin^{-1}(a+bx)}}{a-\sqrt{a^2-1}}\right)}{\left(a^2-1\right)^{3/2}}+\frac{ab^2\text{PolyLog}\left(2,-\frac{ie^{i\sin^{-1}(a+bx)}}{\sqrt{a^2-1}+a}\right)}{\left(a^2-1\right)^{3/2}}+\frac{b^2\log(x)}{1-a^2}-\frac{iab^2\sin^{-1}(a+bx)\log\left(1+\frac{ie^{i\sin^{-1}(a+bx)}}{a-\sqrt{a^2-1}}\right)}{\left(a^2-1\right)^{3/2}}+$$

```
[Out] -((b*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/((1 - a^2)*x)) - ArcSin[a + b*x
]^2/(2*x^2) - (I*a*b^2*ArcSin[a + b*x]*Log[1 + (I*E^(I*ArcSin[a + b*x]))/(a
 - Sqrt[-1 + a^2])])/(-1 + a^2)^(3/2) + (I*a*b^2*ArcSin[a + b*x]*Log[1 + (I
*E^(I*ArcSin[a + b*x]))/(a + Sqrt[-1 + a^2])])/(-1 + a^2)^(3/2) + (b^2*Log[
x])/(1 - a^2) - (a*b^2*PolyLog[2, ((-I)*E^(I*ArcSin[a + b*x]))/(a - Sqrt[-1
 + a^2])])/(-1 + a^2)^(3/2) + (a*b^2*PolyLog[2, ((-I)*E^(I*ArcSin[a + b*x])
)/(a + Sqrt[-1 + a^2])])/(-1 + a^2)^(3/2)
```

Rubi [A] time = 0.585408, antiderivative size = 272, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 11, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.917, Rules used = {4805, 4743, 4773, 3324, 3323, 2264, 2190, 2279, 2391, 2668, 31}

$$-\frac{ab^2\text{PolyLog}\left(2,-\frac{ie^{i\sin^{-1}(a+bx)}}{a-\sqrt{a^2-1}}\right)}{\left(a^2-1\right)^{3/2}}+\frac{ab^2\text{PolyLog}\left(2,-\frac{ie^{i\sin^{-1}(a+bx)}}{\sqrt{a^2-1}+a}\right)}{\left(a^2-1\right)^{3/2}}+\frac{b^2\log(x)}{1-a^2}-\frac{iab^2\sin^{-1}(a+bx)\log\left(1+\frac{ie^{i\sin^{-1}(a+bx)}}{a-\sqrt{a^2-1}}\right)}{\left(a^2-1\right)^{3/2}}+$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^2/x^3,x]
```

```
[Out] -((b*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/((1 - a^2)*x)) - ArcSin[a + b*x
]^2/(2*x^2) - (I*a*b^2*ArcSin[a + b*x]*Log[1 + (I*E^(I*ArcSin[a + b*x]))/(a
 - Sqrt[-1 + a^2])])/(-1 + a^2)^(3/2) + (I*a*b^2*ArcSin[a + b*x]*Log[1 + (I
*E^(I*ArcSin[a + b*x]))/(a + Sqrt[-1 + a^2])])/(-1 + a^2)^(3/2) + (b^2*Log[
x])/(1 - a^2) - (a*b^2*PolyLog[2, ((-I)*E^(I*ArcSin[a + b*x]))/(a - Sqrt[-1
 + a^2])])/(-1 + a^2)^(3/2) + (a*b^2*PolyLog[2, ((-I)*E^(I*ArcSin[a + b*x])
)/(a + Sqrt[-1 + a^2])])/(-1 + a^2)^(3/2)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
```

```
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3324

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[(b*(c + d*x)^m*Cos[e + f*x])/(f*(a^2 - b^2)*(a + b*Sin[e +
f*x])), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[(b*d*m)/(f*(a^2 - b^2)), Int[((c + d*x)^(m - 1)*Cos[e + f*x])/(a
 + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 2668

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rule 31

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

Rubi steps

$$\int \frac{\sin^{-1}(a+bx)^2}{x^3}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)^2}{\left(-\frac{a}{b}+\frac{x}{b}\right)^3}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{\sin^{-1}(a+bx)^2}{2x^2} + \text{Subst}\left(\int \frac{\sin^{-1}(x)}{\left(-\frac{a}{b}+\frac{x}{b}\right)^2\sqrt{1-x^2}}\,dx, x, a+bx\right)$$

$$= -\frac{\sin^{-1}(a+bx)^2}{2x^2} + \text{Subst}\left(\int \frac{x}{\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)^2}\,dx, x, \sin^{-1}(a+bx)\right)$$

$$= -\frac{b\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{\left(1-a^2\right)x} - \frac{\sin^{-1}(a+bx)^2}{2x^2} + \frac{b\,\text{Subst}\left(\int \frac{\cos(x)}{-\frac{a}{b}+\frac{\sin(x)}{b}}\,dx, x, \sin^{-1}(a+bx)\right)}{1-a^2} + \cdots$$

$$= -\frac{b\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{\left(1-a^2\right)x} - \frac{\sin^{-1}(a+bx)^2}{2x^2} + \frac{(2ab)\,\text{Subst}\left(\int \frac{e^{ix}x}{\frac{i}{b}-\frac{2ae^{ix}}{b}-\frac{ie^{2ix}}{b}}\,dx, x, \sin^{-1}(a+\cdots\right.}{1-a^2}$$

$$= -\frac{b\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{\left(1-a^2\right)x} - \frac{\sin^{-1}(a+bx)^2}{2x^2} + \frac{b^2\log(x)}{1-a^2} + \frac{(2iab)\,\text{Subst}\left(\int \frac{e^{ix}x}{-\frac{2a}{b}-\frac{2\sqrt{-1+a^2}}{b}-\frac{2ie^{i\cdots}}{b}\cdots}\right.}{\left(-1+a^2\right)^{3/\cdots}}$$

$$= -\frac{b\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{\left(1-a^2\right)x} - \frac{\sin^{-1}(a+bx)^2}{2x^2} - \frac{iab^2\sin^{-1}(a+bx)\log\left(1+\frac{ie^{i\sin^{-1}(a+bx)}}{a-\sqrt{-1+a^2}}\right)}{\left(-1+a^2\right)^{3/2}} + \cdots$$

$$= -\frac{b\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{\left(1-a^2\right)x} - \frac{\sin^{-1}(a+bx)^2}{2x^2} - \frac{iab^2\sin^{-1}(a+bx)\log\left(1+\frac{ie^{i\sin^{-1}(a+bx)}}{a-\sqrt{-1+a^2}}\right)}{\left(-1+a^2\right)^{3/2}} + \cdots$$

$$= -\frac{b\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{\left(1-a^2\right)x} - \frac{\sin^{-1}(a+bx)^2}{2x^2} - \frac{iab^2\sin^{-1}(a+bx)\log\left(1+\frac{ie^{i\sin^{-1}(a+bx)}}{a-\sqrt{-1+a^2}}\right)}{\left(-1+a^2\right)^{3/2}} + \cdots$$

Mathematica [A] time = 0.114261, size = 314, normalized size = 1.15

$$-2ab^2x^2\text{PolyLog}\left(2,\frac{ie^{i\sin^{-1}(a+bx)}}{\sqrt{a^2-1}-a}\right)+2ab^2x^2\text{PolyLog}\left(2,-\frac{ie^{i\sin^{-1}(a+bx)}}{\sqrt{a^2-1}+a}\right)-2\sqrt{a^2-1}b^2x^2\log(x)-2iab^2x^2\sin^{-1}(a+bx)\log\left(\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^2/x^3,x]
```

```
[Out] (2*Sqrt[-1 + a^2]*b*x*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x] + Sqrt[-1 + a^2
]*ArcSin[a + b*x]^2 - a^2*Sqrt[-1 + a^2]*ArcSin[a + b*x]^2 - (2*I)*a*b^2*x^
2*ArcSin[a + b*x]*Log[(a - Sqrt[-1 + a^2] + I*E^(I*ArcSin[a + b*x]))/(a - S
qrt[-1 + a^2])] + (2*I)*a*b^2*x^2*ArcSin[a + b*x]*Log[(a + Sqrt[-1 + a^2] +
 I*E^(I*ArcSin[a + b*x]))/(a + Sqrt[-1 + a^2])] - 2*Sqrt[-1 + a^2]*b^2*x^2*
Log[x] - 2*a*b^2*x^2*PolyLog[2, (I*E^(I*ArcSin[a + b*x]))/(-a + Sqrt[-1 + a
^2])] + 2*a*b^2*x^2*PolyLog[2, ((-I)*E^(I*ArcSin[a + b*x]))/(a + Sqrt[-1 +
a^2])])/(2*(-1 + a^2)^(3/2)*x^2)
```

Maple [A] time = 0.57, size = 526, normalized size = 1.9

$$\frac{-ib^2\arcsin(bx+a)}{a^2-1}-\frac{(\arcsin(bx+a))^2a^2}{(2a^2-2)x^2}+\frac{b\arcsin(bx+a)}{(a^2-1)x}\sqrt{1-(bx+a)^2}+\frac{(\arcsin(bx+a))^2}{(2a^2-2)x^2}-\frac{b^2}{a^2-1}\ln\left(2ia\left(i(b\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)^2/x^3,x)
```

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

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\arcsin\left(bx+a\right)^{2}}{x^{3}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(arcsin(b*x + a)^2/x^3, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\operatorname{asin}^{2}\left(a+bx\right)}{x^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**2/x**3,x)
```

```
[Out] Integral(asin(a + b*x)**2/x**3, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\arcsin\left(bx+a\right)^{2}}{x^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(arcsin(b*x + a)^2/x^3, x)
```

3.138 $\int x^2 \sin^{-1}(a+bx)^3 \, dx$

Optimal. Leaf size=371

$$-\frac{6a^2\sqrt{1-(a+bx)^2}}{b^3}-\frac{6a^2(a+bx)\sin^{-1}(a+bx)}{b^3}+\frac{a^3\sin^{-1}(a+bx)^3}{3b^3}+\frac{3a^2\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)^2}{b^3}+\frac{3a\sqrt{1-(a+}{}$$

```
[Out] (-14*Sqrt[1 - (a + b*x)^2])/(9*b^3) - (6*a^2*Sqrt[1 - (a + b*x)^2])/b^3 + (
3*a*(a + b*x)*Sqrt[1 - (a + b*x)^2])/(4*b^3) + (2*(1 - (a + b*x)^2)^(3/2))/
(27*b^3) - (3*a*ArcSin[a + b*x])/(4*b^3) - (4*(a + b*x)*ArcSin[a + b*x])/(3
*b^3) - (6*a^2*(a + b*x)*ArcSin[a + b*x])/b^3 + (3*a*(a + b*x)^2*ArcSin[a +
 b*x])/(2*b^3) - (2*(a + b*x)^3*ArcSin[a + b*x])/(9*b^3) + (2*Sqrt[1 - (a +
 b*x)^2]*ArcSin[a + b*x]^2)/(3*b^3) + (3*a^2*Sqrt[1 - (a + b*x)^2]*ArcSin[a
 + b*x]^2)/b^3 - (3*a*(a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^2)/(2
*b^3) + ((a + b*x)^2*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^2)/(3*b^3) + (a*
ArcSin[a + b*x]^3)/(2*b^3) + (a^3*ArcSin[a + b*x]^3)/(3*b^3) + (x^3*ArcSin[
a + b*x]^3)/3
```

Rubi [A] time = 0.45086, antiderivative size = 371, normalized size of antiderivative = 1., number of steps used = 18, number of rules used = 11, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.917, Rules used = {4805, 4743, 4773, 3317, 3296, 2638, 3311, 30, 2635, 8, 2633}

$$-\frac{6a^2\sqrt{1-(a+bx)^2}}{b^3}-\frac{6a^2(a+bx)\sin^{-1}(a+bx)}{b^3}+\frac{a^3\sin^{-1}(a+bx)^3}{3b^3}+\frac{3a^2\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)^2}{b^3}+\frac{3a\sqrt{1-(a+}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcSin[a + b*x]^3,x]
```


```
[Out] (-14*Sqrt[1 - (a + b*x)^2])/(9*b^3) - (6*a^2*Sqrt[1 - (a + b*x)^2])/b^3 + (
3*a*(a + b*x)*Sqrt[1 - (a + b*x)^2])/(4*b^3) + (2*(1 - (a + b*x)^2)^(3/2))/
(27*b^3) - (3*a*ArcSin[a + b*x])/(4*b^3) - (4*(a + b*x)*ArcSin[a + b*x])/(3
*b^3) - (6*a^2*(a + b*x)*ArcSin[a + b*x])/b^3 + (3*a*(a + b*x)^2*ArcSin[a +
 b*x])/(2*b^3) - (2*(a + b*x)^3*ArcSin[a + b*x])/(9*b^3) + (2*Sqrt[1 - (a +
 b*x)^2]*ArcSin[a + b*x]^2)/(3*b^3) + (3*a^2*Sqrt[1 - (a + b*x)^2]*ArcSin[a
 + b*x]^2)/b^3 - (3*a*(a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^2)/(2
*b^3) + ((a + b*x)^2*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^2)/(3*b^3) + (a*
ArcSin[a + b*x]^3)/(2*b^3) + (a^3*ArcSin[a + b*x]^3)/(3*b^3) + (x^3*ArcSin[
a + b*x]^3)/3
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3317

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

Rule 3296

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

Rule 2638

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

Rule 3311

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

```
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 30

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

Rule 2635

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

Rule 8

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

Rule 2633

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
&& IGtQ[(n - 1)/2, 0]
```

Rubi steps

$$\int x^2 \sin^{-1}(a+bx)^3\,dx = \frac{\text{Subst}\left(\int \left(-\frac{a}{b}+\frac{x}{b}\right)^2 \sin^{-1}(x)^3\,dx, x, a+bx\right)}{b}$$

$$= \frac{1}{3}x^3\sin^{-1}(a+bx)^3 - \text{Subst}\left(\int \frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^3 \sin^{-1}(x)^2}{\sqrt{1-x^2}}\,dx, x, a+bx\right)$$

$$= \frac{1}{3}x^3\sin^{-1}(a+bx)^3 - \text{Subst}\left(\int x^2\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)^3\,dx, x, \sin^{-1}(a+bx)\right)$$

$$= \frac{1}{3}x^3\sin^{-1}(a+bx)^3 - \text{Subst}\left(\int \left(-\frac{a^3x^2}{b^3}+\frac{3a^2x^2\sin(x)}{b^3}-\frac{3ax^2\sin^2(x)}{b^3}+\frac{x^2\sin^3(x)}{b^3}\right)dx, x, \sin$$

$$= \frac{a^3\sin^{-1}(a+bx)^3}{3b^3}+\frac{1}{3}x^3\sin^{-1}(a+bx)^3-\frac{\text{Subst}\left(\int x^2\sin^3(x)\,dx, x, \sin^{-1}(a+bx)\right)}{b^3}+\frac{(3a)\,\text{Subs}}{}$$

$$= \frac{3a(a+bx)^2\sin^{-1}(a+bx)}{2b^3}-\frac{2(a+bx)^3\sin^{-1}(a+bx)}{9b^3}+\frac{3a^2\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)^2}{b^3}-\frac{3a(}{}$$

$$= \frac{3a(a+bx)\sqrt{1-(a+bx)^2}}{4b^3}-\frac{6a^2(a+bx)\sin^{-1}(a+bx)}{b^3}+\frac{3a(a+bx)^2\sin^{-1}(a+bx)}{2b^3}-\frac{2(a+bx)}{}$$

$$= -\frac{2\sqrt{1-(a+bx)^2}}{9b^3}-\frac{6a^2\sqrt{1-(a+bx)^2}}{b^3}+\frac{3a(a+bx)\sqrt{1-(a+bx)^2}}{4b^3}+\frac{2\left(1-(a+bx)^2\right)^{3/2}}{27b^3}-\frac{3a}{}$$

$$= -\frac{14\sqrt{1-(a+bx)^2}}{9b^3}-\frac{6a^2\sqrt{1-(a+bx)^2}}{b^3}+\frac{3a(a+bx)\sqrt{1-(a+bx)^2}}{4b^3}+\frac{2\left(1-(a+bx)^2\right)^{3/2}}{27b^3}-\frac{3}{}$$

Mathematica [A] time = 0.221958, size = 181, normalized size = 0.49

$$\frac{-\sqrt{-a^2-2abx-b^2x^2+1}\left(575a^2-65abx+8b^2x^2+160\right)+18\left(2a^3+3a+2b^3x^3\right)\sin^{-1}(a+bx)^3+18\sqrt{-a^2-2abx-b^2x}}{108}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcSin[a + b*x]^3,x]
```

```
[Out] (-(Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*(160 + 575*a^2 - 65*a*b*x + 8*b^2*x^2)
) - 3*(170*a^3 + 132*a^2*b*x + a*(75 - 30*b^2*x^2) + 8*b*x*(6 + b^2*x^2))*A
rcSin[a + b*x] + 18*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*(4 + 11*a^2 - 5*a*b*x
 + 2*b^2*x^2)*ArcSin[a + b*x]^2 + 18*(3*a + 2*a^3 + 2*b^3*x^3)*ArcSin[a + b
*x]^3)/(108*b^3)
```

Maple [A] time = 0.063, size = 344, normalized size = 0.9

$$\frac{1}{b^3}\left(-\frac{a}{4}\left(4\left(\arcsin\left(bx+a\right)\right)^3\left(bx+a\right)^2+6\left(\arcsin\left(bx+a\right)\right)^2\sqrt{1-\left(bx+a\right)^2}\left(bx+a\right)-2\left(\arcsin\left(bx+a\right)\right)^3-6\arcsin\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/b^3*(-1/4*a*(4*arcsin(b*x+a)^3*(b*x+a)^2+6*arcsin(b*x+a)^2*(1-(b*x+a)^2)^
(1/2)*(b*x+a)-2*arcsin(b*x+a)^3-6*arcsin(b*x+a)*(b*x+a)^2-3*(b*x+a)*(1-(b*x
+a)^2)^(1/2)+3*arcsin(b*x+a))+1/3*arcsin(b*x+a)^3*((b*x+a)^2-3)*(b*x+a)+arc
sin(b*x+a)^2*(1-(b*x+a)^2)^(1/2)-14/9*(1-(b*x+a)^2)^(1/2)-2*(b*x+a)*arcsin(
b*x+a)+1/3*arcsin(b*x+a)^2*(-1+(b*x+a)^2)*(1-(b*x+a)^2)^(1/2)-2/9*arcsin(b*
x+a)*((b*x+a)^2-3)*(b*x+a)-2/27*(-1+(b*x+a)^2)*(1-(b*x+a)^2)^(1/2)+a^2*(arc
sin(b*x+a)^3*(b*x+a)+3*arcsin(b*x+a)^2*(1-(b*x+a)^2)^(1/2)-6*(1-(b*x+a)^2)^
(1/2)-6*(b*x+a)*arcsin(b*x+a))+arcsin(b*x+a)^3*(b*x+a))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.88483, size = 378, normalized size = 1.02

$$\frac{18\left(2\,b^3x^3+2\,a^3+3\,a\right)\arcsin\left(bx+a\right)^3-3\left(8\,b^3x^3-30\,ab^2x^2+170\,a^3+12\left(11\,a^2+4\right)bx+75\,a\right)\arcsin\left(bx+a\right)-\left(8\right.}{108\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/108*(18*(2*b^3*x^3 + 2*a^3 + 3*a)*arcsin(b*x + a)^3 - 3*(8*b^3*x^3 - 30*a
*b^2*x^2 + 170*a^3 + 12*(11*a^2 + 4)*b*x + 75*a)*arcsin(b*x + a) - (8*b^2*x
```

```
^2 - 65*a*b*x - 18*(2*b^2*x^2 - 5*a*b*x + 11*a^2 + 4)*arcsin(b*x + a)^2 + 5
75*a^2 + 160)*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1))/b^3
```

Sympy [A] time = 4.00306, size = 432, normalized size = 1.16

$$\begin{cases} \frac{a^3 \operatorname{asin}^3(a+bx)}{3b^3} - \frac{85a^3 \operatorname{asin}(a+bx)}{18b^3} - \frac{11a^2 x \operatorname{asin}(a+bx)}{3b^2} + \frac{11a^2\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}^2(a+bx)}{6b^3} - \frac{575a^2\sqrt{-a^2-2abx-b^2x^2+1}}{108b^3} + \frac{5ax^2\operatorname{asin}(a+bx)}{6b} - \\ \frac{x^3\operatorname{asin}^3(a)}{3} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*asin(b*x+a)**3,x)
```

```
[Out] Piecewise((a**3*asin(a + b*x)**3/(3*b**3) - 85*a**3*asin(a + b*x)/(18*b**3)
 - 11*a**2*x*asin(a + b*x)/(3*b**2) + 11*a**2*sqrt(-a**2 - 2*a*b*x - b**2*x
**2 + 1)*asin(a + b*x)**2/(6*b**3) - 575*a**2*sqrt(-a**2 - 2*a*b*x - b**2*x
**2 + 1)/(108*b**3) + 5*a*x**2*asin(a + b*x)/(6*b) - 5*a*x*sqrt(-a**2 - 2*a
*b*x - b**2*x**2 + 1)*asin(a + b*x)**2/(6*b**2) + 65*a*x*sqrt(-a**2 - 2*a*b
*x - b**2*x**2 + 1)/(108*b**2) + a*asin(a + b*x)**3/(2*b**3) - 25*a*asin(a
+ b*x)/(12*b**3) + x**3*asin(a + b*x)**3/3 - 2*x**3*asin(a + b*x)/9 + x**2*
sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)**2/(3*b) - 2*x**2*sqrt(
-a**2 - 2*a*b*x - b**2*x**2 + 1)/(27*b) - 4*x*asin(a + b*x)/(3*b**2) + 2*sq
rt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)**2/(3*b**3) - 40*sqrt(-a*
*2 - 2*a*b*x - b**2*x**2 + 1)/(27*b**3), Ne(b, 0)), (x**3*asin(a)**3/3, Tru
e))
```

Giac [A] time = 1.21234, size = 525, normalized size = 1.42

$$\frac{(bx+a)a^2 \arcsin(bx+a)^3}{b^3} + \frac{\left((bx+a)^2-1\right)(bx+a)\arcsin(bx+a)^3}{3\,b^3} - \frac{\left((bx+a)^2-1\right)a\arcsin(bx+a)^3}{b^3} - \frac{3\sqrt{-(bx+a}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (b*x + a)*a^2*arcsin(b*x + a)^3/b^3 + 1/3*((b*x + a)^2 - 1)*(b*x + a)*arcsi
n(b*x + a)^3/b^3 - ((b*x + a)^2 - 1)*a*arcsin(b*x + a)^3/b^3 - 3/2*sqrt(-(b
*x + a)^2 + 1)*(b*x + a)*a*arcsin(b*x + a)^2/b^3 + 3*sqrt(-(b*x + a)^2 + 1)
*a^2*arcsin(b*x + a)^2/b^3 - 6*(b*x + a)*a^2*arcsin(b*x + a)/b^3 + 1/3*(b*x
```

```
 + a)*arcsin(b*x + a)^3/b^3 - 1/2*a*arcsin(b*x + a)^3/b^3 - 1/3*(-(b*x + a)
^2 + 1)^(3/2)*arcsin(b*x + a)^2/b^3 - 2/9*((b*x + a)^2 - 1)*(b*x + a)*arcsi
n(b*x + a)/b^3 + 3/2*((b*x + a)^2 - 1)*a*arcsin(b*x + a)/b^3 + 3/4*sqrt(-(b
*x + a)^2 + 1)*(b*x + a)*a/b^3 - 6*sqrt(-(b*x + a)^2 + 1)*a^2/b^3 + sqrt(-(
b*x + a)^2 + 1)*arcsin(b*x + a)^2/b^3 - 14/9*(b*x + a)*arcsin(b*x + a)/b^3
+ 3/4*a*arcsin(b*x + a)/b^3 + 2/27*(-(b*x + a)^2 + 1)^(3/2)/b^3 - 14/9*sqrt
(-(b*x + a)^2 + 1)/b^3
```

3.139 $\int x\sin^{-1}(a+bx)^3\,dx$

Optimal. Leaf size=211

$$-\frac{a^2\sin^{-1}(a+bx)^3}{2b^2}-\frac{3(a+bx)\sqrt{1-(a+bx)^2}}{8b^2}+\frac{6a\sqrt{1-(a+bx)^2}}{b^2}-\frac{\sin^{-1}(a+bx)^3}{4b^2}+\frac{3(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+}{4b^2}$$

```
[Out] (6*a*Sqrt[1 - (a + b*x)^2])/b^2 - (3*(a + b*x)*Sqrt[1 - (a + b*x)^2])/(8*b^
2) + (3*ArcSin[a + b*x])/(8*b^2) + (6*a*(a + b*x)*ArcSin[a + b*x])/b^2 - (3
*(a + b*x)^2*ArcSin[a + b*x])/(4*b^2) - (3*a*Sqrt[1 - (a + b*x)^2]*ArcSin[a
 + b*x]^2)/b^2 + (3*(a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^2)/(4*b
^2) - ArcSin[a + b*x]^3/(4*b^2) - (a^2*ArcSin[a + b*x]^3)/(2*b^2) + (x^2*Ar
cSin[a + b*x]^3)/2
```

Rubi [A] time = 0.308878, antiderivative size = 211, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 10, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1., Rules used = {4805, 4743, 4773, 3317, 3296, 2638, 3311, 30, 2635, 8}

$$-\frac{a^2\sin^{-1}(a+bx)^3}{2b^2}-\frac{3(a+bx)\sqrt{1-(a+bx)^2}}{8b^2}+\frac{6a\sqrt{1-(a+bx)^2}}{b^2}-\frac{\sin^{-1}(a+bx)^3}{4b^2}+\frac{3(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+}{4b^2}$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcSin[a + b*x]^3,x]
```


```
[Out] (6*a*Sqrt[1 - (a + b*x)^2])/b^2 - (3*(a + b*x)*Sqrt[1 - (a + b*x)^2])/(8*b^
2) + (3*ArcSin[a + b*x])/(8*b^2) + (6*a*(a + b*x)*ArcSin[a + b*x])/b^2 - (3
*(a + b*x)^2*ArcSin[a + b*x])/(4*b^2) - (3*a*Sqrt[1 - (a + b*x)^2]*ArcSin[a
 + b*x]^2)/b^2 + (3*(a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^2)/(4*b
^2) - ArcSin[a + b*x]^3/(4*b^2) - (a^2*ArcSin[a + b*x]^3)/(2*b^2) + (x^2*Ar
cSin[a + b*x]^3)/2
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
```

```
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3317

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

Rule 3296

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

Rule 2638

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

Rule 3311

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

Rule 30

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

Rule 2635

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

Rule 8

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

Rubi steps

$$\begin{aligned}
\int x\sin^{-1}(a+bx)^3\,dx &= \frac{\text{Subst}\left(\int\left(-\frac{a}{b}+\frac{x}{b}\right)\sin^{-1}(x)^3\,dx,x,a+bx\right)}{b}\\
&= \frac{1}{2}x^2\sin^{-1}(a+bx)^3-\frac{3}{2}\text{Subst}\left(\int\frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^2\sin^{-1}(x)^2}{\sqrt{1-x^2}}\,dx,x,a+bx\right)\\
&= \frac{1}{2}x^2\sin^{-1}(a+bx)^3-\frac{3}{2}\text{Subst}\left(\int x^2\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)^2\,dx,x,\sin^{-1}(a+bx)\right)\\
&= \frac{1}{2}x^2\sin^{-1}(a+bx)^3-\frac{3}{2}\text{Subst}\left(\int\left(\frac{a^2x^2}{b^2}-\frac{2ax^2\sin(x)}{b^2}+\frac{x^2\sin^2(x)}{b^2}\right)dx,x,\sin^{-1}(a+bx)\right)\\
&= -\frac{a^2\sin^{-1}(a+bx)^3}{2b^2}+\frac{1}{2}x^2\sin^{-1}(a+bx)^3-\frac{3\,\text{Subst}\left(\int x^2\sin^2(x)\,dx,x,\sin^{-1}(a+bx)\right)}{2b^2}+\frac{(3a)\,\text{Su}}{}\\
&= -\frac{3(a+bx)^2\sin^{-1}(a+bx)}{4b^2}-\frac{3a\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)^2}{b^2}+\frac{3(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a}{4b^2}\\
&= -\frac{3(a+bx)\sqrt{1-(a+bx)^2}}{8b^2}+\frac{6a(a+bx)\sin^{-1}(a+bx)}{b^2}-\frac{3(a+bx)^2\sin^{-1}(a+bx)}{4b^2}-\frac{3a\sqrt{1-(a+}}{}\\
&= \frac{6a\sqrt{1-(a+bx)^2}}{b^2}-\frac{3(a+bx)\sqrt{1-(a+bx)^2}}{8b^2}+\frac{3\sin^{-1}(a+bx)}{8b^2}+\frac{6a(a+bx)\sin^{-1}(a+bx)}{b^2}-\frac{3(}{}
\end{aligned}$$

Mathematica [A] time = 0.141906, size = 135, normalized size = 0.64

$$\frac{3(15a-bx)\sqrt{-a^2-2abx-b^2x^2+1}+\left(-4a^2+4b^2x^2-2\right)\sin^{-1}(a+bx)^3-6(3a-bx)\sqrt{-a^2-2abx-b^2x^2+1}\sin^{-1}(a+b}{8b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcSin[a + b*x]^3,x]
```

```
[Out] (3*(15*a - b*x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2] + (3 + 42*a^2 + 36*a*b*x
- 6*b^2*x^2)*ArcSin[a + b*x] - 6*(3*a - b*x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x
^2]*ArcSin[a + b*x]^2 + (-2 - 4*a^2 + 4*b^2*x^2)*ArcSin[a + b*x]^3)/(8*b^2)
```

Maple [A] time = 0.047, size = 185, normalized size = 0.9

$$\frac{1}{b^2}\left(\frac{(\arcsin(bx+a))^3\left(-1+(bx+a)^2\right)}{2}+\frac{3\,(\arcsin(bx+a))^2}{4}\left((bx+a)\sqrt{1-(bx+a)^2}+\arcsin(bx+a)\right)-\frac{3\arcsin(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arcsin(b*x+a)^3,x)
```

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

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.90174, size = 266, normalized size = 1.26

$$\frac{2\left(2\,b^2x^2-2\,a^2-1\right)\arcsin(bx+a)^3-3\left(2\,b^2x^2-12\,abx-14\,a^2-1\right)\arcsin(bx+a)+3\,\sqrt{-b^2x^2-2\,abx-a^2+1}\left(2\,(bx\right.}{8\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/8*(2*(2*b^2*x^2 - 2*a^2 - 1)*arcsin(b*x + a)^3 - 3*(2*b^2*x^2 - 12*a*b*x
- 14*a^2 - 1)*arcsin(b*x + a) + 3*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(2*(b*
x - 3*a)*arcsin(b*x + a)^2 - b*x + 15*a))/b^2
```

Sympy [A] time = 1.59027, size = 248, normalized size = 1.18

$$\begin{cases} -\frac{a^2\operatorname{asin}^3(a+bx)}{2b^2}+\frac{21a^2\operatorname{asin}(a+bx)}{4b^2}+\frac{9ax\operatorname{asin}(a+bx)}{2b}-\frac{9a\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}^2(a+bx)}{4b^2}+\frac{45a\sqrt{-a^2-2abx-b^2x^2+1}}{8b^2}+\frac{x^2\operatorname{asin}^3(a+bx)}{2}-\frac{3x^2\operatorname{asi} \\ \frac{x^2\operatorname{asin}^3(a)}{2} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*asin(b*x+a)**3,x)
```

```
[Out] Piecewise((-a**2*asin(a + b*x)**3/(2*b**2) + 21*a**2*asin(a + b*x)/(4*b**2)
 + 9*a*x*asin(a + b*x)/(2*b) - 9*a*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*as
in(a + b*x)**2/(4*b**2) + 45*a*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/(8*b**
2) + x**2*asin(a + b*x)**3/2 - 3*x**2*asin(a + b*x)/4 + 3*x*sqrt(-a**2 - 2*
a*b*x - b**2*x**2 + 1)*asin(a + b*x)**2/(4*b) - 3*x*sqrt(-a**2 - 2*a*b*x -
b**2*x**2 + 1)/(8*b) - asin(a + b*x)**3/(4*b**2) + 3*asin(a + b*x)/(8*b**2)
, Ne(b, 0)), (x**2*asin(a)**3/2, True))
```

Giac [A] time = 1.19873, size = 274, normalized size = 1.3

$$-\frac{(bx+a)a\arcsin(bx+a)^3}{b^2}+\frac{\left((bx+a)^2-1\right)\arcsin(bx+a)^3}{2\,b^2}+\frac{3\sqrt{-(bx+a)^2+1}(bx+a)\arcsin(bx+a)^2}{4\,b^2}-\frac{3\sqrt{-(bx}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(b*x + a)*a*arcsin(b*x + a)^3/b^2 + 1/2*((b*x + a)^2 - 1)*arcsin(b*x + a)^
3/b^2 + 3/4*sqrt(-(b*x + a)^2 + 1)*(b*x + a)*arcsin(b*x + a)^2/b^2 - 3*sqrt
(-(b*x + a)^2 + 1)*a*arcsin(b*x + a)^2/b^2 + 6*(b*x + a)*a*arcsin(b*x + a)/
b^2 + 1/4*arcsin(b*x + a)^3/b^2 - 3/4*((b*x + a)^2 - 1)*arcsin(b*x + a)/b^2
 - 3/8*sqrt(-(b*x + a)^2 + 1)*(b*x + a)/b^2 + 6*sqrt(-(b*x + a)^2 + 1)*a/b^
2 - 3/8*arcsin(b*x + a)/b^2
```

3.140 $\int \sin^{-1}(a+bx)^3 \, dx$

Optimal. Leaf size=82

$$-\frac{6\sqrt{1-(a+bx)^2}}{b}+\frac{(a+bx)\sin^{-1}(a+bx)^3}{b}+\frac{3\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)^2}{b}-\frac{6(a+bx)\sin^{-1}(a+bx)}{b}$$

```
[Out] (-6*Sqrt[1 - (a + b*x)^2])/b - (6*(a + b*x)*ArcSin[a + b*x])/b + (3*Sqrt[1
- (a + b*x)^2]*ArcSin[a + b*x]^2)/b + ((a + b*x)*ArcSin[a + b*x]^3)/b
```

Rubi [A] time = 0.081184, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {4803, 4619, 4677, 261}

$$-\frac{6\sqrt{1-(a+bx)^2}}{b}+\frac{(a+bx)\sin^{-1}(a+bx)^3}{b}+\frac{3\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)^2}{b}-\frac{6(a+bx)\sin^{-1}(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^3,x]
```

```
[Out] (-6*Sqrt[1 - (a + b*x)^2])/b - (6*(a + b*x)*ArcSin[a + b*x])/b + (3*Sqrt[1
- (a + b*x)^2]*ArcSin[a + b*x]^2)/b + ((a + b*x)*ArcSin[a + b*x]^3)/b
```

Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
```

```
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 261

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

Rubi steps

$$\int \sin^{-1}(a+bx)^3\,dx = \frac{\text{Subst}\left(\int \sin^{-1}(x)^3\,dx, x, a+bx\right)}{b}$$

$$= \frac{(a+bx)\sin^{-1}(a+bx)^3}{b} - \frac{3\,\text{Subst}\left(\int \frac{x\sin^{-1}(x)^2}{\sqrt{1-x^2}}\,dx, x, a+bx\right)}{b}$$

$$= \frac{3\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)^2}{b} + \frac{(a+bx)\sin^{-1}(a+bx)^3}{b} - \frac{6\,\text{Subst}\left(\int \sin^{-1}(x)\,dx, x, a+bx\right)}{b}$$

$$= -\frac{6(a+bx)\sin^{-1}(a+bx)}{b} + \frac{3\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)^2}{b} + \frac{(a+bx)\sin^{-1}(a+bx)^3}{b} + \frac{6\,\text{Subst}\left(\right.}{}$$

$$= -\frac{6\sqrt{1-(a+bx)^2}}{b} - \frac{6(a+bx)\sin^{-1}(a+bx)}{b} + \frac{3\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)^2}{b} + \frac{(a+bx)\sin^{-1}(a}{b}$$

Mathematica [A] time = 0.0320958, size = 74, normalized size = 0.9

$$\frac{-6\sqrt{1-(a+bx)^2} + (a+bx)\sin^{-1}(a+bx)^3 + 3\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)^2 - 6(a+bx)\sin^{-1}(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^3,x]
```

```
[Out] (-6*Sqrt[1 - (a + b*x)^2] - 6*(a + b*x)*ArcSin[a + b*x] + 3*Sqrt[1 - (a + b
*x)^2]*ArcSin[a + b*x]^2 + (a + b*x)*ArcSin[a + b*x]^3)/b
```

Maple [A] time = 0.032, size = 71, normalized size = 0.9

$$\frac{1}{b}\left((\arcsin(bx+a))^3(bx+a) + 3\,(\arcsin(bx+a))^2\sqrt{1-(bx+a)^2} - 6\sqrt{1-(bx+a)^2} - 6\,(bx+a)\arcsin(bx+a)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)^3,x)
```

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

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.79887, size = 170, normalized size = 2.07

$$\frac{(bx+a)\arcsin(bx+a)^3 - 6(bx+a)\arcsin(bx+a) + 3\sqrt{-b^2x^2 - 2abx - a^2 + 1}\left(\arcsin(bx+a)^2 - 2\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] ((b*x + a)*arcsin(b*x + a)^3 - 6*(b*x + a)*arcsin(b*x + a) + 3*sqrt(-b^2*x^
2 - 2*a*b*x - a^2 + 1)*(arcsin(b*x + a)^2 - 2))/b
```

Sympy [A] time = 0.735238, size = 109, normalized size = 1.33

$$\begin{cases} \frac{a\operatorname{asin}^3(a+bx)}{b} - \frac{6a\operatorname{asin}(a+bx)}{b} + x\operatorname{asin}^3(a+bx) - 6x\operatorname{asin}(a+bx) + \frac{3\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}^2(a+bx)}{b} - \frac{6\sqrt{-a^2-2abx-b^2x^2+1}}{b} & \text{for} \\ x\operatorname{asin}^3(a) & \text{oth} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**3,x)
```

```
[Out] Piecewise((a*asin(a + b*x)**3/b - 6*a*asin(a + b*x)/b + x*asin(a + b*x)**3
- 6*x*asin(a + b*x) + 3*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)
**2/b - 6*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/b, Ne(b, 0)), (x*asin(a)**3
, True))
```

Giac [A] time = 1.19109, size = 105, normalized size = 1.28

$$\frac{(bx+a)\arcsin(bx+a)^3}{b}+\frac{3\sqrt{-(bx+a)^2+1}\arcsin(bx+a)^2}{b}-\frac{6(bx+a)\arcsin(bx+a)}{b}-\frac{6\sqrt{-(bx+a)^2+1}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (b*x + a)*arcsin(b*x + a)^3/b + 3*sqrt(-(b*x + a)^2 + 1)*arcsin(b*x + a)^2/
b - 6*(b*x + a)*arcsin(b*x + a)/b - 6*sqrt(-(b*x + a)^2 + 1)/b
```

3.141 $\int \frac{\sin^{-1}(a+bx)^3}{x}\,dx$

Optimal. Leaf size=365

$$-3i\sin^{-1}(a+bx)^2\text{PolyLog}\left(2,\frac{e^{i\sin^{-1}(a+bx)}}{-\sqrt{1-a^2}+ia}\right)-3i\sin^{-1}(a+bx)^2\text{PolyLog}\left(2,\frac{e^{i\sin^{-1}(a+bx)}}{\sqrt{1-a^2}+ia}\right)+6\sin^{-1}(a+bx)\text{PolyLo}$$

```
[Out] (-I/4)*ArcSin[a + b*x]^4 + ArcSin[a + b*x]^3*Log[1 - E^(I*ArcSin[a + b*x])/
(I*a - Sqrt[1 - a^2])] + ArcSin[a + b*x]^3*Log[1 - E^(I*ArcSin[a + b*x])/(I
*a + Sqrt[1 - a^2])] - (3*I)*ArcSin[a + b*x]^2*PolyLog[2, E^(I*ArcSin[a + b
*x])/(I*a - Sqrt[1 - a^2])] - (3*I)*ArcSin[a + b*x]^2*PolyLog[2, E^(I*ArcSi
n[a + b*x])/(I*a + Sqrt[1 - a^2])] + 6*ArcSin[a + b*x]*PolyLog[3, E^(I*ArcS
in[a + b*x])/(I*a - Sqrt[1 - a^2])] + 6*ArcSin[a + b*x]*PolyLog[3, E^(I*Arc
Sin[a + b*x])/(I*a + Sqrt[1 - a^2])] + (6*I)*PolyLog[4, E^(I*ArcSin[a + b*x
])/(I*a - Sqrt[1 - a^2])] + (6*I)*PolyLog[4, E^(I*ArcSin[a + b*x])/(I*a + S
qrt[1 - a^2])]
```

Rubi [A] time = 0.450544, antiderivative size = 365, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 8, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667, Rules used = {4805, 4741, 4521, 2190, 2531, 6609, 2282, 6589}

$$-3i\sin^{-1}(a+bx)^2\text{PolyLog}\left(2,\frac{e^{i\sin^{-1}(a+bx)}}{-\sqrt{1-a^2}+ia}\right)-3i\sin^{-1}(a+bx)^2\text{PolyLog}\left(2,\frac{e^{i\sin^{-1}(a+bx)}}{\sqrt{1-a^2}+ia}\right)+6\sin^{-1}(a+bx)\text{PolyLo}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^3/x,x]
```


```
[Out] (-I/4)*ArcSin[a + b*x]^4 + ArcSin[a + b*x]^3*Log[1 - E^(I*ArcSin[a + b*x])/
(I*a - Sqrt[1 - a^2])] + ArcSin[a + b*x]^3*Log[1 - E^(I*ArcSin[a + b*x])/(I
*a + Sqrt[1 - a^2])] - (3*I)*ArcSin[a + b*x]^2*PolyLog[2, E^(I*ArcSin[a + b
*x])/(I*a - Sqrt[1 - a^2])] - (3*I)*ArcSin[a + b*x]^2*PolyLog[2, E^(I*ArcSi
n[a + b*x])/(I*a + Sqrt[1 - a^2])] + 6*ArcSin[a + b*x]*PolyLog[3, E^(I*ArcS
in[a + b*x])/(I*a - Sqrt[1 - a^2])] + 6*ArcSin[a + b*x]*PolyLog[3, E^(I*Arc
Sin[a + b*x])/(I*a + Sqrt[1 - a^2])] + (6*I)*PolyLog[4, E^(I*ArcSin[a + b*x
])/(I*a - Sqrt[1 - a^2])] + (6*I)*PolyLog[4, E^(I*ArcSin[a + b*x])/(I*a + S
qrt[1 - a^2])]
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\sin^{-1}(a+bx)^3}{x}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)^3}{-\frac{a}{b}+\frac{x}{b}}\,dx, x, a+bx\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \frac{x^3\cos(x)}{-\frac{a}{b}+\frac{\sin(x)}{b}}\,dx, x, \sin^{-1}(a+bx)\right)}{b}$$

$$= -\frac{1}{4}i\sin^{-1}(a+bx)^4 + \frac{i\,\text{Subst}\left(\int \frac{e^{ix}x^3}{-\frac{ia}{b}-\frac{\sqrt{1-a^2}}{b}+\frac{e^{ix}}{b}}\,dx, x, \sin^{-1}(a+bx)\right)}{b} + \frac{i\,\text{Subst}\left(\int \frac{e^{ix}x^3}{-\frac{ia}{b}+\frac{\sqrt{1-a^2}}{b}+\frac{e^{ix}}{b}}\,dx,\right.}{b}$$

$$= -\frac{1}{4}i\sin^{-1}(a+bx)^4 + \sin^{-1}(a+bx)^3\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + \sin^{-1}(a+bx)^3\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia+\sqrt{1-a^2}}\right.$$

$$= -\frac{1}{4}i\sin^{-1}(a+bx)^4 + \sin^{-1}(a+bx)^3\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + \sin^{-1}(a+bx)^3\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia+\sqrt{1-a^2}}\right.$$

$$= -\frac{1}{4}i\sin^{-1}(a+bx)^4 + \sin^{-1}(a+bx)^3\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + \sin^{-1}(a+bx)^3\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia+\sqrt{1-a^2}}\right.$$

$$= -\frac{1}{4}i\sin^{-1}(a+bx)^4 + \sin^{-1}(a+bx)^3\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + \sin^{-1}(a+bx)^3\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia+\sqrt{1-a^2}}\right.$$

$$= -\frac{1}{4}i\sin^{-1}(a+bx)^4 + \sin^{-1}(a+bx)^3\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + \sin^{-1}(a+bx)^3\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia+\sqrt{1-a^2}}\right.$$

Mathematica [A] time = 0.0379962, size = 424, normalized size = 1.16

$$-3i\sin^{-1}(a+bx)^2\text{PolyLog}\left(2, -\frac{e^{i\sin^{-1}(a+bx)}}{b\left(-\frac{\sqrt{1-a^2}}{b}-\frac{ia}{b}\right)}\right) - 3i\sin^{-1}(a+bx)^2\text{PolyLog}\left(2, -\frac{e^{i\sin^{-1}(a+bx)}}{b\left(\frac{\sqrt{1-a^2}}{b}-\frac{ia}{b}\right)}\right) + 6\sin^{-1}(a+bx)\text{Poly}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^3/x,x]
```

```
[Out] (-I/4)*ArcSin[a + b*x]^4 + ArcSin[a + b*x]^3*Log[1 + E^(I*ArcSin[a + b*x])/
((((-I)*a)/b - Sqrt[1 - a^2]/b)*b)] + ArcSin[a + b*x]^3*Log[1 + E^(I*ArcSin
[a + b*x])/((((-I)*a)/b + Sqrt[1 - a^2]/b)*b)] - (3*I)*ArcSin[a + b*x]^2*Po
lyLog[2, -(E^(I*ArcSin[a + b*x])/((((-I)*a)/b - Sqrt[1 - a^2]/b)*b))] - (3*
I)*ArcSin[a + b*x]^2*PolyLog[2, -(E^(I*ArcSin[a + b*x])/((((-I)*a)/b + Sqrt
[1 - a^2]/b)*b))] + 6*ArcSin[a + b*x]*PolyLog[3, -(E^(I*ArcSin[a + b*x])/((
((-I)*a)/b - Sqrt[1 - a^2]/b)*b))] + 6*ArcSin[a + b*x]*PolyLog[3, -(E^(I*Ar
cSin[a + b*x])/((((-I)*a)/b + Sqrt[1 - a^2]/b)*b))] + (6*I)*PolyLog[4, E^(I
*ArcSin[a + b*x])/(I*a - Sqrt[1 - a^2])] + (6*I)*PolyLog[4, E^(I*ArcSin[a +
 b*x])/(I*a + Sqrt[1 - a^2])]
```

Maple [F] time = 0.879, size = 0, normalized size = 0.

$$\int \frac{(\arcsin(bx+a))^3}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\arcsin(bx+a)^3}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(arcsin(b*x + a)^3/x, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\operatorname{asin}^3(a+bx)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**3/x,x)
```

```
[Out] Integral(asin(a + b*x)**3/x, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\arcsin(bx+a)^3}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(arcsin(b*x + a)^3/x, x)
```

3.142 $\int \frac{\sin^{-1}(a+bx)^3}{x^2}\,dx$

Optimal. Leaf size=316

$$\frac{6b\sin^{-1}(a+bx)\mathrm{PolyLog}\left(2,-\frac{ie^{i\sin^{-1}(a+bx)}}{a-\sqrt{a^2-1}}\right)}{\sqrt{a^2-1}}-\frac{6b\sin^{-1}(a+bx)\mathrm{PolyLog}\left(2,-\frac{ie^{i\sin^{-1}(a+bx)}}{\sqrt{a^2-1}+a}\right)}{\sqrt{a^2-1}}+\frac{6ib\mathrm{PolyLog}\left(3,-\frac{ie^{i\sin^{-1}(a+bx}}{a-\sqrt{a^2-1}}\right.}{\sqrt{a^2-1}}$$

```
[Out] -(ArcSin[a + b*x]^3/x) + ((3*I)*b*ArcSin[a + b*x]^2*Log[1 + (I*E^(I*ArcSin[
a + b*x]))/(a - Sqrt[-1 + a^2])])/Sqrt[-1 + a^2] - ((3*I)*b*ArcSin[a + b*x]
^2*Log[1 + (I*E^(I*ArcSin[a + b*x]))/(a + Sqrt[-1 + a^2])])/Sqrt[-1 + a^2]
+ (6*b*ArcSin[a + b*x]*PolyLog[2, ((-I)*E^(I*ArcSin[a + b*x]))/(a - Sqrt[-1
 + a^2])])/Sqrt[-1 + a^2] - (6*b*ArcSin[a + b*x]*PolyLog[2, ((-I)*E^(I*ArcS
in[a + b*x]))/(a + Sqrt[-1 + a^2])])/Sqrt[-1 + a^2] + ((6*I)*b*PolyLog[3, (
(-I)*E^(I*ArcSin[a + b*x]))/(a - Sqrt[-1 + a^2])])/Sqrt[-1 + a^2] - ((6*I)*
b*PolyLog[3, ((-I)*E^(I*ArcSin[a + b*x]))/(a + Sqrt[-1 + a^2])])/Sqrt[-1 +
a^2]
```

Rubi [A] time = 0.633776, antiderivative size = 316, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 9, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.75, Rules used = {4805, 4743, 4773, 3323, 2264, 2190, 2531, 2282, 6589}

$$\frac{6b\sin^{-1}(a+bx)\mathrm{PolyLog}\left(2,-\frac{ie^{i\sin^{-1}(a+bx)}}{a-\sqrt{a^2-1}}\right)}{\sqrt{a^2-1}}-\frac{6b\sin^{-1}(a+bx)\mathrm{PolyLog}\left(2,-\frac{ie^{i\sin^{-1}(a+bx)}}{\sqrt{a^2-1}+a}\right)}{\sqrt{a^2-1}}+\frac{6ib\mathrm{PolyLog}\left(3,-\frac{ie^{i\sin^{-1}(a+bx}}{a-\sqrt{a^2-1}}\right.}{\sqrt{a^2-1}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^3/x^2,x]
```

```
[Out] -(ArcSin[a + b*x]^3/x) + ((3*I)*b*ArcSin[a + b*x]^2*Log[1 + (I*E^(I*ArcSin[
a + b*x]))/(a - Sqrt[-1 + a^2])])/Sqrt[-1 + a^2] - ((3*I)*b*ArcSin[a + b*x]
^2*Log[1 + (I*E^(I*ArcSin[a + b*x]))/(a + Sqrt[-1 + a^2])])/Sqrt[-1 + a^2]
+ (6*b*ArcSin[a + b*x]*PolyLog[2, ((-I)*E^(I*ArcSin[a + b*x]))/(a - Sqrt[-1
 + a^2])])/Sqrt[-1 + a^2] - (6*b*ArcSin[a + b*x]*PolyLog[2, ((-I)*E^(I*ArcS
in[a + b*x]))/(a + Sqrt[-1 + a^2])])/Sqrt[-1 + a^2] + ((6*I)*b*PolyLog[3, (
(-I)*E^(I*ArcSin[a + b*x]))/(a - Sqrt[-1 + a^2])])/Sqrt[-1 + a^2] - ((6*I)*
b*PolyLog[3, ((-I)*E^(I*ArcSin[a + b*x]))/(a + Sqrt[-1 + a^2])])/Sqrt[-1 +
a^2]
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\sin^{-1}(a+bx)^3}{x^2}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)^3}{\left(-\frac{a}{b}+\frac{x}{b}\right)^2}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{\sin^{-1}(a+bx)^3}{x} + 3\,\text{Subst}\left(\int \frac{\sin^{-1}(x)^2}{\left(-\frac{a}{b}+\frac{x}{b}\right)\sqrt{1-x^2}}\,dx, x, a+bx\right)$$

$$= -\frac{\sin^{-1}(a+bx)^3}{x} + 3\,\text{Subst}\left(\int \frac{x^2}{-\frac{a}{b}+\frac{\sin(x)}{b}}\,dx, x, \sin^{-1}(a+bx)\right)$$

$$= -\frac{\sin^{-1}(a+bx)^3}{x} + 6\,\text{Subst}\left(\int \frac{e^{ix}x^2}{\frac{i}{b}-\frac{2ae^{ix}}{b}-\frac{ie^{2ix}}{b}}\,dx, x, \sin^{-1}(a+bx)\right)$$

$$= -\frac{\sin^{-1}(a+bx)^3}{x} - \frac{(6i)\,\text{Subst}\left(\int \frac{e^{ix}x^2}{-\frac{2a}{b}-\frac{2\sqrt{-1+a^2}}{b}-\frac{2ie^{ix}}{b}}\,dx, x, \sin^{-1}(a+bx)\right)}{\sqrt{-1+a^2}} + \frac{(6i)\,\text{Subst}\left(\int \frac{e^{ix}x^2}{-\frac{2a}{b}+\frac{2\sqrt{-1+a}}{b}}\right.}{\sqrt{-}}$$

$$= -\frac{\sin^{-1}(a+bx)^3}{x} + \frac{3ib\sin^{-1}(a+bx)^2\log\left(1+\frac{ie^{i\sin^{-1}(a+bx)}}{a-\sqrt{-1+a^2}}\right)}{\sqrt{-1+a^2}} - \frac{3ib\sin^{-1}(a+bx)^2\log\left(1+\frac{ie^{i\sin^{-1}(a+b}}{a+\sqrt{-1+a}}\right.}{\sqrt{-1+a^2}}$$

$$= -\frac{\sin^{-1}(a+bx)^3}{x} + \frac{3ib\sin^{-1}(a+bx)^2\log\left(1+\frac{ie^{i\sin^{-1}(a+bx)}}{a-\sqrt{-1+a^2}}\right)}{\sqrt{-1+a^2}} - \frac{3ib\sin^{-1}(a+bx)^2\log\left(1+\frac{ie^{i\sin^{-1}(a+b}}{a+\sqrt{-1+a}}\right.}{\sqrt{-1+a^2}}$$

$$= -\frac{\sin^{-1}(a+bx)^3}{x} + \frac{3ib\sin^{-1}(a+bx)^2\log\left(1+\frac{ie^{i\sin^{-1}(a+bx)}}{a-\sqrt{-1+a^2}}\right)}{\sqrt{-1+a^2}} - \frac{3ib\sin^{-1}(a+bx)^2\log\left(1+\frac{ie^{i\sin^{-1}(a+b}}{a+\sqrt{-1+a}}\right.}{\sqrt{-1+a^2}}$$

$$= -\frac{\sin^{-1}(a+bx)^3}{x} + \frac{3ib\sin^{-1}(a+bx)^2\log\left(1+\frac{ie^{i\sin^{-1}(a+bx)}}{a-\sqrt{-1+a^2}}\right)}{\sqrt{-1+a^2}} - \frac{3ib\sin^{-1}(a+bx)^2\log\left(1+\frac{ie^{i\sin^{-1}(a+b}}{a+\sqrt{-1+a}}\right.}{\sqrt{-1+a^2}}$$

Mathematica [A] time = 0.112617, size = 309, normalized size = 0.98

$$-\frac{-6bx\sin^{-1}(a+bx)\text{PolyLog}\left(2,\frac{ie^{i\sin^{-1}(a+bx)}}{\sqrt{a^2-1}-a}\right)+6bx\sin^{-1}(a+bx)\text{PolyLog}\left(2,-\frac{ie^{i\sin^{-1}(a+bx)}}{\sqrt{a^2-1}+a}\right)-6ibx\text{PolyLog}\left(3,\frac{ie^{i\sin^{-1}(a+b}}{\sqrt{a^2-1}-a}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^3/x^2,x]
```

```
[Out] -((Sqrt[-1 + a^2]*ArcSin[a + b*x]^3 - (3*I)*b*x*ArcSin[a + b*x]^2*Log[(a -
Sqrt[-1 + a^2] + I*E^(I*ArcSin[a + b*x]))/(a - Sqrt[-1 + a^2])] + (3*I)*b*x
*ArcSin[a + b*x]^2*Log[(a + Sqrt[-1 + a^2] + I*E^(I*ArcSin[a + b*x]))/(a +
Sqrt[-1 + a^2])] - 6*b*x*ArcSin[a + b*x]*PolyLog[2, (I*E^(I*ArcSin[a + b*x]
))/(-a + Sqrt[-1 + a^2])] + 6*b*x*ArcSin[a + b*x]*PolyLog[2, ((-I)*E^(I*Arc
Sin[a + b*x]))/(a + Sqrt[-1 + a^2])] - (6*I)*b*x*PolyLog[3, (I*E^(I*ArcSin[
a + b*x]))/(-a + Sqrt[-1 + a^2])] + (6*I)*b*x*PolyLog[3, ((-I)*E^(I*ArcSin[
a + b*x]))/(a + Sqrt[-1 + a^2])])/(Sqrt[-1 + a^2]*x))
```

Maple [F] time = 0.545, size = 0, normalized size = 0.

$$\int \frac{(\arcsin(bx+a))^3}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)^3/x^2,x)
```

```
[Out] int(arcsin(b*x+a)^3/x^2,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\arcsin(bx+a)^3}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(arcsin(b*x + a)^3/x^2, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\operatorname{asin}^3(a+bx)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**3/x**2,x)
```

```
[Out] Integral(asin(a + b*x)**3/x**2, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\arcsin(bx+a)^3}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(arcsin(b*x + a)^3/x^2, x)
```

3.143 $\int \frac{x^2}{\sin^{-1}(a+bx)}\,dx$

Optimal. Leaf size=60

$$\frac{a^2\text{CosIntegral}\left(\sin^{-1}(a+bx)\right)}{b^3}+\frac{\text{CosIntegral}\left(\sin^{-1}(a+bx)\right)}{4b^3}-\frac{\text{CosIntegral}\left(3\sin^{-1}(a+bx)\right)}{4b^3}-\frac{a\text{Si}\left(2\sin^{-1}(a+b$$

```
[Out] CosIntegral[ArcSin[a + b*x]]/(4*b^3) + (a^2*CosIntegral[ArcSin[a + b*x]])/b
^3 - CosIntegral[3*ArcSin[a + b*x]]/(4*b^3) - (a*SinIntegral[2*ArcSin[a + b
*x]])/b^3
```

Rubi [A] time = 0.611634, antiderivative size = 60, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 8, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667, Rules used = {4805, 4747, 6741, 12, 6742, 3302, 4406, 3299}

$$\frac{a^2\text{CosIntegral}\left(\sin^{-1}(a+bx)\right)}{b^3}+\frac{\text{CosIntegral}\left(\sin^{-1}(a+bx)\right)}{4b^3}-\frac{\text{CosIntegral}\left(3\sin^{-1}(a+bx)\right)}{4b^3}-\frac{a\text{Si}\left(2\sin^{-1}(a+b$$

Antiderivative was successfully verified.

```
[In] Int[x^2/ArcSin[a + b*x],x]
```


```
[Out] CosIntegral[ArcSin[a + b*x]]/(4*b^3) + (a^2*CosIntegral[ArcSin[a + b*x]])/b
^3 - CosIntegral[3*ArcSin[a + b*x]]/(4*b^3) - (a*SinIntegral[2*ArcSin[a + b
*x]])/b^3
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4747

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_.) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Dist[1/c^(m + 1), Subst[Int[(a + b*x)^n*Cos[x]*(c*d + e*Sin[x])^m
, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[m, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 3302

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

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 3299

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

Rubi steps

$$\int \frac{x^2}{\sin^{-1}(a+bx)}\,dx = \frac{\text{Subst}\left(\int \frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^2}{\sin^{-1}(x)}\,dx, x, a+bx\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \frac{\cos(x)\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)^2}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \frac{\cos(x)(a-\sin(x))^2}{b^2x}\,dx, x, \sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \frac{\cos(x)(a-\sin(x))^2}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b^3}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{a^2\cos(x)}{x}-\frac{2a\cos(x)\sin(x)}{x}+\frac{\cos(x)\sin^2(x)}{x}\right)dx, x, \sin^{-1}(a+bx)\right)}{b^3}$$
$$= \frac{\text{Subst}\left(\int \frac{\cos(x)\sin^2(x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b^3} - \frac{(2a)\,\text{Subst}\left(\int \frac{\cos(x)\sin(x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b^3} + \frac{a^2 \cdots}{\cdots}$$
$$= \frac{a^2\text{Ci}\left(\sin^{-1}(a+bx)\right)}{b^3} + \frac{\text{Subst}\left(\int \left(\frac{\cos(x)}{4x}-\frac{\cos(3x)}{4x}\right)dx, x, \sin^{-1}(a+bx)\right)}{b^3} - \frac{(2a)\,\text{Subst}\left(\int \frac{\sin(2x)}{2x} \cdots\right)}{b^3}$$
$$= \frac{a^2\text{Ci}\left(\sin^{-1}(a+bx)\right)}{b^3} + \frac{\text{Subst}\left(\int \frac{\cos(x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{4b^3} - \frac{\text{Subst}\left(\int \frac{\cos(3x)}{x}\,dx, x, \sin^{-1}(a+b \cdots\right)}{4b^3}$$
$$= \frac{\text{Ci}\left(\sin^{-1}(a+bx)\right)}{4b^3} + \frac{a^2\text{Ci}\left(\sin^{-1}(a+bx)\right)}{b^3} - \frac{\text{Ci}\left(3\sin^{-1}(a+bx)\right)}{4b^3} - \frac{a\text{Si}\left(2\sin^{-1}(a+bx)\right)}{b^3}$$

Mathematica [A] time = 0.155845, size = 45, normalized size = 0.75

$$-\frac{-\left(4a^2+1\right)\text{CosIntegral}\left(\sin^{-1}(a+bx)\right)+\text{CosIntegral}\left(3\sin^{-1}(a+bx)\right)+4a\text{Si}\left(2\sin^{-1}(a+bx)\right)}{4b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2/ArcSin[a + b*x],x]
```

```
[Out] -(-((1 + 4*a^2)*CosIntegral[ArcSin[a + b*x]]) + CosIntegral[3*ArcSin[a + b*
x]] + 4*a*SinIntegral[2*ArcSin[a + b*x]])/(4*b^3)
```

Maple [A] time = 0.041, size = 49, normalized size = 0.8

$$\frac{1}{b^3}\left(-a\mathrm{Si}\left(2\arcsin\left(bx+a\right)\right)+\frac{\mathrm{Ci}\left(\arcsin\left(bx+a\right)\right)}{4}-\frac{\mathrm{Ci}\left(3\arcsin\left(bx+a\right)\right)}{4}+a^2\mathrm{Ci}\left(\arcsin\left(bx+a\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/b^3*(-a*Si(2*arcsin(b*x+a))+1/4*Ci(arcsin(b*x+a))-1/4*Ci(3*arcsin(b*x+a))
+a^2*Ci(arcsin(b*x+a)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{\arcsin\left(bx+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(x^2/arcsin(b*x + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{x^2}{\arcsin\left(bx+a\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(x^2/arcsin(b*x + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{\mathrm{asin}\left(a+bx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2/asin(b*x+a),x)
```

```
[Out] Integral(x**2/asin(a + b*x), x)
```

Giac [A] time = 1.26167, size = 76, normalized size = 1.27

$$\frac{a^2 \operatorname{Ci}\left(\arcsin\left(bx+a\right)\right)}{b^3} - \frac{a \operatorname{Si}\left(2 \arcsin\left(bx+a\right)\right)}{b^3} - \frac{\operatorname{Ci}\left(3 \arcsin\left(bx+a\right)\right)}{4 b^3} + \frac{\operatorname{Ci}\left(\arcsin\left(bx+a\right)\right)}{4 b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] a^2*cos_integral(arcsin(b*x + a))/b^3 - a*sin_integral(2*arcsin(b*x + a))/b
^3 - 1/4*cos_integral(3*arcsin(b*x + a))/b^3 + 1/4*cos_integral(arcsin(b*x
+ a))/b^3
```

3.144 $\int \frac{x}{\sin^{-1}(a+bx)}\,dx$

Optimal. Leaf size=30

$$\frac{\text{Si}\left(2\sin^{-1}(a+bx)\right)}{2b^2}-\frac{a\text{CosIntegral}\left(\sin^{-1}(a+bx)\right)}{b^2}$$

```
[Out] -((a*CosIntegral[ArcSin[a + b*x]])/b^2) + SinIntegral[2*ArcSin[a + b*x]]/(2
*b^2)
```

Rubi [A] time = 0.220512, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.8, Rules used = {4805, 4747, 6741, 12, 6742, 3302, 4406, 3299}

$$\frac{\text{Si}\left(2\sin^{-1}(a+bx)\right)}{2b^2}-\frac{a\text{CosIntegral}\left(\sin^{-1}(a+bx)\right)}{b^2}$$

Antiderivative was successfully verified.

```
[In] Int[x/ArcSin[a + b*x],x]
```

```
[Out] -((a*CosIntegral[ArcSin[a + b*x]])/b^2) + SinIntegral[2*ArcSin[a + b*x]]/(2
*b^2)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[(((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4747

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_.) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Dist[1/c^(m + 1), Subst[Int[(a + b*x)^n*Cos[x]*(c*d + e*Sin[x])^m
, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[m, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 3302

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

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 3299

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

Rubi steps

$$\int \frac{x}{\sin^{-1}(a+bx)}\,dx = \frac{\text{Subst}\left(\int \frac{-\frac{a}{b}+\frac{x}{b}}{\sin^{-1}(x)}\,dx, x, a+bx\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \frac{\cos(x)\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \frac{\cos(x)(-a+\sin(x))}{bx}\,dx, x, \sin^{-1}(a+bx)\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \frac{\cos(x)(-a+\sin(x))}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b^2}$$

$$= \frac{\text{Subst}\left(\int \left(-\frac{a\cos(x)}{x}+\frac{\cos(x)\sin(x)}{x}\right)dx, x, \sin^{-1}(a+bx)\right)}{b^2}$$

$$= \frac{\text{Subst}\left(\int \frac{\cos(x)\sin(x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b^2} - \frac{a\,\text{Subst}\left(\int \frac{\cos(x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b^2}$$

$$= -\frac{a\text{Ci}\left(\sin^{-1}(a+bx)\right)}{b^2} + \frac{\text{Subst}\left(\int \frac{\sin(2x)}{2x}\,dx, x, \sin^{-1}(a+bx)\right)}{b^2}$$

$$= -\frac{a\text{Ci}\left(\sin^{-1}(a+bx)\right)}{b^2} + \frac{\text{Subst}\left(\int \frac{\sin(2x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{2b^2}$$

$$= -\frac{a\text{Ci}\left(\sin^{-1}(a+bx)\right)}{b^2} + \frac{\text{Si}\left(2\sin^{-1}(a+bx)\right)}{2b^2}$$

Mathematica [A] time = 0.0563224, size = 30, normalized size = 1.

$$\frac{\text{Si}\left(2\sin^{-1}(a+bx)\right)}{2b^2} - \frac{a\text{CosIntegral}\left(\sin^{-1}(a+bx)\right)}{b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/ArcSin[a + b*x],x]
```

```
[Out] -((a*CosIntegral[ArcSin[a + b*x]])/b^2) + SinIntegral[2*ArcSin[a + b*x]]/(2
*b^2)
```

Maple [A] time = 0.031, size = 27, normalized size = 0.9

$$\frac{1}{b^{2}}\left(\frac{\mathrm{Si}\left(2\arcsin\left(bx+a\right)\right)}{2}-a\,\mathrm{Ci}\left(\arcsin\left(bx+a\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/arcsin(b*x+a),x)
```

```
[Out] 1/b^2*(1/2*Si(2*arcsin(b*x+a))-a*Ci(arcsin(b*x+a)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{\arcsin\left(bx+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(x/arcsin(b*x + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{x}{\arcsin\left(bx+a\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(b*x+a),x, algorithm="fricas")
```

```
[Out] integral(x/arcsin(b*x + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{\mathrm{asin}\left(a+bx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/asin(b*x+a),x)
```

```
[Out] Integral(x/asin(a + b*x), x)
```

Giac [A] time = 1.2169, size = 38, normalized size = 1.27

$$-\frac{a\,\mathrm{Ci}\left(\arcsin\left(bx+a\right)\right)}{b^2}+\frac{\mathrm{Si}\left(2\,\arcsin\left(bx+a\right)\right)}{2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(b*x+a),x, algorithm="giac")
```

```
[Out] -a*cos_integral(arcsin(b*x + a))/b^2 + 1/2*sin_integral(2*arcsin(b*x + a))/
b^2
```

3.145 $\int \frac{1}{\sin^{-1}(a+bx)}\,dx$

Optimal. Leaf size=11

$$\frac{\text{CosIntegral}\left(\sin^{-1}(a+bx)\right)}{b}$$

```
[Out] CosIntegral[ArcSin[a + b*x]]/b
```

Rubi [A] time = 0.0222556, antiderivative size = 11, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {4803, 4623, 3302}

$$\frac{\text{CosIntegral}\left(\sin^{-1}(a+bx)\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^(-1),x]
```

```
[Out] CosIntegral[ArcSin[a + b*x]]/b
```

Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rubi steps

$$\int \frac{1}{\sin^{-1}(a+bx)}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\sin^{-1}(x)}\,dx, x, a+bx\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \frac{\cos(x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\mathbf{Ci}\left(\sin^{-1}(a+bx)\right)}{b}$$

Mathematica [A] time = 0.0159863, size = 11, normalized size = 1.

$$\frac{\text{CosIntegral}\left(\sin^{-1}(a+bx)\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^(-1),x]
```

```
[Out] CosIntegral[ArcSin[a + b*x]]/b
```

Maple [A] time = 0.03, size = 12, normalized size = 1.1

$$\frac{\text{Ci}\left(\arcsin\left(bx+a\right)\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/arcsin(b*x+a),x)
```

```
[Out] Ci(arcsin(b*x+a))/b
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\arcsin\left(bx+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a),x, algorithm="maxima")
```

```
[Out] integrate(1/arcsin(b*x + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{\arcsin\left(bx+a\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a),x, algorithm="fricas")
```

```
[Out] integral(1/arcsin(b*x + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\operatorname{asin}\left(a+bx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/asin(b*x+a),x)
```

```
[Out] Integral(1/asin(a + b*x), x)
```

Giac [A] time = 1.19932, size = 15, normalized size = 1.36

$$\frac{\operatorname{Ci}\left(\arcsin\left(bx+a\right)\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a),x, algorithm="giac")
```

```
[Out] cos_integral(arcsin(b*x + a))/b
```

3.146 $\int \frac{1}{x \sin^{-1}(a+bx)} \, dx$

Optimal. Leaf size=14

$$\text{Unintegrable}\left(\frac{1}{x \sin^{-1}(a+bx)}, x\right)$$

```
[Out] Unintegrable[1/(x*ArcSin[a + b*x]), x]
```

Rubi [A] time = 0.0427649, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{x \sin^{-1}(a+bx)} \, dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(x*ArcSin[a + b*x]),x]
```

```
[Out] Defer[Subst][Defer[Int][1/((-(a/b) + x/b)*ArcSin[x]), x], x, a + b*x]/b
```

Rubi steps

$$\int \frac{1}{x \sin^{-1}(a+bx)} \, dx = \frac{\text{Subst}\left(\int \frac{1}{\left(-\frac{a}{b}+\frac{x}{b}\right)\sin^{-1}(x)} \, dx, x, a+bx\right)}{b}$$

Mathematica [A] time = 0.220715, size = 0, normalized size = 0.

$$\int \frac{1}{x \sin^{-1}(a+bx)} \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(x*ArcSin[a + b*x]),x]
```

```
[Out] Integrate[1/(x*ArcSin[a + b*x]), x]
```

Maple [A] time = 0.286, size = 0, normalized size = 0.

$$\int \frac{1}{x \arcsin(bx+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x/arcsin(b*x+a),x)
```

```
[Out] int(1/x/arcsin(b*x+a),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{x \arcsin(bx+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/arcsin(b*x+a),x, algorithm="maxima")
```

```
[Out] integrate(1/(x*arcsin(b*x + a)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\operatorname{integral}\left(\frac{1}{x \arcsin(bx+a)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/arcsin(b*x+a),x, algorithm="fricas")
```

```
[Out] integral(1/(x*arcsin(b*x + a)), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{x \operatorname{asin}(a+bx)} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/asin(b*x+a),x)
```

```
[Out] Integral(1/(x*asin(a + b*x)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{x \arcsin(bx+a)} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/arcsin(b*x+a),x, algorithm="giac")
```

```
[Out] integrate(1/(x*arcsin(b*x + a)), x)
```

3.147 $\int \frac{x^2}{\sin^{-1}(a+bx)^2}\,dx$

Optimal. Leaf size=84

$$-\frac{(4a^2+1)\,\mathrm{Si}\left(\sin^{-1}(a+bx)\right)}{4b^3}-\frac{2a\mathrm{CosIntegral}\left(2\sin^{-1}(a+bx)\right)}{b^3}+\frac{3\mathrm{Si}\left(3\sin^{-1}(a+bx)\right)}{4b^3}-\frac{x^2\sqrt{1-(a+bx)^2}}{b\sin^{-1}(a+bx)}$$

```
[Out] -((x^2*Sqrt[1 - (a + b*x)^2])/(b*ArcSin[a + b*x])) - (2*a*CosIntegral[2*Arc
Sin[a + b*x]])/b^3 - ((1 + 4*a^2)*SinIntegral[ArcSin[a + b*x]])/(4*b^3) + (
3*SinIntegral[3*ArcSin[a + b*x]])/(4*b^3)
```

Rubi [A] time = 0.227717, antiderivative size = 161, normalized size of antiderivative = 1.92, number of steps used = 12, number of rules used = 7, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.583, Rules used = {4805, 4745, 4621, 4723, 3299, 4631, 3302}

$$-\frac{a^2\mathrm{Si}\left(\sin^{-1}(a+bx)\right)}{b^3}-\frac{a^2\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)}-\frac{2a\mathrm{CosIntegral}\left(2\sin^{-1}(a+bx)\right)}{b^3}-\frac{\mathrm{Si}\left(\sin^{-1}(a+bx)\right)}{4b^3}+\frac{3\mathrm{Si}\left(3\sin^{-1}(a+\right.}{4b^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2/ArcSin[a + b*x]^2,x]
```

```
[Out] -((a^2*Sqrt[1 - (a + b*x)^2])/(b^3*ArcSin[a + b*x])) + (2*a*(a + b*x)*Sqrt[
1 - (a + b*x)^2])/(b^3*ArcSin[a + b*x]) - ((a + b*x)^2*Sqrt[1 - (a + b*x)^2
])/(b^3*ArcSin[a + b*x]) - (2*a*CosIntegral[2*ArcSin[a + b*x]])/b^3 - SinIn
tegral[ArcSin[a + b*x]]/(4*b^3) - (a^2*SinIntegral[ArcSin[a + b*x]])/b^3 +
(3*SinIntegral[3*ArcSin[a + b*x]])/(4*b^3)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4745

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_))^(m_.), x_Sy
mbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*ArcSin[c*x])^n, x], x] /; F
reeQ[{a, b, c, d, e}, x] && IGtQ[m, 0] && LtQ[n, -1]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rubi steps

$$\int \frac{x^2}{\sin^{-1}(a+bx)^2}\,dx = \frac{\text{Subst}\left(\int \frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^2}{\sin^{-1}(x)^2}\,dx, x, a+bx\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \left(\frac{a^2}{b^2\sin^{-1}(x)^2} - \frac{2ax}{b^2\sin^{-1}(x)^2} + \frac{x^2}{b^2\sin^{-1}(x)^2}\right)dx, x, a+bx\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \frac{x^2}{\sin^{-1}(x)^2}\,dx, x, a+bx\right)}{b^3} - \frac{(2a)\,\text{Subst}\left(\int \frac{x}{\sin^{-1}(x)^2}\,dx, x, a+bx\right)}{b^3} + \frac{a^2\,\text{Subst}\left(\int \frac{1}{\sin^{-1}(x)^2}\,d\right.}{b^3}$$

$$= -\frac{a^2\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)} + \frac{2a(a+bx)\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)} - \frac{(a+bx)^2\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)} + \frac{\text{Subst}\left(\int\left(-\frac{\sin(x)}{4x}\right.\right.}{}$$

$$= -\frac{a^2\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)} + \frac{2a(a+bx)\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)} - \frac{(a+bx)^2\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)} - \frac{2a\mathbf{Ci}\left(2\sin^{-1}(a+\right.}{b^3}$$

$$= -\frac{a^2\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)} + \frac{2a(a+bx)\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)} - \frac{(a+bx)^2\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)} - \frac{2a\mathbf{Ci}\left(2\sin^{-1}(a+\right.}{b^3}$$

Mathematica [A] time = 0.553251, size = 86, normalized size = 1.02

$$-\frac{\frac{4b^2x^2\sqrt{-a^2-2abx-b^2x^2+1}}{\sin^{-1}(a+bx)} + \left(4a^2+1\right)\mathbf{Si}\left(\sin^{-1}(a+bx)\right) + 8a\text{CosIntegral}\left(2\sin^{-1}(a+bx)\right) - 3\mathbf{Si}\left(3\sin^{-1}(a+bx)\right)}{4b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2/ArcSin[a + b*x]^2,x]
```

```
[Out] -((4*b^2*x^2*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2])/ArcSin[a + b*x] + 8*a*CosIn
tegral[2*ArcSin[a + b*x]] + (1 + 4*a^2)*SinIntegral[ArcSin[a + b*x]] - 3*Si
nIntegral[3*ArcSin[a + b*x]])/(4*b^3)
```

Maple [A] time = 0.047, size = 149, normalized size = 1.8

$$\frac{1}{b^3}\left(-\frac{a\left(2\,\text{Ci}\left(2\,\arcsin\left(bx+a\right)\right)\arcsin\left(bx+a\right)-\sin\left(2\,\arcsin\left(bx+a\right)\right)\right)}{\arcsin\left(bx+a\right)} - \frac{1}{4\,\arcsin\left(bx+a\right)}\sqrt{1-\left(bx+a\right)^2} - \frac{\text{Si}\left(\text{arcs}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/arcsin(b*x+a)^2,x)
```

```
[Out] 1/b^3*(-a*(2*Ci(2*arcsin(b*x+a))*arcsin(b*x+a)-sin(2*arcsin(b*x+a)))/arcsin
(b*x+a)-1/4/arcsin(b*x+a)*(1-(b*x+a)^2)^(1/2)-1/4*Si(arcsin(b*x+a))+1/4/arc
sin(b*x+a)*cos(3*arcsin(b*x+a))+3/4*Si(3*arcsin(b*x+a))-a^2*(Si(arcsin(b*x+
a))*arcsin(b*x+a)+(1-(b*x+a)^2)^(1/2))/arcsin(b*x+a))
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/arcsin(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x^2}{\arcsin\left(bx+a\right)^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/arcsin(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] integral(x^2/arcsin(b*x + a)^2, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{\operatorname{asin}^2\left(a+bx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2/asin(b*x+a)**2,x)
```

```
[Out] Integral(x**2/asin(a + b*x)**2, x)
```

Giac [B] time = 1.2137, size = 228, normalized size = 2.71

$$-\frac{a^2 \operatorname{Si}(\arcsin(bx+a))}{b^3} - \frac{2a \operatorname{Ci}(2\arcsin(bx+a))}{b^3} + \frac{2\sqrt{-(bx+a)^2+1}(bx+a)a}{b^3\arcsin(bx+a)} - \frac{\sqrt{-(bx+a)^2+1}a^2}{b^3\arcsin(bx+a)} + \frac{3\operatorname{Si}(3\arcsin$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/arcsin(b*x+a)^2,x, algorithm="giac")
```

```
[Out] -a^2*sin_integral(arcsin(b*x + a))/b^3 - 2*a*cos_integral(2*arcsin(b*x + a)
)/b^3 + 2*sqrt(-(b*x + a)^2 + 1)*(b*x + a)*a/(b^3*arcsin(b*x + a)) - sqrt(-
(b*x + a)^2 + 1)*a^2/(b^3*arcsin(b*x + a)) + 3/4*sin_integral(3*arcsin(b*x
+ a))/b^3 - 1/4*sin_integral(arcsin(b*x + a))/b^3 + (-(b*x + a)^2 + 1)^(3/2
)/(b^3*arcsin(b*x + a)) - sqrt(-(b*x + a)^2 + 1)/(b^3*arcsin(b*x + a))
```

3.148 $\int \frac{x}{\sin^{-1}(a+bx)^2} \, dx$

Optimal. Leaf size=55

$$\frac{\text{CosIntegral}\left(2\sin^{-1}(a+bx)\right)}{b^2}+\frac{a\text{Si}\left(\sin^{-1}(a+bx)\right)}{b^2}-\frac{x\sqrt{1-(a+bx)^2}}{b\sin^{-1}(a+bx)}$$

```
[Out] -((x*Sqrt[1 - (a + b*x)^2])/(b*ArcSin[a + b*x])) + CosIntegral[2*ArcSin[a +
 b*x]]/b^2 + (a*SinIntegral[ArcSin[a + b*x]])/b^2
```

Rubi [A] time = 0.140056, antiderivative size = 87, normalized size of antiderivative = 1.58, number of steps used = 8, number of rules used = 7, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.7, Rules used = {4805, 4745, 4621, 4723, 3299, 4631, 3302}

$$\frac{\text{CosIntegral}\left(2\sin^{-1}(a+bx)\right)}{b^2}+\frac{a\text{Si}\left(\sin^{-1}(a+bx)\right)}{b^2}+\frac{a\sqrt{1-(a+bx)^2}}{b^2\sin^{-1}(a+bx)}-\frac{(a+bx)\sqrt{1-(a+bx)^2}}{b^2\sin^{-1}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x/ArcSin[a + b*x]^2,x]
```

```
[Out] (a*Sqrt[1 - (a + b*x)^2])/(b^2*ArcSin[a + b*x]) - ((a + b*x)*Sqrt[1 - (a +
b*x)^2])/(b^2*ArcSin[a + b*x]) + CosIntegral[2*ArcSin[a + b*x]]/b^2 + (a*Si
nIntegral[ArcSin[a + b*x]])/b^2
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4745

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_))^(m_.), x_Sy
mbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*ArcSin[c*x])^n, x], x] /; F
reeQ[{a, b, c, d, e}, x] && IGtQ[m, 0] && LtQ[n, -1]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
```

```
Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
b, c}, x] && LtQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rubi steps

$$\int \frac{x}{\sin^{-1}(a+bx)^2}\,dx = \frac{\text{Subst}\left(\int \frac{-\frac{a}{b}+\frac{x}{b}}{\sin^{-1}(x)^2}\,dx, x, a+bx\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \left(-\frac{a}{b\sin^{-1}(x)^2}+\frac{x}{b\sin^{-1}(x)^2}\right)dx, x, a+bx\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \frac{x}{\sin^{-1}(x)^2}\,dx, x, a+bx\right)}{b^2} - \frac{a\,\text{Subst}\left(\int \frac{1}{\sin^{-1}(x)^2}\,dx, x, a+bx\right)}{b^2}$$
$$= \frac{a\sqrt{1-(a+bx)^2}}{b^2\sin^{-1}(a+bx)} - \frac{(a+bx)\sqrt{1-(a+bx)^2}}{b^2\sin^{-1}(a+bx)} + \frac{\text{Subst}\left(\int \frac{\cos(2x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b^2} + \frac{a\,\text{Subst}\left(\int\right.}{}$$
$$= \frac{a\sqrt{1-(a+bx)^2}}{b^2\sin^{-1}(a+bx)} - \frac{(a+bx)\sqrt{1-(a+bx)^2}}{b^2\sin^{-1}(a+bx)} + \frac{\text{Ci}\left(2\sin^{-1}(a+bx)\right)}{b^2} + \frac{a\,\text{Subst}\left(\int \frac{\sin(x)}{x}\,dx, x, \sin^{-1}\right.}{b^2}$$
$$= \frac{a\sqrt{1-(a+bx)^2}}{b^2\sin^{-1}(a+bx)} - \frac{(a+bx)\sqrt{1-(a+bx)^2}}{b^2\sin^{-1}(a+bx)} + \frac{\text{Ci}\left(2\sin^{-1}(a+bx)\right)}{b^2} + \frac{a\text{Si}\left(\sin^{-1}(a+bx)\right)}{b^2}$$

Mathematica [A] time = 0.182412, size = 63, normalized size = 1.15

$$\frac{\sin^{-1}(a+bx)\text{CosIntegral}\left(2\sin^{-1}(a+bx)\right) + a\sin^{-1}(a+bx)\text{Si}\left(\sin^{-1}(a+bx)\right) - bx\sqrt{1-(a+bx)^2}}{b^2\sin^{-1}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/ArcSin[a + b*x]^2,x]
```

```
[Out] (-(b*x*Sqrt[1 - (a + b*x)^2]) + ArcSin[a + b*x]*CosIntegral[2*ArcSin[a + b*
x]] + a*ArcSin[a + b*x]*SinIntegral[ArcSin[a + b*x]])/(b^2*ArcSin[a + b*x])
```

Maple [A] time = 0.038, size = 72, normalized size = 1.3

$$\frac{1}{b^2}\left(-\frac{\sin(2\arcsin(bx+a))}{2\arcsin(bx+a)} + \text{Ci}(2\arcsin(bx+a)) + \frac{a}{\arcsin(bx+a)}\left(\text{Si}(\arcsin(bx+a))\arcsin(bx+a) + \sqrt{1-(bx}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/arcsin(b*x+a)^2,x)
```

```
[Out] 1/b^2*(-1/2/arcsin(b*x+a)*sin(2*arcsin(b*x+a))+Ci(2*arcsin(b*x+a))+a*(Si(ar
csin(b*x+a))*arcsin(b*x+a)+(1-(b*x+a)^2)^(1/2))/arcsin(b*x+a))
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x}{\arcsin\left(bx+a\right)^{2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] integral(x/arcsin(b*x + a)^2, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{\operatorname{asin}^{2}\left(a+bx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/asin(b*x+a)**2,x)
```

```
[Out] Integral(x/asin(a + b*x)**2, x)
```

Giac [A] time = 1.19313, size = 112, normalized size = 2.04

$$\frac{a\,\mathrm{Si}\left(\arcsin\left(bx+a\right)\right)}{b^2}+\frac{\mathrm{Ci}\left(2\,\arcsin\left(bx+a\right)\right)}{b^2}-\frac{\sqrt{-(bx+a)^2+1}(bx+a)}{b^2\arcsin\left(bx+a\right)}+\frac{\sqrt{-(bx+a)^2+1}a}{b^2\arcsin\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(b*x+a)^2,x, algorithm="giac")
```

```
[Out] a*sin_integral(arcsin(b*x + a))/b^2 + cos_integral(2*arcsin(b*x + a))/b^2 -
 sqrt(-(b*x + a)^2 + 1)*(b*x + a)/(b^2*arcsin(b*x + a)) + sqrt(-(b*x + a)^2
 + 1)*a/(b^2*arcsin(b*x + a))
```

3.149 $\int \frac{1}{\sin^{-1}(a+bx)^2} dx$

Optimal. Leaf size=41

$$-\frac{\text{Si}\left(\sin^{-1}(a+bx)\right)}{b}-\frac{\sqrt{1-(a+bx)^2}}{b\sin^{-1}(a+bx)}$$

```
[Out] -(Sqrt[1 - (a + b*x)^2]/(b*ArcSin[a + b*x])) - SinIntegral[ArcSin[a + b*x]]
/b
```

Rubi [A] time = 0.0789604, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {4803, 4621, 4723, 3299}

$$-\frac{\text{Si}\left(\sin^{-1}(a+bx)\right)}{b}-\frac{\sqrt{1-(a+bx)^2}}{b\sin^{-1}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^(-2),x]
```

```
[Out] -(Sqrt[1 - (a + b*x)^2]/(b*ArcSin[a + b*x])) - SinIntegral[ArcSin[a + b*x]]
/b
```

Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
```

```
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{1}{\sin^{-1}(a+bx)^2}\,dx &= \frac{\text{Subst}\left(\int \frac{1}{\sin^{-1}(x)^2}\,dx, x, a+bx\right)}{b}\\
&= -\frac{\sqrt{1-(a+bx)^2}}{b\sin^{-1}(a+bx)} - \frac{\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\sin^{-1}(x)}\,dx, x, a+bx\right)}{b}\\
&= -\frac{\sqrt{1-(a+bx)^2}}{b\sin^{-1}(a+bx)} - \frac{\text{Subst}\left(\int \frac{\sin(x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b}\\
&= -\frac{\sqrt{1-(a+bx)^2}}{b\sin^{-1}(a+bx)} - \frac{\text{Si}\left(\sin^{-1}(a+bx)\right)}{b}
\end{aligned}$$

Mathematica [A] time = 0.070635, size = 37, normalized size = 0.9

$$-\frac{\text{Si}\left(\sin^{-1}(a+bx)\right)+\frac{\sqrt{1-(a+bx)^2}}{\sin^{-1}(a+bx)}}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^(-2),x]
```

```
[Out] -((Sqrt[1 - (a + b*x)^2]/ArcSin[a + b*x] + SinIntegral[ArcSin[a + b*x]])/b)
```

Maple [A] time = 0.03, size = 38, normalized size = 0.9

$$\frac{1}{b}\left(-\frac{1}{\arcsin(bx+a)}\sqrt{1-(bx+a)^2}-\text{Si}\left(\arcsin(bx+a)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/arcsin(b*x+a)^2,x)
```

```
[Out] 1/b*(-1/arcsin(b*x+a)*(1-(b*x+a)^2)^(1/2)-Si(arcsin(b*x+a)))
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{\arcsin\left(bx+a\right)^{2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] integral(arcsin(b*x + a)^(-2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\operatorname{asin}^{2}\left(a+bx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/asin(b*x+a)**2,x)
```

```
[Out] Integral(asin(a + b*x)**(-2), x)
```

Giac [A] time = 1.15882, size = 53, normalized size = 1.29

$$-\frac{\text{Si}\left(\arcsin\left(bx+a\right)\right)}{b}-\frac{\sqrt{-(bx+a)^2+1}}{b\arcsin\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)^2,x, algorithm="giac")
```

```
[Out] -sin_integral(arcsin(b*x + a))/b - sqrt(-(b*x + a)^2 + 1)/(b*arcsin(b*x + a
))
```

3.150 $\int \frac{1}{x \sin^{-1}(a+bx)^2} dx$

Optimal. Leaf size=14

$$\text{Unintegrable}\left(\frac{1}{x \sin^{-1}(a+bx)^2}, x\right)$$

```
[Out] Unintegrable[1/(x*ArcSin[a + b*x]^2), x]
```

Rubi [A] time = 0.0370135, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$, Rules used = {}

$$\int \frac{1}{x \sin^{-1}(a+bx)^2} dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(x*ArcSin[a + b*x]^2),x]
```

```
[Out] Defer[Subst][Defer[Int][1/((-(a/b) + x/b)*ArcSin[x]^2), x], x, a + b*x]/b
```

Rubi steps

$$\int \frac{1}{x \sin^{-1}(a+bx)^2} dx = \frac{\text{Subst}\left(\int \frac{1}{\left(-\frac{a}{b}+\frac{x}{b}\right)\sin^{-1}(x)^2} dx, x, a+bx\right)}{b}$$

Mathematica [A] time = 2.83545, size = 0, normalized size = 0.

$$\int \frac{1}{x \sin^{-1}(a+bx)^2} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(x*ArcSin[a + b*x]^2),x]
```

```
[Out] Integrate[1/(x*ArcSin[a + b*x]^2), x]
```

Maple [A] time = 0.744, size = 0, normalized size = 0.

$$\int \frac{1}{x\left(\arcsin\left(bx+a\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x/arcsin(b*x+a)^2,x)
```

```
[Out] int(1/x/arcsin(b*x+a)^2,x)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/arcsin(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{x\arcsin\left(bx+a\right)^{2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/arcsin(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] integral(1/(x*arcsin(b*x + a)^2), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{x\,\mathrm{asin}^2\,(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/asin(b*x+a)**2,x)
```

```
[Out] Integral(1/(x*asin(a + b*x)**2), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{x\arcsin\,(bx+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/arcsin(b*x+a)^2,x, algorithm="giac")
```

```
[Out] integrate(1/(x*arcsin(b*x + a)^2), x)
```

3.151 $\int \frac{x^2}{\sin^{-1}(a+bx)^3} dx$

Optimal. Leaf size=176

$$-\frac{(4a^2+1)\text{CosIntegral}\left(\sin^{-1}(a+bx)\right)}{8b^3}+\frac{a^2(a+bx)}{2b^3\sin^{-1}(a+bx)}+\frac{9\text{CosIntegral}\left(3\sin^{-1}(a+bx)\right)}{8b^3}+\frac{2a\text{Si}\left(2\sin^{-1}(a+bx)\right)}{b^3}$$

```
[Out] -(x^2*Sqrt[1 - (a + b*x)^2])/(2*b*ArcSin[a + b*x]^2) + (a^2*(a + b*x))/(2*b
^3*ArcSin[a + b*x]) - (2*a*(a + b*x)^2)/(b^3*ArcSin[a + b*x]) + (9*a + b*x)
/(8*b^3*ArcSin[a + b*x]) - ((1 + 4*a^2)*CosIntegral[ArcSin[a + b*x]])/(8*b^
3) + (9*CosIntegral[3*ArcSin[a + b*x]])/(8*b^3) - (3*Sin[3*ArcSin[a + b*x]]
)/(8*b^3*ArcSin[a + b*x]) + (2*a*SinIntegral[2*ArcSin[a + b*x]])/b^3
```

Rubi [A] time = 0.506512, antiderivative size = 263, normalized size of antiderivative = 1.49, number of steps used = 24, number of rules used = 12, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1., Rules used = {4805, 4745, 4621, 4719, 4623, 3302, 4633, 4635, 4406, 12, 3299, 4641}

$$-\frac{a^2\text{CosIntegral}\left(\sin^{-1}(a+bx)\right)}{2b^3}+\frac{a^2(a+bx)}{2b^3\sin^{-1}(a+bx)}-\frac{a^2\sqrt{1-(a+bx)^2}}{2b^3\sin^{-1}(a+bx)^2}-\frac{\text{CosIntegral}\left(\sin^{-1}(a+bx)\right)}{8b^3}+\frac{9\text{CosInte}}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^2/ArcSin[a + b*x]^3,x]
```

```
[Out] -(a^2*Sqrt[1 - (a + b*x)^2])/(2*b^3*ArcSin[a + b*x]^2) + (a*(a + b*x)*Sqrt[
1 - (a + b*x)^2])/(b^3*ArcSin[a + b*x]^2) - ((a + b*x)^2*Sqrt[1 - (a + b*x)
^2])/(2*b^3*ArcSin[a + b*x]^2) + a/(b^3*ArcSin[a + b*x]) - (a + b*x)/(b^3*A
rcSin[a + b*x]) + (a^2*(a + b*x))/(2*b^3*ArcSin[a + b*x]) - (2*a*(a + b*x)^
2)/(b^3*ArcSin[a + b*x]) + (3*(a + b*x)^3)/(2*b^3*ArcSin[a + b*x]) - CosInt
egral[ArcSin[a + b*x]]/(8*b^3) - (a^2*CosIntegral[ArcSin[a + b*x]])/(2*b^3)
 + (9*CosIntegral[3*ArcSin[a + b*x]])/(8*b^3) + (2*a*SinIntegral[2*ArcSin[a
 + b*x]])/b^3
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4745

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_))^(m_.), x_Sy
mbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*ArcSin[c*x])^n, x], x] /; F
reeQ[{a, b, c, d, e}, x] && IGtQ[m, 0] && LtQ[n, -1]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 4633

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (Dis
t[(c*(m + 1))/(b*(n + 1)), Int[(x^(m + 1)*(a + b*ArcSin[c*x])^(n + 1))/Sqrt
[1 - c^2*x^2], x], x] - Dist[m/(b*c*(n + 1)), Int[(x^(m - 1)*(a + b*ArcSin[
c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
```

```
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{x^2}{\sin^{-1}(a+bx)^3}\,dx = \frac{\text{Subst}\left(\int \frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^2}{\sin^{-1}(x)^3}\,dx, x, a+bx\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \left(\frac{a^2}{b^2\sin^{-1}(x)^3} - \frac{2ax}{b^2\sin^{-1}(x)^3} + \frac{x^2}{b^2\sin^{-1}(x)^3}\right)dx, x, a+bx\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \frac{x^2}{\sin^{-1}(x)^3}\,dx, x, a+bx\right)}{b^3} - \frac{(2a)\,\text{Subst}\left(\int \frac{x}{\sin^{-1}(x)^3}\,dx, x, a+bx\right)}{b^3} + \frac{a^2\,\text{Subst}\left(\int \frac{1}{\sin^{-1}(x)^3}\right.}{b^3}$$

$$= -\frac{a^2\sqrt{1-(a+bx)^2}}{2b^3\sin^{-1}(a+bx)^2} + \frac{a(a+bx)\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)^2} - \frac{(a+bx)^2\sqrt{1-(a+bx)^2}}{2b^3\sin^{-1}(a+bx)^2} + \frac{\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\sin\right.}{b}$$

$$= -\frac{a^2\sqrt{1-(a+bx)^2}}{2b^3\sin^{-1}(a+bx)^2} + \frac{a(a+bx)\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)^2} - \frac{(a+bx)^2\sqrt{1-(a+bx)^2}}{2b^3\sin^{-1}(a+bx)^2} + \frac{a}{b^3\sin^{-1}(a+bx)} -$$

$$= -\frac{a^2\sqrt{1-(a+bx)^2}}{2b^3\sin^{-1}(a+bx)^2} + \frac{a(a+bx)\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)^2} - \frac{(a+bx)^2\sqrt{1-(a+bx)^2}}{2b^3\sin^{-1}(a+bx)^2} + \frac{a}{b^3\sin^{-1}(a+bx)} -$$

$$= -\frac{a^2\sqrt{1-(a+bx)^2}}{2b^3\sin^{-1}(a+bx)^2} + \frac{a(a+bx)\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)^2} - \frac{(a+bx)^2\sqrt{1-(a+bx)^2}}{2b^3\sin^{-1}(a+bx)^2} + \frac{a}{b^3\sin^{-1}(a+bx)} -$$

$$= -\frac{a^2\sqrt{1-(a+bx)^2}}{2b^3\sin^{-1}(a+bx)^2} + \frac{a(a+bx)\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)^2} - \frac{(a+bx)^2\sqrt{1-(a+bx)^2}}{2b^3\sin^{-1}(a+bx)^2} + \frac{a}{b^3\sin^{-1}(a+bx)} -$$

$$= -\frac{a^2\sqrt{1-(a+bx)^2}}{2b^3\sin^{-1}(a+bx)^2} + \frac{a(a+bx)\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)^2} - \frac{(a+bx)^2\sqrt{1-(a+bx)^2}}{2b^3\sin^{-1}(a+bx)^2} + \frac{a}{b^3\sin^{-1}(a+bx)} -$$

Mathematica [A] time = 0.511304, size = 115, normalized size = 0.65

$$\frac{\frac{4bx\left(\left(2a^2+5abx+3b^2x^2-2\right)\sin^{-1}(a+bx)-bx\sqrt{-a^2-2abx-b^2x^2+1}\right)}{\sin^{-1}(a+bx)^2} - \left(4a^2+1\right)\text{CosIntegral}\left(\sin^{-1}(a+bx)\right) + 9\text{CosIntegral}\left(3\sin^{-1}(a\right.}{8b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2/ArcSin[a + b*x]^3,x]
```

```
[Out] ((4*b*x*(-(b*x*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]) + (-2 + 2*a^2 + 5*a*b*x +
 3*b^2*x^2)*ArcSin[a + b*x]))/ArcSin[a + b*x]^2 - (1 + 4*a^2)*CosIntegral[A
rcSin[a + b*x]] + 9*CosIntegral[3*ArcSin[a + b*x]] + 16*a*SinIntegral[2*Arc
```

```
Sin[a + b*x]])/(8*b^3)
```

Maple [A] time = 0.058, size = 215, normalized size = 1.2

$$\frac{1}{b^3}\left(\frac{a\left(4\,\mathrm{Si}\,(2\,\arcsin\,(bx+a))\,(\arcsin\,(bx+a))^2+2\,\cos\,(2\,\arcsin\,(bx+a))\arcsin\,(bx+a)+\sin\,(2\,\arcsin\,(bx+a))\right)}{2\,(\arcsin\,(bx+a))^2}-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/arcsin(b*x+a)^3,x)
```

```
[Out] 1/b^3*(1/2*a*(4*Si(2*arcsin(b*x+a))*arcsin(b*x+a)^2+2*cos(2*arcsin(b*x+a))*
arcsin(b*x+a)+sin(2*arcsin(b*x+a)))/arcsin(b*x+a)^2-1/8/arcsin(b*x+a)^2*(1-
(b*x+a)^2)^(1/2)+1/8*(b*x+a)/arcsin(b*x+a)-1/8*Ci(arcsin(b*x+a))+1/8/arcsin
(b*x+a)^2*cos(3*arcsin(b*x+a))-3/8*sin(3*arcsin(b*x+a))/arcsin(b*x+a)+9/8*C
i(3*arcsin(b*x+a))-1/2*a^2*(Ci(arcsin(b*x+a))*arcsin(b*x+a)^2-(b*x+a)*arcsi
n(b*x+a)+(1-(b*x+a)^2)^(1/2))/arcsin(b*x+a)^2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/arcsin(b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{x^2}{\arcsin\,(bx+a)^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/arcsin(b*x+a)^3,x, algorithm="fricas")
```

[Out] integral(x^2/arcsin(b*x + a)^3, x)

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{\mathrm{asin}^3\left(a+bx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2/asin(b*x+a)**3,x)
```

```
[Out] Integral(x**2/asin(a + b*x)**3, x)
```

Giac [A] time = 1.26139, size = 367, normalized size = 2.09

$$-\frac{a^2 \operatorname{Ci}\left(\arcsin\left(bx+a\right)\right)}{2\,b^3}+\frac{(bx+a)a^2}{2\,b^3\arcsin\left(bx+a\right)}+\frac{2\,a\operatorname{Si}\left(2\,\arcsin\left(bx+a\right)\right)}{b^3}+\frac{3\left((bx+a)^2-1\right)(bx+a)}{2\,b^3\arcsin\left(bx+a\right)}-\frac{2\left((bx+a)^2-\right.}{b^3\arcsin\left(bx\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/arcsin(b*x+a)^3,x, algorithm="giac")
```

```
[Out] -1/2*a^2*cos_integral(arcsin(b*x + a))/b^3 + 1/2*(b*x + a)*a^2/(b^3*arcsin(
b*x + a)) + 2*a*sin_integral(2*arcsin(b*x + a))/b^3 + 3/2*((b*x + a)^2 - 1)
*(b*x + a)/(b^3*arcsin(b*x + a)) - 2*((b*x + a)^2 - 1)*a/(b^3*arcsin(b*x +
a)) + 9/8*cos_integral(3*arcsin(b*x + a))/b^3 - 1/8*cos_integral(arcsin(b*x
 + a))/b^3 + sqrt(-(b*x + a)^2 + 1)*(b*x + a)*a/(b^3*arcsin(b*x + a)^2) - 1
/2*sqrt(-(b*x + a)^2 + 1)*a^2/(b^3*arcsin(b*x + a)^2) + 1/2*(b*x + a)/(b^3*
arcsin(b*x + a)) - a/(b^3*arcsin(b*x + a)) + 1/2*(-(b*x + a)^2 + 1)^(3/2)/(
b^3*arcsin(b*x + a)^2) - 1/2*sqrt(-(b*x + a)^2 + 1)/(b^3*arcsin(b*x + a)^2)
```

3.152 $\int \frac{x}{\sin^{-1}(a+bx)^3} dx$

Optimal. Leaf size=108

$$\frac{a\text{CosIntegral}\left(\sin^{-1}(a+bx)\right)}{2b^2}-\frac{\text{Si}\left(2\sin^{-1}(a+bx)\right)}{b^2}-\frac{a(a+bx)}{2b^2\sin^{-1}(a+bx)}-\frac{1-2(a+bx)^2}{2b^2\sin^{-1}(a+bx)}-\frac{x\sqrt{1-(a+bx)^2}}{2b\sin^{-1}(a+bx)^2}$$

```
[Out] -(x*Sqrt[1 - (a + b*x)^2])/(2*b*ArcSin[a + b*x]^2) - (a*(a + b*x))/(2*b^2*A
rcSin[a + b*x]) - (1 - 2*(a + b*x)^2)/(2*b^2*ArcSin[a + b*x]) + (a*CosInteg
ral[ArcSin[a + b*x]])/(2*b^2) - SinIntegral[2*ArcSin[a + b*x]]/b^2
```

Rubi [A] time = 0.269426, antiderivative size = 151, normalized size of antiderivative = 1.4, number of steps used = 14, number of rules used = 12, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1.2, Rules used = {4805, 4745, 4621, 4719, 4623, 3302, 4633, 4635, 4406, 12, 3299, 4641}

$$\frac{a\text{CosIntegral}\left(\sin^{-1}(a+bx)\right)}{2b^2}-\frac{\text{Si}\left(2\sin^{-1}(a+bx)\right)}{b^2}+\frac{(a+bx)^2}{b^2\sin^{-1}(a+bx)}-\frac{a(a+bx)}{2b^2\sin^{-1}(a+bx)}-\frac{\sqrt{1-(a+bx)^2}(a+bx)}{2b^2\sin^{-1}(a+bx)^2}-$$

Antiderivative was successfully verified.

```
[In] Int[x/ArcSin[a + b*x]^3,x]
```

```
[Out] (a*Sqrt[1 - (a + b*x)^2])/(2*b^2*ArcSin[a + b*x]^2) - ((a + b*x)*Sqrt[1 - (
a + b*x)^2])/(2*b^2*ArcSin[a + b*x]^2) - 1/(2*b^2*ArcSin[a + b*x]) - (a*(a
+ b*x))/(2*b^2*ArcSin[a + b*x]) + (a + b*x)^2/(b^2*ArcSin[a + b*x]) + (a*Co
sIntegral[ArcSin[a + b*x]])/(2*b^2) - SinIntegral[2*ArcSin[a + b*x]]/b^2
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4745

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_))^(m_.), x_Sy
mbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*ArcSin[c*x])^n, x], x] /; F
reeQ[{a, b, c, d, e}, x] && IGtQ[m, 0] && LtQ[n, -1]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 4633

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (Dis
t[(c*(m + 1))/(b*(n + 1)), Int[(x^(m + 1)*(a + b*ArcSin[c*x])^(n + 1))/Sqrt
[1 - c^2*x^2], x], x] - Dist[m/(b*c*(n + 1)), Int[(x^(m - 1)*(a + b*ArcSin[
c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
```

```
tQ[p, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{x}{\sin^{-1}(a+bx)^3}\,dx = \frac{\text{Subst}\left(\int \frac{-\frac{a}{b}+\frac{x}{b}}{\sin^{-1}(x)^3}\,dx, x, a+bx\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \left(-\frac{a}{b\sin^{-1}(x)^3}+\frac{x}{b\sin^{-1}(x)^3}\right)dx, x, a+bx\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \frac{x}{\sin^{-1}(x)^3}\,dx, x, a+bx\right)}{b^2} - \frac{a\,\text{Subst}\left(\int \frac{1}{\sin^{-1}(x)^3}\,dx, x, a+bx\right)}{b^2}$$
$$= \frac{a\sqrt{1-(a+bx)^2}}{2b^2\sin^{-1}(a+bx)^2} - \frac{(a+bx)\sqrt{1-(a+bx)^2}}{2b^2\sin^{-1}(a+bx)^2} + \frac{\text{Subst}\left(\int \frac{1}{\sqrt{1-x^2}\sin^{-1}(x)^2}\,dx, x, a+bx\right)}{2b^2} - \frac{\text{Subst}\left(\right.}{}$$
$$= \frac{a\sqrt{1-(a+bx)^2}}{2b^2\sin^{-1}(a+bx)^2} - \frac{(a+bx)\sqrt{1-(a+bx)^2}}{2b^2\sin^{-1}(a+bx)^2} - \frac{1}{2b^2\sin^{-1}(a+bx)} - \frac{a(a+bx)}{2b^2\sin^{-1}(a+bx)} + \frac{(a+}{b^2\sin^{-}}$$
$$= \frac{a\sqrt{1-(a+bx)^2}}{2b^2\sin^{-1}(a+bx)^2} - \frac{(a+bx)\sqrt{1-(a+bx)^2}}{2b^2\sin^{-1}(a+bx)^2} - \frac{1}{2b^2\sin^{-1}(a+bx)} - \frac{a(a+bx)}{2b^2\sin^{-1}(a+bx)} + \frac{(a+}{b^2\sin^{-}}$$
$$= \frac{a\sqrt{1-(a+bx)^2}}{2b^2\sin^{-1}(a+bx)^2} - \frac{(a+bx)\sqrt{1-(a+bx)^2}}{2b^2\sin^{-1}(a+bx)^2} - \frac{1}{2b^2\sin^{-1}(a+bx)} - \frac{a(a+bx)}{2b^2\sin^{-1}(a+bx)} + \frac{(a+}{b^2\sin^{-}}$$
$$= \frac{a\sqrt{1-(a+bx)^2}}{2b^2\sin^{-1}(a+bx)^2} - \frac{(a+bx)\sqrt{1-(a+bx)^2}}{2b^2\sin^{-1}(a+bx)^2} - \frac{1}{2b^2\sin^{-1}(a+bx)} - \frac{a(a+bx)}{2b^2\sin^{-1}(a+bx)} + \frac{(a+}{b^2\sin^{-}}$$
$$= \frac{a\sqrt{1-(a+bx)^2}}{2b^2\sin^{-1}(a+bx)^2} - \frac{(a+bx)\sqrt{1-(a+bx)^2}}{2b^2\sin^{-1}(a+bx)^2} - \frac{1}{2b^2\sin^{-1}(a+bx)} - \frac{a(a+bx)}{2b^2\sin^{-1}(a+bx)} + \frac{(a+}{b^2\sin^{-}}$$

Mathematica [A] time = 0.10872, size = 121, normalized size = 1.12

$$-\frac{x\sqrt{-a^2-2abx-b^2x^2+1}}{2b\sin^{-1}(a+bx)^2} + \frac{a^2+3abx+2b^2x^2-1}{2b^2\sin^{-1}(a+bx)} - 2\left(\frac{\text{Si}\left(2\sin^{-1}(a+bx)\right)}{2b^2} - \frac{a\text{CosIntegral}\left(\sin^{-1}(a+bx)\right)}{b^2}\right) - \frac{3aC}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/ArcSin[a + b*x]^3,x]
```

```
[Out] -(x*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2])/(2*b*ArcSin[a + b*x]^2) + (-1 + a^2
+ 3*a*b*x + 2*b^2*x^2)/(2*b^2*ArcSin[a + b*x]) - (3*a*CosIntegral[ArcSin[a
+ b*x]])/(2*b^2) - 2*(-((a*CosIntegral[ArcSin[a + b*x]])/b^2) + SinIntegral
[2*ArcSin[a + b*x]]/(2*b^2))
```

Maple [A] time = 0.04, size = 109, normalized size = 1.

$$\frac{1}{b^2}\left(-\frac{\sin\left(2\arcsin\left(bx+a\right)\right)}{4\left(\arcsin\left(bx+a\right)\right)^2}-\frac{\cos\left(2\arcsin\left(bx+a\right)\right)}{2\arcsin\left(bx+a\right)}-\operatorname{Si}\left(2\arcsin\left(bx+a\right)\right)+\frac{a}{2\left(\arcsin\left(bx+a\right)\right)^2}\left(\operatorname{Ci}\left(\arcsin\left(bx+\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/arcsin(b*x+a)^3,x)
```

```
[Out] 1/b^2*(-1/4/arcsin(b*x+a)^2*sin(2*arcsin(b*x+a))-1/2/arcsin(b*x+a)*cos(2*ar
csin(b*x+a))-Si(2*arcsin(b*x+a))+1/2*a*(Ci(arcsin(b*x+a))*arcsin(b*x+a)^2-(
b*x+a)*arcsin(b*x+a)+(1-(b*x+a)^2)^(1/2))/arcsin(b*x+a)^2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x}{\arcsin\left(bx+a\right)^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(b*x+a)^3,x, algorithm="fricas")
```

```
[Out] integral(x/arcsin(b*x + a)^3, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{\operatorname{asin}^3(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/asin(b*x+a)**3,x)
```

```
[Out] Integral(x/asin(a + b*x)**3, x)
```

Giac [A] time = 1.21216, size = 188, normalized size = 1.74

$$\frac{a\,\mathrm{Ci}\left(\arcsin\left(bx+a\right)\right)}{2\,b^2}-\frac{(bx+a)a}{2\,b^2\arcsin\left(bx+a\right)}-\frac{\mathrm{Si}\left(2\,\arcsin\left(bx+a\right)\right)}{b^2}+\frac{(bx+a)^2-1}{b^2\arcsin\left(bx+a\right)}-\frac{\sqrt{-(bx+a)^2+1}(bx+a)}{2\,b^2\arcsin\left(bx+a\right)^2}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/2*a*cos_integral(arcsin(b*x + a))/b^2 - 1/2*(b*x + a)*a/(b^2*arcsin(b*x +
 a)) - sin_integral(2*arcsin(b*x + a))/b^2 + ((b*x + a)^2 - 1)/(b^2*arcsin(
b*x + a)) - 1/2*sqrt(-(b*x + a)^2 + 1)*(b*x + a)/(b^2*arcsin(b*x + a)^2) +
1/2*sqrt(-(b*x + a)^2 + 1)*a/(b^2*arcsin(b*x + a)^2) + 1/2/(b^2*arcsin(b*x
+ a))
```

3.153 $\int \frac{1}{\sin^{-1}(a+bx)^3}\,dx$

Optimal. Leaf size=65

$$-\frac{\text{CosIntegral}\left(\sin^{-1}(a+bx)\right)}{2b}+\frac{a+bx}{2b\sin^{-1}(a+bx)}-\frac{\sqrt{1-(a+bx)^2}}{2b\sin^{-1}(a+bx)^2}$$

```
[Out] -Sqrt[1 - (a + b*x)^2]/(2*b*ArcSin[a + b*x]^2) + (a + b*x)/(2*b*ArcSin[a +
b*x]) - CosIntegral[ArcSin[a + b*x]]/(2*b)
```

Rubi [A] time = 0.0855354, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.625, Rules used = {4803, 4621, 4719, 4623, 3302}

$$-\frac{\text{CosIntegral}\left(\sin^{-1}(a+bx)\right)}{2b}+\frac{a+bx}{2b\sin^{-1}(a+bx)}-\frac{\sqrt{1-(a+bx)^2}}{2b\sin^{-1}(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^(-3),x]
```

```
[Out] -Sqrt[1 - (a + b*x)^2]/(2*b*ArcSin[a + b*x]^2) + (a + b*x)/(2*b*ArcSin[a +
b*x]) - CosIntegral[ArcSin[a + b*x]]/(2*b)
```

Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
```

```
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{1}{\sin^{-1}(a+bx)^3}\,dx &= \frac{\text{Subst}\left(\int \frac{1}{\sin^{-1}(x)^3}\,dx, x, a+bx\right)}{b}\\
&= -\frac{\sqrt{1-(a+bx)^2}}{2b\sin^{-1}(a+bx)^2} - \frac{\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\sin^{-1}(x)^2}\,dx, x, a+bx\right)}{2b}\\
&= -\frac{\sqrt{1-(a+bx)^2}}{2b\sin^{-1}(a+bx)^2} + \frac{a+bx}{2b\sin^{-1}(a+bx)} - \frac{\text{Subst}\left(\int \frac{1}{\sin^{-1}(x)}\,dx, x, a+bx\right)}{2b}\\
&= -\frac{\sqrt{1-(a+bx)^2}}{2b\sin^{-1}(a+bx)^2} + \frac{a+bx}{2b\sin^{-1}(a+bx)} - \frac{\text{Subst}\left(\int \frac{\cos(x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{2b}\\
&= -\frac{\sqrt{1-(a+bx)^2}}{2b\sin^{-1}(a+bx)^2} + \frac{a+bx}{2b\sin^{-1}(a+bx)} - \frac{\text{Ci}\left(\sin^{-1}(a+bx)\right)}{2b}
\end{aligned}$$

Mathematica [A] time = 0.0675659, size = 65, normalized size = 1.

$$-\frac{\text{CosIntegral}\left(\sin^{-1}(a+bx)\right)}{2b} + \frac{a+bx}{2b\sin^{-1}(a+bx)} - \frac{\sqrt{1-(a+bx)^2}}{2b\sin^{-1}(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^(-3),x]
```

```
[Out] -Sqrt[1 - (a + b*x)^2]/(2*b*ArcSin[a + b*x]^2) + (a + b*x)/(2*b*ArcSin[a +
b*x]) - CosIntegral[ArcSin[a + b*x]]/(2*b)
```

Maple [A] time = 0.027, size = 53, normalized size = 0.8

$$\frac{1}{b}\left(-\frac{1}{2\left(\arcsin\left(bx+a\right)\right)^{2}}\sqrt{1-\left(bx+a\right)^{2}}+\frac{bx+a}{2\arcsin\left(bx+a\right)}-\frac{\operatorname{Ci}\left(\arcsin\left(bx+a\right)\right)}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/arcsin(b*x+a)^3,x)
```

```
[Out] 1/b*(-1/2/arcsin(b*x+a)^2*(1-(b*x+a)^2)^(1/2)+1/2*(b*x+a)/arcsin(b*x+a)-1/2
*Ci(arcsin(b*x+a)))
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{\arcsin\left(bx+a\right)^{3}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)^3,x, algorithm="fricas")
```

```
[Out] integral(arcsin(b*x + a)^(-3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\operatorname{asin}^3(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/asin(b*x+a)**3,x)
```

```
[Out] Integral(asin(a + b*x)**(-3), x)
```

Giac [A] time = 1.15734, size = 77, normalized size = 1.18

$$-\frac{\operatorname{Ci}(\arcsin(bx+a))}{2\,b}+\frac{bx+a}{2\,b\arcsin(bx+a)}-\frac{\sqrt{-(bx+a)^2+1}}{2\,b\arcsin(bx+a)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)^3,x, algorithm="giac")
```

```
[Out] -1/2*cos_integral(arcsin(b*x + a))/b + 1/2*(b*x + a)/(b*arcsin(b*x + a)) -
1/2*sqrt(-(b*x + a)^2 + 1)/(b*arcsin(b*x + a)^2)
```

3.154 $\int \frac{1}{x \sin^{-1}(a+bx)^3} \, dx$

Optimal. Leaf size=14

$$\text{Unintegrable}\left(\frac{1}{x \sin^{-1}(a+bx)^3}, x\right)$$

```
[Out] Unintegrable[1/(x*ArcSin[a + b*x]^3), x]
```

Rubi [A] time = 0.038641, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$, Rules used = {}

$$\int \frac{1}{x \sin^{-1}(a+bx)^3} \, dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(x*ArcSin[a + b*x]^3),x]
```

```
[Out] Defer[Subst][Defer[Int][1/((-(a/b) + x/b)*ArcSin[x]^3), x], x, a + b*x]/b
```

Rubi steps

$$\int \frac{1}{x \sin^{-1}(a+bx)^3} \, dx = \frac{\text{Subst}\left(\int \frac{1}{\left(-\frac{a}{b}+\frac{x}{b}\right)\sin^{-1}(x)^3} \, dx, x, a+bx\right)}{b}$$

Mathematica [A] time = 2.49177, size = 0, normalized size = 0.

$$\int \frac{1}{x \sin^{-1}(a+bx)^3} \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(x*ArcSin[a + b*x]^3),x]
```

```
[Out] Integrate[1/(x*ArcSin[a + b*x]^3), x]
```

Maple [A] time = 0.878, size = 0, normalized size = 0.

$$\int \frac{1}{x\left(\arcsin\left(bx+a\right)\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x/arcsin(b*x+a)^3,x)
```

```
[Out] int(1/x/arcsin(b*x+a)^3,x)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/arcsin(b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{x\arcsin\left(bx+a\right)^{3}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/arcsin(b*x+a)^3,x, algorithm="fricas")
```

```
[Out] integral(1/(x*arcsin(b*x + a)^3), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{x \operatorname{asin}^3(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/asin(b*x+a)**3,x)
```

```
[Out] Integral(1/(x*asin(a + b*x)**3), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{x \arcsin(bx+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/arcsin(b*x+a)^3,x, algorithm="giac")
```

```
[Out] integrate(1/(x*arcsin(b*x + a)^3), x)
```

3.155 $\int x^2\sqrt{a+b\sin^{-1}(c+dx)}\,dx$

Optimal. Leaf size=535

$$\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}c^2\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{d^3}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}c^2\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{d^3}+\frac{c^2(c+dx)\sqrt{a+b\sin^{-1}(c+}{d^3}$$

```
[Out] (c^2*(c + d*x)*Sqrt[a + b*ArcSin[c + d*x]])/d^3 + ((c + d*x)^3*Sqrt[a + b*A
rcSin[c + d*x]])/(3*d^3) + (c*Sqrt[a + b*ArcSin[c + d*x]]*Cos[2*ArcSin[c +
d*x]])/(2*d^3) - (Sqrt[b]*c*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*Ar
cSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(4*d^3) - (Sqrt[b]*Sqrt[Pi/2]*Cos[a/b]
*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(4*d^3) - (Sqr
t[b]*c^2*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x
]])/Sqrt[b]])/d^3 + (Sqrt[b]*Sqrt[Pi/6]*Cos[(3*a)/b]*FresnelS[(Sqrt[6/Pi]*S
qrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(12*d^3) + (Sqrt[b]*Sqrt[Pi/2]*Fresne
lC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(4*d^3) + (S
qrt[b]*c^2*Sqrt[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqr
t[b]]*Sin[a/b])/d^3 - (Sqrt[b]*c*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c +
 d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(4*d^3) - (Sqrt[b]*Sqrt[Pi/6]*Fre
snelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(3*a)/b])/(12*d
^3)
```

Rubi [A] time = 2.23346, antiderivative size = 535, normalized size of antiderivative = 1., number of steps used = 23, number of rules used = 12, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667, Rules used = {4805, 4747, 6741, 6742, 3386, 3353, 3352, 3351, 3385, 3354, 3443, 3357}

$$\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}c^2\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{d^3}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}c^2\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{d^3}+\frac{c^2(c+dx)\sqrt{a+b\sin^{-1}(c+}{d^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (c^2*(c + d*x)*Sqrt[a + b*ArcSin[c + d*x]])/d^3 + ((c + d*x)^3*Sqrt[a + b*A
rcSin[c + d*x]])/(3*d^3) + (c*Sqrt[a + b*ArcSin[c + d*x]]*Cos[2*ArcSin[c +
d*x]])/(2*d^3) - (Sqrt[b]*c*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*Ar
cSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(4*d^3) - (Sqrt[b]*Sqrt[Pi/2]*Cos[a/b]
*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(4*d^3) - (Sqr
```

```
t[b]*c^2*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x
]])/Sqrt[b]])/d^3 + (Sqrt[b]*Sqrt[Pi/6]*Cos[(3*a)/b]*FresnelS[(Sqrt[6/Pi]*S
qrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(12*d^3) + (Sqrt[b]*Sqrt[Pi/2]*Fresne
lC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(4*d^3) + (S
qrt[b]*c^2*Sqrt[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqr
t[b]]*Sin[a/b])/d^3 - (Sqrt[b]*c*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c +
 d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(4*d^3) - (Sqrt[b]*Sqrt[Pi/6]*Fre
snelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(3*a)/b])/(12*d
^3)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4747

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_.) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Dist[1/c^(m + 1), Subst[Int[(a + b*x)^n*Cos[x]*(c*d + e*Sin[x])^m
, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[m, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 3386

```
Int[Cos[(c_.) + (d_.)*(x_)^(n_)]*((e_.)*(x_))^(m_.), x_Symbol] :> Simp[(e^(
n - 1)*(e*x)^(m - n + 1)*Sin[c + d*x^n])/(d*n), x] - Dist[(e^n*(m - n + 1))
/(d*n), Int[(e*x)^(m - n)*Sin[c + d*x^n], x], x] /; FreeQ[{c, d, e}, x] &&
IGtQ[n, 0] && LtQ[n, m + 1]
```

Rule 3353

```
Int[Sin[(c_) + (d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Dist[Sin[c], Int
[Cos[d*(e + f*x)^2], x], x] + Dist[Cos[c], Int[Sin[d*(e + f*x)^2], x], x] /
; FreeQ[{c, d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3385

```
Int[((e_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)^(n_)], x_Symbol] :> -Simp[(e^
(n - 1)*(e*x)^(m - n + 1)*Cos[c + d*x^n])/(d*n), x] + Dist[(e^n*(m - n + 1)
)/(d*n), Int[(e*x)^(m - n)*Cos[c + d*x^n], x], x] /; FreeQ[{c, d, e}, x] &&
 IGtQ[n, 0] && LtQ[n, m + 1]
```

Rule 3354

```
Int[Cos[(c_) + (d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Dist[Cos[c], Int
[Cos[d*(e + f*x)^2], x], x] - Dist[Sin[c], Int[Sin[d*(e + f*x)^2], x], x] /
; FreeQ[{c, d, e, f}, x]
```

Rule 3443

```
Int[Cos[(a_.) + (b_.)*(x_)^(n_.)]*(x_)^(m_.)*Sin[(a_.) + (b_.)*(x_)^(n_.)]^
(p_.), x_Symbol] :> Simp[(x^(m - n + 1)*Sin[a + b*x^n]^(p + 1))/(b*n*(p + 1
)), x] - Dist[(m - n + 1)/(b*n*(p + 1)), Int[x^(m - n)*Sin[a + b*x^n]^(p +
1), x], x] /; FreeQ[{a, b, p}, x] && LtQ[0, n, m + 1] && NeQ[p, -1]
```

Rule 3357

```
Int[((a_.) + (b_.)*Sin[(c_.) + (d_.)*((e_.) + (f_.)*(x_))^(n_)])^(p_), x_Sy
mbol] :> Int[ExpandTrigReduce[(a + b*Sin[c + d*(e + f*x)^n])^p, x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && IGtQ[p, 1] && IGtQ[n, 1]
```

Rubi steps

$$\int x^2\sqrt{a+b\sin^{-1}(c+dx)}\,dx = \frac{\text{Subst}\left(\int\left(-\frac{c}{d}+\frac{x}{d}\right)^2\sqrt{a+b\sin^{-1}(x)}\,dx,x,c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int\sqrt{a+bx}\cos(x)\left(-\frac{c}{d}+\frac{\sin(x)}{d}\right)^2\,dx,x,\sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{2\,\text{Subst}\left(\int x^2\cos\left(\frac{a-x^2}{b}\right)\left(c+\sin\left(\frac{a-x^2}{b}\right)\right)^2\,dx,x,\sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^3}$$

$$= \frac{2\,\text{Subst}\left(\int x^2\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)\left(c+\sin\left(\frac{a-x^2}{b}\right)\right)^2\,dx,x,\sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^3}$$

$$= \frac{2\,\text{Subst}\left(\int\left(c^2x^2\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)+cx^2\sin\left(\frac{2a}{b}-\frac{2x^2}{b}\right)+x^2\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)\sin^2\left(\frac{a}{b}-\frac{x^2}{b}\right)\right)\,dx,x,\right.}{bd^3}$$

$$= \frac{2\,\text{Subst}\left(\int x^2\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)\sin^2\left(\frac{a}{b}-\frac{x^2}{b}\right)\,dx,x,\sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^3}+\frac{(2c)\,\text{Subst}\left(\int x^2\right.}{}$$

$$= \frac{c^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d^3}+\frac{(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{3d^3}+\frac{c\sqrt{a+b\sin^{-1}(c+dx}}{2}$$

$$= \frac{c^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d^3}+\frac{(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{3d^3}+\frac{c\sqrt{a+b\sin^{-1}(c+dx}}{2}$$

$$= \frac{c^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d^3}+\frac{(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{3d^3}+\frac{c\sqrt{a+b\sin^{-1}(c+dx}}{2}$$

$$= \frac{c^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d^3}+\frac{(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{3d^3}+\frac{c\sqrt{a+b\sin^{-1}(c+dx}}{2}$$

$$= \frac{c^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d^3}+\frac{(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{3d^3}+\frac{c\sqrt{a+b\sin^{-1}(c+dx}}{2}$$

Mathematica [A] time = 1.67363, size = 473, normalized size = 0.88

$$\frac{36\sqrt{2\pi}c^2\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\sqrt{\frac{2}{\pi}}\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}(c+dx)}\right)-9\sqrt{2\pi}\left(4c^2+1\right)\cos\left(\frac{a}{b}\right)S\left(\sqrt{\frac{1}{b}}\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}\right)+7}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (18*Sqrt[b^(-1)]*(c + d*x)*Sqrt[a + b*ArcSin[c + d*x]] + 72*Sqrt[b^(-1)]*c^
2*(c + d*x)*Sqrt[a + b*ArcSin[c + d*x]] + 36*Sqrt[b^(-1)]*c*Sqrt[a + b*ArcS
in[c + d*x]]*Cos[2*ArcSin[c + d*x]] - 18*c*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(
2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi]] - 9*(1 + 4*c^2)*Sqrt[
2*Pi]*Cos[a/b]*FresnelS[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]
] + Sqrt[6*Pi]*Cos[(3*a)/b]*FresnelS[Sqrt[b^(-1)]*Sqrt[6/Pi]*Sqrt[a + b*Arc
Sin[c + d*x]]] + 9*Sqrt[2*Pi]*FresnelC[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*A
rcSin[c + d*x]]]*Sin[a/b] + 36*c^2*Sqrt[2*Pi]*FresnelC[Sqrt[b^(-1)]*Sqrt[2/
Pi]*Sqrt[a + b*ArcSin[c + d*x]]]*Sin[a/b] - 18*c*Sqrt[Pi]*FresnelS[(2*Sqrt[
b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi]]*Sin[(2*a)/b] - Sqrt[6*Pi]*Fr
esnelC[Sqrt[b^(-1)]*Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]]]*Sin[(3*a)/b] -
6*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]]*Sin[3*ArcSin[c + d*x]])/(72*Sqrt
[b^(-1)]*d^3)
```

Maple [A] time = 0.169, size = 748, normalized size = 1.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(d*x+c))^(1/2),x)
```

```
[Out] 1/72/d^3*(-36*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*
x+c))^(1/2)/b)*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*b*c^2
+36*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2
)/b)*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*b*c^2+3^(1/2)*c
os(3*a/b)*FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))
^(1/2)/b)*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*b-3^(1/2)*
sin(3*a/b)*FresnelC(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c)
)^(1/2)/b)*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*b-9*2^(1/
2)*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)
/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b+9*2^(1/2)*Pi^(1/2)*(1/
b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)
^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b-18*cos(2*a/b)*FresnelC(2/Pi^(1/2)/(1/
b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(1/b)^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+
c))^(1/2)*b*c-18*sin(2*a/b)*FresnelS(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x
+c))^(1/2)/b)*(1/b)^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*b*c+72*arcsin(
d*x+c)*sin((a+b*arcsin(d*x+c))/b-a/b)*b*c^2+36*arcsin(d*x+c)*cos(2*(a+b*arc
```

```
sin(d*x+c))/b-2*a/b)*b*c+72*sin((a+b*arcsin(d*x+c))/b-a/b)*a*c^2+18*arcsin(
d*x+c)*sin((a+b*arcsin(d*x+c))/b-a/b)*b-6*arcsin(d*x+c)*sin(3*(a+b*arcsin(d
*x+c))/b-3*a/b)*b+36*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a*c+18*sin((a+b*arc
sin(d*x+c))/b-a/b)*a-6*sin(3*(a+b*arcsin(d*x+c))/b-3*a/b)*a)/(a+b*arcsin(d*
x+c))^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{b \arcsin(dx+c)+a}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*arcsin(d*x + c) + a)*x^2, x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x^2\sqrt{a+b\,\mathrm{asin}\,(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] Integral(x**2*sqrt(a + b*asin(c + d*x)), x)
```

Giac [B] time = 2.39308, size = 1235, normalized size = 2.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*sqrt(2)*sqrt(pi)*b^2*c^2*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)
*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e
^(a*i/b)/((b^2*i/sqrt(abs(b)) + b*sqrt(abs(b)))*d^3) + 1/4*sqrt(2)*sqrt(pi)
*b^2*c^2*i*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2
*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^2*i/sqr
t(abs(b)) - b*sqrt(abs(b)))*d^3) + 1/16*sqrt(2)*sqrt(pi)*b^2*i*erf(-1/2*sqr
t(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin
(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b)/((b^2*i/sqrt(abs(b)) + b*sqrt(abs(
b)))*d^3) + 1/16*sqrt(2)*sqrt(pi)*b^2*i*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x +
 c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(
b))/b)*e^(-a*i/b)/((b^2*i/sqrt(abs(b)) - b*sqrt(abs(b)))*d^3) - 1/2*sqrt(b*
arcsin(d*x + c) + a)*c^2*i*e^(i*arcsin(d*x + c))/d^3 + 1/2*sqrt(b*arcsin(d*
x + c) + a)*c^2*i*e^(-i*arcsin(d*x + c))/d^3 - 1/24*sqrt(pi)*b^(3/2)*i*erf(
-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqr
t(b*arcsin(d*x + c) + a)/sqrt(b))*e^(3*a*i/b)/((sqrt(6)*b^2*i/abs(b) + sqrt
(6)*b)*d^3) + 1/8*sqrt(pi)*b^(3/2)*c*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(
b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b)/((b^2*i/abs(
b) + b)*d^3) - 1/8*sqrt(pi)*b^(3/2)*c*erf(sqrt(b*arcsin(d*x + c) + a)*sqrt(
b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b)/((b^2*i/abs
(b) - b)*d^3) - 1/24*sqrt(pi)*b^(3/2)*i*erf(1/2*sqrt(6)*sqrt(b*arcsin(d*x +
 c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b)
)*e^(-3*a*i/b)/((sqrt(6)*b^2*i/abs(b) - sqrt(6)*b)*d^3) + 1/24*sqrt(b*arcsi
n(d*x + c) + a)*i*e^(3*i*arcsin(d*x + c))/d^3 + 1/4*sqrt(b*arcsin(d*x + c)
+ a)*c*e^(2*i*arcsin(d*x + c))/d^3 - 1/8*sqrt(b*arcsin(d*x + c) + a)*i*e^(i
*arcsin(d*x + c))/d^3 + 1/8*sqrt(b*arcsin(d*x + c) + a)*i*e^(-i*arcsin(d*x
+ c))/d^3 + 1/4*sqrt(b*arcsin(d*x + c) + a)*c*e^(-2*i*arcsin(d*x + c))/d^3
- 1/24*sqrt(b*arcsin(d*x + c) + a)*i*e^(-3*i*arcsin(d*x + c))/d^3
```

3.156 $\int x\sqrt{a+b\sin^{-1}(c+dx)}\,dx$

Optimal. Leaf size=269

$$-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}c\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{d^2}+\frac{\sqrt{\pi}\sqrt{b}\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{8d^2}+\frac{\sqrt{\pi}\sqrt{b}\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+}}{}\right.}{8d^2}$$

```
[Out] -((c*(c + d*x)*Sqrt[a + b*ArcSin[c + d*x]])/d^2) - (Sqrt[a + b*ArcSin[c + d
*x]]*Cos[2*ArcSin[c + d*x]])/(4*d^2) + (Sqrt[b]*Sqrt[Pi]*Cos[(2*a)/b]*Fresn
elC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(8*d^2) + (Sqrt[b]
*c*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sq
rt[b]])/d^2 - (Sqrt[b]*c*Sqrt[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[
c + d*x]])/Sqrt[b]]*Sin[a/b])/d^2 + (Sqrt[b]*Sqrt[Pi]*FresnelS[(2*Sqrt[a +
b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(8*d^2)
```

Rubi [A] time = 0.76976, antiderivative size = 269, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.625, Rules used = {4805, 4747, 6741, 6742, 3386, 3353, 3352, 3351, 3385, 3354}

$$-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}c\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{d^2}+\frac{\sqrt{\pi}\sqrt{b}\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{8d^2}+\frac{\sqrt{\pi}\sqrt{b}\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+}}{}\right.}{8d^2}$$

Antiderivative was successfully verified.

```
[In] Int[x*Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] -((c*(c + d*x)*Sqrt[a + b*ArcSin[c + d*x]])/d^2) - (Sqrt[a + b*ArcSin[c + d
*x]]*Cos[2*ArcSin[c + d*x]])/(4*d^2) + (Sqrt[b]*Sqrt[Pi]*Cos[(2*a)/b]*Fresn
elC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(8*d^2) + (Sqrt[b]
*c*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sq
rt[b]])/d^2 - (Sqrt[b]*c*Sqrt[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[
c + d*x]])/Sqrt[b]]*Sin[a/b])/d^2 + (Sqrt[b]*Sqrt[Pi]*FresnelS[(2*Sqrt[a +
b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(8*d^2)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
```

```
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4747

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_.) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Dist[1/c^(m + 1), Subst[Int[(a + b*x)^n*Cos[x]*(c*d + e*Sin[x])^m
, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[m, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 3386

```
Int[Cos[(c_.) + (d_.)*(x_)^(n_)]*((e_.)*(x_))^(m_.), x_Symbol] :> Simp[(e^(
n - 1)*(e*x)^(m - n + 1)*Sin[c + d*x^n])/(d*n), x] - Dist[(e^n*(m - n + 1))
/(d*n), Int[(e*x)^(m - n)*Sin[c + d*x^n], x], x] /; FreeQ[{c, d, e}, x] &&
IGtQ[n, 0] && LtQ[n, m + 1]
```

Rule 3353

```
Int[Sin[(c_) + (d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Dist[Sin[c], Int
[Cos[d*(e + f*x)^2], x], x] + Dist[Cos[c], Int[Sin[d*(e + f*x)^2], x], x] /
; FreeQ[{c, d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3385

```
Int[((e_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)^(n_)], x_Symbol] :> -Simp[(e^
(n - 1)*(e*x)^(m - n + 1)*Cos[c + d*x^n])/(d*n), x] + Dist[(e^n*(m - n + 1)
```

```
)/(d*n), Int[(e*x)^(m - n)*Cos[c + d*x^n], x], x] /; FreeQ[{c, d, e}, x] &&
 IGtQ[n, 0] && LtQ[n, m + 1]
```

Rule 3354

```
Int[Cos[(c_) + (d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Dist[Cos[c], Int
[Cos[d*(e + f*x)^2], x], x] - Dist[Sin[c], Int[Sin[d*(e + f*x)^2], x], x] /
; FreeQ[{c, d, e, f}, x]
```

Rubi steps

$$\int x\sqrt{a+b\sin^{-1}(c+dx)}\,dx = \frac{\text{Subst}\left(\int\left(-\frac{c}{d}+\frac{x}{d}\right)\sqrt{a+b\sin^{-1}(x)}\,dx,x,c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int\sqrt{a+bx}\cos(x)\left(-\frac{c}{d}+\frac{\sin(x)}{d}\right)dx,x,\sin^{-1}(c+dx)\right)}{d}$$

$$= -\frac{2\,\text{Subst}\left(\int x^2\cos\left(\frac{a-x^2}{b}\right)\left(c+\sin\left(\frac{a-x^2}{b}\right)\right)dx,x,\sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2}$$

$$= -\frac{2\,\text{Subst}\left(\int x^2\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)\left(c+\sin\left(\frac{a-x^2}{b}\right)\right)dx,x,\sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2}$$

$$= -\frac{2\,\text{Subst}\left(\int\left(cx^2\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)+\frac{1}{2}x^2\sin\left(\frac{2a}{b}-\frac{2x^2}{b}\right)\right)dx,x,\sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2}$$

$$= -\frac{\text{Subst}\left(\int x^2\sin\left(\frac{2a}{b}-\frac{2x^2}{b}\right)dx,x,\sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2} - \frac{(2c)\,\text{Subst}\left(\int x^2\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)\right.}{bd}$$

$$= -\frac{c(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d^2} - \frac{\sqrt{a+b\sin^{-1}(c+dx)}\cos\left(2\sin^{-1}(c+dx)\right)}{4d^2} + \frac{\text{Subst}\left(\int\right.}{}$$

$$= -\frac{c(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d^2} - \frac{\sqrt{a+b\sin^{-1}(c+dx)}\cos\left(2\sin^{-1}(c+dx)\right)}{4d^2} + \frac{\left(c\cos\left(\frac{a}{b}\right)\right.}{}$$

$$= -\frac{c(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d^2} - \frac{\sqrt{a+b\sin^{-1}(c+dx)}\cos\left(2\sin^{-1}(c+dx)\right)}{4d^2} + \frac{\sqrt{b}\sqrt{\pi}\,\text{co}}{}$$

Mathematica [C] time = 2.96324, size = 256, normalized size = 0.95

$$\frac{\frac{2\left(-2bce^{-\frac{ia}{b}}\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{3}{2},-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)-2bce^{\frac{ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{3}{2},\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)+\cos\left(2\sin^{-1}(c+dx)\right)\left(-\left(a+b\sin^{-1}(c\right.\right.\right.}{\sqrt{a+b\sin^{-1}(c+dx)}}}{8d^2}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[x*Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] ((Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]
])/Sqrt[Pi]])/Sqrt[b^(-1)] + (2*(-((a + b*ArcSin[c + d*x])*Cos[2*ArcSin[c +
 d*x]]) - (2*b*c*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((-I)*(a
 + b*ArcSin[c + d*x]))/b])/E^((I*a)/b) - 2*b*c*E^((I*a)/b)*Sqrt[(I*(a + b*A
rcSin[c + d*x]))/b]*Gamma[3/2, (I*(a + b*ArcSin[c + d*x]))/b]))/Sqrt[a + b*
ArcSin[c + d*x]] + (Sqrt[Pi]*FresnelS[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c +
 d*x]])/Sqrt[Pi]]*Sin[(2*a)/b])/Sqrt[b^(-1)])/(8*d^2)
```

Maple [A] time = 0.104, size = 369, normalized size = 1.4

$$-\frac{1}{8\,d^2}\left(-4\,\sqrt{2}\sqrt{b^{-1}}\sqrt{\pi}\sqrt{a+b\arcsin(dx+c)}\cos\left(\frac{a}{b}\right)\text{FresnelS}\left(\frac{\sqrt{2}\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\sqrt{b^{-1}}b}\right)bc+4\,\sqrt{2}\sqrt{b^{-1}}\sqrt{\pi}\sqrt{a+b\,\mathrm{a}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(d*x+c))^(1/2),x)
```

```
[Out] -1/8/d^2/(a+b*arcsin(d*x+c))^(1/2)*(-4*2^(1/2)*(1/b)^(1/2)*Pi^(1/2)*(a+b*ar
csin(d*x+c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcs
in(d*x+c))^(1/2)/b)*b*c+4*2^(1/2)*(1/b)^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^
(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1
/2)/b)*b*c-(1/b)^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*FresnelS(2/Pi^(1/
2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*sin(2*a/b)*b-(1/b)^(1/2)*Pi^(1/
2)*(a+b*arcsin(d*x+c))^(1/2)*cos(2*a/b)*FresnelC(2/Pi^(1/2)/(1/b)^(1/2)*(a+
b*arcsin(d*x+c))^(1/2)/b)*b+8*arcsin(d*x+c)*sin((a+b*arcsin(d*x+c))/b-a/b)*
b*c+2*arcsin(d*x+c)*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*b+8*sin((a+b*arcsin(
d*x+c))/b-a/b)*a*c+2*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{b \arcsin(dx+c)+a}\,x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*arcsin(d*x + c) + a)*x, x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x\sqrt{a+b\,\mathrm{asin}\,(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] Integral(x*sqrt(a + b*asin(c + d*x)), x)
```

Giac [B] time = 1.93099, size = 593, normalized size = 2.2

$$-\frac{\sqrt{2}\sqrt{\pi}b^2ci\,\mathrm{erf}\left(-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}i}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}\sqrt{|b|}}{2b}\right)e^{\left(\frac{ai}{b}\right)}}{4\left(\frac{b^2i}{\sqrt{|b|}}+b\sqrt{|b|}\right)d^2}-\frac{\sqrt{2}\sqrt{\pi}b^2ci\,\mathrm{erf}\left(\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}i}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+}}{2b}\right.}{4\left(\frac{b^2i}{\sqrt{|b|}}-b\sqrt{|b|}\right)d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] -1/4*sqrt(2)*sqrt(pi)*b^2*c*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*
i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^
(a*i/b)/((b^2*i/sqrt(abs(b)) + b*sqrt(abs(b)))*d^2) - 1/4*sqrt(2)*sqrt(pi)*
b^2*c*i*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sq
rt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^2*i/sqrt(a
bs(b)) - b*sqrt(abs(b)))*d^2) + 1/2*sqrt(b*arcsin(d*x + c) + a)*c*i*e^(i*ar
csin(d*x + c))/d^2 - 1/2*sqrt(b*arcsin(d*x + c) + a)*c*i*e^(-i*arcsin(d*x +
 c))/d^2 - 1/16*sqrt(pi)*b^(3/2)*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i
/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b)/((b^2*i/abs(b) +
 b)*d^2) + 1/16*sqrt(pi)*b^(3/2)*erf(sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/
abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b)/((b^2*i/abs(b) -
 b)*d^2) - 1/8*sqrt(b*arcsin(d*x + c) + a)*e^(2*i*arcsin(d*x + c))/d^2 - 1/
8*sqrt(b*arcsin(d*x + c) + a)*e^(-2*i*arcsin(d*x + c))/d^2
```

3.157 $\int \sqrt{a+b\sin^{-1}(c+dx)}\,dx$

Optimal. Leaf size=133

$$\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{d}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{d}+\frac{(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d}$$

```
[Out] ((c + d*x)*Sqrt[a + b*ArcSin[c + d*x]])/d - (Sqrt[b]*Sqrt[Pi/2]*Cos[a/b]*Fr
esnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/d + (Sqrt[b]*Sqrt
[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])
/d
```

Rubi [A] time = 0.295289, antiderivative size = 133, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.571, Rules used = {4803, 4619, 4723, 3306, 3305, 3351, 3304, 3352}

$$\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{d}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{d}+\frac{(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*ArcSin[c + d*x]],x]
```


```
[Out] ((c + d*x)*Sqrt[a + b*ArcSin[c + d*x]])/d - (Sqrt[b]*Sqrt[Pi/2]*Cos[a/b]*Fr
esnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/d + (Sqrt[b]*Sqrt
[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])
/d
```


Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
```

```
c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \sqrt{a+b\sin^{-1}(c+dx)}\,dx = \frac{\text{Subst}\left(\int \sqrt{a+b\sin^{-1}(x)}\,dx, x, c+dx\right)}{d}$$

$$= \frac{(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d} - \frac{b\,\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\sqrt{a+b\sin^{-1}(x)}}\,dx, x, c+dx\right)}{2d}$$

$$= \frac{(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d} - \frac{b\,\text{Subst}\left(\int \frac{\sin(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{2d}$$

$$= \frac{(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d} - \frac{\left(b\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{2d} + \frac{\left(b\sin \ldots\right.}{}$$

$$= \frac{(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d} - \frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \sin\left(\frac{x^2}{b}\right)dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{d} + \ldots$$

$$= \frac{(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d} - \frac{\sqrt{b}\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{d} + \frac{\sqrt{b}\sqrt{\frac{\pi}{2}}C\left(\ldots\right)}{d}$$

Mathematica [C] time = 0.0945233, size = 129, normalized size = 0.97

$$\frac{be^{-\frac{ia}{b}}\left(\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{3}{2},-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)+e^{\frac{2ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{3}{2},\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)\right)}{2d\sqrt{a+b\sin^{-1}(c+dx)}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (b*(Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((-I)*(a + b*ArcSin[c
 + d*x]))/b] + E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/
2, (I*(a + b*ArcSin[c + d*x]))/b]))/(2*d*E^((I*a)/b)*Sqrt[a + b*ArcSin[c +
d*x]])
```

Maple [A] time = 0.07, size = 194, normalized size = 1.5

$$\frac{1}{2\,d}\left(-\sqrt{2}\sqrt{\pi}\sqrt{b^{-1}}\sqrt{a+b\arcsin(dx+c)}\cos\left(\frac{a}{b}\right)\text{FresnelS}\left(\frac{\sqrt{2}}{\sqrt{\pi}b}\sqrt{a+b\arcsin(dx+c)}\frac{1}{\sqrt{b^{-1}}}\right)b+\sqrt{2}\sqrt{\pi}\sqrt{b^{-1}}\sqrt{a+b\,\text{ar}\ldots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^(1/2),x)
```

```
[Out] 1/2/d/(a+b*arcsin(d*x+c))^(1/2)*(-2^(1/2)*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcsin(
d*x+c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*
x+c))^(1/2)/b)*b+2^(1/2)*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin
(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b+
2*arcsin(d*x+c)*sin((a+b*arcsin(d*x+c))/b-a/b)*b+2*sin((a+b*arcsin(d*x+c))/
b-a/b)*a)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{b \arcsin (dx + c) + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{a + b \operatorname{asin}{(c + dx)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*asin(c + d*x)), x)
```

Giac [B] time = 1.43217, size = 301, normalized size = 2.26

$$\frac{\sqrt{2}\sqrt{\pi}bi\operatorname{erf}\left(-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}i}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}\sqrt{|b|}}{2b}\right)e^{\left(\frac{ai}{b}\right)}}{4\left(\frac{bi}{\sqrt{|b|}}+\sqrt{|b|}\right)d}+\frac{\sqrt{2}\sqrt{\pi}bi\operatorname{erf}\left(\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}i}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}\sqrt{|b|}}{2b}\right)}{4\left(\frac{bi}{\sqrt{|b|}}-\sqrt{|b|}\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*sqrt(2)*sqrt(pi)*b*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqr
t(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/
b)/((b*i/sqrt(abs(b)) + sqrt(abs(b)))*d) + 1/4*sqrt(2)*sqrt(pi)*b*i*erf(1/2
*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*ar
csin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b*i/sqrt(abs(b)) - sqrt(abs
(b)))*d) - 1/2*sqrt(b*arcsin(d*x + c) + a)*i*e^(i*arcsin(d*x + c))/d + 1/2*
sqrt(b*arcsin(d*x + c) + a)*i*e^(-i*arcsin(d*x + c))/d
```

3.158 $\int x\left(a+b\sin^{-1}(c+dx)\right)^{3/2}\,dx$

Optimal. Leaf size=343

$$\frac{3\sqrt{\pi}b^{3/2}\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{32d^2}+\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}c\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{2d^2}+\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}c\sin\left(\frac{a}{b}\right)S}{2}$$

```
[Out] (-3*b*c*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(2*d^2) - (c*(c
+ d*x)*(a + b*ArcSin[c + d*x])^(3/2))/d^2 - ((a + b*ArcSin[c + d*x])^(3/2)*
Cos[2*ArcSin[c + d*x]])/(4*d^2) + (3*b^(3/2)*c*Sqrt[Pi/2]*Cos[a/b]*FresnelC
[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(2*d^2) - (3*b^(3/2)*Sq
rt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[
Pi])])/(32*d^2) + (3*b^(3/2)*c*Sqrt[Pi/2]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*A
rcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(2*d^2) + (3*b^(3/2)*Sqrt[Pi]*FresnelC[
(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(32*d^2)
+ (3*b*Sqrt[a + b*ArcSin[c + d*x]]*Sin[2*ArcSin[c + d*x]])/(16*d^2)
```

Rubi [A] time = 1.04347, antiderivative size = 343, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 10, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.625, Rules used = {4805, 4747, 6741, 6742, 3386, 3385, 3354, 3352, 3351, 3353}

$$\frac{3\sqrt{\pi}b^{3/2}\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{32d^2}+\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}c\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{2d^2}+\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}c\sin\left(\frac{a}{b}\right)S}{2}$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (-3*b*c*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(2*d^2) - (c*(c
+ d*x)*(a + b*ArcSin[c + d*x])^(3/2))/d^2 - ((a + b*ArcSin[c + d*x])^(3/2)*
Cos[2*ArcSin[c + d*x]])/(4*d^2) + (3*b^(3/2)*c*Sqrt[Pi/2]*Cos[a/b]*FresnelC
[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(2*d^2) - (3*b^(3/2)*Sq
rt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[
Pi])])/(32*d^2) + (3*b^(3/2)*c*Sqrt[Pi/2]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*A
rcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(2*d^2) + (3*b^(3/2)*Sqrt[Pi]*FresnelC[
(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(32*d^2)
+ (3*b*Sqrt[a + b*ArcSin[c + d*x]]*Sin[2*ArcSin[c + d*x]])/(16*d^2)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4747

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_.) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Dist[1/c^(m + 1), Subst[Int[(a + b*x)^n*Cos[x]*(c*d + e*Sin[x])^m
, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[m, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 3386

```
Int[Cos[(c_.) + (d_.)*(x_)^(n_)]*((e_.)*(x_))^(m_.), x_Symbol] :> Simp[(e^(
n - 1)*(e*x)^(m - n + 1)*Sin[c + d*x^n])/(d*n), x] - Dist[(e^n*(m - n + 1))
/(d*n), Int[(e*x)^(m - n)*Sin[c + d*x^n], x], x] /; FreeQ[{c, d, e}, x] &&
IGtQ[n, 0] && LtQ[n, m + 1]
```

Rule 3385

```
Int[((e_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)^(n_)], x_Symbol] :> -Simp[(e^
(n - 1)*(e*x)^(m - n + 1)*Cos[c + d*x^n])/(d*n), x] + Dist[(e^n*(m - n + 1)
)/(d*n), Int[(e*x)^(m - n)*Cos[c + d*x^n], x], x] /; FreeQ[{c, d, e}, x] &&
 IGtQ[n, 0] && LtQ[n, m + 1]
```

Rule 3354

```
Int[Cos[(c_) + (d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Dist[Cos[c], Int
[Cos[d*(e + f*x)^2], x], x] - Dist[Sin[c], Int[Sin[d*(e + f*x)^2], x], x] /
; FreeQ[{c, d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3353

```
Int[Sin[(c_) + (d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Dist[Sin[c], Int
[Cos[d*(e + f*x)^2], x], x] + Dist[Cos[c], Int[Sin[d*(e + f*x)^2], x], x] /
; FreeQ[{c, d, e, f}, x]
```

Rubi steps

$$\int x\left(a+b\sin^{-1}(c+dx)\right)^{3/2}\,dx=\frac{\text{Subst}\left(\int\left(-\frac{c}{d}+\frac{x}{d}\right)\left(a+b\sin^{-1}(x)\right)^{3/2}\,dx,x,c+dx\right)}{d}$$

$$=\frac{\text{Subst}\left(\int(a+bx)^{3/2}\cos(x)\left(-\frac{c}{d}+\frac{\sin(x)}{d}\right)\,dx,x,\sin^{-1}(c+dx)\right)}{d}$$

$$=-\frac{2\,\text{Subst}\left(\int x^4\cos\left(\frac{a-x^2}{b}\right)\left(c+\sin\left(\frac{a-x^2}{b}\right)\right)\,dx,x,\sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2}$$

$$=-\frac{2\,\text{Subst}\left(\int x^4\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)\left(c+\sin\left(\frac{a-x^2}{b}\right)\right)\,dx,x,\sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2}$$

$$=-\frac{2\,\text{Subst}\left(\int\left(cx^4\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)+\frac{1}{2}x^4\sin\left(\frac{2a}{b}-\frac{2x^2}{b}\right)\right)\,dx,x,\sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2}$$

$$=-\frac{\text{Subst}\left(\int x^4\sin\left(\frac{2a}{b}-\frac{2x^2}{b}\right)\,dx,x,\sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2}-\frac{(2c)\,\text{Subst}\left(\int x^4\cos\left(\frac{a}{b}-\right.\right.}{}$$

$$=-\frac{c(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{d^2}-\frac{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}\cos\left(2\sin^{-1}(c+dx)\right)}{4d^2}+\frac{3}{}$$

$$=-\frac{3bc\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d^2}-\frac{c(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{d^2}-\frac{\left(a+b\right.}{}$$

$$=-\frac{3bc\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d^2}-\frac{c(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{d^2}-\frac{\left(a+b\right.}{}$$

$$=-\frac{3bc\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d^2}-\frac{c(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{d^2}-\frac{\left(a+b\right.}{}$$

Mathematica [C] time = 7.39647, size = 635, normalized size = 1.85

$$-\frac{abce^{-\frac{ia}{b}}\left(\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{3}{2},-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)+e^{\frac{2ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{3}{2},\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)\right)}{2d^2\sqrt{a+b\sin^{-1}(c+dx)}}-\frac{bc\left(\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[x*(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] -(a*b*c*(Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((-I)*(a + b*Arc
Sin[c + d*x]))/b] + E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gam
ma[3/2, (I*(a + b*ArcSin[c + d*x]))/b]))/(2*d^2*E^((I*a)/b)*Sqrt[a + b*ArcS
in[c + d*x]]) - (b*c*(2*Sqrt[a + b*ArcSin[c + d*x]]*(3*Sqrt[1 - (c + d*x)^2
] + 2*(c + d*x)*ArcSin[c + d*x]) - Sqrt[b^(-1)]*Sqrt[2*Pi]*FresnelC[Sqrt[b^
(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]]*(3*b*Cos[a/b] + 2*a*Sin[a/b])
 + Sqrt[b^(-1)]*Sqrt[2*Pi]*FresnelS[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcS
in[c + d*x]]]*(2*a*Cos[a/b] - 3*b*Sin[a/b])))/(4*d^2) + (a*(-2*Sqrt[b^(-1)]
*Sqrt[a + b*ArcSin[c + d*x]]*Cos[2*ArcSin[c + d*x]] + Sqrt[Pi]*Cos[(2*a)/b]
*FresnelC[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi]] + Sqrt[Pi]
*FresnelS[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi]]*Sin[(2*a)/
b]))/(8*Sqrt[b^(-1)]*d^2) + (b*(-(Sqrt[b^(-1)]*Sqrt[Pi]*FresnelS[(2*Sqrt[b^
(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi]]*(3*b*Cos[(2*a)/b] + 4*a*Sin[(2
*a)/b])) + Sqrt[b^(-1)]*Sqrt[Pi]*FresnelC[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin
[c + d*x]])/Sqrt[Pi]]*(-4*a*Cos[(2*a)/b] + 3*b*Sin[(2*a)/b]) + 2*Sqrt[a + b
*ArcSin[c + d*x]]*(-4*ArcSin[c + d*x]*Cos[2*ArcSin[c + d*x]] + 3*Sin[2*ArcS
in[c + d*x]])))/(32*d^2)
```

Maple [B] time = 0.133, size = 577, normalized size = 1.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(d*x+c))^(3/2),x)
```

```
[Out] -1/32/d^2*(-24*2^(1/2)*(1/b)^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(a
/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b^2*
c-24*2^(1/2)*(1/b)^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*Fresne
lS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b^2*c+3*(1/b)^
(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(2*a/b)*FresnelS(2/Pi^(1/2)/(1/
b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b^2-3*(1/b)^(1/2)*Pi^(1/2)*(a+b*arcsi
n(d*x+c))^(1/2)*sin(2*a/b)*FresnelC(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+
c))^(1/2)/b)*b^2+32*arcsin(d*x+c)^2*sin((a+b*arcsin(d*x+c))/b-a/b)*b^2*c+8*
arcsin(d*x+c)^2*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*b^2+64*arcsin(d*x+c)*sin
((a+b*arcsin(d*x+c))/b-a/b)*a*b*c+48*arcsin(d*x+c)*cos((a+b*arcsin(d*x+c))/
b-a/b)*b^2*c+16*arcsin(d*x+c)*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a*b-6*arcs
in(d*x+c)*sin(2*(a+b*arcsin(d*x+c))/b-2*a/b)*b^2+32*sin((a+b*arcsin(d*x+c))
/b-a/b)*a^2*c+48*cos((a+b*arcsin(d*x+c))/b-a/b)*a*b*c+8*cos(2*(a+b*arcsin(d
*x+c))/b-2*a/b)*a^2-6*sin(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a*b)/(a+b*arcsin(d
*x+c))^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (b \arcsin(dx+c)+a)^{\frac{3}{2}} x \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(3/2)*x, x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x (a+b \operatorname{asin}(c+dx))^{\frac{3}{2}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] Integral(x*(a + b*asin(c + d*x))**(3/2), x)
```

Giac [B] time = 2.31657, size = 1856, normalized size = 5.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] 1/4*sqrt(2)*sqrt(pi)*a*b^3*c*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)
*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e
^(a*i/b)/((b^3*i/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d^2) + 1/4*sqrt(2)*sqrt(p
i)*a*b^3*c*i*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1
/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^3*i/s
qrt(abs(b)) - b^2*sqrt(abs(b)))*d^2) - 3/8*sqrt(2)*sqrt(pi)*b^4*c*erf(-1/2*
sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arc
sin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b)/((b^3*i/sqrt(abs(b)) + b^2*sqrt
(abs(b)))*d^2) - 1/4*sqrt(2)*sqrt(pi)*a*b^2*c*i*erf(-1/2*sqrt(2)*sqrt(b*arc
sin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*
sqrt(abs(b))/b)*e^(a*i/b)/((b^2*i/sqrt(abs(b)) + b*sqrt(abs(b)))*d^2) + 3/8
*sqrt(2)*sqrt(pi)*b^4*c*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(
abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b
)/((b^3*i/sqrt(abs(b)) - b^2*sqrt(abs(b)))*d^2) - 1/4*sqrt(2)*sqrt(pi)*a*b^
2*c*i*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt
(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^2*i/sqrt(abs
(b)) - b*sqrt(abs(b)))*d^2) + 3/64*sqrt(pi)*b^(7/2)*i*erf(-sqrt(b*arcsin(d*
x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*
i/b)/((b^3*i/abs(b) + b^2)*d^2) + 3/64*sqrt(pi)*b^(7/2)*i*erf(sqrt(b*arcsin
(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-
2*a*i/b)/((b^3*i/abs(b) - b^2)*d^2) + 1/2*sqrt(b*arcsin(d*x + c) + a)*b*c*i
*arcsin(d*x + c)*e^(i*arcsin(d*x + c))/d^2 - 1/2*sqrt(b*arcsin(d*x + c) + a
)*b*c*i*arcsin(d*x + c)*e^(-i*arcsin(d*x + c))/d^2 + 1/16*sqrt(pi)*a*b^(5/2
)*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c
) + a)/sqrt(b))*e^(2*a*i/b)/((b^3*i/abs(b) + b^2)*d^2) - 1/16*sqrt(pi)*a*b^
(5/2)*erf(sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x
+ c) + a)/sqrt(b))*e^(-2*a*i/b)/((b^3*i/abs(b) - b^2)*d^2) + 1/2*sqrt(b*arc
sin(d*x + c) + a)*a*c*i*e^(i*arcsin(d*x + c))/d^2 - 1/2*sqrt(b*arcsin(d*x +
 c) + a)*a*c*i*e^(-i*arcsin(d*x + c))/d^2 - 1/16*sqrt(pi)*a*b^(3/2)*erf(-sq
rt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sq
rt(b))*e^(2*a*i/b)/((b^2*i/abs(b) + b)*d^2) + 1/16*sqrt(pi)*a*b^(3/2)*erf(s
qrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/s
qrt(b))*e^(-2*a*i/b)/((b^2*i/abs(b) - b)*d^2) - 3/32*sqrt(b*arcsin(d*x + c)
 + a)*b*i*e^(2*i*arcsin(d*x + c))/d^2 - 1/8*sqrt(b*arcsin(d*x + c) + a)*b*a
rcsin(d*x + c)*e^(2*i*arcsin(d*x + c))/d^2 - 3/4*sqrt(b*arcsin(d*x + c) + a
)*b*c*e^(i*arcsin(d*x + c))/d^2 - 3/4*sqrt(b*arcsin(d*x + c) + a)*b*c*e^(-i
*arcsin(d*x + c))/d^2 + 3/32*sqrt(b*arcsin(d*x + c) + a)*b*i*e^(-2*i*arcsin
(d*x + c))/d^2 - 1/8*sqrt(b*arcsin(d*x + c) + a)*b*arcsin(d*x + c)*e^(-2*i*
arcsin(d*x + c))/d^2 - 1/8*sqrt(b*arcsin(d*x + c) + a)*a*e^(2*i*arcsin(d*x
+ c))/d^2 - 1/8*sqrt(b*arcsin(d*x + c) + a)*a*e^(-2*i*arcsin(d*x + c))/d^2
```

3.159 $\int \left(a+b\sin^{-1}(c+dx)\right)^{3/2}\,dx$

Optimal. Leaf size=175

$$-\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{2d}-\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{2d}+\frac{3b\sqrt{1-(c+dx)^2}\sqrt{a+b\sin}}{2d}$$

```
[Out] (3*b*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(2*d) + ((c + d*x)*
(a + b*ArcSin[c + d*x])^(3/2))/d - (3*b^(3/2)*Sqrt[Pi/2]*Cos[a/b]*FresnelC[
(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(2*d) - (3*b^(3/2)*Sqrt[
Pi/2]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/
(2*d)
```

Rubi [A] time = 0.270942, antiderivative size = 175, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 9, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.643, Rules used = {4803, 4619, 4677, 4623, 3306, 3305, 3351, 3304, 3352}

$$-\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{2d}-\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{2d}+\frac{3b\sqrt{1-(c+dx)^2}\sqrt{a+b\sin}}{2d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(3/2),x]
```


```
[Out] (3*b*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(2*d) + ((c + d*x)*
(a + b*ArcSin[c + d*x])^(3/2))/d - (3*b^(3/2)*Sqrt[Pi/2]*Cos[a/b]*FresnelC[
(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(2*d) - (3*b^(3/2)*Sqrt[
Pi/2]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/
(2*d)
```


Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \left(a+b\sin^{-1}(c+dx)\right)^{3/2}\,dx=\frac{\text{Subst}\left(\int \left(a+b\sin^{-1}(x)\right)^{3/2}\,dx,x,c+dx\right)}{d}$$

$$=\frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{d}-\frac{(3b)\,\text{Subst}\left(\int \frac{x\sqrt{a+b\sin^{-1}(x)}}{\sqrt{1-x^2}}\,dx,x,c+dx\right)}{2d}$$

$$=\frac{3b\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d}+\frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{d}-\frac{\left(3b^2\right)\text{Subst}}{}$$

$$=\frac{3b\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d}+\frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{d}-\frac{(3b)\,\text{Subst}\left(\right.}{}$$

$$=\frac{3b\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d}+\frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{d}-\frac{\left(3b\cos\left(\frac{a}{b}\right)\right)}{}$$

$$=\frac{3b\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d}+\frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{d}-\frac{\left(3b\cos\left(\frac{a}{b}\right)\right)}{}$$

$$=\frac{3b\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d}+\frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{d}-\frac{3b^{3/2}\sqrt{\frac{\pi}{2}}\cos}{}$$

Mathematica [C] time = 3.02174, size = 313, normalized size = 1.79

$$\frac{b\left(\frac{2ae^{-\frac{ia}{b}}\left(\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{3}{2},-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)+e^{\frac{2ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{3}{2},\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)\right)}{\sqrt{a+b\sin^{-1}(c+dx)}}-\sqrt{2\pi}\sqrt{\frac{1}{b}}\left(2a\sin\left(\frac{a}{b}\right)+3b\,\text{c}\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (b*(2*Sqrt[a + b*ArcSin[c + d*x]]*(3*Sqrt[1 - (c + d*x)^2] + 2*(c + d*x)*Ar
cSin[c + d*x]) + (2*a*(Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((
-I)*(a + b*ArcSin[c + d*x]))/b] + E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c +
 d*x]))/b]*Gamma[3/2, (I*(a + b*ArcSin[c + d*x]))/b]))/(E^((I*a)/b)*Sqrt[a
+ b*ArcSin[c + d*x]]) - Sqrt[b^(-1)]*Sqrt[2*Pi]*FresnelC[Sqrt[b^(-1)]*Sqrt[
2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]]*(3*b*Cos[a/b] + 2*a*Sin[a/b]) + Sqrt[b^(
-1)]*Sqrt[2*Pi]*FresnelS[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]
]]*(2*a*Cos[a/b] - 3*b*Sin[a/b])))/(4*d)
```

Maple [B] time = 0.081, size = 296, normalized size = 1.7

$$\frac{1}{4d}\left(-3\sqrt{b^{-1}}\sqrt{\pi}\sqrt{2}\sqrt{a+b\arcsin(dx+c)}\cos\left(\frac{a}{b}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\sqrt{a+b\arcsin(dx+c)}}{\sqrt{b^{-1}}\sqrt{\pi}b}\right)b^2-3\sqrt{b^{-1}}\sqrt{\pi}\sqrt{2}\sqrt{a+b\,\mathrm{arc}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^(3/2),x)
```

```
[Out] 1/4/d/(a+b*arcsin(d*x+c))^(1/2)*(-3*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsi
n(d*x+c))^(1/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(
d*x+c))^(1/2)/b)*b^2-3*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/
2)*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)
/b)*b^2+4*arcsin(d*x+c)^2*sin((a+b*arcsin(d*x+c))/b-a/b)*b^2+8*arcsin(d*x+c
)*sin((a+b*arcsin(d*x+c))/b-a/b)*a*b+6*arcsin(d*x+c)*cos((a+b*arcsin(d*x+c)
)/b-a/b)*b^2+4*sin((a+b*arcsin(d*x+c))/b-a/b)*a^2+6*cos((a+b*arcsin(d*x+c))
/b-a/b)*a*b)
```

Maple [F] time = 0., size = 0, normalized size = 0.

$$\int (b\arcsin(dx+c)+a)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (a + b \operatorname{asin}(c + dx))^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**(3/2), x)
```

Giac [B] time = 1.87448, size = 980, normalized size = 5.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] -1/4*sqrt(2)*sqrt(pi)*a*b^3*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*
i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^
(a*i/b)/((b^3*i/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d) - 1/4*sqrt(2)*sqrt(pi)*
a*b^3*i*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sq
rt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^3*i/sqrt(a
bs(b)) - b^2*sqrt(abs(b)))*d) + 3/8*sqrt(2)*sqrt(pi)*b^4*erf(-1/2*sqrt(2)*s
qrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x +
 c) + a)*sqrt(abs(b))/b)*e^(a*i/b)/((b^3*i/sqrt(abs(b)) + b^2*sqrt(abs(b)))
*d) + 1/4*sqrt(2)*sqrt(pi)*a*b^2*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c)
+ a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/
```

```
b)*e^(a*i/b)/((b^2*i/sqrt(abs(b)) + b*sqrt(abs(b)))*d) - 3/8*sqrt(2)*sqrt(p
i)*b^4*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqr
t(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^3*i/sqrt(ab
s(b)) - b^2*sqrt(abs(b)))*d) + 1/4*sqrt(2)*sqrt(pi)*a*b^2*i*erf(1/2*sqrt(2)
*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x
 + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^2*i/sqrt(abs(b)) - b*sqrt(abs(b))
)*d) - 1/2*sqrt(b*arcsin(d*x + c) + a)*b*i*arcsin(d*x + c)*e^(i*arcsin(d*x
+ c))/d + 1/2*sqrt(b*arcsin(d*x + c) + a)*b*i*arcsin(d*x + c)*e^(-i*arcsin(
d*x + c))/d - 1/2*sqrt(b*arcsin(d*x + c) + a)*a*i*e^(i*arcsin(d*x + c))/d +
 1/2*sqrt(b*arcsin(d*x + c) + a)*a*i*e^(-i*arcsin(d*x + c))/d + 3/4*sqrt(b*
arcsin(d*x + c) + a)*b*e^(i*arcsin(d*x + c))/d + 3/4*sqrt(b*arcsin(d*x + c)
 + a)*b*e^(-i*arcsin(d*x + c))/d
```

3.160 $\int x\left(a+b\sin^{-1}(c+dx)\right)^{5/2}\,dx$

Optimal. Leaf size=406

$$\frac{15\sqrt{\frac{\pi}{2}}b^{5/2}c\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{4d^2}-\frac{15\sqrt{\pi}b^{5/2}\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{128d^2}-\frac{15\sqrt{\pi}b^{5/2}\sin\left(\frac{2a}{b}\right)S}{128}$$

```
[Out] (15*b^2*c*(c + d*x)*Sqrt[a + b*ArcSin[c + d*x]])/(4*d^2) - (5*b*c*Sqrt[1 -
(c + d*x)^2]*(a + b*ArcSin[c + d*x])^(3/2))/(2*d^2) - (c*(c + d*x)*(a + b*A
rcSin[c + d*x])^(5/2))/d^2 + (15*b^2*Sqrt[a + b*ArcSin[c + d*x]]*Cos[2*ArcS
in[c + d*x]])/(64*d^2) - ((a + b*ArcSin[c + d*x])^(5/2)*Cos[2*ArcSin[c + d*
x]])/(4*d^2) - (15*b^(5/2)*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*Arc
Sin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(128*d^2) - (15*b^(5/2)*c*Sqrt[Pi/2]*Co
s[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(4*d^2)
+ (15*b^(5/2)*c*Sqrt[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]
)/Sqrt[b]]*Sin[a/b])/(4*d^2) - (15*b^(5/2)*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*
ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(128*d^2) + (5*b*(a + b
*ArcSin[c + d*x])^(3/2)*Sin[2*ArcSin[c + d*x]])/(16*d^2)
```

Rubi [A] time = 1.17029, antiderivative size = 406, normalized size of antiderivative = 1., number of steps used = 18, number of rules used = 10, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.625, Rules used = {4805, 4747, 6741, 6742, 3386, 3385, 3353, 3352, 3351, 3354}

$$\frac{15\sqrt{\frac{\pi}{2}}b^{5/2}c\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{4d^2}-\frac{15\sqrt{\pi}b^{5/2}\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{128d^2}-\frac{15\sqrt{\pi}b^{5/2}\sin\left(\frac{2a}{b}\right)S}{128}$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] (15*b^2*c*(c + d*x)*Sqrt[a + b*ArcSin[c + d*x]])/(4*d^2) - (5*b*c*Sqrt[1 -
(c + d*x)^2]*(a + b*ArcSin[c + d*x])^(3/2))/(2*d^2) - (c*(c + d*x)*(a + b*A
rcSin[c + d*x])^(5/2))/d^2 + (15*b^2*Sqrt[a + b*ArcSin[c + d*x]]*Cos[2*ArcS
in[c + d*x]])/(64*d^2) - ((a + b*ArcSin[c + d*x])^(5/2)*Cos[2*ArcSin[c + d*
x]])/(4*d^2) - (15*b^(5/2)*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*Arc
Sin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(128*d^2) - (15*b^(5/2)*c*Sqrt[Pi/2]*Co
s[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(4*d^2)
+ (15*b^(5/2)*c*Sqrt[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]
)/Sqrt[b]]*Sin[a/b])/(4*d^2) - (15*b^(5/2)*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*
```

```
ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(128*d^2) + (5*b*(a + b
*ArcSin[c + d*x])^(3/2)*Sin[2*ArcSin[c + d*x]])/(16*d^2)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4747

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_.) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Dist[1/c^(m + 1), Subst[Int[(a + b*x)^n*Cos[x]*(c*d + e*Sin[x])^m
, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[m, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 3386

```
Int[Cos[(c_.) + (d_.)*(x_)^(n_)]*((e_.)*(x_))^(m_.), x_Symbol] :> Simp[(e^(
n - 1)*(e*x)^(m - n + 1)*Sin[c + d*x^n])/(d*n), x] - Dist[(e^n*(m - n + 1))
/(d*n), Int[(e*x)^(m - n)*Sin[c + d*x^n], x], x] /; FreeQ[{c, d, e}, x] &&
IGtQ[n, 0] && LtQ[n, m + 1]
```

Rule 3385

```
Int[((e_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)^(n_)], x_Symbol] :> -Simp[(e^
(n - 1)*(e*x)^(m - n + 1)*Cos[c + d*x^n])/(d*n), x] + Dist[(e^n*(m - n + 1)
)/(d*n), Int[(e*x)^(m - n)*Cos[c + d*x^n], x], x] /; FreeQ[{c, d, e}, x] &&
 IGtQ[n, 0] && LtQ[n, m + 1]
```

Rule 3353

```
Int[Sin[(c_) + (d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Dist[Sin[c], Int
[Cos[d*(e + f*x)^2], x], x] + Dist[Cos[c], Int[Sin[d*(e + f*x)^2], x], x] /
; FreeQ[{c, d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3354

```
Int[Cos[(c_) + (d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Dist[Cos[c], Int
[Cos[d*(e + f*x)^2], x], x] - Dist[Sin[c], Int[Sin[d*(e + f*x)^2], x], x] /
; FreeQ[{c, d, e, f}, x]
```

Rubi steps

$$\int x\left(a+b\sin^{-1}(c+dx)\right)^{5/2}\,dx=\frac{\text{Subst}\left(\int\left(-\frac{c}{d}+\frac{x}{d}\right)\left(a+b\sin^{-1}(x)\right)^{5/2}\,dx,x,c+dx\right)}{d}$$

$$=\frac{\text{Subst}\left(\int(a+bx)^{5/2}\cos(x)\left(-\frac{c}{d}+\frac{\sin(x)}{d}\right)\,dx,x,\sin^{-1}(c+dx)\right)}{d}$$

$$=-\frac{2\,\text{Subst}\left(\int x^6\cos\left(\frac{a-x^2}{b}\right)\left(c+\sin\left(\frac{a-x^2}{b}\right)\right)\,dx,x,\sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2}$$

$$=-\frac{2\,\text{Subst}\left(\int x^6\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)\left(c+\sin\left(\frac{a-x^2}{b}\right)\right)\,dx,x,\sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2}$$

$$=-\frac{2\,\text{Subst}\left(\int\left(cx^6\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)+\frac{1}{2}x^6\sin\left(\frac{2a}{b}-\frac{2x^2}{b}\right)\right)\,dx,x,\sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2}$$

$$=-\frac{\text{Subst}\left(\int x^6\sin\left(\frac{2a}{b}-\frac{2x^2}{b}\right)\,dx,x,\sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2}-\frac{(2c)\,\text{Subst}\left(\int x^6\cos\left(\frac{a}{b}\right.\right.}{}$$

$$=-\frac{c(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{d^2}-\frac{\left(a+b\sin^{-1}(c+dx)\right)^{5/2}\cos\left(2\sin^{-1}(c+dx)\right)}{4d^2}+$$

$$=-\frac{5bc\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{2d^2}-\frac{c(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{d^2}-\frac{\left(a\right.}{}$$

$$=\frac{15b^2c(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d^2}-\frac{5bc\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{2d^2}-\frac{c(c}{}$$

$$=\frac{15b^2c(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d^2}-\frac{5bc\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{2d^2}-\frac{c(c}{}$$

$$=\frac{15b^2c(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d^2}-\frac{5bc\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{2d^2}-\frac{c(c}{}$$

Mathematica [C] time = 9.42034, size = 1083, normalized size = 2.67

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[x*(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] -(a^2*b*c*(Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((-I)*(a + b*A
rcSin[c + d*x]))/b] + E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*G
amma[3/2, (I*(a + b*ArcSin[c + d*x]))/b]))/(2*d^2*E^((I*a)/b)*Sqrt[a + b*Ar
cSin[c + d*x]]) - (a*b*c*(2*Sqrt[a + b*ArcSin[c + d*x]]*(3*Sqrt[1 - (c + d*
x)^2] + 2*(c + d*x)*ArcSin[c + d*x]) - Sqrt[b^(-1)]*Sqrt[2*Pi]*FresnelC[Sqr
t[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]]*(3*b*Cos[a/b] + 2*a*Sin[a
/b]) + Sqrt[b^(-1)]*Sqrt[2*Pi]*FresnelS[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*
ArcSin[c + d*x]]]*(2*a*Cos[a/b] - 3*b*Sin[a/b])))/(2*d^2) - (c*((2*Sqrt[a +
 b*ArcSin[c + d*x]]*(-2*Sqrt[1 - (c + d*x)^2]*(a - 5*b*ArcSin[c + d*x]) + b
*(c + d*x)*(-15 + 4*ArcSin[c + d*x]^2)))/Sqrt[b^(-1)] + Sqrt[2*Pi]*FresnelS
[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]]*((-4*a^2 + 15*b^2)*Co
s[a/b] + 12*a*b*Sin[a/b]) + Sqrt[2*Pi]*FresnelC[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqr
t[a + b*ArcSin[c + d*x]]]*(12*a*b*Cos[a/b] + (4*a^2 - 15*b^2)*Sin[a/b])))/(
8*Sqrt[b^(-1)]*d^2) + (a^2*(-2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]]*Cos
[2*ArcSin[c + d*x]] + Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[b^(-1)]*Sqrt[a
 + b*ArcSin[c + d*x]])/Sqrt[Pi]] + Sqrt[Pi]*FresnelS[(2*Sqrt[b^(-1)]*Sqrt[a
 + b*ArcSin[c + d*x]])/Sqrt[Pi]]*Sin[(2*a)/b]))/(8*Sqrt[b^(-1)]*d^2) + (a*b
*(-(Sqrt[b^(-1)]*Sqrt[Pi]*FresnelS[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*
x]])/Sqrt[Pi]]*(3*b*Cos[(2*a)/b] + 4*a*Sin[(2*a)/b])) + Sqrt[b^(-1)]*Sqrt[P
i]*FresnelC[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi]]*(-4*a*Co
s[(2*a)/b] + 3*b*Sin[(2*a)/b]) + 2*Sqrt[a + b*ArcSin[c + d*x]]*(-4*ArcSin[c
 + d*x]*Cos[2*ArcSin[c + d*x]] + 3*Sin[2*ArcSin[c + d*x]])))/(16*d^2) + (Sq
rt[Pi]*FresnelC[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi]]*((16
*a^2 - 15*b^2)*Cos[(2*a)/b] - 24*a*b*Sin[(2*a)/b]) - Sqrt[Pi]*FresnelS[(2*S
qrt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi]]*(-24*a*b*Cos[(2*a)/b] +
(-16*a^2 + 15*b^2)*Sin[(2*a)/b]) - (2*Sqrt[a + b*ArcSin[c + d*x]]*(b*(-15 +
 16*ArcSin[c + d*x]^2)*Cos[2*ArcSin[c + d*x]] + 4*(a - 5*b*ArcSin[c + d*x])
*Sin[2*ArcSin[c + d*x]]))/Sqrt[b^(-1)])/(128*Sqrt[b^(-1)]*d^2)
```

Maple [B] time = 0.157, size = 859, normalized size = 2.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(d*x+c))^(5/2),x)
```

```
[Out] -1/128/d^2*(240*2^(1/2)*(1/b)^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(
a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b^3
*c-240*2^(1/2)*(1/b)^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*Fres
nelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b^3*c+128*ar
csin(d*x+c)^3*sin((a+b*arcsin(d*x+c))/b-a/b)*b^3*c+15*(1/b)^(1/2)*Pi^(1/2)*
```

```
(a+b*arcsin(d*x+c))^(1/2)*cos(2*a/b)*FresnelC(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*a
rcsin(d*x+c))^(1/2)/b)*b^3+15*(1/b)^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2
)*sin(2*a/b)*FresnelS(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b
^3+32*arcsin(d*x+c)^3*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*b^3+384*arcsin(d*x
+c)^2*sin((a+b*arcsin(d*x+c))/b-a/b)*a*b^2*c+320*arcsin(d*x+c)^2*cos((a+b*a
rcsin(d*x+c))/b-a/b)*b^3*c+96*arcsin(d*x+c)^2*cos(2*(a+b*arcsin(d*x+c))/b-2
*a/b)*a*b^2-40*arcsin(d*x+c)^2*sin(2*(a+b*arcsin(d*x+c))/b-2*a/b)*b^3+384*a
rcsin(d*x+c)*sin((a+b*arcsin(d*x+c))/b-a/b)*a^2*b*c-480*arcsin(d*x+c)*sin((
a+b*arcsin(d*x+c))/b-a/b)*b^3*c+640*arcsin(d*x+c)*cos((a+b*arcsin(d*x+c))/b
-a/b)*a*b^2*c+96*arcsin(d*x+c)*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a^2*b-30*
arcsin(d*x+c)*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*b^3-80*arcsin(d*x+c)*sin(2
*(a+b*arcsin(d*x+c))/b-2*a/b)*a*b^2+128*sin((a+b*arcsin(d*x+c))/b-a/b)*a^3*
c-480*sin((a+b*arcsin(d*x+c))/b-a/b)*a*b^2*c+320*cos((a+b*arcsin(d*x+c))/b-
a/b)*a^2*b*c+32*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a^3-30*cos(2*(a+b*arcsin
(d*x+c))/b-2*a/b)*a*b^2-40*sin(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a^2*b)/(a+b*a
rcsin(d*x+c))^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (b \arcsin (dx + c) + a)^{\frac{5}{2}} x \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(5/2)*x, x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [B] time = 3.46289, size = 3578, normalized size = 8.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*sqrt(pi)*a^2*b^3*c*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) +
a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)
*e^(a*i/b)/((b^3*i/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d^2) + 1/2*sqrt(2)*sqrt
(pi)*a^2*b^3*c*i*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b))
 - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^3
*i/sqrt(abs(b)) - b^2*sqrt(abs(b)))*d^2) - 3/4*sqrt(2)*sqrt(pi)*a*b^4*c*erf
(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt
(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b)/((b^3*i/sqrt(abs(b)) + b^
2*sqrt(abs(b)))*d^2) - 1/2*sqrt(2)*sqrt(pi)*a^2*b^2*c*i*erf(-1/2*sqrt(2)*sq
rt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x +
c) + a)*sqrt(abs(b))/b)*e^(a*i/b)/((b^2*i/sqrt(abs(b)) + b*sqrt(abs(b)))*d^
2) + 15/16*sqrt(2)*sqrt(pi)*b^4*c*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c)
 + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))
/b)*e^(a*i/b)/((b^2*i/sqrt(abs(b)) + b*sqrt(abs(b)))*d^2) + 3/4*sqrt(2)*sqr
t(pi)*a*b^4*c*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) -
1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^3*i/
sqrt(abs(b)) - b^2*sqrt(abs(b)))*d^2) - 1/2*sqrt(2)*sqrt(pi)*a^2*b^2*c*i*er
f(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt
(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^2*i/sqrt(abs(b)) - b
*sqrt(abs(b)))*d^2) + 15/16*sqrt(2)*sqrt(pi)*b^4*c*i*erf(1/2*sqrt(2)*sqrt(b
*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) +
 a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^2*i/sqrt(abs(b)) - b*sqrt(abs(b)))*d^2)
+ 1/2*sqrt(b*arcsin(d*x + c) + a)*b^2*c*i*arcsin(d*x + c)^2*e^(i*arcsin(d*x
 + c))/d^2 - 1/2*sqrt(b*arcsin(d*x + c) + a)*b^2*c*i*arcsin(d*x + c)^2*e^(-
```

i*arcsin(d*x + c))/d^2 + 3/32*sqrt(pi)*a*b^(7/2)*i*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b)/((b^3*i/abs(b) + b^2)*d^2) + 3/4*sqrt(2)*sqrt(pi)*a*b^3*c*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b)/((b^2*i/sqrt(abs(b)) + b*sqrt(abs(b)))*d^2) - 3/4*sqrt(2)*sqrt(pi)*a*b^3*c*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^2*i/sqrt(abs(b)) - b*sqrt(abs(b)))*d^2) + 3/32*sqrt(pi)*a*b^(7/2)*i*erf(sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b)/((b^3*i/abs(b) - b^2)*d^2) + sqrt(b*arcsin(d*x + c) + a)*a*b*c*i*arcsin(d*x + c)*e^(i*arcsin(d*x + c))/d^2 - sqrt(b*arcsin(d*x + c) + a)*a*b*c*i*arcsin(d*x + c)*e^(-i*arcsin(d*x + c))/d^2 + 1/8*sqrt(pi)*a^2*b^(5/2)*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b)/((b^3*i/abs(b) + b^2)*d^2) - 3/32*sqrt(pi)*a*b^(5/2)*i*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b)/((b^2*i/abs(b) + b)*d^2) - 1/8*sqrt(pi)*a^2*b^(5/2)*erf(sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b)/((b^3*i/abs(b) - b^2)*d^2) - 3/32*sqrt(pi)*a*b^(5/2)*i*erf(sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b)/((b^2*i/abs(b) - b)*d^2) - 5/32*sqrt(b*arcsin(d*x + c) + a)*b^2*i*arcsin(d*x + c)*e^(2*i*arcsin(d*x + c))/d^2 - 1/8*sqrt(b*arcsin(d*x + c) + a)*b^2*arcsin(d*x + c)^2*e^(2*i*arcsin(d*x + c))/d^2 + 1/2*sqrt(b*arcsin(d*x + c) + a)*a^2*c*i*e^(i*arcsin(d*x + c))/d^2 - 15/8*sqrt(b*arcsin(d*x + c) + a)*b^2*c*i*e^(i*arcsin(d*x + c))/d^2 - 5/4*sqrt(b*arcsin(d*x + c) + a)*b^2*c*arcsin(d*x + c)*e^(i*arcsin(d*x + c))/d^2 - 1/2*sqrt(b*arcsin(d*x + c) + a)*a^2*c*i*e^(-i*arcsin(d*x + c))/d^2 + 15/8*sqrt(b*arcsin(d*x + c) + a)*b^2*c*i*e^(-i*arcsin(d*x + c))/d^2 - 5/4*sqrt(b*arcsin(d*x + c) + a)*b^2*c*arcsin(d*x + c)*e^(-i*arcsin(d*x + c))/d^2 + 5/32*sqrt(b*arcsin(d*x + c) + a)*b^2*i*arcsin(d*x + c)*e^(-2*i*arcsin(d*x + c))/d^2 - 1/8*sqrt(b*arcsin(d*x + c) + a)*b^2*arcsin(d*x + c)^2*e^(-2*i*arcsin(d*x + c))/d^2 - 1/16*sqrt(pi)*a^2*b^2*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b)/((b^(5/2)*i/abs(b) + b^(3/2))*d^2) + 1/16*sqrt(pi)*a^2*b^2*erf(sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b)/((b^(5/2)*i/abs(b) - b^(3/2))*d^2) - 1/16*sqrt(pi)*a^2*b^(3/2)*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b)/((b^2*i/abs(b) + b)*d^2) + 15/256*sqrt(pi)*b^(7/2)*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b)/((b^2*i/abs(b) + b)*d^2) + 1/16*sqrt(pi)*a^2*b^(3/2)*erf(sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b)/((b^2*i/abs(b) - b)*d^2) - 15/256*sqrt(pi)*b^(7/2)*erf(sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b)/((b^2*i/abs(b) - b)*d^2) - 5/32*sqrt(b*arcsin(d*x + c) + a)*a*b*i*e^(2*i*arcsin(d*x + c))/d^2 - 1/4*sqrt(b*arcsin(d*x + c) + a)*a*b*arcsin(d*x + c)*e^(2*i*arcsin(d*x +

```
 c))/d^2 - 5/4*sqrt(b*arcsin(d*x + c) + a)*a*b*c*e^(i*arcsin(d*x + c))/d^2
- 5/4*sqrt(b*arcsin(d*x + c) + a)*a*b*c*e^(-i*arcsin(d*x + c))/d^2 + 5/32*s
qrt(b*arcsin(d*x + c) + a)*a*b*i*e^(-2*i*arcsin(d*x + c))/d^2 - 1/4*sqrt(b*
arcsin(d*x + c) + a)*a*b*arcsin(d*x + c)*e^(-2*i*arcsin(d*x + c))/d^2 - 1/8
*sqrt(b*arcsin(d*x + c) + a)*a^2*e^(2*i*arcsin(d*x + c))/d^2 + 15/128*sqrt(
b*arcsin(d*x + c) + a)*b^2*e^(2*i*arcsin(d*x + c))/d^2 - 1/8*sqrt(b*arcsin(
d*x + c) + a)*a^2*e^(-2*i*arcsin(d*x + c))/d^2 + 15/128*sqrt(b*arcsin(d*x +
 c) + a)*b^2*e^(-2*i*arcsin(d*x + c))/d^2
```

3.161 $\int \left(a+b\sin^{-1}(c+dx)\right)^{5/2}\,dx$

Optimal. Leaf size=204

$$-\frac{15\sqrt{\frac{\pi}{2}}b^{5/2}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{4d}+\frac{15\sqrt{\frac{\pi}{2}}b^{5/2}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{4d}-\frac{15b^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d}$$

```
[Out] (-15*b^2*(c + d*x)*Sqrt[a + b*ArcSin[c + d*x]])/(4*d) + (5*b*Sqrt[1 - (c +
d*x)^2]*(a + b*ArcSin[c + d*x])^(3/2))/(2*d) + ((c + d*x)*(a + b*ArcSin[c +
 d*x])^(5/2))/d + (15*b^(5/2)*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt
[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(4*d) - (15*b^(5/2)*Sqrt[Pi/2]*FresnelC[
(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(4*d)
```

Rubi [A] time = 0.42179, antiderivative size = 204, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 9, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.643, Rules used = {4803, 4619, 4677, 4723, 3306, 3305, 3351, 3304, 3352}

$$-\frac{15\sqrt{\frac{\pi}{2}}b^{5/2}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{4d}+\frac{15\sqrt{\frac{\pi}{2}}b^{5/2}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{4d}-\frac{15b^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(5/2),x]
```


```
[Out] (-15*b^2*(c + d*x)*Sqrt[a + b*ArcSin[c + d*x]])/(4*d) + (5*b*Sqrt[1 - (c +
d*x)^2]*(a + b*ArcSin[c + d*x])^(3/2))/(2*d) + ((c + d*x)*(a + b*ArcSin[c +
 d*x])^(5/2))/d + (15*b^(5/2)*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt
[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(4*d) - (15*b^(5/2)*Sqrt[Pi/2]*FresnelC[
(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(4*d)
```


Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \left(a+b\sin^{-1}(c+dx)\right)^{5/2}\,dx = \frac{\text{Subst}\left(\int \left(a+b\sin^{-1}(x)\right)^{5/2}\,dx,x,c+dx\right)}{d}$$

$$= \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{d} - \frac{(5b)\,\text{Subst}\left(\int \frac{x\left(a+b\sin^{-1}(x)\right)^{3/2}}{\sqrt{1-x^2}}\,dx,x,c+dx\right)}{2d}$$

$$= \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{2d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{d} - \frac{\left(15b^2\right)\text{S}}{}$$

$$= -\frac{15b^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{2d} + \frac{(c+}{}$$

$$= -\frac{15b^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{2d} + \frac{(c+}{}$$

$$= -\frac{15b^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{2d} + \frac{(c+}{}$$

$$= -\frac{15b^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{2d} + \frac{(c+}{}$$

$$= -\frac{15b^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{2d} + \frac{(c+}{}$$

Mathematica [C] time = 3.20527, size = 432, normalized size = 2.12

$$\frac{e^{-\frac{ia}{b}}\left(2b\left(2a^2\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{3}{2},-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)+2a^2e^{\frac{2ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{3}{2},\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] ((I*(4*a^2 + 15*b^2)*(-1 + E^(((2*I)*a)/b))*Sqrt[Pi/2]*Sqrt[a + b*ArcSin[c
+ d*x]]*FresnelC[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]])/Sqrt
[b^(-1)] + ((4*a^2 + 15*b^2)*(1 + E^(((2*I)*a)/b))*Sqrt[Pi/2]*Sqrt[a + b*Ar
cSin[c + d*x]]*FresnelS[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]
])/Sqrt[b^(-1)] + 2*b*(E^((I*a)/b)*(a + b*ArcSin[c + d*x])*(-15*b*(c + d*x)
 + 10*a*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2] + 2*(4*a*(c + d*x) + 5*b*Sqrt[1 -
 c^2 - 2*c*d*x - d^2*x^2])*ArcSin[c + d*x] + 4*b*(c + d*x)*ArcSin[c + d*x]^
2) + 2*a^2*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((-I)*(a + b*A
rcSin[c + d*x]))/b] + 2*a^2*E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x])
)/b]*Gamma[3/2, (I*(a + b*ArcSin[c + d*x]))/b]))/(8*d*E^((I*a)/b)*Sqrt[a +
b*ArcSin[c + d*x]])
```

Maple [B] time = 0.093, size = 433, normalized size = 2.1

$$\frac{1}{8d}\left(15\sqrt{b^{-1}}\sqrt{\pi}\sqrt{2}\sqrt{a+b\arcsin(dx+c)}\cos\left(\frac{a}{b}\right)\mathrm{FresnelS}\left(\frac{\sqrt{2}\sqrt{a+b\arcsin(dx+c)}}{\sqrt{b^{-1}}\sqrt{\pi}b}\right)b^3-15\sqrt{b^{-1}}\sqrt{\pi}\sqrt{2}\sqrt{a+b\,\mathrm{arcs}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^(5/2),x)
```

```
[Out] 1/8/d/(a+b*arcsin(d*x+c))^(1/2)*(15*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsi
n(d*x+c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(
d*x+c))^(1/2)/b)*b^3-15*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1
/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2
)/b)*b^3+8*arcsin(d*x+c)^3*sin((a+b*arcsin(d*x+c))/b-a/b)*b^3+24*arcsin(d*x
+c)^2*sin((a+b*arcsin(d*x+c))/b-a/b)*a*b^2+20*arcsin(d*x+c)^2*cos((a+b*arcs
in(d*x+c))/b-a/b)*b^3+24*arcsin(d*x+c)*sin((a+b*arcsin(d*x+c))/b-a/b)*a^2*b
-30*arcsin(d*x+c)*sin((a+b*arcsin(d*x+c))/b-a/b)*b^3+40*arcsin(d*x+c)*cos((
a+b*arcsin(d*x+c))/b-a/b)*a*b^2+8*sin((a+b*arcsin(d*x+c))/b-a/b)*a^3-30*sin
((a+b*arcsin(d*x+c))/b-a/b)*a*b^2+20*cos((a+b*arcsin(d*x+c))/b-a/b)*a^2*b)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (b\arcsin(dx+c)+a)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [B] time = 2.47604, size = 1766, normalized size = 8.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(2)*sqrt(pi)*a^2*b^3*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a
)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*
e^(a*i/b)/((b^3*i/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d) - 1/2*sqrt(2)*sqrt(pi
)*a^2*b^3*i*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/
```

```
2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^3*i/sq
rt(abs(b)) - b^2*sqrt(abs(b)))*d) + 3/4*sqrt(2)*sqrt(pi)*a*b^4*erf(-1/2*sqr
t(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin
(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b)/((b^3*i/sqrt(abs(b)) + b^2*sqrt(ab
s(b)))*d) + 1/2*sqrt(2)*sqrt(pi)*a^2*b^2*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d
*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(
abs(b))/b)*e^(a*i/b)/((b^2*i/sqrt(abs(b)) + b*sqrt(abs(b)))*d) - 15/16*sqrt
(2)*sqrt(pi)*b^4*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(
b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b)/((b
^2*i/sqrt(abs(b)) + b*sqrt(abs(b)))*d) - 3/4*sqrt(2)*sqrt(pi)*a*b^4*erf(1/2
*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*ar
csin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^3*i/sqrt(abs(b)) - b^2*sq
rt(abs(b)))*d) + 1/2*sqrt(2)*sqrt(pi)*a^2*b^2*i*erf(1/2*sqrt(2)*sqrt(b*arcs
in(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*s
qrt(abs(b))/b)*e^(-a*i/b)/((b^2*i/sqrt(abs(b)) - b*sqrt(abs(b)))*d) - 15/16
*sqrt(2)*sqrt(pi)*b^4*i*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(
abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b
)/((b^2*i/sqrt(abs(b)) - b*sqrt(abs(b)))*d) - 1/2*sqrt(b*arcsin(d*x + c) +
a)*b^2*i*arcsin(d*x + c)^2*e^(i*arcsin(d*x + c))/d + 1/2*sqrt(b*arcsin(d*x
+ c) + a)*b^2*i*arcsin(d*x + c)^2*e^(-i*arcsin(d*x + c))/d - 3/4*sqrt(2)*sq
rt(pi)*a*b^3*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) -
1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b)/((b^2*i/s
qrt(abs(b)) + b*sqrt(abs(b)))*d) + 3/4*sqrt(2)*sqrt(pi)*a*b^3*erf(1/2*sqrt(
2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d
*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^2*i/sqrt(abs(b)) - b*sqrt(abs(b
)))*d) - sqrt(b*arcsin(d*x + c) + a)*a*b*i*arcsin(d*x + c)*e^(i*arcsin(d*x
+ c))/d + sqrt(b*arcsin(d*x + c) + a)*a*b*i*arcsin(d*x + c)*e^(-i*arcsin(d*
x + c))/d - 1/2*sqrt(b*arcsin(d*x + c) + a)*a^2*i*e^(i*arcsin(d*x + c))/d +
 15/8*sqrt(b*arcsin(d*x + c) + a)*b^2*i*e^(i*arcsin(d*x + c))/d + 5/4*sqrt(
b*arcsin(d*x + c) + a)*b^2*arcsin(d*x + c)*e^(i*arcsin(d*x + c))/d + 1/2*sq
rt(b*arcsin(d*x + c) + a)*a^2*i*e^(-i*arcsin(d*x + c))/d - 15/8*sqrt(b*arcs
in(d*x + c) + a)*b^2*i*e^(-i*arcsin(d*x + c))/d + 5/4*sqrt(b*arcsin(d*x + c
) + a)*b^2*arcsin(d*x + c)*e^(-i*arcsin(d*x + c))/d + 5/4*sqrt(b*arcsin(d*x
 + c) + a)*a*b*e^(i*arcsin(d*x + c))/d + 5/4*sqrt(b*arcsin(d*x + c) + a)*a*
b*e^(-i*arcsin(d*x + c))/d
```

3.162 $\int \left(a+b\sin^{-1}(c+dx)\right)^{7/2}\,dx$

Optimal. Leaf size=243

$$\frac{105\sqrt{\frac{\pi}{2}}b^{7/2}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{8d}+\frac{105\sqrt{\frac{\pi}{2}}b^{7/2}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{8d}-\frac{105b^3\sqrt{1-(c+dx)^2}\sqrt{}}{8d}$$

```
[Out] (-105*b^3*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(8*d) - (35*b^
2*(c + d*x)*(a + b*ArcSin[c + d*x])^(3/2))/(4*d) + (7*b*Sqrt[1 - (c + d*x)^
2]*(a + b*ArcSin[c + d*x])^(5/2))/(2*d) + ((c + d*x)*(a + b*ArcSin[c + d*x]
)^(7/2))/d + (105*b^(7/2)*Sqrt[Pi/2]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a +
 b*ArcSin[c + d*x]])/Sqrt[b]])/(8*d) + (105*b^(7/2)*Sqrt[Pi/2]*FresnelS[(Sq
rt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(8*d)
```

Rubi [A] time = 0.442471, antiderivative size = 243, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 9, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.643, Rules used = {4803, 4619, 4677, 4623, 3306, 3305, 3351, 3304, 3352}

$$\frac{105\sqrt{\frac{\pi}{2}}b^{7/2}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{8d}+\frac{105\sqrt{\frac{\pi}{2}}b^{7/2}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{8d}-\frac{105b^3\sqrt{1-(c+dx)^2}\sqrt{}}{8d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] (-105*b^3*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(8*d) - (35*b^
2*(c + d*x)*(a + b*ArcSin[c + d*x])^(3/2))/(4*d) + (7*b*Sqrt[1 - (c + d*x)^
2]*(a + b*ArcSin[c + d*x])^(5/2))/(2*d) + ((c + d*x)*(a + b*ArcSin[c + d*x]
)^(7/2))/d + (105*b^(7/2)*Sqrt[Pi/2]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a +
 b*ArcSin[c + d*x]])/Sqrt[b]])/(8*d) + (105*b^(7/2)*Sqrt[Pi/2]*FresnelS[(Sq
rt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(8*d)
```

Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \left(a+b\sin^{-1}(c+dx)\right)^{7/2}\,dx=\frac{\text{Subst}\left(\int \left(a+b\sin^{-1}(x)\right)^{7/2}\,dx,x,c+dx\right)}{d}$$

$$=\frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}{d}-\frac{(7b)\,\text{Subst}\left(\int \frac{x\left(a+b\sin^{-1}(x)\right)^{5/2}}{\sqrt{1-x^2}}\,dx,x,c+dx\right)}{2d}$$

$$=\frac{7b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{2d}+\frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}{d}-\frac{\left(35b^2\right)\text{S}}{}$$

$$=-\frac{35b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{4d}+\frac{7b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{2d}+\frac{(c}{}$$

$$=-\frac{105b^3\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d}-\frac{35b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{4d}+\frac{7}{}$$

$$=-\frac{105b^3\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d}-\frac{35b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{4d}+\frac{7}{}$$

$$=-\frac{105b^3\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d}-\frac{35b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{4d}+\frac{7}{}$$

$$=-\frac{105b^3\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d}-\frac{35b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{4d}+\frac{7}{}$$

$$=-\frac{105b^3\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d}-\frac{35b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{4d}+\frac{7}{}$$

Mathematica [C] time = 4.99659, size = 551, normalized size = 2.27

$$e^{-\frac{ia}{b}}\left(\frac{4\left(4a^3\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{3}{2},-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)+4a^3e^{\frac{2ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{3}{2},\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)+e^{\frac{ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)\left(7\left(4a^2\sqrt{-c^2}\right.\right.\right.}{}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] (((8*I)*a^3*(-1 + E^(((2*I)*a)/b)) + 105*b^3*(1 + E^(((2*I)*a)/b)))*Sqrt[2*
Pi]*Sqrt[a + b*ArcSin[c + d*x]]*FresnelC[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b
*ArcSin[c + d*x]]] - I*(105*b^3*(-1 + E^(((2*I)*a)/b)) + (8*I)*a^3*(1 + E^(
((2*I)*a)/b)))*Sqrt[2*Pi]*Sqrt[a + b*ArcSin[c + d*x]]*FresnelS[Sqrt[b^(-1)]
*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]] + (4*(E^((I*a)/b)*(a + b*ArcSin[c
+ d*x])*(7*(-10*a*b*(c + d*x) + 4*a^2*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2] - 1
5*b^2*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2]) + (24*a^2*(c + d*x) - 70*b^2*(c +
d*x) + 56*a*b*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2])*ArcSin[c + d*x] + 4*b*(6*a
*(c + d*x) + 7*b*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2])*ArcSin[c + d*x]^2 + 8*b
^2*(c + d*x)*ArcSin[c + d*x]^3) + 4*a^3*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))
/b]*Gamma[3/2, ((-I)*(a + b*ArcSin[c + d*x]))/b] + 4*a^3*E^(((2*I)*a)/b)*Sq
rt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, (I*(a + b*ArcSin[c + d*x]))/b]
))/Sqrt[b^(-1)])/(32*Sqrt[b^(-1)]*d*E^((I*a)/b)*Sqrt[a + b*ArcSin[c + d*x]]
)
```

Maple [B] time = 0.114, size = 608, normalized size = 2.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^(7/2),x)
```

```
[Out] 1/16/d/(a+b*arcsin(d*x+c))^(1/2)*(105*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arc
sin(d*x+c))^(1/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsi
n(d*x+c))^(1/2)/b)*b^4+105*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))
^(1/2)*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(
1/2)/b)*b^4+16*arcsin(d*x+c)^4*sin((a+b*arcsin(d*x+c))/b-a/b)*b^4+64*arcsin
```

```
(d*x+c)^3*sin((a+b*arcsin(d*x+c))/b-a/b)*a*b^3+56*arcsin(d*x+c)^3*cos((a+b*
arcsin(d*x+c))/b-a/b)*b^4+96*arcsin(d*x+c)^2*sin((a+b*arcsin(d*x+c))/b-a/b)
*a^2*b^2-140*arcsin(d*x+c)^2*sin((a+b*arcsin(d*x+c))/b-a/b)*b^4+168*arcsin(
d*x+c)^2*cos((a+b*arcsin(d*x+c))/b-a/b)*a*b^3+64*arcsin(d*x+c)*sin((a+b*arc
sin(d*x+c))/b-a/b)*a^3*b-280*arcsin(d*x+c)*sin((a+b*arcsin(d*x+c))/b-a/b)*a
*b^3+168*arcsin(d*x+c)*cos((a+b*arcsin(d*x+c))/b-a/b)*a^2*b^2-210*arcsin(d*
x+c)*cos((a+b*arcsin(d*x+c))/b-a/b)*b^4+16*sin((a+b*arcsin(d*x+c))/b-a/b)*a
^4-140*sin((a+b*arcsin(d*x+c))/b-a/b)*a^2*b^2+56*cos((a+b*arcsin(d*x+c))/b-
a/b)*a^3*b-210*cos((a+b*arcsin(d*x+c))/b-a/b)*a*b^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (b\arcsin(dx+c)+a)^{\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(7/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**(7/2),x)
```

[Out] Timed out

Giac [B] time = 3.28257, size = 2175, normalized size = 8.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*arcsin(d*x+c))^(7/2),x, algorithm="giac")

```
[Out] -sqrt(2)*sqrt(pi)*a^3*b^3*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/
sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a
*i/b)/((b^3*i/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d) - sqrt(2)*sqrt(pi)*a^3*b^
3*i*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2
)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^3*i/sqrt(abs(b
)) - b^2*sqrt(abs(b)))*d) - 1/2*sqrt(b*arcsin(d*x + c) + a)*b^3*i*arcsin(d*
x + c)^3*e^(i*arcsin(d*x + c))/d + 1/2*sqrt(b*arcsin(d*x + c) + a)*b^3*i*ar
csin(d*x + c)^3*e^(-i*arcsin(d*x + c))/d + 9/8*sqrt(2)*sqrt(pi)*a^2*b^4*erf
(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt
(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b)/((b^3*i/sqrt(abs(b)) + b^
2*sqrt(abs(b)))*d) + sqrt(2)*sqrt(pi)*a^3*b^2*i*erf(-1/2*sqrt(2)*sqrt(b*arc
sin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*
sqrt(abs(b))/b)*e^(a*i/b)/((b^2*i/sqrt(abs(b)) + b*sqrt(abs(b)))*d) - 9/8*s
qrt(2)*sqrt(pi)*a^2*b^4*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(
abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b
)/((b^3*i/sqrt(abs(b)) - b^2*sqrt(abs(b)))*d) + sqrt(2)*sqrt(pi)*a^3*b^2*i*
erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sq
rt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^2*i/sqrt(abs(b)) -
 b*sqrt(abs(b)))*d) - 3/2*sqrt(b*arcsin(d*x + c) + a)*a*b^2*i*arcsin(d*x +
c)^2*e^(i*arcsin(d*x + c))/d + 3/2*sqrt(b*arcsin(d*x + c) + a)*a*b^2*i*arcs
in(d*x + c)^2*e^(-i*arcsin(d*x + c))/d - 9/8*sqrt(2)*sqrt(pi)*a^2*b^3*erf(-
1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b
*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b)/((b^2*i/sqrt(abs(b)) + b*sq
rt(abs(b)))*d) - 105/32*sqrt(2)*sqrt(pi)*b^5*erf(-1/2*sqrt(2)*sqrt(b*arcsin
(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqr
t(abs(b))/b)*e^(a*i/b)/((b^2*i/sqrt(abs(b)) + b*sqrt(abs(b)))*d) + 9/8*sqrt
(2)*sqrt(pi)*a^2*b^3*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs
(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/(
(b^2*i/sqrt(abs(b)) - b*sqrt(abs(b)))*d) + 105/32*sqrt(2)*sqrt(pi)*b^5*erf(
1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b
*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^2*i/sqrt(abs(b)) - b*s
qrt(abs(b)))*d) - 3/2*sqrt(b*arcsin(d*x + c) + a)*a^2*b*i*arcsin(d*x + c)*e
```

```
^(i*arcsin(d*x + c))/d + 35/8*sqrt(b*arcsin(d*x + c) + a)*b^3*i*arcsin(d*x
+ c)*e^(i*arcsin(d*x + c))/d + 7/4*sqrt(b*arcsin(d*x + c) + a)*b^3*arcsin(d
*x + c)^2*e^(i*arcsin(d*x + c))/d + 3/2*sqrt(b*arcsin(d*x + c) + a)*a^2*b*i
*arcsin(d*x + c)*e^(-i*arcsin(d*x + c))/d - 35/8*sqrt(b*arcsin(d*x + c) + a
)*b^3*i*arcsin(d*x + c)*e^(-i*arcsin(d*x + c))/d + 7/4*sqrt(b*arcsin(d*x +
c) + a)*b^3*arcsin(d*x + c)^2*e^(-i*arcsin(d*x + c))/d - 1/2*sqrt(b*arcsin(
d*x + c) + a)*a^3*i*e^(i*arcsin(d*x + c))/d + 35/8*sqrt(b*arcsin(d*x + c) +
 a)*a*b^2*i*e^(i*arcsin(d*x + c))/d + 7/2*sqrt(b*arcsin(d*x + c) + a)*a*b^2
*arcsin(d*x + c)*e^(i*arcsin(d*x + c))/d + 1/2*sqrt(b*arcsin(d*x + c) + a)*
a^3*i*e^(-i*arcsin(d*x + c))/d - 35/8*sqrt(b*arcsin(d*x + c) + a)*a*b^2*i*e
^(-i*arcsin(d*x + c))/d + 7/2*sqrt(b*arcsin(d*x + c) + a)*a*b^2*arcsin(d*x
+ c)*e^(-i*arcsin(d*x + c))/d + 7/4*sqrt(b*arcsin(d*x + c) + a)*a^2*b*e^(i*
arcsin(d*x + c))/d - 105/16*sqrt(b*arcsin(d*x + c) + a)*b^3*e^(i*arcsin(d*x
 + c))/d + 7/4*sqrt(b*arcsin(d*x + c) + a)*a^2*b*e^(-i*arcsin(d*x + c))/d -
 105/16*sqrt(b*arcsin(d*x + c) + a)*b^3*e^(-i*arcsin(d*x + c))/d
```

3.163 $\int \frac{x^2}{\sqrt{a+b\sin^{-1}(c+dx)}}\,dx$

Optimal. Leaf size=440

$$\frac{\sqrt{2\pi}c^2\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}d^3}+\frac{\sqrt{2\pi}c^2\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}d^3}+\frac{\sqrt{\pi}c\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin}}{\sqrt{\pi}}\right.}{\sqrt{b}d^3}$$

```
[Out] (Sqrt[Pi/2]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt
[b]])/(2*Sqrt[b]*d^3) + (c^2*Sqrt[2*Pi]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[
a + b*ArcSin[c + d*x]])/Sqrt[b]])/(Sqrt[b]*d^3) - (Sqrt[Pi/6]*Cos[(3*a)/b]*
FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(2*Sqrt[b]*d^3)
 - (c*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[
b]*Sqrt[Pi])])/(Sqrt[b]*d^3) + (Sqrt[Pi/2]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*
ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(2*Sqrt[b]*d^3) + (c^2*Sqrt[2*Pi]*Fres
nelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(Sqrt[b]*d
^3) + (c*Sqrt[Pi]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi
])]*Sin[(2*a)/b])/(Sqrt[b]*d^3) - (Sqrt[Pi/6]*FresnelS[(Sqrt[6/Pi]*Sqrt[a +
 b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(3*a)/b])/(2*Sqrt[b]*d^3)
```

Rubi [A] time = 1.01881, antiderivative size = 440, normalized size of antiderivative = 1., number of steps used = 20, number of rules used = 9, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {4805, 4747, 6741, 6742, 3354, 3352, 3351, 3353, 4574}

$$\frac{\sqrt{2\pi}c^2\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}d^3}+\frac{\sqrt{2\pi}c^2\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}d^3}+\frac{\sqrt{\pi}c\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin}}{\sqrt{\pi}}\right.}{\sqrt{b}d^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (Sqrt[Pi/2]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt
[b]])/(2*Sqrt[b]*d^3) + (c^2*Sqrt[2*Pi]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[
a + b*ArcSin[c + d*x]])/Sqrt[b]])/(Sqrt[b]*d^3) - (Sqrt[Pi/6]*Cos[(3*a)/b]*
FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(2*Sqrt[b]*d^3)
 - (c*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[
b]*Sqrt[Pi])])/(Sqrt[b]*d^3) + (Sqrt[Pi/2]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*
ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(2*Sqrt[b]*d^3) + (c^2*Sqrt[2*Pi]*Fres
```

```
nelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(Sqrt[b]*d
^3) + (c*Sqrt[Pi]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi
])]*Sin[(2*a)/b])/(Sqrt[b]*d^3) - (Sqrt[Pi/6]*FresnelS[(Sqrt[6/Pi]*Sqrt[a +
 b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(3*a)/b])/(2*Sqrt[b]*d^3)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4747

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_.) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Dist[1/c^(m + 1), Subst[Int[(a + b*x)^n*Cos[x]*(c*d + e*Sin[x])^m
, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[m, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 3354

```
Int[Cos[(c_) + (d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Dist[Cos[c], Int
[Cos[d*(e + f*x)^2], x], x] - Dist[Sin[c], Int[Sin[d*(e + f*x)^2], x], x] /
; FreeQ[{c, d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3353

```
Int[Sin[(c_) + (d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Dist[Sin[c], Int
[Cos[d*(e + f*x)^2], x], x] + Dist[Cos[c], Int[Sin[d*(e + f*x)^2], x], x] /
; FreeQ[{c, d, e, f}, x]
```

Rule 4574

```
Int[Cos[w_]^(q_.)*Sin[v_]^(p_.), x_Symbol] :> Int[ExpandTrigReduce[Sin[v]^p
*Cos[w]^q, x], x] /; IGtQ[p, 0] && IGtQ[q, 0] && ((PolynomialQ[v, x] && Pol
ynomialQ[w, x]) || (BinomialQ[{v, w}, x] && IndependentQ[Cancel[v/w], x]))
```

Rubi steps

$$\int \frac{x^2}{\sqrt{a+b\sin^{-1}(c+dx)}}dx = \frac{\text{Subst}\left(\int \frac{\left(-\frac{c}{d}+\frac{x}{d}\right)^2}{\sqrt{a+b\sin^{-1}(x)}}dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{\cos(x)\left(-\frac{c}{d}+\frac{\sin(x)}{d}\right)^2}{\sqrt{a+bx}}dx, x, \sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{2\,\text{Subst}\left(\int \cos\left(\frac{a-x^2}{b}\right)\left(c+\sin\left(\frac{a-x^2}{b}\right)\right)^2 dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^3}$$

$$= \frac{2\,\text{Subst}\left(\int \cos\left(\frac{a}{b}-\frac{x^2}{b}\right)\left(c+\sin\left(\frac{a-x^2}{b}\right)\right)^2 dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^3}$$

$$= \frac{2\,\text{Subst}\left(\int \left(c^2\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)+c\sin\left(\frac{2a}{b}-\frac{2x^2}{b}\right)+\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)\sin^2\left(\frac{a}{b}-\frac{x^2}{b}\right)\right)dx, x, \sqrt{a+b\right.}{bd^3}$$

$$= \frac{2\,\text{Subst}\left(\int \cos\left(\frac{a}{b}-\frac{x^2}{b}\right)\sin^2\left(\frac{a}{b}-\frac{x^2}{b}\right)dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^3} + \frac{(2c)\,\text{Subst}\left(\int \sin\left(\right.\right.}{}$$

$$= \frac{2\,\text{Subst}\left(\int \left(-\frac{1}{4}\cos\left(\frac{3a}{b}-\frac{3x^2}{b}\right)+\frac{1}{4}\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)\right)dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^3} + \frac{\left(2c^2\cos\right.}{}$$

$$= \frac{c^2\sqrt{2\pi}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}d^3} - \frac{c\sqrt{\pi}\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{\sqrt{b}d^3} + \frac{c^2\sqrt{2\pi}S\left(\frac{\sqrt{\frac{2}{\pi}}}{}\right.}{}$$

$$= \frac{c^2\sqrt{2\pi}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}d^3} - \frac{c\sqrt{\pi}\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{\sqrt{b}d^3} + \frac{c^2\sqrt{2\pi}S\left(\frac{\sqrt{\frac{2}{\pi}}}{}\right.}{}$$

$$= \frac{\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{2\sqrt{b}d^3} + \frac{c^2\sqrt{2\pi}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}d^3} - \frac{\sqrt{\frac{\pi}{6}}\cos\left(\frac{3a}{b}\right.}{}$$

Mathematica [A] time = 1.11203, size = 335, normalized size = 0.76

$$\frac{\sqrt{\pi}\sqrt{\frac{1}{b}}\left(3\sqrt{2}\left(4c^2+1\right)\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\sqrt{\frac{2}{\pi}}\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}(c+dx)}\right)+12\sqrt{2}c^2\sin\left(\frac{a}{b}\right)S\left(\sqrt{\frac{1}{b}}\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+d\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (Sqrt[b^(-1)]*Sqrt[Pi]*(3*Sqrt[2]*(1 + 4*c^2)*Cos[a/b]*FresnelC[Sqrt[b^(-1)
]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]] - Sqrt[6]*Cos[(3*a)/b]*FresnelC[S
qrt[b^(-1)]*Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]]] - 12*c*Cos[(2*a)/b]*Fre
snelS[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi]] + 3*Sqrt[2]*Fr
esnelS[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]]*Sin[a/b] + 12*S
qrt[2]*c^2*FresnelS[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]]*Si
n[a/b] + 12*c*FresnelC[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi
]]*Sin[(2*a)/b] - Sqrt[6]*FresnelS[Sqrt[b^(-1)]*Sqrt[6/Pi]*Sqrt[a + b*ArcSi
n[c + d*x]]]*Sin[(3*a)/b]))/(12*d^3)
```

Maple [A] time = 0.097, size = 339, normalized size = 0.8

$$-\frac{\sqrt{\pi}}{12\,d^3}\sqrt{b^{-1}}\left(-12\,\cos\left(\frac{a}{b}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\sqrt{b^{-1}}b}\right)\sqrt{2}c^2-12\,\sin\left(\frac{a}{b}\right)\mathrm{FresnelS}\left(\frac{\sqrt{2}\sqrt{a+b\arcsin\left(dx+c\right.}}{\sqrt{\pi}\sqrt{b^{-1}}b}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/(a+b*arcsin(d*x+c))^(1/2),x)
```

```
[Out] -1/12/d^3*Pi^(1/2)*(1/b)^(1/2)*(-12*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b
)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*c^2-12*sin(a/b)*FresnelS(2^(1/
2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*c^2+cos(3*a/b)
*FresnelC(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)
*3^(1/2)*2^(1/2)+sin(3*a/b)*FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(
a+b*arcsin(d*x+c))^(1/2)/b)*3^(1/2)*2^(1/2)+12*cos(2*a/b)*FresnelS(2/Pi^(1/
2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*c-12*sin(2*a/b)*FresnelC(2/Pi^(
1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*c-3*cos(a/b)*FresnelC(2^(1/2)
/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)-3*sin(a/b)*Fresn
elS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{\sqrt{b\arcsin\left(dx+c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(x^2/sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{\sqrt{a + b \operatorname{asin}(c + dx)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2/(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] Integral(x**2/sqrt(a + b*asin(c + d*x)), x)
```

Giac [A] time = 2.62234, size = 898, normalized size = 2.04

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] -sqrt(pi)*c^2*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) -
 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b)/((sqrt(2
)*b*i/sqrt(abs(b)) + sqrt(2)*sqrt(abs(b)))*d^3) + sqrt(pi)*c^2*erf(1/2*sqrt
```

```
(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(
d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((sqrt(2)*b*i/sqrt(abs(b)) - sqrt(
2)*sqrt(abs(b)))*d^3) + 1/2*sqrt(pi)*c*i*erf(sqrt(b*arcsin(d*x + c) + a)*sq
rt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b)/((b^(3/2
)*i/abs(b) - sqrt(b))*d^3) + 1/2*sqrt(pi)*c*i*erf(-sqrt(b*arcsin(d*x + c) +
 a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b)/(sq
rt(b)*d^3*(b*i/abs(b) + 1)) + 1/4*sqrt(pi)*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d
*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqr
t(b))*e^(3*a*i/b)/((sqrt(6)*b^(3/2)*i/abs(b) + sqrt(6)*sqrt(b))*d^3) - 1/4*
sqrt(pi)*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*
sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b)/((sqrt(2)*b*i
/sqrt(abs(b)) + sqrt(2)*sqrt(abs(b)))*d^3) + 1/4*sqrt(pi)*erf(1/2*sqrt(2)*s
qrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x +
 c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((sqrt(2)*b*i/sqrt(abs(b)) - sqrt(2)*sq
rt(abs(b)))*d^3) - 1/4*sqrt(pi)*erf(1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)
*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-3*
a*i/b)/((sqrt(6)*b^(3/2)*i/abs(b) - sqrt(6)*sqrt(b))*d^3)
```

3.164 $\int \frac{x}{\sqrt{a+b\sin^{-1}(c+dx)}}\,dx$

Optimal. Leaf size=211

$$-\frac{\sqrt{\pi}\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{2\sqrt{b}d^2}-\frac{\sqrt{2\pi}c\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}d^2}-\frac{\sqrt{2\pi}c\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}d^2}$$

```
[Out] -((c*Sqrt[2*Pi]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/
Sqrt[b]])/(Sqrt[b]*d^2)) + (Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqrt[a + b*Ar
cSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(2*Sqrt[b]*d^2) - (c*Sqrt[2*Pi]*Fresne
lS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(Sqrt[b]*d^2
) - (Sqrt[Pi]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*
Sin[(2*a)/b])/(2*Sqrt[b]*d^2)
```

Rubi [A] time = 0.451545, antiderivative size = 211, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 8, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {4805, 4747, 6741, 6742, 3354, 3352, 3351, 3353}

$$-\frac{\sqrt{\pi}\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{2\sqrt{b}d^2}-\frac{\sqrt{2\pi}c\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}d^2}-\frac{\sqrt{2\pi}c\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}d^2}$$

Antiderivative was successfully verified.

```
[In] Int[x/Sqrt[a + b*ArcSin[c + d*x]],x]
```


```
[Out] -((c*Sqrt[2*Pi]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/
Sqrt[b]])/(Sqrt[b]*d^2)) + (Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqrt[a + b*Ar
cSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(2*Sqrt[b]*d^2) - (c*Sqrt[2*Pi]*Fresne
lS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(Sqrt[b]*d^2
) - (Sqrt[Pi]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*
Sin[(2*a)/b])/(2*Sqrt[b]*d^2)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4747

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_.) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Dist[1/c^(m + 1), Subst[Int[(a + b*x)^n*Cos[x]*(c*d + e*Sin[x])^m
, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[m, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 3354

```
Int[Cos[(c_) + (d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Dist[Cos[c], Int
[Cos[d*(e + f*x)^2], x], x] - Dist[Sin[c], Int[Sin[d*(e + f*x)^2], x], x] /
; FreeQ[{c, d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3353

```
Int[Sin[(c_) + (d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Dist[Sin[c], Int
[Cos[d*(e + f*x)^2], x], x] + Dist[Cos[c], Int[Sin[d*(e + f*x)^2], x], x] /
; FreeQ[{c, d, e, f}, x]
```

Rubi steps

$$\int \frac{x}{\sqrt{a+b\sin^{-1}(c+dx)}}\,dx = \frac{\text{Subst}\left(\int \frac{-\frac{c}{d}+\frac{x}{d}}{\sqrt{a+b\sin^{-1}(x)}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{\cos(x)\left(-\frac{c}{d}+\frac{\sin(x)}{d}\right)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{d}$$

$$= -\frac{2\,\text{Subst}\left(\int \cos\left(\frac{a-x^2}{b}\right)\left(c+\sin\left(\frac{a-x^2}{b}\right)\right)dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2}$$

$$= -\frac{2\,\text{Subst}\left(\int \cos\left(\frac{a}{b}-\frac{x^2}{b}\right)\left(c+\sin\left(\frac{a-x^2}{b}\right)\right)dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2}$$

$$= -\frac{2\,\text{Subst}\left(\int \left(c\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)+\frac{1}{2}\sin\left(\frac{2a}{b}-\frac{2x^2}{b}\right)\right)dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2}$$

$$= -\frac{\text{Subst}\left(\int \sin\left(\frac{2a}{b}-\frac{2x^2}{b}\right)dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2} - \frac{(2c)\,\text{Subst}\left(\int \cos\left(\frac{a}{b}-\frac{x^2}{b}\right)dx, \ldots\right.}{bd^2}$$

$$= -\frac{\left(2c\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \cos\left(\frac{x^2}{b}\right)dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2} + \frac{\cos\left(\frac{2a}{b}\right)\text{Subst}\left(\int \sin\left(\ldots\right.\right.}{\ldots}$$

$$= -\frac{c\sqrt{2\pi}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}d^2} + \frac{\sqrt{\pi}\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{2\sqrt{b}d^2} - \frac{c\sqrt{2\pi}S\left(\frac{\sqrt{\frac{2}{\pi}}\ldots}{\ldots}\right.}{\ldots}$$

Mathematica [C] time = 0.639559, size = 224, normalized size = 1.06

$$\frac{\sqrt{\pi}\sqrt{\frac{1}{b}}\left(\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}}\right)-\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}}\right)\right)+\frac{ice^{-\frac{ia}{b}}\left(\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\,\text{Gamma}\left(\frac{1}{2},-\frac{i(a\ldots}{\ldots}\right.\right.}{\ldots}}{2d^2}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[x/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] ((I*c*(Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((-I)*(a + b*ArcSi
n[c + d*x]))/b] - E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma
```

```
[1/2, (I*(a + b*ArcSin[c + d*x]))/b]))/(E^((I*a)/b)*Sqrt[a + b*ArcSin[c + d
*x]]) + Sqrt[b^(-1)]*Sqrt[Pi]*(Cos[(2*a)/b]*FresnelS[(2*Sqrt[b^(-1)]*Sqrt[a
 + b*ArcSin[c + d*x]])/Sqrt[Pi]] - FresnelC[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcS
in[c + d*x]])/Sqrt[Pi]]*Sin[(2*a)/b]))/(2*d^2)
```

Maple [A] time = 0.065, size = 164, normalized size = 0.8

$$\frac{\sqrt{\pi}}{2\,d^2}\sqrt{b^{-1}}\left(-2\,\sqrt{2}\cos\left(\frac{a}{b}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\sqrt{b^{-1}}b}\right)c-2\,\sqrt{2}\sin\left(\frac{a}{b}\right)\mathrm{FresnelS}\left(\frac{\sqrt{2}\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\sqrt{b^{-1}}b}\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(a+b*arcsin(d*x+c))^(1/2),x)
```

```
[Out] 1/2/d^2*(1/b)^(1/2)*Pi^(1/2)*(-2*2^(1/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)
/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*c-2*2^(1/2)*sin(a/b)*FresnelS(2^(
1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*c+cos(2*a/b)*Fresnel
S(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)-sin(2*a/b)*FresnelC(2
/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{\sqrt{b\arcsin\left(dx+c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(x/sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{\sqrt{a + b \operatorname{asin}{(c + dx)}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] Integral(x/sqrt(a + b*asin(c + d*x)), x)
```

Giac [A] time = 2.19093, size = 429, normalized size = 2.03

$$\frac{\sqrt{\pi}c\,\mathrm{erf}\left(-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}i}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}\sqrt{|b|}}{2b}\right)e^{\left(\frac{ai}{b}\right)}}{\left(\frac{\sqrt{2}bi}{\sqrt{|b|}}+\sqrt{2}\sqrt{|b|}\right)d^2}-\frac{\sqrt{\pi}c\,\mathrm{erf}\left(\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}i}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}\sqrt{|b|}}{2b}\right)e^{\left(-\frac{ai}{b}\right)}}{\left(\frac{\sqrt{2}bi}{\sqrt{|b|}}-\sqrt{2}\sqrt{|b|}\right)d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] sqrt(pi)*c*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/
2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b)/((sqrt(2)*b
*i/sqrt(abs(b)) + sqrt(2)*sqrt(abs(b)))*d^2) - sqrt(pi)*c*erf(1/2*sqrt(2)*s
qrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x +
 c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((sqrt(2)*b*i/sqrt(abs(b)) - sqrt(2)*sq
rt(abs(b)))*d^2) - 1/4*sqrt(pi)*i*erf(sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i
/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b)/((b^(3/2)*i/abs
(b) - sqrt(b))*d^2) - 1/4*sqrt(pi)*i*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(
b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b)/(sqrt(b)*d^2
*(b*i/abs(b) + 1))
```

3.165 $\int \frac{1}{\sqrt{a+b\sin^{-1}(c+dx)}}\,dx$

Optimal. Leaf size=105

$$\frac{\sqrt{2\pi}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}d}+\frac{\sqrt{2\pi}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}d}$$

```
[Out] (Sqrt[2*Pi]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt
[b]])/(Sqrt[b]*d) + (Sqrt[2*Pi]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c +
d*x]])/Sqrt[b]]*Sin[a/b])/(Sqrt[b]*d)
```

Rubi [A] time = 0.12965, antiderivative size = 105, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {4803, 4623, 3306, 3305, 3351, 3304, 3352}

$$\frac{\sqrt{2\pi}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}d}+\frac{\sqrt{2\pi}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}d}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (Sqrt[2*Pi]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt
[b]])/(Sqrt[b]*d) + (Sqrt[2*Pi]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c +
d*x]])/Sqrt[b]]*Sin[a/b])/(Sqrt[b]*d)
```

Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{1}{\sqrt{a+b\sin^{-1}(c+dx)}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\sqrt{a+b\sin^{-1}(x)}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}-\frac{x}{b}\right)}{\sqrt{x}}\,dx, x, a+b\sin^{-1}(c+dx)\right)}{bd}$$

$$= \frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\cos\left(\frac{x}{b}\right)}{\sqrt{x}}\,dx, x, a+b\sin^{-1}(c+dx)\right)}{bd} + \frac{\sin\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\sin\left(\frac{x}{b}\right)}{\sqrt{x}}\,dx, x, a+b\,\text{si}\right.}{bd}$$

$$= \frac{\left(2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \cos\left(\frac{x^2}{b}\right)dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd} + \frac{\left(2\sin\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \sin\left(\frac{x^2}{b}\right.\right.}{b}$$

$$= \frac{\sqrt{2\pi}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}d} + \frac{\sqrt{2\pi}S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)\sin\left(\frac{a}{b}\right)}{\sqrt{b}d}$$

Mathematica [C] time = 0.0956151, size = 131, normalized size = 1.25

$$\frac{ie^{-\frac{ia}{b}}\left(e^{\frac{2ia}{b}}\sqrt{\frac{i(a+b\sin^{-1}(c+dx))}{b}}\text{Gamma}\left(\frac{1}{2},\frac{i(a+b\sin^{-1}(c+dx))}{b}\right)-\sqrt{-\frac{i(a+b\sin^{-1}(c+dx))}{b}}\text{Gamma}\left(\frac{1}{2},-\frac{i(a+b\sin^{-1}(c+dx))}{b}\right)\right)}{2d\sqrt{a+b\sin^{-1}(c+dx)}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[1/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] ((I/2)*(-(Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((-I)*(a + b*Ar
cSin[c + d*x]))/b]) + E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*G
amma[1/2, (I*(a + b*ArcSin[c + d*x]))/b]))/(d*E^((I*a)/b)*Sqrt[a + b*ArcSin
[c + d*x]])
```

Maple [A] time = 0.036, size = 87, normalized size = 0.8

$$\frac{\sqrt{2}\sqrt{\pi}}{d}\sqrt{b^{-1}}\left(\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{2}}{\sqrt{\pi}b}\sqrt{a+b\arcsin(dx+c)}\frac{1}{\sqrt{b^{-1}}}\right)+\sin\left(\frac{a}{b}\right)\text{FresnelS}\left(\frac{\sqrt{2}}{\sqrt{\pi}b}\sqrt{a+b\arcsin(dx+c)}\frac{1}{\sqrt{b}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c))^(1/2),x)
```

```
[Out] 2^(1/2)*Pi^(1/2)*(1/b)^(1/2)*(cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2
)*(a+b*arcsin(d*x+c))^(1/2)/b)+sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/
2)*(a+b*arcsin(d*x+c))^(1/2)/b))/d
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{b \arcsin(dx + c) + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a + b \operatorname{asin}(c + dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] Integral(1/sqrt(a + b*asin(c + d*x)), x)
```

Giac [A] time = 1.87453, size = 230, normalized size = 2.19

$$-\frac{\sqrt{\pi}\operatorname{erf}\left(-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}i}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}\sqrt{|b|}}{2b}\right)e^{\left(\frac{ai}{b}\right)}}{\left(\frac{\sqrt{2}bi}{\sqrt{|b|}}+\sqrt{2}\sqrt{|b|}\right)d}+\frac{\sqrt{\pi}\operatorname{erf}\left(\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}i}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}\sqrt{|b|}}{2b}\right)e^{\left(-\frac{ai}{b}\right)}}{\left(\frac{\sqrt{2}bi}{\sqrt{|b|}}-\sqrt{2}\sqrt{|b|}\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] -sqrt(pi)*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2
*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b)/((sqrt(2)*b*
i/sqrt(abs(b)) + sqrt(2)*sqrt(abs(b)))*d) + sqrt(pi)*erf(1/2*sqrt(2)*sqrt(b
*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) +
 a)*sqrt(abs(b))/b)*e^(-a*i/b)/((sqrt(2)*b*i/sqrt(abs(b)) - sqrt(2)*sqrt(ab
s(b)))*d)
```

3.166 $\int \frac{x}{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}\,dx$

Optimal. Leaf size=287

$$-\frac{2\sqrt{2\pi}c\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d^2}+\frac{2\sqrt{\pi}\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{b^{3/2}d^2}+\frac{2\sqrt{\pi}\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin}}{\sqrt{b}}\right.}{b^{3/2}d^2}$$

```
[Out] (2*c*Sqrt[1 - (c + d*x)^2])/(b*d^2*Sqrt[a + b*ArcSin[c + d*x]]) - (2*(c + d
*x)*Sqrt[1 - (c + d*x)^2])/(b*d^2*Sqrt[a + b*ArcSin[c + d*x]]) + (2*Sqrt[Pi
]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]
)/(b^(3/2)*d^2) + (2*c*Sqrt[2*Pi]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*
ArcSin[c + d*x]])/Sqrt[b]])/(b^(3/2)*d^2) - (2*c*Sqrt[2*Pi]*FresnelC[(Sqrt[
2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(b^(3/2)*d^2) + (2*Sq
rt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*
a)/b])/(b^(3/2)*d^2)
```

Rubi [A] time = 0.610907, antiderivative size = 287, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 10, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.625, Rules used = {4805, 4745, 4621, 4723, 3306, 3305, 3351, 3304, 3352, 4631}

$$-\frac{2\sqrt{2\pi}c\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d^2}+\frac{2\sqrt{\pi}\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{b^{3/2}d^2}+\frac{2\sqrt{\pi}\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin}}{\sqrt{b}}\right.}{b^{3/2}d^2}$$

Antiderivative was successfully verified.

```
[In] Int[x/(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (2*c*Sqrt[1 - (c + d*x)^2])/(b*d^2*Sqrt[a + b*ArcSin[c + d*x]]) - (2*(c + d
*x)*Sqrt[1 - (c + d*x)^2])/(b*d^2*Sqrt[a + b*ArcSin[c + d*x]]) + (2*Sqrt[Pi
]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]
)/(b^(3/2)*d^2) + (2*c*Sqrt[2*Pi]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*
ArcSin[c + d*x]])/Sqrt[b]])/(b^(3/2)*d^2) - (2*c*Sqrt[2*Pi]*FresnelC[(Sqrt[
2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(b^(3/2)*d^2) + (2*Sq
rt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*
a)/b])/(b^(3/2)*d^2)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4745

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_))^(m_.), x_Sy
mbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*ArcSin[c*x])^n, x], x] /; F
reeQ[{a, b, c, d, e}, x] && IGtQ[m, 0] && LtQ[n, -1]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rubi steps

$$\int \frac{x}{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{-\frac{c}{d}+\frac{x}{d}}{\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \left(-\frac{c}{d\left(a+b\sin^{-1}(x)\right)^{3/2}}+\frac{x}{d\left(a+b\sin^{-1}(x)\right)^{3/2}}\right)dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{x}{\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx, x, c+dx\right)}{d^2} - \frac{c\,\text{Subst}\left(\int \frac{1}{\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx, x, c+dx\right)}{d^2}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{bd^2\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{bd^2\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{2\,\text{Subst}\left(\int \frac{\cos(2x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+\right.}{bd^2}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{bd^2\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{bd^2\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{(2c)\,\text{Subst}\left(\int \frac{\sin(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(\right.}{bd^2}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{bd^2\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{bd^2\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{\left(2c\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{\sqrt{a+bx}}\,dx\right.}{bd^2}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{bd^2\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{bd^2\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{2\sqrt{\pi}\cos\left(\frac{2a}{b}\right)C\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right.}{b^{3/2}d^2}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{bd^2\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{bd^2\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{2\sqrt{\pi}\cos\left(\frac{2a}{b}\right)C\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right.}{b^{3/2}d^2}$$

Mathematica [C] time = 2.2409, size = 287, normalized size = 1.

$$\frac{2\sqrt{\pi}\left(\frac{1}{b}\right)^{3/2}\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}}\right) + \frac{-ce^{-\frac{ia}{b}}\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{1}{2},-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)-ce^{\frac{ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Ga}}{}}{d^2}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[x/(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (2*(b^(-1))^(3/2)*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[b^(-1)]*Sqrt[a + b
*ArcSin[c + d*x]])/Sqrt[Pi]] + (c/E^(I*ArcSin[c + d*x]) + c*E^(I*ArcSin[c +
 d*x]) - (c*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((-I)*(a + b*
ArcSin[c + d*x]))/b])/E^((I*a)/b) - c*E^((I*a)/b)*Sqrt[(I*(a + b*ArcSin[c +
 d*x]))/b]*Gamma[1/2, (I*(a + b*ArcSin[c + d*x]))/b] + 2*Sqrt[b^(-1)]*Sqrt[
Pi]*Sqrt[a + b*ArcSin[c + d*x]]*FresnelS[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[
c + d*x]])/Sqrt[Pi]]*Sin[(2*a)/b] - Sin[2*ArcSin[c + d*x]])/(b*Sqrt[a + b*A
rcSin[c + d*x]]))/d^2
```

Maple [A] time = 0.105, size = 301, normalized size = 1.1

$$\frac{1}{bd^2}\left(2\sqrt{2}\sqrt{b^{-1}}\sqrt{a+b\arcsin(dx+c)}\cos\left(\frac{a}{b}\right)\text{FresnelS}\left(\frac{\sqrt{2}\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\sqrt{b^{-1}}b}\right)\sqrt{\pi}c-2\sqrt{2}\sqrt{b^{-1}}\sqrt{a+b\arcsin(d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(a+b*arcsin(d*x+c))^(3/2),x)
```

```
[Out] 1/d^2/b*(2*2^(1/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelS(
2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*Pi^(1/2)*c-2*2^(1
/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2
)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*Pi^(1/2)*c+2*(1/b)^(1/2)*(a+b*ar
csin(d*x+c))^(1/2)*cos(2*a/b)*FresnelC(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d
*x+c))^(1/2)/b)*Pi^(1/2)+2*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(2*a/b)
*FresnelS(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*Pi^(1/2)+2*co
s((a+b*arcsin(d*x+c))/b-a/b)*c-sin(2*(a+b*arcsin(d*x+c))/b-2*a/b))/(a+b*arc
sin(d*x+c))^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{(b\arcsin(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(x/(b*arcsin(d*x + c) + a)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{(a + b \operatorname{asin}{(c + dx)})^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] Integral(x/(a + b*asin(c + d*x))**(3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{(b \arcsin(dx + c) + a)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(x/(b*arcsin(d*x + c) + a)^(3/2), x)
```

3.167 $\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}\,dx$

Optimal. Leaf size=144

$$\frac{2\sqrt{2\pi}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}-\frac{2\sqrt{2\pi}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}-\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}}$$

```
[Out] (-2*Sqrt[1 - (c + d*x)^2])/(b*d*Sqrt[a + b*ArcSin[c + d*x]]) - (2*Sqrt[2*Pi
]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(b^(
3/2)*d) + (2*Sqrt[2*Pi]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/S
qrt[b]]*Sin[a/b])/(b^(3/2)*d)
```

Rubi [A] time = 0.279042, antiderivative size = 144, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.571, Rules used = {4803, 4621, 4723, 3306, 3305, 3351, 3304, 3352}

$$\frac{2\sqrt{2\pi}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}-\frac{2\sqrt{2\pi}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}-\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(-3/2),x]
```

```
[Out] (-2*Sqrt[1 - (c + d*x)^2])/(b*d*Sqrt[a + b*ArcSin[c + d*x]]) - (2*Sqrt[2*Pi
]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(b^(
3/2)*d) + (2*Sqrt[2*Pi]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/S
qrt[b]]*Sin[a/b])/(b^(3/2)*d)
```

Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{2\,\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\sqrt{a+b\sin^{-1}(x)}}\,dx, x, c+dx\right)}{bd}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{2\,\text{Subst}\left(\int \frac{\sin(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{bd}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{\left(2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{bd} + \frac{(2\sin$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{\left(4\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \sin\left(\frac{x^2}{b}\right)\,dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{b^2d}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{2\sqrt{2\pi}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d} + \frac{2\sqrt{2\pi}C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin}}{\sqrt{b}}\right.}{b^{3/2}d}$$

Mathematica [C] time = 0.293278, size = 185, normalized size = 1.28

$$\frac{e^{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\left(e^{i\sin^{-1}(c+dx)}\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{1}{2},-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)+e^{\frac{ia}{b}}\left(e^{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Ga}\right.\right.}{bd\sqrt{a+b\sin^{-1}(c+dx)}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(-3/2),x]
```

```
[Out] (E^(I*ArcSin[c + d*x])*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((
-I)*(a + b*ArcSin[c + d*x]))/b] + E^((I*a)/b)*(-1 - E^((2*I)*ArcSin[c + d*x
]) + E^((I*(a + b*ArcSin[c + d*x]))/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*
Gamma[1/2, (I*(a + b*ArcSin[c + d*x]))/b]))/(b*d*E^((I*(a + b*ArcSin[c + d*
```

```
x]))/b)*Sqrt[a + b*ArcSin[c + d*x]])
```

Maple [A] time = 0.069, size = 161, normalized size = 1.1

$$-2\frac{1}{bd\sqrt{a+b\arcsin(dx+c)}}\left(\sqrt{b^{-1}}\sqrt{\pi}\sqrt{2}\sqrt{a+b\arcsin(dx+c)}\cos\left(\frac{a}{b}\right)\mathrm{FresnelS}\left(\frac{\sqrt{2}\sqrt{a+b\arcsin(dx+c)}}{\sqrt{b^{-1}}\sqrt{\pi}b}\right)-\sqrt{b^{-1}}\sqrt{\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c))^(3/2),x)
```

```
[Out] -2/d/b*((1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*Fre
snelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)-(1/b)^(1/2)
*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1
/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)+cos((a+b*arcsin(d*x+c))/b-a/b)
)/(a+b*arcsin(d*x+c))^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(b\arcsin(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(-3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a + b \operatorname{asin}{(c + dx)})^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**(-3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(b \arcsin(dx + c) + a)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(-3/2), x)
```

3.168 $\int \frac{x}{\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}\,dx$

Optimal. Leaf size=384

$$\frac{8\sqrt{\pi}\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{3b^{5/2}d^2}+\frac{4\sqrt{2\pi}c\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d^2}+\frac{4\sqrt{2\pi}c\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d^2}$$

```
[Out] (2*c*Sqrt[1 - (c + d*x)^2])/(3*b*d^2*(a + b*ArcSin[c + d*x])^(3/2)) - (2*(c
 + d*x)*Sqrt[1 - (c + d*x)^2])/(3*b*d^2*(a + b*ArcSin[c + d*x])^(3/2)) - 4/
(3*b^2*d^2*Sqrt[a + b*ArcSin[c + d*x]]) - (4*c*(c + d*x))/(3*b^2*d^2*Sqrt[a
 + b*ArcSin[c + d*x]]) + (8*(c + d*x)^2)/(3*b^2*d^2*Sqrt[a + b*ArcSin[c + d
*x]]) + (4*c*Sqrt[2*Pi]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c +
 d*x]])/Sqrt[b]])/(3*b^(5/2)*d^2) - (8*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sq
rt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(3*b^(5/2)*d^2) + (4*c*Sqrt
[2*Pi]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])
/(3*b^(5/2)*d^2) + (8*Sqrt[Pi]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sq
rt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(3*b^(5/2)*d^2)
```

Rubi [A] time = 0.89594, antiderivative size = 384, normalized size of antiderivative = 1., number of steps used = 22, number of rules used = 15, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.938, Rules used = {4805, 4745, 4621, 4719, 4623, 3306, 3305, 3351, 3304, 3352, 4633, 4635, 4406, 12, 4641}

$$\frac{8\sqrt{\pi}\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{3b^{5/2}d^2}+\frac{4\sqrt{2\pi}c\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d^2}+\frac{4\sqrt{2\pi}c\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d^2}$$

Antiderivative was successfully verified.

```
[In] Int[x/(a + b*ArcSin[c + d*x])^(5/2),x]
```


```
[Out] (2*c*Sqrt[1 - (c + d*x)^2])/(3*b*d^2*(a + b*ArcSin[c + d*x])^(3/2)) - (2*(c
 + d*x)*Sqrt[1 - (c + d*x)^2])/(3*b*d^2*(a + b*ArcSin[c + d*x])^(3/2)) - 4/
(3*b^2*d^2*Sqrt[a + b*ArcSin[c + d*x]]) - (4*c*(c + d*x))/(3*b^2*d^2*Sqrt[a
 + b*ArcSin[c + d*x]]) + (8*(c + d*x)^2)/(3*b^2*d^2*Sqrt[a + b*ArcSin[c + d
*x]]) + (4*c*Sqrt[2*Pi]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c +
 d*x]])/Sqrt[b]])/(3*b^(5/2)*d^2) - (8*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sq
```

```
rt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(3*b^(5/2)*d^2) + (4*c*Sqrt
[2*Pi]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])
/(3*b^(5/2)*d^2) + (8*Sqrt[Pi]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sq
rt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(3*b^(5/2)*d^2)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4745

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_))^(m_.), x_Sy
mbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*ArcSin[c*x])^n, x], x] /; F
reeQ[{a, b, c, d, e}, x] && IGtQ[m, 0] && LtQ[n, -1]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4633

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (Dis
t[(c*(m + 1))/(b*(n + 1)), Int[(x^(m + 1)*(a + b*ArcSin[c*x])^(n + 1))/Sqrt
[1 - c^2*x^2], x], x] - Dist[m/(b*c*(n + 1)), Int[(x^(m - 1)*(a + b*ArcSin[
c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{x}{\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{-\frac{c}{d}+\frac{x}{d}}{\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx,x,c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \left(-\frac{c}{d\left(a+b\sin^{-1}(x)\right)^{5/2}}+\frac{x}{d\left(a+b\sin^{-1}(x)\right)^{5/2}}\right)dx,x,c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{x}{\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx,x,c+dx\right)}{d^2} - \frac{c\,\text{Subst}\left(\int \frac{1}{\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx,x,c+dx\right)}{d^2}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{2\,\text{Subst}\left(\int \frac{1}{\sqrt{1-x^2}\left(a+b\sin^{-1}\right.}\right.}{3bd^2}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4}{3b^2d^2\sqrt{a+b\sin^{-1}(c+dx}}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4}{3b^2d^2\sqrt{a+b\sin^{-1}(c+dx}}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4}{3b^2d^2\sqrt{a+b\sin^{-1}(c+dx}}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4}{3b^2d^2\sqrt{a+b\sin^{-1}(c+dx}}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4}{3b^2d^2\sqrt{a+b\sin^{-1}(c+dx}}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4}{3b^2d^2\sqrt{a+b\sin^{-1}(c+dx}}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4}{3b^2d^2\sqrt{a+b\sin^{-1}(c+dx}}$$

Mathematica [C] time = 2.70806, size = 392, normalized size = 1.02

$$2bce^{-\frac{ia}{b}}\left(-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)+ce^{-i\sin^{-1}(c+dx)}\left(2be^{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\left(\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{3/2}\text{Gam}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[x/(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] (-4*a*Cos[2*ArcSin[c + d*x]] - 4*b*ArcSin[c + d*x]*Cos[2*ArcSin[c + d*x]] -
 8*Sqrt[b^(-1)]*Sqrt[Pi]*(a + b*ArcSin[c + d*x])^(3/2)*Cos[(2*a)/b]*Fresnel
S[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi]] + (2*b*c*(((-I)*(a
 + b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1/2, ((-I)*(a + b*ArcSin[c + d*x]))/b
])/E^((I*a)/b) + (c*((-2*I)*a + b + (2*I)*a*E^((2*I)*ArcSin[c + d*x]) + b*E
^((2*I)*ArcSin[c + d*x]) + (2*I)*b*(-1 + E^((2*I)*ArcSin[c + d*x]))*ArcSin[
c + d*x] + 2*b*E^((I*(a + b*ArcSin[c + d*x]))/b)*((I*(a + b*ArcSin[c + d*x]
))/b)^(3/2)*Gamma[1/2, (I*(a + b*ArcSin[c + d*x]))/b]))/E^(I*ArcSin[c + d*x
]) + 8*Sqrt[b^(-1)]*Sqrt[Pi]*(a + b*ArcSin[c + d*x])^(3/2)*FresnelC[(2*Sqrt
[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi]]*Sin[(2*a)/b] - b*Sin[2*ArcS
in[c + d*x]])/(3*b^2*d^2*(a + b*ArcSin[c + d*x])^(3/2))
```

Maple [B] time = 0.133, size = 681, normalized size = 1.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(a+b*arcsin(d*x+c))^(5/2),x)
```

```
[Out] -1/3/d^2/b^2/(a+b*arcsin(d*x+c))^(3/2)*(-4*arcsin(d*x+c)*2^(1/2)*(1/b)^(1/2
)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/
b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b*c-4*arcsin(d*x+c)*2^(1/2)*(1/b)^(1/
2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1
/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b*c-4*2^(1/2)*(1/b)^(1/2)*Pi^(1/2)*(
a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+
b*arcsin(d*x+c))^(1/2)/b)*a*c-4*2^(1/2)*(1/b)^(1/2)*Pi^(1/2)*(a+b*arcsin(d*
x+c))^(1/2)*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+
c))^(1/2)/b)*a*c+8*arcsin(d*x+c)*Pi^(1/2)*(1/b)^(1/2)*cos(2*a/b)*FresnelS(2
/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+c))^(1/2
```

```
)*b-8*arcsin(d*x+c)*Pi^(1/2)*(1/b)^(1/2)*sin(2*a/b)*FresnelC(2/Pi^(1/2)/(1/
b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+c))^(1/2)*b+8*Pi^(1/2
)*(1/b)^(1/2)*cos(2*a/b)*FresnelS(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c)
)^(1/2)/b)*(a+b*arcsin(d*x+c))^(1/2)*a-8*Pi^(1/2)*(1/b)^(1/2)*sin(2*a/b)*Fr
esnelC(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+
c))^(1/2)*a+4*arcsin(d*x+c)*sin((a+b*arcsin(d*x+c))/b-a/b)*b*c+4*arcsin(d*x
+c)*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*b-2*cos((a+b*arcsin(d*x+c))/b-a/b)*b
*c+4*sin((a+b*arcsin(d*x+c))/b-a/b)*a*c+sin(2*(a+b*arcsin(d*x+c))/b-2*a/b)*
b+4*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{(b \arcsin{(dx + c)} + a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(x/(b*arcsin(d*x + c) + a)^(5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{(a + b \operatorname{asin}{(c + dx)})^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*asin(d*x+c))**(5/2),x)
```

```
[Out] Integral(x/(a + b*asin(c + d*x))**(5/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{(b\arcsin(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(x/(b*arcsin(d*x + c) + a)^(5/2), x)
```

3.169 $\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}\,dx$

Optimal. Leaf size=179

$$-\frac{4\sqrt{2\pi}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d}-\frac{4\sqrt{2\pi}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d}+\frac{4(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}}-\frac{}{3bd}$$

```
[Out] (-2*Sqrt[1 - (c + d*x)^2])/(3*b*d*(a + b*ArcSin[c + d*x])^(3/2)) + (4*(c +
d*x))/(3*b^2*d*Sqrt[a + b*ArcSin[c + d*x]]) - (4*Sqrt[2*Pi]*Cos[a/b]*Fresne
lC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(3*b^(5/2)*d) - (4*Sq
rt[2*Pi]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b
])/(3*b^(5/2)*d)
```

Rubi [A] time = 0.279322, antiderivative size = 179, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 9, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.643, Rules used = {4803, 4621, 4719, 4623, 3306, 3305, 3351, 3304, 3352}

$$-\frac{4\sqrt{2\pi}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d}-\frac{4\sqrt{2\pi}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d}+\frac{4(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}}-\frac{}{3bd}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(-5/2),x]
```

```
[Out] (-2*Sqrt[1 - (c + d*x)^2])/(3*b*d*(a + b*ArcSin[c + d*x])^(3/2)) + (4*(c +
d*x))/(3*b^2*d*Sqrt[a + b*ArcSin[c + d*x]]) - (4*Sqrt[2*Pi]*Cos[a/b]*Fresne
lC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(3*b^(5/2)*d) - (4*Sq
rt[2*Pi]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b
])/(3*b^(5/2)*d)
```

Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{2\,\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx, x, c+dx\right)}{3bd}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{4(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{4\,\text{Subst}\left(\int \frac{1}{\sqrt{a+b\sin^{-1}(x)}}\,dx,\right.}{3b^2d}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{4(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{4\,\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}-\frac{x}{b}\right)}{\sqrt{x}}\,dx, x,\right.}{3b^3d}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{4(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{\left(4\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{x}{b}\right)}{\sqrt{x}}\right.}{3b}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{4(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{\left(8\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \cos\left(\right.\right.}{}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{4(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{4\sqrt{2\pi}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin}}{\sqrt{b}}\right.}{3b^{5/2}d}$$

Mathematica [C] time = 0.947179, size = 238, normalized size = 1.33

$$\frac{e^{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\left(-2be^{i\sin^{-1}(c+dx)}\left(-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)-ie^{\frac{ia}{b}}\left(-2ibe^{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\left(\frac{i\left(a+b\sin^{-1}\right.}{b}\right.\right.\right.}{3b^2d\left(a+b\right.}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(-5/2),x]
```

```
[Out] (-2*b*E^(I*ArcSin[c + d*x])*(((-I)*(a + b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[
1/2, ((-I)*(a + b*ArcSin[c + d*x]))/b] - I*E^((I*a)/b)*(2*a*(-1 + E^((2*I)*
ArcSin[c + d*x])) + b*(-I - 2*ArcSin[c + d*x] + E^((2*I)*ArcSin[c + d*x])*(
-I + 2*ArcSin[c + d*x])) - (2*I)*b*E^((I*(a + b*ArcSin[c + d*x]))/b)*((I*(a
 + b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1/2, (I*(a + b*ArcSin[c + d*x]))/b]))
/(3*b^2*d*E^((I*(a + b*ArcSin[c + d*x]))/b)*(a + b*ArcSin[c + d*x])^(3/2))
```

Maple [B] time = 0.079, size = 355, normalized size = 2.

$$\frac{2}{3\,b^2 d}\left(-2\,\arcsin\left(dx+c\right)\sqrt{2}\sqrt{\pi}\sqrt{b^{-1}}\sqrt{a+b\arcsin\left(dx+c\right)}\cos\left(\frac{a}{b}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\sqrt{b^{-1}}b}\right)b-2\,\mathrm{arcsi}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c))^(5/2),x)
```

```
[Out] 2/3/d/b^2*(-2*arcsin(d*x+c)*2^(1/2)*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+c)
)^(1/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^
(1/2)/b)*b-2*arcsin(d*x+c)*2^(1/2)*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+c))
^(1/2)*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(
1/2)/b)*b-2*2^(1/2)*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)
*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*a-2*2^(
1/2)*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelS(2^(1/
2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*a+2*arcsin(d*x+c)*sin(
(a+b*arcsin(d*x+c))/b-a/b)*b-cos((a+b*arcsin(d*x+c))/b-a/b)*b+2*sin((a+b*ar
csin(d*x+c))/b-a/b)*a)/(a+b*arcsin(d*x+c))^(3/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b\arcsin\left(dx+c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(-5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a + b\,\mathrm{asin}\,(c + dx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c))**(5/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**(-5/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(b \arcsin(dx + c) + a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(-5/2), x)
```

3.170 $\int \frac{x}{\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}\,dx$

Optimal. Leaf size=468

$$\frac{8\sqrt{2\pi}c\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{15b^{7/2}d^2}-\frac{32\sqrt{\pi}\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{15b^{7/2}d^2}-\frac{32\sqrt{\pi}\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{15b^{7/2}d^2}$$

```
[Out] (2*c*Sqrt[1 - (c + d*x)^2])/(5*b*d^2*(a + b*ArcSin[c + d*x])^(5/2)) - (2*(c
 + d*x)*Sqrt[1 - (c + d*x)^2])/(5*b*d^2*(a + b*ArcSin[c + d*x])^(5/2)) - 4/
(15*b^2*d^2*(a + b*ArcSin[c + d*x])^(3/2)) - (4*c*(c + d*x))/(15*b^2*d^2*(a
 + b*ArcSin[c + d*x])^(3/2)) + (8*(c + d*x)^2)/(15*b^2*d^2*(a + b*ArcSin[c
+ d*x])^(3/2)) - (8*c*Sqrt[1 - (c + d*x)^2])/(15*b^3*d^2*Sqrt[a + b*ArcSin[
c + d*x]]) + (32*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(15*b^3*d^2*Sqrt[a + b*Ar
cSin[c + d*x]]) - (32*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*ArcSin[c
 + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(15*b^(7/2)*d^2) - (8*c*Sqrt[2*Pi]*Cos[a/b]*
FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(15*b^(7/2)*d^2
) + (8*c*Sqrt[2*Pi]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[
b]]*Sin[a/b])/(15*b^(7/2)*d^2) - (32*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin
[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(15*b^(7/2)*d^2)
```

Rubi [A] time = 1.064, antiderivative size = 468, normalized size of antiderivative = 1., number of steps used = 21, number of rules used = 13, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.812, Rules used = {4805, 4745, 4621, 4719, 4723, 3306, 3305, 3351, 3304, 3352, 4633, 4631, 4641}

$$\frac{8\sqrt{2\pi}c\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{15b^{7/2}d^2}-\frac{32\sqrt{\pi}\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{15b^{7/2}d^2}-\frac{32\sqrt{\pi}\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{15b^{7/2}d^2}$$

Antiderivative was successfully verified.

```
[In] Int[x/(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] (2*c*Sqrt[1 - (c + d*x)^2])/(5*b*d^2*(a + b*ArcSin[c + d*x])^(5/2)) - (2*(c
 + d*x)*Sqrt[1 - (c + d*x)^2])/(5*b*d^2*(a + b*ArcSin[c + d*x])^(5/2)) - 4/
(15*b^2*d^2*(a + b*ArcSin[c + d*x])^(3/2)) - (4*c*(c + d*x))/(15*b^2*d^2*(a
 + b*ArcSin[c + d*x])^(3/2)) + (8*(c + d*x)^2)/(15*b^2*d^2*(a + b*ArcSin[c
```

```
+ d*x])^(3/2)) - (8*c*Sqrt[1 - (c + d*x)^2])/(15*b^3*d^2*Sqrt[a + b*ArcSin[
c + d*x]]) + (32*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(15*b^3*d^2*Sqrt[a + b*Ar
cSin[c + d*x]]) - (32*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*ArcSin[c
 + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(15*b^(7/2)*d^2) - (8*c*Sqrt[2*Pi]*Cos[a/b]*
FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(15*b^(7/2)*d^2
) + (8*c*Sqrt[2*Pi]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[
b]]*Sin[a/b])/(15*b^(7/2)*d^2) - (32*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin
[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(15*b^(7/2)*d^2)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4745

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_))^(m_.), x_Sy
mbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*ArcSin[c*x])^n, x], x] /; F
reeQ[{a, b, c, d, e}, x] && IGtQ[m, 0] && LtQ[n, -1]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4633

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (Dis
t[(c*(m + 1))/(b*(n + 1)), Int[(x^(m + 1)*(a + b*ArcSin[c*x])^(n + 1))/Sqrt
[1 - c^2*x^2], x], x] - Dist[m/(b*c*(n + 1)), Int[(x^(m - 1)*(a + b*ArcSin[
c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
```

```
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{x}{\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}\,dx = \frac{\text{Subst}\left(\int \frac{-\frac{c}{d}+\frac{x}{d}}{\left(a+b\sin^{-1}(x)\right)^{7/2}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \left(-\frac{c}{d\left(a+b\sin^{-1}(x)\right)^{7/2}}+\frac{x}{d\left(a+b\sin^{-1}(x)\right)^{7/2}}\right)dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{x}{\left(a+b\sin^{-1}(x)\right)^{7/2}}\,dx, x, c+dx\right)}{d^2} - \frac{c\,\text{Subst}\left(\int \frac{1}{\left(a+b\sin^{-1}(x)\right)^{7/2}}\,dx, x, c+dx\right)}{d^2}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{2\,\text{Subst}\left(\int \frac{1}{\sqrt{1-x^2}\left(a+b\sin\right.}\right.}{5bd}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{4}{15b^2d^2\left(a+b\sin^{-1}(c+\right.}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{4}{15b^2d^2\left(a+b\sin^{-1}(c+\right.}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{4}{15b^2d^2\left(a+b\sin^{-1}(c+\right.}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{4}{15b^2d^2\left(a+b\sin^{-1}(c+\right.}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{4}{15b^2d^2\left(a+b\sin^{-1}(c+\right.}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{4}{15b^2d^2\left(a+b\sin^{-1}(c+\right.}$$

Mathematica [C] time = 1.8565, size = 524, normalized size = 1.12

$$-2\left(-16a^2\sin\left(2\sin^{-1}(c+dx)\right)+32\sqrt{\pi}\sqrt{\frac{1}{b}}\cos\left(\frac{2a}{b}\right)\left(a+b\sin^{-1}(c+dx)\right)^{5/2}\text{FresnelC}\left(\frac{2\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}}\right)+32\sqrt{\pi}\sqrt{\frac{1}{b}}\,\text{s}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[x/(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] (-(c*(-6*b^2*E^(I*ArcSin[c + d*x]) + (4*(a + b*ArcSin[c + d*x])*(E^((I*(a +
 b*ArcSin[c + d*x]))/b)*(2*a - I*b + 2*b*ArcSin[c + d*x]) - (2*I)*b*(((-I)*
(a + b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1/2, ((-I)*(a + b*ArcSin[c + d*x]))
/b]))/E^((I*a)/b) + (8*a^2 + 4*a*b*(I + 4*ArcSin[c + d*x]) + 2*b^2*(-3 + (2
*I)*ArcSin[c + d*x] + 4*ArcSin[c + d*x]^2) - 8*E^((I*(a + b*ArcSin[c + d*x]
))/b)*(a + b*ArcSin[c + d*x])^2*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[1
/2, (I*(a + b*ArcSin[c + d*x]))/b])/E^(I*ArcSin[c + d*x]))) - 2*(4*a*b*Cos[
2*ArcSin[c + d*x]] + 4*b^2*ArcSin[c + d*x]*Cos[2*ArcSin[c + d*x]] + 32*Sqrt
[b^(-1)]*Sqrt[Pi]*(a + b*ArcSin[c + d*x])^(5/2)*Cos[(2*a)/b]*FresnelC[(2*Sq
rt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi]] + 32*Sqrt[b^(-1)]*Sqrt[Pi
]*(a + b*ArcSin[c + d*x])^(5/2)*FresnelS[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[
c + d*x]])/Sqrt[Pi]]*Sin[(2*a)/b] - 16*a^2*Sin[2*ArcSin[c + d*x]] + 3*b^2*S
in[2*ArcSin[c + d*x]] - 32*a*b*ArcSin[c + d*x]*Sin[2*ArcSin[c + d*x]] - 16*
b^2*ArcSin[c + d*x]^2*Sin[2*ArcSin[c + d*x]]))/(30*b^3*d^2*(a + b*ArcSin[c
+ d*x])^(5/2))
```

Maple [B] time = 0.167, size = 1172, normalized size = 2.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(a+b*arcsin(d*x+c))^(7/2),x)
```

```
[Out] 1/15/d^2/b^3*(-8*arcsin(d*x+c)^2*2^(1/2)*(1/b)^(1/2)*Pi^(1/2)*cos(a/b)*Fres
nelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(
d*x+c))^(1/2)*b^2*c+8*arcsin(d*x+c)^2*2^(1/2)*(1/b)^(1/2)*Pi^(1/2)*sin(a/b)
*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*ar
csin(d*x+c))^(1/2)*b^2*c-16*arcsin(d*x+c)*2^(1/2)*(1/b)^(1/2)*Pi^(1/2)*cos(
a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+
```

```
b*arcsin(d*x+c))^(1/2)*a*b*c+16*arcsin(d*x+c)*2^(1/2)*(1/b)^(1/2)*Pi^(1/2)*
sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)
*(a+b*arcsin(d*x+c))^(1/2)*a*b*c-32*arcsin(d*x+c)^2*Pi^(1/2)*(1/b)^(1/2)*co
s(2*a/b)*FresnelC(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*
arcsin(d*x+c))^(1/2)*b^2-32*arcsin(d*x+c)^2*Pi^(1/2)*(1/b)^(1/2)*sin(2*a/b)
*FresnelS(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d
*x+c))^(1/2)*b^2-8*2^(1/2)*(1/b)^(1/2)*Pi^(1/2)*cos(a/b)*FresnelS(2^(1/2)/P
i^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+c))^(1/2)*
a^2*c+8*2^(1/2)*(1/b)^(1/2)*Pi^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/
b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+c))^(1/2)*a^2*c-64*ar
csin(d*x+c)*Pi^(1/2)*(1/b)^(1/2)*cos(2*a/b)*FresnelC(2/Pi^(1/2)/(1/b)^(1/2)
*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+c))^(1/2)*a*b-64*arcsin(d*x+c
)*Pi^(1/2)*(1/b)^(1/2)*sin(2*a/b)*FresnelS(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcs
in(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+c))^(1/2)*a*b-32*Pi^(1/2)*(1/b)^(1/2)*c
os(2*a/b)*FresnelC(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b
*arcsin(d*x+c))^(1/2)*a^2-32*Pi^(1/2)*(1/b)^(1/2)*sin(2*a/b)*FresnelS(2/Pi^
(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+c))^(1/2)*a^
2-8*arcsin(d*x+c)^2*cos((a+b*arcsin(d*x+c))/b-a/b)*b^2*c+16*arcsin(d*x+c)^2
*sin(2*(a+b*arcsin(d*x+c))/b-2*a/b)*b^2-16*arcsin(d*x+c)*cos((a+b*arcsin(d*
x+c))/b-a/b)*a*b*c-4*arcsin(d*x+c)*sin((a+b*arcsin(d*x+c))/b-a/b)*b^2*c+32*
arcsin(d*x+c)*sin(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a*b-4*arcsin(d*x+c)*cos(2*
(a+b*arcsin(d*x+c))/b-2*a/b)*b^2-8*cos((a+b*arcsin(d*x+c))/b-a/b)*a^2*c+6*c
os((a+b*arcsin(d*x+c))/b-a/b)*b^2*c-4*sin((a+b*arcsin(d*x+c))/b-a/b)*a*b*c+
16*sin(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a^2-3*sin(2*(a+b*arcsin(d*x+c))/b-2*a
/b)*b^2-4*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a*b)/(a+b*arcsin(d*x+c))^(5/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{(b\arcsin(dx+c)+a)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate(x/(b*arcsin(d*x + c) + a)^(7/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*asin(d*x+c))**(7/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{(b \arcsin (dx + c) + a)^{\frac{7}{2}}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="giac")
```

```
[Out] integrate(x/(b*arcsin(d*x + c) + a)^(7/2), x)
```

3.171 $\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}\,dx$

Optimal. Leaf size=218

$$-\frac{8\sqrt{2\pi}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{15b^{7/2}d}+\frac{8\sqrt{2\pi}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{15b^{7/2}d}+\frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}+$$

```
[Out] (-2*Sqrt[1 - (c + d*x)^2])/(5*b*d*(a + b*ArcSin[c + d*x])^(5/2)) + (4*(c +
d*x))/(15*b^2*d*(a + b*ArcSin[c + d*x])^(3/2)) + (8*Sqrt[1 - (c + d*x)^2])/
(15*b^3*d*Sqrt[a + b*ArcSin[c + d*x]]) + (8*Sqrt[2*Pi]*Cos[a/b]*FresnelS[(S
qrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(15*b^(7/2)*d) - (8*Sqrt[2
*Pi]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(
15*b^(7/2)*d)
```

Rubi [A] time = 0.42953, antiderivative size = 218, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 9, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.643, Rules used = {4803, 4621, 4719, 4723, 3306, 3305, 3351, 3304, 3352}

$$-\frac{8\sqrt{2\pi}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{15b^{7/2}d}+\frac{8\sqrt{2\pi}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{15b^{7/2}d}+\frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}+$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(-7/2),x]
```


```
[Out] (-2*Sqrt[1 - (c + d*x)^2])/(5*b*d*(a + b*ArcSin[c + d*x])^(5/2)) + (4*(c +
d*x))/(15*b^2*d*(a + b*ArcSin[c + d*x])^(3/2)) + (8*Sqrt[1 - (c + d*x)^2])/
(15*b^3*d*Sqrt[a + b*ArcSin[c + d*x]]) + (8*Sqrt[2*Pi]*Cos[a/b]*FresnelS[(S
qrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(15*b^(7/2)*d) - (8*Sqrt[2
*Pi]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(
15*b^(7/2)*d)
```


Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
```

```
}, x]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\sin^{-1}(x)\right)^{7/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{2\,\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx, x, c+dx\right)}{5bd}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4\,\text{Subst}\left(\int \frac{1}{\left(a+b\sin^{-1}(x)\right)^{3}}\right.}{15b^2d}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{8\sqrt{1-(c+dx)^2}}{15b^3d\sqrt{a+b\sin^{-1}(c+}}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{8\sqrt{1-(c+dx)^2}}{15b^3d\sqrt{a+b\sin^{-1}(c+}}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{8\sqrt{1-(c+dx)^2}}{15b^3d\sqrt{a+b\sin^{-1}(c+}}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{8\sqrt{1-(c+dx)^2}}{15b^3d\sqrt{a+b\sin^{-1}(c+}}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{8\sqrt{1-(c+dx)^2}}{15b^3d\sqrt{a+b\sin^{-1}(c+}}$$

Mathematica [C] time = 0.800962, size = 287, normalized size = 1.32

$$e^{-i\sin^{-1}(c+dx)}\left(-8e^{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\left(a+b\sin^{-1}(c+dx)\right)^2\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{1}{2},\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)+8a^2+4ab\left(4\sin^{-1}\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(-7/2),x]
```

```
[Out] (-6*b^2*E^(I*ArcSin[c + d*x]) + (4*(a + b*ArcSin[c + d*x])*(E^((I*(a + b*Ar
cSin[c + d*x]))/b)*(2*a + b*(-I + 2*ArcSin[c + d*x])) - (2*I)*b*(((-I)*(a +
 b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1/2, ((-I)*(a + b*ArcSin[c + d*x]))/b])
)/E^((I*a)/b) + (8*a^2 + 4*a*b*(I + 4*ArcSin[c + d*x]) + 2*b^2*(-3 + (2*I)*
ArcSin[c + d*x] + 4*ArcSin[c + d*x]^2) - 8*E^((I*(a + b*ArcSin[c + d*x]))/b
)*(a + b*ArcSin[c + d*x])^2*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2,
(I*(a + b*ArcSin[c + d*x]))/b])/E^(I*ArcSin[c + d*x]))/(30*b^3*d*(a + b*Arc
Sin[c + d*x])^(5/2))
```

Maple [B] time = 0.096, size = 600, normalized size = 2.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c))^(7/2),x)
```

```
[Out] 2/15/d/b^3*(4*arcsin(d*x+c)^2*(1/b)^(1/2)*2^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+
c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c)
)^(1/2)/b)*b^2-4*arcsin(d*x+c)^2*(1/b)^(1/2)*2^(1/2)*Pi^(1/2)*(a+b*arcsin(d
*x+c))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x
+c))^(1/2)/b)*b^2+8*arcsin(d*x+c)*(1/b)^(1/2)*2^(1/2)*Pi^(1/2)*(a+b*arcsin(
d*x+c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*
x+c))^(1/2)/b)*a*b-8*arcsin(d*x+c)*(1/b)^(1/2)*2^(1/2)*Pi^(1/2)*(a+b*arcsin
(d*x+c))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d
*x+c))^(1/2)/b)*a*b+4*(1/b)^(1/2)*2^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2
)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/
b)*a^2-4*(1/b)^(1/2)*2^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*Fr
esnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*a^2+4*arcs
in(d*x+c)^2*cos((a+b*arcsin(d*x+c))/b-a/b)*b^2+8*arcsin(d*x+c)*cos((a+b*arc
sin(d*x+c))/b-a/b)*a*b+2*arcsin(d*x+c)*sin((a+b*arcsin(d*x+c))/b-a/b)*b^2+4
*cos((a+b*arcsin(d*x+c))/b-a/b)*a^2-3*cos((a+b*arcsin(d*x+c))/b-a/b)*b^2+2*
sin((a+b*arcsin(d*x+c))/b-a/b)*a*b)/(a+b*arcsin(d*x+c))^(5/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(b\arcsin(dx+c)+a)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(-7/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c))**(7/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b \arcsin\left(dx + c\right) + a\right)^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(-7/2), x)
```

3.172 $\int x^m \left(a+b\sin^{-1}(c+dx)\right)^n \, dx$

Optimal. Leaf size=18

$$\text{Unintegrable}\left(x^m \left(a+b\sin^{-1}(c+dx)\right)^n,x\right)$$

```
[Out] Unintegrable[x^m*(a + b*ArcSin[c + d*x])^n, x]
```

Rubi [A] time = 0.0539602, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int x^m \left(a+b\sin^{-1}(c+dx)\right)^n \, dx$$

Verification is Not applicable to the result.

```
[In] Int[x^m*(a + b*ArcSin[c + d*x])^n,x]
```

```
[Out] Defer[Subst][Defer[Int][(-(c/d) + x/d)^m*(a + b*ArcSin[x])^n, x], x, c + d*
x]/d
```

Rubi steps

$$\int x^m \left(a+b\sin^{-1}(c+dx)\right)^n \, dx = \frac{\text{Subst}\left(\int \left(-\frac{c}{d}+\frac{x}{d}\right)^m \left(a+b\sin^{-1}(x)\right)^n \, dx,x,c+dx\right)}{d}$$

Mathematica [A] time = 0.466689, size = 0, normalized size = 0.

$$\int x^m \left(a+b\sin^{-1}(c+dx)\right)^n \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x^m*(a + b*ArcSin[c + d*x])^n,x]
```

```
[Out] Integrate[x^m*(a + b*ArcSin[c + d*x])^n, x]
```

Maple [A] time = 1.419, size = 0, normalized size = 0.

$$\int x^{m} \left(a+b \arcsin \left(d x+c\right)\right)^{n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a+b*arcsin(d*x+c))^n,x)
```

```
[Out] int(x^m*(a+b*arcsin(d*x+c))^n,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int (b \arcsin\left(dx+c\right)+a)^{n} x^{m}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(d*x+c))^n,x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^n*x^m, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left((b \arcsin\left(dx+c\right)+a)^{n} x^{m}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(d*x+c))^n,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(d*x + c) + a)^n*x^m, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int x^{m} \left(a+b \operatorname{asin}\left(c+dx\right)\right)^{n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(a+b*asin(d*x+c))**n,x)
```

```
[Out] Integral(x**m*(a + b*asin(c + d*x))**n, x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(d*x+c))^n,x, algorithm="giac")
```

```
[Out] Timed out
```

3.173 $\int x^2 \left(a+b\sin^{-1}(c+dx)\right)^n \, dx$

Optimal. Leaf size=611

$$-\frac{ic^2 e^{-\frac{ia}{b}} \left(a+b\sin^{-1}(c+dx)\right)^n \left(-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{-n} \text{Gamma}\left(n+1,-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{2d^3} + \frac{ic^2 e^{\frac{ia}{b}} \left(a+b\sin^{-1}(c+dx)\right)^n \left(\frac{i(\cdots}{\cdots}\right.}{\cdots}$$

```
[Out] ((-I/8)*(a + b*ArcSin[c + d*x])^n*Gamma[1 + n, ((-I)*(a + b*ArcSin[c + d*x]
))/b])/(d^3*E^((I*a)/b)*(((-I)*(a + b*ArcSin[c + d*x]))/b)^n) - ((I/2)*c^2*
(a + b*ArcSin[c + d*x])^n*Gamma[1 + n, ((-I)*(a + b*ArcSin[c + d*x]))/b])/(
d^3*E^((I*a)/b)*(((-I)*(a + b*ArcSin[c + d*x]))/b)^n) + ((I/8)*E^((I*a)/b)*
(a + b*ArcSin[c + d*x])^n*Gamma[1 + n, (I*(a + b*ArcSin[c + d*x]))/b])/(d^3
*((I*(a + b*ArcSin[c + d*x]))/b)^n) + ((I/2)*c^2*E^((I*a)/b)*(a + b*ArcSin[
c + d*x])^n*Gamma[1 + n, (I*(a + b*ArcSin[c + d*x]))/b])/(d^3*((I*(a + b*Ar
cSin[c + d*x]))/b)^n) + (2^(-2 - n)*c*(a + b*ArcSin[c + d*x])^n*Gamma[1 + n
, ((-2*I)*(a + b*ArcSin[c + d*x]))/b])/(d^3*E^(((2*I)*a)/b)*(((-I)*(a + b*A
rcSin[c + d*x]))/b)^n) + (2^(-2 - n)*c*E^(((2*I)*a)/b)*(a + b*ArcSin[c + d*
x])^n*Gamma[1 + n, ((2*I)*(a + b*ArcSin[c + d*x]))/b])/(d^3*((I*(a + b*ArcS
in[c + d*x]))/b)^n) + ((I/8)*3^(-1 - n)*(a + b*ArcSin[c + d*x])^n*Gamma[1 +
 n, ((-3*I)*(a + b*ArcSin[c + d*x]))/b])/(d^3*E^(((3*I)*a)/b)*(((-I)*(a + b
*ArcSin[c + d*x]))/b)^n) - ((I/8)*3^(-1 - n)*E^(((3*I)*a)/b)*(a + b*ArcSin[
c + d*x])^n*Gamma[1 + n, ((3*I)*(a + b*ArcSin[c + d*x]))/b])/(d^3*((I*(a +
b*ArcSin[c + d*x]))/b)^n)
```

Rubi [A] time = 1.11638, antiderivative size = 611, normalized size of antiderivative = 1., number of steps used = 22, number of rules used = 9, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.562, Rules used = {4805, 4747, 6741, 12, 6742, 3307, 2181, 4406, 3308}

$$-\frac{ic^2 e^{-\frac{ia}{b}} \left(a+b\sin^{-1}(c+dx)\right)^n \left(-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{-n} \text{Gamma}\left(n+1,-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{2d^3} + \frac{ic^2 e^{\frac{ia}{b}} \left(a+b\sin^{-1}(c+dx)\right)^n \left(\frac{i(\cdots}{\cdots}\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(a + b*ArcSin[c + d*x])^n,x]
```

```
[Out] ((-I/8)*(a + b*ArcSin[c + d*x])^n*Gamma[1 + n, ((-I)*(a + b*ArcSin[c + d*x]
))/b])/(d^3*E^((I*a)/b)*(((-I)*(a + b*ArcSin[c + d*x]))/b)^n) - ((I/2)*c^2*
(a + b*ArcSin[c + d*x])^n*Gamma[1 + n, ((-I)*(a + b*ArcSin[c + d*x]))/b])/(
d^3*E^((I*a)/b)*(((-I)*(a + b*ArcSin[c + d*x]))/b)^n) + ((I/8)*E^((I*a)/b)*
(a + b*ArcSin[c + d*x])^n*Gamma[1 + n, (I*(a + b*ArcSin[c + d*x]))/b])/(d^3
```

```
*((I*(a + b*ArcSin[c + d*x]))/b)^n) + ((I/2)*c^2*E^((I*a)/b)*(a + b*ArcSin[
c + d*x])^n*Gamma[1 + n, (I*(a + b*ArcSin[c + d*x]))/b])/(d^3*((I*(a + b*Ar
cSin[c + d*x]))/b)^n) + (2^(-2 - n)*c*(a + b*ArcSin[c + d*x])^n*Gamma[1 + n
, ((-2*I)*(a + b*ArcSin[c + d*x]))/b])/(d^3*E^(((2*I)*a)/b)*(((-I)*(a + b*A
rcSin[c + d*x]))/b)^n) + (2^(-2 - n)*c*E^(((2*I)*a)/b)*(a + b*ArcSin[c + d*
x])^n*Gamma[1 + n, ((2*I)*(a + b*ArcSin[c + d*x]))/b])/(d^3*((I*(a + b*ArcS
in[c + d*x]))/b)^n) + ((I/8)*3^(-1 - n)*(a + b*ArcSin[c + d*x])^n*Gamma[1 +
 n, ((-3*I)*(a + b*ArcSin[c + d*x]))/b])/(d^3*E^(((3*I)*a)/b)*(((-I)*(a + b
*ArcSin[c + d*x]))/b)^n) - ((I/8)*3^(-1 - n)*E^(((3*I)*a)/b)*(a + b*ArcSin[
c + d*x])^n*Gamma[1 + n, ((3*I)*(a + b*ArcSin[c + d*x]))/b])/(d^3*((I*(a +
b*ArcSin[c + d*x]))/b)^n)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4747

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_.) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Dist[1/c^(m + 1), Subst[Int[(a + b*x)^n*Cos[x]*(c*d + e*Sin[x])^m
, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[m, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
```

```
f, m}, x] && IntegerQ[2*k]
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rubi steps

$$\int x^2\left(a+b\sin^{-1}(c+dx)\right)^n\,dx=\frac{\text{Subst}\left(\int\left(-\frac{c}{d}+\frac{x}{d}\right)^2\left(a+b\sin^{-1}(x)\right)^n\,dx,x,c+dx\right)}{d}$$

$$=\frac{\text{Subst}\left(\int(a+bx)^n\cos(x)\left(-\frac{c}{d}+\frac{\sin(x)}{d}\right)^2\,dx,x,\sin^{-1}(c+dx)\right)}{d}$$

$$=\frac{\text{Subst}\left(\int\frac{(a+bx)^n\cos(x)(c-\sin(x))^2}{d^2}\,dx,x,\sin^{-1}(c+dx)\right)}{d}$$

$$=\frac{\text{Subst}\left(\int(a+bx)^n\cos(x)(c-\sin(x))^2\,dx,x,\sin^{-1}(c+dx)\right)}{d^3}$$

$$=\frac{\text{Subst}\left(\int\left(c^2(a+bx)^n\cos(x)-2c(a+bx)^n\cos(x)\sin(x)+(a+bx)^n\cos(x)\sin^2(x)\right)\,d}{d^3}$$

$$=\frac{\text{Subst}\left(\int(a+bx)^n\cos(x)\sin^2(x)\,dx,x,\sin^{-1}(c+dx)\right)}{d^3}-\frac{(2c)\,\text{Subst}\left(\int(a+bx)^n\cos(x\right.}{d}$$

$$=\frac{\text{Subst}\left(\int\left(\frac{1}{4}(a+bx)^n\cos(x)-\frac{1}{4}(a+bx)^n\cos(3x)\right)\,dx,x,\sin^{-1}(c+dx)\right)}{d^3}-\frac{(2c)\,\text{Subst}}{}$$

$$=-\frac{ic^2e^{-\frac{ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{-n}\Gamma\left(1+n,-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{2d^3}+\frac{ic^2e}{}$$

$$=-\frac{ic^2e^{-\frac{ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{-n}\Gamma\left(1+n,-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{2d^3}+\frac{ic^2e}{}$$

$$=-\frac{ie^{-\frac{ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{-n}\Gamma\left(1+n,-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{8d^3}-\frac{ic^2e^{-}}{}$$

Mathematica [A] time = 0.503547, size = 419, normalized size = 0.69

$$\frac{2^{-n-3}3^{-n-1}e^{-\frac{3ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^n\left(\frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{b^2}\right)^{-n}\left(i\left(4c^2+1\right)2^n3^{n+1}e^{\frac{4ia}{b}}\left(-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^n\text{Gamma}\left(n+1,\frac{i(}{}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(a + b*ArcSin[c + d*x])^n,x]
```

```
[Out] (2^(-3 - n)*3^(-1 - n)*(a + b*ArcSin[c + d*x])^n*((-I)*2^n*3^(1 + n)*(1 + 4
*c^2)*E^(((2*I)*a)/b)*((I*(a + b*ArcSin[c + d*x]))/b)^n*Gamma[1 + n, ((-I)*
```

```
(a + b*ArcSin[c + d*x]))/b] + I*2^n*3^(1 + n)*(1 + 4*c^2)*E^(((4*I)*a)/b)*(
((-I)*(a + b*ArcSin[c + d*x]))/b)^n*Gamma[1 + n, (I*(a + b*ArcSin[c + d*x])
)/b] + 2*3^(1 + n)*c*E^((I*a)/b)*((I*(a + b*ArcSin[c + d*x]))/b)^n*Gamma[1
+ n, ((-2*I)*(a + b*ArcSin[c + d*x]))/b] + 2*3^(1 + n)*c*E^(((5*I)*a)/b)*((
(-I)*(a + b*ArcSin[c + d*x]))/b)^n*Gamma[1 + n, ((2*I)*(a + b*ArcSin[c + d*
x]))/b] + I*2^n*((I*(a + b*ArcSin[c + d*x]))/b)^n*Gamma[1 + n, ((-3*I)*(a +
 b*ArcSin[c + d*x]))/b] - I*2^n*E^(((6*I)*a)/b)*(((-I)*(a + b*ArcSin[c + d*
x]))/b)^n*Gamma[1 + n, ((3*I)*(a + b*ArcSin[c + d*x]))/b]))/(d^3*E^(((3*I)*
a)/b)*((a + b*ArcSin[c + d*x])^2/b^2)^n)
```

Maple [F] time = 0.405, size = 0, normalized size = 0.

$$\int x^2 (a + b \arcsin(dx + c))^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(d*x+c))^n,x)
```

```
[Out] int(x^2*(a+b*arcsin(d*x+c))^n,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (b \arcsin(dx + c) + a)^n x^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(d*x+c))^n,x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^n*x^2, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((b \arcsin(dx + c) + a)^n x^2, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(d*x+c))^n,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(d*x + c) + a)^n*x^2, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x^2 (a + b \operatorname{asin}(c + dx))^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(d*x+c))**n,x)
```

```
[Out] Integral(x**2*(a + b*asin(c + d*x))**n, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (b \arcsin(dx + c) + a)^n x^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(d*x+c))^n,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^n*x^2, x)
```

3.174 $\int x \left(a+b\sin^{-1}(c+dx)\right)^n \, dx$

Optimal. Leaf size=301

$$\frac{ice^{-\frac{ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{-n}\text{Gamma}\left(n+1,-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{2d^2}-\frac{2^{-n-3}e^{-\frac{2ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^n\left(\right.}{}$$

```
[Out] ((I/2)*c*(a + b*ArcSin[c + d*x])^n*Gamma[1 + n, ((-I)*(a + b*ArcSin[c + d*x
]))/b])/(d^2*E^((I*a)/b)*(((-I)*(a + b*ArcSin[c + d*x]))/b)^n) - ((I/2)*c*E
^((I*a)/b)*(a + b*ArcSin[c + d*x])^n*Gamma[1 + n, (I*(a + b*ArcSin[c + d*x]
))/b])/(d^2*((I*(a + b*ArcSin[c + d*x]))/b)^n) - (2^(-3 - n)*(a + b*ArcSin[
c + d*x])^n*Gamma[1 + n, ((-2*I)*(a + b*ArcSin[c + d*x]))/b])/(d^2*E^(((2*I
)*a)/b)*(((-I)*(a + b*ArcSin[c + d*x]))/b)^n) - (2^(-3 - n)*E^(((2*I)*a)/b)
*(a + b*ArcSin[c + d*x])^n*Gamma[1 + n, ((2*I)*(a + b*ArcSin[c + d*x]))/b])
/(d^2*((I*(a + b*ArcSin[c + d*x]))/b)^n)
```

Rubi [A] time = 0.517349, antiderivative size = 301, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 9, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.643, Rules used = {4805, 4747, 6741, 12, 6742, 3307, 2181, 4406, 3308}

$$\frac{ice^{-\frac{ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{-n}\text{Gamma}\left(n+1,-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{2d^2}-\frac{2^{-n-3}e^{-\frac{2ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^n\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*ArcSin[c + d*x])^n,x]
```


```
[Out] ((I/2)*c*(a + b*ArcSin[c + d*x])^n*Gamma[1 + n, ((-I)*(a + b*ArcSin[c + d*x
]))/b])/(d^2*E^((I*a)/b)*(((-I)*(a + b*ArcSin[c + d*x]))/b)^n) - ((I/2)*c*E
^((I*a)/b)*(a + b*ArcSin[c + d*x])^n*Gamma[1 + n, (I*(a + b*ArcSin[c + d*x]
))/b])/(d^2*((I*(a + b*ArcSin[c + d*x]))/b)^n) - (2^(-3 - n)*(a + b*ArcSin[
c + d*x])^n*Gamma[1 + n, ((-2*I)*(a + b*ArcSin[c + d*x]))/b])/(d^2*E^(((2*I
)*a)/b)*(((-I)*(a + b*ArcSin[c + d*x]))/b)^n) - (2^(-3 - n)*E^(((2*I)*a)/b)
*(a + b*ArcSin[c + d*x])^n*Gamma[1 + n, ((2*I)*(a + b*ArcSin[c + d*x]))/b])
/(d^2*((I*(a + b*ArcSin[c + d*x]))/b)^n)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
```

```
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4747

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_.) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Dist[1/c^(m + 1), Subst[Int[(a + b*x)^n*Cos[x]*(c*d + e*Sin[x])^m
, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[m, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rubi steps

$$\int x\left(a+b\sin^{-1}(c+dx)\right)^n\,dx=\frac{\text{Subst}\left(\int\left(-\frac{c}{d}+\frac{x}{d}\right)\left(a+b\sin^{-1}(x)\right)^n\,dx,x,c+dx\right)}{d}$$

$$=\frac{\text{Subst}\left(\int(a+bx)^n\cos(x)\left(-\frac{c}{d}+\frac{\sin(x)}{d}\right)\,dx,x,\sin^{-1}(c+dx)\right)}{d}$$

$$=\frac{\text{Subst}\left(\int\frac{(a+bx)^n\cos(x)(-c+\sin(x))}{d}\,dx,x,\sin^{-1}(c+dx)\right)}{d}$$

$$=\frac{\text{Subst}\left(\int(a+bx)^n\cos(x)(-c+\sin(x))\,dx,x,\sin^{-1}(c+dx)\right)}{d^2}$$

$$=\frac{\text{Subst}\left(\int\left(-c(a+bx)^n\cos(x)+(a+bx)^n\cos(x)\sin(x)\right)\,dx,x,\sin^{-1}(c+dx)\right)}{d^2}$$

$$=\frac{\text{Subst}\left(\int(a+bx)^n\cos(x)\sin(x)\,dx,x,\sin^{-1}(c+dx)\right)}{d^2}-\frac{c\,\text{Subst}\left(\int(a+bx)^n\cos(x)\,dx,x\right.}{d^2}$$

$$=\frac{\text{Subst}\left(\int\frac{1}{2}(a+bx)^n\sin(2x)\,dx,x,\sin^{-1}(c+dx)\right)}{d^2}-\frac{c\,\text{Subst}\left(\int e^{-ix}(a+bx)^n\,dx,x,\sin^{-1}\right.}{2d^2}$$

$$=\frac{ice^{-\frac{ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{-n}\Gamma\left(1+n,-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{2d^2}-\frac{ice^{\frac{ia}{b}}\left(a-\right.}{}$$

$$=\frac{ice^{-\frac{ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{-n}\Gamma\left(1+n,-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{2d^2}-\frac{ice^{\frac{ia}{b}}\left(a-\right.}{}$$

$$=\frac{ice^{-\frac{ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{-n}\Gamma\left(1+n,-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{2d^2}-\frac{ice^{\frac{ia}{b}}\left(a-\right.}{}$$

Mathematica [A] time = 0.220187, size = 269, normalized size = 0.89

$$-\frac{i2^{-n-3}e^{-\frac{2ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^n\left(\frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{b^2}\right)^{-n}\left(c2^{n+2}e^{\frac{3ia}{b}}\left(-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^n\text{Gamma}\left(n+1,\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*ArcSin[c + d*x])^n,x]
```

```
[Out] ((-I)*2^(-3 - n)*(a + b*ArcSin[c + d*x])^n*(-(2^(2 + n)*c*E^((I*a)/b)*((I*(
a + b*ArcSin[c + d*x]))/b)^n*Gamma[1 + n, ((-I)*(a + b*ArcSin[c + d*x]))/b]
) + 2^(2 + n)*c*E^(((3*I)*a)/b)*(((-I)*(a + b*ArcSin[c + d*x]))/b)^n*Gamma[
1 + n, (I*(a + b*ArcSin[c + d*x]))/b] - I*(((I*(a + b*ArcSin[c + d*x]))/b)^
n*Gamma[1 + n, ((-2*I)*(a + b*ArcSin[c + d*x]))/b] + E^(((4*I)*a)/b)*(((-I)
*(a + b*ArcSin[c + d*x]))/b)^n*Gamma[1 + n, ((2*I)*(a + b*ArcSin[c + d*x]))
/b])))/(d^2*E^(((2*I)*a)/b)*((a + b*ArcSin[c + d*x])^2/b^2)^n)
```

Maple [F] time = 0.266, size = 0, normalized size = 0.

$$\int x\left(a+b\arcsin\left(dx+c\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(d*x+c))^n,x)
```

```
[Out] int(x*(a+b*arcsin(d*x+c))^n,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\left(b\arcsin\left(dx+c\right)+a\right)^{n}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x+c))^n,x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^n*x, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\left(b\arcsin\left(dx+c\right)+a\right)^{n}x,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x+c))^n,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(d*x + c) + a)^n*x, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x\left(a+b\operatorname{asin}\left(c+dx\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(d*x+c))**n,x)
```

```
[Out] Integral(x*(a + b*asin(c + d*x))**n, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (b\arcsin\left(dx+c\right)+a)^{n}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x+c))^n,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^n*x, x)
```

3.175 $\int \left(a+b\sin^{-1}(c+dx)\right)^n\,dx$

Optimal. Leaf size=147

$$\frac{ie^{\frac{ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^n\left(\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{-n}\text{Gamma}\left(n+1,\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{2d}-\frac{ie^{-\frac{ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^n\left(-\frac{i\left(a+b\sin\right.}{}\right.}{}$$

```
[Out] ((-I/2)*(a + b*ArcSin[c + d*x])^n*Gamma[1 + n, ((-I)*(a + b*ArcSin[c + d*x]
))/b])/(d*E^((I*a)/b)*(((-I)*(a + b*ArcSin[c + d*x]))/b)^n) + ((I/2)*E^((I*
a)/b)*(a + b*ArcSin[c + d*x])^n*Gamma[1 + n, (I*(a + b*ArcSin[c + d*x]))/b]
)/(d*((I*(a + b*ArcSin[c + d*x]))/b)^n)
```

Rubi [A] time = 0.133024, antiderivative size = 147, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4803, 4623, 3307, 2181}

$$\frac{ie^{\frac{ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^n\left(\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{-n}\text{Gamma}\left(n+1,\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{2d}-\frac{ie^{-\frac{ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^n\left(-\frac{i\left(a+b\sin\right.}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^n,x]
```

```
[Out] ((-I/2)*(a + b*ArcSin[c + d*x])^n*Gamma[1 + n, ((-I)*(a + b*ArcSin[c + d*x]
))/b])/(d*E^((I*a)/b)*(((-I)*(a + b*ArcSin[c + d*x]))/b)^n) + ((I/2)*E^((I*
a)/b)*(a + b*ArcSin[c + d*x])^n*Gamma[1 + n, (I*(a + b*ArcSin[c + d*x]))/b]
)/(d*((I*(a + b*ArcSin[c + d*x]))/b)^n)
```

Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rubi steps

$$\int \left(a+b\sin^{-1}(c+dx)\right)^n\,dx = \frac{\text{Subst}\left(\int \left(a+b\sin^{-1}(x)\right)^n\,dx,x,c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int x^n\cos\left(\frac{a}{b}-\frac{x}{b}\right)\,dx,x,a+b\sin^{-1}(c+dx)\right)}{bd}$$

$$= \frac{\text{Subst}\left(\int e^{-i\left(\frac{a}{b}-\frac{x}{b}\right)}x^n\,dx,x,a+b\sin^{-1}(c+dx)\right)}{2bd} + \frac{\text{Subst}\left(\int e^{i\left(\frac{a}{b}-\frac{x}{b}\right)}x^n\,dx,x,a+b\sin^{-1}(c+\right.}{2bd}$$

$$= -\frac{ie^{-\frac{ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{-n}\Gamma\left(1+n,-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{2d} + \frac{ie^{\frac{ia}{b}}\left(a+b\right.}{}$$

Mathematica [A] time = 0.108205, size = 129, normalized size = 0.88

$$-\frac{ie^{-\frac{ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^n\left(\left(-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{-n}\text{Gamma}\left(n+1,-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)-e^{\frac{2ia}{b}}\left(\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{-n}\text{Gamma}\right.}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^n,x]
```

```
[Out] ((-I/2)*(a + b*ArcSin[c + d*x])^n*(Gamma[1 + n, ((-I)*(a + b*ArcSin[c + d*x
]))/b]/(((-I)*(a + b*ArcSin[c + d*x]))/b)^n - (E^(((2*I)*a)/b)*Gamma[1 + n,
 (I*(a + b*ArcSin[c + d*x]))/b])/((I*(a + b*ArcSin[c + d*x]))/b)^n))/(d*E^(
```

```
(I*a)/b))
```

Maple [F] time = 0.126, size = 0, normalized size = 0.

$$\int (a + b \arcsin (dx + c))^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^n,x)
```

```
[Out] int((a+b*arcsin(d*x+c))^n,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (b \arcsin (dx + c) + a)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^n,x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^n, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((b \arcsin (dx + c) + a)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^n,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(d*x + c) + a)^n, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (a + b \operatorname{asin} (c + dx))^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**n,x)
```

```
[Out] Integral((a + b*asin(c + d*x))**n, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (b\arcsin(dx+c)+a)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^n,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^n, x)
```

3.176 $\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^n}{x}\,dx$

Optimal. Leaf size=18

$$\text{Unintegrable}\left(\frac{\left(a+b\sin^{-1}(c+dx)\right)^n}{x},x\right)$$

```
[Out] Unintegrable[(a + b*ArcSin[c + d*x])^n/x, x]
```

Rubi [A] time = 0.0582569, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^n}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*ArcSin[c + d*x])^n/x,x]
```

```
[Out] Defer[Subst][Defer[Int][(a + b*ArcSin[x])^n/(-(c/d) + x/d), x], x, c + d*x]
/d
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^n}{x}\,dx=\frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^n}{-\frac{c}{d}+\frac{x}{d}}\,dx,x,c+dx\right)}{d}$$

Mathematica [A] time = 0.186916, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^n}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^n/x,x]
```

```
[Out] Integrate[(a + b*ArcSin[c + d*x])^n/x, x]
```

Maple [A] time = 0.14, size = 0, normalized size = 0.

$$\int \frac{(a+b\arcsin(dx+c))^n}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^n/x,x)
```

```
[Out] int((a+b*arcsin(d*x+c))^n/x,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b\arcsin(dx+c)+a)^n}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^n/x,x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^n/x, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(b\arcsin(dx+c)+a)^n}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^n/x,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(d*x + c) + a)^n/x, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+b\operatorname{asin}(c+dx))^n}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**n/x,x)
```

```
[Out] Integral((a + b*asin(c + d*x))**n/x, x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b\arcsin(dx+c)+a)^n}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^n/x,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^n/x, x)
```

3.177 $\int (ce+dex)^4 \left(a+b\sin^{-1}(c+dx)\right) dx$

Optimal. Leaf size=106

$$\frac{e^4(c+dx)^5\left(a+b\sin^{-1}(c+dx)\right)}{5d}+\frac{be^4\left(1-(c+dx)^2\right)^{5/2}}{25d}-\frac{2be^4\left(1-(c+dx)^2\right)^{3/2}}{15d}+\frac{be^4\sqrt{1-(c+dx)^2}}{5d}$$

```
[Out] (b*e^4*Sqrt[1 - (c + d*x)^2])/(5*d) - (2*b*e^4*(1 - (c + d*x)^2)^(3/2))/(15
*d) + (b*e^4*(1 - (c + d*x)^2)^(5/2))/(25*d) + (e^4*(c + d*x)^5*(a + b*ArcS
in[c + d*x]))/(5*d)
```

Rubi [A] time = 0.0926155, antiderivative size = 106, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {4805, 12, 4627, 266, 43}

$$\frac{e^4(c+dx)^5\left(a+b\sin^{-1}(c+dx)\right)}{5d}+\frac{be^4\left(1-(c+dx)^2\right)^{5/2}}{25d}-\frac{2be^4\left(1-(c+dx)^2\right)^{3/2}}{15d}+\frac{be^4\sqrt{1-(c+dx)^2}}{5d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^4*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (b*e^4*Sqrt[1 - (c + d*x)^2])/(5*d) - (2*b*e^4*(1 - (c + d*x)^2)^(3/2))/(15
*d) + (b*e^4*(1 - (c + d*x)^2)^(5/2))/(25*d) + (e^4*(c + d*x)^5*(a + b*ArcS
in[c + d*x]))/(5*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
```

```
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\int (ce+dex)^4\left(a+b\sin^{-1}(c+dx)\right)dx = \frac{\text{Subst}\left(\int e^4x^4\left(a+b\sin^{-1}(x)\right)dx,x,c+dx\right)}{d}$$
$$= \frac{e^4\,\text{Subst}\left(\int x^4\left(a+b\sin^{-1}(x)\right)dx,x,c+dx\right)}{d}$$
$$= \frac{e^4(c+dx)^5\left(a+b\sin^{-1}(c+dx)\right)}{5d} - \frac{\left(be^4\right)\text{Subst}\left(\int \frac{x^5}{\sqrt{1-x^2}}\,dx,x,c+dx\right)}{5d}$$
$$= \frac{e^4(c+dx)^5\left(a+b\sin^{-1}(c+dx)\right)}{5d} - \frac{\left(be^4\right)\text{Subst}\left(\int \frac{x^2}{\sqrt{1-x}}\,dx,x,(c+dx)^2\right)}{10d}$$
$$= \frac{e^4(c+dx)^5\left(a+b\sin^{-1}(c+dx)\right)}{5d} - \frac{\left(be^4\right)\text{Subst}\left(\int\left(\frac{1}{\sqrt{1-x}}-2\sqrt{1-x}+(1-x)^{3/}\right.\right.}{10d}$$
$$= \frac{be^4\sqrt{1-(c+dx)^2}}{5d} - \frac{2be^4\left(1-(c+dx)^2\right)^{3/2}}{15d} + \frac{be^4\left(1-(c+dx)^2\right)^{5/2}}{25d} + \frac{e^4(c+d}{}$$

Mathematica [A] time = 0.111426, size = 77, normalized size = 0.73

$$\frac{e^4\left(\frac{1}{5}(c+dx)^5\left(a+b\sin^{-1}(c+dx)\right)-\frac{1}{75}b\sqrt{1-(c+dx)^2}\left(-3\left((c+dx)^2-1\right)^2+10\left(1-(c+dx)^2\right)-15\right)\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^4*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (e^4*(-(b*Sqrt[1 - (c + d*x)^2]*(-15 + 10*(1 - (c + d*x)^2) - 3*(-1 + (c +
d*x)^2)^2))/75 + ((c + d*x)^5*(a + b*ArcSin[c + d*x]))/5))/d
```

Maple [A] time = 0.011, size = 99, normalized size = 0.9

$$\frac{1}{d}\left(\frac{e^4 (dx+c)^5 a}{5} + e^4 b\left(\frac{(dx+c)^5 \arcsin(dx+c)}{5} + \frac{(dx+c)^4}{25}\sqrt{1-(dx+c)^2} + \frac{4 (dx+c)^2}{75}\sqrt{1-(dx+c)^2} + \frac{8}{75}\sqrt{1-(dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^4*(a+b*arcsin(d*x+c)),x)
```

```
[Out] 1/d*(1/5*e^4*(d*x+c)^5*a+e^4*b*(1/5*(d*x+c)^5*arcsin(d*x+c)+1/25*(d*x+c)^4*
(1-(d*x+c)^2)^(1/2)+4/75*(d*x+c)^2*(1-(d*x+c)^2)^(1/2)+8/75*(1-(d*x+c)^2)^(
1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4*(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.41032, size = 564, normalized size = 5.32

$$\frac{15\,ad^5e^4x^5 + 75\,acd^4e^4x^4 + 150\,ac^2d^3e^4x^3 + 150\,ac^3d^2e^4x^2 + 75\,ac^4de^4x + 15\left(bd^5e^4x^5 + 5\,bcd^4e^4x^4 + 10\,bc^2d^3e^4x^3 + 10\,b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4*(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/75*(15*a*d^5*e^4*x^5 + 75*a*c*d^4*e^4*x^4 + 150*a*c^2*d^3*e^4*x^3 + 150*a
*c^3*d^2*e^4*x^2 + 75*a*c^4*d*e^4*x + 15*(b*d^5*e^4*x^5 + 5*b*c*d^4*e^4*x^4
 + 10*b*c^2*d^3*e^4*x^3 + 10*b*c^3*d^2*e^4*x^2 + 5*b*c^4*d*e^4*x + b*c^5*e^
4)*arcsin(d*x + c) + (3*b*d^4*e^4*x^4 + 12*b*c*d^3*e^4*x^3 + 2*(9*b*c^2 + 2
*b)*d^2*e^4*x^2 + 4*(3*b*c^3 + 2*b*c)*d*e^4*x + (3*b*c^4 + 4*b*c^2 + 8*b)*e
^4)*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1))/d
```

Sympy [A] time = 6.2101, size = 527, normalized size = 4.97

$$\begin{cases} ac^4e^4x + 2ac^3de^4x^2 + 2ac^2d^2e^4x^3 + acd^3e^4x^4 + \frac{ad^4e^4x^5}{5} + \frac{bc^5e^4\operatorname{asin}(c+dx)}{5d} + bc^4e^4x\operatorname{asin}(c+dx) + \frac{bc^4e^4\sqrt{-c^2-2cdx-d^2x^2+1}}{25d} + \\ c^4e^4x\,(a+b\operatorname{asin}(c)) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**4*(a+b*asin(d*x+c)),x)
```

```
[Out] Piecewise((a*c**4*e**4*x + 2*a*c**3*d*e**4*x**2 + 2*a*c**2*d**2*e**4*x**3 +
 a*c*d**3*e**4*x**4 + a*d**4*e**4*x**5/5 + b*c**5*e**4*asin(c + d*x)/(5*d)
+ b*c**4*e**4*x*asin(c + d*x) + b*c**4*e**4*sqrt(-c**2 - 2*c*d*x - d**2*x**
2 + 1)/(25*d) + 2*b*c**3*d*e**4*x**2*asin(c + d*x) + 4*b*c**3*e**4*x*sqrt(-
c**2 - 2*c*d*x - d**2*x**2 + 1)/25 + 2*b*c**2*d**2*e**4*x**3*asin(c + d*x)
+ 6*b*c**2*d*e**4*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/25 + 4*b*c**2*
e**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(75*d) + b*c*d**3*e**4*x**4*asin
(c + d*x) + 4*b*c*d**2*e**4*x**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/25 +
 8*b*c*e**4*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/75 + b*d**4*e**4*x**5*a
sin(c + d*x)/5 + b*d**3*e**4*x**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/25
+ 4*b*d*e**4*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/75 + 8*b*e**4*sqrt(
-c**2 - 2*c*d*x - d**2*x**2 + 1)/(75*d), Ne(d, 0)), (c**4*e**4*x*(a + b*asi
n(c)), True))
```

Giac [A] time = 1.35057, size = 225, normalized size = 2.12

$$\frac{(dx+c)^5ae^4}{5\,d} + \frac{\left((dx+c)^2-1\right)^2(dx+c)b\arcsin(dx+c)\,e^4}{5\,d} + \frac{2\left((dx+c)^2-1\right)(dx+c)b\arcsin(dx+c)\,e^4}{5\,d} + \frac{\left((dx+c)^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4*(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/5*(d*x + c)^5*a*e^4/d + 1/5*((d*x + c)^2 - 1)^2*(d*x + c)*b*arcsin(d*x +
c)*e^4/d + 2/5*((d*x + c)^2 - 1)*(d*x + c)*b*arcsin(d*x + c)*e^4/d + 1/25*(
(d*x + c)^2 - 1)^2*sqrt(-(d*x + c)^2 + 1)*b*e^4/d + 1/5*(d*x + c)*b*arcsin(
d*x + c)*e^4/d - 2/15*(-(d*x + c)^2 + 1)^(3/2)*b*e^4/d + 1/5*sqrt(-(d*x + c
)^2 + 1)*b*e^4/d
```

3.178 $\int (ce+dex)^3 \left(a+b\sin^{-1}(c+dx)\right) dx$

Optimal. Leaf size=109

$$\frac{e^3(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)}{4d}+\frac{be^3\sqrt{1-(c+dx)^2}(c+dx)^3}{16d}+\frac{3be^3\sqrt{1-(c+dx)^2}(c+dx)}{32d}-\frac{3be^3\sin^{-1}(c+dx)}{32d}$$

```
[Out] (3*b*e^3*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(32*d) + (b*e^3*(c + d*x)^3*Sqrt[
1 - (c + d*x)^2])/(16*d) - (3*b*e^3*ArcSin[c + d*x])/(32*d) + (e^3*(c + d*x
)^4*(a + b*ArcSin[c + d*x]))/(4*d)
```

Rubi [A] time = 0.0756311, antiderivative size = 109, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {4805, 12, 4627, 321, 216}

$$\frac{e^3(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)}{4d}+\frac{be^3\sqrt{1-(c+dx)^2}(c+dx)^3}{16d}+\frac{3be^3\sqrt{1-(c+dx)^2}(c+dx)}{32d}-\frac{3be^3\sin^{-1}(c+dx)}{32d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (3*b*e^3*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(32*d) + (b*e^3*(c + d*x)^3*Sqrt[
1 - (c + d*x)^2])/(16*d) - (3*b*e^3*ArcSin[c + d*x])/(32*d) + (e^3*(c + d*x
)^4*(a + b*ArcSin[c + d*x]))/(4*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
```

```
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rubi steps

$$\int (ce+dex)^3 \left(a+b\sin^{-1}(c+dx)\right)\,dx = \frac{\text{Subst}\left(\int e^3x^3\left(a+b\sin^{-1}(x)\right)\,dx,x,c+dx\right)}{d}$$
$$= \frac{e^3\,\text{Subst}\left(\int x^3\left(a+b\sin^{-1}(x)\right)\,dx,x,c+dx\right)}{d}$$
$$= \frac{e^3(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)}{4d} - \frac{\left(be^3\right)\text{Subst}\left(\int \frac{x^4}{\sqrt{1-x^2}}\,dx,x,c+dx\right)}{4d}$$
$$= \frac{be^3(c+dx)^3\sqrt{1-(c+dx)^2}}{16d} + \frac{e^3(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)}{4d} - \frac{\left(3be^3\right)\text{Subst}\left(\right.}{}$$
$$= \frac{3be^3(c+dx)\sqrt{1-(c+dx)^2}}{32d} + \frac{be^3(c+dx)^3\sqrt{1-(c+dx)^2}}{16d} + \frac{e^3(c+dx)^4\left(a+b\,\text{si}\right.}{4d}$$
$$= \frac{3be^3(c+dx)\sqrt{1-(c+dx)^2}}{32d} + \frac{be^3(c+dx)^3\sqrt{1-(c+dx)^2}}{16d} - \frac{3be^3\sin^{-1}(c+dx)}{32d}$$

Mathematica [A] time = 0.078866, size = 87, normalized size = 0.8

$$\frac{e^3\left(8(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)+2b\sqrt{1-(c+dx)^2}(c+dx)^3+3b\sqrt{1-(c+dx)^2}(c+dx)-3b\sin^{-1}(c+dx)\right)}{32d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^3*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (e^3*(3*b*(c + d*x)*Sqrt[1 - (c + d*x)^2] + 2*b*(c + d*x)^3*Sqrt[1 - (c + d
*x)^2] - 3*b*ArcSin[c + d*x] + 8*(c + d*x)^4*(a + b*ArcSin[c + d*x])))/(32*
d)
```

Maple [A] time = 0.006, size = 90, normalized size = 0.8

$$\frac{1}{d}\left(\frac{e^{3}\left(dx+c\right)^{4}a}{4}+e^{3}b\left(\frac{\left(dx+c\right)^{4}\arcsin\left(dx+c\right)}{4}+\frac{\left(dx+c\right)^{3}}{16}\sqrt{1-\left(dx+c\right)^{2}}+\frac{3\,dx+3\,c}{32}\sqrt{1-\left(dx+c\right)^{2}}-\frac{3\arcsin\left(dx\right.}{32}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3*(a+b*arcsin(d*x+c)),x)
```

```
[Out] 1/d*(1/4*e^3*(d*x+c)^4*a+e^3*b*(1/4*(d*x+c)^4*arcsin(d*x+c)+1/16*(d*x+c)^3*
(1-(d*x+c)^2)^(1/2)+3/32*(d*x+c)*(1-(d*x+c)^2)^(1/2)-3/32*arcsin(d*x+c)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.39475, size = 452, normalized size = 4.15

$$\frac{8\,ad^{4}e^{3}x^{4}+32\,acd^{3}e^{3}x^{3}+48\,ac^{2}d^{2}e^{3}x^{2}+32\,ac^{3}de^{3}x+\left(8\,bd^{4}e^{3}x^{4}+32\,bcd^{3}e^{3}x^{3}+48\,bc^{2}d^{2}e^{3}x^{2}+32\,bc^{3}de^{3}x+\left(8\,bc^{4}-\right.\right.}{32\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/32*(8*a*d^4*e^3*x^4 + 32*a*c*d^3*e^3*x^3 + 48*a*c^2*d^2*e^3*x^2 + 32*a*c^
3*d*e^3*x + (8*b*d^4*e^3*x^4 + 32*b*c*d^3*e^3*x^3 + 48*b*c^2*d^2*e^3*x^2 +
```

```
32*b*c^3*d*e^3*x + (8*b*c^4 - 3*b)*e^3)*arcsin(d*x + c) + (2*b*d^3*e^3*x^3
+ 6*b*c*d^2*e^3*x^2 + 3*(2*b*c^2 + b)*d*e^3*x + (2*b*c^3 + 3*b*c)*e^3)*sqrt
(-d^2*x^2 - 2*c*d*x - c^2 + 1))/d
```

Sympy [A] time = 2.81556, size = 394, normalized size = 3.61

$$\begin{cases} ac^3e^3x + \frac{3ac^2de^3x^2}{2} + acd^2e^3x^3 + \frac{ad^3e^3x^4}{4} + \frac{bc^4e^3\operatorname{asin}(c+dx)}{4d} + bc^3e^3x\operatorname{asin}(c+dx) + \frac{bc^3e^3\sqrt{-c^2-2cdx-d^2x^2+1}}{16d} + \frac{3bc^2de^3x^2\operatorname{asin}(c+dx)}{2} \\ c^3e^3x\left(a + b\operatorname{asin}(c)\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3*(a+b*asin(d*x+c)),x)
```

```
[Out] Piecewise((a*c**3*e**3*x + 3*a*c**2*d*e**3*x**2/2 + a*c*d**2*e**3*x**3 + a*
d**3*e**3*x**4/4 + b*c**4*e**3*asin(c + d*x)/(4*d) + b*c**3*e**3*x*asin(c +
 d*x) + b*c**3*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(16*d) + 3*b*c**2
*d*e**3*x**2*asin(c + d*x)/2 + 3*b*c**2*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*
x**2 + 1)/16 + b*c*d**2*e**3*x**3*asin(c + d*x) + 3*b*c*d*e**3*x**2*sqrt(-c
**2 - 2*c*d*x - d**2*x**2 + 1)/16 + 3*b*c*e**3*sqrt(-c**2 - 2*c*d*x - d**2*
x**2 + 1)/(32*d) + b*d**3*e**3*x**4*asin(c + d*x)/4 + b*d**2*e**3*x**3*sqrt
(-c**2 - 2*c*d*x - d**2*x**2 + 1)/16 + 3*b*e**3*x*sqrt(-c**2 - 2*c*d*x - d*
*2*x**2 + 1)/32 - 3*b*e**3*asin(c + d*x)/(32*d), Ne(d, 0)), (c**3*e**3*x*(a
 + b*asin(c)), True))
```

Giac [A] time = 1.39028, size = 204, normalized size = 1.87

$$\frac{\left((dx+c)^2-1\right)^2 b \arcsin(dx+c)\,e^3}{4\,d} - \frac{\left(-(dx+c)^2+1\right)^{\frac{3}{2}}(dx+c)be^3}{16\,d} + \frac{\left((dx+c)^2-1\right)^2 ae^3}{4\,d} + \frac{\left((dx+c)^2-1\right)b\arcsin(dx+}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/4*((d*x + c)^2 - 1)^2*b*arcsin(d*x + c)*e^3/d - 1/16*(-(d*x + c)^2 + 1)^(
3/2)*(d*x + c)*b*e^3/d + 1/4*((d*x + c)^2 - 1)^2*a*e^3/d + 1/2*((d*x + c)^2
 - 1)*b*arcsin(d*x + c)*e^3/d + 5/32*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*b*e^3
/d + 1/2*((d*x + c)^2 - 1)*a*e^3/d + 5/32*b*arcsin(d*x + c)*e^3/d
```

3.179 $\int (ce+dex)^2 \left(a+b\sin^{-1}(c+dx)\right) dx$

Optimal. Leaf size=80

$$\frac{e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)}{3d}-\frac{be^2\left(1-(c+dx)^2\right)^{3/2}}{9d}+\frac{be^2\sqrt{1-(c+dx)^2}}{3d}$$

```
[Out] (b*e^2*Sqrt[1 - (c + d*x)^2])/(3*d) - (b*e^2*(1 - (c + d*x)^2)^(3/2))/(9*d)
 + (e^2*(c + d*x)^3*(a + b*ArcSin[c + d*x]))/(3*d)
```

Rubi [A] time = 0.0713548, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {4805, 12, 4627, 266, 43}

$$\frac{e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)}{3d}-\frac{be^2\left(1-(c+dx)^2\right)^{3/2}}{9d}+\frac{be^2\sqrt{1-(c+dx)^2}}{3d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (b*e^2*Sqrt[1 - (c + d*x)^2])/(3*d) - (b*e^2*(1 - (c + d*x)^2)^(3/2))/(9*d)
 + (e^2*(c + d*x)^3*(a + b*ArcSin[c + d*x]))/(3*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
```

```
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$
\begin{aligned}
\int (ce+dex)^2\left(a+b\sin^{-1}(c+dx)\right)dx &= \frac{\text{Subst}\left(\int e^2x^2\left(a+b\sin^{-1}(x)\right)dx,x,c+dx\right)}{d}\\
&= \frac{e^2\,\text{Subst}\left(\int x^2\left(a+b\sin^{-1}(x)\right)dx,x,c+dx\right)}{d}\\
&= \frac{e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)}{3d}-\frac{\left(be^2\right)\text{Subst}\left(\int\frac{x^3}{\sqrt{1-x^2}}\,dx,x,c+dx\right)}{3d}\\
&= \frac{e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)}{3d}-\frac{\left(be^2\right)\text{Subst}\left(\int\frac{x}{\sqrt{1-x}}\,dx,x,(c+dx)^2\right)}{6d}\\
&= \frac{e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)}{3d}-\frac{\left(be^2\right)\text{Subst}\left(\int\left(\frac{1}{\sqrt{1-x}}-\sqrt{1-x}\right)dx,x,(c+d\right.}{6d}\\
&= \frac{be^2\sqrt{1-(c+dx)^2}}{3d}-\frac{be^2\left(1-(c+dx)^2\right)^{3/2}}{9d}+\frac{e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)}{3d}
\end{aligned}
$$

Mathematica [A] time = 0.0483664, size = 64, normalized size = 0.8

$$\frac{e^2\left(3(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)+b\left(c^2+2cdx+d^2x^2+2\right)\sqrt{1-(c+dx)^2}\right)}{9d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (e^2*(b*(2 + c^2 + 2*c*d*x + d^2*x^2)*Sqrt[1 - (c + d*x)^2] + 3*(c + d*x)^3
*(a + b*ArcSin[c + d*x])))/(9*d)
```

Maple [A] time = 0.004, size = 77, normalized size = 1.

$$\frac{1}{d}\left(\frac{e^2\,(dx+c)^3\,a}{3}+e^2b\left(\frac{(dx+c)^3\arcsin(dx+c)}{3}+\frac{(dx+c)^2}{9}\sqrt{1-(dx+c)^2}+\frac{2}{9}\sqrt{1-(dx+c)^2}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2*(a+b*arcsin(d*x+c)),x)
```

```
[Out] 1/d*(1/3*e^2*(d*x+c)^3*a+e^2*b*(1/3*(d*x+c)^3*arcsin(d*x+c)+1/9*(d*x+c)^2*(
1-(d*x+c)^2)^(1/2)+2/9*(1-(d*x+c)^2)^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.20817, size = 321, normalized size = 4.01

$$\frac{3\,ad^3e^2x^3+9\,acd^2e^2x^2+9\,ac^2de^2x+3\left(bd^3e^2x^3+3\,bcd^2e^2x^2+3\,bc^2de^2x+bc^3e^2\right)\arcsin(dx+c)+\left(bd^2e^2x^2+2\,bcde^2x\right.}{9\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/9*(3*a*d^3*e^2*x^3 + 9*a*c*d^2*e^2*x^2 + 9*a*c^2*d*e^2*x + 3*(b*d^3*e^2*x
^3 + 3*b*c*d^2*e^2*x^2 + 3*b*c^2*d*e^2*x + b*c^3*e^2)*arcsin(d*x + c) + (b*
d^2*e^2*x^2 + 2*b*c*d*e^2*x + (b*c^2 + 2*b)*e^2)*sqrt(-d^2*x^2 - 2*c*d*x -
```

```
c^2 + 1))/d
```

Sympy [A] time = 1.25899, size = 258, normalized size = 3.22

$$\begin{cases} ac^2e^2x + acde^2x^2 + \frac{ad^2e^2x^3}{3} + \frac{bc^3e^2\operatorname{asin}(c+dx)}{3d} + bc^2e^2x\operatorname{asin}(c+dx) + \frac{bc^2e^2\sqrt{-c^2-2cdx-d^2x^2+1}}{9d} + bcde^2x^2\operatorname{asin}(c+dx) + \frac{2bce^2x \\ c^2e^2x(a+b\operatorname{asin}(c)) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2*(a+b*asin(d*x+c)),x)
```

```
[Out] Piecewise((a*c**2*e**2*x + a*c*d*e**2*x**2 + a*d**2*e**2*x**3/3 + b*c**3*e*
*2*asin(c + d*x)/(3*d) + b*c**2*e**2*x*asin(c + d*x) + b*c**2*e**2*sqrt(-c*
*2 - 2*c*d*x - d**2*x**2 + 1)/(9*d) + b*c*d*e**2*x**2*asin(c + d*x) + 2*b*c
*e**2*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/9 + b*d**2*e**2*x**3*asin(c +
 d*x)/3 + b*d*e**2*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/9 + 2*b*e**2*
sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(9*d), Ne(d, 0)), (c**2*e**2*x*(a + b
*asin(c)), True))
```

Giac [A] time = 1.32084, size = 142, normalized size = 1.78

$$\frac{(dx+c)^3ae^2}{3d} + \frac{\left((dx+c)^2-1\right)(dx+c)b\arcsin(dx+c)e^2}{3d} + \frac{(dx+c)b\arcsin(dx+c)e^2}{3d} - \frac{\left(-(dx+c)^2+1\right)^{\frac{3}{2}}be^2}{9d} + \sqrt{-(d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/3*(d*x + c)^3*a*e^2/d + 1/3*((d*x + c)^2 - 1)*(d*x + c)*b*arcsin(d*x + c)
*e^2/d + 1/3*(d*x + c)*b*arcsin(d*x + c)*e^2/d - 1/9*(-(d*x + c)^2 + 1)^(3/
2)*b*e^2/d + 1/3*sqrt(-(d*x + c)^2 + 1)*b*e^2/d
```

3.180 $\int (ce+dex)\left(a+b\sin^{-1}(c+dx)\right)\,dx$

Optimal. Leaf size=70

$$\frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)}{2d}+\frac{be\sqrt{1-(c+dx)^2}(c+dx)}{4d}-\frac{be\sin^{-1}(c+dx)}{4d}$$

```
[Out] (b*e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(4*d) - (b*e*ArcSin[c + d*x])/(4*d) +
 (e*(c + d*x)^2*(a + b*ArcSin[c + d*x]))/(2*d)
```

Rubi [A] time = 0.0404498, antiderivative size = 70, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {4805, 12, 4627, 321, 216}

$$\frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)}{2d}+\frac{be\sqrt{1-(c+dx)^2}(c+dx)}{4d}-\frac{be\sin^{-1}(c+dx)}{4d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (b*e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(4*d) - (b*e*ArcSin[c + d*x])/(4*d) +
 (e*(c + d*x)^2*(a + b*ArcSin[c + d*x]))/(2*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rubi steps

$$
\begin{aligned}
\int (ce+dex)\left(a+b\sin^{-1}(c+dx)\right)dx &= \frac{\text{Subst}\left(\int ex\left(a+b\sin^{-1}(x)\right)dx,x,c+dx\right)}{d}\\
&= \frac{e\,\text{Subst}\left(\int x\left(a+b\sin^{-1}(x)\right)dx,x,c+dx\right)}{d}\\
&= \frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)}{2d}-\frac{(be)\,\text{Subst}\left(\int \frac{x^2}{\sqrt{1-x^2}}\,dx,x,c+dx\right)}{2d}\\
&= \frac{be(c+dx)\sqrt{1-(c+dx)^2}}{4d}+\frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)}{2d}-\frac{(be)\,\text{Subst}\left(\int \frac{1}{\sqrt{1-x}}\right.}{4d}\\
&= \frac{be(c+dx)\sqrt{1-(c+dx)^2}}{4d}-\frac{be\sin^{-1}(c+dx)}{4d}+\frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)}{2d}
\end{aligned}
$$

Mathematica [A] time = 0.0678682, size = 59, normalized size = 0.84

$$\frac{e\left(2(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)+b\sqrt{1-(c+dx)^2}(c+dx)-b\sin^{-1}(c+dx)\right)}{4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (e*(b*(c + d*x)*Sqrt[1 - (c + d*x)^2] - b*ArcSin[c + d*x] + 2*(c + d*x)^2*(
a + b*ArcSin[c + d*x])))/(4*d)
```

Maple [A] time = 0.004, size = 64, normalized size = 0.9

$$\frac{1}{d}\left(\frac{e\left(dx+c\right)^{2}a}{2}+eb\left(\frac{\arcsin\left(dx+c\right)\left(dx+c\right)^{2}}{2}+\frac{dx+c}{4}\sqrt{1-\left(dx+c\right)^{2}}-\frac{\arcsin\left(dx+c\right)}{4}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)*(a+b*arcsin(d*x+c)),x)
```

```
[Out] 1/d*(1/2*e*(d*x+c)^2*a+e*b*(1/2*arcsin(d*x+c)*(d*x+c)^2+1/4*(d*x+c)*(1-(d*x
+c)^2)^(1/2)-1/4*arcsin(d*x+c)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.10735, size = 213, normalized size = 3.04

$$\frac{2\,ad^{2}ex^{2}+4\,acdex+\left(2\,bd^{2}ex^{2}+4\,bcdex+\left(2\,bc^{2}-b\right)e\right)\arcsin\left(dx+c\right)+\left(bdex+bce\right)\sqrt{-d^{2}x^{2}-2\,cdx-c^{2}+1}}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/4*(2*a*d^2*e*x^2 + 4*a*c*d*e*x + (2*b*d^2*e*x^2 + 4*b*c*d*e*x + (2*b*c^2
- b)*e)*arcsin(d*x + c) + (b*d*e*x + b*c*e)*sqrt(-d^2*x^2 - 2*c*d*x - c^2 +
 1))/d
```

Sympy [A] time = 0.475252, size = 148, normalized size = 2.11

$$\begin{cases} acex + \frac{adex^2}{2} + \frac{bc^2e\operatorname{asin}(c+dx)}{2d} + bcex\operatorname{asin}(c+dx) + \frac{bce\sqrt{-c^2-2cdx-d^2x^2+1}}{4d} + \frac{bdex^2\operatorname{asin}(c+dx)}{2} + \frac{bex\sqrt{-c^2-2cdx-d^2x^2+1}}{4} - \frac{be\operatorname{asin}(c+dx}{4d} \\ cex\left(a + b\operatorname{asin}(c)\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*asin(d*x+c)),x)
```

```
[Out] Piecewise((a*c*e*x + a*d*e*x**2/2 + b*c**2*e*asin(c + d*x)/(2*d) + b*c*e*x*
asin(c + d*x) + b*c*e*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(4*d) + b*d*e*x
**2*asin(c + d*x)/2 + b*e*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/4 - b*e*a
sin(c + d*x)/(4*d), Ne(d, 0)), (c*e*x*(a + b*asin(c)), True))
```

Giac [A] time = 1.18343, size = 109, normalized size = 1.56

$$\frac{\left((dx+c)^2-1\right)b\arcsin(dx+c)e}{2d} + \frac{\sqrt{-(dx+c)^2+1}(dx+c)be}{4d} + \frac{\left((dx+c)^2-1\right)ae}{2d} + \frac{b\arcsin(dx+c)e}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/2*((d*x + c)^2 - 1)*b*arcsin(d*x + c)*e/d + 1/4*sqrt(-(d*x + c)^2 + 1)*(d
*x + c)*b*e/d + 1/2*((d*x + c)^2 - 1)*a*e/d + 1/4*b*arcsin(d*x + c)*e/d
```

3.181 $\int \left(a+b\sin^{-1}(c+dx)\right)\,dx$

Optimal. Leaf size=40

$$ax+\frac{b\sqrt{1-(c+dx)^2}}{d}+\frac{b(c+dx)\sin^{-1}(c+dx)}{d}$$

```
[Out] a*x + (b*Sqrt[1 - (c + d*x)^2])/d + (b*(c + d*x)*ArcSin[c + d*x])/d
```

Rubi [A] time = 0.024191, antiderivative size = 40, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.3, Rules used = {4803, 4619, 261}

$$ax+\frac{b\sqrt{1-(c+dx)^2}}{d}+\frac{b(c+dx)\sin^{-1}(c+dx)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[a + b*ArcSin[c + d*x],x]
```

```
[Out] a*x + (b*Sqrt[1 - (c + d*x)^2])/d + (b*(c + d*x)*ArcSin[c + d*x])/d
```

Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rubi steps

$$
\begin{aligned}
\int \left(a+b\sin^{-1}(c+dx)\right)\,dx &= ax+b\int \sin^{-1}(c+dx)\,dx\\
&= ax+\frac{b\,\text{Subst}\left(\int \sin^{-1}(x)\,dx,x,c+dx\right)}{d}\\
&= ax+\frac{b(c+dx)\sin^{-1}(c+dx)}{d}-\frac{b\,\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}}\,dx,x,c+dx\right)}{d}\\
&= ax+\frac{b\sqrt{1-(c+dx)^2}}{d}+\frac{b(c+dx)\sin^{-1}(c+dx)}{d}
\end{aligned}
$$

Mathematica [A] time = 0.0399415, size = 51, normalized size = 1.27

$$
ax+\frac{b\left(\sqrt{-c^2-2cdx-d^2x^2+1}+c\sin^{-1}(c+dx)\right)}{d}+bx\sin^{-1}(c+dx)
$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*ArcSin[c + d*x],x]
```

```
[Out] a*x + b*x*ArcSin[c + d*x] + (b*(Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2] + c*ArcSi
n[c + d*x]))/d
```

Maple [A] time = 0.003, size = 36, normalized size = 0.9

$$
ax+\frac{b}{d}\left((dx+c)\arcsin(dx+c)+\sqrt{1-(dx+c)^2}\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a+b*arcsin(d*x+c),x)
```

```
[Out] a*x+b/d*((d*x+c)*arcsin(d*x+c)+(1-(d*x+c)^2)^(1/2))
```

Maxima [A] time = 1.42312, size = 47, normalized size = 1.18

$$
ax+\frac{\left((dx+c)\arcsin(dx+c)+\sqrt{-(dx+c)^2+1}\right)b}{d}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(d*x+c),x, algorithm="maxima")
```

```
[Out] a*x + ((d*x + c)*arcsin(d*x + c) + sqrt(-(d*x + c)^2 + 1))*b/d
```

Fricas [A] time = 1.92261, size = 111, normalized size = 2.78

$$\frac{adx + (bdx + bc)\arcsin(dx + c) + \sqrt{-d^2x^2 - 2\,cdx - c^2 + 1}b}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(d*x+c),x, algorithm="fricas")
```

```
[Out] (a*d*x + (b*d*x + b*c)*arcsin(d*x + c) + sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)
*b)/d
```

Sympy [A] time = 0.220161, size = 51, normalized size = 1.27

$$ax + b\left(\begin{cases}\frac{c\operatorname{asin}(c+dx)}{d} + x\operatorname{asin}(c + dx) + \frac{\sqrt{-c^2-2cdx-d^2x^2+1}}{d} & \text{for}\ d \neq 0\\ x\operatorname{asin}(c) & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*asin(d*x+c),x)
```

```
[Out] a*x + b*Piecewise((c*asin(c + d*x)/d + x*asin(c + d*x) + sqrt(-c**2 - 2*c*d
*x - d**2*x**2 + 1)/d, Ne(d, 0)), (x*asin(c), True))
```

Giac [A] time = 1.15692, size = 47, normalized size = 1.18

$$ax + \frac{\left((dx + c)\arcsin(dx + c) + \sqrt{-(dx + c)^2 + 1}\right)b}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(d*x+c),x, algorithm="giac")
```

```
[Out] a*x + ((d*x + c)*arcsin(d*x + c) + sqrt(-(d*x + c)^2 + 1))*b/d
```

3.182 $\int \frac{a+b\sin^{-1}(c+dx)}{ce+dex}\,dx$

Optimal. Leaf size=89

$$-\frac{ib\text{PolyLog}\left(2,e^{2i\sin^{-1}(c+dx)}\right)}{2de}-\frac{i\left(a+b\sin^{-1}(c+dx)\right)^2}{2bde}+\frac{\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de}$$

```
[Out] ((-I/2)*(a + b*ArcSin[c + d*x])^2)/(b*d*e) + ((a + b*ArcSin[c + d*x])*Log[1
 - E^((2*I)*ArcSin[c + d*x])])/(d*e) - ((I/2)*b*PolyLog[2, E^((2*I)*ArcSin[
c + d*x])])/(d*e)
```

Rubi [A] time = 0.104629, antiderivative size = 89, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4805, 12, 4625, 3717, 2190, 2279, 2391}

$$-\frac{ib\text{PolyLog}\left(2,e^{2i\sin^{-1}(c+dx)}\right)}{2de}-\frac{i\left(a+b\sin^{-1}(c+dx)\right)^2}{2bde}+\frac{\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])/(c*e + d*e*x),x]
```

```
[Out] ((-I/2)*(a + b*ArcSin[c + d*x])^2)/(b*d*e) + ((a + b*ArcSin[c + d*x])*Log[1
 - E^((2*I)*ArcSin[c + d*x])])/(d*e) - ((I/2)*b*PolyLog[2, E^((2*I)*ArcSin[
c + d*x])])/(d*e)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(c+dx)}{ce+dex}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{ex}\,dx, x, c+dx\right)}{d}$$
$$= \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{x}\,dx, x, c+dx\right)}{de}$$
$$= \frac{\text{Subst}\left(\int (a+bx)\cot(x)\,dx, x, \sin^{-1}(c+dx)\right)}{de}$$
$$= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^2}{2bde} - \frac{(2i)\,\text{Subst}\left(\int \frac{e^{2ix}(a+bx)}{1-e^{2ix}}\,dx, x, \sin^{-1}(c+dx)\right)}{de}$$
$$= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^2}{2bde} + \frac{\left(a+b\sin^{-1}(c+dx)\right)\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{b\,\text{Subst}\left(\int \log\left(1\right.\right.}{}$$
$$= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^2}{2bde} + \frac{\left(a+b\sin^{-1}(c+dx)\right)\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} + \frac{(ib)\,\text{Subst}\left(\int \frac{\log}{}\right.}{}$$
$$= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^2}{2bde} + \frac{\left(a+b\sin^{-1}(c+dx)\right)\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{ib\text{Li}_2\left(e^{2i\sin^{-1}(c+d}\right.}{2de}$$

Mathematica [A] time = 0.0589282, size = 71, normalized size = 0.8

$$\frac{-\frac{1}{2}ib\left(\sin^{-1}(c+dx)^2+\text{PolyLog}\left(2,e^{2i\sin^{-1}(c+dx)}\right)\right)+a\log(c+dx)+b\sin^{-1}(c+dx)\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c + d*x])/(c*e + d*e*x),x]
```

```
[Out] (b*ArcSin[c + d*x]*Log[1 - E^((2*I)*ArcSin[c + d*x])] + a*Log[c + d*x] - (I
/2)*b*(ArcSin[c + d*x]^2 + PolyLog[2, E^((2*I)*ArcSin[c + d*x])]))/(d*e)
```

Maple [A] time = 0.038, size = 182, normalized size = 2.

$$\frac{a\ln(dx+c)}{de} - \frac{\frac{i}{2}b\left(\arcsin(dx+c)\right)^2}{de} + \frac{b\arcsin(dx+c)}{de}\ln\left(1+i(dx+c)+\sqrt{1-(dx+c)^2}\right) + \frac{b\arcsin(dx+c)}{de}\ln\left(1-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))/(d*e*x+c*e),x)
```

```
[Out] 1/d*a/e*ln(d*x+c)-1/2*I/d*b/e*arcsin(d*x+c)^2+1/d*b/e*arcsin(d*x+c)*ln(1+I*
(d*x+c)+(1-(d*x+c)^2)^(1/2))+1/d*b/e*arcsin(d*x+c)*ln(1-I*(d*x+c)-(1-(d*x+c
)^2)^(1/2))-I/d*b/e*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-I/d*b/e*polylo
g(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\arcsin\left(dx+c\right)+a}{dex+ce},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e),x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(d*x + c) + a)/(d*e*x + c*e), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{a}{c+dx}\,dx + \int \frac{b\operatorname{asin}\left(c+dx\right)}{c+dx}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))/(d*e*x+c*e),x)
```

```
[Out] (Integral(a/(c + d*x), x) + Integral(b*asin(c + d*x)/(c + d*x), x))/e
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\arcsin(dx+c)+a}{dex+ce}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)/(d*e*x + c*e), x)
```

3.183 $\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^2}\,dx$

Optimal. Leaf size=51

$$-\frac{a+b\sin^{-1}(c+dx)}{de^2(c+dx)}-\frac{b\tanh^{-1}\left(\sqrt{1-(c+dx)^2}\right)}{de^2}$$

```
[Out] -((a + b*ArcSin[c + d*x])/(d*e^2*(c + d*x))) - (b*ArcTanh[Sqrt[1 - (c + d*x
)^2]])/(d*e^2)
```

Rubi [A] time = 0.0531497, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4805, 12, 4627, 266, 63, 206}

$$-\frac{a+b\sin^{-1}(c+dx)}{de^2(c+dx)}-\frac{b\tanh^{-1}\left(\sqrt{1-(c+dx)^2}\right)}{de^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^2,x]
```

```
[Out] -((a + b*ArcSin[c + d*x])/(d*e^2*(c + d*x))) - (b*ArcTanh[Sqrt[1 - (c + d*x
)^2]])/(d*e^2)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
```

```
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^2}\,dx &= \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{e^2x^2}\,dx, x, c+dx\right)}{d}\\
&= \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{x^2}\,dx, x, c+dx\right)}{de^2}\\
&= -\frac{a+b\sin^{-1}(c+dx)}{de^2(c+dx)} + \frac{b\,\text{Subst}\left(\int \frac{1}{x\sqrt{1-x^2}}\,dx, x, c+dx\right)}{de^2}\\
&= -\frac{a+b\sin^{-1}(c+dx)}{de^2(c+dx)} + \frac{b\,\text{Subst}\left(\int \frac{1}{\sqrt{1-x}x}\,dx, x, (c+dx)^2\right)}{2de^2}\\
&= -\frac{a+b\sin^{-1}(c+dx)}{de^2(c+dx)} - \frac{b\,\text{Subst}\left(\int \frac{1}{1-x^2}\,dx, x, \sqrt{1-(c+dx)^2}\right)}{de^2}\\
&= -\frac{a+b\sin^{-1}(c+dx)}{de^2(c+dx)} - \frac{b\tanh^{-1}\left(\sqrt{1-(c+dx)^2}\right)}{de^2}
\end{aligned}
$$

Mathematica [A] time = 0.0265302, size = 46, normalized size = 0.9

$$\frac{-\frac{a+b\sin^{-1}(c+dx)}{c+dx}-b\tanh^{-1}\left(\sqrt{1-(c+dx)^2}\right)}{de^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^2,x]
```

```
[Out] (-((a + b*ArcSin[c + d*x])/(c + d*x)) - b*ArcTanh[Sqrt[1 - (c + d*x)^2]])/(
d*e^2)
```

Maple [A] time = 0.004, size = 56, normalized size = 1.1

$$\frac{1}{d}\left(-\frac{a}{e^2(dx+c)}+\frac{b}{e^2}\left(-\frac{\arcsin(dx+c)}{dx+c}-\mathrm{Artanh}\left(\frac{1}{\sqrt{1-(dx+c)^2}}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))/(d*e*x+c*e)^2,x)
```

```
[Out] 1/d*(-a/e^2/(d*x+c)+b/e^2*(-1/(d*x+c)*arcsin(d*x+c)-arctanh(1/(1-(d*x+c)^2)
^(1/2))))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.11646, size = 238, normalized size = 4.67

$$-\frac{2\,b\arcsin\left(dx+c\right)+\left(bdx+bc\right)\log\left(\sqrt{-d^{2}x^{2}-2\,cdx-c^{2}+1}+1\right)-\left(bdx+bc\right)\log\left(\sqrt{-d^{2}x^{2}-2\,cdx-c^{2}+1}-1\right)+2}{2\left(d^{2}e^{2}x+cde^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(2*b*arcsin(d*x + c) + (b*d*x + b*c)*log(sqrt(-d^2*x^2 - 2*c*d*x - c^2
 + 1) + 1) - (b*d*x + b*c)*log(sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1) - 1) + 2*
a)/(d^2*e^2*x + c*d*e^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int\frac{a}{c^{2}+2cdx+d^{2}x^{2}}\,dx+\int\frac{b\operatorname{asin}\left(c+dx\right)}{c^{2}+2cdx+d^{2}x^{2}}\,dx}{e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))/(d*e*x+c*e)**2,x)
```

```
[Out] (Integral(a/(c**2 + 2*c*d*x + d**2*x**2), x) + Integral(b*asin(c + d*x)/(c*
*2 + 2*c*d*x + d**2*x**2), x))/e**2
```

Giac [B] time = 1.28244, size = 163, normalized size = 3.2

$$-b\left(\frac{\arcsin\left(dx+c\right)e^{(-1)}}{(dxe+ce)d}+\frac{de^{(-2)}\log\left(\left|\sqrt{\frac{e^{2}}{(dxe+ce)^{2}}-1}+\frac{\sqrt{d^{2}}e}{(dxe+ce)d}\right|\right)}{|d|^{2}\operatorname{sgn}\left(\frac{1}{dxe+ce}\right)\operatorname{sgn}\left(d\right)}\right)-\frac{ae^{(-1)}}{(dxe+ce)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^2,x, algorithm="giac")
```

```
[Out] -b*(arcsin(d*x + c)*e^(-1)/((d*x*e + c*e)*d) + d*e^(-2)*log(abs(sqrt(e^2/(d
*x*e + c*e)^2 - 1) + sqrt(d^2)*e/((d*x*e + c*e)*d)))/(abs(d)^2*sgn(1/(d*x*e
 + c*e))*sgn(d))) - a*e^(-1)/((d*x*e + c*e)*d)
```

3.184 $\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^3}\,dx$

Optimal. Leaf size=61

$$-\frac{a+b\sin^{-1}(c+dx)}{2de^3(c+dx)^2}-\frac{b\sqrt{1-(c+dx)^2}}{2de^3(c+dx)}$$

```
[Out] -(b*Sqrt[1 - (c + d*x)^2])/(2*d*e^3*(c + d*x)) - (a + b*ArcSin[c + d*x])/(2
*d*e^3*(c + d*x)^2)
```

Rubi [A] time = 0.0530201, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.19, Rules used = {4805, 12, 4627, 264}

$$-\frac{a+b\sin^{-1}(c+dx)}{2de^3(c+dx)^2}-\frac{b\sqrt{1-(c+dx)^2}}{2de^3(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^3,x]
```

```
[Out] -(b*Sqrt[1 - (c + d*x)^2])/(2*d*e^3*(c + d*x)) - (a + b*ArcSin[c + d*x])/(2
*d*e^3*(c + d*x)^2)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
```

```
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 264

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c
*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] /; FreeQ[{a, b, c, m, n,
 p}, x] && EqQ[(m + 1)/n + p + 1, 0] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^3}\,dx &= \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{e^3x^3}\,dx, x, c+dx\right)}{d}\\ &= \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{x^3}\,dx, x, c+dx\right)}{de^3}\\ &= -\frac{a+b\sin^{-1}(c+dx)}{2de^3(c+dx)^2}+\frac{b\,\text{Subst}\left(\int \frac{1}{x^2\sqrt{1-x^2}}\,dx, x, c+dx\right)}{2de^3}\\ &= -\frac{b\sqrt{1-(c+dx)^2}}{2de^3(c+dx)}-\frac{a+b\sin^{-1}(c+dx)}{2de^3(c+dx)^2}\end{aligned}$$

Mathematica [A] time = 0.0535338, size = 49, normalized size = 0.8

$$-\frac{a+b(c+dx)\sqrt{1-(c+dx)^2}+b\sin^{-1}(c+dx)}{2de^3(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^3,x]
```

```
[Out] -(a + b*(c + d*x)*Sqrt[1 - (c + d*x)^2] + b*ArcSin[c + d*x])/(2*d*e^3*(c +
d*x)^2)
```

Maple [A] time = 0.006, size = 62, normalized size = 1.

$$\frac{1}{d}\left(-\frac{a}{2\,e^3\,(dx+c)^2}+\frac{b}{e^3}\left(-\frac{\arcsin(dx+c)}{2\,(dx+c)^2}-\frac{1}{2\,dx+2\,c}\sqrt{1-(dx+c)^2}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))/(d*e*x+c*e)^3,x)
```

```
[Out] 1/d*(-1/2*a/e^3/(d*x+c)^2+b/e^3*(-1/2/(d*x+c)^2*arcsin(d*x+c)-1/2/(d*x+c)*(
1-(d*x+c)^2)^(1/2)))
```

Maxima [B] time = 1.46822, size = 162, normalized size = 2.66

$$-\frac{1}{2}\,b\left(\frac{\sqrt{-d^2x^2-2\,cdx-c^2+1}d}{d^3e^3x+cd^2e^3}+\frac{\arcsin\left(dx+c\right)}{d^3e^3x^2+2\,cd^2e^3x+c^2de^3}\right)-\frac{a}{2\left(d^3e^3x^2+2\,cd^2e^3x+c^2de^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^3,x, algorithm="maxima")
```

```
[Out] -1/2*b*(sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*d/(d^3*e^3*x + c*d^2*e^3) + arcs
in(d*x + c)/(d^3*e^3*x^2 + 2*c*d^2*e^3*x + c^2*d*e^3)) - 1/2*a/(d^3*e^3*x^2
 + 2*c*d^2*e^3*x + c^2*d*e^3)
```

Fricas [A] time = 2.15265, size = 213, normalized size = 3.49

$$\frac{ad^2x^2+2\,acdx-bc^2\arcsin\left(dx+c\right)-\left(bc^2dx+bc^3\right)\sqrt{-d^2x^2-2\,cdx-c^2+1}}{2\left(c^2d^3e^3x^2+2\,c^3d^2e^3x+c^4de^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(a*d^2*x^2 + 2*a*c*d*x - b*c^2*arcsin(d*x + c) - (b*c^2*d*x + b*c^3)*sq
rt(-d^2*x^2 - 2*c*d*x - c^2 + 1))/(c^2*d^3*e^3*x^2 + 2*c^3*d^2*e^3*x + c^4*
d*e^3)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{a}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx+\int \frac{b\,\mathrm{asin}\,(c+dx)}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))/(d*e*x+c*e)**3,x)
```

```
[Out] (Integral(a/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integral(
b*asin(c + d*x)/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x))/e**3
```

Giac [B] time = 1.28168, size = 301, normalized size = 4.93

$$-\frac{b\arcsin\left(dx+c\right)e^{(-3)}}{4\,d}-\frac{(dx+c)^2 b\arcsin\left(dx+c\right)e^{(-3)}}{8\,d\left(\sqrt{-(dx+c)^2+1}+1\right)^2}-\frac{b\left(\sqrt{-(dx+c)^2+1}+1\right)^2\arcsin\left(dx+c\right)e^{(-3)}}{8\left(dx+c\right)^2 d}-\frac{ae^{(-3)}}{4\,d}-\frac{\quad}{8\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^3,x, algorithm="giac")
```

```
[Out] -1/4*b*arcsin(d*x + c)*e^(-3)/d - 1/8*(d*x + c)^2*b*arcsin(d*x + c)*e^(-3)/
(d*(sqrt(-(d*x + c)^2 + 1) + 1)^2) - 1/8*b*(sqrt(-(d*x + c)^2 + 1) + 1)^2*a
rcsin(d*x + c)*e^(-3)/((d*x + c)^2*d) - 1/4*a*e^(-3)/d - 1/8*(d*x + c)^2*a*
e^(-3)/(d*(sqrt(-(d*x + c)^2 + 1) + 1)^2) + 1/4*(d*x + c)*b*e^(-3)/(d*(sqrt
(-(d*x + c)^2 + 1) + 1)) - 1/4*b*(sqrt(-(d*x + c)^2 + 1) + 1)*e^(-3)/((d*x
+ c)*d) - 1/8*a*(sqrt(-(d*x + c)^2 + 1) + 1)^2*e^(-3)/((d*x + c)^2*d)
```

3.185 $\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^4}\,dx$

Optimal. Leaf size=88

$$-\frac{a+b\sin^{-1}(c+dx)}{3de^4(c+dx)^3}-\frac{b\sqrt{1-(c+dx)^2}}{6de^4(c+dx)^2}-\frac{b\tanh^{-1}\left(\sqrt{1-(c+dx)^2}\right)}{6de^4}$$

```
[Out] -(b*Sqrt[1 - (c + d*x)^2])/(6*d*e^4*(c + d*x)^2) - (a + b*ArcSin[c + d*x])/
(3*d*e^4*(c + d*x)^3) - (b*ArcTanh[Sqrt[1 - (c + d*x)^2]])/(6*d*e^4)
```

Rubi [A] time = 0.0727574, antiderivative size = 88, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4805, 12, 4627, 266, 51, 63, 206}

$$-\frac{a+b\sin^{-1}(c+dx)}{3de^4(c+dx)^3}-\frac{b\sqrt{1-(c+dx)^2}}{6de^4(c+dx)^2}-\frac{b\tanh^{-1}\left(\sqrt{1-(c+dx)^2}\right)}{6de^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^4,x]
```

```
[Out] -(b*Sqrt[1 - (c + d*x)^2])/(6*d*e^4*(c + d*x)^2) - (a + b*ArcSin[c + d*x])/
(3*d*e^4*(c + d*x)^3) - (b*ArcTanh[Sqrt[1 - (c + d*x)^2]])/(6*d*e^4)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
```

```
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^4}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{e^4x^4}\,dx,x,c+dx\right)}{d}$$
$$= \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{x^4}\,dx,x,c+dx\right)}{de^4}$$
$$= -\frac{a+b\sin^{-1}(c+dx)}{3de^4(c+dx)^3} + \frac{b\,\text{Subst}\left(\int \frac{1}{x^3\sqrt{1-x^2}}\,dx,x,c+dx\right)}{3de^4}$$
$$= -\frac{a+b\sin^{-1}(c+dx)}{3de^4(c+dx)^3} + \frac{b\,\text{Subst}\left(\int \frac{1}{\sqrt{1-x}x^2}\,dx,x,(c+dx)^2\right)}{6de^4}$$
$$= -\frac{b\sqrt{1-(c+dx)^2}}{6de^4(c+dx)^2} - \frac{a+b\sin^{-1}(c+dx)}{3de^4(c+dx)^3} + \frac{b\,\text{Subst}\left(\int \frac{1}{\sqrt{1-x}x}\,dx,x,(c+dx)^2\right)}{12de^4}$$
$$= -\frac{b\sqrt{1-(c+dx)^2}}{6de^4(c+dx)^2} - \frac{a+b\sin^{-1}(c+dx)}{3de^4(c+dx)^3} - \frac{b\,\text{Subst}\left(\int \frac{1}{1-x^2}\,dx,x,\sqrt{1-(c+dx)^2}\right)}{6de^4}$$
$$= -\frac{b\sqrt{1-(c+dx)^2}}{6de^4(c+dx)^2} - \frac{a+b\sin^{-1}(c+dx)}{3de^4(c+dx)^3} - \frac{b\tanh^{-1}\left(\sqrt{1-(c+dx)^2}\right)}{6de^4}$$

Mathematica [A] time = 0.0762458, size = 77, normalized size = 0.88

$$-\frac{2\left(a+b\sin^{-1}(c+dx)\right)+b(c+dx)\left(\sqrt{1-(c+dx)^2}+(c+dx)^2\tanh^{-1}\left(\sqrt{1-(c+dx)^2}\right)\right)}{6de^4(c+dx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^4,x]
```

```
[Out] -(2*(a + b*ArcSin[c + d*x]) + b*(c + d*x)*(Sqrt[1 - (c + d*x)^2] + (c + d*x
)^2*ArcTanh[Sqrt[1 - (c + d*x)^2]]))/(6*d*e^4*(c + d*x)^3)
```

Maple [A] time = 0.005, size = 78, normalized size = 0.9

$$\frac{1}{d}\left(-\frac{a}{3\,e^4\,(dx+c)^3}+\frac{b}{e^4}\left(-\frac{\arcsin(dx+c)}{3\,(dx+c)^3}-\frac{1}{6\,(dx+c)^2}\sqrt{1-(dx+c)^2}-\frac{1}{6}\text{Artanh}\left(\frac{1}{\sqrt{1-(dx+c)^2}}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))/(d*e*x+c*e)^4,x)
```

```
[Out] 1/d*(-1/3*a/e^4/(d*x+c)^3+b/e^4*(-1/3/(d*x+c)^3*arcsin(d*x+c)-1/6/(d*x+c)^2
*(1-(d*x+c)^2)^(1/2)-1/6*arctanh(1/(1-(d*x+c)^2)^(1/2))))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{\left(\left(d^4e^4x^3 + 3\,cd^3e^4x^2 + 3\,c^2d^2e^4x + c^3de^4\right)\int \frac{}{d^7e^4x^7+7\,cd^6e^4x^6+\left(21\,c^2-1\right)d^5e^4x^5+5\left(7\,c^3-c\right)d^4e^4x^4+5\left(7\,c^4-2\,c^2\right)d^3e^4x^3+\left(21\,c^5-10\,c^3\right)d^2e^4x^2+(}{3\left(d^4e\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^4,x, algorithm="maxima")
```

```
[Out] -1/3*(3*(d^4*e^4*x^3 + 3*c*d^3*e^4*x^2 + 3*c^2*d^2*e^4*x + c^3*d*e^4)*integ
rate(1/3*e^(1/2*log(d*x + c + 1) + 1/2*log(-d*x - c + 1))/(d^7*e^4*x^7 + 7*
c*d^6*e^4*x^6 + (21*c^2 - 1)*d^5*e^4*x^5 + 5*(7*c^3 - c)*d^4*e^4*x^4 + 5*(7
*c^4 - 2*c^2)*d^3*e^4*x^3 + (21*c^5 - 10*c^3)*d^2*e^4*x^2 + (7*c^6 - 5*c^4)
*d*e^4*x + (c^7 - c^5)*e^4 + (d^5*e^4*x^5 + 5*c*d^4*e^4*x^4 + (10*c^2 - 1)*
d^3*e^4*x^3 + (10*c^3 - 3*c)*d^2*e^4*x^2 + (5*c^4 - 3*c^2)*d*e^4*x + (c^5 -
 c^3)*e^4)*e^(log(d*x + c + 1) + log(-d*x - c + 1))), x) + arctan2(d*x + c,
 sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))*b/(d^4*e^4*x^3 + 3*c*d^3*e^4*x^2 +
3*c^2*d^2*e^4*x + c^3*d*e^4) - 1/3*a/(d^4*e^4*x^3 + 3*c*d^3*e^4*x^2 + 3*c^2
*d^2*e^4*x + c^3*d*e^4)
```

Fricas [B] time = 2.47081, size = 462, normalized size = 5.25

$$-\frac{4\,b\arcsin\left(dx+c\right) + \left(bd^3x^3 + 3\,bcd^2x^2 + 3\,bc^2dx + bc^3\right)\log\left(\sqrt{-d^2x^2 - 2\,cdx - c^2 + 1} + 1\right) - \left(bd^3x^3 + 3\,bcd^2x^2 + 3\,bc\right.}{12\left(d^4e^4x^3 + 3\,cd^3e^4x^2 + 3\,c^2d^2e^4x + \right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^4,x, algorithm="fricas")
```

```
[Out] -1/12*(4*b*arcsin(d*x + c) + (b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c
^3)*log(sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1) + 1) - (b*d^3*x^3 + 3*b*c*d^2*x^
```

```
2 + 3*b*c^2*d*x + b*c^3)*log(sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1) - 1) + 2*sq
rt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*(b*d*x + b*c) + 4*a)/(d^4*e^4*x^3 + 3*c*d^
3*e^4*x^2 + 3*c^2*d^2*e^4*x + c^3*d*e^4)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{a}{c^4+4c^3dx+6c^2d^2x^2+4cd^3x^3+d^4x^4}\,dx + \int \frac{b\operatorname{asin}(c+dx)}{c^4+4c^3dx+6c^2d^2x^2+4cd^3x^3+d^4x^4}\,dx}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))/(d*e*x+c*e)**4,x)
```

```
[Out] (Integral(a/(c**4 + 4*c**3*d*x + 6*c**2*d**2*x**2 + 4*c*d**3*x**3 + d**4*x*
*4), x) + Integral(b*asin(c + d*x)/(c**4 + 4*c**3*d*x + 6*c**2*d**2*x**2 +
4*c*d**3*x**3 + d**4*x**4), x))/e**4
```

Giac [B] time = 1.67887, size = 508, normalized size = 5.77

$$-\frac{(dx+c)^3 b\arcsin(dx+c)e^{(-4)}}{24\,d\left(\sqrt{-(dx+c)^2+1}+1\right)^3} - \frac{(dx+c)b\arcsin(dx+c)e^{(-4)}}{8\,d\left(\sqrt{-(dx+c)^2+1}+1\right)} - \frac{b\left(\sqrt{-(dx+c)^2+1}+1\right)\arcsin(dx+c)e^{(-4)}}{8\,(dx+c)d} - \frac{b\Big(\sqrt{-\cdots}}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^4,x, algorithm="giac")
```

```
[Out] -1/24*(d*x + c)^3*b*arcsin(d*x + c)*e^(-4)/(d*(sqrt(-(d*x + c)^2 + 1) + 1)^
3) - 1/8*(d*x + c)*b*arcsin(d*x + c)*e^(-4)/(d*(sqrt(-(d*x + c)^2 + 1) + 1)
) - 1/8*b*(sqrt(-(d*x + c)^2 + 1) + 1)*arcsin(d*x + c)*e^(-4)/((d*x + c)*d)
 - 1/24*b*(sqrt(-(d*x + c)^2 + 1) + 1)^3*arcsin(d*x + c)*e^(-4)/((d*x + c)^
3*d) - 1/6*b*e^(-4)*log(sqrt(-(d*x + c)^2 + 1) + 1)/d + 1/6*b*e^(-4)*log(ab
s(d*x + c))/d - 1/24*(d*x + c)^3*a*e^(-4)/(d*(sqrt(-(d*x + c)^2 + 1) + 1)^3
) + 1/24*(d*x + c)^2*b*e^(-4)/(d*(sqrt(-(d*x + c)^2 + 1) + 1)^2) - 1/8*(d*x
 + c)*a*e^(-4)/(d*(sqrt(-(d*x + c)^2 + 1) + 1)) - 1/8*a*(sqrt(-(d*x + c)^2
+ 1) + 1)*e^(-4)/((d*x + c)*d) - 1/24*b*(sqrt(-(d*x + c)^2 + 1) + 1)^2*e^(-
4)/((d*x + c)^2*d) - 1/24*a*(sqrt(-(d*x + c)^2 + 1) + 1)^3*e^(-4)/((d*x + c
)^3*d)
```

3.186 $\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^5}\,dx$

Optimal. Leaf size=94

$$-\frac{a+b\sin^{-1}(c+dx)}{4de^5(c+dx)^4}-\frac{b\sqrt{1-(c+dx)^2}}{6de^5(c+dx)}-\frac{b\sqrt{1-(c+dx)^2}}{12de^5(c+dx)^3}$$

```
[Out] -(b*Sqrt[1 - (c + d*x)^2])/(12*d*e^5*(c + d*x)^3) - (b*Sqrt[1 - (c + d*x)^2
])/(6*d*e^5*(c + d*x)) - (a + b*ArcSin[c + d*x])/(4*d*e^5*(c + d*x)^4)
```

Rubi [A] time = 0.0681326, antiderivative size = 94, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {4805, 12, 4627, 271, 264}

$$-\frac{a+b\sin^{-1}(c+dx)}{4de^5(c+dx)^4}-\frac{b\sqrt{1-(c+dx)^2}}{6de^5(c+dx)}-\frac{b\sqrt{1-(c+dx)^2}}{12de^5(c+dx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^5,x]
```

```
[Out] -(b*Sqrt[1 - (c + d*x)^2])/(12*d*e^5*(c + d*x)^3) - (b*Sqrt[1 - (c + d*x)^2
])/(6*d*e^5*(c + d*x)) - (a + b*ArcSin[c + d*x])/(4*d*e^5*(c + d*x)^4)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
```

```
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 271

```
Int[(x_)^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x^(m + 1)*(
a + b*x^n)^(p + 1))/(a*(m + 1)), x] - Dist[(b*(m + n*(p + 1) + 1))/(a*(m +
1)), Int[x^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, m, n, p}, x] && IL
tQ[Simplify[(m + 1)/n + p + 1], 0] && NeQ[m, -1]
```

Rule 264

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c
*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] /; FreeQ[{a, b, c, m, n,
 p}, x] && EqQ[(m + 1)/n + p + 1, 0] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^5}\,dx &= \frac{\operatorname{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{e^5x^5}\,dx,x,c+dx\right)}{d}\\
&= \frac{\operatorname{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{x^5}\,dx,x,c+dx\right)}{de^5}\\
&= -\frac{a+b\sin^{-1}(c+dx)}{4de^5(c+dx)^4}+\frac{b\operatorname{Subst}\left(\int \frac{1}{x^4\sqrt{1-x^2}}\,dx,x,c+dx\right)}{4de^5}\\
&= -\frac{b\sqrt{1-(c+dx)^2}}{12de^5(c+dx)^3}-\frac{a+b\sin^{-1}(c+dx)}{4de^5(c+dx)^4}+\frac{b\operatorname{Subst}\left(\int \frac{1}{x^2\sqrt{1-x^2}}\,dx,x,c+dx\right)}{6de^5}\\
&= -\frac{b\sqrt{1-(c+dx)^2}}{12de^5(c+dx)^3}-\frac{b\sqrt{1-(c+dx)^2}}{6de^5(c+dx)}-\frac{a+b\sin^{-1}(c+dx)}{4de^5(c+dx)^4}
\end{aligned}$$

Mathematica [A] time = 0.0610868, size = 63, normalized size = 0.67

$$-\frac{3\left(a+b\sin^{-1}(c+dx)\right)+b(c+dx)\sqrt{1-(c+dx)^2}\left(2(c+dx)^2+1\right)}{12de^5(c+dx)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^5,x]
```

```
[Out] -(b*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(1 + 2*(c + d*x)^2) + 3*(a + b*ArcSin[c
 + d*x]))/(12*d*e^5*(c + d*x)^4)
```

Maple [A] time = 0.004, size = 84, normalized size = 0.9

$$\frac{1}{d}\left(-\frac{a}{4\,e^{5}\left(dx+c\right)^{4}}+\frac{b}{e^{5}}\left(-\frac{\arcsin\left(dx+c\right)}{4\,\left(dx+c\right)^{4}}-\frac{1}{12\,\left(dx+c\right)^{3}}\sqrt{1-\left(dx+c\right)^{2}}-\frac{1}{6\,dx+6\,c}\sqrt{1-\left(dx+c\right)^{2}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))/(d*e*x+c*e)^5,x)
```

```
[Out] 1/d*(-1/4*a/e^5/(d*x+c)^4+b/e^5*(-1/4/(d*x+c)^4*arcsin(d*x+c)-1/12/(d*x+c)^
3*(1-(d*x+c)^2)^(1/2)-1/6/(d*x+c)*(1-(d*x+c)^2)^(1/2)))
```

Maxima [B] time = 1.61405, size = 355, normalized size = 3.78

$$\frac{1}{12}\,b\left(\frac{\left(2\,d^{4}x^{4}+8\,cd^{3}x^{3}+2\,c^{4}+\left(12\,c^{2}d^{2}-d^{2}\right)x^{2}-c^{2}+2\left(4\,c^{3}d-cd\right)x-1\right)d}{\left(d^{5}e^{5}x^{3}+3\,cd^{4}e^{5}x^{2}+3\,c^{2}d^{3}e^{5}x+c^{3}d^{2}e^{5}\right)\sqrt{dx+c+1}\sqrt{-dx-c+1}}-\frac{3\,\arcsin\left(dx+c\right)}{d^{5}e^{5}x^{4}+4\,cd^{4}e^{5}x^{3}+6\,c^{2}d^{3}e^{5}x^{2}+4\,c^{3}d^{2}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^5,x, algorithm="maxima")
```

```
[Out] 1/12*b*((2*d^4*x^4 + 8*c*d^3*x^3 + 2*c^4 + (12*c^2*d^2 - d^2)*x^2 - c^2 + 2
*(4*c^3*d - c*d)*x - 1)*d/((d^5*e^5*x^3 + 3*c*d^4*e^5*x^2 + 3*c^2*d^3*e^5*x
 + c^3*d^2*e^5)*sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) - 3*arcsin(d*x + c)/(
d^5*e^5*x^4 + 4*c*d^4*e^5*x^3 + 6*c^2*d^3*e^5*x^2 + 4*c^3*d^2*e^5*x + c^4*d
*e^5)) - 1/4*a/(d^5*e^5*x^4 + 4*c*d^4*e^5*x^3 + 6*c^2*d^3*e^5*x^2 + 4*c^3*d
^2*e^5*x + c^4*d*e^5)
```

Fricas [B] time = 2.29779, size = 405, normalized size = 4.31

$$\frac{3\,ad^{4}x^{4}+12\,acd^{3}x^{3}+18\,ac^{2}d^{2}x^{2}+12\,ac^{3}dx-3\,bc^{4}\arcsin\left(dx+c\right)-\left(2\,bc^{4}d^{3}x^{3}+6\,bc^{5}d^{2}x^{2}+2\,bc^{7}+bc^{5}+\left(6\,bc^{6}+bc\right.\right.}{12\left(c^{4}d^{5}e^{5}x^{4}+4\,c^{5}d^{4}e^{5}x^{3}+6\,c^{6}d^{3}e^{5}x^{2}+4\,c^{7}d^{2}e^{5}x+c^{8}de^{5}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^5,x, algorithm="fricas")
```

```
[Out] 1/12*(3*a*d^4*x^4 + 12*a*c*d^3*x^3 + 18*a*c^2*d^2*x^2 + 12*a*c^3*d*x - 3*b*
c^4*arcsin(d*x + c) - (2*b*c^4*d^3*x^3 + 6*b*c^5*d^2*x^2 + 2*b*c^7 + b*c^5
+ (6*b*c^6 + b*c^4)*d*x)*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1))/(c^4*d^5*e^5*x
^4 + 4*c^5*d^4*e^5*x^3 + 6*c^6*d^3*e^5*x^2 + 4*c^7*d^2*e^5*x + c^8*d*e^5)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{a}{c^5+5c^4dx+10c^3d^2x^2+10c^2d^3x^3+5cd^4x^4+d^5x^5}\,dx + \int \frac{b\operatorname{asin}(c+dx)}{c^5+5c^4dx+10c^3d^2x^2+10c^2d^3x^3+5cd^4x^4+d^5x^5}\,dx}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))/(d*e*x+c*e)**5,x)
```

```
[Out] (Integral(a/(c**5 + 5*c**4*d*x + 10*c**3*d**2*x**2 + 10*c**2*d**3*x**3 + 5*
c*d**4*x**4 + d**5*x**5), x) + Integral(b*asin(c + d*x)/(c**5 + 5*c**4*d*x
+ 10*c**3*d**2*x**2 + 10*c**2*d**3*x**3 + 5*c*d**4*x**4 + d**5*x**5), x))/e
**5
```

Giac [B] time = 1.68219, size = 576, normalized size = 6.13

$$-\frac{3\,b\arcsin(dx+c)\,e^{(-5)}}{32\,d} - \frac{(dx+c)^4 b\arcsin(dx+c)\,e^{(-5)}}{64\,d\left(\sqrt{-(dx+c)^2+1}+1\right)^4} - \frac{(dx+c)^2 b\arcsin(dx+c)\,e^{(-5)}}{16\,d\left(\sqrt{-(dx+c)^2+1}+1\right)^2} - \frac{b\left(\sqrt{-(dx+c)^2+1}+1\right)^2 a}{16\,(dx+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^5,x, algorithm="giac")
```

```
[Out] -3/32*b*arcsin(d*x + c)*e^(-5)/d - 1/64*(d*x + c)^4*b*arcsin(d*x + c)*e^(-5
)/(d*(sqrt(-(d*x + c)^2 + 1) + 1)^4) - 1/16*(d*x + c)^2*b*arcsin(d*x + c)*e
^(-5)/(d*(sqrt(-(d*x + c)^2 + 1) + 1)^2) - 1/16*b*(sqrt(-(d*x + c)^2 + 1) +
 1)^2*arcsin(d*x + c)*e^(-5)/((d*x + c)^2*d) - 1/64*b*(sqrt(-(d*x + c)^2 +
1) + 1)^4*arcsin(d*x + c)*e^(-5)/((d*x + c)^4*d) - 3/32*a*e^(-5)/d - 1/64*(
d*x + c)^4*a*e^(-5)/(d*(sqrt(-(d*x + c)^2 + 1) + 1)^4) + 1/96*(d*x + c)^3*b
```

```
*e^(-5)/(d*(sqrt(-(d*x + c)^2 + 1) + 1)^3) - 1/16*(d*x + c)^2*a*e^(-5)/(d*(
sqrt(-(d*x + c)^2 + 1) + 1)^2) + 3/32*(d*x + c)*b*e^(-5)/(d*(sqrt(-(d*x + c
)^2 + 1) + 1)) - 3/32*b*(sqrt(-(d*x + c)^2 + 1) + 1)*e^(-5)/((d*x + c)*d) -
 1/16*a*(sqrt(-(d*x + c)^2 + 1) + 1)^2*e^(-5)/((d*x + c)^2*d) - 1/96*b*(sqr
t(-(d*x + c)^2 + 1) + 1)^3*e^(-5)/((d*x + c)^3*d) - 1/64*a*(sqrt(-(d*x + c)
^2 + 1) + 1)^4*e^(-5)/((d*x + c)^4*d)
```

3.187 $\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^6}\,dx$

Optimal. Leaf size=121

$$-\frac{a+b\sin^{-1}(c+dx)}{5de^6(c+dx)^5}-\frac{3b\sqrt{1-(c+dx)^2}}{40de^6(c+dx)^2}-\frac{b\sqrt{1-(c+dx)^2}}{20de^6(c+dx)^4}-\frac{3b\tanh^{-1}\left(\sqrt{1-(c+dx)^2}\right)}{40de^6}$$

```
[Out] -(b*Sqrt[1 - (c + d*x)^2])/(20*d*e^6*(c + d*x)^4) - (3*b*Sqrt[1 - (c + d*x)
^2])/(40*d*e^6*(c + d*x)^2) - (a + b*ArcSin[c + d*x])/(5*d*e^6*(c + d*x)^5)
 - (3*b*ArcTanh[Sqrt[1 - (c + d*x)^2]])/(40*d*e^6)
```

Rubi [A] time = 0.0925666, antiderivative size = 121, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4805, 12, 4627, 266, 51, 63, 206}

$$-\frac{a+b\sin^{-1}(c+dx)}{5de^6(c+dx)^5}-\frac{3b\sqrt{1-(c+dx)^2}}{40de^6(c+dx)^2}-\frac{b\sqrt{1-(c+dx)^2}}{20de^6(c+dx)^4}-\frac{3b\tanh^{-1}\left(\sqrt{1-(c+dx)^2}\right)}{40de^6}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^6,x]
```

```
[Out] -(b*Sqrt[1 - (c + d*x)^2])/(20*d*e^6*(c + d*x)^4) - (3*b*Sqrt[1 - (c + d*x)
^2])/(40*d*e^6*(c + d*x)^2) - (a + b*ArcSin[c + d*x])/(5*d*e^6*(c + d*x)^5)
 - (3*b*ArcTanh[Sqrt[1 - (c + d*x)^2]])/(40*d*e^6)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
```

```
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^6}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{e^6x^6}\,dx, x, c+dx\right)}{d}$$
$$= \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{x^6}\,dx, x, c+dx\right)}{de^6}$$
$$= -\frac{a+b\sin^{-1}(c+dx)}{5de^6(c+dx)^5} + \frac{b\,\text{Subst}\left(\int \frac{1}{x^5\sqrt{1-x^2}}\,dx, x, c+dx\right)}{5de^6}$$
$$= -\frac{a+b\sin^{-1}(c+dx)}{5de^6(c+dx)^5} + \frac{b\,\text{Subst}\left(\int \frac{1}{\sqrt{1-x}x^3}\,dx, x, (c+dx)^2\right)}{10de^6}$$
$$= -\frac{b\sqrt{1-(c+dx)^2}}{20de^6(c+dx)^4} - \frac{a+b\sin^{-1}(c+dx)}{5de^6(c+dx)^5} + \frac{(3b)\,\text{Subst}\left(\int \frac{1}{\sqrt{1-x}x^2}\,dx, x, (c+dx)^2\right)}{40de^6}$$
$$= -\frac{b\sqrt{1-(c+dx)^2}}{20de^6(c+dx)^4} - \frac{3b\sqrt{1-(c+dx)^2}}{40de^6(c+dx)^2} - \frac{a+b\sin^{-1}(c+dx)}{5de^6(c+dx)^5} + \frac{(3b)\,\text{Subst}\left(\int \frac{1}{\sqrt{1-x}x}\,dx, x, (c+\right.}{80de^6}$$
$$= -\frac{b\sqrt{1-(c+dx)^2}}{20de^6(c+dx)^4} - \frac{3b\sqrt{1-(c+dx)^2}}{40de^6(c+dx)^2} - \frac{a+b\sin^{-1}(c+dx)}{5de^6(c+dx)^5} - \frac{(3b)\,\text{Subst}\left(\int \frac{1}{1-x^2}\,dx, x, \sqrt{1-\right.}{40de^6}$$
$$= -\frac{b\sqrt{1-(c+dx)^2}}{20de^6(c+dx)^4} - \frac{3b\sqrt{1-(c+dx)^2}}{40de^6(c+dx)^2} - \frac{a+b\sin^{-1}(c+dx)}{5de^6(c+dx)^5} - \frac{3b\tanh^{-1}\left(\sqrt{1-(c+dx)^2}\right)}{40de^6}$$

Mathematica [C] time = 0.0392163, size = 68, normalized size = 0.56

$$\frac{-\frac{1}{5}b\sqrt{1-(c+dx)^2}\text{Hypergeometric2F1}\left(\frac{1}{2},3,\frac{3}{2},1-(c+dx)^2\right) - \frac{a+b\sin^{-1}(c+dx)}{5(c+dx)^5}}{de^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^6,x]
```

```
[Out] (-(a + b*ArcSin[c + d*x])/(5*(c + d*x)^5) - (b*Sqrt[1 - (c + d*x)^2]*Hyperg
eometric2F1[1/2, 3, 3/2, 1 - (c + d*x)^2])/5)/(d*e^6)
```

Maple [A] time = 0.004, size = 100, normalized size = 0.8

$$\frac{1}{d}\left(-\frac{a}{5e^6(dx+c)^5} + \frac{b}{e^6}\left(-\frac{\arcsin(dx+c)}{5(dx+c)^5} - \frac{1}{20(dx+c)^4}\sqrt{1-(dx+c)^2} - \frac{3}{40(dx+c)^2}\sqrt{1-(dx+c)^2} - \frac{3}{40}\text{Artanh}\left(\frac{}{\sqrt{}}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))/(d*e*x+c*e)^6,x)
```

```
[Out] 1/d*(-1/5*a/e^6/(d*x+c)^5+b/e^6*(-1/5/(d*x+c)^5*arcsin(d*x+c)-1/20/(d*x+c)^
4*(1-(d*x+c)^2)^(1/2)-3/40/(d*x+c)^2*(1-(d*x+c)^2)^(1/2)-3/40*arctanh(1/(1-
(d*x+c)^2)^(1/2))))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{\left(\left(d^6e^6x^5 + 5\,cd^5e^6x^4 + 10\,c^2d^4e^6x^3 + 10\,c^3d^3e^6x^2 + 5\,c^4d^2e^6x + c^5de^6\right)\int \frac{}{d^9e^6x^9+9\,cd^8e^6x^8+\left(36\,c^2-1\right)d^7e^6x^7+7\left(12\,c^3-c\right)d^6e^6x^6+21\,(}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^6,x, algorithm="maxima")
```

```
[Out] -1/5*(5*(d^6*e^6*x^5 + 5*c*d^5*e^6*x^4 + 10*c^2*d^4*e^6*x^3 + 10*c^3*d^3*e^
6*x^2 + 5*c^4*d^2*e^6*x + c^5*d*e^6)*integrate(1/5*e^(1/2*log(d*x + c + 1)
+ 1/2*log(-d*x - c + 1))/(d^9*e^6*x^9 + 9*c*d^8*e^6*x^8 + (36*c^2 - 1)*d^7*
e^6*x^7 + 7*(12*c^3 - c)*d^6*e^6*x^6 + 21*(6*c^4 - c^2)*d^5*e^6*x^5 + 7*(18
*c^5 - 5*c^3)*d^4*e^6*x^4 + 7*(12*c^6 - 5*c^4)*d^3*e^6*x^3 + 3*(12*c^7 - 7*
c^5)*d^2*e^6*x^2 + (9*c^8 - 7*c^6)*d*e^6*x + (c^9 - c^7)*e^6 + (d^7*e^6*x^7
 + 7*c*d^6*e^6*x^6 + (21*c^2 - 1)*d^5*e^6*x^5 + 5*(7*c^3 - c)*d^4*e^6*x^4 +
 5*(7*c^4 - 2*c^2)*d^3*e^6*x^3 + (21*c^5 - 10*c^3)*d^2*e^6*x^2 + (7*c^6 - 5
*c^4)*d*e^6*x + (c^7 - c^5)*e^6)*e^(log(d*x + c + 1) + log(-d*x - c + 1))),
 x) + arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))*b/(d^6*e^6*x^
5 + 5*c*d^5*e^6*x^4 + 10*c^2*d^4*e^6*x^3 + 10*c^3*d^3*e^6*x^2 + 5*c^4*d^2*e
^6*x + c^5*d*e^6) - 1/5*a/(d^6*e^6*x^5 + 5*c*d^5*e^6*x^4 + 10*c^2*d^4*e^6*x
^3 + 10*c^3*d^3*e^6*x^2 + 5*c^4*d^2*e^6*x + c^5*d*e^6)
```

Fricas [B] time = 3.22165, size = 705, normalized size = 5.83

$$-\frac{16\,b\arcsin\left(dx+c\right) + 3\left(bd^5x^5 + 5\,bcd^4x^4 + 10\,bc^2d^3x^3 + 10\,bc^3d^2x^2 + 5\,bc^4dx + bc^5\right)\log\left(\sqrt{-d^2x^2 - 2\,cdx - c^2 + 1} + \right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^6,x, algorithm="fricas")
```

```
[Out] -1/80*(16*b*arcsin(d*x + c) + 3*(b*d^5*x^5 + 5*b*c*d^4*x^4 + 10*b*c^2*d^3*x
^3 + 10*b*c^3*d^2*x^2 + 5*b*c^4*d*x + b*c^5)*log(sqrt(-d^2*x^2 - 2*c*d*x -
c^2 + 1) + 1) - 3*(b*d^5*x^5 + 5*b*c*d^4*x^4 + 10*b*c^2*d^3*x^3 + 10*b*c^3*
d^2*x^2 + 5*b*c^4*d*x + b*c^5)*log(sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1) - 1)
+ 2*(3*b*d^3*x^3 + 9*b*c*d^2*x^2 + 3*b*c^3 + (9*b*c^2 + 2*b)*d*x + 2*b*c)*s
qrt(-d^2*x^2 - 2*c*d*x - c^2 + 1) + 16*a)/(d^6*e^6*x^5 + 5*c*d^5*e^6*x^4 +
10*c^2*d^4*e^6*x^3 + 10*c^3*d^3*e^6*x^2 + 5*c^4*d^2*e^6*x + c^5*d*e^6)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{a}{c^6+6c^5dx+15c^4d^2x^2+20c^3d^3x^3+15c^2d^4x^4+6cd^5x^5+d^6x^6}\,dx + \int \frac{b\,\mathrm{asin}\,(c+dx)}{c^6+6c^5dx+15c^4d^2x^2+20c^3d^3x^3+15c^2d^4x^4+6cd^5x^5+d^6x^6}\,dx}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))/(d*e*x+c*e)**6,x)
```

```
[Out] (Integral(a/(c**6 + 6*c**5*d*x + 15*c**4*d**2*x**2 + 20*c**3*d**3*x**3 + 15
*c**2*d**4*x**4 + 6*c*d**5*x**5 + d**6*x**6), x) + Integral(b*asin(c + d*x)
/(c**6 + 6*c**5*d*x + 15*c**4*d**2*x**2 + 20*c**3*d**3*x**3 + 15*c**2*d**4*
x**4 + 6*c*d**5*x**5 + d**6*x**6), x))/e**6
```

Giac [B] time = 1.81915, size = 783, normalized size = 6.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^6,x, algorithm="giac")
```

```
[Out] -1/160*(d*x + c)^5*b*arcsin(d*x + c)*e^(-6)/(d*(sqrt(-(d*x + c)^2 + 1) + 1)
^5) - 1/32*(d*x + c)^3*b*arcsin(d*x + c)*e^(-6)/(d*(sqrt(-(d*x + c)^2 + 1)
+ 1)^3) - 1/16*(d*x + c)*b*arcsin(d*x + c)*e^(-6)/(d*(sqrt(-(d*x + c)^2 + 1
) + 1)) - 1/16*b*(sqrt(-(d*x + c)^2 + 1) + 1)*arcsin(d*x + c)*e^(-6)/((d*x
+ c)*d) - 1/32*b*(sqrt(-(d*x + c)^2 + 1) + 1)^3*arcsin(d*x + c)*e^(-6)/((d*
x + c)^3*d) - 1/160*b*(sqrt(-(d*x + c)^2 + 1) + 1)^5*arcsin(d*x + c)*e^(-6)
/((d*x + c)^5*d) - 3/40*b*e^(-6)*log(sqrt(-(d*x + c)^2 + 1) + 1)/d + 3/40*b
```

```
*e^(-6)*log(abs(d*x + c))/d - 1/160*(d*x + c)^5*a*e^(-6)/(d*(sqrt(-(d*x + c
)^2 + 1) + 1)^5) + 1/320*(d*x + c)^4*b*e^(-6)/(d*(sqrt(-(d*x + c)^2 + 1) +
1)^4) - 1/32*(d*x + c)^3*a*e^(-6)/(d*(sqrt(-(d*x + c)^2 + 1) + 1)^3) + 1/40
*(d*x + c)^2*b*e^(-6)/(d*(sqrt(-(d*x + c)^2 + 1) + 1)^2) - 1/16*(d*x + c)*a
*e^(-6)/(d*(sqrt(-(d*x + c)^2 + 1) + 1)) - 1/16*a*(sqrt(-(d*x + c)^2 + 1) +
 1)*e^(-6)/((d*x + c)*d) - 1/40*b*(sqrt(-(d*x + c)^2 + 1) + 1)^2*e^(-6)/((d
*x + c)^2*d) - 1/32*a*(sqrt(-(d*x + c)^2 + 1) + 1)^3*e^(-6)/((d*x + c)^3*d)
 - 1/320*b*(sqrt(-(d*x + c)^2 + 1) + 1)^4*e^(-6)/((d*x + c)^4*d) - 1/160*a*
(sqrt(-(d*x + c)^2 + 1) + 1)^5*e^(-6)/((d*x + c)^5*d)
```

3.188 $\int (ce+dex)^4 \left(a+b\sin^{-1}(c+dx)\right)^2 \, dx$

Optimal. Leaf size=203

$$\frac{e^4(c+dx)^5\left(a+b\sin^{-1}(c+dx)\right)^2}{5d}+\frac{2be^4\sqrt{1-(c+dx)^2}(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)}{25d}+\frac{8be^4\sqrt{1-(c+dx)^2}(c+dx)^2\left(a\right.}{75d}$$

```
[Out] (-16*b^2*e^4*x)/75 - (8*b^2*e^4*(c + d*x)^3)/(225*d) - (2*b^2*e^4*(c + d*x)
^5)/(125*d) + (16*b*e^4*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(75*
d) + (8*b*e^4*(c + d*x)^2*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(7
5*d) + (2*b*e^4*(c + d*x)^4*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/
(25*d) + (e^4*(c + d*x)^5*(a + b*ArcSin[c + d*x])^2)/(5*d)
```

Rubi [A] time = 0.304755, antiderivative size = 203, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.304, Rules used = {4805, 12, 4627, 4707, 4677, 8, 30}

$$\frac{e^4(c+dx)^5\left(a+b\sin^{-1}(c+dx)\right)^2}{5d}+\frac{2be^4\sqrt{1-(c+dx)^2}(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)}{25d}+\frac{8be^4\sqrt{1-(c+dx)^2}(c+dx)^2\left(a\right.}{75d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^4*(a + b*ArcSin[c + d*x])^2,x]
```



```
[Out] (-16*b^2*e^4*x)/75 - (8*b^2*e^4*(c + d*x)^3)/(225*d) - (2*b^2*e^4*(c + d*x)
^5)/(125*d) + (16*b*e^4*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(75*
d) + (8*b*e^4*(c + d*x)^2*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(7
5*d) + (2*b*e^4*(c + d*x)^4*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/
(25*d) + (e^4*(c + d*x)^5*(a + b*ArcSin[c + d*x])^2)/(5*d)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rubi steps

$$\int (ce+dex)^4\left(a+b\sin^{-1}(c+dx)\right)^2\,dx=\frac{\operatorname{Subst}\left(\int e^4x^4\left(a+b\sin^{-1}(x)\right)^2\,dx,x,c+dx\right)}{d}$$

$$=\frac{e^4\operatorname{Subst}\left(\int x^4\left(a+b\sin^{-1}(x)\right)^2\,dx,x,c+dx\right)}{d}$$

$$=\frac{e^4(c+dx)^5\left(a+b\sin^{-1}(c+dx)\right)^2}{5d}-\frac{\left(2be^4\right)\operatorname{Subst}\left(\int\frac{x^5\left(a+b\sin^{-1}(x)\right)}{\sqrt{1-x^2}}\,dx,x,c+dx\right.}{5d}$$

$$=\frac{2be^4(c+dx)^4\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{25d}+\frac{e^4(c+dx)^5\left(a+b\sin^{-1}(c\right.}{5d}$$

$$=-\frac{2b^2e^4(c+dx)^5}{125d}+\frac{8be^4(c+dx)^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{75d}+\frac{2be^4(c}{}$$

$$=-\frac{8b^2e^4(c+dx)^3}{225d}-\frac{2b^2e^4(c+dx)^5}{125d}+\frac{16be^4\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{75d}$$

$$=-\frac{16}{75}b^2e^4x-\frac{8b^2e^4(c+dx)^3}{225d}-\frac{2b^2e^4(c+dx)^5}{125d}+\frac{16be^4\sqrt{1-(c+dx)^2}\left(a+b\sin\right.}{75d}$$

Mathematica [A] time = 0.376562, size = 164, normalized size = 0.81

$$\frac{e^4\left((c+dx)^5\left(a+b\sin^{-1}(c+dx)\right)^2-\frac{2}{25}b\left(-5\sqrt{1-(c+dx)^2}(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)-\frac{20}{3}\sqrt{1-(c+dx)^2}(c+dx)^2\left(a\right.\right.\right.}{5d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^4*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (e^4*((c + d*x)^5*(a + b*ArcSin[c + d*x])^2 - (2*b*((20*b*(c + d*x)^3)/9 +
b*(c + d*x)^5 - (20*(c + d*x)^2*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x
]))/3 - 5*(c + d*x)^4*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]) + (40*(
b*d*x - Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])))/3))/25))/(5*d)
```

Maple [A] time = 0.035, size = 194, normalized size = 1.

$$\frac{1}{d}\left(\frac{e^4\left(dx+c\right)^5a^2}{5}+e^4b^2\left(\frac{\left(\arcsin\left(dx+c\right)\right)^2\left(dx+c\right)^5}{5}+\frac{2\arcsin\left(dx+c\right)\left(3\left(dx+c\right)^4+4\left(dx+c\right)^2+8\right)}{75}\sqrt{1-\left(dx+c\right)^2}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^4*(a+b*arcsin(d*x+c))^2,x)
```

```
[Out] 1/d*(1/5*e^4*(d*x+c)^5*a^2+e^4*b^2*(1/5*arcsin(d*x+c)^2*(d*x+c)^5+2/75*arcs
in(d*x+c)*(3*(d*x+c)^4+4*(d*x+c)^2+8)*(1-(d*x+c)^2)^(1/2)-2/125*(d*x+c)^5-8
/225*(d*x+c)^3-16/75*d*x-16/75*c)+2*e^4*a*b*(1/5*(d*x+c)^5*arcsin(d*x+c)+1/
25*(d*x+c)^4*(1-(d*x+c)^2)^(1/2)+4/75*(d*x+c)^2*(1-(d*x+c)^2)^(1/2)+8/75*(1
-(d*x+c)^2)^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4*(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.396, size = 1207, normalized size = 5.95

$$\frac{9\left(25\,a^2-2\,b^2\right)d^5e^4x^5+45\left(25\,a^2-2\,b^2\right)cd^4e^4x^4+10\left(9\left(25\,a^2-2\,b^2\right)c^2-4\,b^2\right)d^3e^4x^3+30\left(3\left(25\,a^2-2\,b^2\right)c^3-4\,b^2c\right)\cdots}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4*(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] 1/1125*(9*(25*a^2 - 2*b^2)*d^5*e^4*x^5 + 45*(25*a^2 - 2*b^2)*c*d^4*e^4*x^4
+ 10*(9*(25*a^2 - 2*b^2)*c^2 - 4*b^2)*d^3*e^4*x^3 + 30*(3*(25*a^2 - 2*b^2)*
c^3 - 4*b^2*c)*d^2*e^4*x^2 + 15*(3*(25*a^2 - 2*b^2)*c^4 - 8*b^2*c^2 - 16*b^
2)*d*e^4*x + 225*(b^2*d^5*e^4*x^5 + 5*b^2*c*d^4*e^4*x^4 + 10*b^2*c^2*d^3*e^
4*x^3 + 10*b^2*c^3*d^2*e^4*x^2 + 5*b^2*c^4*d*e^4*x + b^2*c^5*e^4)*arcsin(d*
x + c)^2 + 450*(a*b*d^5*e^4*x^5 + 5*a*b*c*d^4*e^4*x^4 + 10*a*b*c^2*d^3*e^4*
x^3 + 10*a*b*c^3*d^2*e^4*x^2 + 5*a*b*c^4*d*e^4*x + a*b*c^5*e^4)*arcsin(d*x
+ c) + 30*(3*a*b*d^4*e^4*x^4 + 12*a*b*c*d^3*e^4*x^3 + 2*(9*a*b*c^2 + 2*a*b)
*d^2*e^4*x^2 + 4*(3*a*b*c^3 + 2*a*b*c)*d*e^4*x + (3*a*b*c^4 + 4*a*b*c^2 + 8
*a*b)*e^4 + (3*b^2*d^4*e^4*x^4 + 12*b^2*c*d^3*e^4*x^3 + 2*(9*b^2*c^2 + 2*b^
```

```
2)*d^2*e^4*x^2 + 4*(3*b^2*c^3 + 2*b^2*c)*d*e^4*x + (3*b^2*c^4 + 4*b^2*c^2 +
 8*b^2)*e^4)*arcsin(d*x + c))*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1))/d
```

Sympy [A] time = 13.3175, size = 1268, normalized size = 6.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**4*(a+b*asin(d*x+c))**2,x)
```

```
[Out] Piecewise((a**2*c**4*e**4*x + 2*a**2*c**3*d*e**4*x**2 + 2*a**2*c**2*d**2*e*
*4*x**3 + a**2*c*d**3*e**4*x**4 + a**2*d**4*e**4*x**5/5 + 2*a*b*c**5*e**4*a
sin(c + d*x)/(5*d) + 2*a*b*c**4*e**4*x*asin(c + d*x) + 2*a*b*c**4*e**4*sqrt
(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(25*d) + 4*a*b*c**3*d*e**4*x**2*asin(c +
d*x) + 8*a*b*c**3*e**4*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/25 + 4*a*b*c
**2*d**2*e**4*x**3*asin(c + d*x) + 12*a*b*c**2*d*e**4*x**2*sqrt(-c**2 - 2*c
*d*x - d**2*x**2 + 1)/25 + 8*a*b*c**2*e**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2
 + 1)/(75*d) + 2*a*b*c*d**3*e**4*x**4*asin(c + d*x) + 8*a*b*c*d**2*e**4*x**
3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/25 + 16*a*b*c*e**4*x*sqrt(-c**2 - 2
*c*d*x - d**2*x**2 + 1)/75 + 2*a*b*d**4*e**4*x**5*asin(c + d*x)/5 + 2*a*b*d
**3*e**4*x**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/25 + 8*a*b*d*e**4*x**2*
sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/75 + 16*a*b*e**4*sqrt(-c**2 - 2*c*d*x
 - d**2*x**2 + 1)/(75*d) + b**2*c**5*e**4*asin(c + d*x)**2/(5*d) + b**2*c**
4*e**4*x*asin(c + d*x)**2 - 2*b**2*c**4*e**4*x/25 + 2*b**2*c**4*e**4*sqrt(-
c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/(25*d) + 2*b**2*c**3*d*e**4*x
**2*asin(c + d*x)**2 - 4*b**2*c**3*d*e**4*x**2/25 + 8*b**2*c**3*e**4*x*sqrt
(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/25 + 2*b**2*c**2*d**2*e**4*
x**3*asin(c + d*x)**2 - 4*b**2*c**2*d**2*e**4*x**3/25 + 12*b**2*c**2*d*e**4
*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/25 - 8*b**2*c**2*
e**4*x/75 + 8*b**2*c**2*e**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c +
 d*x)/(75*d) + b**2*c*d**3*e**4*x**4*asin(c + d*x)**2 - 2*b**2*c*d**3*e**4*
x**4/25 + 8*b**2*c*d**2*e**4*x**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asi
n(c + d*x)/25 - 8*b**2*c*d*e**4*x**2/75 + 16*b**2*c*e**4*x*sqrt(-c**2 - 2*c
*d*x - d**2*x**2 + 1)*asin(c + d*x)/75 + b**2*d**4*e**4*x**5*asin(c + d*x)*
*2/5 - 2*b**2*d**4*e**4*x**5/125 + 2*b**2*d**3*e**4*x**4*sqrt(-c**2 - 2*c*d
*x - d**2*x**2 + 1)*asin(c + d*x)/25 - 8*b**2*d**2*e**4*x**3/225 + 8*b**2*d
*e**4*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/75 - 16*b**2
*e**4*x/75 + 16*b**2*e**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*
x)/(75*d), Ne(d, 0)), (c**4*e**4*x*(a + b*asin(c))**2, True))
```

Giac [B] time = 1.2839, size = 576, normalized size = 2.84

$$\frac{(dx+c)^5a^2e^4}{5d}+\frac{\left(\left(dx+c\right)^2-1\right)^2(dx+c)b^2\arcsin\left(dx+c\right)^2e^4}{5d}+\frac{2\left(\left(dx+c\right)^2-1\right)^2(dx+c)ab\arcsin\left(dx+c\right)e^4}{5d}+\frac{2\left((dx\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4*(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] 1/5*(d*x + c)^5*a^2*e^4/d + 1/5*((d*x + c)^2 - 1)^2*(d*x + c)*b^2*arcsin(d*
x + c)^2*e^4/d + 2/5*((d*x + c)^2 - 1)^2*(d*x + c)*a*b*arcsin(d*x + c)*e^4/
d + 2/5*((d*x + c)^2 - 1)*(d*x + c)*b^2*arcsin(d*x + c)^2*e^4/d + 2/25*((d*
x + c)^2 - 1)^2*sqrt(-(d*x + c)^2 + 1)*b^2*arcsin(d*x + c)*e^4/d - 2/125*((
d*x + c)^2 - 1)^2*(d*x + c)*b^2*e^4/d + 4/5*((d*x + c)^2 - 1)*(d*x + c)*a*b
*arcsin(d*x + c)*e^4/d + 1/5*(d*x + c)*b^2*arcsin(d*x + c)^2*e^4/d + 2/25*(
(d*x + c)^2 - 1)^2*sqrt(-(d*x + c)^2 + 1)*a*b*e^4/d - 4/15*(-(d*x + c)^2 +
1)^(3/2)*b^2*arcsin(d*x + c)*e^4/d - 76/1125*((d*x + c)^2 - 1)*(d*x + c)*b^
2*e^4/d + 2/5*(d*x + c)*a*b*arcsin(d*x + c)*e^4/d - 4/15*(-(d*x + c)^2 + 1)
^(3/2)*a*b*e^4/d + 2/5*sqrt(-(d*x + c)^2 + 1)*b^2*arcsin(d*x + c)*e^4/d - 2
98/1125*(d*x + c)*b^2*e^4/d + 2/5*sqrt(-(d*x + c)^2 + 1)*a*b*e^4/d
```

3.189 $\int (ce+dex)^3 \left(a+b\sin^{-1}(c+dx)\right)^2 \, dx$

Optimal. Leaf size=176

$$\frac{e^3(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)^2}{4d}+\frac{be^3\sqrt{1-(c+dx)^2}(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)}{8d}+\frac{3be^3\sqrt{1-(c+dx)^2}(c+dx)\left(a+b\right.}{16d}$$

```
[Out] (-3*b^2*e^3*(c + d*x)^2)/(32*d) - (b^2*e^3*(c + d*x)^4)/(32*d) + (3*b*e^3*(
c + d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(16*d) + (b*e^3*(c
+ d*x)^3*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(8*d) - (3*e^3*(a +
 b*ArcSin[c + d*x])^2)/(32*d) + (e^3*(c + d*x)^4*(a + b*ArcSin[c + d*x])^2)
/(4*d)
```

Rubi [A] time = 0.258837, antiderivative size = 176, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.261, Rules used = {4805, 12, 4627, 4707, 4641, 30}

$$\frac{e^3(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)^2}{4d}+\frac{be^3\sqrt{1-(c+dx)^2}(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)}{8d}+\frac{3be^3\sqrt{1-(c+dx)^2}(c+dx)\left(a+b\right.}{16d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3*(a + b*ArcSin[c + d*x])^2,x]
```


```
[Out] (-3*b^2*e^3*(c + d*x)^2)/(32*d) - (b^2*e^3*(c + d*x)^4)/(32*d) + (3*b*e^3*(
c + d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(16*d) + (b*e^3*(c
+ d*x)^3*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(8*d) - (3*e^3*(a +
 b*ArcSin[c + d*x])^2)/(32*d) + (e^3*(c + d*x)^4*(a + b*ArcSin[c + d*x])^2)
/(4*d)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rubi steps

$$\int (ce+dex)^3 \left(a+b\sin^{-1}(c+dx)\right)^2 \, dx = \frac{\text{Subst}\left(\int e^3x^3\left(a+b\sin^{-1}(x)\right)^2 \, dx, x, c+dx\right)}{d}$$
$$= \frac{e^3\,\text{Subst}\left(\int x^3\left(a+b\sin^{-1}(x)\right)^2 \, dx, x, c+dx\right)}{d}$$
$$= \frac{e^3(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)^2}{4d} - \frac{\left(be^3\right)\text{Subst}\left(\int \frac{x^4\left(a+b\sin^{-1}(x)\right)}{\sqrt{1-x^2}} \, dx, x, c+dx\right.}{2d}$$
$$= \frac{be^3(c+dx)^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{8d} + \frac{e^3(c+dx)^4\left(a+b\sin^{-1}(c+\right.}{4d}$$
$$= -\frac{b^2e^3(c+dx)^4}{32d} + \frac{3be^3(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{16d} + \frac{be^3(c+d}{}$$
$$= -\frac{3b^2e^3(c+dx)^2}{32d} - \frac{b^2e^3(c+dx)^4}{32d} + \frac{3be^3(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+\right.}{16d}$$

Mathematica [A] time = 0.201898, size = 142, normalized size = 0.81

$$\frac{e^3\left(\frac{1}{8}\left(-3\left(-2b\sqrt{1-(c+dx)^2}(c+dx)\left(a+b\sin^{-1}(c+dx)\right)+\left(a+b\sin^{-1}(c+dx)\right)^2+b^2(c+dx)^2\right)+4b\sqrt{1-(c+dx)^2}(c\right.\right.}{4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^3*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (e^3*((c + d*x)^4*(a + b*ArcSin[c + d*x])^2 + (-(b^2*(c + d*x)^4) + 4*b*(c
+ d*x)^3*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]) - 3*(b^2*(c + d*x)^2
 - 2*b*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]) + (a + b*Arc
Sin[c + d*x])^2))/8))/(4*d)
```

Maple [A] time = 0.036, size = 206, normalized size = 1.2

$$\frac{1}{d}\left(\frac{e^3\,(dx+c)^4\,a^2}{4} + e^3b^2\left(\frac{(\arcsin(dx+c))^2\,(dx+c)^4}{4} - \frac{\arcsin(dx+c)}{16}\left(-2\,(dx+c)^3\,\sqrt{1-(dx+c)^2} - 3\,(dx+c)\,\sqrt{1-(\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^2,x)
```

```
[Out] 1/d*(1/4*e^3*(d*x+c)^4*a^2+e^3*b^2*(1/4*arcsin(d*x+c)^2*(d*x+c)^4-1/16*arcs
in(d*x+c)*(-2*(d*x+c)^3*(1-(d*x+c)^2)^(1/2)-3*(d*x+c)*(1-(d*x+c)^2)^(1/2)+3
*arcsin(d*x+c))+3/32*arcsin(d*x+c)^2-1/32*(d*x+c)^4-3/32*(d*x+c)^2)+2*e^3*a
*b*(1/4*(d*x+c)^4*arcsin(d*x+c)+1/16*(d*x+c)^3*(1-(d*x+c)^2)^(1/2)+3/32*(d*
x+c)*(1-(d*x+c)^2)^(1/2)-3/32*arcsin(d*x+c)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.61765, size = 922, normalized size = 5.24

$$\left(8\,a^2-b^2\right)d^4e^3x^4+4\left(8\,a^2-b^2\right)cd^3e^3x^3+3\left(2\left(8\,a^2-b^2\right)c^2-b^2\right)d^2e^3x^2+2\left(2\left(8\,a^2-b^2\right)c^3-3\,b^2c\right)de^3x+\left(8\,b^2d^4e^3x^4\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] 1/32*((8*a^2 - b^2)*d^4*e^3*x^4 + 4*(8*a^2 - b^2)*c*d^3*e^3*x^3 + 3*(2*(8*a
^2 - b^2)*c^2 - b^2)*d^2*e^3*x^2 + 2*(2*(8*a^2 - b^2)*c^3 - 3*b^2*c)*d*e^3*
x + (8*b^2*d^4*e^3*x^4 + 32*b^2*c*d^3*e^3*x^3 + 48*b^2*c^2*d^2*e^3*x^2 + 32
*b^2*c^3*d*e^3*x + (8*b^2*c^4 - 3*b^2)*e^3)*arcsin(d*x + c)^2 + 2*(8*a*b*d^
4*e^3*x^4 + 32*a*b*c*d^3*e^3*x^3 + 48*a*b*c^2*d^2*e^3*x^2 + 32*a*b*c^3*d*e^
3*x + (8*a*b*c^4 - 3*a*b)*e^3)*arcsin(d*x + c) + 2*(2*a*b*d^3*e^3*x^3 + 6*a
*b*c*d^2*e^3*x^2 + 3*(2*a*b*c^2 + a*b)*d*e^3*x + (2*a*b*c^3 + 3*a*b*c)*e^3
+ (2*b^2*d^3*e^3*x^3 + 6*b^2*c*d^2*e^3*x^2 + 3*(2*b^2*c^2 + b^2)*d*e^3*x +
(2*b^2*c^3 + 3*b^2*c)*e^3)*arcsin(d*x + c))*sqrt(-d^2*x^2 - 2*c*d*x - c^2 +
 1))/d
```

Sympy [A] time = 6.92324, size = 916, normalized size = 5.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3*(a+b*asin(d*x+c))**2,x)
```

```
[Out] Piecewise((a**2*c**3*e**3*x + 3*a**2*c**2*d*e**3*x**2/2 + a**2*c*d**2*e**3*
x**3 + a**2*d**3*e**3*x**4/4 + a*b*c**4*e**3*asin(c + d*x)/(2*d) + 2*a*b*c*
*3*e**3*x*asin(c + d*x) + a*b*c**3*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 +
1)/(8*d) + 3*a*b*c**2*d*e**3*x**2*asin(c + d*x) + 3*a*b*c**2*e**3*x*sqrt(-c
**2 - 2*c*d*x - d**2*x**2 + 1)/8 + 2*a*b*c*d**2*e**3*x**3*asin(c + d*x) + 3
*a*b*c*d*e**3*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/8 + 3*a*b*c*e**3*s
qrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(16*d) + a*b*d**3*e**3*x**4*asin(c + d
*x)/2 + a*b*d**2*e**3*x**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/8 + 3*a*b*
e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/16 - 3*a*b*e**3*asin(c + d*x)/
(16*d) + b**2*c**4*e**3*asin(c + d*x)**2/(4*d) + b**2*c**3*e**3*x*asin(c +
d*x)**2 - b**2*c**3*e**3*x/8 + b**2*c**3*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x
**2 + 1)*asin(c + d*x)/(8*d) + 3*b**2*c**2*d*e**3*x**2*asin(c + d*x)**2/2 -
 3*b**2*c**2*d*e**3*x**2/16 + 3*b**2*c**2*e**3*x*sqrt(-c**2 - 2*c*d*x - d**
2*x**2 + 1)*asin(c + d*x)/8 + b**2*c*d**2*e**3*x**3*asin(c + d*x)**2 - b**2
*c*d**2*e**3*x**3/8 + 3*b**2*c*d*e**3*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2
 + 1)*asin(c + d*x)/8 - 3*b**2*c*e**3*x/16 + 3*b**2*c*e**3*sqrt(-c**2 - 2*c
*d*x - d**2*x**2 + 1)*asin(c + d*x)/(16*d) + b**2*d**3*e**3*x**4*asin(c + d
*x)**2/4 - b**2*d**3*e**3*x**4/32 + b**2*d**2*e**3*x**3*sqrt(-c**2 - 2*c*d*
x - d**2*x**2 + 1)*asin(c + d*x)/8 - 3*b**2*d*e**3*x**2/32 + 3*b**2*e**3*x*
sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/16 - 3*b**2*e**3*asin(c
 + d*x)**2/(32*d), Ne(d, 0)), (c**3*e**3*x*(a + b*asin(c))**2, True))
```

Giac [B] time = 1.24333, size = 474, normalized size = 2.69

$$\frac{\left((dx+c)^2-1\right)^2 b^2 \arcsin(dx+c)^2 e^3}{4d} - \frac{\left(-(dx+c)^2+1\right)^{\frac{3}{2}}(dx+c)b^2 \arcsin(dx+c)e^3}{8d} + \frac{\left((dx+c)^2-1\right)^2 ab \arcsin(dx+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] 1/4*((d*x + c)^2 - 1)^2*b^2*arcsin(d*x + c)^2*e^3/d - 1/8*(-(d*x + c)^2 + 1
)^(3/2)*(d*x + c)*b^2*arcsin(d*x + c)*e^3/d + 1/2*((d*x + c)^2 - 1)^2*a*b*a
```

```
rcsin(d*x + c)*e^3/d + 1/2*((d*x + c)^2 - 1)*b^2*arcsin(d*x + c)^2*e^3/d -
1/8*(-(d*x + c)^2 + 1)^(3/2)*(d*x + c)*a*b*e^3/d + 5/16*sqrt(-(d*x + c)^2 +
 1)*(d*x + c)*b^2*arcsin(d*x + c)*e^3/d + 1/4*((d*x + c)^2 - 1)^2*a^2*e^3/d
 - 1/32*((d*x + c)^2 - 1)^2*b^2*e^3/d + ((d*x + c)^2 - 1)*a*b*arcsin(d*x +
c)*e^3/d + 5/32*b^2*arcsin(d*x + c)^2*e^3/d + 5/16*sqrt(-(d*x + c)^2 + 1)*(
d*x + c)*a*b*e^3/d + 1/2*((d*x + c)^2 - 1)*a^2*e^3/d - 5/32*((d*x + c)^2 -
1)*b^2*e^3/d + 5/16*a*b*arcsin(d*x + c)*e^3/d - 17/256*b^2*e^3/d
```

3.190 $\int (ce+dex)^2 \left(a+b\sin^{-1}(c+dx)\right)^2 dx$

Optimal. Leaf size=140

$$\frac{e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)^2}{3d}+\frac{2be^2\sqrt{1-(c+dx)^2}(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)}{9d}+\frac{4be^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(\right.}{9d}$$

```
[Out] (-4*b^2*e^2*x)/9 - (2*b^2*e^2*(c + d*x)^3)/(27*d) + (4*b*e^2*Sqrt[1 - (c +
d*x)^2]*(a + b*ArcSin[c + d*x]))/(9*d) + (2*b*e^2*(c + d*x)^2*Sqrt[1 - (c +
 d*x)^2]*(a + b*ArcSin[c + d*x]))/(9*d) + (e^2*(c + d*x)^3*(a + b*ArcSin[c
+ d*x])^2)/(3*d)
```

Rubi [A] time = 0.206665, antiderivative size = 140, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.304, Rules used = {4805, 12, 4627, 4707, 4677, 8, 30}

$$\frac{e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)^2}{3d}+\frac{2be^2\sqrt{1-(c+dx)^2}(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)}{9d}+\frac{4be^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(\right.}{9d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x])^2,x]
```


```
[Out] (-4*b^2*e^2*x)/9 - (2*b^2*e^2*(c + d*x)^3)/(27*d) + (4*b*e^2*Sqrt[1 - (c +
d*x)^2]*(a + b*ArcSin[c + d*x]))/(9*d) + (2*b*e^2*(c + d*x)^2*Sqrt[1 - (c +
 d*x)^2]*(a + b*ArcSin[c + d*x]))/(9*d) + (e^2*(c + d*x)^3*(a + b*ArcSin[c
+ d*x])^2)/(3*d)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rubi steps

$$\int (ce+dex)^2 \left(a+b\sin^{-1}(c+dx)\right)^2 \, dx = \frac{\text{Subst}\left(\int e^2x^2\left(a+b\sin^{-1}(x)\right)^2 \, dx,x,c+dx\right)}{d}$$
$$= \frac{e^2\,\text{Subst}\left(\int x^2\left(a+b\sin^{-1}(x)\right)^2 \, dx,x,c+dx\right)}{d}$$
$$= \frac{e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)^2}{3d} - \frac{\left(2be^2\right)\text{Subst}\left(\int \frac{x^3\left(a+b\sin^{-1}(x)\right)}{\sqrt{1-x^2}} \, dx,x,c+dx\right.}{3d}$$
$$= \frac{2be^2(c+dx)^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{9d} + \frac{e^2(c+dx)^3\left(a+b\sin^{-1}(c\right.}{3d}$$
$$= -\frac{2b^2e^2(c+dx)^3}{27d} + \frac{4be^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{9d} + \frac{2be^2(c+dx)^2\sqrt{1}}{}$$
$$= -\frac{4}{9}b^2e^2x - \frac{2b^2e^2(c+dx)^3}{27d} + \frac{4be^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{9d} + \frac{2be^2(c}{}$$

Mathematica [A] time = 0.193641, size = 112, normalized size = 0.8

$$\frac{e^2\left((c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)^2 - \frac{2}{9}b\left(-3\sqrt{1-(c+dx)^2}(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right) - 6\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(\right.\right.\right.}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (e^2*((c + d*x)^3*(a + b*ArcSin[c + d*x])^2 - (2*b*(6*b*d*x + b*(c + d*x)^3
 - 6*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]) - 3*(c + d*x)^2*Sqrt[1 -
 (c + d*x)^2]*(a + b*ArcSin[c + d*x])))/9))/(3*d)
```

Maple [A] time = 0.031, size = 152, normalized size = 1.1

$$\frac{1}{d}\left(\frac{e^2\,(dx+c)^3\,a^2}{3} + e^2b^2\left(\frac{(\arcsin(dx+c))^2\,(dx+c)^3}{3} + \frac{2\,\arcsin(dx+c)\left((dx+c)^2+2\right)}{9}\sqrt{1-(dx+c)^2} - \frac{2\,(dx+c)^3}{27} - \right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^2,x)
```

```
[Out] 1/d*(1/3*e^2*(d*x+c)^3*a^2+e^2*b^2*(1/3*arcsin(d*x+c)^2*(d*x+c)^3+2/9*arcsi
n(d*x+c)*((d*x+c)^2+2)*(1-(d*x+c)^2)^(1/2)-2/27*(d*x+c)^3-4/9*d*x-4/9*c)+2*
e^2*a*b*(1/3*(d*x+c)^3*arcsin(d*x+c)+1/9*(d*x+c)^2*(1-(d*x+c)^2)^(1/2)+2/9*
(1-(d*x+c)^2)^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.48297, size = 651, normalized size = 4.65

$$\frac{\left(9\,a^2-2\,b^2\right)d^3e^2x^3+3\left(9\,a^2-2\,b^2\right)cd^2e^2x^2+3\left(\left(9\,a^2-2\,b^2\right)c^2-4\,b^2\right)de^2x+9\left(b^2d^3e^2x^3+3\,b^2cd^2e^2x^2+3\,b^2c^2de^2x+\cdots\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] 1/27*((9*a^2 - 2*b^2)*d^3*e^2*x^3 + 3*(9*a^2 - 2*b^2)*c*d^2*e^2*x^2 + 3*((9
*a^2 - 2*b^2)*c^2 - 4*b^2)*d*e^2*x + 9*(b^2*d^3*e^2*x^3 + 3*b^2*c*d^2*e^2*x
^2 + 3*b^2*c^2*d*e^2*x + b^2*c^3*e^2)*arcsin(d*x + c)^2 + 18*(a*b*d^3*e^2*x
^3 + 3*a*b*c*d^2*e^2*x^2 + 3*a*b*c^2*d*e^2*x + a*b*c^3*e^2)*arcsin(d*x + c)
 + 6*(a*b*d^2*e^2*x^2 + 2*a*b*c*d*e^2*x + (a*b*c^2 + 2*a*b)*e^2 + (b^2*d^2*
e^2*x^2 + 2*b^2*c*d*e^2*x + (b^2*c^2 + 2*b^2)*e^2)*arcsin(d*x + c))*sqrt(-d
^2*x^2 - 2*c*d*x - c^2 + 1))/d
```

Sympy [A] time = 2.85857, size = 610, normalized size = 4.36

$$\begin{cases} a^2c^2e^2x + a^2cde^2x^2 + \frac{a^2d^2e^2x^3}{3} + \frac{2abc^3e^2\operatorname{asin}(c+dx)}{3d} + 2abc^2e^2x\operatorname{asin}(c+dx) + \frac{2abc^2e^2\sqrt{-c^2-2cdx-d^2x^2+1}}{9d} + 2abcde^2x^2\operatorname{asin}(c+\cdots \\ c^2e^2x\left(a+b\operatorname{asin}(c)\right)^2 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2*(a+b*asin(d*x+c))**2,x)
```

```
[Out] Piecewise((a**2*c**2*e**2*x + a**2*c*d*e**2*x**2 + a**2*d**2*e**2*x**3/3 +
2*a*b*c**3*e**2*asin(c + d*x)/(3*d) + 2*a*b*c**2*e**2*x*asin(c + d*x) + 2*a
*b*c**2*e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(9*d) + 2*a*b*c*d*e**2*x
**2*asin(c + d*x) + 4*a*b*c*e**2*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/9
+ 2*a*b*d**2*e**2*x**3*asin(c + d*x)/3 + 2*a*b*d*e**2*x**2*sqrt(-c**2 - 2*c
*d*x - d**2*x**2 + 1)/9 + 4*a*b*e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/
(9*d) + b**2*c**3*e**2*asin(c + d*x)**2/(3*d) + b**2*c**2*e**2*x*asin(c + d
*x)**2 - 2*b**2*c**2*e**2*x/9 + 2*b**2*c**2*e**2*sqrt(-c**2 - 2*c*d*x - d**
2*x**2 + 1)*asin(c + d*x)/(9*d) + b**2*c*d*e**2*x**2*asin(c + d*x)**2 - 2*b
**2*c*d*e**2*x**2/9 + 4*b**2*c*e**2*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)
*asin(c + d*x)/9 + b**2*d**2*e**2*x**3*asin(c + d*x)**2/3 - 2*b**2*d**2*e**
2*x**3/27 + 2*b**2*d*e**2*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c
 + d*x)/9 - 4*b**2*e**2*x/9 + 4*b**2*e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2
+ 1)*asin(c + d*x)/(9*d), Ne(d, 0)), (c**2*e**2*x*(a + b*asin(c))**2, True)
)
```

Giac [B] time = 1.28405, size = 355, normalized size = 2.54

$$\frac{\left((dx+c)^2-1\right)(dx+c)b^2\arcsin(dx+c)^2e^2}{3d}+\frac{(dx+c)^3a^2e^2}{3d}+\frac{2\left((dx+c)^2-1\right)(dx+c)ab\arcsin(dx+c)e^2}{3d}+\frac{(dx+c)b^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] 1/3*((d*x + c)^2 - 1)*(d*x + c)*b^2*arcsin(d*x + c)^2*e^2/d + 1/3*(d*x + c)
^3*a^2*e^2/d + 2/3*((d*x + c)^2 - 1)*(d*x + c)*a*b*arcsin(d*x + c)*e^2/d +
1/3*(d*x + c)*b^2*arcsin(d*x + c)^2*e^2/d - 2/9*(-(d*x + c)^2 + 1)^(3/2)*b^
2*arcsin(d*x + c)*e^2/d - 2/27*((d*x + c)^2 - 1)*(d*x + c)*b^2*e^2/d + 2/3*
(d*x + c)*a*b*arcsin(d*x + c)*e^2/d - 2/9*(-(d*x + c)^2 + 1)^(3/2)*a*b*e^2/
d + 2/3*sqrt(-(d*x + c)^2 + 1)*b^2*arcsin(d*x + c)*e^2/d - 14/27*(d*x + c)*
b^2*e^2/d + 2/3*sqrt(-(d*x + c)^2 + 1)*a*b*e^2/d
```

3.191 $\int (ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^2\,dx$

Optimal. Leaf size=105

$$\frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)^2}{2d}+\frac{be\sqrt{1-(c+dx)^2}(c+dx)\left(a+b\sin^{-1}(c+dx)\right)}{2d}-\frac{e\left(a+b\sin^{-1}(c+dx)\right)^2}{4d}-\frac{b^2e(c+}{4d}$$

```
[Out] -(b^2*e*(c + d*x)^2)/(4*d) + (b*e*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*Ar
cSin[c + d*x]))/(2*d) - (e*(a + b*ArcSin[c + d*x])^2)/(4*d) + (e*(c + d*x)^
2*(a + b*ArcSin[c + d*x])^2)/(2*d)
```

Rubi [A] time = 0.145095, antiderivative size = 105, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4805, 12, 4627, 4707, 4641, 30}

$$\frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)^2}{2d}+\frac{be\sqrt{1-(c+dx)^2}(c+dx)\left(a+b\sin^{-1}(c+dx)\right)}{2d}-\frac{e\left(a+b\sin^{-1}(c+dx)\right)^2}{4d}-\frac{b^2e(c+}{4d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] -(b^2*e*(c + d*x)^2)/(4*d) + (b*e*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*Ar
cSin[c + d*x]))/(2*d) - (e*(a + b*ArcSin[c + d*x])^2)/(4*d) + (e*(c + d*x)^
2*(a + b*ArcSin[c + d*x])^2)/(2*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
```

```
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rubi steps

$$\begin{aligned}
\int (ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^2\,dx &= \frac{\text{Subst}\left(\int ex\left(a+b\sin^{-1}(x)\right)^2\,dx,x,c+dx\right)}{d}\\
&= \frac{e\,\text{Subst}\left(\int x\left(a+b\sin^{-1}(x)\right)^2\,dx,x,c+dx\right)}{d}\\
&= \frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)^2}{2d} - \frac{(be)\,\text{Subst}\left(\int \frac{x^2\left(a+b\sin^{-1}(x)\right)}{\sqrt{1-x^2}}\,dx,x,c+dx\right)}{d}\\
&= \frac{be(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{2d} + \frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)}{2d}\\
&= -\frac{b^2e(c+dx)^2}{4d} + \frac{be(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{2d} - \frac{e\left(a+b\sin^{-1}(\right.}{4d}
\end{aligned}$$

Mathematica [A] time = 0.0735132, size = 86, normalized size = 0.82

$$-\frac{e\left(-2(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)^2-2b\sqrt{1-(c+dx)^2}(c+dx)\left(a+b\sin^{-1}(c+dx)\right)+\left(a+b\sin^{-1}(c+dx)\right)^2+b^2(c\cdots\right.}{4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] -(e*(b^2*(c + d*x)^2 - 2*b*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c
+ d*x]) + (a + b*ArcSin[c + d*x])^2 - 2*(c + d*x)^2*(a + b*ArcSin[c + d*x])
^2))/(4*d)
```

Maple [A] time = 0.03, size = 146, normalized size = 1.4

$$\frac{1}{d}\left(\frac{e(dx+c)^2a^2}{2}+eb^2\left(\frac{(\arcsin(dx+c))^2\left((dx+c)^2-1\right)}{2}+\frac{\arcsin(dx+c)}{2}\left((dx+c)\sqrt{1-(dx+c)^2}+\arcsin(dx+c)\right)\cdots\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)*(a+b*arcsin(d*x+c))^2,x)
```

```
[Out] 1/d*(1/2*e*(d*x+c)^2*a^2+e*b^2*(1/2*arcsin(d*x+c)^2*((d*x+c)^2-1)+1/2*arcsi
n(d*x+c)*((d*x+c)*(1-(d*x+c)^2)^(1/2)+arcsin(d*x+c))-1/4*arcsin(d*x+c)^2-1/
4*(d*x+c)^2)+2*e*a*b*(1/2*arcsin(d*x+c)*(d*x+c)^2+1/4*(d*x+c)*(1-(d*x+c)^2)
^(1/2)-1/4*arcsin(d*x+c)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.4353, size = 421, normalized size = 4.01

$$\frac{\left(2a^2-b^2\right)d^2ex^2+2\left(2a^2-b^2\right)cdex+\left(2b^2d^2ex^2+4b^2cdex+\left(2b^2c^2-b^2\right)e\right)\arcsin\left(dx+c\right)^2+2\left(2abd^2ex^2+4abcdex\right.}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] 1/4*((2*a^2 - b^2)*d^2*e*x^2 + 2*(2*a^2 - b^2)*c*d*e*x + (2*b^2*d^2*e*x^2 +
 4*b^2*c*d*e*x + (2*b^2*c^2 - b^2)*e)*arcsin(d*x + c)^2 + 2*(2*a*b*d^2*e*x^
2 + 4*a*b*c*d*e*x + (2*a*b*c^2 - a*b)*e)*arcsin(d*x + c) + 2*(a*b*d*e*x + a
*b*c*e + (b^2*d*e*x + b^2*c*e)*arcsin(d*x + c))*sqrt(-d^2*x^2 - 2*c*d*x - c
^2 + 1))/d
```

Sympy [A] time = 1.27237, size = 335, normalized size = 3.19

$$\begin{cases} a^2cex+\frac{a^2dex^2}{2}+\frac{abc^2e\operatorname{asin}(c+dx)}{d}+2abcex\operatorname{asin}(c+dx)+\frac{abce\sqrt{-c^2-2cdx-d^2x^2+1}}{2d}+abdex^2\operatorname{asin}(c+dx)+\frac{abex\sqrt{-c^2-2cdx-d^2x^2+1}}{2} \\ cex\left(a+b\operatorname{asin}(c)\right)^2 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*asin(d*x+c))**2,x)
```

```
[Out] Piecewise((a**2*c*e*x + a**2*d*e*x**2/2 + a*b*c**2*e*asin(c + d*x)/d + 2*a*
b*c*e*x*asin(c + d*x) + a*b*c*e*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(2*d)
 + a*b*d*e*x**2*asin(c + d*x) + a*b*e*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 +
1)/2 - a*b*e*asin(c + d*x)/(2*d) + b**2*c**2*e*asin(c + d*x)**2/(2*d) + b**
2*c*e*x*asin(c + d*x)**2 - b**2*c*e*x/2 + b**2*c*e*sqrt(-c**2 - 2*c*d*x - d
**2*x**2 + 1)*asin(c + d*x)/(2*d) + b**2*d*e*x**2*asin(c + d*x)**2/2 - b**2
*d*e*x**2/4 + b**2*e*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/
2 - b**2*e*asin(c + d*x)**2/(4*d), Ne(d, 0)), (c*e*x*(a + b*asin(c))**2, Tr
ue))
```

Giac [B] time = 1.26747, size = 261, normalized size = 2.49

$$\frac{\left((dx+c)^2-1\right)b^2\arcsin\left(dx+c\right)^2e}{2d}+\frac{\sqrt{-(dx+c)^2+1}(dx+c)b^2\arcsin\left(dx+c\right)e}{2d}+\frac{\left((dx+c)^2-1\right)ab\arcsin\left(dx+c\right)e}{d}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] 1/2*((d*x + c)^2 - 1)*b^2*arcsin(d*x + c)^2*e/d + 1/2*sqrt(-(d*x + c)^2 + 1
)*(d*x + c)*b^2*arcsin(d*x + c)*e/d + ((d*x + c)^2 - 1)*a*b*arcsin(d*x + c)
*e/d + 1/4*b^2*arcsin(d*x + c)^2*e/d + 1/2*sqrt(-(d*x + c)^2 + 1)*(d*x + c)
*a*b*e/d + 1/2*((d*x + c)^2 - 1)*a^2*e/d - 1/4*((d*x + c)^2 - 1)*b^2*e/d +
1/2*a*b*arcsin(d*x + c)*e/d - 1/8*b^2*e/d
```

3.192 $\int \left(a+b\sin^{-1}(c+dx)\right)^2\,dx$

Optimal. Leaf size=59

$$\frac{2b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{d}+\frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^2}{d}-2b^2x$$

```
[Out] -2*b^2*x + (2*b*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/d + ((c + d*
x)*(a + b*ArcSin[c + d*x])^2)/d
```

Rubi [A] time = 0.0721905, antiderivative size = 59, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4803, 4619, 4677, 8}

$$\frac{2b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{d}+\frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^2}{d}-2b^2x$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] -2*b^2*x + (2*b*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/d + ((c + d*
x)*(a + b*ArcSin[c + d*x])^2)/d
```

Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
```

```
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\int \left(a+b\sin^{-1}(c+dx)\right)^2\,dx = \frac{\text{Subst}\left(\int \left(a+b\sin^{-1}(x)\right)^2\,dx,x,c+dx\right)}{d}$$
$$= \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^2}{d} - \frac{(2b)\,\text{Subst}\left(\int \frac{x\left(a+b\sin^{-1}(x)\right)}{\sqrt{1-x^2}}\,dx,x,c+dx\right)}{d}$$
$$= \frac{2b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^2}{d} - \frac{\left(2b^2\right)\text{Subst}(}{}$$
$$= -2b^2x + \frac{2b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^2}{d}$$

Mathematica [A] time = 0.082908, size = 63, normalized size = 1.07

$$\frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^2}{d} - \frac{2b\left(b(c+dx)-\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] ((c + d*x)*(a + b*ArcSin[c + d*x])^2)/d - (2*b*(b*(c + d*x) - Sqrt[1 - (c +
 d*x)^2]*(a + b*ArcSin[c + d*x])))/d
```

Maple [A] time = 0.003, size = 92, normalized size = 1.6

$$\frac{1}{d}\left((dx+c)\,a^2+b^2\left((\arcsin(dx+c))^2(dx+c)-2\,dx-2\,c+2\sqrt{1-(dx+c)^2}\arcsin(dx+c)\right)+2\,ab\left((dx+c)\arcsin(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^2,x)
```

```
[Out] 1/d*((d*x+c)*a^2+b^2*(arcsin(d*x+c)^2*(d*x+c)-2*d*x-2*c+2*(1-(d*x+c)^2)^(1/
2)*arcsin(d*x+c))+2*a*b*((d*x+c)*arcsin(d*x+c)+(1-(d*x+c)^2)^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.39363, size = 224, normalized size = 3.8

$$\frac{\left(a^2-2\,b^2\right)dx+\left(b^2dx+b^2c\right)\arcsin\left(dx+c\right)^2+2\left(abdx+abc\right)\arcsin\left(dx+c\right)+2\,\sqrt{-d^2x^2-2\,cdx-c^2+1}\left(b^2\arcsin\left(dx\right.\right.}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] ((a^2 - 2*b^2)*d*x + (b^2*d*x + b^2*c)*arcsin(d*x + c)^2 + 2*(a*b*d*x + a*b
*c)*arcsin(d*x + c) + 2*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*(b^2*arcsin(d*x
+ c) + a*b))/d
```

Sympy [A] time = 0.462011, size = 143, normalized size = 2.42

$$\begin{cases} a^2x+\frac{2abc\operatorname{asin}\left(c+dx\right)}{d}+2abx\operatorname{asin}\left(c+dx\right)+\frac{2ab\sqrt{-c^2-2cdx-d^2x^2+1}}{d}+\frac{b^2c\operatorname{asin}^2\left(c+dx\right)}{d}+b^2x\operatorname{asin}^2\left(c+dx\right)-2b^2x+\frac{2b^2\sqrt{-c^2-2cdx-}}{} \\ x\left(a+b\operatorname{asin}\left(c\right)\right)^2 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**2,x)
```

```
[Out] Piecewise((a**2*x + 2*a*b*c*asin(c + d*x)/d + 2*a*b*x*asin(c + d*x) + 2*a*b
*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/d + b**2*c*asin(c + d*x)**2/d + b**2
*x*asin(c + d*x)**2 - 2*b**2*x + 2*b**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 +
1)*asin(c + d*x)/d, Ne(d, 0)), (x*(a + b*asin(c))**2, True))
```

Giac [A] time = 1.19288, size = 150, normalized size = 2.54

$$\frac{(dx+c)b^2 \arcsin(dx+c)^2}{d} + \frac{2(dx+c)ab \arcsin(dx+c)}{d} + \frac{2\sqrt{-(dx+c)^2+1}b^2 \arcsin(dx+c)}{d} + \frac{(dx+c)a^2}{d} - \frac{2(dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] (d*x + c)*b^2*arcsin(d*x + c)^2/d + 2*(d*x + c)*a*b*arcsin(d*x + c)/d + 2*s
qrt(-(d*x + c)^2 + 1)*b^2*arcsin(d*x + c)/d + (d*x + c)*a^2/d - 2*(d*x + c)
*b^2/d + 2*sqrt(-(d*x + c)^2 + 1)*a*b/d
```

3.193 $\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{ce+dex}\,dx$

Optimal. Leaf size=126

$$-\frac{ib\text{PolyLog}\left(2,e^{2i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de}+\frac{b^2\text{PolyLog}\left(3,e^{2i\sin^{-1}(c+dx)}\right)}{2de}-\frac{i\left(a+b\sin^{-1}(c+dx)\right)^3}{3bde}+\frac{\log\left(1-e\right.}{}$$

```
[Out] ((-I/3)*(a + b*ArcSin[c + d*x])^3)/(b*d*e) + ((a + b*ArcSin[c + d*x])^2*Log
[1 - E^((2*I)*ArcSin[c + d*x])])/(d*e) - (I*b*(a + b*ArcSin[c + d*x])*PolyL
og[2, E^((2*I)*ArcSin[c + d*x])])/(d*e) + (b^2*PolyLog[3, E^((2*I)*ArcSin[c
 + d*x])])/(2*d*e)
```

Rubi [A] time = 0.183361, antiderivative size = 126, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.348, Rules used = {4805, 12, 4625, 3717, 2190, 2531, 2282, 6589}

$$-\frac{ib\text{PolyLog}\left(2,e^{2i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de}+\frac{b^2\text{PolyLog}\left(3,e^{2i\sin^{-1}(c+dx)}\right)}{2de}-\frac{i\left(a+b\sin^{-1}(c+dx)\right)^3}{3bde}+\frac{\log\left(1-e\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x),x]
```

```
[Out] ((-I/3)*(a + b*ArcSin[c + d*x])^3)/(b*d*e) + ((a + b*ArcSin[c + d*x])^2*Log
[1 - E^((2*I)*ArcSin[c + d*x])])/(d*e) - (I*b*(a + b*ArcSin[c + d*x])*PolyL
og[2, E^((2*I)*ArcSin[c + d*x])])/(d*e) + (b^2*PolyLog[3, E^((2*I)*ArcSin[c
 + d*x])])/(2*d*e)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{ce+dex}\,dx = \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^2}{ex}\,dx, x, c+dx\right)}{d}$$
$$= \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^2}{x}\,dx, x, c+dx\right)}{de}$$
$$= \frac{\text{Subst}\left(\int (a+bx)^2\cot(x)\,dx, x, \sin^{-1}(c+dx)\right)}{de}$$
$$= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^3}{3bde} - \frac{(2i)\,\text{Subst}\left(\int \frac{e^{2ix}(a+bx)^2}{1-e^{2ix}}\,dx, x, \sin^{-1}(c+dx)\right)}{de}$$
$$= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^3}{3bde} + \frac{\left(a+b\sin^{-1}(c+dx)\right)^2\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{(2b)\,\text{Subst}\left(\int (\right.}{}$$
$$= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^3}{3bde} + \frac{\left(a+b\sin^{-1}(c+dx)\right)^2\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{ib\left(a+b\sin^{-1}(\right.}{}$$
$$= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^3}{3bde} + \frac{\left(a+b\sin^{-1}(c+dx)\right)^2\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{ib\left(a+b\sin^{-1}(\right.}{}$$
$$= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^3}{3bde} + \frac{\left(a+b\sin^{-1}(c+dx)\right)^2\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{ib\left(a+b\sin^{-1}(\right.}{}$$

Mathematica [A] time = 0.163338, size = 170, normalized size = 1.35

$$\frac{-iab\left(\sin^{-1}(c+dx)^2+\text{PolyLog}\left(2,e^{2i\sin^{-1}(c+dx)}\right)\right)+b^2\left(i\sin^{-1}(c+dx)\text{PolyLog}\left(2,e^{-2i\sin^{-1}(c+dx)}\right)+\frac{1}{2}\text{PolyLog}\left(3,e^{-2i\sin\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x),x]
```

```
[Out] (2*a*b*ArcSin[c + d*x]*Log[1 - E^((2*I)*ArcSin[c + d*x])] + a^2*Log[c + d*x
] - I*a*b*(ArcSin[c + d*x]^2 + PolyLog[2, E^((2*I)*ArcSin[c + d*x])]) + b^2
*((-I/24)*Pi^3 + (I/3)*ArcSin[c + d*x]^3 + ArcSin[c + d*x]^2*Log[1 - E^((-2
*I)*ArcSin[c + d*x])] + I*ArcSin[c + d*x]*PolyLog[2, E^((-2*I)*ArcSin[c + d
*x])] + PolyLog[3, E^((-2*I)*ArcSin[c + d*x])]/2))/(d*e)
```

Maple [B] time = 0.039, size = 455, normalized size = 3.6

$$\frac{a^2\ln(dx+c)}{de}-\frac{\frac{i}{3}b^2(\arcsin(dx+c))^3}{de}+\frac{b^2(\arcsin(dx+c))^2}{de}\ln\left(1+i(dx+c)+\sqrt{1-(dx+c)^2}\right)-\frac{2\,ib^2\arcsin(dx+c}{de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e),x)
```

```
[Out] 1/d*a^2/e*ln(d*x+c)-1/3*I/d*b^2/e*arcsin(d*x+c)^3+1/d*b^2/e*arcsin(d*x+c)^2
*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-2*I/d*b^2/e*arcsin(d*x+c)*polylog(2,-I
*(d*x+c)-(1-(d*x+c)^2)^(1/2))+2/d*b^2/e*polylog(3,-I*(d*x+c)-(1-(d*x+c)^2)^
(1/2))+1/d*b^2/e*arcsin(d*x+c)^2*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-2*I/d*
b^2/e*arcsin(d*x+c)*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+2/d*b^2/e*poly
log(3,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-I/d*a*b/e*arcsin(d*x+c)^2+2/d*a*b/e*ar
csin(d*x+c)*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+2/d*a*b/e*arcsin(d*x+c)*ln(
1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-2*I/d*a*b/e*polylog(2,I*(d*x+c)+(1-(d*x+c)
^2)^(1/2))-2*I/d*a*b/e*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^2\arcsin(dx+c)^2+2\,ab\arcsin(dx+c)+a^2}{dex+ce},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e),x, algorithm="fricas")
```

```
[Out] integral((b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2)/(d*e*x + c*e
), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{a^2}{c+dx}\,dx + \int \frac{b^2 \operatorname{asin}^2(c+dx)}{c+dx}\,dx + \int \frac{2ab\operatorname{asin}(c+dx)}{c+dx}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**2/(d*e*x+c*e),x)
```

```
[Out] (Integral(a**2/(c + d*x), x) + Integral(b**2*asin(c + d*x)**2/(c + d*x), x)
 + Integral(2*a*b*asin(c + d*x)/(c + d*x), x))/e
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b\arcsin(dx+c)+a)^2}{dex+ce}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^2/(d*e*x + c*e), x)
```

3.194 $\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{(ce+dex)^2}\,dx$

Optimal. Leaf size=116

$$\frac{2ib^2\text{PolyLog}\left(2,-e^{i\sin^{-1}(c+dx)}\right)}{de^2}-\frac{2ib^2\text{PolyLog}\left(2,e^{i\sin^{-1}(c+dx)}\right)}{de^2}-\frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{de^2(c+dx)}-\frac{4b\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)\left(a\right.}{de^2}$$

```
[Out] -((a + b*ArcSin[c + d*x])^2/(d*e^2*(c + d*x))) - (4*b*(a + b*ArcSin[c + d*x
])*ArcTanh[E^(I*ArcSin[c + d*x])])/(d*e^2) + ((2*I)*b^2*PolyLog[2, -E^(I*Ar
cSin[c + d*x])])/(d*e^2) - ((2*I)*b^2*PolyLog[2, E^(I*ArcSin[c + d*x])])/(d
*e^2)
```

Rubi [A] time = 0.163736, antiderivative size = 116, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.304, Rules used = {4805, 12, 4627, 4709, 4183, 2279, 2391}

$$\frac{2ib^2\text{PolyLog}\left(2,-e^{i\sin^{-1}(c+dx)}\right)}{de^2}-\frac{2ib^2\text{PolyLog}\left(2,e^{i\sin^{-1}(c+dx)}\right)}{de^2}-\frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{de^2(c+dx)}-\frac{4b\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)\left(a\right.}{de^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^2,x]
```


```
[Out] -((a + b*ArcSin[c + d*x])^2/(d*e^2*(c + d*x))) - (4*b*(a + b*ArcSin[c + d*x
])*ArcTanh[E^(I*ArcSin[c + d*x])])/(d*e^2) + ((2*I)*b^2*PolyLog[2, -E^(I*Ar
cSin[c + d*x])])/(d*e^2) - ((2*I)*b^2*PolyLog[2, E^(I*ArcSin[c + d*x])])/(d
*e^2)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{(ce+dex)^2}\,dx = \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^2}{e^2x^2}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^2}{x^2}\,dx, x, c+dx\right)}{de^2}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{de^2(c+dx)} + \frac{(2b)\,\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{x\sqrt{1-x^2}}\,dx, x, c+dx\right)}{de^2}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{de^2(c+dx)} + \frac{(2b)\,\text{Subst}\left(\int (a+bx)\csc(x)\,dx, x, \sin^{-1}(c+dx)\right)}{de^2}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{de^2(c+dx)} - \frac{4b\left(a+b\sin^{-1}(c+dx)\right)\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)}{de^2} - \frac{\left(2b^2\right)\text{Subst}\left(\right.}{}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{de^2(c+dx)} - \frac{4b\left(a+b\sin^{-1}(c+dx)\right)\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)}{de^2} + \frac{\left(2ib^2\right)\text{Subst}}{}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{de^2(c+dx)} - \frac{4b\left(a+b\sin^{-1}(c+dx)\right)\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)}{de^2} + \frac{2ib^2\text{Li}_2\left(-e^{i\,\text{s}}\right.}{de^2}$$

Mathematica [A] time = 0.574653, size = 176, normalized size = 1.52

$$\frac{b^2\left(2i\text{PolyLog}\left(2,-e^{i\sin^{-1}(c+dx)}\right)-2i\text{PolyLog}\left(2,e^{i\sin^{-1}(c+dx)}\right)+\sin^{-1}(c+dx)\left(-\frac{\sin^{-1}(c+dx)}{c+dx}+2\log\left(1-e^{i\sin^{-1}(c+dx)}\right)-\right.\right.}{de}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^2,x]
```

```
[Out] (-(a^2/(c + d*x)) - 2*a*b*(ArcSin[c + d*x]/(c + d*x) + Log[((c + d*x)*Csc[A
rcSin[c + d*x]/2])/2] - Log[Sin[ArcSin[c + d*x]/2]]) + b^2*(ArcSin[c + d*x]
*(-(ArcSin[c + d*x]/(c + d*x)) + 2*Log[1 - E^(I*ArcSin[c + d*x])] - 2*Log[1
 + E^(I*ArcSin[c + d*x])]) + (2*I)*PolyLog[2, -E^(I*ArcSin[c + d*x])] - (2*
I)*PolyLog[2, E^(I*ArcSin[c + d*x])]))/(d*e^2)
```

Maple [A] time = 0.069, size = 251, normalized size = 2.2

$$-\frac{a^2}{de^2(dx+c)}-\frac{b^2(\arcsin(dx+c))^2}{de^2(dx+c)}+2\,\frac{b^2\arcsin(dx+c)\ln\left(1-i(dx+c)-\sqrt{1-(dx+c)^2}\right)}{de^2}-2\,\frac{b^2\arcsin(dx+c)\ln\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^2,x)
```

```
[Out] -1/d*a^2/e^2/(d*x+c)-1/d*b^2/e^2/(d*x+c)*arcsin(d*x+c)^2+2/d*b^2/e^2*arcsin
(d*x+c)*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-2/d*b^2/e^2*arcsin(d*x+c)*ln(1+
I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+2*I*b^2*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(
1/2))/d/e^2-2*I*b^2*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))/d/e^2-2/d*a*b/
e^2/(d*x+c)*arcsin(d*x+c)-2/d*a*b/e^2*arctanh(1/(1-(d*x+c)^2)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^2\arcsin(dx+c)^2+2\,ab\arcsin(dx+c)+a^2}{d^2e^2x^2+2\,cde^2x+c^2e^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2)/(d^2*e^2*x^2
 + 2*c*d*e^2*x + c^2*e^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{a^2}{c^2+2cdx+d^2x^2}\,dx + \int \frac{b^2 \operatorname{asin}^2(c+dx)}{c^2+2cdx+d^2x^2}\,dx + \int \frac{2ab \operatorname{asin}(c+dx)}{c^2+2cdx+d^2x^2}\,dx}{e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**2/(d*e*x+c*e)**2,x)
```

```
[Out] (Integral(a**2/(c**2 + 2*c*d*x + d**2*x**2), x) + Integral(b**2*asin(c + d*
x)**2/(c**2 + 2*c*d*x + d**2*x**2), x) + Integral(2*a*b*asin(c + d*x)/(c**2
 + 2*c*d*x + d**2*x**2), x))/e**2
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b \arcsin(dx+c)+a)^2}{(dex+ce)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^2/(d*e*x + c*e)^2, x)
```

3.195 $\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{(ce+dex)^3}\,dx$

Optimal. Leaf size=87

$$-\frac{b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{de^3(c+dx)}-\frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^3(c+dx)^2}+\frac{b^2\log(c+dx)}{de^3}$$

```
[Out] -((b*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(d*e^3*(c + d*x))) - (a
 + b*ArcSin[c + d*x])^2/(2*d*e^3*(c + d*x)^2) + (b^2*Log[c + d*x])/(d*e^3)
```

Rubi [A] time = 0.135123, antiderivative size = 87, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {4805, 12, 4627, 4681, 29}

$$-\frac{b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{de^3(c+dx)}-\frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^3(c+dx)^2}+\frac{b^2\log(c+dx)}{de^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^3,x]
```

```
[Out] -((b*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(d*e^3*(c + d*x))) - (a
 + b*ArcSin[c + d*x])^2/(2*d*e^3*(c + d*x)^2) + (b^2*Log[c + d*x])/(d*e^3)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
```

```
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4681

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^F
racPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c
^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d,
 e, f, m, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] &
& NeQ[m, -1]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{(ce+dex)^3}\,dx = \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^2}{e^3x^3}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^2}{x^3}\,dx, x, c+dx\right)}{de^3}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^3(c+dx)^2} + \frac{b\,\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{x^2\sqrt{1-x^2}}\,dx, x, c+dx\right)}{de^3}$$

$$= -\frac{b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{de^3(c+dx)} - \frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^3(c+dx)^2} + \frac{b^2\,\text{Subst}\left(\int \frac{1}{x}\,dx, x, c\right.}{de^3}$$

$$= -\frac{b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{de^3(c+dx)} - \frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^3(c+dx)^2} + \frac{b^2\log(c+dx)}{de^3}$$

Mathematica [A] time = 0.233506, size = 126, normalized size = 1.45

$$-\frac{a\left(a+2b(c+dx)\sqrt{-c^2-2cdx-d^2x^2+1}\right)+2b\sin^{-1}(c+dx)\left(a+b(c+dx)\sqrt{-c^2-2cdx-d^2x^2+1}\right)-2b^2(c+dx)^2\,\text{lo}\ldots}{2de^3(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^3,x]
```

```
[Out] -(a*(a + 2*b*(c + d*x)*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2]) + 2*b*(a + b*(c +
 d*x)*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2])*ArcSin[c + d*x] + b^2*ArcSin[c + d
*x]^2 - 2*b^2*(c + d*x)^2*Log[c + d*x])/(2*d*e^3*(c + d*x)^2)
```

Maple [A] time = 0.036, size = 152, normalized size = 1.8

$$-\frac{a^2}{2\,de^3\,(dx+c)^2}-\frac{b^2\,(\arcsin\,(dx+c))^2}{2\,de^3\,(dx+c)^2}-\frac{b^2\arcsin\,(dx+c)}{de^3\,(dx+c)}\sqrt{1-(dx+c)^2}+\frac{b^2\ln\,(dx+c)}{de^3}-\frac{ab\arcsin\,(dx+c)}{de^3\,(dx+c)^2}-\frac{a}{de^3\,(d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^3,x)
```

```
[Out] -1/2/d*a^2/e^3/(d*x+c)^2-1/2/d*b^2/e^3/(d*x+c)^2*arcsin(d*x+c)^2-1/d*b^2/e^
3*arcsin(d*x+c)/(d*x+c)*(1-(d*x+c)^2)^(1/2)+b^2*ln(d*x+c)/d/e^3-1/d*a*b/e^3
/(d*x+c)^2*arcsin(d*x+c)-1/d*a*b/e^3/(d*x+c)*(1-(d*x+c)^2)^(1/2)
```

Maxima [B] time = 1.53729, size = 319, normalized size = 3.67

$$-\left(\frac{\sqrt{-d^2x^2-2\,cdx-c^2+1}d\arcsin\,(dx+c)}{d^3e^3x+cd^2e^3}-\frac{\log\,(dx+c)}{de^3}\right)b^2-ab\left(\frac{\sqrt{-d^2x^2-2\,cdx-c^2+1}d}{d^3e^3x+cd^2e^3}+\frac{\arcsin\,(dx+c)}{d^3e^3x^2+2\,cd^2e^3x+c^2d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^3,x, algorithm="maxima")
```

```
[Out] -(sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*d*arcsin(d*x + c)/(d^3*e^3*x + c*d^2*e
^3) - log(d*x + c)/(d*e^3))*b^2 - a*b*(sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*d
/(d^3*e^3*x + c*d^2*e^3) + arcsin(d*x + c)/(d^3*e^3*x^2 + 2*c*d^2*e^3*x + c
^2*d*e^3)) - 1/2*b^2*arcsin(d*x + c)^2/(d^3*e^3*x^2 + 2*c*d^2*e^3*x + c^2*d
*e^3) - 1/2*a^2/(d^3*e^3*x^2 + 2*c*d^2*e^3*x + c^2*d*e^3)
```

Fricas [A] time = 3.01178, size = 338, normalized size = 3.89

$$-\frac{b^2\arcsin\,(dx+c)^2+2\,ab\arcsin\,(dx+c)+a^2-2\left(b^2d^2x^2+2\,b^2cdx+b^2c^2\right)\log\,(dx+c)+2\left(abdx+abc+\left(b^2dx+b^2c\right.\right.}{2\left(d^3e^3x^2+2\,cd^2e^3x+c^2de^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^3,x, algorithm="fricas")
```

```
[Out] -1/2*(b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2 - 2*(b^2*d^2*x^2
+ 2*b^2*c*d*x + b^2*c^2)*log(d*x + c) + 2*(a*b*d*x + a*b*c + (b^2*d*x + b^2
*c)*arcsin(d*x + c))*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1))/(d^3*e^3*x^2 + 2*c
*d^2*e^3*x + c^2*d*e^3)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{a^2}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx + \int \frac{b^2\operatorname{asin}^2(c+dx)}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx + \int \frac{2ab\operatorname{asin}(c+dx)}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**2/(d*e*x+c*e)**3,x)
```

```
[Out] (Integral(a**2/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integr
al(b**2*asin(c + d*x)**2/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x
) + Integral(2*a*b*asin(c + d*x)/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*
x**3), x))/e**3
```

Giac [B] time = 1.39003, size = 666, normalized size = 7.66

$$-\frac{b^2\arcsin(dx+c)^2e^{(-3)}}{4d} - \frac{(dx+c)^2b^2\arcsin(dx+c)^2e^{(-3)}}{8d\left(\sqrt{-(dx+c)^2+1}+1\right)^2} - \frac{b^2\left(\sqrt{-(dx+c)^2+1}+1\right)^2\arcsin(dx+c)^2e^{(-3)}}{8(dx+c)^2d} - \frac{ab\,\mathrm{arc}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^3,x, algorithm="giac")
```

```
[Out] -1/4*b^2*arcsin(d*x + c)^2*e^(-3)/d - 1/8*(d*x + c)^2*b^2*arcsin(d*x + c)^2
*e^(-3)/(d*(sqrt(-(d*x + c)^2 + 1) + 1)^2) - 1/8*b^2*(sqrt(-(d*x + c)^2 + 1
) + 1)^2*arcsin(d*x + c)^2*e^(-3)/((d*x + c)^2*d) - 1/2*a*b*arcsin(d*x + c)
*e^(-3)/d - 1/4*(d*x + c)^2*a*b*arcsin(d*x + c)*e^(-3)/(d*(sqrt(-(d*x + c)^
```

```
2 + 1) + 1)^2) + 1/2*(d*x + c)*b^2*arcsin(d*x + c)*e^(-3)/(d*(sqrt(-(d*x +
c)^2 + 1) + 1)) - 1/2*b^2*(sqrt(-(d*x + c)^2 + 1) + 1)*arcsin(d*x + c)*e^(-
3)/((d*x + c)*d) - 1/4*a*b*(sqrt(-(d*x + c)^2 + 1) + 1)^2*arcsin(d*x + c)*e
^(-3)/((d*x + c)^2*d) + 2*b^2*e^(-3)*log(2)/d - b^2*e^(-3)*log(2*sqrt(-(d*x
 + c)^2 + 1) + 2)/d + b^2*e^(-3)*log(sqrt(-(d*x + c)^2 + 1) + 1)/d + b^2*e^
(-3)*log(abs(d*x + c))/d - 1/4*a^2*e^(-3)/d - 1/8*(d*x + c)^2*a^2*e^(-3)/(d
*(sqrt(-(d*x + c)^2 + 1) + 1)^2) + 1/2*(d*x + c)*a*b*e^(-3)/(d*(sqrt(-(d*x
+ c)^2 + 1) + 1)) - 1/2*a*b*(sqrt(-(d*x + c)^2 + 1) + 1)*e^(-3)/((d*x + c)*
d) - 1/8*a^2*(sqrt(-(d*x + c)^2 + 1) + 1)^2*e^(-3)/((d*x + c)^2*d)
```

3.196 $\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{(ce+dex)^4}\,dx$

Optimal. Leaf size=187

$$\frac{ib^2\text{PolyLog}\left(2,-e^{i\sin^{-1}(c+dx)}\right)}{3de^4}-\frac{ib^2\text{PolyLog}\left(2,e^{i\sin^{-1}(c+dx)}\right)}{3de^4}-\frac{b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{3de^4(c+dx)^2}-\frac{\left(a+b\sin^{-1}(c\right.}{3de^4(c+d}$$

```
[Out] -b^2/(3*d*e^4*(c + d*x)) - (b*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])
)/(3*d*e^4*(c + d*x)^2) - (a + b*ArcSin[c + d*x])^2/(3*d*e^4*(c + d*x)^3) -
 (2*b*(a + b*ArcSin[c + d*x])*ArcTanh[E^(I*ArcSin[c + d*x])])/(3*d*e^4) + (
(I/3)*b^2*PolyLog[2, -E^(I*ArcSin[c + d*x])])/(d*e^4) - ((I/3)*b^2*PolyLog[
2, E^(I*ArcSin[c + d*x])])/(d*e^4)
```

Rubi [A] time = 0.245836, antiderivative size = 187, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 9, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.391, Rules used = {4805, 12, 4627, 4701, 4709, 4183, 2279, 2391, 30}

$$\frac{ib^2\text{PolyLog}\left(2,-e^{i\sin^{-1}(c+dx)}\right)}{3de^4}-\frac{ib^2\text{PolyLog}\left(2,e^{i\sin^{-1}(c+dx)}\right)}{3de^4}-\frac{b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{3de^4(c+dx)^2}-\frac{\left(a+b\sin^{-1}(c\right.}{3de^4(c+d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^4,x]
```

```
[Out] -b^2/(3*d*e^4*(c + d*x)) - (b*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])
)/(3*d*e^4*(c + d*x)^2) - (a + b*ArcSin[c + d*x])^2/(3*d*e^4*(c + d*x)^3) -
 (2*b*(a + b*ArcSin[c + d*x])*ArcTanh[E^(I*ArcSin[c + d*x])])/(3*d*e^4) + (
(I/3)*b^2*PolyLog[2, -E^(I*ArcSin[c + d*x])])/(d*e^4) - ((I/3)*b^2*PolyLog[
2, E^(I*ArcSin[c + d*x])])/(d*e^4)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{(ce+dex)^4}\,dx = \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^2}{e^4x^4}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^2}{x^4}\,dx, x, c+dx\right)}{de^4}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{3de^4(c+dx)^3} + \frac{(2b)\,\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{x^3\sqrt{1-x^2}}\,dx, x, c+dx\right)}{3de^4}$$

$$= -\frac{b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{3de^4(c+dx)^2} - \frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{3de^4(c+dx)^3} + \frac{b\,\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{x\sqrt{1-x^2}}\right.}{3de^4}$$

$$= -\frac{b^2}{3de^4(c+dx)} - \frac{b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{3de^4(c+dx)^2} - \frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{3de^4(c+dx)^3} + \frac{b\,\text{Sub}}{}$$

$$= -\frac{b^2}{3de^4(c+dx)} - \frac{b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{3de^4(c+dx)^2} - \frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{3de^4(c+dx)^3} - \frac{2b\left(a\right.}{}$$

$$= -\frac{b^2}{3de^4(c+dx)} - \frac{b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{3de^4(c+dx)^2} - \frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{3de^4(c+dx)^3} - \frac{2b\left(a\right.}{}$$

$$= -\frac{b^2}{3de^4(c+dx)} - \frac{b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{3de^4(c+dx)^2} - \frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{3de^4(c+dx)^3} - \frac{2b\left(a\right.}{}$$

Mathematica [A] time = 2.04051, size = 246, normalized size = 1.32

$$-\frac{-4ib^2(c+dx)^3\text{PolyLog}\left(2,-e^{i\sin^{-1}(c+dx)}\right) + b^2\left(4i(c+dx)^3\text{PolyLog}\left(2,e^{i\sin^{-1}(c+dx)}\right) + 4(c+dx)^2 + 4\sin^{-1}(c+dx)^2 +\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^4,x]
```

```
[Out] -(4*a^2 + 8*a*b*ArcSin[c + d*x] - (4*I)*b^2*(c + d*x)^3*PolyLog[2, -E^(I*Ar
cSin[c + d*x])] + 2*a*b*Sin[2*ArcSin[c + d*x]] + a*b*(Log[Cos[ArcSin[c + d*
x]/2]] - Log[Sin[ArcSin[c + d*x]/2]])*(3*(c + d*x) - Sin[3*ArcSin[c + d*x]]
) + b^2*(4*(c + d*x)^2 + 4*ArcSin[c + d*x]^2 + (4*I)*(c + d*x)^3*PolyLog[2,
 E^(I*ArcSin[c + d*x])] + ArcSin[c + d*x]*(2*Sin[2*ArcSin[c + d*x]] + (Log[
1 - E^(I*ArcSin[c + d*x])] - Log[1 + E^(I*ArcSin[c + d*x])])*(-3*(c + d*x)
+ Sin[3*ArcSin[c + d*x]]))))/(12*d*e^4*(c + d*x)^3)
```

Maple [A] time = 0.129, size = 336, normalized size = 1.8

$$-\frac{a^2}{3\,de^4\,(dx+c)^3}-\frac{b^2\arcsin(dx+c)}{3\,de^4\,(dx+c)^2}\sqrt{1-(dx+c)^2}-\frac{b^2\,(\arcsin(dx+c))^2}{3\,de^4\,(dx+c)^3}-\frac{b^2}{3\,de^4\,(dx+c)}-\frac{b^2\arcsin(dx+c)}{3\,de^4}\ln\Big(1+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^4,x)
```

```
[Out] -1/3/d*a^2/e^4/(d*x+c)^3-1/3/d*b^2/e^4/(d*x+c)^2*arcsin(d*x+c)*(1-(d*x+c)^2
)^(1/2)-1/3/d*b^2/e^4/(d*x+c)^3*arcsin(d*x+c)^2-1/3*b^2/d/e^4/(d*x+c)-1/3/d
*b^2/e^4*arcsin(d*x+c)*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+1/3*I*b^2*polylo
g(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))/d/e^4+1/3/d*b^2/e^4*arcsin(d*x+c)*ln(1-
I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-1/3*I*b^2*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^
(1/2))/d/e^4-2/3/d*a*b/e^4/(d*x+c)^3*arcsin(d*x+c)-1/3/d*a*b/e^4/(d*x+c)^2*
(1-(d*x+c)^2)^(1/2)-1/3/d*a*b/e^4*arctanh(1/(1-(d*x+c)^2)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^2}{3\left(d^4e^4x^3+3\,cd^3e^4x^2+3\,c^2d^2e^4x+c^3de^4\right)}-\frac{b^2\arctan\left(dx+c,\sqrt{dx+c+1}\sqrt{-dx-c+1}\right)^2+2\left(d^4e^4x^3+3\,cd^3e^4x^2+3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^4,x, algorithm="maxima")
```

```
[Out] -1/3*a^2/(d^4*e^4*x^3 + 3*c*d^3*e^4*x^2 + 3*c^2*d^2*e^4*x + c^3*d*e^4) - 1/
3*(b^2*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2 + 3*(d^4*e^
4*x^3 + 3*c*d^3*e^4*x^2 + 3*c^2*d^2*e^4*x + c^3*d*e^4)*integrate(2/3*((b^2*
d*x + b^2*c)*sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)*arctan2(d*x + c, sqrt(d*x
 + c + 1)*sqrt(-d*x - c + 1)) - 3*(a*b*d^2*x^2 + 2*a*b*c*d*x + a*b*c^2 - a*
b)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^6*e^4*x^6 + 6
*c*d^5*e^4*x^5 + (15*c^2 - 1)*d^4*e^4*x^4 + 4*(5*c^3 - c)*d^3*e^4*x^3 + 3*(
5*c^4 - 2*c^2)*d^2*e^4*x^2 + 2*(3*c^5 - 2*c^3)*d*e^4*x + (c^6 - c^4)*e^4),
x))/(d^4*e^4*x^3 + 3*c*d^3*e^4*x^2 + 3*c^2*d^2*e^4*x + c^3*d*e^4)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^2 \arcsin\left(dx+c\right)^2 + 2\,ab \arcsin\left(dx+c\right) + a^2}{d^4e^4x^4 + 4\,cd^3e^4x^3 + 6\,c^2d^2e^4x^2 + 4\,c^3de^4x + c^4e^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^4,x, algorithm="fricas")
```

```
[Out] integral((b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2)/(d^4*e^4*x^4
 + 4*c*d^3*e^4*x^3 + 6*c^2*d^2*e^4*x^2 + 4*c^3*d*e^4*x + c^4*e^4), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{a^2}{c^4+4c^3dx+6c^2d^2x^2+4cd^3x^3+d^4x^4}\,dx + \int \frac{b^2 \operatorname{asin}^2\left(c+dx\right)}{c^4+4c^3dx+6c^2d^2x^2+4cd^3x^3+d^4x^4}\,dx + \int \frac{2ab \operatorname{asin}\left(c+dx\right)}{c^4+4c^3dx+6c^2d^2x^2+4cd^3x^3+d^4x^4}\,dx}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**2/(d*e*x+c*e)**4,x)
```

```
[Out] (Integral(a**2/(c**4 + 4*c**3*d*x + 6*c**2*d**2*x**2 + 4*c*d**3*x**3 + d**4
*x**4), x) + Integral(b**2*asin(c + d*x)**2/(c**4 + 4*c**3*d*x + 6*c**2*d**
2*x**2 + 4*c*d**3*x**3 + d**4*x**4), x) + Integral(2*a*b*asin(c + d*x)/(c**
4 + 4*c**3*d*x + 6*c**2*d**2*x**2 + 4*c*d**3*x**3 + d**4*x**4), x))/e**4
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b \arcsin (dx+c)+a)^2}{(dex+ce)^4}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^4,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^2/(d*e*x + c*e)^4, x)
```

3.197 $\int (ce+dex)^4 \left(a+b\sin^{-1}(c+dx)\right)^3 dx$

Optimal. Leaf size=338

$$-\frac{6b^2e^4(c+dx)^5\left(a+b\sin^{-1}(c+dx)\right)}{125d}-\frac{8b^2e^4(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)}{75d}-\frac{16}{25}ab^2e^4x+\frac{e^4(c+dx)^5\left(a+b\sin^{-1}(c+\right.}{5d}$$

```
[Out] (-16*a*b^2*e^4*x)/25 - (298*b^3*e^4*Sqrt[1 - (c + d*x)^2])/(375*d) + (76*b^
3*e^4*(1 - (c + d*x)^2)^(3/2))/(1125*d) - (6*b^3*e^4*(1 - (c + d*x)^2)^(5/2
))/(625*d) - (16*b^3*e^4*(c + d*x)*ArcSin[c + d*x])/(25*d) - (8*b^2*e^4*(c
+ d*x)^3*(a + b*ArcSin[c + d*x]))/(75*d) - (6*b^2*e^4*(c + d*x)^5*(a + b*Ar
cSin[c + d*x]))/(125*d) + (8*b*e^4*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c +
d*x])^2)/(25*d) + (4*b*e^4*(c + d*x)^2*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[
c + d*x])^2)/(25*d) + (3*b*e^4*(c + d*x)^4*Sqrt[1 - (c + d*x)^2]*(a + b*Arc
Sin[c + d*x])^2)/(25*d) + (e^4*(c + d*x)^5*(a + b*ArcSin[c + d*x])^3)/(5*d)
```

Rubi [A] time = 0.493582, antiderivative size = 338, normalized size of antiderivative = 1., number of steps used = 17, number of rules used = 9, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.391, Rules used = {4805, 12, 4627, 4707, 4677, 4619, 261, 266, 43}

$$-\frac{6b^2e^4(c+dx)^5\left(a+b\sin^{-1}(c+dx)\right)}{125d}-\frac{8b^2e^4(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)}{75d}-\frac{16}{25}ab^2e^4x+\frac{e^4(c+dx)^5\left(a+b\sin^{-1}(c+\right.}{5d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^4*(a + b*ArcSin[c + d*x])^3,x]
```


```
[Out] (-16*a*b^2*e^4*x)/25 - (298*b^3*e^4*Sqrt[1 - (c + d*x)^2])/(375*d) + (76*b^
3*e^4*(1 - (c + d*x)^2)^(3/2))/(1125*d) - (6*b^3*e^4*(1 - (c + d*x)^2)^(5/2
))/(625*d) - (16*b^3*e^4*(c + d*x)*ArcSin[c + d*x])/(25*d) - (8*b^2*e^4*(c
+ d*x)^3*(a + b*ArcSin[c + d*x]))/(75*d) - (6*b^2*e^4*(c + d*x)^5*(a + b*Ar
cSin[c + d*x]))/(125*d) + (8*b*e^4*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c +
d*x])^2)/(25*d) + (4*b*e^4*(c + d*x)^2*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[
c + d*x])^2)/(25*d) + (3*b*e^4*(c + d*x)^4*Sqrt[1 - (c + d*x)^2]*(a + b*Arc
Sin[c + d*x])^2)/(25*d) + (e^4*(c + d*x)^5*(a + b*ArcSin[c + d*x])^3)/(5*d)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
```

```
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\int (ce+dex)^4 \left(a+b\sin^{-1}(c+dx)\right)^3 dx = \frac{\text{Subst}\left(\int e^4x^4\left(a+b\sin^{-1}(x)\right)^3 dx, x, c+dx\right)}{d}$$

$$= \frac{e^4\,\text{Subst}\left(\int x^4\left(a+b\sin^{-1}(x)\right)^3 dx, x, c+dx\right)}{d}$$

$$= \frac{e^4(c+dx)^5\left(a+b\sin^{-1}(c+dx)\right)^3}{5d} - \frac{\left(3be^4\right)\text{Subst}\left(\int \frac{x^5\left(a+b\sin^{-1}(x)\right)^2}{\sqrt{1-x^2}} dx, x, c+\right.}{5d}$$

$$= \frac{3be^4(c+dx)^4\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{25d} + \frac{e^4(c+dx)^5\left(a+b\sin^{-1}(\right.}{5d}$$

$$= -\frac{6b^2e^4(c+dx)^5\left(a+b\sin^{-1}(c+dx)\right)}{125d} + \frac{4be^4(c+dx)^2\sqrt{1-(c+dx)^2}\left(a+b\,\text{si}\right.}{25d}$$

$$= -\frac{8b^2e^4(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)}{75d} - \frac{6b^2e^4(c+dx)^5\left(a+b\sin^{-1}(c+dx)\right)}{125d}$$

$$= -\frac{16}{25}ab^2e^4x - \frac{8b^2e^4(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)}{75d} - \frac{6b^2e^4(c+dx)^5\left(a+b\sin\right.}{125d}$$

$$= -\frac{16}{25}ab^2e^4x - \frac{6b^3e^4\sqrt{1-(c+dx)^2}}{125d} + \frac{4b^3e^4\left(1-(c+dx)^2\right)^{3/2}}{125d} - \frac{6b^3e^4\left(1-(c+\right.}{625d}$$

$$= -\frac{16}{25}ab^2e^4x - \frac{298b^3e^4\sqrt{1-(c+dx)^2}}{375d} + \frac{76b^3e^4\left(1-(c+dx)^2\right)^{3/2}}{1125d} - \frac{6b^3e^4\left(1-\right.}{6}$$

Mathematica [A] time = 0.94015, size = 307, normalized size = 0.91

$$e^4\left((c+dx)^5\left(a+b\sin^{-1}(c+dx)\right)^3-\frac{1}{25}b\left(6b(c+dx)^5\left(a+b\sin^{-1}(c+dx)\right)-15\sqrt{1-(c+dx)^2}(c+dx)^4\left(a+b\sin^{-1}(c+\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^4*(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] (e^4*((c + d*x)^5*(a + b*ArcSin[c + d*x])^3 - (b*((40*b^2*(2 + c^2 + 2*c*d*
x + d^2*x^2)*Sqrt[1 - (c + d*x)^2])/9 - (2*b^2*Sqrt[1 - (c + d*x)^2]*(-15 +
 10*(1 - (c + d*x)^2) - 3*(-1 + (c + d*x)^2)^2))/5 + (40*b*(c + d*x)^3*(a +
 b*ArcSin[c + d*x]))/3 + 6*b*(c + d*x)^5*(a + b*ArcSin[c + d*x]) - 40*Sqrt[
1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^2 - 20*(c + d*x)^2*Sqrt[1 - (c + d
*x)^2]*(a + b*ArcSin[c + d*x])^2 - 15*(c + d*x)^4*Sqrt[1 - (c + d*x)^2]*(a
+ b*ArcSin[c + d*x])^2 + 80*b*(a*d*x + b*Sqrt[1 - (c + d*x)^2] + b*(c + d*x
)*ArcSin[c + d*x])))/25))/(5*d)
```

Maple [A] time = 0.041, size = 383, normalized size = 1.1

$$\frac{1}{d}\left(\frac{e^4(dx+c)^5a^3}{5}+e^4b^3\left(\frac{(dx+c)^5(\arcsin(dx+c))^3}{5}+\frac{(\arcsin(dx+c))^2\left(3(dx+c)^4+4(dx+c)^2+8\right)}{25}\sqrt{1-(dx+c)^2}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^4*(a+b*arcsin(d*x+c))^3,x)
```

```
[Out] 1/d*(1/5*e^4*(d*x+c)^5*a^3+e^4*b^3*(1/5*(d*x+c)^5*arcsin(d*x+c)^3+1/25*arcs
in(d*x+c)^2*(3*(d*x+c)^4+4*(d*x+c)^2+8)*(1-(d*x+c)^2)^(1/2)-16/25*(1-(d*x+c
)^2)^(1/2)-16/25*(d*x+c)*arcsin(d*x+c)-6/125*(d*x+c)^5*arcsin(d*x+c)-2/625*
(3*(d*x+c)^4+4*(d*x+c)^2+8)*(1-(d*x+c)^2)^(1/2)-8/75*(d*x+c)^3*arcsin(d*x+c
)-8/225*((d*x+c)^2+2)*(1-(d*x+c)^2)^(1/2))+3*e^4*a*b^2*(1/5*arcsin(d*x+c)^2
*(d*x+c)^5+2/75*arcsin(d*x+c)*(3*(d*x+c)^4+4*(d*x+c)^2+8)*(1-(d*x+c)^2)^(1/
2)-2/125*(d*x+c)^5-8/225*(d*x+c)^3-16/75*d*x-16/75*c)+3*e^4*a^2*b*(1/5*(d*x
+c)^5*arcsin(d*x+c)+1/25*(d*x+c)^4*(1-(d*x+c)^2)^(1/2)+4/75*(d*x+c)^2*(1-(d
*x+c)^2)^(1/2)+8/75*(1-(d*x+c)^2)^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4*(a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 3.58772, size = 2141, normalized size = 6.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4*(a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] 1/5625*(45*(25*a^3 - 6*a*b^2)*d^5*e^4*x^5 + 225*(25*a^3 - 6*a*b^2)*c*d^4*e^
4*x^4 - 150*(4*a*b^2 - 3*(25*a^3 - 6*a*b^2)*c^2)*d^3*e^4*x^3 - 450*(4*a*b^2
*c - (25*a^3 - 6*a*b^2)*c^3)*d^2*e^4*x^2 - 225*(8*a*b^2*c^2 - (25*a^3 - 6*a
*b^2)*c^4 + 16*a*b^2)*d*e^4*x + 1125*(b^3*d^5*e^4*x^5 + 5*b^3*c*d^4*e^4*x^4
 + 10*b^3*c^2*d^3*e^4*x^3 + 10*b^3*c^3*d^2*e^4*x^2 + 5*b^3*c^4*d*e^4*x + b^
3*c^5*e^4)*arcsin(d*x + c)^3 + 3375*(a*b^2*d^5*e^4*x^5 + 5*a*b^2*c*d^4*e^4*
x^4 + 10*a*b^2*c^2*d^3*e^4*x^3 + 10*a*b^2*c^3*d^2*e^4*x^2 + 5*a*b^2*c^4*d*e
^4*x + a*b^2*c^5*e^4)*arcsin(d*x + c)^2 + 15*(9*(25*a^2*b - 2*b^3)*d^5*e^4*
x^5 + 45*(25*a^2*b - 2*b^3)*c*d^4*e^4*x^4 - 10*(4*b^3 - 9*(25*a^2*b - 2*b^3
)*c^2)*d^3*e^4*x^3 - 30*(4*b^3*c - 3*(25*a^2*b - 2*b^3)*c^3)*d^2*e^4*x^2 -
15*(8*b^3*c^2 - 3*(25*a^2*b - 2*b^3)*c^4 + 16*b^3)*d*e^4*x - (40*b^3*c^3 -
9*(25*a^2*b - 2*b^3)*c^5 + 240*b^3*c)*e^4)*arcsin(d*x + c) + (27*(25*a^2*b
- 2*b^3)*d^4*e^4*x^4 + 108*(25*a^2*b - 2*b^3)*c*d^3*e^4*x^3 + 2*(450*a^2*b
- 136*b^3 + 81*(25*a^2*b - 2*b^3)*c^2)*d^2*e^4*x^2 + 4*(27*(25*a^2*b - 2*b^
3)*c^3 + 2*(225*a^2*b - 68*b^3)*c)*d*e^4*x + (27*(25*a^2*b - 2*b^3)*c^4 + 1
800*a^2*b - 4144*b^3 + 4*(225*a^2*b - 68*b^3)*c^2)*e^4 + 225*(3*b^3*d^4*e^4
*x^4 + 12*b^3*c*d^3*e^4*x^3 + 2*(9*b^3*c^2 + 2*b^3)*d^2*e^4*x^2 + 4*(3*b^3*
c^3 + 2*b^3*c)*d*e^4*x + (3*b^3*c^4 + 4*b^3*c^2 + 8*b^3)*e^4)*arcsin(d*x +
c)^2 + 450*(3*a*b^2*d^4*e^4*x^4 + 12*a*b^2*c*d^3*e^4*x^3 + 2*(9*a*b^2*c^2 +
 2*a*b^2)*d^2*e^4*x^2 + 4*(3*a*b^2*c^3 + 2*a*b^2*c)*d*e^4*x + (3*a*b^2*c^4
+ 4*a*b^2*c^2 + 8*a*b^2)*e^4)*arcsin(d*x + c))*sqrt(-d^2*x^2 - 2*c*d*x - c^
2 + 1))/d
```

Sympy [A] time = 26.3756, size = 2518, normalized size = 7.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**4*(a+b*asin(d*x+c))**3,x)
```

```
[Out] Piecewise((a**3*c**4*e**4*x + 2*a**3*c**3*d*e**4*x**2 + 2*a**3*c**2*d**2*e*
*4*x**3 + a**3*c*d**3*e**4*x**4 + a**3*d**4*e**4*x**5/5 + 3*a**2*b*c**5*e**
4*asin(c + d*x)/(5*d) + 3*a**2*b*c**4*e**4*x*asin(c + d*x) + 3*a**2*b*c**4*
e**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(25*d) + 6*a**2*b*c**3*d*e**4*x*
*2*asin(c + d*x) + 12*a**2*b*c**3*e**4*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 +
 1)/25 + 6*a**2*b*c**2*d**2*e**4*x**3*asin(c + d*x) + 18*a**2*b*c**2*d*e**4
*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/25 + 4*a**2*b*c**2*e**4*sqrt(-c
**2 - 2*c*d*x - d**2*x**2 + 1)/(25*d) + 3*a**2*b*c*d**3*e**4*x**4*asin(c +
d*x) + 12*a**2*b*c*d**2*e**4*x**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/25
+ 8*a**2*b*c*e**4*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/25 + 3*a**2*b*d**
4*e**4*x**5*asin(c + d*x)/5 + 3*a**2*b*d**3*e**4*x**4*sqrt(-c**2 - 2*c*d*x
- d**2*x**2 + 1)/25 + 4*a**2*b*d*e**4*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2
 + 1)/25 + 8*a**2*b*e**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(25*d) + 3*a
*b**2*c**5*e**4*asin(c + d*x)**2/(5*d) + 3*a*b**2*c**4*e**4*x*asin(c + d*x)
**2 - 6*a*b**2*c**4*e**4*x/25 + 6*a*b**2*c**4*e**4*sqrt(-c**2 - 2*c*d*x - d
**2*x**2 + 1)*asin(c + d*x)/(25*d) + 6*a*b**2*c**3*d*e**4*x**2*asin(c + d*x
)**2 - 12*a*b**2*c**3*d*e**4*x**2/25 + 24*a*b**2*c**3*e**4*x*sqrt(-c**2 - 2
*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/25 + 6*a*b**2*c**2*d**2*e**4*x**3*asi
n(c + d*x)**2 - 12*a*b**2*c**2*d**2*e**4*x**3/25 + 36*a*b**2*c**2*d*e**4*x*
*2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/25 - 8*a*b**2*c**2*e
**4*x/25 + 8*a*b**2*c**2*e**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c
+ d*x)/(25*d) + 3*a*b**2*c*d**3*e**4*x**4*asin(c + d*x)**2 - 6*a*b**2*c*d**
3*e**4*x**4/25 + 24*a*b**2*c*d**2*e**4*x**3*sqrt(-c**2 - 2*c*d*x - d**2*x**
2 + 1)*asin(c + d*x)/25 - 8*a*b**2*c*d*e**4*x**2/25 + 16*a*b**2*c*e**4*x*sq
rt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/25 + 3*a*b**2*d**4*e**4*x
**5*asin(c + d*x)**2/5 - 6*a*b**2*d**4*e**4*x**5/125 + 6*a*b**2*d**3*e**4*x
**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/25 - 8*a*b**2*d**2*
e**4*x**3/75 + 8*a*b**2*d*e**4*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*a
sin(c + d*x)/25 - 16*a*b**2*e**4*x/25 + 16*a*b**2*e**4*sqrt(-c**2 - 2*c*d*x
 - d**2*x**2 + 1)*asin(c + d*x)/(25*d) + b**3*c**5*e**4*asin(c + d*x)**3/(5
*d) - 6*b**3*c**5*e**4*asin(c + d*x)/(125*d) + b**3*c**4*e**4*x*asin(c + d*
x)**3 - 6*b**3*c**4*e**4*x*asin(c + d*x)/25 + 3*b**3*c**4*e**4*sqrt(-c**2 -
 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/(25*d) - 6*b**3*c**4*e**4*sqrt(-
c**2 - 2*c*d*x - d**2*x**2 + 1)/(625*d) + 2*b**3*c**3*d*e**4*x**2*asin(c +
d*x)**3 - 12*b**3*c**3*d*e**4*x**2*asin(c + d*x)/25 + 12*b**3*c**3*e**4*x*s
qrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/25 - 24*b**3*c**3*e**
```

```
4*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/625 - 8*b**3*c**3*e**4*asin(c + d
*x)/(75*d) + 2*b**3*c**2*d**2*e**4*x**3*asin(c + d*x)**3 - 12*b**3*c**2*d**
2*e**4*x**3*asin(c + d*x)/25 + 18*b**3*c**2*d*e**4*x**2*sqrt(-c**2 - 2*c*d*
x - d**2*x**2 + 1)*asin(c + d*x)**2/25 - 36*b**3*c**2*d*e**4*x**2*sqrt(-c**
2 - 2*c*d*x - d**2*x**2 + 1)/625 - 8*b**3*c**2*e**4*x*asin(c + d*x)/25 + 4*
b**3*c**2*e**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/(25*d
) - 272*b**3*c**2*e**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(5625*d) + b**
3*c*d**3*e**4*x**4*asin(c + d*x)**3 - 6*b**3*c*d**3*e**4*x**4*asin(c + d*x)
/25 + 12*b**3*c*d**2*e**4*x**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c
 + d*x)**2/25 - 24*b**3*c*d**2*e**4*x**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 +
 1)/625 - 8*b**3*c*d*e**4*x**2*asin(c + d*x)/25 + 8*b**3*c*e**4*x*sqrt(-c**
2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/25 - 544*b**3*c*e**4*x*sqrt(-
c**2 - 2*c*d*x - d**2*x**2 + 1)/5625 - 16*b**3*c*e**4*asin(c + d*x)/(25*d)
+ b**3*d**4*e**4*x**5*asin(c + d*x)**3/5 - 6*b**3*d**4*e**4*x**5*asin(c + d
*x)/125 + 3*b**3*d**3*e**4*x**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(
c + d*x)**2/25 - 6*b**3*d**3*e**4*x**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1
)/625 - 8*b**3*d**2*e**4*x**3*asin(c + d*x)/75 + 4*b**3*d*e**4*x**2*sqrt(-c
**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/25 - 272*b**3*d*e**4*x**2*s
qrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/5625 - 16*b**3*e**4*x*asin(c + d*x)/25
 + 8*b**3*e**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/(25*d
) - 4144*b**3*e**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(5625*d), Ne(d, 0)
), (c**4*e**4*x*(a + b*asin(c))**3, True))
```

Giac [B] time = 1.35541, size = 1085, normalized size = 3.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4*(a+b*arcsin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] 1/5*((d*x + c)^2 - 1)^2*(d*x + c)*b^3*arcsin(d*x + c)^3*e^4/d + 1/5*(d*x +
c)^5*a^3*e^4/d + 3/5*((d*x + c)^2 - 1)^2*(d*x + c)*a*b^2*arcsin(d*x + c)^2*
e^4/d + 2/5*((d*x + c)^2 - 1)*(d*x + c)*b^3*arcsin(d*x + c)^3*e^4/d + 3/25*
((d*x + c)^2 - 1)^2*sqrt(-(d*x + c)^2 + 1)*b^3*arcsin(d*x + c)^2*e^4/d + 3/
5*((d*x + c)^2 - 1)^2*(d*x + c)*a^2*b*arcsin(d*x + c)*e^4/d - 6/125*((d*x +
 c)^2 - 1)^2*(d*x + c)*b^3*arcsin(d*x + c)*e^4/d + 6/5*((d*x + c)^2 - 1)*(d
*x + c)*a*b^2*arcsin(d*x + c)^2*e^4/d + 1/5*(d*x + c)*b^3*arcsin(d*x + c)^3
*e^4/d + 6/25*((d*x + c)^2 - 1)^2*sqrt(-(d*x + c)^2 + 1)*a*b^2*arcsin(d*x +
 c)*e^4/d - 2/5*(-(d*x + c)^2 + 1)^(3/2)*b^3*arcsin(d*x + c)^2*e^4/d - 6/12
5*((d*x + c)^2 - 1)^2*(d*x + c)*a*b^2*e^4/d + 6/5*((d*x + c)^2 - 1)*(d*x +
c)*a^2*b*arcsin(d*x + c)*e^4/d - 76/375*((d*x + c)^2 - 1)*(d*x + c)*b^3*arc
```

```
sin(d*x + c)*e^4/d + 3/5*(d*x + c)*a*b^2*arcsin(d*x + c)^2*e^4/d + 3/25*((d
*x + c)^2 - 1)^2*sqrt(-(d*x + c)^2 + 1)*a^2*b*e^4/d - 6/625*((d*x + c)^2 -
1)^2*sqrt(-(d*x + c)^2 + 1)*b^3*e^4/d - 4/5*(-(d*x + c)^2 + 1)^(3/2)*a*b^2*
arcsin(d*x + c)*e^4/d + 3/5*sqrt(-(d*x + c)^2 + 1)*b^3*arcsin(d*x + c)^2*e^
4/d - 76/375*((d*x + c)^2 - 1)*(d*x + c)*a*b^2*e^4/d + 3/5*(d*x + c)*a^2*b*
arcsin(d*x + c)*e^4/d - 298/375*(d*x + c)*b^3*arcsin(d*x + c)*e^4/d - 2/5*(
-(d*x + c)^2 + 1)^(3/2)*a^2*b*e^4/d + 76/1125*(-(d*x + c)^2 + 1)^(3/2)*b^3*
e^4/d + 6/5*sqrt(-(d*x + c)^2 + 1)*a*b^2*arcsin(d*x + c)*e^4/d - 298/375*(d
*x + c)*a*b^2*e^4/d + 3/5*sqrt(-(d*x + c)^2 + 1)*a^2*b*e^4/d - 298/375*sqrt
(-(d*x + c)^2 + 1)*b^3*e^4/d
```

3.198 $\int (ce+dex)^3 \left(a+b\sin^{-1}(c+dx)\right)^3\,dx$

Optimal. Leaf size=287

$$-\frac{3b^2e^3(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)}{32d}-\frac{9b^2e^3(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)}{32d}+\frac{e^3(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)^3}{4d}+\frac{3be}{}$$

```
[Out] (-45*b^3*e^3*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(256*d) - (3*b^3*e^3*(c + d*x
)^3*Sqrt[1 - (c + d*x)^2])/(128*d) + (45*b^3*e^3*ArcSin[c + d*x])/(256*d) -
 (9*b^2*e^3*(c + d*x)^2*(a + b*ArcSin[c + d*x]))/(32*d) - (3*b^2*e^3*(c + d
*x)^4*(a + b*ArcSin[c + d*x]))/(32*d) + (9*b*e^3*(c + d*x)*Sqrt[1 - (c + d*
x)^2]*(a + b*ArcSin[c + d*x])^2)/(32*d) + (3*b*e^3*(c + d*x)^3*Sqrt[1 - (c
+ d*x)^2]*(a + b*ArcSin[c + d*x])^2)/(16*d) - (3*e^3*(a + b*ArcSin[c + d*x]
)^3)/(32*d) + (e^3*(c + d*x)^4*(a + b*ArcSin[c + d*x])^3)/(4*d)
```

Rubi [A] time = 0.400394, antiderivative size = 287, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 7, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.304, Rules used = {4805, 12, 4627, 4707, 4641, 321, 216}

$$-\frac{3b^2e^3(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)}{32d}-\frac{9b^2e^3(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)}{32d}+\frac{e^3(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)^3}{4d}+\frac{3be}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3*(a + b*ArcSin[c + d*x])^3,x]
```


```
[Out] (-45*b^3*e^3*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(256*d) - (3*b^3*e^3*(c + d*x
)^3*Sqrt[1 - (c + d*x)^2])/(128*d) + (45*b^3*e^3*ArcSin[c + d*x])/(256*d) -
 (9*b^2*e^3*(c + d*x)^2*(a + b*ArcSin[c + d*x]))/(32*d) - (3*b^2*e^3*(c + d
*x)^4*(a + b*ArcSin[c + d*x]))/(32*d) + (9*b*e^3*(c + d*x)*Sqrt[1 - (c + d*
x)^2]*(a + b*ArcSin[c + d*x])^2)/(32*d) + (3*b*e^3*(c + d*x)^3*Sqrt[1 - (c
+ d*x)^2]*(a + b*ArcSin[c + d*x])^2)/(16*d) - (3*e^3*(a + b*ArcSin[c + d*x]
)^3)/(32*d) + (e^3*(c + d*x)^4*(a + b*ArcSin[c + d*x])^3)/(4*d)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rubi steps

$$\int (ce+dex)^3 \left(a+b\sin^{-1}(c+dx)\right)^3 dx = \frac{\text{Subst}\left(\int e^3x^3 \left(a+b\sin^{-1}(x)\right)^3 dx, x, c+dx\right)}{d}$$

$$= \frac{e^3\,\text{Subst}\left(\int x^3 \left(a+b\sin^{-1}(x)\right)^3 dx, x, c+dx\right)}{d}$$

$$= \frac{e^3(c+dx)^4 \left(a+b\sin^{-1}(c+dx)\right)^3}{4d} - \frac{\left(3be^3\right)\text{Subst}\left(\int \frac{x^4\left(a+b\sin^{-1}(x)\right)^2}{\sqrt{1-x^2}} dx, x, c+\right.}{4d}$$

$$= \frac{3be^3(c+dx)^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{16d} + \frac{e^3(c+dx)^4 \left(a+b\sin^{-1}\right.}{4d}$$

$$= -\frac{3b^2e^3(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)}{32d} + \frac{9be^3(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin\right.}{32d}$$

$$= -\frac{3b^3e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{128d} - \frac{9b^2e^3(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)}{32d} - \frac{3b^2e}{}$$

$$= -\frac{45b^3e^3(c+dx)\sqrt{1-(c+dx)^2}}{256d} - \frac{3b^3e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{128d} - \frac{9b^2e^3(c+d}{}$$

$$= -\frac{45b^3e^3(c+dx)\sqrt{1-(c+dx)^2}}{256d} - \frac{3b^3e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{128d} + \frac{45b^3e^3\sin}{256}$$

Mathematica [A] time = 0.498578, size = 232, normalized size = 0.81

$$\frac{e^3\left((c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)^3 - \frac{3}{8}\left(b^2(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right) + 3b^2(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right) - 2b\sqrt{1-}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^3*(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] (e^3*((c + d*x)^4*(a + b*ArcSin[c + d*x])^3 - (3*((15*b^3*(c + d*x)*Sqrt[1
- (c + d*x)^2])/8 + (b^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/4 - (15*b^3*Arc
Sin[c + d*x])/8 + 3*b^2*(c + d*x)^2*(a + b*ArcSin[c + d*x]) + b^2*(c + d*x)
^4*(a + b*ArcSin[c + d*x]) - 3*b*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*Arc
Sin[c + d*x])^2 - 2*b*(c + d*x)^3*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d
*x])^2 + (a + b*ArcSin[c + d*x])^3))/8))/(4*d)
```

Maple [A] time = 0.043, size = 397, normalized size = 1.4

$$\frac{1}{d}\left(\frac{e^3 (dx+c)^4 a^3}{4}+e^3b^3\left(\frac{(dx+c)^4 (\arcsin (dx+c))^3}{4}-\frac{3 (\arcsin (dx+c))^2}{32}\left(-2 (dx+c)^3 \sqrt{1-(dx+c)^2}-3 (dx+c) \sqrt{\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^3,x)
```

```
[Out] 1/d*(1/4*e^3*(d*x+c)^4*a^3+e^3*b^3*(1/4*(d*x+c)^4*arcsin(d*x+c)^3-3/32*arcs
in(d*x+c)^2*(-2*(d*x+c)^3*(1-(d*x+c)^2)^(1/2)-3*(d*x+c)*(1-(d*x+c)^2)^(1/2)
+3*arcsin(d*x+c))-3/32*(d*x+c)^4*arcsin(d*x+c)-3/256*(d*x+c)*(2*(d*x+c)^2+3
)*(1-(d*x+c)^2)^(1/2)-27/256*arcsin(d*x+c)-9/32*arcsin(d*x+c)*((d*x+c)^2-1)
-9/64*(d*x+c)*(1-(d*x+c)^2)^(1/2)+3/16*arcsin(d*x+c)^3)+3*e^3*a*b^2*(1/4*ar
csin(d*x+c)^2*(d*x+c)^4-1/16*arcsin(d*x+c)*(-2*(d*x+c)^3*(1-(d*x+c)^2)^(1/2
)-3*(d*x+c)*(1-(d*x+c)^2)^(1/2)+3*arcsin(d*x+c))+3/32*arcsin(d*x+c)^2-1/32*
(d*x+c)^4-3/32*(d*x+c)^2)+3*e^3*a^2*b*(1/4*(d*x+c)^4*arcsin(d*x+c)+1/16*(d*
x+c)^3*(1-(d*x+c)^2)^(1/2)+3/32*(d*x+c)*(1-(d*x+c)^2)^(1/2)-3/32*arcsin(d*x
+c)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.84205, size = 1597, normalized size = 5.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] 1/256*(8*(8*a^3 - 3*a*b^2)*d^4*e^3*x^4 + 32*(8*a^3 - 3*a*b^2)*c*d^3*e^3*x^3
 - 24*(3*a*b^2 - 2*(8*a^3 - 3*a*b^2)*c^2)*d^2*e^3*x^2 - 16*(9*a*b^2*c - 2*(
8*a^3 - 3*a*b^2)*c^3)*d*e^3*x + 8*(8*b^3*d^4*e^3*x^4 + 32*b^3*c*d^3*e^3*x^3
 + 48*b^3*c^2*d^2*e^3*x^2 + 32*b^3*c^3*d*e^3*x + (8*b^3*c^4 - 3*b^3)*e^3)*a
rcsin(d*x + c)^3 + 24*(8*a*b^2*d^4*e^3*x^4 + 32*a*b^2*c*d^3*e^3*x^3 + 48*a*
b^2*c^2*d^2*e^3*x^2 + 32*a*b^2*c^3*d*e^3*x + (8*a*b^2*c^4 - 3*a*b^2)*e^3)*a
rcsin(d*x + c)^2 + 3*(8*(8*a^2*b - b^3)*d^4*e^3*x^4 + 32*(8*a^2*b - b^3)*c*
d^3*e^3*x^3 - 24*(b^3 - 2*(8*a^2*b - b^3)*c^2)*d^2*e^3*x^2 - 16*(3*b^3*c -
2*(8*a^2*b - b^3)*c^3)*d*e^3*x - (24*b^3*c^2 - 8*(8*a^2*b - b^3)*c^4 + 24*a
^2*b - 15*b^3)*e^3)*arcsin(d*x + c) + 3*(2*(8*a^2*b - b^3)*d^3*e^3*x^3 + 6*
(8*a^2*b - b^3)*c*d^2*e^3*x^2 + 3*(8*a^2*b - 5*b^3 + 2*(8*a^2*b - b^3)*c^2)
*d*e^3*x + (2*(8*a^2*b - b^3)*c^3 + 3*(8*a^2*b - 5*b^3)*c)*e^3 + 8*(2*b^3*d
^3*e^3*x^3 + 6*b^3*c*d^2*e^3*x^2 + 3*(2*b^3*c^2 + b^3)*d*e^3*x + (2*b^3*c^3
 + 3*b^3*c)*e^3)*arcsin(d*x + c)^2 + 16*(2*a*b^2*d^3*e^3*x^3 + 6*a*b^2*c*d^
2*e^3*x^2 + 3*(2*a*b^2*c^2 + a*b^2)*d*e^3*x + (2*a*b^2*c^3 + 3*a*b^2*c)*e^3
)*arcsin(d*x + c))*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1))/d
```

Sympy [A] time = 14.784, size = 1828, normalized size = 6.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3*(a+b*asin(d*x+c))**3,x)
```

```
[Out] Piecewise((a**3*c**3*e**3*x + 3*a**3*c**2*d*e**3*x**2/2 + a**3*c*d**2*e**3*
x**3 + a**3*d**3*e**3*x**4/4 + 3*a**2*b*c**4*e**3*asin(c + d*x)/(4*d) + 3*a
**2*b*c**3*e**3*x*asin(c + d*x) + 3*a**2*b*c**3*e**3*sqrt(-c**2 - 2*c*d*x -
 d**2*x**2 + 1)/(16*d) + 9*a**2*b*c**2*d*e**3*x**2*asin(c + d*x)/2 + 9*a**2
*b*c**2*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/16 + 3*a**2*b*c*d**2*e
**3*x**3*asin(c + d*x) + 9*a**2*b*c*d*e**3*x**2*sqrt(-c**2 - 2*c*d*x - d**2
*x**2 + 1)/16 + 9*a**2*b*c*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(32*d
) + 3*a**2*b*d**3*e**3*x**4*asin(c + d*x)/4 + 3*a**2*b*d**2*e**3*x**3*sqrt(
-c**2 - 2*c*d*x - d**2*x**2 + 1)/16 + 9*a**2*b*e**3*x*sqrt(-c**2 - 2*c*d*x
- d**2*x**2 + 1)/32 - 9*a**2*b*e**3*asin(c + d*x)/(32*d) + 3*a*b**2*c**4*e*
*3*asin(c + d*x)**2/(4*d) + 3*a*b**2*c**3*e**3*x*asin(c + d*x)**2 - 3*a*b**
2*c**3*e**3*x/8 + 3*a*b**2*c**3*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*
asin(c + d*x)/(8*d) + 9*a*b**2*c**2*d*e**3*x**2*asin(c + d*x)**2/2 - 9*a*b*
*2*c**2*d*e**3*x**2/16 + 9*a*b**2*c**2*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x
**2 + 1)*asin(c + d*x)/8 + 3*a*b**2*c*d**2*e**3*x**3*asin(c + d*x)**2 - 3*a
*b**2*c*d**2*e**3*x**3/8 + 9*a*b**2*c*d*e**3*x**2*sqrt(-c**2 - 2*c*d*x - d*
*2*x**2 + 1)*asin(c + d*x)/8 - 9*a*b**2*c*e**3*x/16 + 9*a*b**2*c*e**3*sqrt(
```

```
-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/(16*d) + 3*a*b**2*d**3*e**3*
x**4*asin(c + d*x)**2/4 - 3*a*b**2*d**3*e**3*x**4/32 + 3*a*b**2*d**2*e**3*x
**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/8 - 9*a*b**2*d*e**3
*x**2/32 + 9*a*b**2*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d
*x)/16 - 9*a*b**2*e**3*asin(c + d*x)**2/(32*d) + b**3*c**4*e**3*asin(c + d*
x)**3/(4*d) - 3*b**3*c**4*e**3*asin(c + d*x)/(32*d) + b**3*c**3*e**3*x*asin
(c + d*x)**3 - 3*b**3*c**3*e**3*x*asin(c + d*x)/8 + 3*b**3*c**3*e**3*sqrt(-
c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/(16*d) - 3*b**3*c**3*e**3*
sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(128*d) + 3*b**3*c**2*d*e**3*x**2*asi
n(c + d*x)**3/2 - 9*b**3*c**2*d*e**3*x**2*asin(c + d*x)/16 + 9*b**3*c**2*e*
*3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/16 - 9*b**3*c**
2*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/128 - 9*b**3*c**2*e**3*asin(
c + d*x)/(32*d) + b**3*c*d**2*e**3*x**3*asin(c + d*x)**3 - 3*b**3*c*d**2*e*
*3*x**3*asin(c + d*x)/8 + 9*b**3*c*d*e**3*x**2*sqrt(-c**2 - 2*c*d*x - d**2*
x**2 + 1)*asin(c + d*x)**2/16 - 9*b**3*c*d*e**3*x**2*sqrt(-c**2 - 2*c*d*x -
 d**2*x**2 + 1)/128 - 9*b**3*c*e**3*x*asin(c + d*x)/16 + 9*b**3*c*e**3*sqrt
(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/(32*d) - 45*b**3*c*e**3*
sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(256*d) + b**3*d**3*e**3*x**4*asin(c
+ d*x)**3/4 - 3*b**3*d**3*e**3*x**4*asin(c + d*x)/32 + 3*b**3*d**2*e**3*x**
3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/16 - 3*b**3*d**2*e
**3*x**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/128 - 9*b**3*d*e**3*x**2*asi
n(c + d*x)/32 + 9*b**3*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c
+ d*x)**2/32 - 45*b**3*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/256 - 3
*b**3*e**3*asin(c + d*x)**3/(32*d) + 45*b**3*e**3*asin(c + d*x)/(256*d), Ne
(d, 0)), (c**3*e**3*x*(a + b*asin(c))**3, True))
```

Giac [B] time = 1.32353, size = 864, normalized size = 3.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] 1/4*((d*x + c)^2 - 1)^2*b^3*arcsin(d*x + c)^3*e^3/d - 3/16*(-(d*x + c)^2 +
1)^(3/2)*(d*x + c)*b^3*arcsin(d*x + c)^2*e^3/d + 3/4*((d*x + c)^2 - 1)^2*a*
b^2*arcsin(d*x + c)^2*e^3/d + 1/2*((d*x + c)^2 - 1)*b^3*arcsin(d*x + c)^3*e
^3/d - 3/8*(-(d*x + c)^2 + 1)^(3/2)*(d*x + c)*a*b^2*arcsin(d*x + c)*e^3/d +
 15/32*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*b^3*arcsin(d*x + c)^2*e^3/d + 3/4*(
(d*x + c)^2 - 1)^2*a^2*b*arcsin(d*x + c)*e^3/d - 3/32*((d*x + c)^2 - 1)^2*b
^3*arcsin(d*x + c)*e^3/d + 3/2*((d*x + c)^2 - 1)*a*b^2*arcsin(d*x + c)^2*e^
3/d + 5/32*b^3*arcsin(d*x + c)^3*e^3/d - 3/16*(-(d*x + c)^2 + 1)^(3/2)*(d*x
```

```
 + c)*a^2*b*e^3/d + 3/128*(-(d*x + c)^2 + 1)^(3/2)*(d*x + c)*b^3*e^3/d + 15
/16*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*a*b^2*arcsin(d*x + c)*e^3/d + 1/4*((d*
x + c)^2 - 1)^2*a^3*e^3/d - 3/32*((d*x + c)^2 - 1)^2*a*b^2*e^3/d + 3/2*((d*
x + c)^2 - 1)*a^2*b*arcsin(d*x + c)*e^3/d - 15/32*((d*x + c)^2 - 1)*b^3*arc
sin(d*x + c)*e^3/d + 15/32*a*b^2*arcsin(d*x + c)^2*e^3/d + 15/32*sqrt(-(d*x
 + c)^2 + 1)*(d*x + c)*a^2*b*e^3/d - 51/256*sqrt(-(d*x + c)^2 + 1)*(d*x + c
)*b^3*e^3/d + 1/2*((d*x + c)^2 - 1)*a^3*e^3/d - 15/32*((d*x + c)^2 - 1)*a*b
^2*e^3/d + 15/32*a^2*b*arcsin(d*x + c)*e^3/d - 51/256*b^3*arcsin(d*x + c)*e
^3/d - 51/256*a*b^2*e^3/d
```

3.199 $\int (ce+dex)^2 \left(a+b\sin^{-1}(c+dx)\right)^3\,dx$

Optimal. Leaf size=235

$$-\frac{2b^2e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)}{9d}-\frac{4}{3}ab^2e^2x+\frac{2be^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{3d}+\frac{be^2(c+dx)^2\sqrt{1-(c+dx}{3}$$

```
[Out] (-4*a*b^2*e^2*x)/3 - (14*b^3*e^2*Sqrt[1 - (c + d*x)^2])/(9*d) + (2*b^3*e^2*
(1 - (c + d*x)^2)^(3/2))/(27*d) - (4*b^3*e^2*(c + d*x)*ArcSin[c + d*x])/(3*
d) - (2*b^2*e^2*(c + d*x)^3*(a + b*ArcSin[c + d*x]))/(9*d) + (2*b*e^2*Sqrt[
1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^2)/(3*d) + (b*e^2*(c + d*x)^2*Sqrt
[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^2)/(3*d) + (e^2*(c + d*x)^3*(a +
b*ArcSin[c + d*x])^3)/(3*d)
```

Rubi [A] time = 0.322174, antiderivative size = 235, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.391, Rules used = {4805, 12, 4627, 4707, 4677, 4619, 261, 266, 43}

$$-\frac{2b^2e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)}{9d}-\frac{4}{3}ab^2e^2x+\frac{2be^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{3d}+\frac{be^2(c+dx)^2\sqrt{1-(c+dx}{3}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x])^3,x]
```


```
[Out] (-4*a*b^2*e^2*x)/3 - (14*b^3*e^2*Sqrt[1 - (c + d*x)^2])/(9*d) + (2*b^3*e^2*
(1 - (c + d*x)^2)^(3/2))/(27*d) - (4*b^3*e^2*(c + d*x)*ArcSin[c + d*x])/(3*
d) - (2*b^2*e^2*(c + d*x)^3*(a + b*ArcSin[c + d*x]))/(9*d) + (2*b*e^2*Sqrt[
1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^2)/(3*d) + (b*e^2*(c + d*x)^2*Sqrt
[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^2)/(3*d) + (e^2*(c + d*x)^3*(a +
b*ArcSin[c + d*x])^3)/(3*d)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
```

```
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\int (ce+dex)^2 \left(a+b\sin^{-1}(c+dx)\right)^3 \, dx = \frac{\text{Subst}\left(\int e^2x^2 \left(a+b\sin^{-1}(x)\right)^3 \, dx, x, c+dx\right)}{d}$$

$$= \frac{e^2 \,\text{Subst}\left(\int x^2 \left(a+b\sin^{-1}(x)\right)^3 \, dx, x, c+dx\right)}{d}$$

$$= \frac{e^2(c+dx)^3 \left(a+b\sin^{-1}(c+dx)\right)^3}{3d} - \frac{\left(be^2\right)\text{Subst}\left(\int \frac{x^3\left(a+b\sin^{-1}(x)\right)^2}{\sqrt{1-x^2}} \, dx, x, c+dx\right.}{d}$$

$$= \frac{be^2(c+dx)^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{3d} + \frac{e^2(c+dx)^3\left(a+b\sin^{-1}(c+\right.}{3d}$$

$$= -\frac{2b^2e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)}{9d} + \frac{2be^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx\right.}{3d}$$

$$= -\frac{4}{3}ab^2e^2x - \frac{2b^2e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)}{9d} + \frac{2be^2\sqrt{1-(c+dx)^2}\left(a+b\,\mathrm{si}\right.}{3d}$$

$$= -\frac{4}{3}ab^2e^2x - \frac{4b^3e^2(c+dx)\sin^{-1}(c+dx)}{3d} - \frac{2b^2e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)}{9d}$$

$$= -\frac{4}{3}ab^2e^2x - \frac{14b^3e^2\sqrt{1-(c+dx)^2}}{9d} + \frac{2b^3e^2\left(1-(c+dx)^2\right)^{3/2}}{27d} - \frac{4b^3e^2(c+dx)\,\mathrm{si}}{3d}$$

Mathematica [A] time = 0.342833, size = 199, normalized size = 0.85

$$e^2\left((c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)^3 - b\left(\frac{2}{3}b(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right) - \sqrt{1-(c+dx)^2}(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)^2\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] (e^2*((c + d*x)^3*(a + b*ArcSin[c + d*x])^3 - b*((2*b^2*(2 + c^2 + 2*c*d*x
+ d^2*x^2)*Sqrt[1 - (c + d*x)^2])/9 + (2*b*(c + d*x)^3*(a + b*ArcSin[c + d*
x]))/3 - 2*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^2 - (c + d*x)^2*Sq
rt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^2 + 4*b*(a*d*x + b*Sqrt[1 - (c
+ d*x)^2] + b*(c + d*x)*ArcSin[c + d*x]))))/(3*d)
```

Maple [A] time = 0.038, size = 280, normalized size = 1.2

$$\frac{1}{d}\left(\frac{e^2\,(dx+c)^3\,a^3}{3}+e^2b^3\left(\frac{(dx+c)^3\,(\arcsin\,(dx+c))^3}{3}+\frac{(\arcsin\,(dx+c))^2\left((dx+c)^2+2\right)}{3}\sqrt{1-(dx+c)^2}-\frac{4}{3}\sqrt{1-(dx\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^3,x)
```

```
[Out] 1/d*(1/3*e^2*(d*x+c)^3*a^3+e^2*b^3*(1/3*(d*x+c)^3*arcsin(d*x+c)^3+1/3*arcsi
n(d*x+c)^2*((d*x+c)^2+2)*(1-(d*x+c)^2)^(1/2)-4/3*(1-(d*x+c)^2)^(1/2)-4/3*(d
*x+c)*arcsin(d*x+c)-2/9*(d*x+c)^3*arcsin(d*x+c)-2/27*((d*x+c)^2+2)*(1-(d*x+
c)^2)^(1/2))+3*e^2*a*b^2*(1/3*arcsin(d*x+c)^2*(d*x+c)^3+2/9*arcsin(d*x+c)*(
(d*x+c)^2+2)*(1-(d*x+c)^2)^(1/2)-2/27*(d*x+c)^3-4/9*d*x-4/9*c)+3*e^2*a^2*b*
(1/3*(d*x+c)^3*arcsin(d*x+c)+1/9*(d*x+c)^2*(1-(d*x+c)^2)^(1/2)+2/9*(1-(d*x+
c)^2)^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.62982, size = 1107, normalized size = 4.71

$$\frac{3\left(3a^3-2ab^2\right)d^3e^2x^3+9\left(3a^3-2ab^2\right)cd^2e^2x^2-9\left(4ab^2-\left(3a^3-2ab^2\right)c^2\right)de^2x+9\left(b^3d^3e^2x^3+3b^3cd^2e^2x^2+3b^3c^2de^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] 1/27*(3*(3*a^3 - 2*a*b^2)*d^3*e^2*x^3 + 9*(3*a^3 - 2*a*b^2)*c*d^2*e^2*x^2 -
 9*(4*a*b^2 - (3*a^3 - 2*a*b^2)*c^2)*d*e^2*x + 9*(b^3*d^3*e^2*x^3 + 3*b^3*c
*d^2*e^2*x^2 + 3*b^3*c^2*d*e^2*x + b^3*c^3*e^2)*arcsin(d*x + c)^3 + 27*(a*b
^2*d^3*e^2*x^3 + 3*a*b^2*c*d^2*e^2*x^2 + 3*a*b^2*c^2*d*e^2*x + a*b^2*c^3*e^
2)*arcsin(d*x + c)^2 + 3*((9*a^2*b - 2*b^3)*d^3*e^2*x^3 + 3*(9*a^2*b - 2*b^
3)*c*d^2*e^2*x^2 - 3*(4*b^3 - (9*a^2*b - 2*b^3)*c^2)*d*e^2*x - (12*b^3*c -
(9*a^2*b - 2*b^3)*c^3)*e^2)*arcsin(d*x + c) + ((9*a^2*b - 2*b^3)*d^2*e^2*x^
2 + 2*(9*a^2*b - 2*b^3)*c*d*e^2*x + (18*a^2*b - 40*b^3 + (9*a^2*b - 2*b^3)*
c^2)*e^2 + 9*(b^3*d^2*e^2*x^2 + 2*b^3*c*d*e^2*x + (b^3*c^2 + 2*b^3)*e^2)*ar
csin(d*x + c)^2 + 18*(a*b^2*d^2*e^2*x^2 + 2*a*b^2*c*d*e^2*x + (a*b^2*c^2 +
2*a*b^2)*e^2)*arcsin(d*x + c))*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1))/d
```

Sympy [A] time = 7.35458, size = 1173, normalized size = 4.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2*(a+b*asin(d*x+c))**3,x)
```

```
[Out] Piecewise((a**3*c**2*e**2*x + a**3*c*d*e**2*x**2 + a**3*d**2*e**2*x**3/3 +
a**2*b*c**3*e**2*asin(c + d*x)/d + 3*a**2*b*c**2*e**2*x*asin(c + d*x) + a**
2*b*c**2*e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(3*d) + 3*a**2*b*c*d*e*
*2*x**2*asin(c + d*x) + 2*a**2*b*c*e**2*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2
+ 1)/3 + a**2*b*d**2*e**2*x**3*asin(c + d*x) + a**2*b*d*e**2*x**2*sqrt(-c**
2 - 2*c*d*x - d**2*x**2 + 1)/3 + 2*a**2*b*e**2*sqrt(-c**2 - 2*c*d*x - d**2*
x**2 + 1)/(3*d) + a*b**2*c**3*e**2*asin(c + d*x)**2/d + 3*a*b**2*c**2*e**2*
x*asin(c + d*x)**2 - 2*a*b**2*c**2*e**2*x/3 + 2*a*b**2*c**2*e**2*sqrt(-c**2
 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/(3*d) + 3*a*b**2*c*d*e**2*x**2*as
in(c + d*x)**2 - 2*a*b**2*c*d*e**2*x**2/3 + 4*a*b**2*c*e**2*x*sqrt(-c**2 -
2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/3 + a*b**2*d**2*e**2*x**3*asin(c + d
*x)**2 - 2*a*b**2*d**2*e**2*x**3/9 + 2*a*b**2*d*e**2*x**2*sqrt(-c**2 - 2*c*
```

```
d*x - d**2*x**2 + 1)*asin(c + d*x)/3 - 4*a*b**2*e**2*x/3 + 4*a*b**2*e**2*sq
rt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/(3*d) + b**3*c**3*e**2*as
in(c + d*x)**3/(3*d) - 2*b**3*c**3*e**2*asin(c + d*x)/(9*d) + b**3*c**2*e**
2*x*asin(c + d*x)**3 - 2*b**3*c**2*e**2*x*asin(c + d*x)/3 + b**3*c**2*e**2*
sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/(3*d) - 2*b**3*c**2*
e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(27*d) + b**3*c*d*e**2*x**2*asin
(c + d*x)**3 - 2*b**3*c*d*e**2*x**2*asin(c + d*x)/3 + 2*b**3*c*e**2*x*sqrt(
-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/3 - 4*b**3*c*e**2*x*sqrt(
-c**2 - 2*c*d*x - d**2*x**2 + 1)/27 - 4*b**3*c*e**2*asin(c + d*x)/(3*d) + b
**3*d**2*e**2*x**3*asin(c + d*x)**3/3 - 2*b**3*d**2*e**2*x**3*asin(c + d*x)
/9 + b**3*d*e**2*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**
2/3 - 2*b**3*d*e**2*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/27 - 4*b**3*
e**2*x*asin(c + d*x)/3 + 2*b**3*e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*
asin(c + d*x)**2/(3*d) - 40*b**3*e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)
/(27*d), Ne(d, 0)), (c**2*e**2*x*(a + b*asin(c))**3, True))
```

Giac [B] time = 1.33241, size = 655, normalized size = 2.79

$$\frac{\left((dx+c)^2-1\right)(dx+c)b^3\arcsin(dx+c)^3e^2}{3d}+\frac{\left((dx+c)^2-1\right)(dx+c)ab^2\arcsin(dx+c)^2e^2}{d}+\frac{(dx+c)b^3\arcsin(dx+c)^3e^2}{3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] 1/3*((d*x + c)^2 - 1)*(d*x + c)*b^3*arcsin(d*x + c)^3*e^2/d + ((d*x + c)^2
- 1)*(d*x + c)*a*b^2*arcsin(d*x + c)^2*e^2/d + 1/3*(d*x + c)*b^3*arcsin(d*x
 + c)^3*e^2/d - 1/3*(-(d*x + c)^2 + 1)^(3/2)*b^3*arcsin(d*x + c)^2*e^2/d +
1/3*(d*x + c)^3*a^3*e^2/d + ((d*x + c)^2 - 1)*(d*x + c)*a^2*b*arcsin(d*x +
c)*e^2/d - 2/9*((d*x + c)^2 - 1)*(d*x + c)*b^3*arcsin(d*x + c)*e^2/d + (d*x
 + c)*a*b^2*arcsin(d*x + c)^2*e^2/d - 2/3*(-(d*x + c)^2 + 1)^(3/2)*a*b^2*ar
csin(d*x + c)*e^2/d + sqrt(-(d*x + c)^2 + 1)*b^3*arcsin(d*x + c)^2*e^2/d -
2/9*((d*x + c)^2 - 1)*(d*x + c)*a*b^2*e^2/d + (d*x + c)*a^2*b*arcsin(d*x +
c)*e^2/d - 14/9*(d*x + c)*b^3*arcsin(d*x + c)*e^2/d - 1/3*(-(d*x + c)^2 + 1
)^(3/2)*a^2*b*e^2/d + 2/27*(-(d*x + c)^2 + 1)^(3/2)*b^3*e^2/d + 2*sqrt(-(d*
x + c)^2 + 1)*a*b^2*arcsin(d*x + c)*e^2/d - 14/9*(d*x + c)*a*b^2*e^2/d + sq
rt(-(d*x + c)^2 + 1)*a^2*b*e^2/d - 14/9*sqrt(-(d*x + c)^2 + 1)*b^3*e^2/d
```

3.200 $\int (ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^3\,dx$

Optimal. Leaf size=165

$$-\frac{3b^2e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)}{4d}+\frac{3be(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{4d}+\frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx\right.}{2d}$$

```
[Out] (-3*b^3*e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(8*d) + (3*b^3*e*ArcSin[c + d*x]
)/(8*d) - (3*b^2*e*(c + d*x)^2*(a + b*ArcSin[c + d*x]))/(4*d) + (3*b*e*(c +
 d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^2)/(4*d) - (e*(a + b*Ar
cSin[c + d*x])^3)/(4*d) + (e*(c + d*x)^2*(a + b*ArcSin[c + d*x])^3)/(2*d)
```

Rubi [A] time = 0.20941, antiderivative size = 165, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4805, 12, 4627, 4707, 4641, 321, 216}

$$-\frac{3b^2e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)}{4d}+\frac{3be(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{4d}+\frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx\right.}{2d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)*(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] (-3*b^3*e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(8*d) + (3*b^3*e*ArcSin[c + d*x]
)/(8*d) - (3*b^2*e*(c + d*x)^2*(a + b*ArcSin[c + d*x]))/(4*d) + (3*b*e*(c +
 d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^2)/(4*d) - (e*(a + b*Ar
cSin[c + d*x])^3)/(4*d) + (e*(c + d*x)^2*(a + b*ArcSin[c + d*x])^3)/(2*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rubi steps

$$\int (ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^3\,dx = \frac{\text{Subst}\left(\int ex\left(a+b\sin^{-1}(x)\right)^3\,dx,x,c+dx\right)}{d}$$
$$= \frac{e\,\text{Subst}\left(\int x\left(a+b\sin^{-1}(x)\right)^3\,dx,x,c+dx\right)}{d}$$
$$= \frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)^3}{2d} - \frac{(3be)\,\text{Subst}\left(\int \frac{x^2\left(a+b\sin^{-1}(x)\right)^2}{\sqrt{1-x^2}}\,dx,x,c+dx\right)}{2d}$$
$$= \frac{3be(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{4d} + \frac{e(c+dx)^2\left(a+b\sin^{-1}(c+d\right.}{2d}$$
$$= -\frac{3b^2e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)}{4d} + \frac{3be(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c\right.}{4d}$$
$$= -\frac{3b^3e(c+dx)\sqrt{1-(c+dx)^2}}{8d} - \frac{3b^2e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)}{4d} + \frac{3be(c+dx}{}$$
$$= -\frac{3b^3e(c+dx)\sqrt{1-(c+dx)^2}}{8d} + \frac{3b^3e\sin^{-1}(c+dx)}{8d} - \frac{3b^2e(c+dx)^2\left(a+b\sin^{-1}(\right.}{4d}$$

Mathematica [A] time = 0.216465, size = 137, normalized size = 0.83

$$\frac{e\left(-3b^2(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)+3b(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2+2(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right.\right.}{4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)*(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] (e*((3*b^3*(-((c + d*x)*Sqrt[1 - (c + d*x)^2]) + ArcSin[c + d*x]))/2 - 3*b^
2*(c + d*x)^2*(a + b*ArcSin[c + d*x]) + 3*b*(c + d*x)*Sqrt[1 - (c + d*x)^2]
*(a + b*ArcSin[c + d*x])^2 - (a + b*ArcSin[c + d*x])^3 + 2*(c + d*x)^2*(a +
 b*ArcSin[c + d*x])^3))/(4*d)
```

Maple [A] time = 0.036, size = 266, normalized size = 1.6

$$\frac{1}{d}\left(\frac{e(dx+c)^2a^3}{2}+eb^3\left(\frac{(\arcsin(dx+c))^3\left((dx+c)^2-1\right)}{2}+\frac{3(\arcsin(dx+c))^2}{4}\left((dx+c)\sqrt{1-(dx+c)^2}+\arcsin(dx+\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)*(a+b*arcsin(d*x+c))^3,x)
```

```
[Out] 1/d*(1/2*e*(d*x+c)^2*a^3+e*b^3*(1/2*arcsin(d*x+c)^3*((d*x+c)^2-1)+3/4*arcsi
n(d*x+c)^2*((d*x+c)*(1-(d*x+c)^2)^(1/2)+arcsin(d*x+c))-3/4*arcsin(d*x+c)*((
d*x+c)^2-1)-3/8*(d*x+c)*(1-(d*x+c)^2)^(1/2)-3/8*arcsin(d*x+c)-1/2*arcsin(d*
x+c)^3)+3*e*a*b^2*(1/2*arcsin(d*x+c)^2*((d*x+c)^2-1)+1/2*arcsin(d*x+c)*((d*
x+c)*(1-(d*x+c)^2)^(1/2)+arcsin(d*x+c))-1/4*arcsin(d*x+c)^2-1/4*(d*x+c)^2)+
3*e*a^2*b*(1/2*arcsin(d*x+c)*(d*x+c)^2+1/4*(d*x+c)*(1-(d*x+c)^2)^(1/2)-1/4*
arcsin(d*x+c)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.56369, size = 716, normalized size = 4.34

$$2\left(2a^3-3ab^2\right)d^2ex^2+4\left(2a^3-3ab^2\right)cdex+2\left(2b^3d^2ex^2+4b^3cdex+\left(2b^3c^2-b^3\right)e\right)\arcsin\left(dx+c\right)^3+6\left(2ab^2d^2ex^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] 1/8*(2*(2*a^3 - 3*a*b^2)*d^2*e*x^2 + 4*(2*a^3 - 3*a*b^2)*c*d*e*x + 2*(2*b^3
*d^2*e*x^2 + 4*b^3*c*d*e*x + (2*b^3*c^2 - b^3)*e)*arcsin(d*x + c)^3 + 6*(2*
a*b^2*d^2*e*x^2 + 4*a*b^2*c*d*e*x + (2*a*b^2*c^2 - a*b^2)*e)*arcsin(d*x + c
)^2 + 3*(2*(2*a^2*b - b^3)*d^2*e*x^2 + 4*(2*a^2*b - b^3)*c*d*e*x - (2*a^2*b
 - b^3 - 2*(2*a^2*b - b^3)*c^2)*e)*arcsin(d*x + c) + 3*((2*a^2*b - b^3)*d*e
*x + (2*a^2*b - b^3)*c*e + 2*(b^3*d*e*x + b^3*c*e)*arcsin(d*x + c)^2 + 4*(a
*b^2*d*e*x + a*b^2*c*e)*arcsin(d*x + c))*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)
)/d
```

Sympy [A] time = 2.99633, size = 685, normalized size = 4.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*asin(d*x+c))**3,x)
```

```
[Out] Piecewise((a**3*c*e*x + a**3*d*e*x**2/2 + 3*a**2*b*c**2*e*asin(c + d*x)/(2*
d) + 3*a**2*b*c*e*x*asin(c + d*x) + 3*a**2*b*c*e*sqrt(-c**2 - 2*c*d*x - d**
2*x**2 + 1)/(4*d) + 3*a**2*b*d*e*x**2*asin(c + d*x)/2 + 3*a**2*b*e*x*sqrt(-
c**2 - 2*c*d*x - d**2*x**2 + 1)/4 - 3*a**2*b*e*asin(c + d*x)/(4*d) + 3*a*b*
*2*c**2*e*asin(c + d*x)**2/(2*d) + 3*a*b**2*c*e*x*asin(c + d*x)**2 - 3*a*b*
*2*c*e*x/2 + 3*a*b**2*c*e*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*
x)/(2*d) + 3*a*b**2*d*e*x**2*asin(c + d*x)**2/2 - 3*a*b**2*d*e*x**2/4 + 3*a
*b**2*e*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/2 - 3*a*b**2*
e*asin(c + d*x)**2/(4*d) + b**3*c**2*e*asin(c + d*x)**3/(2*d) - 3*b**3*c**2
*e*asin(c + d*x)/(4*d) + b**3*c*e*x*asin(c + d*x)**3 - 3*b**3*c*e*x*asin(c
+ d*x)/2 + 3*b**3*c*e*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**
2/(4*d) - 3*b**3*c*e*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(8*d) + b**3*d*e
*x**2*asin(c + d*x)**3/2 - 3*b**3*d*e*x**2*asin(c + d*x)/4 + 3*b**3*e*x*sqr
t(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/4 - 3*b**3*e*x*sqrt(-c*
*2 - 2*c*d*x - d**2*x**2 + 1)/8 - b**3*e*asin(c + d*x)**3/(4*d) + 3*b**3*e*
asin(c + d*x)/(8*d), Ne(d, 0)), (c*e*x*(a + b*asin(c))**3, True))
```

Giac [B] time = 1.26782, size = 479, normalized size = 2.9

$$\frac{\left((dx+c)^2-1\right)b^3\arcsin\left(dx+c\right)^3e}{2\,d}+\frac{3\,\sqrt{-(dx+c)^2+1}(dx+c)b^3\arcsin\left(dx+c\right)^2e}{4\,d}+\frac{3\left((dx+c)^2-1\right)ab^2\arcsin\left(dx+\right.}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] 1/2*((d*x + c)^2 - 1)*b^3*arcsin(d*x + c)^3*e/d + 3/4*sqrt(-(d*x + c)^2 + 1
)*(d*x + c)*b^3*arcsin(d*x + c)^2*e/d + 3/2*((d*x + c)^2 - 1)*a*b^2*arcsin(
d*x + c)^2*e/d + 1/4*b^3*arcsin(d*x + c)^3*e/d + 3/2*sqrt(-(d*x + c)^2 + 1)
*(d*x + c)*a*b^2*arcsin(d*x + c)*e/d + 3/2*((d*x + c)^2 - 1)*a^2*b*arcsin(d
*x + c)*e/d - 3/4*((d*x + c)^2 - 1)*b^3*arcsin(d*x + c)*e/d + 3/4*a*b^2*arc
sin(d*x + c)^2*e/d + 3/4*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*a^2*b*e/d - 3/8*s
```

```
qrt(-(d*x + c)^2 + 1)*(d*x + c)*b^3*e/d + 1/2*((d*x + c)^2 - 1)*a^3*e/d - 3
/4*((d*x + c)^2 - 1)*a*b^2*e/d + 3/4*a^2*b*arcsin(d*x + c)*e/d - 3/8*b^3*ar
csin(d*x + c)*e/d - 3/8*a*b^2*e/d
```

3.201 $\int \left(a+b\sin^{-1}(c+dx)\right)^3\,dx$

Optimal. Leaf size=104

$$-6ab^2x+\frac{3b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{d}+\frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^3}{d}-\frac{6b^3\sqrt{1-(c+dx)^2}}{d}-\frac{6b^3(c+dx)\,\mathrm{si}}{d}$$

```
[Out] -6*a*b^2*x - (6*b^3*Sqrt[1 - (c + d*x)^2])/d - (6*b^3*(c + d*x)*ArcSin[c +
d*x])/d + (3*b*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^2)/d + ((c + d
*x)*(a + b*ArcSin[c + d*x])^3)/d
```

Rubi [A] time = 0.114004, antiderivative size = 104, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4803, 4619, 4677, 261}

$$-6ab^2x+\frac{3b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{d}+\frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^3}{d}-\frac{6b^3\sqrt{1-(c+dx)^2}}{d}-\frac{6b^3(c+dx)\,\mathrm{si}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^3,x]
```



```
[Out] -6*a*b^2*x - (6*b^3*Sqrt[1 - (c + d*x)^2])/d - (6*b^3*(c + d*x)*ArcSin[c +
d*x])/d + (3*b*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^2)/d + ((c + d
*x)*(a + b*ArcSin[c + d*x])^3)/d
```


Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rubi steps

$$\int \left(a+b\sin^{-1}(c+dx)\right)^3\,dx = \frac{\text{Subst}\left(\int \left(a+b\sin^{-1}(x)\right)^3\,dx,x,c+dx\right)}{d}$$

$$= \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^3}{d} - \frac{(3b)\,\text{Subst}\left(\int \frac{x\left(a+b\sin^{-1}(x)\right)^2}{\sqrt{1-x^2}}\,dx,x,c+dx\right)}{d}$$

$$= \frac{3b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^3}{d} - \frac{\left(6b^2\right)\text{Subst}}{}$$

$$= -6ab^2x + \frac{3b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^3}{d} - \frac{(6}{}$$

$$= -6ab^2x - \frac{6b^3(c+dx)\sin^{-1}(c+dx)}{d} + \frac{3b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{d} + \frac{(c+dx}{}$$

$$= -6ab^2x - \frac{6b^3\sqrt{1-(c+dx)^2}}{d} - \frac{6b^3(c+dx)\sin^{-1}(c+dx)}{d} + \frac{3b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-}\right.}{d}$$

Mathematica [A] time = 0.0770902, size = 96, normalized size = 0.92

$$\frac{-6b^2\left(a(c+dx)+b\sqrt{1-(c+dx)^2}+b(c+dx)\sin^{-1}(c+dx)\right)+(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^3+3b\sqrt{1-(c+dx)^2}\left(a+b\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] (3*b*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^2 + (c + d*x)*(a + b*Arc
Sin[c + d*x])^3 - 6*b^2*(a*(c + d*x) + b*Sqrt[1 - (c + d*x)^2] + b*(c + d*x
)*ArcSin[c + d*x]))/d
```

Maple [A] time = 0.029, size = 166, normalized size = 1.6

$$\frac{1}{d}\left((dx+c)\,a^3+b^3\left((\arcsin(dx+c))^3\,(dx+c)+3\,(\arcsin(dx+c))^2\sqrt{1-(dx+c)^2}-6\sqrt{1-(dx+c)^2}-6\,(dx+c)\arcsin\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^3,x)
```

```
[Out] 1/d*((d*x+c)*a^3+b^3*(arcsin(d*x+c)^3*(d*x+c)+3*arcsin(d*x+c)^2*(1-(d*x+c)^
2)^(1/2)-6*(1-(d*x+c)^2)^(1/2)-6*(d*x+c)*arcsin(d*x+c))+3*a*b^2*(arcsin(d*x
+c)^2*(d*x+c)-2*d*x-2*c+2*(1-(d*x+c)^2)^(1/2)*arcsin(d*x+c))+3*a^2*b*((d*x+
c)*arcsin(d*x+c)+(1-(d*x+c)^2)^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.39141, size = 370, normalized size = 3.56

$$\frac{\left(b^3dx+b^3c\right)\arcsin(dx+c)^3+\left(a^3-6\,ab^2\right)dx+3\left(ab^2dx+ab^2c\right)\arcsin(dx+c)^2+3\left(\left(a^2b-2\,b^3\right)dx+\left(a^2b-2\,b^3\right)c\right)\text{ar}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] ((b^3*d*x + b^3*c)*arcsin(d*x + c)^3 + (a^3 - 6*a*b^2)*d*x + 3*(a*b^2*d*x +
 a*b^2*c)*arcsin(d*x + c)^2 + 3*((a^2*b - 2*b^3)*d*x + (a^2*b - 2*b^3)*c)*a
rcsin(d*x + c) + 3*(b^3*arcsin(d*x + c)^2 + 2*a*b^2*arcsin(d*x + c) + a^2*b
 - 2*b^3)*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1))/d
```

Sympy [A] time = 1.16492, size = 282, normalized size = 2.71

$$\begin{cases} a^3x + \frac{3a^2bc\operatorname{asin}(c+dx)}{d} + 3a^2bx\operatorname{asin}(c+dx) + \frac{3a^2b\sqrt{-c^2-2cdx-d^2x^2+1}}{d} + \frac{3ab^2c\operatorname{asin}^2(c+dx)}{d} + 3ab^2x\operatorname{asin}^2(c+dx) - 6ab^2x + \frac{6a\ldots}{} \\ x\left(a + b\operatorname{asin}(c)\right)^3 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**3,x)
```

```
[Out] Piecewise((a**3*x + 3*a**2*b*c*asin(c + d*x)/d + 3*a**2*b*x*asin(c + d*x) +
 3*a**2*b*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/d + 3*a*b**2*c*asin(c + d*x
)**2/d + 3*a*b**2*x*asin(c + d*x)**2 - 6*a*b**2*x + 6*a*b**2*sqrt(-c**2 - 2
*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/d + b**3*c*asin(c + d*x)**3/d - 6*b**
3*c*asin(c + d*x)/d + b**3*x*asin(c + d*x)**3 - 6*b**3*x*asin(c + d*x) + 3*
b**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/d - 6*b**3*sqrt
(-c**2 - 2*c*d*x - d**2*x**2 + 1)/d, Ne(d, 0)), (x*(a + b*asin(c))**3, True
))
```

Giac [B] time = 1.20051, size = 281, normalized size = 2.7

$$\frac{(dx+c)b^3\arcsin(dx+c)^3}{d} + \frac{3(dx+c)ab^2\arcsin(dx+c)^2}{d} + \frac{3\sqrt{-(dx+c)^2+1}b^3\arcsin(dx+c)^2}{d} + \frac{3(dx+c)a^2b\operatorname{arc}\ldots}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] (d*x + c)*b^3*arcsin(d*x + c)^3/d + 3*(d*x + c)*a*b^2*arcsin(d*x + c)^2/d +
 3*sqrt(-(d*x + c)^2 + 1)*b^3*arcsin(d*x + c)^2/d + 3*(d*x + c)*a^2*b*arcsi
n(d*x + c)/d - 6*(d*x + c)*b^3*arcsin(d*x + c)/d + 6*sqrt(-(d*x + c)^2 + 1)
*a*b^2*arcsin(d*x + c)/d + (d*x + c)*a^3/d - 6*(d*x + c)*a*b^2/d + 3*sqrt(-
(d*x + c)^2 + 1)*a^2*b/d - 6*sqrt(-(d*x + c)^2 + 1)*b^3/d
```

3.202 $\int \frac{(a+b\sin^{-1}(c+dx))^3}{ce+dex}\,dx$

Optimal. Leaf size=169

$$\frac{3b^2\text{PolyLog}\left(3,e^{2i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{2de}-\frac{3ib\text{PolyLog}\left(2,e^{2i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)^2}{2de}+\frac{3ib^3\text{PolyLo}}{}$$

```
[Out] ((-I/4)*(a + b*ArcSin[c + d*x])^4)/(b*d*e) + ((a + b*ArcSin[c + d*x])^3*Log
[1 - E^((2*I)*ArcSin[c + d*x])])/(d*e) - (((3*I)/2)*b*(a + b*ArcSin[c + d*x
])^2*PolyLog[2, E^((2*I)*ArcSin[c + d*x])])/(d*e) + (3*b^2*(a + b*ArcSin[c
+ d*x])*PolyLog[3, E^((2*I)*ArcSin[c + d*x])])/(2*d*e) + (((3*I)/4)*b^3*Pol
yLog[4, E^((2*I)*ArcSin[c + d*x])])/(d*e)
```

Rubi [A] time = 0.203623, antiderivative size = 169, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 9, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.391, Rules used = {4805, 12, 4625, 3717, 2190, 2531, 6609, 2282, 6589}

$$\frac{3b^2\text{PolyLog}\left(3,e^{2i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{2de}-\frac{3ib\text{PolyLog}\left(2,e^{2i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)^2}{2de}+\frac{3ib^3\text{PolyLo}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x),x]
```

```
[Out] ((-I/4)*(a + b*ArcSin[c + d*x])^4)/(b*d*e) + ((a + b*ArcSin[c + d*x])^3*Log
[1 - E^((2*I)*ArcSin[c + d*x])])/(d*e) - (((3*I)/2)*b*(a + b*ArcSin[c + d*x
])^2*PolyLog[2, E^((2*I)*ArcSin[c + d*x])])/(d*e) + (3*b^2*(a + b*ArcSin[c
+ d*x])*PolyLog[3, E^((2*I)*ArcSin[c + d*x])])/(2*d*e) + (((3*I)/4)*b^3*Pol
yLog[4, E^((2*I)*ArcSin[c + d*x])])/(d*e)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{ce+dex}\,dx = \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^3}{ex}\,dx, x, c+dx\right)}{d}$$
$$= \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^3}{x}\,dx, x, c+dx\right)}{de}$$
$$= \frac{\text{Subst}\left(\int (a+bx)^3\cot(x)\,dx, x, \sin^{-1}(c+dx)\right)}{de}$$
$$= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^4}{4bde} - \frac{(2i)\,\text{Subst}\left(\int \frac{e^{2ix}(a+bx)^3}{1-e^{2ix}}\,dx, x, \sin^{-1}(c+dx)\right)}{de}$$
$$= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^4}{4bde} + \frac{\left(a+b\sin^{-1}(c+dx)\right)^3\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{(3b)\,\text{Subst}\left(\int (\ldots\right.}{}$$
$$= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^4}{4bde} + \frac{\left(a+b\sin^{-1}(c+dx)\right)^3\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{3ib\left(a+b\sin^{-1}\ldots\right.}{}$$
$$= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^4}{4bde} + \frac{\left(a+b\sin^{-1}(c+dx)\right)^3\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{3ib\left(a+b\sin^{-1}\ldots\right.}{}$$
$$= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^4}{4bde} + \frac{\left(a+b\sin^{-1}(c+dx)\right)^3\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{3ib\left(a+b\sin^{-1}\ldots\right.}{}$$
$$= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^4}{4bde} + \frac{\left(a+b\sin^{-1}(c+dx)\right)^3\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{3ib\left(a+b\sin^{-1}\ldots\right.}{}$$

Mathematica [A] time = 0.197131, size = 304, normalized size = 1.8

$$-\frac{i\left(96a^2b\,\text{PolyLog}\left(2,e^{2i\sin^{-1}(c+dx)}\right)-96b^2\sin^{-1}(c+dx)\,\text{PolyLog}\left(2,e^{-2i\sin^{-1}(c+dx)}\right)\left(2a+b\sin^{-1}(c+dx)\right)+96iab^2\,\text{Poly}\ldots\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x),x]
```

```
[Out] ((-I/64)*(8*a*b^2*Pi^3 + b^3*Pi^4 + 96*a^2*b*ArcSin[c + d*x]^2 - 64*a*b^2*A
rcSin[c + d*x]^3 - 16*b^3*ArcSin[c + d*x]^4 + (192*I)*a*b^2*ArcSin[c + d*x]
^2*Log[1 - E^((-2*I)*ArcSin[c + d*x])] + (64*I)*b^3*ArcSin[c + d*x]^3*Log[1
 - E^((-2*I)*ArcSin[c + d*x])] + (192*I)*a^2*b*ArcSin[c + d*x]*Log[1 - E^((
2*I)*ArcSin[c + d*x])] + (64*I)*a^3*Log[c + d*x] - 96*b^2*ArcSin[c + d*x]*(
2*a + b*ArcSin[c + d*x])*PolyLog[2, E^((-2*I)*ArcSin[c + d*x])] + 96*a^2*b*
PolyLog[2, E^((2*I)*ArcSin[c + d*x])] + (96*I)*a*b^2*PolyLog[3, E^((-2*I)*A
rcSin[c + d*x])] + (96*I)*b^3*ArcSin[c + d*x]*PolyLog[3, E^((-2*I)*ArcSin[c
 + d*x])] + 48*b^3*PolyLog[4, E^((-2*I)*ArcSin[c + d*x])]))/(d*e)
```

Maple [B] time = 0.043, size = 828, normalized size = 4.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^3/(d*e*x+c*e),x)
```

```
[Out] 1/d*a^3/e*ln(d*x+c)+6*I/d*b^3/e*polylog(4,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+1/
d*b^3/e*arcsin(d*x+c)^3*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-6*I/d*a*b^2/e*a
rcsin(d*x+c)*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+6/d*b^3/e*arcsin(d*x+
c)*polylog(3,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-3*I/d*a^2*b/e*polylog(2,I*(d*x
+c)+(1-(d*x+c)^2)^(1/2))+1/d*b^3/e*arcsin(d*x+c)^3*ln(1-I*(d*x+c)-(1-(d*x+c
)^2)^(1/2))-3*I/d*b^3/e*arcsin(d*x+c)^2*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^
(1/2))+6/d*b^3/e*arcsin(d*x+c)*polylog(3,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-1/4
*I/d*b^3/e*arcsin(d*x+c)^4+6*I/d*b^3/e*polylog(4,-I*(d*x+c)-(1-(d*x+c)^2)^(
1/2))+3/d*a*b^2/e*arcsin(d*x+c)^2*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-I/d*a
*b^2/e*arcsin(d*x+c)^3+6/d*a*b^2/e*polylog(3,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2)
)+3/d*a*b^2/e*arcsin(d*x+c)^2*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-3*I/d*b^3
/e*arcsin(d*x+c)^2*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+6/d*a*b^2/e*pol
ylog(3,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-3/2*I/d*a^2*b/e*arcsin(d*x+c)^2+3/d*a
^2*b/e*arcsin(d*x+c)*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+3/d*a^2*b/e*arcsin
(d*x+c)*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-6*I/d*a*b^2/e*arcsin(d*x+c)*pol
ylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-3*I/d*a^2*b/e*polylog(2,-I*(d*x+c)-(
1-(d*x+c)^2)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^3 \arcsin(dx+c)^3 + 3\,ab^2 \arcsin(dx+c)^2 + 3\,a^2b \arcsin(dx+c) + a^3}{dex+ce}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e),x, algorithm="fricas")
```

```
[Out] integral((b^3*arcsin(d*x + c)^3 + 3*a*b^2*arcsin(d*x + c)^2 + 3*a^2*b*arcsi
n(d*x + c) + a^3)/(d*e*x + c*e), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{a^3}{c+dx}\,dx + \int \frac{b^3 \operatorname{asin}^3(c+dx)}{c+dx}\,dx + \int \frac{3ab^2 \operatorname{asin}^2(c+dx)}{c+dx}\,dx + \int \frac{3a^2b \operatorname{asin}(c+dx)}{c+dx}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**3/(d*e*x+c*e),x)
```

```
[Out] (Integral(a**3/(c + d*x), x) + Integral(b**3*asin(c + d*x)**3/(c + d*x), x)
 + Integral(3*a*b**2*asin(c + d*x)**2/(c + d*x), x) + Integral(3*a**2*b*asi
n(c + d*x)/(c + d*x), x))/e
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b \arcsin(dx+c)+a)^3}{dex+ce}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^3/(d*e*x + c*e), x)
```

3.203 $\int \frac{(a+b\sin^{-1}(c+dx))^3}{(ce+dex)^2}\,dx$

Optimal. Leaf size=190

$$\frac{6ib^2\text{PolyLog}\left(2,-e^{i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de^2}-\frac{6ib^2\text{PolyLog}\left(2,e^{i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de^2}-\frac{6b^3\text{PolyLog}}{}$$

```
[Out] -((a + b*ArcSin[c + d*x])^3/(d*e^2*(c + d*x))) - (6*b*(a + b*ArcSin[c + d*x
])^2*ArcTanh[E^(I*ArcSin[c + d*x])])/(d*e^2) + ((6*I)*b^2*(a + b*ArcSin[c +
 d*x])*PolyLog[2, -E^(I*ArcSin[c + d*x])])/(d*e^2) - ((6*I)*b^2*(a + b*ArcS
in[c + d*x])*PolyLog[2, E^(I*ArcSin[c + d*x])])/(d*e^2) - (6*b^3*PolyLog[3,
 -E^(I*ArcSin[c + d*x])])/(d*e^2) + (6*b^3*PolyLog[3, E^(I*ArcSin[c + d*x])
])/(d*e^2)
```

Rubi [A] time = 0.247561, antiderivative size = 190, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.348, Rules used = {4805, 12, 4627, 4709, 4183, 2531, 2282, 6589}

$$\frac{6ib^2\text{PolyLog}\left(2,-e^{i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de^2}-\frac{6ib^2\text{PolyLog}\left(2,e^{i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de^2}-\frac{6b^3\text{PolyLog}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x)^2,x]
```


```
[Out] -((a + b*ArcSin[c + d*x])^3/(d*e^2*(c + d*x))) - (6*b*(a + b*ArcSin[c + d*x
])^2*ArcTanh[E^(I*ArcSin[c + d*x])])/(d*e^2) + ((6*I)*b^2*(a + b*ArcSin[c +
 d*x])*PolyLog[2, -E^(I*ArcSin[c + d*x])])/(d*e^2) - ((6*I)*b^2*(a + b*ArcS
in[c + d*x])*PolyLog[2, E^(I*ArcSin[c + d*x])])/(d*e^2) - (6*b^3*PolyLog[3,
 -E^(I*ArcSin[c + d*x])])/(d*e^2) + (6*b^3*PolyLog[3, E^(I*ArcSin[c + d*x])
])/(d*e^2)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
```

```
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{(ce+dex)^2}\,dx = \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^3}{e^2x^2}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^3}{x^2}\,dx, x, c+dx\right)}{de^2}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{de^2(c+dx)} + \frac{(3b)\,\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^2}{x\sqrt{1-x^2}}\,dx, x, c+dx\right)}{de^2}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{de^2(c+dx)} + \frac{(3b)\,\text{Subst}\left(\int (a+bx)^2\csc(x)\,dx, x, \sin^{-1}(c+dx)\right)}{de^2}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{de^2(c+dx)} - \frac{6b\left(a+b\sin^{-1}(c+dx)\right)^2\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)}{de^2} - \frac{\left(6b^2\right)\text{Subst}\left(\right.}{}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{de^2(c+dx)} - \frac{6b\left(a+b\sin^{-1}(c+dx)\right)^2\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)}{de^2} + \frac{6ib^2\left(a+b\sin\right.}{}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{de^2(c+dx)} - \frac{6b\left(a+b\sin^{-1}(c+dx)\right)^2\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)}{de^2} + \frac{6ib^2\left(a+b\sin\right.}{}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{de^2(c+dx)} - \frac{6b\left(a+b\sin^{-1}(c+dx)\right)^2\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)}{de^2} + \frac{6ib^2\left(a+b\sin\right.}{}$$

Mathematica [A] time = 0.787842, size = 342, normalized size = 1.8

$$-\frac{-6ib^2\text{PolyLog}\left(2,-e^{i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right) + 6ib^2\text{PolyLog}\left(2,e^{i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right) + 6b^3\text{PolyL}}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x)^2,x]
```

```
[Out] -((a^3/(c + d*x) + (3*a^2*b*ArcSin[c + d*x])/(c + d*x) + (3*a*b^2*ArcSin[c
+ d*x]^2)/(c + d*x) + (b^3*ArcSin[c + d*x]^3)/(c + d*x) - 6*a*b^2*ArcSin[c
```

```
+ d*x]*Log[1 - E^(I*ArcSin[c + d*x])] - 3*b^3*ArcSin[c + d*x]^2*Log[1 - E^(
I*ArcSin[c + d*x])] + 6*a*b^2*ArcSin[c + d*x]*Log[1 + E^(I*ArcSin[c + d*x])
] + 3*b^3*ArcSin[c + d*x]^2*Log[1 + E^(I*ArcSin[c + d*x])] - 3*a^2*b*Log[c
+ d*x] + 3*a^2*b*Log[1 + Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2]] - (6*I)*b^2*(a
+ b*ArcSin[c + d*x])*PolyLog[2, -E^(I*ArcSin[c + d*x])] + (6*I)*b^2*(a + b*
ArcSin[c + d*x])*PolyLog[2, E^(I*ArcSin[c + d*x])] + 6*b^3*PolyLog[3, -E^(I
*ArcSin[c + d*x])] - 6*b^3*PolyLog[3, E^(I*ArcSin[c + d*x])])/(d*e^2))
```

Maple [B] time = 0.067, size = 532, normalized size = 2.8

$$-\frac{a^3}{de^2(dx+c)}-\frac{b^3(\arcsin(dx+c))^3}{de^2(dx+c)}-3\frac{b^3(\arcsin(dx+c))^2\ln\left(1+i(dx+c)+\sqrt{1-(dx+c)^2}\right)}{de^2}+\frac{6\,ib^3\arcsin(dx+}{de^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^2,x)
```

```
[Out] -1/d*a^3/e^2/(d*x+c)-1/d*b^3/e^2/(d*x+c)*arcsin(d*x+c)^3-3/d*b^3/e^2*arcsin
(d*x+c)^2*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+6*I/d*b^3/e^2*arcsin(d*x+c)*p
olylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-6*b^3*polylog(3,-I*(d*x+c)-(1-(d*x
+c)^2)^(1/2))/d/e^2+3/d*b^3/e^2*arcsin(d*x+c)^2*ln(1-I*(d*x+c)-(1-(d*x+c)^2
)^(1/2))-6*I/d*b^3/e^2*arcsin(d*x+c)*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2
))+6*b^3*polylog(3,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))/d/e^2-3/d*a*b^2/e^2/(d*x+
c)*arcsin(d*x+c)^2+6/d*a*b^2/e^2*arcsin(d*x+c)*ln(1-I*(d*x+c)-(1-(d*x+c)^2)
^(1/2))-6/d*a*b^2/e^2*arcsin(d*x+c)*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+6*I
/d*a*b^2/e^2*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-6*I/d*a*b^2/e^2*poly
log(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-3/d*a^2*b/e^2/(d*x+c)*arcsin(d*x+c)-3/
d*a^2*b/e^2*arctanh(1/(1-(d*x+c)^2)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^3 \arcsin(dx+c)^3 + 3\,ab^2 \arcsin(dx+c)^2 + 3\,a^2 b \arcsin(dx+c) + a^3}{d^2e^2x^2 + 2\,cde^2x + c^2e^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^2,x, algorithm="fricas")
```

```
[Out] integral((b^3*arcsin(d*x + c)^3 + 3*a*b^2*arcsin(d*x + c)^2 + 3*a^2*b*arcsi
n(d*x + c) + a^3)/(d^2*e^2*x^2 + 2*c*d*e^2*x + c^2*e^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{a^3}{c^2+2cdx+d^2x^2}\,dx + \int \frac{b^3 \operatorname{asin}^3(c+dx)}{c^2+2cdx+d^2x^2}\,dx + \int \frac{3ab^2 \operatorname{asin}^2(c+dx)}{c^2+2cdx+d^2x^2}\,dx + \int \frac{3a^2b \operatorname{asin}(c+dx)}{c^2+2cdx+d^2x^2}\,dx}{e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**3/(d*e*x+c*e)**2,x)
```

```
[Out] (Integral(a**3/(c**2 + 2*c*d*x + d**2*x**2), x) + Integral(b**3*asin(c + d*
x)**3/(c**2 + 2*c*d*x + d**2*x**2), x) + Integral(3*a*b**2*asin(c + d*x)**2
/(c**2 + 2*c*d*x + d**2*x**2), x) + Integral(3*a**2*b*asin(c + d*x)/(c**2 +
 2*c*d*x + d**2*x**2), x))/e**2
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b \arcsin(dx+c) + a)^3}{(dex+ce)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^3/(d*e*x + c*e)^2, x)
```

3.204 $\int \frac{(a+b\sin^{-1}(c+dx))^3}{(ce+dex)^3}\,dx$

Optimal. Leaf size=167

$$-\frac{3ib^3\text{PolyLog}\left(2,e^{2i\sin^{-1}(c+dx)}\right)}{2de^3}+\frac{3b^2\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de^3}-\frac{3b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+\right.}{2de^3(c+dx)}$$

```
[Out] (((-3*I)/2)*b*(a + b*ArcSin[c + d*x])^2)/(d*e^3) - (3*b*Sqrt[1 - (c + d*x)^
2]*(a + b*ArcSin[c + d*x])^2)/(2*d*e^3*(c + d*x)) - (a + b*ArcSin[c + d*x])
^3/(2*d*e^3*(c + d*x)^2) + (3*b^2*(a + b*ArcSin[c + d*x])*Log[1 - E^((2*I)*
ArcSin[c + d*x])])/(d*e^3) - (((3*I)/2)*b^3*PolyLog[2, E^((2*I)*ArcSin[c +
d*x])])/(d*e^3)
```

Rubi [A] time = 0.250553, antiderivative size = 167, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 9, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.391, Rules used = {4805, 12, 4627, 4681, 4625, 3717, 2190, 2279, 2391}

$$-\frac{3ib^3\text{PolyLog}\left(2,e^{2i\sin^{-1}(c+dx)}\right)}{2de^3}+\frac{3b^2\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de^3}-\frac{3b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+\right.}{2de^3(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x)^3,x]
```

```
[Out] (((-3*I)/2)*b*(a + b*ArcSin[c + d*x])^2)/(d*e^3) - (3*b*Sqrt[1 - (c + d*x)^
2]*(a + b*ArcSin[c + d*x])^2)/(2*d*e^3*(c + d*x)) - (a + b*ArcSin[c + d*x])
^3/(2*d*e^3*(c + d*x)^2) + (3*b^2*(a + b*ArcSin[c + d*x])*Log[1 - E^((2*I)*
ArcSin[c + d*x])])/(d*e^3) - (((3*I)/2)*b^3*PolyLog[2, E^((2*I)*ArcSin[c +
d*x])])/(d*e^3)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4681

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^F
racPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c
^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d,
 e, f, m, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] &
& NeQ[m, -1]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
```

```
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{(ce+dex)^3}\,dx = \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^3}{e^3x^3}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^3}{x^3}\,dx, x, c+dx\right)}{de^3}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{2de^3(c+dx)^2} + \frac{(3b)\,\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^2}{x^2\sqrt{1-x^2}}\,dx, x, c+dx\right)}{2de^3}$$

$$= -\frac{3b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^3(c+dx)} - \frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{2de^3(c+dx)^2} + \frac{\left(3b^2\right)\text{Subst}\left(\int \frac{a+b}{\cdots}\right.}{d\cdots}$$

$$= -\frac{3b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^3(c+dx)} - \frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{2de^3(c+dx)^2} + \frac{\left(3b^2\right)\text{Subst}\left(\int (a+\cdots\right.}{\cdots}$$

$$= -\frac{3ib\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^3} - \frac{3b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^3(c+dx)} - \frac{\left(a+b\sin^{-1}(c+\cdots\right.}{2de^3(c+dx\cdots}$$

$$= -\frac{3ib\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^3} - \frac{3b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^3(c+dx)} - \frac{\left(a+b\sin^{-1}(c+\cdots\right.}{2de^3(c+dx\cdots}$$

$$= -\frac{3ib\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^3} - \frac{3b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^3(c+dx)} - \frac{\left(a+b\sin^{-1}(c+\cdots\right.}{2de^3(c+dx\cdots}$$

$$= -\frac{3ib\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^3} - \frac{3b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^3(c+dx)} - \frac{\left(a+b\sin^{-1}(c+\cdots\right.}{2de^3(c+dx\cdots}$$

Mathematica [A] time = 0.761107, size = 248, normalized size = 1.49

$$-\frac{3ib^3(c+dx)^2\text{PolyLog}\left(2, e^{2i\sin^{-1}(c+dx)}\right) + a\left(a\left(a+3b(c+dx)\sqrt{-c^2-2cdx-d^2x^2+1}\right) - 6b^2(c+dx)^2\log(c+dx)\right) + 3\cdots}{\cdots}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x)^3,x]
```

```
[Out] -(3*b^2*(a + b*(c + d*x)*(I*c + I*d*x + Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2]))
*ArcSin[c + d*x]^2 + b^3*ArcSin[c + d*x]^3 + 3*b*ArcSin[c + d*x]*(a*(a + 2*
b*(c + d*x)*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2]) - 2*b^2*(c + d*x)^2*Log[1 -
E^((2*I)*ArcSin[c + d*x])]) + a*(a*(a + 3*b*(c + d*x)*Sqrt[1 - c^2 - 2*c*d*
x - d^2*x^2]) - 6*b^2*(c + d*x)^2*Log[c + d*x]) + (3*I)*b^3*(c + d*x)^2*Pol
yLog[2, E^((2*I)*ArcSin[c + d*x])])/(2*d*e^3*(c + d*x)^2)
```

Maple [B] time = 0.09, size = 403, normalized size = 2.4

$$-\frac{a^3}{2\,de^3\,(dx+c)^2}-\frac{\frac{3\,i}{2}b^3\,(\arcsin\,(dx+c))^2}{de^3}-\frac{3\,b^3\,(\arcsin\,(dx+c))^2}{2\,de^3\,(dx+c)}\sqrt{1-(dx+c)^2}-\frac{b^3\,(\arcsin\,(dx+c))^3}{2\,de^3\,(dx+c)^2}+3\,\frac{b^3\arcsin\,(\ldots}{\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^3,x)
```

```
[Out] -1/2/d*a^3/e^3/(d*x+c)^2-3/2*I/d*b^3/e^3*arcsin(d*x+c)^2-3/2/d*b^3/e^3*arcs
in(d*x+c)^2/(d*x+c)*(1-(d*x+c)^2)^(1/2)-1/2/d*b^3/e^3*arcsin(d*x+c)^3/(d*x+
c)^2+3/d*b^3/e^3*arcsin(d*x+c)*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+3/d*b^3/
e^3*arcsin(d*x+c)*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-3*I/d*b^3/e^3*polylog
(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-3*I/d*b^3/e^3*polylog(2,I*(d*x+c)+(1-(d*
x+c)^2)^(1/2))-3/2/d*a*b^2/e^3*arcsin(d*x+c)^2/(d*x+c)^2-3/d*a*b^2/e^3*arcs
in(d*x+c)/(d*x+c)*(1-(d*x+c)^2)^(1/2)+3/d*a*b^2/e^3*ln(d*x+c)-3/2/d*a^2*b/e
^3/(d*x+c)^2*arcsin(d*x+c)-3/2/d*a^2*b/e^3/(d*x+c)*(1-(d*x+c)^2)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^3 \arcsin(dx+c)^3 + 3\,ab^2 \arcsin(dx+c)^2 + 3\,a^2 b \arcsin(dx+c) + a^3}{d^3e^3x^3 + 3\,cd^2e^3x^2 + 3\,c^2de^3x + c^3e^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^3,x, algorithm="fricas")
```

```
[Out] integral((b^3*arcsin(d*x + c)^3 + 3*a*b^2*arcsin(d*x + c)^2 + 3*a^2*b*arcsi
n(d*x + c) + a^3)/(d^3*e^3*x^3 + 3*c*d^2*e^3*x^2 + 3*c^2*d*e^3*x + c^3*e^3)
, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{a^3}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx + \int \frac{b^3 \operatorname{asin}^3(c+dx)}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx + \int \frac{3ab^2 \operatorname{asin}^2(c+dx)}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx + \int \frac{3a^2b \operatorname{asin}(c+dx)}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**3/(d*e*x+c*e)**3,x)
```

```
[Out] (Integral(a**3/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integr
al(b**3*asin(c + d*x)**3/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x
) + Integral(3*a*b**2*asin(c + d*x)**2/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 +
 d**3*x**3), x) + Integral(3*a**2*b*asin(c + d*x)/(c**3 + 3*c**2*d*x + 3*c*
d**2*x**2 + d**3*x**3), x))/e**3
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b \arcsin(dx+c) + a)^3}{(dex+ce)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^3,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^3/(d*e*x + c*e)^3, x)
```

3.205 $\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{(ce+dex)^4}\,dx$

Optimal. Leaf size=291

$$\frac{ib^2\text{PolyLog}\left(2,-e^{i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de^4}-\frac{ib^2\text{PolyLog}\left(2,e^{i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de^4}-\frac{b^3\text{PolyLog}\left(3\right.}{d}$$

```
[Out] -((b^2*(a + b*ArcSin[c + d*x]))/(d*e^4*(c + d*x))) - (b*Sqrt[1 - (c + d*x)^
2]*(a + b*ArcSin[c + d*x])^2)/(2*d*e^4*(c + d*x)^2) - (a + b*ArcSin[c + d*x
])^3/(3*d*e^4*(c + d*x)^3) - (b*(a + b*ArcSin[c + d*x])^2*ArcTanh[E^(I*ArcS
in[c + d*x])])/(d*e^4) - (b^3*ArcTanh[Sqrt[1 - (c + d*x)^2]])/(d*e^4) + (I*
b^2*(a + b*ArcSin[c + d*x])*PolyLog[2, -E^(I*ArcSin[c + d*x])])/(d*e^4) - (
I*b^2*(a + b*ArcSin[c + d*x])*PolyLog[2, E^(I*ArcSin[c + d*x])])/(d*e^4) -
(b^3*PolyLog[3, -E^(I*ArcSin[c + d*x])])/(d*e^4) + (b^3*PolyLog[3, E^(I*Arc
Sin[c + d*x])])/(d*e^4)
```

Rubi [A] time = 0.39413, antiderivative size = 291, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 12, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.522, Rules used = {4805, 12, 4627, 4701, 4709, 4183, 2531, 2282, 6589, 266, 63, 206}

$$\frac{ib^2\text{PolyLog}\left(2,-e^{i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de^4}-\frac{ib^2\text{PolyLog}\left(2,e^{i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de^4}-\frac{b^3\text{PolyLog}\left(3\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x)^4,x]
```



```
[Out] -((b^2*(a + b*ArcSin[c + d*x]))/(d*e^4*(c + d*x))) - (b*Sqrt[1 - (c + d*x)^
2]*(a + b*ArcSin[c + d*x])^2)/(2*d*e^4*(c + d*x)^2) - (a + b*ArcSin[c + d*x
])^3/(3*d*e^4*(c + d*x)^3) - (b*(a + b*ArcSin[c + d*x])^2*ArcTanh[E^(I*ArcS
in[c + d*x])])/(d*e^4) - (b^3*ArcTanh[Sqrt[1 - (c + d*x)^2]])/(d*e^4) + (I*
b^2*(a + b*ArcSin[c + d*x])*PolyLog[2, -E^(I*ArcSin[c + d*x])])/(d*e^4) - (
I*b^2*(a + b*ArcSin[c + d*x])*PolyLog[2, E^(I*ArcSin[c + d*x])])/(d*e^4) -
(b^3*PolyLog[3, -E^(I*ArcSin[c + d*x])])/(d*e^4) + (b^3*PolyLog[3, E^(I*Arc
Sin[c + d*x])])/(d*e^4)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
```

cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
```

```
1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{(ce+dex)^4}\,dx = \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^3}{e^4x^4}\,dx,x,c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^3}{x^4}\,dx,x,c+dx\right)}{de^4}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{3de^4(c+dx)^3} + \frac{b\,\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^2}{x^3\sqrt{1-x^2}}\,dx,x,c+dx\right)}{de^4}$$

$$= -\frac{b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^4(c+dx)^2} - \frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{3de^4(c+dx)^3} + \frac{b\,\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}\right.}{x\sqrt{1-x}}\right.}{2de}$$

$$= -\frac{b^2\left(a+b\sin^{-1}(c+dx)\right)}{de^4(c+dx)} - \frac{b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^4(c+dx)^2} - \frac{\left(a+b\sin^{-1}(c+dx\right.}{3de^4(c+dx)^3}$$

$$= -\frac{b^2\left(a+b\sin^{-1}(c+dx)\right)}{de^4(c+dx)} - \frac{b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^4(c+dx)^2} - \frac{\left(a+b\sin^{-1}(c+dx\right.}{3de^4(c+dx)^3}$$

$$= -\frac{b^2\left(a+b\sin^{-1}(c+dx)\right)}{de^4(c+dx)} - \frac{b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^4(c+dx)^2} - \frac{\left(a+b\sin^{-1}(c+dx\right.}{3de^4(c+dx)^3}$$

$$= -\frac{b^2\left(a+b\sin^{-1}(c+dx)\right)}{de^4(c+dx)} - \frac{b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^4(c+dx)^2} - \frac{\left(a+b\sin^{-1}(c+dx\right.}{3de^4(c+dx)^3}$$

$$= -\frac{b^2\left(a+b\sin^{-1}(c+dx)\right)}{de^4(c+dx)} - \frac{b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^4(c+dx)^2} - \frac{\left(a+b\sin^{-1}(c+dx\right.}{3de^4(c+dx)^3}$$

Mathematica [B] time = 7.69102, size = 732, normalized size = 2.52

$$ab^2\left(8i\text{PolyLog}\left(2,-e^{i\sin^{-1}(c+dx)}\right) - \frac{2\left(4i(c+dx)^3\text{PolyLog}\left(2,e^{i\sin^{-1}(c+dx)}\right)+4\sin^{-1}(c+dx)^2+2\sin^{-1}(c+dx)\sin\left(2\sin^{-1}(c+dx)\right)-3(c+dx)\sin^{-1}(c+dx\right.}{}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x)^4,x]
```

```
[Out] -a^3/(3*d*e^4*(c + d*x)^3) - (a^2*b*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2])/(2*d
*e^4*(c + d*x)^2) - (a^2*b*ArcSin[c + d*x])/(d*e^4*(c + d*x)^3) + (a^2*b*Lo
```

```
g[c + d*x])/(2*d*e^4) - (a^2*b*Log[1 + Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2]])/
(2*d*e^4) + (a*b^2*((8*I)*PolyLog[2, -E^(I*ArcSin[c + d*x])] - (2*(2 + 4*Ar
cSin[c + d*x]^2 - 2*Cos[2*ArcSin[c + d*x]] - 3*(c + d*x)*ArcSin[c + d*x]*Lo
g[1 - E^(I*ArcSin[c + d*x])] + 3*(c + d*x)*ArcSin[c + d*x]*Log[1 + E^(I*Arc
Sin[c + d*x])] + (4*I)*(c + d*x)^3*PolyLog[2, E^(I*ArcSin[c + d*x])] + 2*Ar
cSin[c + d*x]*Sin[2*ArcSin[c + d*x]] + ArcSin[c + d*x]*Log[1 - E^(I*ArcSin[
c + d*x])]*Sin[3*ArcSin[c + d*x]] - ArcSin[c + d*x]*Log[1 + E^(I*ArcSin[c +
 d*x])]*Sin[3*ArcSin[c + d*x]]))/(c + d*x)^3))/(8*d*e^4) + (b^3*(-24*ArcSin
[c + d*x]*Cot[ArcSin[c + d*x]/2] - 4*ArcSin[c + d*x]^3*Cot[ArcSin[c + d*x]/
2] - 6*ArcSin[c + d*x]^2*Csc[ArcSin[c + d*x]/2]^2 - (c + d*x)*ArcSin[c + d*
x]^3*Csc[ArcSin[c + d*x]/2]^4 + 24*ArcSin[c + d*x]^2*Log[1 - E^(I*ArcSin[c
+ d*x])] - 24*ArcSin[c + d*x]^2*Log[1 + E^(I*ArcSin[c + d*x])] + 48*Log[Tan
[ArcSin[c + d*x]/2]] + (48*I)*ArcSin[c + d*x]*PolyLog[2, -E^(I*ArcSin[c + d
*x])] - (48*I)*ArcSin[c + d*x]*PolyLog[2, E^(I*ArcSin[c + d*x])] - 48*PolyL
og[3, -E^(I*ArcSin[c + d*x])] + 48*PolyLog[3, E^(I*ArcSin[c + d*x])] + 6*Ar
cSin[c + d*x]^2*Sec[ArcSin[c + d*x]/2]^2 - (16*ArcSin[c + d*x]^3*Sin[ArcSin
[c + d*x]/2]^4)/(c + d*x)^3 - 24*ArcSin[c + d*x]*Tan[ArcSin[c + d*x]/2] - 4
*ArcSin[c + d*x]^3*Tan[ArcSin[c + d*x]/2]))/(48*d*e^4)
```

Maple [B] time = 0.124, size = 716, normalized size = 2.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^4,x)
```

```
[Out] -1/3/d*a^3/e^4/(d*x+c)^3-1/2/d*b^3/e^4/(d*x+c)^2*arcsin(d*x+c)^2*(1-(d*x+c)
^2)^(1/2)-1/3/d*b^3/e^4/(d*x+c)^3*arcsin(d*x+c)^3-1/d*b^3/e^4/(d*x+c)*arcsi
n(d*x+c)-1/2/d*b^3/e^4*arcsin(d*x+c)^2*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+
I/d*b^3/e^4*arcsin(d*x+c)*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-b^3*pol
ylog(3,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))/d/e^4+1/2/d*b^3/e^4*arcsin(d*x+c)^2*
ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-I/d*a*b^2/e^4*polylog(2,I*(d*x+c)+(1-(d
*x+c)^2)^(1/2))+b^3*polylog(3,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))/d/e^4-2/d*b^3/
e^4*arctanh(I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-1/d*a*b^2/e^4/(d*x+c)^2*arcsin(d
*x+c)*(1-(d*x+c)^2)^(1/2)-1/d*a*b^2/e^4/(d*x+c)^3*arcsin(d*x+c)^2-1/d*a*b^2
/e^4/(d*x+c)-1/d*a*b^2/e^4*arcsin(d*x+c)*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2)
)+I/d*a*b^2/e^4*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+1/d*a*b^2/e^4*arc
sin(d*x+c)*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-I/d*b^3/e^4*arcsin(d*x+c)*po
lylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-1/d*a^2*b/e^4/(d*x+c)^3*arcsin(d*x+c
)-1/2/d*a^2*b/e^4/(d*x+c)^2*(1-(d*x+c)^2)^(1/2)-1/2/d*a^2*b/e^4*arctanh(1/(
1-(d*x+c)^2)^(1/2))
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^4,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^3 \arcsin(dx+c)^3 + 3\,ab^2 \arcsin(dx+c)^2 + 3\,a^2 b \arcsin(dx+c) + a^3}{d^4e^4x^4 + 4\,cd^3e^4x^3 + 6\,c^2d^2e^4x^2 + 4\,c^3de^4x + c^4e^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^4,x, algorithm="fricas")
```

```
[Out] integral((b^3*arcsin(d*x + c)^3 + 3*a*b^2*arcsin(d*x + c)^2 + 3*a^2*b*arcsi
n(d*x + c) + a^3)/(d^4*e^4*x^4 + 4*c*d^3*e^4*x^3 + 6*c^2*d^2*e^4*x^2 + 4*c^
3*d*e^4*x + c^4*e^4), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{a^3}{c^4+4c^3dx+6c^2d^2x^2+4cd^3x^3+d^4x^4}\,dx + \int \frac{b^3\operatorname{asin}^3(c+dx)}{c^4+4c^3dx+6c^2d^2x^2+4cd^3x^3+d^4x^4}\,dx + \int \frac{3ab^2\operatorname{asin}^2(c+dx)}{c^4+4c^3dx+6c^2d^2x^2+4cd^3x^3+d^4x^4}\,dx + \int \frac{3a^2b\operatorname{asin}(c\cdots}{c^4+4c^3dx+6c^2d^2x^2+\cdots}}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**3/(d*e*x+c*e)**4,x)
```

```
[Out] (Integral(a**3/(c**4 + 4*c**3*d*x + 6*c**2*d**2*x**2 + 4*c*d**3*x**3 + d**4
*x**4), x) + Integral(b**3*asin(c + d*x)**3/(c**4 + 4*c**3*d*x + 6*c**2*d**
2*x**2 + 4*c*d**3*x**3 + d**4*x**4), x) + Integral(3*a*b**2*asin(c + d*x)**
2/(c**4 + 4*c**3*d*x + 6*c**2*d**2*x**2 + 4*c*d**3*x**3 + d**4*x**4), x) +
Integral(3*a**2*b*asin(c + d*x)/(c**4 + 4*c**3*d*x + 6*c**2*d**2*x**2 + 4*c
```

```
*d**3*x**3 + d**4*x**4), x))/e**4
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b \arcsin{(dx + c)} + a)^3}{(dex + ce)^4}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^4,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^3/(d*e*x + c*e)^4, x)
```

3.206 $\int (ce+dex)^3 \left(a+b\sin^{-1}(c+dx)\right)^4 \, dx$

Optimal. Leaf size=357

$$-\frac{3b^3e^3(c+dx)^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{32d}-\frac{45b^3e^3(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{64d}-\frac{3b^2e^3(c+}{}$$

```
[Out] (45*b^4*e^3*(c + d*x)^2)/(128*d) + (3*b^4*e^3*(c + d*x)^4)/(128*d) - (45*b^
3*e^3*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(64*d) - (3*
b^3*e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(32*d) +
 (45*b^2*e^3*(a + b*ArcSin[c + d*x])^2)/(128*d) - (9*b^2*e^3*(c + d*x)^2*(a
 + b*ArcSin[c + d*x])^2)/(16*d) - (3*b^2*e^3*(c + d*x)^4*(a + b*ArcSin[c +
d*x])^2)/(16*d) + (3*b*e^3*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c
+ d*x])^3)/(8*d) + (b*e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c
 + d*x])^3)/(4*d) - (3*e^3*(a + b*ArcSin[c + d*x])^4)/(32*d) + (e^3*(c + d*
x)^4*(a + b*ArcSin[c + d*x])^4)/(4*d)
```

Rubi [A] time = 0.640142, antiderivative size = 357, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.261, Rules used = {4805, 12, 4627, 4707, 4641, 30}

$$-\frac{3b^3e^3(c+dx)^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{32d}-\frac{45b^3e^3(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{64d}-\frac{3b^2e^3(c+}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3*(a + b*ArcSin[c + d*x])^4,x]
```


```
[Out] (45*b^4*e^3*(c + d*x)^2)/(128*d) + (3*b^4*e^3*(c + d*x)^4)/(128*d) - (45*b^
3*e^3*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(64*d) - (3*
b^3*e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(32*d) +
 (45*b^2*e^3*(a + b*ArcSin[c + d*x])^2)/(128*d) - (9*b^2*e^3*(c + d*x)^2*(a
 + b*ArcSin[c + d*x])^2)/(16*d) - (3*b^2*e^3*(c + d*x)^4*(a + b*ArcSin[c +
d*x])^2)/(16*d) + (3*b*e^3*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c
+ d*x])^3)/(8*d) + (b*e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c
 + d*x])^3)/(4*d) - (3*e^3*(a + b*ArcSin[c + d*x])^4)/(32*d) + (e^3*(c + d*
x)^4*(a + b*ArcSin[c + d*x])^4)/(4*d)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
```

```
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rubi steps

$$\int (ce+dex)^3 \left(a+b\sin^{-1}(c+dx)\right)^4 dx = \frac{\text{Subst}\left(\int e^3x^3 \left(a+b\sin^{-1}(x)\right)^4 dx,x,c+dx\right)}{d}$$
$$= \frac{e^3\,\text{Subst}\left(\int x^3 \left(a+b\sin^{-1}(x)\right)^4 dx,x,c+dx\right)}{d}$$
$$= \frac{e^3(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)^4}{4d} - \frac{\left(be^3\right)\text{Subst}\left(\int \frac{x^4\left(a+b\sin^{-1}(x)\right)^3}{\sqrt{1-x^2}} dx,x,c+d\right.}{d}$$
$$= \frac{be^3(c+dx)^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^3}{4d} + \frac{e^3(c+dx)^4\left(a+b\sin^{-1}(c\right.}{4d}$$
$$= -\frac{3b^2e^3(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)^2}{16d} + \frac{3be^3(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\,\text{si}\right.}{8d}$$
$$= -\frac{3b^3e^3(c+dx)^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{32d} - \frac{9b^2e^3(c+dx)^2\left(a+b\,\text{s}\right.}{16d}$$
$$= \frac{3b^4e^3(c+dx)^4}{128d} - \frac{45b^3e^3(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{64d} - \frac{3b^3e^3(}{}$$
$$= \frac{45b^4e^3(c+dx)^2}{128d} + \frac{3b^4e^3(c+dx)^4}{128d} - \frac{45b^3e^3(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}\right.}{64d}$$

Mathematica [A] time = 0.474308, size = 287, normalized size = 0.8

$$\frac{e^3\left(-3b^3(c+dx)^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)-\frac{45}{2}b^3(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)-6b^2(c+dx)^4\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^3*(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] (e^3*((45*b^4*(c + d*x)^2)/4 + (3*b^4*(c + d*x)^4)/4 - (45*b^3*(c + d*x)*Sq
rt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/2 - 3*b^3*(c + d*x)^3*Sqrt[1 -
 (c + d*x)^2]*(a + b*ArcSin[c + d*x]) + (45*b^2*(a + b*ArcSin[c + d*x])^2)/
4 - 18*b^2*(c + d*x)^2*(a + b*ArcSin[c + d*x])^2 - 6*b^2*(c + d*x)^4*(a + b
*ArcSin[c + d*x])^2 + 12*b*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c
+ d*x])^3 + 8*b*(c + d*x)^3*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^3
 - 3*(a + b*ArcSin[c + d*x])^4 + 8*(c + d*x)^4*(a + b*ArcSin[c + d*x])^4))/
```

```
(32*d)
```

Maple [A] time = 0.048, size = 654, normalized size = 1.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^4,x)
```

```
[Out] 1/d*(1/4*e^3*(d*x+c)^4*a^4+e^3*b^4*(1/4*(d*x+c)^4*arcsin(d*x+c)^4-1/8*arcsi
n(d*x+c)^3*(-2*(d*x+c)^3*(1-(d*x+c)^2)^(1/2)-3*(d*x+c)*(1-(d*x+c)^2)^(1/2)+
3*arcsin(d*x+c))-3/16*arcsin(d*x+c)^2*(d*x+c)^4+3/64*arcsin(d*x+c)*(-2*(d*x
+c)^3*(1-(d*x+c)^2)^(1/2)-3*(d*x+c)*(1-(d*x+c)^2)^(1/2)+3*arcsin(d*x+c))+27
/128*arcsin(d*x+c)^2+3/128*(d*x+c)^4+45/128*(d*x+c)^2-9/16*arcsin(d*x+c)^2*
((d*x+c)^2-1)-9/16*arcsin(d*x+c)*((d*x+c)*(1-(d*x+c)^2)^(1/2)+arcsin(d*x+c)
)+9/32*arcsin(d*x+c)^4)+4*e^3*a*b^3*(1/4*(d*x+c)^4*arcsin(d*x+c)^3-3/32*arc
sin(d*x+c)^2*(-2*(d*x+c)^3*(1-(d*x+c)^2)^(1/2)-3*(d*x+c)*(1-(d*x+c)^2)^(1/2
)+3*arcsin(d*x+c))-3/32*(d*x+c)^4*arcsin(d*x+c)-3/256*(d*x+c)*(2*(d*x+c)^2+
3)*(1-(d*x+c)^2)^(1/2)-27/256*arcsin(d*x+c)-9/32*arcsin(d*x+c)*((d*x+c)^2-1
)-9/64*(d*x+c)*(1-(d*x+c)^2)^(1/2)+3/16*arcsin(d*x+c)^3)+6*e^3*a^2*b^2*(1/4
*arcsin(d*x+c)^2*(d*x+c)^4-1/16*arcsin(d*x+c)*(-2*(d*x+c)^3*(1-(d*x+c)^2)^(
1/2)-3*(d*x+c)*(1-(d*x+c)^2)^(1/2)+3*arcsin(d*x+c))+3/32*arcsin(d*x+c)^2-1/
32*(d*x+c)^4-3/32*(d*x+c)^2)+4*e^3*a^3*b*(1/4*(d*x+c)^4*arcsin(d*x+c)+1/16*
(d*x+c)^3*(1-(d*x+c)^2)^(1/2)+3/32*(d*x+c)*(1-(d*x+c)^2)^(1/2)-3/32*arcsin(
d*x+c)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 3.21609, size = 2390, normalized size = 6.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^4,x, algorithm="fricas")
```

```
[Out] 1/128*((32*a^4 - 24*a^2*b^2 + 3*b^4)*d^4*e^3*x^4 + 4*(32*a^4 - 24*a^2*b^2 +
 3*b^4)*c*d^3*e^3*x^3 - 3*(24*a^2*b^2 - 15*b^4 - 2*(32*a^4 - 24*a^2*b^2 + 3
*b^4)*c^2)*d^2*e^3*x^2 + 2*(2*(32*a^4 - 24*a^2*b^2 + 3*b^4)*c^3 - 9*(8*a^2*
b^2 - 5*b^4)*c)*d*e^3*x + 4*(8*b^4*d^4*e^3*x^4 + 32*b^4*c*d^3*e^3*x^3 + 48*
b^4*c^2*d^2*e^3*x^2 + 32*b^4*c^3*d*e^3*x + (8*b^4*c^4 - 3*b^4)*e^3)*arcsin(
d*x + c)^4 + 16*(8*a*b^3*d^4*e^3*x^4 + 32*a*b^3*c*d^3*e^3*x^3 + 48*a*b^3*c^
2*d^2*e^3*x^2 + 32*a*b^3*c^3*d*e^3*x + (8*a*b^3*c^4 - 3*a*b^3)*e^3)*arcsin(
d*x + c)^3 + 3*(8*(8*a^2*b^2 - b^4)*d^4*e^3*x^4 + 32*(8*a^2*b^2 - b^4)*c*d^
3*e^3*x^3 - 24*(b^4 - 2*(8*a^2*b^2 - b^4)*c^2)*d^2*e^3*x^2 - 16*(3*b^4*c -
2*(8*a^2*b^2 - b^4)*c^3)*d*e^3*x - (24*b^4*c^2 - 8*(8*a^2*b^2 - b^4)*c^4 +
24*a^2*b^2 - 15*b^4)*e^3)*arcsin(d*x + c)^2 + 2*(8*(8*a^3*b - 3*a*b^3)*d^4*
e^3*x^4 + 32*(8*a^3*b - 3*a*b^3)*c*d^3*e^3*x^3 - 24*(3*a*b^3 - 2*(8*a^3*b -
 3*a*b^3)*c^2)*d^2*e^3*x^2 - 16*(9*a*b^3*c - 2*(8*a^3*b - 3*a*b^3)*c^3)*d*e
^3*x - (72*a*b^3*c^2 - 8*(8*a^3*b - 3*a*b^3)*c^4 + 24*a^3*b - 45*a*b^3)*e^3
)*arcsin(d*x + c) + 2*(2*(8*a^3*b - 3*a*b^3)*d^3*e^3*x^3 + 6*(8*a^3*b - 3*a
*b^3)*c*d^2*e^3*x^2 + 3*(8*a^3*b - 15*a*b^3 + 2*(8*a^3*b - 3*a*b^3)*c^2)*d*
e^3*x + (2*(8*a^3*b - 3*a*b^3)*c^3 + 3*(8*a^3*b - 15*a*b^3)*c)*e^3 + 8*(2*b
^4*d^3*e^3*x^3 + 6*b^4*c*d^2*e^3*x^2 + 3*(2*b^4*c^2 + b^4)*d*e^3*x + (2*b^4
*c^3 + 3*b^4*c)*e^3)*arcsin(d*x + c)^3 + 24*(2*a*b^3*d^3*e^3*x^3 + 6*a*b^3*
c*d^2*e^3*x^2 + 3*(2*a*b^3*c^2 + a*b^3)*d*e^3*x + (2*a*b^3*c^3 + 3*a*b^3*c)
*e^3)*arcsin(d*x + c)^2 + 3*(2*(8*a^2*b^2 - b^4)*d^3*e^3*x^3 + 6*(8*a^2*b^2
 - b^4)*c*d^2*e^3*x^2 + 3*(8*a^2*b^2 - 5*b^4 + 2*(8*a^2*b^2 - b^4)*c^2)*d*e
^3*x + (2*(8*a^2*b^2 - b^4)*c^3 + 3*(8*a^2*b^2 - 5*b^4)*c)*e^3)*arcsin(d*x
+ c))*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1))/d
```

Sympy [A] time = 31.0822, size = 2876, normalized size = 8.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3*(a+b*asin(d*x+c))**4,x)
```

```
[Out] Piecewise((a**4*c**3*e**3*x + 3*a**4*c**2*d*e**3*x**2/2 + a**4*c*d**2*e**3*
x**3 + a**4*d**3*e**3*x**4/4 + a**3*b*c**4*e**3*asin(c + d*x)/d + 4*a**3*b*
c**3*e**3*x*asin(c + d*x) + a**3*b*c**3*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x*
*2 + 1)/(4*d) + 6*a**3*b*c**2*d*e**3*x**2*asin(c + d*x) + 3*a**3*b*c**2*e**
3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/4 + 4*a**3*b*c*d**2*e**3*x**3*asi
n(c + d*x) + 3*a**3*b*c*d*e**3*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/4
 + 3*a**3*b*c*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(8*d) + a**3*b*d**
3*e**3*x**4*asin(c + d*x) + a**3*b*d**2*e**3*x**3*sqrt(-c**2 - 2*c*d*x - d*
*2*x**2 + 1)/4 + 3*a**3*b*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/8 -
3*a**3*b*e**3*asin(c + d*x)/(8*d) + 3*a**2*b**2*c**4*e**3*asin(c + d*x)**2/
(2*d) + 6*a**2*b**2*c**3*e**3*x*asin(c + d*x)**2 - 3*a**2*b**2*c**3*e**3*x/
4 + 3*a**2*b**2*c**3*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*
x)/(4*d) + 9*a**2*b**2*c**2*d*e**3*x**2*asin(c + d*x)**2 - 9*a**2*b**2*c**2
*d*e**3*x**2/8 + 9*a**2*b**2*c**2*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 +
 1)*asin(c + d*x)/4 + 6*a**2*b**2*c*d**2*e**3*x**3*asin(c + d*x)**2 - 3*a**
2*b**2*c*d**2*e**3*x**3/4 + 9*a**2*b**2*c*d*e**3*x**2*sqrt(-c**2 - 2*c*d*x
- d**2*x**2 + 1)*asin(c + d*x)/4 - 9*a**2*b**2*c*e**3*x/8 + 9*a**2*b**2*c*e
**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/(8*d) + 3*a**2*b**2
*d**3*e**3*x**4*asin(c + d*x)**2/2 - 3*a**2*b**2*d**3*e**3*x**4/16 + 3*a**2
*b**2*d**2*e**3*x**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/4
- 9*a**2*b**2*d*e**3*x**2/16 + 9*a**2*b**2*e**3*x*sqrt(-c**2 - 2*c*d*x - d*
*2*x**2 + 1)*asin(c + d*x)/8 - 9*a**2*b**2*e**3*asin(c + d*x)**2/(16*d) + a
*b**3*c**4*e**3*asin(c + d*x)**3/d - 3*a*b**3*c**4*e**3*asin(c + d*x)/(8*d)
 + 4*a*b**3*c**3*e**3*x*asin(c + d*x)**3 - 3*a*b**3*c**3*e**3*x*asin(c + d*
x)/2 + 3*a*b**3*c**3*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*
x)**2/(4*d) - 3*a*b**3*c**3*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(32*
d) + 6*a*b**3*c**2*d*e**3*x**2*asin(c + d*x)**3 - 9*a*b**3*c**2*d*e**3*x**2
*asin(c + d*x)/4 + 9*a*b**3*c**2*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 +
1)*asin(c + d*x)**2/4 - 9*a*b**3*c**2*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x*
*2 + 1)/32 - 9*a*b**3*c**2*e**3*asin(c + d*x)/(8*d) + 4*a*b**3*c*d**2*e**3*
x**3*asin(c + d*x)**3 - 3*a*b**3*c*d**2*e**3*x**3*asin(c + d*x)/2 + 9*a*b**
3*c*d*e**3*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/4 -
9*a*b**3*c*d*e**3*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/32 - 9*a*b**3*
c*e**3*x*asin(c + d*x)/4 + 9*a*b**3*c*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2
 + 1)*asin(c + d*x)**2/(8*d) - 45*a*b**3*c*e**3*sqrt(-c**2 - 2*c*d*x - d**2
*x**2 + 1)/(64*d) + a*b**3*d**3*e**3*x**4*asin(c + d*x)**3 - 3*a*b**3*d**3*
e**3*x**4*asin(c + d*x)/8 + 3*a*b**3*d**2*e**3*x**3*sqrt(-c**2 - 2*c*d*x -
d**2*x**2 + 1)*asin(c + d*x)**2/4 - 3*a*b**3*d**2*e**3*x**3*sqrt(-c**2 - 2*
c*d*x - d**2*x**2 + 1)/32 - 9*a*b**3*d*e**3*x**2*asin(c + d*x)/8 + 9*a*b**3
*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/8 - 45*a*b**
3*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/64 - 3*a*b**3*e**3*asin(c +
d*x)**3/(8*d) + 45*a*b**3*e**3*asin(c + d*x)/(64*d) + b**4*c**4*e**3*asin(c
 + d*x)**4/(4*d) - 3*b**4*c**4*e**3*asin(c + d*x)**2/(16*d) + b**4*c**3*e**
3*x*asin(c + d*x)**4 - 3*b**4*c**3*e**3*x*asin(c + d*x)**2/4 + 3*b**4*c**3*
e**3*x/32 + b**4*c**3*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d
```

```
*x)**3/(4*d) - 3*b**4*c**3*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(
c + d*x)/(32*d) + 3*b**4*c**2*d*e**3*x**2*asin(c + d*x)**4/2 - 9*b**4*c**2*
d*e**3*x**2*asin(c + d*x)**2/8 + 9*b**4*c**2*d*e**3*x**2/64 + 3*b**4*c**2*e
**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**3/4 - 9*b**4*c**
2*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/32 - 9*b**4*c*
*2*e**3*asin(c + d*x)**2/(16*d) + b**4*c*d**2*e**3*x**3*asin(c + d*x)**4 -
3*b**4*c*d**2*e**3*x**3*asin(c + d*x)**2/4 + 3*b**4*c*d**2*e**3*x**3/32 + 3
*b**4*c*d*e**3*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**3/
4 - 9*b**4*c*d*e**3*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x
)/32 - 9*b**4*c*e**3*x*asin(c + d*x)**2/8 + 45*b**4*c*e**3*x/64 + 3*b**4*c*
e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**3/(8*d) - 45*b**4
*c*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/(64*d) + b**4*d
**3*e**3*x**4*asin(c + d*x)**4/4 - 3*b**4*d**3*e**3*x**4*asin(c + d*x)**2/1
6 + 3*b**4*d**3*e**3*x**4/128 + b**4*d**2*e**3*x**3*sqrt(-c**2 - 2*c*d*x -
d**2*x**2 + 1)*asin(c + d*x)**3/4 - 3*b**4*d**2*e**3*x**3*sqrt(-c**2 - 2*c*
d*x - d**2*x**2 + 1)*asin(c + d*x)/32 - 9*b**4*d*e**3*x**2*asin(c + d*x)**2
/16 + 45*b**4*d*e**3*x**2/128 + 3*b**4*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x
**2 + 1)*asin(c + d*x)**3/8 - 45*b**4*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x*
*2 + 1)*asin(c + d*x)/64 - 3*b**4*e**3*asin(c + d*x)**4/(32*d) + 45*b**4*e*
*3*asin(c + d*x)**2/(128*d), Ne(d, 0)), (c**3*e**3*x*(a + b*asin(c))**4, Tr
ue))
```

Giac [B] time = 1.42435, size = 1353, normalized size = 3.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^4,x, algorithm="giac")
```

```
[Out] 1/4*((d*x + c)^2 - 1)^2*b^4*arcsin(d*x + c)^4*e^3/d - 1/4*(-(d*x + c)^2 + 1
)^(3/2)*(d*x + c)*b^4*arcsin(d*x + c)^3*e^3/d + ((d*x + c)^2 - 1)^2*a*b^3*a
rcsin(d*x + c)^3*e^3/d + 1/2*((d*x + c)^2 - 1)*b^4*arcsin(d*x + c)^4*e^3/d
- 3/4*(-(d*x + c)^2 + 1)^(3/2)*(d*x + c)*a*b^3*arcsin(d*x + c)^2*e^3/d + 5/
8*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*b^4*arcsin(d*x + c)^3*e^3/d + 3/2*((d*x
+ c)^2 - 1)^2*a^2*b^2*arcsin(d*x + c)^2*e^3/d - 3/16*((d*x + c)^2 - 1)^2*b^
4*arcsin(d*x + c)^2*e^3/d + 2*((d*x + c)^2 - 1)*a*b^3*arcsin(d*x + c)^3*e^3
/d + 5/32*b^4*arcsin(d*x + c)^4*e^3/d - 3/4*(-(d*x + c)^2 + 1)^(3/2)*(d*x +
 c)*a^2*b^2*arcsin(d*x + c)*e^3/d + 3/32*(-(d*x + c)^2 + 1)^(3/2)*(d*x + c)
*b^4*arcsin(d*x + c)*e^3/d + 15/8*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*a*b^3*ar
csin(d*x + c)^2*e^3/d + ((d*x + c)^2 - 1)^2*a^3*b*arcsin(d*x + c)*e^3/d - 3
/8*((d*x + c)^2 - 1)^2*a*b^3*arcsin(d*x + c)*e^3/d + 3*((d*x + c)^2 - 1)*a^
```

```
2*b^2*arcsin(d*x + c)^2*e^3/d - 15/16*((d*x + c)^2 - 1)*b^4*arcsin(d*x + c)
^2*e^3/d + 5/8*a*b^3*arcsin(d*x + c)^3*e^3/d - 1/4*(-(d*x + c)^2 + 1)^(3/2)
*(d*x + c)*a^3*b*e^3/d + 3/32*(-(d*x + c)^2 + 1)^(3/2)*(d*x + c)*a*b^3*e^3/
d + 15/8*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*a^2*b^2*arcsin(d*x + c)*e^3/d - 5
1/64*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*b^4*arcsin(d*x + c)*e^3/d + 1/4*((d*x
 + c)^2 - 1)^2*a^4*e^3/d - 3/16*((d*x + c)^2 - 1)^2*a^2*b^2*e^3/d + 3/128*(
(d*x + c)^2 - 1)^2*b^4*e^3/d + 2*((d*x + c)^2 - 1)*a^3*b*arcsin(d*x + c)*e^
3/d - 15/8*((d*x + c)^2 - 1)*a*b^3*arcsin(d*x + c)*e^3/d + 15/16*a^2*b^2*ar
csin(d*x + c)^2*e^3/d - 51/128*b^4*arcsin(d*x + c)^2*e^3/d + 5/8*sqrt(-(d*x
 + c)^2 + 1)*(d*x + c)*a^3*b*e^3/d - 51/64*sqrt(-(d*x + c)^2 + 1)*(d*x + c)
*a*b^3*e^3/d + 1/2*((d*x + c)^2 - 1)*a^4*e^3/d - 15/16*((d*x + c)^2 - 1)*a^
2*b^2*e^3/d + 51/128*((d*x + c)^2 - 1)*b^4*e^3/d + 5/8*a^3*b*arcsin(d*x + c
)*e^3/d - 51/64*a*b^3*arcsin(d*x + c)*e^3/d - 51/128*a^2*b^2*e^3/d + 195/10
24*b^4*e^3/d
```

3.207 $\int (ce+dex)^2 \left(a+b\sin^{-1}(c+dx)\right)^4 \, dx$

Optimal. Leaf size=289

$$-\frac{160b^3e^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{27d}-\frac{8b^3e^2(c+dx)^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{27d}-\frac{4b^2e^2(c+dx)^3\left(a\right.}{9}$$

```
[Out] (160*b^4*e^2*x)/27 + (8*b^4*e^2*(c + d*x)^3)/(81*d) - (160*b^3*e^2*Sqrt[1 -
 (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(27*d) - (8*b^3*e^2*(c + d*x)^2*Sqrt
[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(27*d) - (8*b^2*e^2*(c + d*x)*(a
 + b*ArcSin[c + d*x])^2)/(3*d) - (4*b^2*e^2*(c + d*x)^3*(a + b*ArcSin[c + d
*x])^2)/(9*d) + (8*b*e^2*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^3)/(
9*d) + (4*b*e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^3
)/(9*d) + (e^2*(c + d*x)^3*(a + b*ArcSin[c + d*x])^4)/(3*d)
```

Rubi [A] time = 0.481905, antiderivative size = 289, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 8, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.348, Rules used = {4805, 12, 4627, 4707, 4677, 4619, 8, 30}

$$-\frac{160b^3e^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{27d}-\frac{8b^3e^2(c+dx)^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{27d}-\frac{4b^2e^2(c+dx)^3\left(a\right.}{9}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x])^4,x]
```


```
[Out] (160*b^4*e^2*x)/27 + (8*b^4*e^2*(c + d*x)^3)/(81*d) - (160*b^3*e^2*Sqrt[1 -
 (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(27*d) - (8*b^3*e^2*(c + d*x)^2*Sqrt
[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(27*d) - (8*b^2*e^2*(c + d*x)*(a
 + b*ArcSin[c + d*x])^2)/(3*d) - (4*b^2*e^2*(c + d*x)^3*(a + b*ArcSin[c + d
*x])^2)/(9*d) + (8*b*e^2*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^3)/(
9*d) + (4*b*e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^3
)/(9*d) + (e^2*(c + d*x)^3*(a + b*ArcSin[c + d*x])^4)/(3*d)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rubi steps

$$\int (ce+dex)^2\left(a+b\sin^{-1}(c+dx)\right)^4\,dx=\frac{\text{Subst}\left(\int e^2x^2\left(a+b\sin^{-1}(x)\right)^4\,dx,x,c+dx\right)}{d}$$
$$=\frac{e^2\,\text{Subst}\left(\int x^2\left(a+b\sin^{-1}(x)\right)^4\,dx,x,c+dx\right)}{d}$$
$$=\frac{e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)^4}{3d}-\frac{\left(4be^2\right)\text{Subst}\left(\int\frac{x^3\left(a+b\sin^{-1}(x)\right)^3}{\sqrt{1-x^2}}\,dx,x,c+\right.}{3d}$$
$$=\frac{4be^2(c+dx)^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^3}{9d}+\frac{e^2(c+dx)^3\left(a+b\sin^{-1}(\right.}{3d}$$
$$=-\frac{4b^2e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)^2}{9d}+\frac{8be^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+\right.}{9d}$$
$$=-\frac{8b^3e^2(c+dx)^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{27d}-\frac{8b^2e^2(c+dx)\left(a+b\,\mathrm{si}\right.}{3d}$$
$$=\frac{8b^4e^2(c+dx)^3}{81d}-\frac{160b^3e^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{27d}-\frac{8b^3e^2(c+dx}{}$$
$$=\frac{160}{27}b^4e^2x+\frac{8b^4e^2(c+dx)^3}{81d}-\frac{160b^3e^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{27d}-$$

Mathematica [A] time = 0.598003, size = 235, normalized size = 0.81

$$\frac{e^2\left(\frac{1}{3}(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)^4-\frac{4}{9}b\left(\frac{2}{3}b^2\sqrt{1-(c+dx)^2}(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)-\frac{40}{3}b^2\left(bdx-\sqrt{1-(c+dx}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] (e^2*(((c + d*x)^3*(a + b*ArcSin[c + d*x])^4)/3 - (4*b*((-2*b^3*(c + d*x)^3
)/9 + (2*b^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/3 +
 6*b*(c + d*x)*(a + b*ArcSin[c + d*x])^2 + b*(c + d*x)^3*(a + b*ArcSin[c +
d*x])^2 - 2*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^3 - (c + d*x)^2*S
qrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^3 - (40*b^2*(b*d*x - Sqrt[1 -
```

```
(c + d*x)^2]*(a + b*ArcSin[c + d*x]))))/3))/9))/d
```

Maple [A] time = 0.038, size = 440, normalized size = 1.5

$$\frac{1}{d}\left(\frac{e^2 (dx+c)^3 a^4}{3} + e^2 b^4 \left(\frac{(dx+c)^3 (\arcsin (dx+c))^4}{3} + \frac{4 (\arcsin (dx+c))^3 \left((dx+c)^2+2\right)}{9}\sqrt{1-(dx+c)^2} - \frac{8 (\arcsin (\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^4,x)
```

```
[Out] 1/d*(1/3*e^2*(d*x+c)^3*a^4+e^2*b^4*(1/3*(d*x+c)^3*arcsin(d*x+c)^4+4/9*arcsi
n(d*x+c)^3*((d*x+c)^2+2)*(1-(d*x+c)^2)^(1/2)-8/3*arcsin(d*x+c)^2*(d*x+c)+16
0/27*d*x+160/27*c-16/3*(1-(d*x+c)^2)^(1/2)*arcsin(d*x+c)-4/9*arcsin(d*x+c)^
2*(d*x+c)^3-8/27*arcsin(d*x+c)*((d*x+c)^2+2)*(1-(d*x+c)^2)^(1/2)+8/81*(d*x+
c)^3)+4*e^2*a*b^3*(1/3*(d*x+c)^3*arcsin(d*x+c)^3+1/3*arcsin(d*x+c)^2*((d*x+
c)^2+2)*(1-(d*x+c)^2)^(1/2)-4/3*(1-(d*x+c)^2)^(1/2)-4/3*(d*x+c)*arcsin(d*x+
c)-2/9*(d*x+c)^3*arcsin(d*x+c)-2/27*((d*x+c)^2+2)*(1-(d*x+c)^2)^(1/2))+6*e^
2*a^2*b^2*(1/3*arcsin(d*x+c)^2*(d*x+c)^3+2/9*arcsin(d*x+c)*((d*x+c)^2+2)*(1
-(d*x+c)^2)^(1/2)-2/27*(d*x+c)^3-4/9*d*x-4/9*c)+4*e^2*a^3*b*(1/3*(d*x+c)^3*
arcsin(d*x+c)+1/9*(d*x+c)^2*(1-(d*x+c)^2)^(1/2)+2/9*(1-(d*x+c)^2)^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.86572, size = 1643, normalized size = 5.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^4,x, algorithm="fricas")
```

```
[Out] 1/81*((27*a^4 - 36*a^2*b^2 + 8*b^4)*d^3*e^2*x^3 + 3*(27*a^4 - 36*a^2*b^2 +
8*b^4)*c*d^2*e^2*x^2 - 3*(72*a^2*b^2 - 160*b^4 - (27*a^4 - 36*a^2*b^2 + 8*b
^4)*c^2)*d*e^2*x + 27*(b^4*d^3*e^2*x^3 + 3*b^4*c*d^2*e^2*x^2 + 3*b^4*c^2*d*
e^2*x + b^4*c^3*e^2)*arcsin(d*x + c)^4 + 108*(a*b^3*d^3*e^2*x^3 + 3*a*b^3*c
*d^2*e^2*x^2 + 3*a*b^3*c^2*d*e^2*x + a*b^3*c^3*e^2)*arcsin(d*x + c)^3 + 18*
((9*a^2*b^2 - 2*b^4)*d^3*e^2*x^3 + 3*(9*a^2*b^2 - 2*b^4)*c*d^2*e^2*x^2 - 3*
(4*b^4 - (9*a^2*b^2 - 2*b^4)*c^2)*d*e^2*x - (12*b^4*c - (9*a^2*b^2 - 2*b^4)
*c^3)*e^2)*arcsin(d*x + c)^2 + 36*((3*a^3*b - 2*a*b^3)*d^3*e^2*x^3 + 3*(3*a
^3*b - 2*a*b^3)*c*d^2*e^2*x^2 - 3*(4*a*b^3 - (3*a^3*b - 2*a*b^3)*c^2)*d*e^2
*x - (12*a*b^3*c - (3*a^3*b - 2*a*b^3)*c^3)*e^2)*arcsin(d*x + c) + 12*((3*a
^3*b - 2*a*b^3)*d^2*e^2*x^2 + 2*(3*a^3*b - 2*a*b^3)*c*d*e^2*x + 3*(b^4*d^2*
e^2*x^2 + 2*b^4*c*d*e^2*x + (b^4*c^2 + 2*b^4)*e^2)*arcsin(d*x + c)^3 + (6*a
^3*b - 40*a*b^3 + (3*a^3*b - 2*a*b^3)*c^2)*e^2 + 9*(a*b^3*d^2*e^2*x^2 + 2*a
*b^3*c*d*e^2*x + (a*b^3*c^2 + 2*a*b^3)*e^2)*arcsin(d*x + c)^2 + ((9*a^2*b^2
 - 2*b^4)*d^2*e^2*x^2 + 2*(9*a^2*b^2 - 2*b^4)*c*d*e^2*x + (18*a^2*b^2 - 40*
b^4 + (9*a^2*b^2 - 2*b^4)*c^2)*e^2)*arcsin(d*x + c))*sqrt(-d^2*x^2 - 2*c*d*
x - c^2 + 1))/d
```

Sympy [A] time = 13.9753, size = 1889, normalized size = 6.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2*(a+b*asin(d*x+c))**4,x)
```

```
[Out] Piecewise((a**4*c**2*e**2*x + a**4*c*d*e**2*x**2 + a**4*d**2*e**2*x**3/3 +
4*a**3*b*c**3*e**2*asin(c + d*x)/(3*d) + 4*a**3*b*c**2*e**2*x*asin(c + d*x)
 + 4*a**3*b*c**2*e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(9*d) + 4*a**3*
b*c*d*e**2*x**2*asin(c + d*x) + 8*a**3*b*c*e**2*x*sqrt(-c**2 - 2*c*d*x - d*
*2*x**2 + 1)/9 + 4*a**3*b*d**2*e**2*x**3*asin(c + d*x)/3 + 4*a**3*b*d*e**2*
x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/9 + 8*a**3*b*e**2*sqrt(-c**2 - 2
*c*d*x - d**2*x**2 + 1)/(9*d) + 2*a**2*b**2*c**3*e**2*asin(c + d*x)**2/d +
6*a**2*b**2*c**2*e**2*x*asin(c + d*x)**2 - 4*a**2*b**2*c**2*e**2*x/3 + 4*a*
*2*b**2*c**2*e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/(3*d)
 + 6*a**2*b**2*c*d*e**2*x**2*asin(c + d*x)**2 - 4*a**2*b**2*c*d*e**2*x**2/3
 + 8*a**2*b**2*c*e**2*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)
/3 + 2*a**2*b**2*d**2*e**2*x**3*asin(c + d*x)**2 - 4*a**2*b**2*d**2*e**2*x*
*3/9 + 4*a**2*b**2*d*e**2*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c
 + d*x)/3 - 8*a**2*b**2*e**2*x/3 + 8*a**2*b**2*e**2*sqrt(-c**2 - 2*c*d*x -
```

```
d**2*x**2 + 1)*asin(c + d*x)/(3*d) + 4*a*b**3*c**3*e**2*asin(c + d*x)**3/(3
*d) - 8*a*b**3*c**3*e**2*asin(c + d*x)/(9*d) + 4*a*b**3*c**2*e**2*x*asin(c
+ d*x)**3 - 8*a*b**3*c**2*e**2*x*asin(c + d*x)/3 + 4*a*b**3*c**2*e**2*sqrt(
-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/(3*d) - 8*a*b**3*c**2*e**
2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(27*d) + 4*a*b**3*c*d*e**2*x**2*asi
n(c + d*x)**3 - 8*a*b**3*c*d*e**2*x**2*asin(c + d*x)/3 + 8*a*b**3*c*e**2*x*
sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/3 - 16*a*b**3*c*e**2
*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/27 - 16*a*b**3*c*e**2*asin(c + d*x
)/(3*d) + 4*a*b**3*d**2*e**2*x**3*asin(c + d*x)**3/3 - 8*a*b**3*d**2*e**2*x
**3*asin(c + d*x)/9 + 4*a*b**3*d*e**2*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2
 + 1)*asin(c + d*x)**2/3 - 8*a*b**3*d*e**2*x**2*sqrt(-c**2 - 2*c*d*x - d**2
*x**2 + 1)/27 - 16*a*b**3*e**2*x*asin(c + d*x)/3 + 8*a*b**3*e**2*sqrt(-c**2
 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/(3*d) - 160*a*b**3*e**2*sqrt(-
c**2 - 2*c*d*x - d**2*x**2 + 1)/(27*d) + b**4*c**3*e**2*asin(c + d*x)**4/(3
*d) - 4*b**4*c**3*e**2*asin(c + d*x)**2/(9*d) + b**4*c**2*e**2*x*asin(c + d
*x)**4 - 4*b**4*c**2*e**2*x*asin(c + d*x)**2/3 + 8*b**4*c**2*e**2*x/27 + 4*
b**4*c**2*e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**3/(9*d)
 - 8*b**4*c**2*e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/(27
*d) + b**4*c*d*e**2*x**2*asin(c + d*x)**4 - 4*b**4*c*d*e**2*x**2*asin(c + d
*x)**2/3 + 8*b**4*c*d*e**2*x**2/27 + 8*b**4*c*e**2*x*sqrt(-c**2 - 2*c*d*x -
 d**2*x**2 + 1)*asin(c + d*x)**3/9 - 16*b**4*c*e**2*x*sqrt(-c**2 - 2*c*d*x
- d**2*x**2 + 1)*asin(c + d*x)/27 - 8*b**4*c*e**2*asin(c + d*x)**2/(3*d) +
b**4*d**2*e**2*x**3*asin(c + d*x)**4/3 - 4*b**4*d**2*e**2*x**3*asin(c + d*x
)**2/9 + 8*b**4*d**2*e**2*x**3/81 + 4*b**4*d*e**2*x**2*sqrt(-c**2 - 2*c*d*x
 - d**2*x**2 + 1)*asin(c + d*x)**3/9 - 8*b**4*d*e**2*x**2*sqrt(-c**2 - 2*c*
d*x - d**2*x**2 + 1)*asin(c + d*x)/27 - 8*b**4*e**2*x*asin(c + d*x)**2/3 +
160*b**4*e**2*x/27 + 8*b**4*e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin
(c + d*x)**3/(9*d) - 160*b**4*e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*as
in(c + d*x)/(27*d), Ne(d, 0)), (c**2*e**2*x*(a + b*asin(c))**4, True))
```

Giac [B] time = 1.39374, size = 1053, normalized size = 3.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^4,x, algorithm="giac")
```

```
[Out] 1/3*((d*x + c)^2 - 1)*(d*x + c)*b^4*arcsin(d*x + c)^4*e^2/d + 4/3*((d*x + c
)^2 - 1)*(d*x + c)*a*b^3*arcsin(d*x + c)^3*e^2/d + 1/3*(d*x + c)*b^4*arcsin
(d*x + c)^4*e^2/d - 4/9*(-(d*x + c)^2 + 1)^(3/2)*b^4*arcsin(d*x + c)^3*e^2/
d + 2*((d*x + c)^2 - 1)*(d*x + c)*a^2*b^2*arcsin(d*x + c)^2*e^2/d - 4/9*((d
```

```
*x + c)^2 - 1)*(d*x + c)*b^4*arcsin(d*x + c)^2*e^2/d + 4/3*(d*x + c)*a*b^3*
arcsin(d*x + c)^3*e^2/d - 4/3*(-(d*x + c)^2 + 1)^(3/2)*a*b^3*arcsin(d*x + c
)^2*e^2/d + 4/3*sqrt(-(d*x + c)^2 + 1)*b^4*arcsin(d*x + c)^3*e^2/d + 1/3*(d
*x + c)^3*a^4*e^2/d + 4/3*((d*x + c)^2 - 1)*(d*x + c)*a^3*b*arcsin(d*x + c)
*e^2/d - 8/9*((d*x + c)^2 - 1)*(d*x + c)*a*b^3*arcsin(d*x + c)*e^2/d + 2*(d
*x + c)*a^2*b^2*arcsin(d*x + c)^2*e^2/d - 28/9*(d*x + c)*b^4*arcsin(d*x + c
)^2*e^2/d - 4/3*(-(d*x + c)^2 + 1)^(3/2)*a^2*b^2*arcsin(d*x + c)*e^2/d + 8/
27*(-(d*x + c)^2 + 1)^(3/2)*b^4*arcsin(d*x + c)*e^2/d + 4*sqrt(-(d*x + c)^2
 + 1)*a*b^3*arcsin(d*x + c)^2*e^2/d - 4/9*((d*x + c)^2 - 1)*(d*x + c)*a^2*b
^2*e^2/d + 8/81*((d*x + c)^2 - 1)*(d*x + c)*b^4*e^2/d + 4/3*(d*x + c)*a^3*b
*arcsin(d*x + c)*e^2/d - 56/9*(d*x + c)*a*b^3*arcsin(d*x + c)*e^2/d - 4/9*(
-(d*x + c)^2 + 1)^(3/2)*a^3*b*e^2/d + 8/27*(-(d*x + c)^2 + 1)^(3/2)*a*b^3*e
^2/d + 4*sqrt(-(d*x + c)^2 + 1)*a^2*b^2*arcsin(d*x + c)*e^2/d - 56/9*sqrt(-
(d*x + c)^2 + 1)*b^4*arcsin(d*x + c)*e^2/d - 28/9*(d*x + c)*a^2*b^2*e^2/d +
 488/81*(d*x + c)*b^4*e^2/d + 4/3*sqrt(-(d*x + c)^2 + 1)*a^3*b*e^2/d - 56/9
*sqrt(-(d*x + c)^2 + 1)*a*b^3*e^2/d
```

3.208 $\int (ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^4\,dx$

Optimal. Leaf size=198

$$-\frac{3b^3e(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{2d}-\frac{3b^2e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)^2}{2d}+\frac{3b^2e\left(a+b\sin^{-1}(c+dx)\right)^2}{4d}+$$

```
[Out] (3*b^4*e*(c + d*x)^2)/(4*d) - (3*b^3*e*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a +
 b*ArcSin[c + d*x]))/(2*d) + (3*b^2*e*(a + b*ArcSin[c + d*x])^2)/(4*d) - (3
*b^2*e*(c + d*x)^2*(a + b*ArcSin[c + d*x])^2)/(2*d) + (b*e*(c + d*x)*Sqrt[1
 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^3)/d - (e*(a + b*ArcSin[c + d*x])^4
)/(4*d) + (e*(c + d*x)^2*(a + b*ArcSin[c + d*x])^4)/(2*d)
```

Rubi [A] time = 0.305862, antiderivative size = 198, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4805, 12, 4627, 4707, 4641, 30}

$$-\frac{3b^3e(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{2d}-\frac{3b^2e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)^2}{2d}+\frac{3b^2e\left(a+b\sin^{-1}(c+dx)\right)^2}{4d}+$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)*(a + b*ArcSin[c + d*x])^4,x]
```


```
[Out] (3*b^4*e*(c + d*x)^2)/(4*d) - (3*b^3*e*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a +
 b*ArcSin[c + d*x]))/(2*d) + (3*b^2*e*(a + b*ArcSin[c + d*x])^2)/(4*d) - (3
*b^2*e*(c + d*x)^2*(a + b*ArcSin[c + d*x])^2)/(2*d) + (b*e*(c + d*x)*Sqrt[1
 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^3)/d - (e*(a + b*ArcSin[c + d*x])^4
)/(4*d) + (e*(c + d*x)^2*(a + b*ArcSin[c + d*x])^4)/(2*d)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rubi steps

$$\int (ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^4\,dx = \frac{\text{Subst}\left(\int ex\left(a+b\sin^{-1}(x)\right)^4\,dx,x,c+dx\right)}{d}$$
$$= \frac{e\,\text{Subst}\left(\int x\left(a+b\sin^{-1}(x)\right)^4\,dx,x,c+dx\right)}{d}$$
$$= \frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)^4}{2d} - \frac{(2be)\,\text{Subst}\left(\int \frac{x^2\left(a+b\sin^{-1}(x)\right)^3}{\sqrt{1-x^2}}\,dx,x,c+dx\right)}{d}$$
$$= \frac{be(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^3}{d} + \frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx\right.}{2d}$$
$$= -\frac{3b^2e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)^2}{2d} + \frac{be(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c\right.}{d}$$
$$= -\frac{3b^3e(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{2d} - \frac{3b^2e(c+dx)^2\left(a+b\sin^{-1}(\right.}{2d}$$
$$= \frac{3b^4e(c+dx)^2}{4d} - \frac{3b^3e(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{2d} + \frac{3b^2e\left(a+b\,\mathrm{s}\right.}{}$$

Mathematica [A] time = 0.263336, size = 163, normalized size = 0.82

$$-\frac{e\left(3b^2\left(2(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)^2+2b\sqrt{1-(c+dx)^2}(c+dx)\left(a+b\sin^{-1}(c+dx)\right)-\left(a+b\sin^{-1}(c+dx)\right)^2-b^2(\right.}{4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)*(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] -(e*(-4*b*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^3 + (a +
b*ArcSin[c + d*x])^4 - 2*(c + d*x)^2*(a + b*ArcSin[c + d*x])^4 + 3*b^2*(-(b
^2*(c + d*x)^2) + 2*b*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x
]) - (a + b*ArcSin[c + d*x])^2 + 2*(c + d*x)^2*(a + b*ArcSin[c + d*x])^2)))
/(4*d)
```

Maple [B] time = 0.04, size = 412, normalized size = 2.1

$$\frac{1}{d}\left(\frac{e\left(dx+c\right)^2a^4}{2}+eb^4\left(\frac{\left(\left(dx+c\right)^2-1\right)\left(\arcsin\left(dx+c\right)\right)^4}{2}+\left(\arcsin\left(dx+c\right)\right)^3\left(\left(dx+c\right)\sqrt{1-\left(dx+c\right)^2}+\arcsin\left(dx+c\right)\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)*(a+b*arcsin(d*x+c))^4,x)
```

```
[Out] 1/d*(1/2*e*(d*x+c)^2*a^4+e*b^4*(1/2*((d*x+c)^2-1)*arcsin(d*x+c)^4+arcsin(d*
x+c)^3*((d*x+c)*(1-(d*x+c)^2)^(1/2)+arcsin(d*x+c))-3/2*arcsin(d*x+c)^2*((d*
x+c)^2-1)-3/2*arcsin(d*x+c)*((d*x+c)*(1-(d*x+c)^2)^(1/2)+arcsin(d*x+c))+3/4
*arcsin(d*x+c)^2+3/4*(d*x+c)^2-3/4*arcsin(d*x+c)^4)+4*e*a*b^3*(1/2*arcsin(d
*x+c)^3*((d*x+c)^2-1)+3/4*arcsin(d*x+c)^2*((d*x+c)*(1-(d*x+c)^2)^(1/2)+arcs
in(d*x+c))-3/4*arcsin(d*x+c)*((d*x+c)^2-1)-3/8*(d*x+c)*(1-(d*x+c)^2)^(1/2)-
3/8*arcsin(d*x+c)-1/2*arcsin(d*x+c)^3)+6*e*a^2*b^2*(1/2*arcsin(d*x+c)^2*((d
*x+c)^2-1)+1/2*arcsin(d*x+c)*((d*x+c)*(1-(d*x+c)^2)^(1/2)+arcsin(d*x+c))-1/
4*arcsin(d*x+c)^2-1/4*(d*x+c)^2)+4*e*a^3*b*(1/2*arcsin(d*x+c)*(d*x+c)^2+1/4
*(d*x+c)*(1-(d*x+c)^2)^(1/2)-1/4*arcsin(d*x+c)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.58579, size = 1045, normalized size = 5.28

$$\frac{\left(2\,a^4-6\,a^2b^2+3\,b^4\right)d^2ex^2+2\left(2\,a^4-6\,a^2b^2+3\,b^4\right)cdex+\left(2\,b^4d^2ex^2+4\,b^4cdex+\left(2\,b^4c^2-b^4\right)e\right)\arcsin\left(dx+c\right)^4+4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^4,x, algorithm="fricas")
```

```
[Out] 1/4*((2*a^4 - 6*a^2*b^2 + 3*b^4)*d^2*e*x^2 + 2*(2*a^4 - 6*a^2*b^2 + 3*b^4)*
c*d*e*x + (2*b^4*d^2*e*x^2 + 4*b^4*c*d*e*x + (2*b^4*c^2 - b^4)*e)*arcsin(d*
x + c)^4 + 4*(2*a*b^3*d^2*e*x^2 + 4*a*b^3*c*d*e*x + (2*a*b^3*c^2 - a*b^3)*e
)*arcsin(d*x + c)^3 + 3*(2*(2*a^2*b^2 - b^4)*d^2*e*x^2 + 4*(2*a^2*b^2 - b^4
)*c*d*e*x - (2*a^2*b^2 - b^4 - 2*(2*a^2*b^2 - b^4)*c^2)*e)*arcsin(d*x + c)^
```

```
2 + 2*(2*(2*a^3*b - 3*a*b^3)*d^2*e*x^2 + 4*(2*a^3*b - 3*a*b^3)*c*d*e*x - (2
*a^3*b - 3*a*b^3 - 2*(2*a^3*b - 3*a*b^3)*c^2)*e)*arcsin(d*x + c) + 2*((2*a^
3*b - 3*a*b^3)*d*e*x + 2*(b^4*d*e*x + b^4*c*e)*arcsin(d*x + c)^3 + (2*a^3*b
 - 3*a*b^3)*c*e + 6*(a*b^3*d*e*x + a*b^3*c*e)*arcsin(d*x + c)^2 + 3*((2*a^2
*b^2 - b^4)*d*e*x + (2*a^2*b^2 - b^4)*c*e)*arcsin(d*x + c))*sqrt(-d^2*x^2 -
 2*c*d*x - c^2 + 1))/d
```

Sympy [A] time = 6.88189, size = 1027, normalized size = 5.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*asin(d*x+c))**4,x)
```

```
[Out] Piecewise((a**4*c*e*x + a**4*d*e*x**2/2 + 2*a**3*b*c**2*e*asin(c + d*x)/d +
 4*a**3*b*c*e*x*asin(c + d*x) + a**3*b*c*e*sqrt(-c**2 - 2*c*d*x - d**2*x**2
 + 1)/d + 2*a**3*b*d*e*x**2*asin(c + d*x) + a**3*b*e*x*sqrt(-c**2 - 2*c*d*x
 - d**2*x**2 + 1) - a**3*b*e*asin(c + d*x)/d + 3*a**2*b**2*c**2*e*asin(c +
d*x)**2/d + 6*a**2*b**2*c*e*x*asin(c + d*x)**2 - 3*a**2*b**2*c*e*x + 3*a**2
*b**2*c*e*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/d + 3*a**2*b*
*2*d*e*x**2*asin(c + d*x)**2 - 3*a**2*b**2*d*e*x**2/2 + 3*a**2*b**2*e*x*sqr
t(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x) - 3*a**2*b**2*e*asin(c + d
*x)**2/(2*d) + 2*a*b**3*c**2*e*asin(c + d*x)**3/d - 3*a*b**3*c**2*e*asin(c
+ d*x)/d + 4*a*b**3*c*e*x*asin(c + d*x)**3 - 6*a*b**3*c*e*x*asin(c + d*x) +
 3*a*b**3*c*e*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/d - 3*
a*b**3*c*e*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(2*d) + 2*a*b**3*d*e*x**2*
asin(c + d*x)**3 - 3*a*b**3*d*e*x**2*asin(c + d*x) + 3*a*b**3*e*x*sqrt(-c**
2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2 - 3*a*b**3*e*x*sqrt(-c**2 - 2
*c*d*x - d**2*x**2 + 1)/2 - a*b**3*e*asin(c + d*x)**3/d + 3*a*b**3*e*asin(c
 + d*x)/(2*d) + b**4*c**2*e*asin(c + d*x)**4/(2*d) - 3*b**4*c**2*e*asin(c +
 d*x)**2/(2*d) + b**4*c*e*x*asin(c + d*x)**4 - 3*b**4*c*e*x*asin(c + d*x)**
2 + 3*b**4*c*e*x/2 + b**4*c*e*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c
+ d*x)**3/d - 3*b**4*c*e*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x
)/(2*d) + b**4*d*e*x**2*asin(c + d*x)**4/2 - 3*b**4*d*e*x**2*asin(c + d*x)*
*2/2 + 3*b**4*d*e*x**2/4 + b**4*e*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*a
sin(c + d*x)**3 - 3*b**4*e*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c +
 d*x)/2 - b**4*e*asin(c + d*x)**4/(4*d) + 3*b**4*e*asin(c + d*x)**2/(4*d),
Ne(d, 0)), (c*e*x*(a + b*asin(c))**4, True))
```

Giac [B] time = 1.34008, size = 751, normalized size = 3.79

$$\frac{\left((dx+c)^2-1\right)b^4\arcsin\left(dx+c\right)^4e}{2\,d}+\frac{\sqrt{-(dx+c)^2+1}(dx+c)b^4\arcsin\left(dx+c\right)^3e}{d}+\frac{2\left((dx+c)^2-1\right)ab^3\arcsin\left(dx+\right.}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^4,x, algorithm="giac")
```

```
[Out] 1/2*((d*x + c)^2 - 1)*b^4*arcsin(d*x + c)^4*e/d + sqrt(-(d*x + c)^2 + 1)*(d
*x + c)*b^4*arcsin(d*x + c)^3*e/d + 2*((d*x + c)^2 - 1)*a*b^3*arcsin(d*x +
c)^3*e/d + 1/4*b^4*arcsin(d*x + c)^4*e/d + 3*sqrt(-(d*x + c)^2 + 1)*(d*x +
c)*a*b^3*arcsin(d*x + c)^2*e/d + 3*((d*x + c)^2 - 1)*a^2*b^2*arcsin(d*x + c
)^2*e/d - 3/2*((d*x + c)^2 - 1)*b^4*arcsin(d*x + c)^2*e/d + a*b^3*arcsin(d*
x + c)^3*e/d + 3*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*a^2*b^2*arcsin(d*x + c)*e
/d - 3/2*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*b^4*arcsin(d*x + c)*e/d + 2*((d*x
 + c)^2 - 1)*a^3*b*arcsin(d*x + c)*e/d - 3*((d*x + c)^2 - 1)*a*b^3*arcsin(d
*x + c)*e/d + 3/2*a^2*b^2*arcsin(d*x + c)^2*e/d - 3/4*b^4*arcsin(d*x + c)^2
*e/d + sqrt(-(d*x + c)^2 + 1)*(d*x + c)*a^3*b*e/d - 3/2*sqrt(-(d*x + c)^2 +
 1)*(d*x + c)*a*b^3*e/d + 1/2*((d*x + c)^2 - 1)*a^4*e/d - 3/2*((d*x + c)^2
- 1)*a^2*b^2*e/d + 3/4*((d*x + c)^2 - 1)*b^4*e/d + a^3*b*arcsin(d*x + c)*e/
d - 3/2*a*b^3*arcsin(d*x + c)*e/d - 3/4*a^2*b^2*e/d + 3/8*b^4*e/d
```

3.209 $\int \left(a+b\sin^{-1}(c+dx)\right)^4\,dx$

Optimal. Leaf size=119

$$-\frac{24b^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{d}-\frac{12b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^2}{d}+\frac{4b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{d}$$

```
[Out] 24*b^4*x - (24*b^3*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/d - (12*b
^2*(c + d*x)*(a + b*ArcSin[c + d*x])^2)/d + (4*b*Sqrt[1 - (c + d*x)^2]*(a +
 b*ArcSin[c + d*x])^3)/d + ((c + d*x)*(a + b*ArcSin[c + d*x])^4)/d
```

Rubi [A] time = 0.158683, antiderivative size = 119, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4803, 4619, 4677, 8}

$$-\frac{24b^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{d}-\frac{12b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^2}{d}+\frac{4b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] 24*b^4*x - (24*b^3*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/d - (12*b
^2*(c + d*x)*(a + b*ArcSin[c + d*x])^2)/d + (4*b*Sqrt[1 - (c + d*x)^2]*(a +
 b*ArcSin[c + d*x])^3)/d + ((c + d*x)*(a + b*ArcSin[c + d*x])^4)/d
```

Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\int \left(a+b\sin^{-1}(c+dx)\right)^4 dx = \frac{\text{Subst}\left(\int \left(a+b\sin^{-1}(x)\right)^4 dx, x, c+dx\right)}{d}$$

$$= \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^4}{d} - \frac{(4b)\,\text{Subst}\left(\int \frac{x\left(a+b\sin^{-1}(x)\right)^3}{\sqrt{1-x^2}} dx, x, c+dx\right)}{d}$$

$$= \frac{4b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^3}{d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^4}{d} - \frac{\left(12b^2\right)\text{Subs}}{}$$

$$= -\frac{12b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^2}{d} + \frac{4b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^3}{d} + \frac{(c+d}{}$$

$$= -\frac{24b^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{d} - \frac{12b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^2}{d} + \frac{4b\sqrt{1}}{}$$

$$= 24b^4x - \frac{24b^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{d} - \frac{12b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^2}{d}$$

Mathematica [A] time = 0.129566, size = 115, normalized size = 0.97

$$\frac{-12b^2\left(2b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)+(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^2-2b^2(c+dx)\right)+(c+dx)\left(a+b\sin^{-1}(c\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] (4*b*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^3 + (c + d*x)*(a + b*Arc
Sin[c + d*x])^4 - 12*b^2*(-2*b^2*(c + d*x) + 2*b*Sqrt[1 - (c + d*x)^2]*(a +
```

```
b*ArcSin[c + d*x]) + (c + d*x)*(a + b*ArcSin[c + d*x])^2))/d
```

Maple [B] time = 0.035, size = 255, normalized size = 2.1

$$\frac{1}{d}\left(a^4\left(dx+c\right)+b^4\left(\left(dx+c\right)\left(\arcsin\left(dx+c\right)\right)^4+4\left(\arcsin\left(dx+c\right)\right)^3\sqrt{1-\left(dx+c\right)^2}-12\left(\arcsin\left(dx+c\right)\right)^2\left(dx+c\right)+24\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^4,x)
```

```
[Out] 1/d*(a^4*(d*x+c)+b^4*((d*x+c)*arcsin(d*x+c)^4+4*arcsin(d*x+c)^3*(1-(d*x+c)^
2)^(1/2)-12*arcsin(d*x+c)^2*(d*x+c)+24*d*x+24*c-24*(1-(d*x+c)^2)^(1/2)*arcs
in(d*x+c))+4*a*b^3*(arcsin(d*x+c)^3*(d*x+c)+3*arcsin(d*x+c)^2*(1-(d*x+c)^2)
^(1/2)-6*(1-(d*x+c)^2)^(1/2)-6*(d*x+c)*arcsin(d*x+c))+6*a^2*b^2*(arcsin(d*x
+c)^2*(d*x+c)-2*d*x-2*c+2*(1-(d*x+c)^2)^(1/2)*arcsin(d*x+c))+4*a^3*b*((d*x+
c)*arcsin(d*x+c)+(1-(d*x+c)^2)^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.37543, size = 540, normalized size = 4.54

$$\frac{\left(b^4dx+b^4c\right)\arcsin\left(dx+c\right)^4+4\left(ab^3dx+ab^3c\right)\arcsin\left(dx+c\right)^3+\left(a^4-12\,a^2b^2+24\,b^4\right)dx+6\left(\left(a^2b^2-2\,b^4\right)dx+\left(a^2b^2\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4,x, algorithm="fricas")
```

```
[Out] ((b^4*d*x + b^4*c)*arcsin(d*x + c)^4 + 4*(a*b^3*d*x + a*b^3*c)*arcsin(d*x +
 c)^3 + (a^4 - 12*a^2*b^2 + 24*b^4)*d*x + 6*((a^2*b^2 - 2*b^4)*d*x + (a^2*b
^2 - 2*b^4)*c)*arcsin(d*x + c)^2 + 4*((a^3*b - 6*a*b^3)*d*x + (a^3*b - 6*a*
b^3)*c)*arcsin(d*x + c) + 4*(b^4*arcsin(d*x + c)^3 + 3*a*b^3*arcsin(d*x + c
)^2 + a^3*b - 6*a*b^3 + 3*(a^2*b^2 - 2*b^4)*arcsin(d*x + c))*sqrt(-d^2*x^2
- 2*c*d*x - c^2 + 1))/d
```

Sympy [A] time = 2.5461, size = 444, normalized size = 3.73

$$\begin{cases} a^4x + \frac{4a^3bc\operatorname{asin}(c+dx)}{d} + 4a^3bx\operatorname{asin}(c+dx) + \frac{4a^3b\sqrt{-c^2-2cdx-d^2x^2+1}}{d} + \frac{6a^2b^2c\operatorname{asin}^2(c+dx)}{d} + 6a^2b^2x\operatorname{asin}^2(c+dx) - 12a^2b^2x \\ x(a+b\operatorname{asin}(c))^4 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**4,x)
```

```
[Out] Piecewise((a**4*x + 4*a**3*b*c*asin(c + d*x)/d + 4*a**3*b*x*asin(c + d*x) +
 4*a**3*b*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/d + 6*a**2*b**2*c*asin(c +
d*x)**2/d + 6*a**2*b**2*x*asin(c + d*x)**2 - 12*a**2*b**2*x + 12*a**2*b**2*
sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/d + 4*a*b**3*c*asin(c +
 d*x)**3/d - 24*a*b**3*c*asin(c + d*x)/d + 4*a*b**3*x*asin(c + d*x)**3 - 24
*a*b**3*x*asin(c + d*x) + 12*a*b**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*a
sin(c + d*x)**2/d - 24*a*b**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/d + b**
4*c*asin(c + d*x)**4/d - 12*b**4*c*asin(c + d*x)**2/d + b**4*x*asin(c + d*x
)**4 - 12*b**4*x*asin(c + d*x)**2 + 24*b**4*x + 4*b**4*sqrt(-c**2 - 2*c*d*x
 - d**2*x**2 + 1)*asin(c + d*x)**3/d - 24*b**4*sqrt(-c**2 - 2*c*d*x - d**2*
x**2 + 1)*asin(c + d*x)/d, Ne(d, 0)), (x*(a + b*asin(c))**4, True))
```

Giac [B] time = 1.19167, size = 444, normalized size = 3.73

$$\frac{(dx+c)b^4\arcsin(dx+c)^4}{d} + \frac{4(dx+c)ab^3\arcsin(dx+c)^3}{d} + \frac{4\sqrt{-(dx+c)^2+1}b^4\arcsin(dx+c)^3}{d} + \frac{6(dx+c)a^2b^2\operatorname{ar}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4,x, algorithm="giac")
```

```
[Out] (d*x + c)*b^4*arcsin(d*x + c)^4/d + 4*(d*x + c)*a*b^3*arcsin(d*x + c)^3/d +
 4*sqrt(-(d*x + c)^2 + 1)*b^4*arcsin(d*x + c)^3/d + 6*(d*x + c)*a^2*b^2*arc
```

```
sin(d*x + c)^2/d - 12*(d*x + c)*b^4*arcsin(d*x + c)^2/d + 12*sqrt(-(d*x + c
)^2 + 1)*a*b^3*arcsin(d*x + c)^2/d + 4*(d*x + c)*a^3*b*arcsin(d*x + c)/d -
24*(d*x + c)*a*b^3*arcsin(d*x + c)/d + 12*sqrt(-(d*x + c)^2 + 1)*a^2*b^2*ar
csin(d*x + c)/d - 24*sqrt(-(d*x + c)^2 + 1)*b^4*arcsin(d*x + c)/d + (d*x +
c)*a^4/d - 12*(d*x + c)*a^2*b^2/d + 24*(d*x + c)*b^4/d + 4*sqrt(-(d*x + c)^
2 + 1)*a^3*b/d - 24*sqrt(-(d*x + c)^2 + 1)*a*b^3/d
```

3.210 $\int \frac{(a+b\sin^{-1}(c+dx))^4}{ce+dex}\,dx$

Optimal. Leaf size=202

$$\frac{3b^2\text{PolyLog}\left(3,e^{2i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)^2}{de}+\frac{3ib^3\text{PolyLog}\left(4,e^{2i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de}-\frac{2ib\text{PolyL}}{}$$

```
[Out] ((-I/5)*(a + b*ArcSin[c + d*x])^5)/(b*d*e) + ((a + b*ArcSin[c + d*x])^4*Log
[1 - E^((2*I)*ArcSin[c + d*x])])/(d*e) - ((2*I)*b*(a + b*ArcSin[c + d*x])^3
*PolyLog[2, E^((2*I)*ArcSin[c + d*x])])/(d*e) + (3*b^2*(a + b*ArcSin[c + d*
x])^2*PolyLog[3, E^((2*I)*ArcSin[c + d*x])])/(d*e) + ((3*I)*b^3*(a + b*ArcS
in[c + d*x])*PolyLog[4, E^((2*I)*ArcSin[c + d*x])])/(d*e) - (3*b^4*PolyLog[
5, E^((2*I)*ArcSin[c + d*x])])/(2*d*e)
```

Rubi [A] time = 0.234107, antiderivative size = 202, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 9, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.391, Rules used = {4805, 12, 4625, 3717, 2190, 2531, 6609, 2282, 6589}

$$\frac{3b^2\text{PolyLog}\left(3,e^{2i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)^2}{de}+\frac{3ib^3\text{PolyLog}\left(4,e^{2i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de}-\frac{2ib\text{PolyL}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x),x]
```


```
[Out] ((-I/5)*(a + b*ArcSin[c + d*x])^5)/(b*d*e) + ((a + b*ArcSin[c + d*x])^4*Log
[1 - E^((2*I)*ArcSin[c + d*x])])/(d*e) - ((2*I)*b*(a + b*ArcSin[c + d*x])^3
*PolyLog[2, E^((2*I)*ArcSin[c + d*x])])/(d*e) + (3*b^2*(a + b*ArcSin[c + d*
x])^2*PolyLog[3, E^((2*I)*ArcSin[c + d*x])])/(d*e) + ((3*I)*b^3*(a + b*ArcS
in[c + d*x])*PolyLog[4, E^((2*I)*ArcSin[c + d*x])])/(d*e) - (3*b^4*PolyLog[
5, E^((2*I)*ArcSin[c + d*x])])/(2*d*e)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
```

```
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{ce+dex}\,dx = \frac{\operatorname{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^4}{ex}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\operatorname{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^4}{x}\,dx, x, c+dx\right)}{de}$$

$$= \frac{\operatorname{Subst}\left(\int (a+bx)^4\cot(x)\,dx, x, \sin^{-1}(c+dx)\right)}{de}$$

$$= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^5}{5bde} - \frac{(2i)\operatorname{Subst}\left(\int \frac{e^{2ix}(a+bx)^4}{1-e^{2ix}}\,dx, x, \sin^{-1}(c+dx)\right)}{de}$$

$$= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^5}{5bde} + \frac{\left(a+b\sin^{-1}(c+dx)\right)^4\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{(4b)\operatorname{Subst}\left(\int \right.}{}$$

$$= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^5}{5bde} + \frac{\left(a+b\sin^{-1}(c+dx)\right)^4\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{2ib\left(a+b\sin\right.}{}$$

$$= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^5}{5bde} + \frac{\left(a+b\sin^{-1}(c+dx)\right)^4\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{2ib\left(a+b\sin\right.}{}$$

$$= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^5}{5bde} + \frac{\left(a+b\sin^{-1}(c+dx)\right)^4\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{2ib\left(a+b\sin\right.}{}$$

$$= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^5}{5bde} + \frac{\left(a+b\sin^{-1}(c+dx)\right)^4\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{2ib\left(a+b\sin\right.}{}$$

$$= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^5}{5bde} + \frac{\left(a+b\sin^{-1}(c+dx)\right)^4\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{2ib\left(a+b\sin\right.}{}$$

Mathematica [B] time = 0.377343, size = 439, normalized size = 2.17

$$\frac{4a^2b^2\left(24i\sin^{-1}(c+dx)\text{PolyLog}\left(2,e^{-2i\sin^{-1}(c+dx)}\right)+12\text{PolyLog}\left(3,e^{-2i\sin^{-1}(c+dx)}\right)+8i\sin^{-1}(c+dx)^3+24\sin^{-1}(c+dx\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x),x]
```

```
[Out] (16*a^4*Log[c + d*x] + 64*a^3*b*(ArcSin[c + d*x]*Log[1 - E^((2*I)*ArcSin[c
+ d*x])] - (I/2)*(ArcSin[c + d*x]^2 + PolyLog[2, E^((2*I)*ArcSin[c + d*x])]
)) + 4*a^2*b^2*((-I)*Pi^3 + (8*I)*ArcSin[c + d*x]^3 + 24*ArcSin[c + d*x]^2*
Log[1 - E^((-2*I)*ArcSin[c + d*x])] + (24*I)*ArcSin[c + d*x]*PolyLog[2, E^(
(-2*I)*ArcSin[c + d*x])] + 12*PolyLog[3, E^((-2*I)*ArcSin[c + d*x])]) - I*a
*b^3*(Pi^4 - 16*ArcSin[c + d*x]^4 + (64*I)*ArcSin[c + d*x]^3*Log[1 - E^((-2
*I)*ArcSin[c + d*x])] - 96*ArcSin[c + d*x]^2*PolyLog[2, E^((-2*I)*ArcSin[c
+ d*x])] + (96*I)*ArcSin[c + d*x]*PolyLog[3, E^((-2*I)*ArcSin[c + d*x])] +
48*PolyLog[4, E^((-2*I)*ArcSin[c + d*x])]) + 16*b^4*((-I/160)*Pi^5 + (I/5)*
ArcSin[c + d*x]^5 + ArcSin[c + d*x]^4*Log[1 - E^((-2*I)*ArcSin[c + d*x])] +
 (2*I)*ArcSin[c + d*x]^3*PolyLog[2, E^((-2*I)*ArcSin[c + d*x])] + 3*ArcSin[
c + d*x]^2*PolyLog[3, E^((-2*I)*ArcSin[c + d*x])] - (3*I)*ArcSin[c + d*x]*P
olyLog[4, E^((-2*I)*ArcSin[c + d*x])] - (3*PolyLog[5, E^((-2*I)*ArcSin[c +
d*x])])/2))/(16*d*e)
```

Maple [B] time = 0.045, size = 1295, normalized size = 6.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^4/(d*e*x+c*e),x)
```

```
[Out] -4*I/d*a^3*b/e*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-2*I/d*a^2*b^2/e*ar
csin(d*x+c)^3-2*I/d*a^3*b/e*arcsin(d*x+c)^2-4*I/d*a^3*b/e*polylog(2,I*(d*x+
c)+(1-(d*x+c)^2)^(1/2))-12*I/d*a^2*b^2/e*arcsin(d*x+c)*polylog(2,I*(d*x+c)+
(1-(d*x+c)^2)^(1/2))+12/d*a^2*b^2/e*polylog(3,I*(d*x+c)+(1-(d*x+c)^2)^(1/2)
)+12/d*b^4/e*arcsin(d*x+c)^2*polylog(3,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+12/d*
b^4/e*arcsin(d*x+c)^2*polylog(3,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+1/d*b^4/e*a
rcsin(d*x+c)^4*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+1/d*b^4/e*arcsin(d*x+c)^
4*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+12/d*a^2*b^2/e*polylog(3,-I*(d*x+c)-(
1-(d*x+c)^2)^(1/2))-1/5*I/d*b^4/e*arcsin(d*x+c)^5-4*I/d*b^4/e*arcsin(d*x+c)
```

```
^3*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-4*I/d*b^4/e*arcsin(d*x+c)^3*pol
ylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+24*I/d*b^4/e*arcsin(d*x+c)*polylog(4
,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+24*I/d*b^4/e*arcsin(d*x+c)*polylog(4,-I*(d*
x+c)-(1-(d*x+c)^2)^(1/2))+24/d*a*b^3/e*arcsin(d*x+c)*polylog(3,-I*(d*x+c)-(
1-(d*x+c)^2)^(1/2))+6/d*a^2*b^2/e*arcsin(d*x+c)^2*ln(1-I*(d*x+c)-(1-(d*x+c)
^2)^(1/2))+4/d*a*b^3/e*arcsin(d*x+c)^3*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+
4/d*a^3*b/e*arcsin(d*x+c)*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+4/d*a^3*b/e*a
rcsin(d*x+c)*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+6/d*a^2*b^2/e*arcsin(d*x+c
)^2*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+24/d*a*b^3/e*arcsin(d*x+c)*polylog(
3,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+4/d*a*b^3/e*arcsin(d*x+c)^3*ln(1-I*(d*x+c)
-(1-(d*x+c)^2)^(1/2))+24*I/d*a*b^3/e*polylog(4,-I*(d*x+c)-(1-(d*x+c)^2)^(1/
2))+24*I/d*a*b^3/e*polylog(4,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-I/d*a*b^3/e*arc
sin(d*x+c)^4-24/d*b^4/e*polylog(5,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+1/d*a^4/e
*ln(d*x+c)-24/d*b^4/e*polylog(5,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-12*I/d*a*b^3
/e*arcsin(d*x+c)^2*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-12*I/d*a*b^3/e*
arcsin(d*x+c)^2*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-12*I/d*a^2*b^2/e*
arcsin(d*x+c)*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b^4 \arcsin\left(dx+c\right)^4 + 4\,ab^3 \arcsin\left(dx+c\right)^3 + 6\,a^2b^2 \arcsin\left(dx+c\right)^2 + 4\,a^3b \arcsin\left(dx+c\right) + a^4}{dex+ce}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e),x, algorithm="fricas")
```

```
[Out] integral((b^4*arcsin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6*a^2*b^2*arc
sin(d*x + c)^2 + 4*a^3*b*arcsin(d*x + c) + a^4)/(d*e*x + c*e), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{a^4}{c+dx}\,dx + \int \frac{b^4 \operatorname{asin}^4(c+dx)}{c+dx}\,dx + \int \frac{4ab^3 \operatorname{asin}^3(c+dx)}{c+dx}\,dx + \int \frac{6a^2b^2 \operatorname{asin}^2(c+dx)}{c+dx}\,dx + \int \frac{4a^3b \operatorname{asin}(c+dx)}{c+dx}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**4/(d*e*x+c*e),x)
```

```
[Out] (Integral(a**4/(c + d*x), x) + Integral(b**4*asin(c + d*x)**4/(c + d*x), x)
 + Integral(4*a*b**3*asin(c + d*x)**3/(c + d*x), x) + Integral(6*a**2*b**2*
asin(c + d*x)**2/(c + d*x), x) + Integral(4*a**3*b*asin(c + d*x)/(c + d*x),
 x))/e
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b \arcsin(dx+c) + a)^4}{dex + ce}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^4/(d*e*x + c*e), x)
```

3.211 $\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{(ce+dex)^2}\,dx$

Optimal. Leaf size=270

$$-\frac{24b^3\text{PolyLog}\left(3,-e^{i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de^2}+\frac{24b^3\text{PolyLog}\left(3,e^{i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de^2}+12ib^2\text{Po}$$

```
[Out] -((a + b*ArcSin[c + d*x])^4/(d*e^2*(c + d*x))) - (8*b*(a + b*ArcSin[c + d*x
])^3*ArcTanh[E^(I*ArcSin[c + d*x])])/(d*e^2) + ((12*I)*b^2*(a + b*ArcSin[c
+ d*x])^2*PolyLog[2, -E^(I*ArcSin[c + d*x])])/(d*e^2) - ((12*I)*b^2*(a + b*
ArcSin[c + d*x])^2*PolyLog[2, E^(I*ArcSin[c + d*x])])/(d*e^2) - (24*b^3*(a
+ b*ArcSin[c + d*x])*PolyLog[3, -E^(I*ArcSin[c + d*x])])/(d*e^2) + (24*b^3*
(a + b*ArcSin[c + d*x])*PolyLog[3, E^(I*ArcSin[c + d*x])])/(d*e^2) - ((24*I
)*b^4*PolyLog[4, -E^(I*ArcSin[c + d*x])])/(d*e^2) + ((24*I)*b^4*PolyLog[4,
E^(I*ArcSin[c + d*x])])/(d*e^2)
```

Rubi [A] time = 0.312955, antiderivative size = 270, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 9, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.391, Rules used = {4805, 12, 4627, 4709, 4183, 2531, 6609, 2282, 6589}

$$-\frac{24b^3\text{PolyLog}\left(3,-e^{i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de^2}+\frac{24b^3\text{PolyLog}\left(3,e^{i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de^2}+12ib^2\text{Po}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x)^2,x]
```

```
[Out] -((a + b*ArcSin[c + d*x])^4/(d*e^2*(c + d*x))) - (8*b*(a + b*ArcSin[c + d*x
])^3*ArcTanh[E^(I*ArcSin[c + d*x])])/(d*e^2) + ((12*I)*b^2*(a + b*ArcSin[c
+ d*x])^2*PolyLog[2, -E^(I*ArcSin[c + d*x])])/(d*e^2) - ((12*I)*b^2*(a + b*
ArcSin[c + d*x])^2*PolyLog[2, E^(I*ArcSin[c + d*x])])/(d*e^2) - (24*b^3*(a
+ b*ArcSin[c + d*x])*PolyLog[3, -E^(I*ArcSin[c + d*x])])/(d*e^2) + (24*b^3*
(a + b*ArcSin[c + d*x])*PolyLog[3, E^(I*ArcSin[c + d*x])])/(d*e^2) - ((24*I
)*b^4*PolyLog[4, -E^(I*ArcSin[c + d*x])])/(d*e^2) + ((24*I)*b^4*PolyLog[4,
E^(I*ArcSin[c + d*x])])/(d*e^2)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
```

```
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{(ce+dex)^2}\,dx = \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^4}{e^2x^2}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^4}{x^2}\,dx, x, c+dx\right)}{de^2}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{de^2(c+dx)} + \frac{(4b)\,\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^3}{x\sqrt{1-x^2}}\,dx, x, c+dx\right)}{de^2}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{de^2(c+dx)} + \frac{(4b)\,\text{Subst}\left(\int (a+bx)^3\csc(x)\,dx, x, \sin^{-1}(c+dx)\right)}{de^2}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{de^2(c+dx)} - \frac{8b\left(a+b\sin^{-1}(c+dx)\right)^3\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)}{de^2} - \frac{\left(12b^2\right)\text{Subst}}{}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{de^2(c+dx)} - \frac{8b\left(a+b\sin^{-1}(c+dx)\right)^3\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)}{de^2} + \frac{12ib^2\left(a+b\,\text{si}\right.}{}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{de^2(c+dx)} - \frac{8b\left(a+b\sin^{-1}(c+dx)\right)^3\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)}{de^2} + \frac{12ib^2\left(a+b\,\text{si}\right.}{}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{de^2(c+dx)} - \frac{8b\left(a+b\sin^{-1}(c+dx)\right)^3\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)}{de^2} + \frac{12ib^2\left(a+b\,\text{si}\right.}{}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{de^2(c+dx)} - \frac{8b\left(a+b\sin^{-1}(c+dx)\right)^3\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)}{de^2} + \frac{12ib^2\left(a+b\,\text{si}\right.}{}$$

<u>Mathematica</u> [B] time = 1.75632, size = 575, normalized size = 2.13

$$\frac{6a^2b^2\left(2i\text{PolyLog}\left(2,-e^{i\sin^{-1}(c+dx)}\right) - 2i\text{PolyLog}\left(2,e^{i\sin^{-1}(c+dx)}\right) + \sin^{-1}(c+dx)\left(-\frac{\sin^{-1}(c+dx)}{c+dx} + 2\log\left(1-e^{i\sin^{-1}(c+dx)}\right)\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x)^2,x]
```

```
[Out] (-(a^4/(c + d*x)) - 4*a^3*b*(ArcSin[c + d*x]/(c + d*x) + Log[((c + d*x)*Csc
[ArcSin[c + d*x]/2])/2] - Log[Sin[ArcSin[c + d*x]/2]]) + 6*a^2*b^2*(ArcSin[
c + d*x]*(-(ArcSin[c + d*x]/(c + d*x)) + 2*Log[1 - E^(I*ArcSin[c + d*x])] -
```

```
 2*Log[1 + E^(I*ArcSin[c + d*x])]) + (2*I)*PolyLog[2, -E^(I*ArcSin[c + d*x]
)] - (2*I)*PolyLog[2, E^(I*ArcSin[c + d*x])]) + 4*a*b^3*(-(ArcSin[c + d*x]^
3/(c + d*x)) + 3*ArcSin[c + d*x]^2*Log[1 - E^(I*ArcSin[c + d*x])] - 3*ArcSi
n[c + d*x]^2*Log[1 + E^(I*ArcSin[c + d*x])] + (6*I)*ArcSin[c + d*x]*PolyLog
[2, -E^(I*ArcSin[c + d*x])] - (6*I)*ArcSin[c + d*x]*PolyLog[2, E^(I*ArcSin[
c + d*x])] - 6*PolyLog[3, -E^(I*ArcSin[c + d*x])] + 6*PolyLog[3, E^(I*ArcSi
n[c + d*x])]) + b^4*((-I/2)*Pi^4 + I*ArcSin[c + d*x]^4 - ArcSin[c + d*x]^4/
(c + d*x) + 4*ArcSin[c + d*x]^3*Log[1 - E^((-I)*ArcSin[c + d*x])] - 4*ArcSi
n[c + d*x]^3*Log[1 + E^(I*ArcSin[c + d*x])] + (12*I)*ArcSin[c + d*x]^2*Poly
Log[2, E^((-I)*ArcSin[c + d*x])] + (12*I)*ArcSin[c + d*x]^2*PolyLog[2, -E^(
I*ArcSin[c + d*x])] + 24*ArcSin[c + d*x]*PolyLog[3, E^((-I)*ArcSin[c + d*x]
)] - 24*ArcSin[c + d*x]*PolyLog[3, -E^(I*ArcSin[c + d*x])] - (24*I)*PolyLog
[4, E^((-I)*ArcSin[c + d*x])] - (24*I)*PolyLog[4, -E^(I*ArcSin[c + d*x])]))
/(d*e^2)
```

Maple [B] time = 0.076, size = 911, normalized size = 3.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^2,x)
```

```
[Out] -1/d*a^4/e^2/(d*x+c)-1/d*b^4/e^2/(d*x+c)*arcsin(d*x+c)^4+4/d*b^4/e^2*arcsin
(d*x+c)^3*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-4/d*b^4/e^2*arcsin(d*x+c)^3*l
n(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+24/d*b^4/e^2*arcsin(d*x+c)*polylog(3,I*(
d*x+c)+(1-(d*x+c)^2)^(1/2))-24/d*b^4/e^2*arcsin(d*x+c)*polylog(3,-I*(d*x+c)
-(1-(d*x+c)^2)^(1/2))+12*I/d*a^2*b^2/e^2*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)
^(1/2))-24*I/d*a*b^3/e^2*arcsin(d*x+c)*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1
/2))-12*I/d*b^4/e^2*arcsin(d*x+c)^2*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2)
)-12*I/d*a^2*b^2/e^2*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-4/d*a*b^3/e^2
/(d*x+c)*arcsin(d*x+c)^3-12/d*a*b^3/e^2*arcsin(d*x+c)^2*ln(1+I*(d*x+c)+(1-(
d*x+c)^2)^(1/2))+24*I*b^4*polylog(4,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))/d/e^2-24
/d*a*b^3/e^2*polylog(3,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+12/d*a*b^3/e^2*arcsi
n(d*x+c)^2*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+12*I/d*b^4/e^2*arcsin(d*x+c)
^2*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+24/d*a*b^3/e^2*polylog(3,I*(d*
x+c)+(1-(d*x+c)^2)^(1/2))-6/d*a^2*b^2/e^2/(d*x+c)*arcsin(d*x+c)^2+12/d*a^2*
b^2/e^2*arcsin(d*x+c)*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-12/d*a^2*b^2/e^2*
arcsin(d*x+c)*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-24*I*b^4*polylog(4,-I*(d*
x+c)-(1-(d*x+c)^2)^(1/2))/d/e^2+24*I/d*a*b^3/e^2*arcsin(d*x+c)*polylog(2,-I
*(d*x+c)-(1-(d*x+c)^2)^(1/2))-4/d*a^3*b/e^2/(d*x+c)*arcsin(d*x+c)-4/d*a^3*b
/e^2*arctanh(1/(1-(d*x+c)^2)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^4\arcsin\left(dx+c\right)^4+4\,ab^3\arcsin\left(dx+c\right)^3+6\,a^2b^2\arcsin\left(dx+c\right)^2+4\,a^3b\arcsin\left(dx+c\right)+a^4}{d^2e^2x^2+2\,cde^2x+c^2e^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^2,x, algorithm="fricas")
```

```
[Out] integral((b^4*arcsin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6*a^2*b^2*arc
sin(d*x + c)^2 + 4*a^3*b*arcsin(d*x + c) + a^4)/(d^2*e^2*x^2 + 2*c*d*e^2*x
+ c^2*e^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int\frac{a^4}{c^2+2cdx+d^2x^2}\,dx+\int\frac{b^4\operatorname{asin}^4\left(c+dx\right)}{c^2+2cdx+d^2x^2}\,dx+\int\frac{4ab^3\operatorname{asin}^3\left(c+dx\right)}{c^2+2cdx+d^2x^2}\,dx+\int\frac{6a^2b^2\operatorname{asin}^2\left(c+dx\right)}{c^2+2cdx+d^2x^2}\,dx+\int\frac{4a^3b\operatorname{asin}\left(c+dx\right)}{c^2+2cdx+d^2x^2}\,dx}{e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**4/(d*e*x+c*e)**2,x)
```

```
[Out] (Integral(a**4/(c**2 + 2*c*d*x + d**2*x**2), x) + Integral(b**4*asin(c + d*
x)**4/(c**2 + 2*c*d*x + d**2*x**2), x) + Integral(4*a*b**3*asin(c + d*x)**3
/(c**2 + 2*c*d*x + d**2*x**2), x) + Integral(6*a**2*b**2*asin(c + d*x)**2/(
c**2 + 2*c*d*x + d**2*x**2), x) + Integral(4*a**3*b*asin(c + d*x)/(c**2 + 2
```

```
*c*d*x + d**2*x**2), x))/e**2
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b \arcsin(dx + c) + a)^4}{(dex + ce)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^4/(d*e*x + c*e)^2, x)
```

3.212 $\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{(ce+dex)^3}\,dx$

Optimal. Leaf size=198

$$-\frac{6ib^3\text{PolyLog}\left(2,e^{2i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de^3}+\frac{3b^4\text{PolyLog}\left(3,e^{2i\sin^{-1}(c+dx)}\right)}{de^3}+\frac{6b^2\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)\left(a+b\right.}{de^3}$$

```
[Out] ((-2*I)*b*(a + b*ArcSin[c + d*x])^3)/(d*e^3) - (2*b*Sqrt[1 - (c + d*x)^2]*(
a + b*ArcSin[c + d*x])^3)/(d*e^3*(c + d*x)) - (a + b*ArcSin[c + d*x])^4/(2*
d*e^3*(c + d*x)^2) + (6*b^2*(a + b*ArcSin[c + d*x])^2*Log[1 - E^((2*I)*ArcS
in[c + d*x])])/(d*e^3) - ((6*I)*b^3*(a + b*ArcSin[c + d*x])*PolyLog[2, E^((
2*I)*ArcSin[c + d*x])])/(d*e^3) + (3*b^4*PolyLog[3, E^((2*I)*ArcSin[c + d*x
])])/(d*e^3)
```

Rubi [A] time = 0.319608, antiderivative size = 198, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 10, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.435, Rules used = {4805, 12, 4627, 4681, 4625, 3717, 2190, 2531, 2282, 6589}

$$-\frac{6ib^3\text{PolyLog}\left(2,e^{2i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de^3}+\frac{3b^4\text{PolyLog}\left(3,e^{2i\sin^{-1}(c+dx)}\right)}{de^3}+\frac{6b^2\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)\left(a+b\right.}{de^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x)^3,x]
```


```
[Out] ((-2*I)*b*(a + b*ArcSin[c + d*x])^3)/(d*e^3) - (2*b*Sqrt[1 - (c + d*x)^2]*(
a + b*ArcSin[c + d*x])^3)/(d*e^3*(c + d*x)) - (a + b*ArcSin[c + d*x])^4/(2*
d*e^3*(c + d*x)^2) + (6*b^2*(a + b*ArcSin[c + d*x])^2*Log[1 - E^((2*I)*ArcS
in[c + d*x])])/(d*e^3) - ((6*I)*b^3*(a + b*ArcSin[c + d*x])*PolyLog[2, E^((
2*I)*ArcSin[c + d*x])])/(d*e^3) + (3*b^4*PolyLog[3, E^((2*I)*ArcSin[c + d*x
])])/(d*e^3)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4681

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^F
racPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c
^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d,
 e, f, m, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] &
& NeQ[m, -1]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
```

```
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{(ce+dex)^3}\,dx = \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^4}{e^3x^3}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^4}{x^3}\,dx, x, c+dx\right)}{de^3}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{2de^3(c+dx)^2} + \frac{(2b)\,\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^3}{x^2\sqrt{1-x^2}}\,dx, x, c+dx\right)}{de^3}$$

$$= -\frac{2b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^3}{de^3(c+dx)} - \frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{2de^3(c+dx)^2} + \frac{\left(6b^2\right)\text{Subst}\left(\int \frac{(a+}{}\right.}{}$$

$$= -\frac{2b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^3}{de^3(c+dx)} - \frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{2de^3(c+dx)^2} + \frac{\left(6b^2\right)\text{Subst}\left(\int(a+\right.}{}$$

$$= -\frac{2ib\left(a+b\sin^{-1}(c+dx)\right)^3}{de^3} - \frac{2b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^3}{de^3(c+dx)} - \frac{\left(a+b\sin^{-1}(c+\right.}{2de^3(c+dx}$$

$$= -\frac{2ib\left(a+b\sin^{-1}(c+dx)\right)^3}{de^3} - \frac{2b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^3}{de^3(c+dx)} - \frac{\left(a+b\sin^{-1}(c+\right.}{2de^3(c+dx}$$

$$= -\frac{2ib\left(a+b\sin^{-1}(c+dx)\right)^3}{de^3} - \frac{2b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^3}{de^3(c+dx)} - \frac{\left(a+b\sin^{-1}(c+\right.}{2de^3(c+dx}$$

$$= -\frac{2ib\left(a+b\sin^{-1}(c+dx)\right)^3}{de^3} - \frac{2b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^3}{de^3(c+dx)} - \frac{\left(a+b\sin^{-1}(c+\right.}{2de^3(c+dx}$$

$$= -\frac{2ib\left(a+b\sin^{-1}(c+dx)\right)^3}{de^3} - \frac{2b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^3}{de^3(c+dx)} - \frac{\left(a+b\sin^{-1}(c+\right.}{2de^3(c+dx}$$

Mathematica [A] time = 1.20757, size = 385, normalized size = 1.94

$$\frac{8ab^3\left(-3i\left(\sin^{-1}(c+dx)^2+\text{PolyLog}\left(2,e^{2i\sin^{-1}(c+dx)}\right)\right)-\frac{\sin^{-1}(c+dx)^3}{(c+dx)^2}-\frac{3\sqrt{1-(c+dx)^2}\sin^{-1}(c+dx)^2}{c+dx}+6\sin^{-1}(c+dx)\log\left(1-\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x)^3,x]
```

```
[Out] ((-2*a^4)/(c + d*x)^2 - (8*a^3*b*Sqrt[1 - (c + d*x)^2])/(c + d*x) - (8*a^3*
b*ArcSin[c + d*x])/(c + d*x)^2 - (2*b^4*ArcSin[c + d*x]^4)/(c + d*x)^2 + 24
*a^2*b^2*(-((Sqrt[1 - (c + d*x)^2]*ArcSin[c + d*x])/(c + d*x)) - ArcSin[c +
 d*x]^2/(2*(c + d*x)^2) + Log[c + d*x]) + 8*a*b^3*((-3*Sqrt[1 - (c + d*x)^2
]*ArcSin[c + d*x]^2)/(c + d*x) - ArcSin[c + d*x]^3/(c + d*x)^2 + 6*ArcSin[c
 + d*x]*Log[1 - E^((2*I)*ArcSin[c + d*x])] - (3*I)*(ArcSin[c + d*x]^2 + Pol
yLog[2, E^((2*I)*ArcSin[c + d*x])])) + b^4*((-I)*Pi^3 + (8*I)*ArcSin[c + d*
x]^3 - (8*Sqrt[1 - (c + d*x)^2]*ArcSin[c + d*x]^3)/(c + d*x) + 24*ArcSin[c
+ d*x]^2*Log[1 - E^((-2*I)*ArcSin[c + d*x])] + (24*I)*ArcSin[c + d*x]*PolyL
og[2, E^((-2*I)*ArcSin[c + d*x])] + 12*PolyLog[3, E^((-2*I)*ArcSin[c + d*x]
)]))/(4*d*e^3)
```

Maple [B] time = 0.085, size = 747, normalized size = 3.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^3,x)
```

```
[Out] -1/2/d*a^4/e^3/(d*x+c)^2-12*I/d*a*b^3/e^3*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2
)^(1/2))-2/d*b^4/e^3*arcsin(d*x+c)^3/(d*x+c)*(1-(d*x+c)^2)^(1/2)-1/2/d*b^4/
e^3*arcsin(d*x+c)^4/(d*x+c)^2+6/d*b^4/e^3*arcsin(d*x+c)^2*ln(1+I*(d*x+c)+(1
-(d*x+c)^2)^(1/2))-12*I/d*a*b^3/e^3*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2)
)+12/d*b^4/e^3*polylog(3,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+6/d*b^4/e^3*arcsin
(d*x+c)^2*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-2*I/d*b^4/e^3*arcsin(d*x+c)^3
+12/d*b^4/e^3*polylog(3,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-12*I/d*b^4/e^3*arcsi
n(d*x+c)*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-6/d*a*b^3/e^3*arcsin(d*x+
c)^2/(d*x+c)*(1-(d*x+c)^2)^(1/2)-2/d*a*b^3/e^3*arcsin(d*x+c)^3/(d*x+c)^2+12
/d*a*b^3/e^3*arcsin(d*x+c)*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+12/d*a*b^3/e
^3*arcsin(d*x+c)*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-6*I/d*a*b^3/e^3*arcsin
(d*x+c)^2-12*I/d*b^4/e^3*arcsin(d*x+c)*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(
1/2))-3/d*a^2*b^2/e^3*arcsin(d*x+c)^2/(d*x+c)^2-6/d*a^2*b^2/e^3*arcsin(d*x+
c)/(d*x+c)*(1-(d*x+c)^2)^(1/2)+6/d*a^2*b^2/e^3*ln(d*x+c)-2/d*a^3*b/e^3/(d*x
+c)^2*arcsin(d*x+c)-2/d*a^3*b/e^3/(d*x+c)*(1-(d*x+c)^2)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^4 \arcsin(dx+c)^4 + 4\,ab^3 \arcsin(dx+c)^3 + 6\,a^2b^2 \arcsin(dx+c)^2 + 4\,a^3b \arcsin(dx+c) + a^4}{d^3e^3x^3 + 3\,cd^2e^3x^2 + 3\,c^2de^3x + c^3e^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^3,x, algorithm="fricas")
```

```
[Out] integral((b^4*arcsin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6*a^2*b^2*arc
sin(d*x + c)^2 + 4*a^3*b*arcsin(d*x + c) + a^4)/(d^3*e^3*x^3 + 3*c*d^2*e^3*
x^2 + 3*c^2*d*e^3*x + c^3*e^3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{a^4}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx + \int \frac{b^4 \operatorname{asin}^4(c+dx)}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx + \int \frac{4ab^3 \operatorname{asin}^3(c+dx)}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx + \int \frac{6a^2b^2 \operatorname{asin}^2(c+dx)}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx + \int \frac{4a^3b \operatorname{asin}(}{c^3+3c^2dx+3cd}}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**4/(d*e*x+c*e)**3,x)
```

```
[Out] (Integral(a**4/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integr
al(b**4*asin(c + d*x)**4/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x
) + Integral(4*a*b**3*asin(c + d*x)**3/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 +
 d**3*x**3), x) + Integral(6*a**2*b**2*asin(c + d*x)**2/(c**3 + 3*c**2*d*x
+ 3*c*d**2*x**2 + d**3*x**3), x) + Integral(4*a**3*b*asin(c + d*x)/(c**3 +
3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x))/e**3
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b \arcsin(dx+c) + a)^4}{(dex+ce)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^3,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^4/(d*e*x + c*e)^3, x)
```

3.213 $\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{(ce+dex)^4}\,dx$

Optimal. Leaf size=439

$$-\frac{4b^3\text{PolyLog}\left(3,-e^{i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de^4}+\frac{4b^3\text{PolyLog}\left(3,e^{i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de^4}+\frac{2ib^2\text{PolyL}}{}$$

```
[Out] (-2*b^2*(a + b*ArcSin[c + d*x])^2)/(d*e^4*(c + d*x)) - (2*b*Sqrt[1 - (c + d
*x)^2]*(a + b*ArcSin[c + d*x])^3)/(3*d*e^4*(c + d*x)^2) - (a + b*ArcSin[c +
 d*x])^4/(3*d*e^4*(c + d*x)^3) - (8*b^3*(a + b*ArcSin[c + d*x])*ArcTanh[E^(
I*ArcSin[c + d*x])])/(d*e^4) - (4*b*(a + b*ArcSin[c + d*x])^3*ArcTanh[E^(I*
ArcSin[c + d*x])])/(3*d*e^4) + ((4*I)*b^4*PolyLog[2, -E^(I*ArcSin[c + d*x])
])/(d*e^4) + ((2*I)*b^2*(a + b*ArcSin[c + d*x])^2*PolyLog[2, -E^(I*ArcSin[c
 + d*x])])/(d*e^4) - ((4*I)*b^4*PolyLog[2, E^(I*ArcSin[c + d*x])])/(d*e^4)
- ((2*I)*b^2*(a + b*ArcSin[c + d*x])^2*PolyLog[2, E^(I*ArcSin[c + d*x])])/(
d*e^4) - (4*b^3*(a + b*ArcSin[c + d*x])*PolyLog[3, -E^(I*ArcSin[c + d*x])])
/(d*e^4) + (4*b^3*(a + b*ArcSin[c + d*x])*PolyLog[3, E^(I*ArcSin[c + d*x])]
)/(d*e^4) - ((4*I)*b^4*PolyLog[4, -E^(I*ArcSin[c + d*x])])/(d*e^4) + ((4*I)
*b^4*PolyLog[4, E^(I*ArcSin[c + d*x])])/(d*e^4)
```

Rubi [A] time = 0.576085, antiderivative size = 439, normalized size of antiderivative = 1., number of steps used = 21, number of rules used = 12, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.522, Rules used = {4805, 12, 4627, 4701, 4709, 4183, 2531, 6609, 2282, 6589, 2279, 2391}

$$-\frac{4b^3\text{PolyLog}\left(3,-e^{i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de^4}+\frac{4b^3\text{PolyLog}\left(3,e^{i\sin^{-1}(c+dx)}\right)\left(a+b\sin^{-1}(c+dx)\right)}{de^4}+\frac{2ib^2\text{PolyL}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x)^4,x]
```


```
[Out] (-2*b^2*(a + b*ArcSin[c + d*x])^2)/(d*e^4*(c + d*x)) - (2*b*Sqrt[1 - (c + d
*x)^2]*(a + b*ArcSin[c + d*x])^3)/(3*d*e^4*(c + d*x)^2) - (a + b*ArcSin[c +
 d*x])^4/(3*d*e^4*(c + d*x)^3) - (8*b^3*(a + b*ArcSin[c + d*x])*ArcTanh[E^(
I*ArcSin[c + d*x])])/(d*e^4) - (4*b*(a + b*ArcSin[c + d*x])^3*ArcTanh[E^(I*
ArcSin[c + d*x])])/(3*d*e^4) + ((4*I)*b^4*PolyLog[2, -E^(I*ArcSin[c + d*x])
])/(d*e^4) + ((2*I)*b^2*(a + b*ArcSin[c + d*x])^2*PolyLog[2, -E^(I*ArcSin[c
 + d*x])])/(d*e^4) - ((4*I)*b^4*PolyLog[2, E^(I*ArcSin[c + d*x])])/(d*e^4)
- ((2*I)*b^2*(a + b*ArcSin[c + d*x])^2*PolyLog[2, E^(I*ArcSin[c + d*x])])/(
```

```
d*e^4) - (4*b^3*(a + b*ArcSin[c + d*x])*PolyLog[3, -E^(I*ArcSin[c + d*x])])
/(d*e^4) + (4*b^3*(a + b*ArcSin[c + d*x])*PolyLog[3, E^(I*ArcSin[c + d*x])]
)/(d*e^4) - ((4*I)*b^4*PolyLog[4, -E^(I*ArcSin[c + d*x])])/(d*e^4) + ((4*I)
*b^4*PolyLog[4, E^(I*ArcSin[c + d*x])])/(d*e^4)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
```

```
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{(ce+dex)^4}\,dx = \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^4}{e^4x^4}\,dx,x,c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^4}{x^4}\,dx,x,c+dx\right)}{de^4}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{3de^4(c+dx)^3} + \frac{(4b)\,\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^3}{x^3\sqrt{1-x^2}}\,dx,x,c+dx\right)}{3de^4}$$

$$= -\frac{2b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^3}{3de^4(c+dx)^2} - \frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{3de^4(c+dx)^3} + \frac{(2b)\,\text{Subst}\left(\int \frac{\left(a+b\sin\right.}{x\sqrt{}}\right.}{3d}$$

$$= -\frac{2b^2\left(a+b\sin^{-1}(c+dx)\right)^2}{de^4(c+dx)} - \frac{2b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^3}{3de^4(c+dx)^2} - \frac{\left(a+b\sin^{-1}(c+\right.}{3de^4(c+dx)}$$

$$= -\frac{2b^2\left(a+b\sin^{-1}(c+dx)\right)^2}{de^4(c+dx)} - \frac{2b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^3}{3de^4(c+dx)^2} - \frac{\left(a+b\sin^{-1}(c+\right.}{3de^4(c+dx)}$$

$$= -\frac{2b^2\left(a+b\sin^{-1}(c+dx)\right)^2}{de^4(c+dx)} - \frac{2b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^3}{3de^4(c+dx)^2} - \frac{\left(a+b\sin^{-1}(c+\right.}{3de^4(c+dx)}$$

$$= -\frac{2b^2\left(a+b\sin^{-1}(c+dx)\right)^2}{de^4(c+dx)} - \frac{2b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^3}{3de^4(c+dx)^2} - \frac{\left(a+b\sin^{-1}(c+\right.}{3de^4(c+dx)}$$

$$= -\frac{2b^2\left(a+b\sin^{-1}(c+dx)\right)^2}{de^4(c+dx)} - \frac{2b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^3}{3de^4(c+dx)^2} - \frac{\left(a+b\sin^{-1}(c+\right.}{3de^4(c+dx)}$$

$$= -\frac{2b^2\left(a+b\sin^{-1}(c+dx)\right)^2}{de^4(c+dx)} - \frac{2b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^3}{3de^4(c+dx)^2} - \frac{\left(a+b\sin^{-1}(c+\right.}{3de^4(c+dx)}$$

Mathematica [B] time = 10.4079, size = 1274, normalized size = 2.9

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x)^4,x]
```

```
[Out] -a^4/(3*d*e^4*(c + d*x)^3) + (a^2*b^2*((8*I)*PolyLog[2, -E^(I*ArcSin[c + d*
x])] - (2*(2 + 4*ArcSin[c + d*x]^2 - 2*Cos[2*ArcSin[c + d*x]] - 3*(c + d*x)
*ArcSin[c + d*x]*Log[1 - E^(I*ArcSin[c + d*x])] + 3*(c + d*x)*ArcSin[c + d*
x]*Log[1 + E^(I*ArcSin[c + d*x])] + (4*I)*(c + d*x)^3*PolyLog[2, E^(I*ArcSi
n[c + d*x])] + 2*ArcSin[c + d*x]*Sin[2*ArcSin[c + d*x]] + ArcSin[c + d*x]*L
og[1 - E^(I*ArcSin[c + d*x])]*Sin[3*ArcSin[c + d*x]] - ArcSin[c + d*x]*Log[
1 + E^(I*ArcSin[c + d*x])]*Sin[3*ArcSin[c + d*x]]))/(c + d*x)^3))/(4*d*e^4)
 + (a*b^3*(-24*ArcSin[c + d*x]*Cot[ArcSin[c + d*x]/2] - 4*ArcSin[c + d*x]^3
*Cot[ArcSin[c + d*x]/2] - 6*ArcSin[c + d*x]^2*Csc[ArcSin[c + d*x]/2]^2 - (c
 + d*x)*ArcSin[c + d*x]^3*Csc[ArcSin[c + d*x]/2]^4 + 24*ArcSin[c + d*x]^2*L
og[1 - E^(I*ArcSin[c + d*x])] - 24*ArcSin[c + d*x]^2*Log[1 + E^(I*ArcSin[c
+ d*x])] + 48*Log[Tan[ArcSin[c + d*x]/2]] + (48*I)*ArcSin[c + d*x]*PolyLog[
2, -E^(I*ArcSin[c + d*x])] - (48*I)*ArcSin[c + d*x]*PolyLog[2, E^(I*ArcSin[
c + d*x])] - 48*PolyLog[3, -E^(I*ArcSin[c + d*x])] + 48*PolyLog[3, E^(I*Arc
Sin[c + d*x])] + 6*ArcSin[c + d*x]^2*Sec[ArcSin[c + d*x]/2]^2 - (16*ArcSin[
c + d*x]^3*Sin[ArcSin[c + d*x]/2]^4)/(c + d*x)^3 - 24*ArcSin[c + d*x]*Tan[A
rcSin[c + d*x]/2] - 4*ArcSin[c + d*x]^3*Tan[ArcSin[c + d*x]/2]))/(12*d*e^4)
 + (b^4*((-2*I)*Pi^4 + (4*I)*ArcSin[c + d*x]^4 - 24*ArcSin[c + d*x]^2*Cot[A
rcSin[c + d*x]/2] - 2*ArcSin[c + d*x]^4*Cot[ArcSin[c + d*x]/2] - 4*ArcSin[c
 + d*x]^3*Csc[ArcSin[c + d*x]/2]^2 - ((c + d*x)*ArcSin[c + d*x]^4*Csc[ArcSi
n[c + d*x]/2]^4)/2 + 16*ArcSin[c + d*x]^3*Log[1 - E^((-I)*ArcSin[c + d*x])]
 + 96*ArcSin[c + d*x]*Log[1 - E^(I*ArcSin[c + d*x])] - 96*ArcSin[c + d*x]*L
og[1 + E^(I*ArcSin[c + d*x])] - 16*ArcSin[c + d*x]^3*Log[1 + E^(I*ArcSin[c
+ d*x])] + (48*I)*ArcSin[c + d*x]^2*PolyLog[2, E^((-I)*ArcSin[c + d*x])] +
(48*I)*(2 + ArcSin[c + d*x]^2)*PolyLog[2, -E^(I*ArcSin[c + d*x])] - (96*I)*
PolyLog[2, E^(I*ArcSin[c + d*x])] + 96*ArcSin[c + d*x]*PolyLog[3, E^((-I)*A
rcSin[c + d*x])] - 96*ArcSin[c + d*x]*PolyLog[3, -E^(I*ArcSin[c + d*x])] -
(96*I)*PolyLog[4, E^((-I)*ArcSin[c + d*x])] - (96*I)*PolyLog[4, -E^(I*ArcSi
n[c + d*x])] + 4*ArcSin[c + d*x]^3*Sec[ArcSin[c + d*x]/2]^2 - (8*ArcSin[c +
 d*x]^4*Sin[ArcSin[c + d*x]/2]^4)/(c + d*x)^3 - 24*ArcSin[c + d*x]^2*Tan[Ar
cSin[c + d*x]/2] - 2*ArcSin[c + d*x]^4*Tan[ArcSin[c + d*x]/2]))/(24*d*e^4)
+ (4*a^3*b*(-(ArcSin[c + d*x]*Cot[ArcSin[c + d*x]/2])/12 - Csc[ArcSin[c + d
*x]/2]^2/24 - (ArcSin[c + d*x]*Cot[ArcSin[c + d*x]/2]*Csc[ArcSin[c + d*x]/2
]^2)/24 - Log[Cos[ArcSin[c + d*x]/2]]/6 + Log[Sin[ArcSin[c + d*x]/2]]/6 + S
ec[ArcSin[c + d*x]/2]^2/24 - (ArcSin[c + d*x]*Tan[ArcSin[c + d*x]/2])/12 -
(ArcSin[c + d*x]*Sec[ArcSin[c + d*x]/2]^2*Tan[ArcSin[c + d*x]/2])/24))/(d*e
^4)
```

Maple [B] time = 0.128, size = 1327, normalized size = 3.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^4,x)
```

```
[Out] 4*I*b^4*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))/d/e^4-4*I*b^4*polylog(2,I
*(d*x+c)+(1-(d*x+c)^2)^(1/2))/d/e^4-4*I*b^4*polylog(4,-I*(d*x+c)-(1-(d*x+c)
^2)^(1/2))/d/e^4+4*I*b^4*polylog(4,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))/d/e^4-4/d
*a*b^3/e^4*polylog(3,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+4/d*a*b^3/e^4*polylog(
3,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+2/3/d*b^4/e^4*arcsin(d*x+c)^3*ln(1-I*(d*x+
c)-(1-(d*x+c)^2)^(1/2))+4/d*b^4/e^4*arcsin(d*x+c)*polylog(3,I*(d*x+c)+(1-(d
*x+c)^2)^(1/2))-4/d*b^4/e^4*arcsin(d*x+c)*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2
))-4/d*b^4/e^4*arcsin(d*x+c)*polylog(3,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-2/3/
d*b^4/e^4*arcsin(d*x+c)^3*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-2/d*b^4/e^4/(
d*x+c)*arcsin(d*x+c)^2-2/d*a^2*b^2/e^4/(d*x+c)-2/3/d*a^3*b/e^4*arctanh(1/(1
-(d*x+c)^2)^(1/2))+4/d*b^4/e^4*arcsin(d*x+c)*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(
1/2))-1/3/d*b^4/e^4/(d*x+c)^3*arcsin(d*x+c)^4-8/d*a*b^3/e^4*arctanh(I*(d*x+
c)+(1-(d*x+c)^2)^(1/2))-2/3/d*b^4/e^4/(d*x+c)^2*arcsin(d*x+c)^3*(1-(d*x+c)^
2)^(1/2)-2/3/d*a^3*b/e^4/(d*x+c)^2*(1-(d*x+c)^2)^(1/2)-4/3/d*a^3*b/e^4/(d*x
+c)^3*arcsin(d*x+c)-4/d*a*b^3/e^4/(d*x+c)*arcsin(d*x+c)-2/d*a*b^3/e^4*arcsi
n(d*x+c)^2*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-2/d*a^2*b^2/e^4*arcsin(d*x+c
)*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-2*I/d*a^2*b^2/e^4*polylog(2,I*(d*x+c)
+(1-(d*x+c)^2)^(1/2))+2*I/d*a^2*b^2/e^4*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^
(1/2))+2/d*a^2*b^2/e^4*arcsin(d*x+c)*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-4/
3/d*a*b^3/e^4/(d*x+c)^3*arcsin(d*x+c)^3+2/d*a*b^3/e^4*arcsin(d*x+c)^2*ln(1-
I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-2/d*a^2*b^2/e^4/(d*x+c)^3*arcsin(d*x+c)^2-2*
I/d*b^4/e^4*arcsin(d*x+c)^2*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+2*I/d*
b^4/e^4*arcsin(d*x+c)^2*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-4*I/d*a*b
^3/e^4*arcsin(d*x+c)*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-1/3/d*a^4/e^4
/(d*x+c)^3-2/d*a*b^3/e^4/(d*x+c)^2*arcsin(d*x+c)^2*(1-(d*x+c)^2)^(1/2)-2/d*
a^2*b^2/e^4/(d*x+c)^2*arcsin(d*x+c)*(1-(d*x+c)^2)^(1/2)+4*I/d*a*b^3/e^4*arc
sin(d*x+c)*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^4}{3\left(d^4e^4x^3+3\,cd^3e^4x^2+3\,c^2d^2e^4x+c^3de^4\right)}-\frac{b^4\arctan\left(dx+c,\sqrt{dx+c+1}\sqrt{-dx-c+1}\right)^4+2\left(d^4e^4x^3+3\,cd^3e^4x^2+3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^4,x, algorithm="maxima")
```

```
[Out] -1/3*a^4/(d^4*e^4*x^3 + 3*c*d^3*e^4*x^2 + 3*c^2*d^2*e^4*x + c^3*d*e^4) - 1/
3*(b^4*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^4 + 3*(d^4*e^
```

```
4*x^3 + 3*c*d^3*e^4*x^2 + 3*c^2*d^2*e^4*x + c^3*d*e^4)*integrate(2/3*(2*(b^
4*d*x + b^4*c)*sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)*arctan2(d*x + c, sqrt(d
*x + c + 1)*sqrt(-d*x - c + 1))^3 - 6*(a*b^3*d^2*x^2 + 2*a*b^3*c*d*x + a*b^
3*c^2 - a*b^3)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^3 - 9
*(a^2*b^2*d^2*x^2 + 2*a^2*b^2*c*d*x + a^2*b^2*c^2 - a^2*b^2)*arctan2(d*x +
c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2 - 6*(a^3*b*d^2*x^2 + 2*a^3*b*c*d
*x + a^3*b*c^2 - a^3*b)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c +
1)))/(d^6*e^4*x^6 + 6*c*d^5*e^4*x^5 + (15*c^2 - 1)*d^4*e^4*x^4 + 4*(5*c^3 -
 c)*d^3*e^4*x^3 + 3*(5*c^4 - 2*c^2)*d^2*e^4*x^2 + 2*(3*c^5 - 2*c^3)*d*e^4*x
 + (c^6 - c^4)*e^4), x))/(d^4*e^4*x^3 + 3*c*d^3*e^4*x^2 + 3*c^2*d^2*e^4*x +
 c^3*d*e^4)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\operatorname{integral}\left(\frac{b^4 \arcsin\left(dx+c\right)^4 + 4\,ab^3 \arcsin\left(dx+c\right)^3 + 6\,a^2b^2 \arcsin\left(dx+c\right)^2 + 4\,a^3b \arcsin\left(dx+c\right) + a^4}{d^4e^4x^4 + 4\,cd^3e^4x^3 + 6\,c^2d^2e^4x^2 + 4\,c^3de^4x + c^4e^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^4,x, algorithm="fricas")
```

```
[Out] integral((b^4*arcsin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6*a^2*b^2*arc
sin(d*x + c)^2 + 4*a^3*b*arcsin(d*x + c) + a^4)/(d^4*e^4*x^4 + 4*c*d^3*e^4*
x^3 + 6*c^2*d^2*e^4*x^2 + 4*c^3*d*e^4*x + c^4*e^4), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{a^4}{c^4+4c^3dx+6c^2d^2x^2+4cd^3x^3+d^4x^4}\,dx + \int \frac{b^4\operatorname{asin}^4\left(c+dx\right)}{c^4+4c^3dx+6c^2d^2x^2+4cd^3x^3+d^4x^4}\,dx + \int \frac{4ab^3\operatorname{asin}^3\left(c+dx\right)}{c^4+4c^3dx+6c^2d^2x^2+4cd^3x^3+d^4x^4}\,dx + \int \frac{6a^2b^2\operatorname{asin}^2\left(c\right.}{c^4+4c^3dx+6c^2d^2x^2+4}}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**4/(d*e*x+c*e)**4,x)
```

```
[Out] (Integral(a**4/(c**4 + 4*c**3*d*x + 6*c**2*d**2*x**2 + 4*c*d**3*x**3 + d**4
*x**4), x) + Integral(b**4*asin(c + d*x)**4/(c**4 + 4*c**3*d*x + 6*c**2*d**
2*x**2 + 4*c*d**3*x**3 + d**4*x**4), x) + Integral(4*a*b**3*asin(c + d*x)**
3/(c**4 + 4*c**3*d*x + 6*c**2*d**2*x**2 + 4*c*d**3*x**3 + d**4*x**4), x) +
Integral(6*a**2*b**2*asin(c + d*x)**2/(c**4 + 4*c**3*d*x + 6*c**2*d**2*x**2
```

```
+ 4*c*d**3*x**3 + d**4*x**4), x) + Integral(4*a**3*b*asin(c + d*x)/(c**4 +
4*c**3*d*x + 6*c**2*d**2*x**2 + 4*c*d**3*x**3 + d**4*x**4), x))/e**4
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b \arcsin(dx + c) + a)^4}{(dex + ce)^4} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^4,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^4/(d*e*x + c*e)^4, x)
```

3.214 $\int \left(a+b\sin^{-1}(c+dx)\right)^5 \, dx$

Optimal. Leaf size=164

$$-\frac{60b^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{d}-\frac{20b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^3}{d}+120ab^4x+\frac{5b\sqrt{1-(c+dx)^2}\left(a+b\right.}{d}$$

```
[Out] 120*a*b^4*x + (120*b^5*Sqrt[1 - (c + d*x)^2])/d + (120*b^5*(c + d*x)*ArcSin
[c + d*x])/d - (60*b^3*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^2)/d -
 (20*b^2*(c + d*x)*(a + b*ArcSin[c + d*x])^3)/d + (5*b*Sqrt[1 - (c + d*x)^2
]*(a + b*ArcSin[c + d*x])^4)/d + ((c + d*x)*(a + b*ArcSin[c + d*x])^5)/d
```

Rubi [A] time = 0.208758, antiderivative size = 164, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 4, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4803, 4619, 4677, 261}

$$-\frac{60b^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{d}-\frac{20b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^3}{d}+120ab^4x+\frac{5b\sqrt{1-(c+dx)^2}\left(a+b\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^5,x]
```


```
[Out] 120*a*b^4*x + (120*b^5*Sqrt[1 - (c + d*x)^2])/d + (120*b^5*(c + d*x)*ArcSin
[c + d*x])/d - (60*b^3*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^2)/d -
 (20*b^2*(c + d*x)*(a + b*ArcSin[c + d*x])^3)/d + (5*b*Sqrt[1 - (c + d*x)^2
]*(a + b*ArcSin[c + d*x])^4)/d + ((c + d*x)*(a + b*ArcSin[c + d*x])^5)/d
```


Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rubi steps

$$\int \left(a+b\sin^{-1}(c+dx)\right)^5\,dx = \frac{\text{Subst}\left(\int \left(a+b\sin^{-1}(x)\right)^5\,dx,x,c+dx\right)}{d}$$

$$= \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^5}{d} - \frac{(5b)\,\text{Subst}\left(\int \frac{x\left(a+b\sin^{-1}(x)\right)^4}{\sqrt{1-x^2}}\,dx,x,c+dx\right)}{d}$$

$$= \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^4}{d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^5}{d} - \frac{\left(20b^2\right)\text{Subst}}{}$$

$$= -\frac{20b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^3}{d} + \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^4}{d} + \frac{(c+dx}{}$$

$$= -\frac{60b^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{d} - \frac{20b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^3}{d} + \frac{5b\sqrt{1}}{}$$

$$= 120ab^4x - \frac{60b^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{d} - \frac{20b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)}{d}$$

$$= 120ab^4x + \frac{120b^5(c+dx)\sin^{-1}(c+dx)}{d} - \frac{60b^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{d} - \frac{20b}{}$$

$$= 120ab^4x + \frac{120b^5\sqrt{1-(c+dx)^2}}{d} + \frac{120b^5(c+dx)\sin^{-1}(c+dx)}{d} - \frac{60b^3\sqrt{1-(c+dx)^2}\,(a+}{d}$$

Mathematica [A] time = 0.199896, size = 150, normalized size = 0.91

$$\frac{-20b^2\left(-6b^2\left(a(c+dx)+b\sqrt{1-(c+dx)^2}+b(c+dx)\sin^{-1}(c+dx)\right)+(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^3+3b\sqrt{1-(c+dx}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^5,x]
```

```
[Out] (5*b*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^4 + (c + d*x)*(a + b*Arc
Sin[c + d*x])^5 - 20*b^2*(3*b*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])
^2 + (c + d*x)*(a + b*ArcSin[c + d*x])^3 - 6*b^2*(a*(c + d*x) + b*Sqrt[1 -
(c + d*x)^2] + b*(c + d*x)*ArcSin[c + d*x])))/d
```

Maple [B] time = 0.038, size = 367, normalized size = 2.2

$$\frac{1}{d}\left(a^5(dx+c)+b^5\left((\arcsin(dx+c))^5(dx+c)+5(\arcsin(dx+c))^4\sqrt{1-(dx+c)^2}-20(\arcsin(dx+c))^3(dx+c)-\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^5,x)
```

```
[Out] 1/d*(a^5*(d*x+c)+b^5*(arcsin(d*x+c)^5*(d*x+c)+5*arcsin(d*x+c)^4*(1-(d*x+c)^
2)^(1/2)-20*arcsin(d*x+c)^3*(d*x+c)-60*arcsin(d*x+c)^2*(1-(d*x+c)^2)^(1/2)+
120*(1-(d*x+c)^2)^(1/2)+120*(d*x+c)*arcsin(d*x+c))+5*a*b^4*((d*x+c)*arcsin(
d*x+c)^4+4*arcsin(d*x+c)^3*(1-(d*x+c)^2)^(1/2)-12*arcsin(d*x+c)^2*(d*x+c)+2
4*d*x+24*c-24*(1-(d*x+c)^2)^(1/2)*arcsin(d*x+c))+10*a^2*b^3*(arcsin(d*x+c)^
3*(d*x+c)+3*arcsin(d*x+c)^2*(1-(d*x+c)^2)^(1/2)-6*(1-(d*x+c)^2)^(1/2)-6*(d*
x+c)*arcsin(d*x+c))+10*a^3*b^2*(arcsin(d*x+c)^2*(d*x+c)-2*d*x-2*c+2*(1-(d*x
+c)^2)^(1/2)*arcsin(d*x+c))+5*a^4*b*((d*x+c)*arcsin(d*x+c)+(1-(d*x+c)^2)^(1
/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.39977, size = 749, normalized size = 4.57

$$\frac{\left(b^5dx + b^5c\right)\arcsin\left(dx + c\right)^5 + 5\left(ab^4dx + ab^4c\right)\arcsin\left(dx + c\right)^4 + 10\left(\left(a^2b^3 - 2\,b^5\right)dx + \left(a^2b^3 - 2\,b^5\right)c\right)\arcsin\left(dx + c\right)^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^5,x, algorithm="fricas")
```

```
[Out] ((b^5*d*x + b^5*c)*arcsin(d*x + c)^5 + 5*(a*b^4*d*x + a*b^4*c)*arcsin(d*x +
 c)^4 + 10*((a^2*b^3 - 2*b^5)*d*x + (a^2*b^3 - 2*b^5)*c)*arcsin(d*x + c)^3
+ (a^5 - 20*a^3*b^2 + 120*a*b^4)*d*x + 10*((a^3*b^2 - 6*a*b^4)*d*x + (a^3*b
^2 - 6*a*b^4)*c)*arcsin(d*x + c)^2 + 5*((a^4*b - 12*a^2*b^3 + 24*b^5)*d*x +
 (a^4*b - 12*a^2*b^3 + 24*b^5)*c)*arcsin(d*x + c) + 5*(b^5*arcsin(d*x + c)^
4 + 4*a*b^4*arcsin(d*x + c)^3 + a^4*b - 12*a^2*b^3 + 24*b^5 + 6*(a^2*b^3 -
2*b^5)*arcsin(d*x + c)^2 + 4*(a^3*b^2 - 6*a*b^4)*arcsin(d*x + c))*sqrt(-d^2
*x^2 - 2*c*d*x - c^2 + 1))/d
```

Sympy [A] time = 5.19545, size = 663, normalized size = 4.04

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**5,x)
```

```
[Out] Piecewise((a**5*x + 5*a**4*b*c*asin(c + d*x)/d + 5*a**4*b*x*asin(c + d*x) +
 5*a**4*b*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/d + 10*a**3*b**2*c*asin(c +
 d*x)**2/d + 10*a**3*b**2*x*asin(c + d*x)**2 - 20*a**3*b**2*x + 20*a**3*b**
2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/d + 10*a**2*b**3*c*as
in(c + d*x)**3/d - 60*a**2*b**3*c*asin(c + d*x)/d + 10*a**2*b**3*x*asin(c +
 d*x)**3 - 60*a**2*b**3*x*asin(c + d*x) + 30*a**2*b**3*sqrt(-c**2 - 2*c*d*x
 - d**2*x**2 + 1)*asin(c + d*x)**2/d - 60*a**2*b**3*sqrt(-c**2 - 2*c*d*x -
d**2*x**2 + 1)/d + 5*a*b**4*c*asin(c + d*x)**4/d - 60*a*b**4*c*asin(c + d*x
)**2/d + 5*a*b**4*x*asin(c + d*x)**4 - 60*a*b**4*x*asin(c + d*x)**2 + 120*a
```

```
*b**4*x + 20*a*b**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**3/
d - 120*a*b**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/d + b**5
*c*asin(c + d*x)**5/d - 20*b**5*c*asin(c + d*x)**3/d + 120*b**5*c*asin(c +
d*x)/d + b**5*x*asin(c + d*x)**5 - 20*b**5*x*asin(c + d*x)**3 + 120*b**5*x*
asin(c + d*x) + 5*b**5*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)*
*4/d - 60*b**5*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/d + 1
20*b**5*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/d, Ne(d, 0)), (x*(a + b*asin(
c))**5, True))
```

Giac [B] time = 1.21896, size = 651, normalized size = 3.97

$$\frac{(dx+c)b^5 \arcsin(dx+c)^5}{d} + \frac{5(dx+c)ab^4 \arcsin(dx+c)^4}{d} + \frac{5\sqrt{-(dx+c)^2+1}b^5 \arcsin(dx+c)^4}{d} + \frac{10(dx+c)a^2b^3 \, \mathrm{a}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^5,x, algorithm="giac")
```

```
[Out] (d*x + c)*b^5*arcsin(d*x + c)^5/d + 5*(d*x + c)*a*b^4*arcsin(d*x + c)^4/d +
 5*sqrt(-(d*x + c)^2 + 1)*b^5*arcsin(d*x + c)^4/d + 10*(d*x + c)*a^2*b^3*ar
csin(d*x + c)^3/d - 20*(d*x + c)*b^5*arcsin(d*x + c)^3/d + 20*sqrt(-(d*x +
c)^2 + 1)*a*b^4*arcsin(d*x + c)^3/d + 10*(d*x + c)*a^3*b^2*arcsin(d*x + c)^
2/d - 60*(d*x + c)*a*b^4*arcsin(d*x + c)^2/d + 30*sqrt(-(d*x + c)^2 + 1)*a^
2*b^3*arcsin(d*x + c)^2/d - 60*sqrt(-(d*x + c)^2 + 1)*b^5*arcsin(d*x + c)^2
/d + 5*(d*x + c)*a^4*b*arcsin(d*x + c)/d - 60*(d*x + c)*a^2*b^3*arcsin(d*x
+ c)/d + 120*(d*x + c)*b^5*arcsin(d*x + c)/d + 20*sqrt(-(d*x + c)^2 + 1)*a^
3*b^2*arcsin(d*x + c)/d - 120*sqrt(-(d*x + c)^2 + 1)*a*b^4*arcsin(d*x + c)/
d + (d*x + c)*a^5/d - 20*(d*x + c)*a^3*b^2/d + 120*(d*x + c)*a*b^4/d + 5*sq
rt(-(d*x + c)^2 + 1)*a^4*b/d - 60*sqrt(-(d*x + c)^2 + 1)*a^2*b^3/d + 120*sq
rt(-(d*x + c)^2 + 1)*b^5/d
```

3.215 $\int \frac{(ce+dex)^4}{a+b\sin^{-1}(c+dx)}\,dx$

Optimal. Leaf size=213

$$\frac{e^4\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{8bd}-\frac{3e^4\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{16bd}+\frac{e^4\cos\left(\frac{5a}{b}\right)\text{CosIntegral}\left(\frac{5(a+b\sin^{-1}(c+dx))}{b}\right)}{16bd}$$

```
[Out] (e^4*Cos[a/b]*CosIntegral[(a + b*ArcSin[c + d*x])/b])/(8*b*d) - (3*e^4*Cos[
(3*a)/b]*CosIntegral[(3*(a + b*ArcSin[c + d*x]))/b])/(16*b*d) + (e^4*Cos[(5
*a)/b]*CosIntegral[(5*(a + b*ArcSin[c + d*x]))/b])/(16*b*d) + (e^4*Sin[a/b]
*SinIntegral[(a + b*ArcSin[c + d*x])/b])/(8*b*d) - (3*e^4*Sin[(3*a)/b]*SinI
ntegral[(3*(a + b*ArcSin[c + d*x]))/b])/(16*b*d) + (e^4*Sin[(5*a)/b]*SinInt
egral[(5*(a + b*ArcSin[c + d*x]))/b])/(16*b*d)
```

Rubi [A] time = 0.408438, antiderivative size = 209, normalized size of antiderivative = 0.98, number of steps used = 14, number of rules used = 7, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.304, Rules used = {4805, 12, 4635, 4406, 3303, 3299, 3302}

$$\frac{e^4\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)}{8bd}-\frac{3e^4\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(c+dx)\right)}{16bd}+\frac{e^4\cos\left(\frac{5a}{b}\right)\text{CosIntegr}}{16}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^4/(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (e^4*Cos[a/b]*CosIntegral[a/b + ArcSin[c + d*x]])/(8*b*d) - (3*e^4*Cos[(3*a
)/b]*CosIntegral[(3*a)/b + 3*ArcSin[c + d*x]])/(16*b*d) + (e^4*Cos[(5*a)/b]
*CosIntegral[(5*a)/b + 5*ArcSin[c + d*x]])/(16*b*d) + (e^4*Sin[a/b]*SinInte
gral[a/b + ArcSin[c + d*x]])/(8*b*d) - (3*e^4*Sin[(3*a)/b]*SinIntegral[(3*a
)/b + 3*ArcSin[c + d*x]])/(16*b*d) + (e^4*Sin[(5*a)/b]*SinIntegral[(5*a)/b
+ 5*ArcSin[c + d*x]])/(16*b*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rubi steps

$$\int \frac{(ce+dex)^4}{a+b\sin^{-1}(c+dx)}\,dx = \frac{\text{Subst}\left(\int \frac{e^4x^4}{a+b\sin^{-1}(x)}\,dx,x,c+dx\right)}{d}$$
$$= \frac{e^4\,\text{Subst}\left(\int \frac{x^4}{a+b\sin^{-1}(x)}\,dx,x,c+dx\right)}{d}$$
$$= \frac{e^4\,\text{Subst}\left(\int \frac{\cos(x)\sin^4(x)}{a+bx}\,dx,x,\sin^{-1}(c+dx)\right)}{d}$$
$$= \frac{e^4\,\text{Subst}\left(\int \left(\frac{\cos(x)}{8(a+bx)}-\frac{3\cos(3x)}{16(a+bx)}+\frac{\cos(5x)}{16(a+bx)}\right)dx,x,\sin^{-1}(c+dx)\right)}{d}$$
$$= \frac{e^4\,\text{Subst}\left(\int \frac{\cos(5x)}{a+bx}\,dx,x,\sin^{-1}(c+dx)\right)}{16d}+\frac{e^4\,\text{Subst}\left(\int \frac{\cos(x)}{a+bx}\,dx,x,\sin^{-1}(c+dx)\right)}{8d}-\frac{\left(3e^4\right)\text{Su}}{}$$
$$= \frac{\left(e^4\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+x\right)}{a+bx}\,dx,x,\sin^{-1}(c+dx)\right)}{8d}-\frac{\left(3e^4\cos\left(\frac{3a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{3a}{b}+3x\right)}{a+bx}\,dx,\right.}{16d}$$
$$= \frac{e^4\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)}{8bd}-\frac{3e^4\cos\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3a}{b}+3\sin^{-1}(c+dx)\right)}{16bd}+\frac{e^4\cos\left(\frac{5a}{b}\right)\text{Ci}\left(\right.}{}$$

Mathematica [A] time = 0.323096, size = 150, normalized size = 0.7

$$\frac{e^4\left(2\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)-3\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(3\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)\right)+\cos\left(\frac{5a}{b}\right)\text{CosIntegral}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^4/(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (e^4*(2*Cos[a/b]*CosIntegral[a/b + ArcSin[c + d*x]] - 3*Cos[(3*a)/b]*CosInt
egral[3*(a/b + ArcSin[c + d*x])] + Cos[(5*a)/b]*CosIntegral[5*(a/b + ArcSin
[c + d*x])] + 2*Sin[a/b]*SinIntegral[a/b + ArcSin[c + d*x]] - 3*Sin[(3*a)/b
]*SinIntegral[3*(a/b + ArcSin[c + d*x])] + Sin[(5*a)/b]*SinIntegral[5*(a/b
+ ArcSin[c + d*x])]))/(16*b*d)
```

Maple [A] time = 0.038, size = 155, normalized size = 0.7

$$-\frac{e^4}{16\,bd}\left(3\,\text{Si}\left(3\,\arcsin(dx+c)+3\,\frac{a}{b}\right)\sin\left(3\,\frac{a}{b}\right)+3\,\text{Ci}\left(3\,\arcsin(dx+c)+3\,\frac{a}{b}\right)\cos\left(3\,\frac{a}{b}\right)-\text{Si}\left(5\,\arcsin(dx+c)+5\,\frac{a}{b}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^4/(a+b*arcsin(d*x+c)),x)
```

```
[Out] -1/16/d*e^4*(3*Si(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)+3*Ci(3*arcsin(d*x+c)+3*
a/b)*cos(3*a/b)-Si(5*arcsin(d*x+c)+5*a/b)*sin(5*a/b)-Ci(5*arcsin(d*x+c)+5*a
/b)*cos(5*a/b)-2*Si(arcsin(d*x+c)+a/b)*sin(a/b)-2*Ci(arcsin(d*x+c)+a/b)*cos
(a/b))/b
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dex + ce)^4}{b \arcsin(dx + c) + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)^4/(b*arcsin(d*x + c) + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{d^4e^4x^4 + 4\,cd^3e^4x^3 + 6\,c^2d^2e^4x^2 + 4\,c^3de^4x + c^4e^4}{b \arcsin(dx + c) + a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral((d^4*e^4*x^4 + 4*c*d^3*e^4*x^3 + 6*c^2*d^2*e^4*x^2 + 4*c^3*d*e^4*x
 + c^4*e^4)/(b*arcsin(d*x + c) + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e^4\left(\int \frac{c^4}{a + b \operatorname{asin}(c + dx)}\, dx + \int \frac{d^4x^4}{a + b \operatorname{asin}(c + dx)}\, dx + \int \frac{4cd^3x^3}{a + b \operatorname{asin}(c + dx)}\, dx + \int \frac{6c^2d^2x^2}{a + b \operatorname{asin}(c + dx)}\, dx + \int \frac{}{a -}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**4/(a+b*asin(d*x+c)),x)
```

```
[Out] e**4*(Integral(c**4/(a + b*asin(c + d*x)), x) + Integral(d**4*x**4/(a + b*a
sin(c + d*x)), x) + Integral(4*c*d**3*x**3/(a + b*asin(c + d*x)), x) + Inte
gral(6*c**2*d**2*x**2/(a + b*asin(c + d*x)), x) + Integral(4*c**3*d*x/(a +
b*asin(c + d*x)), x))
```

Giac [B] time = 1.26859, size = 549, normalized size = 2.58

$$\frac{\cos\left(\frac{a}{b}\right)^{5}\operatorname{Ci}\left(\frac{5a}{b}+5\arcsin\left(dx+c\right)\right)e^{4}}{bd}+\frac{\cos\left(\frac{a}{b}\right)^{4}e^{4}\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{5a}{b}+5\arcsin\left(dx+c\right)\right)}{bd}-\frac{5\cos\left(\frac{a}{b}\right)^{3}\operatorname{Ci}\left(\frac{5a}{b}+5\arcsin\right.}{4bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] cos(a/b)^5*cos_integral(5*a/b + 5*arcsin(d*x + c))*e^4/(b*d) + cos(a/b)^4*e
^4*sin(a/b)*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b*d) - 5/4*cos(a/b)^3*
cos_integral(5*a/b + 5*arcsin(d*x + c))*e^4/(b*d) - 3/4*cos(a/b)^3*cos_inte
gral(3*a/b + 3*arcsin(d*x + c))*e^4/(b*d) - 3/4*cos(a/b)^2*e^4*sin(a/b)*sin
_integral(5*a/b + 5*arcsin(d*x + c))/(b*d) - 3/4*cos(a/b)^2*e^4*sin(a/b)*si
n_integral(3*a/b + 3*arcsin(d*x + c))/(b*d) + 5/16*cos(a/b)*cos_integral(5*
a/b + 5*arcsin(d*x + c))*e^4/(b*d) + 9/16*cos(a/b)*cos_integral(3*a/b + 3*a
rcsin(d*x + c))*e^4/(b*d) + 1/8*cos(a/b)*cos_integral(a/b + arcsin(d*x + c)
)*e^4/(b*d) + 1/16*e^4*sin(a/b)*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b*
d) + 3/16*e^4*sin(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b*d) + 1/8*
e^4*sin(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b*d)
```

3.216 $\int \frac{(ce+dex)^3}{a+b\sin^{-1}(c+dx)}\,dx$

Optimal. Leaf size=145

$$-\frac{e^3\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{4bd}+\frac{e^3\sin\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{8bd}+\frac{e^3\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2\left(a+b\sin^{-1}(c+\right.}{b}\right.}{4bd}$$

```
[Out] -(e^3*CosIntegral[(2*(a + b*ArcSin[c + d*x]))/b]*Sin[(2*a)/b])/(4*b*d) + (e
^3*CosIntegral[(4*(a + b*ArcSin[c + d*x]))/b]*Sin[(4*a)/b])/(8*b*d) + (e^3*
Cos[(2*a)/b]*SinIntegral[(2*(a + b*ArcSin[c + d*x]))/b])/(4*b*d) - (e^3*Cos
[(4*a)/b]*SinIntegral[(4*(a + b*ArcSin[c + d*x]))/b])/(8*b*d)
```

Rubi [A] time = 0.314128, antiderivative size = 145, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 7, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.304, Rules used = {4805, 12, 4635, 4406, 3303, 3299, 3302}

$$-\frac{e^3\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(c+dx)\right)}{4bd}+\frac{e^3\sin\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4a}{b}+4\sin^{-1}(c+dx)\right)}{8bd}+\frac{e^3\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}\right.}{4}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x]),x]
```

```
[Out] -(e^3*CosIntegral[(2*a)/b + 2*ArcSin[c + d*x]]*Sin[(2*a)/b])/(4*b*d) + (e^3
*CosIntegral[(4*a)/b + 4*ArcSin[c + d*x]]*Sin[(4*a)/b])/(8*b*d) + (e^3*Cos[
(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c + d*x]])/(4*b*d) - (e^3*Cos[(4*a)
/b]*SinIntegral[(4*a)/b + 4*ArcSin[c + d*x]])/(8*b*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rubi steps

$$\int \frac{(ce+dex)^3}{a+b\sin^{-1}(c+dx)}\,dx = \frac{\text{Subst}\left(\int \frac{e^3x^3}{a+b\sin^{-1}(x)}\,dx,x,c+dx\right)}{d}$$
$$= \frac{e^3\,\text{Subst}\left(\int \frac{x^3}{a+b\sin^{-1}(x)}\,dx,x,c+dx\right)}{d}$$
$$= \frac{e^3\,\text{Subst}\left(\int \frac{\cos(x)\sin^3(x)}{a+bx}\,dx,x,\sin^{-1}(c+dx)\right)}{d}$$
$$= \frac{e^3\,\text{Subst}\left(\int \left(\frac{\sin(2x)}{4(a+bx)}-\frac{\sin(4x)}{8(a+bx)}\right)dx,x,\sin^{-1}(c+dx)\right)}{d}$$
$$= -\frac{e^3\,\text{Subst}\left(\int \frac{\sin(4x)}{a+bx}\,dx,x,\sin^{-1}(c+dx)\right)}{8d}+\frac{e^3\,\text{Subst}\left(\int \frac{\sin(2x)}{a+bx}\,dx,x,\sin^{-1}(c+dx)\right)}{4d}$$
$$= \frac{\left(e^3\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx,x,\sin^{-1}(c+dx)\right)}{4d}-\frac{\left(e^3\cos\left(\frac{4a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{4a}{b}+4x\right)}{a+bx}\,d\right.}{8d}$$
$$= -\frac{e^3\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(c+dx)\right)\sin\left(\frac{2a}{b}\right)}{4bd}+\frac{e^3\text{Ci}\left(\frac{4a}{b}+4\sin^{-1}(c+dx)\right)\sin\left(\frac{4a}{b}\right)}{8bd}+\frac{e^3\cos\left(\frac{2a}{b}\right)}{}$$

Mathematica [A] time = 0.236173, size = 109, normalized size = 0.75

$$\frac{e^3\left(-2\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(2\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)\right)+\sin\left(\frac{4a}{b}\right)\text{CosIntegral}\left(4\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)\right)+2\cos\left(\frac{2a}{b}\right)\text{Si}\left(2\right.\right.}{8bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (e^3*(-2*CosIntegral[2*(a/b + ArcSin[c + d*x])]*Sin[(2*a)/b] + CosIntegral[
4*(a/b + ArcSin[c + d*x])]*Sin[(4*a)/b] + 2*Cos[(2*a)/b]*SinIntegral[2*(a/b
 + ArcSin[c + d*x])] - Cos[(4*a)/b]*SinIntegral[4*(a/b + ArcSin[c + d*x])])
)/(8*b*d)
```

Maple [A] time = 0.034, size = 112, normalized size = 0.8

$$-\frac{e^3}{8\,bd}\left(\text{Si}\left(4\,\arcsin(dx+c)+4\,\frac{a}{b}\right)\cos\left(4\,\frac{a}{b}\right)-\text{Ci}\left(4\,\arcsin(dx+c)+4\,\frac{a}{b}\right)\sin\left(4\,\frac{a}{b}\right)-2\,\text{Si}\left(2\,\arcsin(dx+c)+2\,\frac{a}{b}\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3/(a+b*arcsin(d*x+c)),x)
```

```
[Out] -1/8/d*e^3*(Si(4*arcsin(d*x+c)+4*a/b)*cos(4*a/b)-Ci(4*arcsin(d*x+c)+4*a/b)*
sin(4*a/b)-2*Si(2*arcsin(d*x+c)+2*a/b)*cos(2*a/b)+2*Ci(2*arcsin(d*x+c)+2*a/
b)*sin(2*a/b))/b
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dex + ce)^3}{b \arcsin(dx + c) + a} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)^3/(b*arcsin(d*x + c) + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{d^3e^3x^3 + 3\,cd^2e^3x^2 + 3\,c^2de^3x + c^3e^3}{b \arcsin(dx + c) + a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral((d^3*e^3*x^3 + 3*c*d^2*e^3*x^2 + 3*c^2*d*e^3*x + c^3*e^3)/(b*arcsi
n(d*x + c) + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e^3\left(\int \frac{c^3}{a + b \operatorname{asin}(c + dx)}\, dx + \int \frac{d^3x^3}{a + b \operatorname{asin}(c + dx)}\, dx + \int \frac{3cd^2x^2}{a + b \operatorname{asin}(c + dx)}\, dx + \int \frac{3c^2dx}{a + b \operatorname{asin}(c + dx)}\, dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3/(a+b*asin(d*x+c)),x)
```

```
[Out] e**3*(Integral(c**3/(a + b*asin(c + d*x)), x) + Integral(d**3*x**3/(a + b*a
sin(c + d*x)), x) + Integral(3*c*d**2*x**2/(a + b*asin(c + d*x)), x) + Inte
gral(3*c**2*d*x/(a + b*asin(c + d*x)), x))
```

Giac [A] time = 1.21758, size = 363, normalized size = 2.5

$$\frac{\cos\left(\frac{a}{b}\right)^{3}\operatorname{Ci}\left(\frac{4a}{b}+4\arcsin\left(dx+c\right)\right)e^{3}\sin\left(\frac{a}{b}\right)}{bd}-\frac{\cos\left(\frac{a}{b}\right)^{4}e^{3}\operatorname{Si}\left(\frac{4a}{b}+4\arcsin\left(dx+c\right)\right)}{bd}-\frac{\cos\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{4a}{b}+4\arcsin\left(\right.\right.}{2bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] cos(a/b)^3*cos_integral(4*a/b + 4*arcsin(d*x + c))*e^3*sin(a/b)/(b*d) - cos
(a/b)^4*e^3*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b*d) - 1/2*cos(a/b)*co
s_integral(4*a/b + 4*arcsin(d*x + c))*e^3*sin(a/b)/(b*d) - 1/2*cos(a/b)*cos
_integral(2*a/b + 2*arcsin(d*x + c))*e^3*sin(a/b)/(b*d) + cos(a/b)^2*e^3*si
n_integral(4*a/b + 4*arcsin(d*x + c))/(b*d) + 1/2*cos(a/b)^2*e^3*sin_integr
al(2*a/b + 2*arcsin(d*x + c))/(b*d) - 1/8*e^3*sin_integral(4*a/b + 4*arcsin
(d*x + c))/(b*d) - 1/4*e^3*sin_integral(2*a/b + 2*arcsin(d*x + c))/(b*d)
```

3.217 $\int \frac{(ce+dex)^2}{a+b\sin^{-1}(c+dx)} dx$

Optimal. Leaf size=141

$$\frac{e^2\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{4bd}-\frac{e^2\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{4bd}+\frac{e^2\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{4bd}-\frac{e^2}{}$$

```
[Out] (e^2*Cos[a/b]*CosIntegral[(a + b*ArcSin[c + d*x])/b])/(4*b*d) - (e^2*Cos[(3
*a)/b]*CosIntegral[(3*(a + b*ArcSin[c + d*x]))/b])/(4*b*d) + (e^2*Sin[a/b]*
SinIntegral[(a + b*ArcSin[c + d*x])/b])/(4*b*d) - (e^2*Sin[(3*a)/b]*SinInte
gral[(3*(a + b*ArcSin[c + d*x]))/b])/(4*b*d)
```

Rubi [A] time = 0.277519, antiderivative size = 137, normalized size of antiderivative = 0.97, number of steps used = 11, number of rules used = 7, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.304, Rules used = {4805, 12, 4635, 4406, 3303, 3299, 3302}

$$\frac{e^2\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)}{4bd}-\frac{e^2\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(c+dx)\right)}{4bd}+\frac{e^2\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(\right.}{4bd}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (e^2*Cos[a/b]*CosIntegral[a/b + ArcSin[c + d*x]])/(4*b*d) - (e^2*Cos[(3*a)/
b]*CosIntegral[(3*a)/b + 3*ArcSin[c + d*x]])/(4*b*d) + (e^2*Sin[a/b]*SinInt
egral[a/b + ArcSin[c + d*x]])/(4*b*d) - (e^2*Sin[(3*a)/b]*SinIntegral[(3*a)
/b + 3*ArcSin[c + d*x]])/(4*b*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rubi steps

$$\int \frac{(ce+dex)^2}{a+b\sin^{-1}(c+dx)}\,dx = \frac{\text{Subst}\left(\int \frac{e^2x^2}{a+b\sin^{-1}(x)}\,dx, x, c+dx\right)}{d}$$
$$= \frac{e^2\,\text{Subst}\left(\int \frac{x^2}{a+b\sin^{-1}(x)}\,dx, x, c+dx\right)}{d}$$
$$= \frac{e^2\,\text{Subst}\left(\int \frac{\cos(x)\sin^2(x)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{d}$$
$$= \frac{e^2\,\text{Subst}\left(\int \left(\frac{\cos(x)}{4(a+bx)} - \frac{\cos(3x)}{4(a+bx)}\right)dx, x, \sin^{-1}(c+dx)\right)}{d}$$
$$= \frac{e^2\,\text{Subst}\left(\int \frac{\cos(x)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{4d} - \frac{e^2\,\text{Subst}\left(\int \frac{\cos(3x)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{4d}$$
$$= \frac{\left(e^2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+x\right)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{4d} - \frac{\left(e^2\cos\left(\frac{3a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{3a}{b}+3x\right)}{a+bx}\,dx, x\right.}{4d}$$
$$= \frac{e^2\cos\left(\frac{a}{b}\right)\mathbf{Ci}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)}{4bd} - \frac{e^2\cos\left(\frac{3a}{b}\right)\mathbf{Ci}\left(\frac{3a}{b}+3\sin^{-1}(c+dx)\right)}{4bd} + \frac{e^2\sin\left(\frac{a}{b}\right)\mathbf{Si}\left(\frac{a}{b}+\right.}{4bd}$$

Mathematica [A] time = 0.19, size = 102, normalized size = 0.72

$$\frac{e^2\left(\cos\left(\frac{a}{b}\right)\textbf{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right) - \cos\left(\frac{3a}{b}\right)\textbf{CosIntegral}\left(3\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)\right) + \sin\left(\frac{a}{b}\right)\textbf{Si}\left(\frac{a}{b}+\sin^{-1}(c+\right.\right.}{4bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (e^2*(Cos[a/b]*CosIntegral[a/b + ArcSin[c + d*x]] - Cos[(3*a)/b]*CosIntegra
l[3*(a/b + ArcSin[c + d*x])] + Sin[a/b]*SinIntegral[a/b + ArcSin[c + d*x]]
- Sin[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c + d*x])]))/(4*b*d)
```

Maple [A] time = 0.034, size = 103, normalized size = 0.7

$$\frac{e^2}{4\,bd}\left(\mathrm{Si}\left(\arcsin(dx+c)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right) + \mathrm{Ci}\left(\arcsin(dx+c)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right) - \mathrm{Si}\left(3\,\arcsin(dx+c)+3\,\frac{a}{b}\right)\sin\left(3\,\frac{a}{b}\right) - \mathrm{Ci}\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2/(a+b*arcsin(d*x+c)),x)
```

```
[Out] 1/4/d*e^2*(Si(arcsin(d*x+c)+a/b)*sin(a/b)+Ci(arcsin(d*x+c)+a/b)*cos(a/b)-Si
(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)-Ci(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b))/b
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dex + ce)^2}{b \arcsin(dx + c) + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)^2/(b*arcsin(d*x + c) + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{d^2e^2x^2 + 2\,cde^2x + c^2e^2}{b \arcsin(dx + c) + a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral((d^2*e^2*x^2 + 2*c*d*e^2*x + c^2*e^2)/(b*arcsin(d*x + c) + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e^2\left(\int \frac{c^2}{a + b \operatorname{asin}(c + dx)}\, dx + \int \frac{d^2x^2}{a + b \operatorname{asin}(c + dx)}\, dx + \int \frac{2cdx}{a + b \operatorname{asin}(c + dx)}\, dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2/(a+b*asin(d*x+c)),x)
```

```
[Out] e**2*(Integral(c**2/(a + b*asin(c + d*x)), x) + Integral(d**2*x**2/(a + b*a
sin(c + d*x)), x) + Integral(2*c*d*x/(a + b*asin(c + d*x)), x))
```

Giac [A] time = 1.23363, size = 266, normalized size = 1.89

$$-\frac{\cos\left(\frac{a}{b}\right)^{3}\operatorname{Ci}\left(\frac{3a}{b}+3\arcsin\left(dx+c\right)\right)e^{2}}{bd}-\frac{\cos\left(\frac{a}{b}\right)^{2}e^{2}\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{3a}{b}+3\arcsin\left(dx+c\right)\right)}{bd}+\frac{3\cos\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{3a}{b}+3\arcsin\right.}{4bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] -cos(a/b)^3*cos_integral(3*a/b + 3*arcsin(d*x + c))*e^2/(b*d) - cos(a/b)^2*
e^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b*d) + 3/4*cos(a/b)*c
os_integral(3*a/b + 3*arcsin(d*x + c))*e^2/(b*d) + 1/4*cos(a/b)*cos_integra
l(a/b + arcsin(d*x + c))*e^2/(b*d) + 1/4*e^2*sin(a/b)*sin_integral(3*a/b +
3*arcsin(d*x + c))/(b*d) + 1/4*e^2*sin(a/b)*sin_integral(a/b + arcsin(d*x +
 c))/(b*d)
```

3.218 $\int \frac{ce+dex}{a+b\sin^{-1}(c+dx)}\,dx$

Optimal. Leaf size=69

$$\frac{e\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{2bd}-\frac{e\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{2bd}$$

```
[Out] -(e*CosIntegral[(2*(a + b*ArcSin[c + d*x]))/b]*Sin[(2*a)/b])/(2*b*d) + (e*C
os[(2*a)/b]*SinIntegral[(2*(a + b*ArcSin[c + d*x]))/b])/(2*b*d)
```

Rubi [A] time = 0.145213, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4805, 12, 4635, 4406, 3303, 3299, 3302}

$$\frac{e\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\sin^{-1}(c+dx)\right)}{2bd}-\frac{e\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(c+dx)\right)}{2bd}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)/(a + b*ArcSin[c + d*x]),x]
```

```
[Out] -(e*CosIntegral[(2*a)/b + 2*ArcSin[c + d*x]]*Sin[(2*a)/b])/(2*b*d) + (e*Cos
[(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c + d*x]])/(2*b*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
```

```
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rubi steps

$$\int \frac{ce+dex}{a+b\sin^{-1}(c+dx)}\,dx = \frac{\text{Subst}\left(\int \frac{ex}{a+b\sin^{-1}(x)}\,dx, x, c+dx\right)}{d}$$
$$= \frac{e\,\text{Subst}\left(\int \frac{x}{a+b\sin^{-1}(x)}\,dx, x, c+dx\right)}{d}$$
$$= \frac{e\,\text{Subst}\left(\int \frac{\cos(x)\sin(x)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{d}$$
$$= \frac{e\,\text{Subst}\left(\int \frac{\sin(2x)}{2(a+bx)}\,dx, x, \sin^{-1}(c+dx)\right)}{d}$$
$$= \frac{e\,\text{Subst}\left(\int \frac{\sin(2x)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{2d}$$
$$= \frac{\left(e\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{2d} - \frac{\left(e\sin\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx,\right.}{2d}$$
$$= -\frac{e\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(c+dx)\right)\sin\left(\frac{2a}{b}\right)}{2bd} + \frac{e\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\sin^{-1}(c+dx)\right)}{2bd}$$

Mathematica [A] time = 0.0852078, size = 61, normalized size = 0.88

$$\frac{e\left(\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\sin^{-1}(c+dx)\right)-\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(c+dx)\right)\right)}{2bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)/(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (e*(-(CosIntegral[(2*a)/b + 2*ArcSin[c + d*x]]*Sin[(2*a)/b]) + Cos[(2*a)/b]
*SinIntegral[(2*a)/b + 2*ArcSin[c + d*x]]))/(2*b*d)
```

Maple [A] time = 0.03, size = 60, normalized size = 0.9

$$\frac{e}{2\,bd}\left(\text{Si}\left(2\,\arcsin(dx+c)+2\,\frac{a}{b}\right)\cos\left(2\,\frac{a}{b}\right)-\text{Ci}\left(2\,\arcsin(dx+c)+2\,\frac{a}{b}\right)\sin\left(2\,\frac{a}{b}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)/(a+b*arcsin(d*x+c)),x)
```

```
[Out] 1/2/d*e*(Si(2*arcsin(d*x+c)+2*a/b)*cos(2*a/b)-Ci(2*arcsin(d*x+c)+2*a/b)*sin
(2*a/b))/b
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{dex + ce}{b \arcsin(dx + c) + a} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)/(b*arcsin(d*x + c) + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{dex + ce}{b \arcsin(dx + c) + a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral((d*e*x + c*e)/(b*arcsin(d*x + c) + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e\left(\int \frac{c}{a + b \operatorname{asin}(c + dx)} \, dx + \int \frac{dx}{a + b \operatorname{asin}(c + dx)} \, dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*asin(d*x+c)),x)
```

```
[Out] e*(Integral(c/(a + b*asin(c + d*x)), x) + Integral(d*x/(a + b*asin(c + d*x)
), x))
```

Giac [A] time = 1.22327, size = 132, normalized size = 1.91

$$-\frac{\cos\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{2a}{b}+2\arcsin\left(dx+c\right)\right)e\sin\left(\frac{a}{b}\right)}{bd}+\frac{\cos\left(\frac{a}{b}\right)^{2}e\operatorname{Si}\left(\frac{2a}{b}+2\arcsin\left(dx+c\right)\right)}{bd}-\frac{e\operatorname{Si}\left(\frac{2a}{b}+2\arcsin\left(dx+c\right)\right)}{2bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] -cos(a/b)*cos_integral(2*a/b + 2*arcsin(d*x + c))*e*sin(a/b)/(b*d) + cos(a/
b)^2*e*sin_integral(2*a/b + 2*arcsin(d*x + c))/(b*d) - 1/2*e*sin_integral(2
*a/b + 2*arcsin(d*x + c))/(b*d)
```

3.219 $\int \frac{1}{a+b\sin^{-1}(c+dx)}\,dx$

Optimal. Leaf size=57

$$\frac{\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{bd}+\frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{bd}$$

```
[Out] (Cos[a/b]*CosIntegral[(a + b*ArcSin[c + d*x])/b])/(b*d) + (Sin[a/b]*SinInte
gral[(a + b*ArcSin[c + d*x])/b])/(b*d)
```

Rubi [A] time = 0.0839661, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.417, Rules used = {4803, 4623, 3303, 3299, 3302}

$$\frac{\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{bd}+\frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{bd}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(-1),x]
```

```
[Out] (Cos[a/b]*CosIntegral[(a + b*ArcSin[c + d*x])/b])/(b*d) + (Sin[a/b]*SinInte
gral[(a + b*ArcSin[c + d*x])/b])/(b*d)
```

Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
```

```
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{1}{a+b\sin^{-1}(c+dx)}\,dx &= \frac{\text{Subst}\left(\int \frac{1}{a+b\sin^{-1}(x)}\,dx, x, c+dx\right)}{d}\\
&= \frac{\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}-\frac{x}{b}\right)}{x}\,dx, x, a+b\sin^{-1}(c+dx)\right)}{bd}\\
&= \frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\cos\left(\frac{x}{b}\right)}{x}\,dx, x, a+b\sin^{-1}(c+dx)\right)}{bd} + \frac{\sin\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\sin\left(\frac{x}{b}\right)}{x}\,dx, x, a+b\sin
\end{aligned}$$

$$= \frac{\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{bd} + \frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{bd}$$

Mathematica [A] time = 0.0795795, size = 48, normalized size = 0.84

$$\frac{\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)+\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)}{bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(-1),x]
```

```
[Out] (Cos[a/b]*CosIntegral[a/b + ArcSin[c + d*x]] + Sin[a/b]*SinIntegral[a/b + A
rcSin[c + d*x]])/(b*d)
```

Maple [A] time = 0.03, size = 52, normalized size = 0.9

$$\frac{1}{d}\left(\frac{1}{b}\mathrm{Si}\left(\arcsin\left(dx+c\right)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)+\frac{1}{b}\mathrm{Ci}\left(\arcsin\left(dx+c\right)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c)),x)
```

```
[Out] 1/d*(Si(arcsin(d*x+c)+a/b)*sin(a/b)/b+Ci(arcsin(d*x+c)+a/b)*cos(a/b)/b)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{b\arcsin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] integrate(1/(b*arcsin(d*x + c) + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{b\arcsin\left(dx+c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(1/(b*arcsin(d*x + c) + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{a+b\,\mathrm{asin}\,(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c)),x)
```

```
[Out] Integral(1/(a + b*asin(c + d*x)), x)
```

Giac [A] time = 1.15563, size = 72, normalized size = 1.26

$$\frac{\cos\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{a}{b}+\arcsin\left(dx+c\right)\right)}{bd}+\frac{\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a}{b}+\arcsin\left(dx+c\right)\right)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] cos(a/b)*cos_integral(a/b + arcsin(d*x + c))/(b*d) + sin(a/b)*sin_integral(
a/b + arcsin(d*x + c))/(b*d)
```

3.220 $\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)}\,dx$

Optimal. Leaf size=26

$$\frac{\text{Unintegrable}\left(\frac{1}{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)},x\right)}{e}$$

```
[Out] Unintegrable[1/((c + d*x)*(a + b*ArcSin[c + d*x])), x]/e
```

Rubi [A] time = 0.0638499, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])),x]

[Out] Defer[Subst][Defer[Int][1/(x*(a + b*ArcSin[x])), x], x, c + d*x]/(d*e)
```

Rubi steps

$$\begin{aligned}\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)}\,dx &= \frac{\text{Subst}\left(\int \frac{1}{ex\left(a+b\sin^{-1}(x)\right)}\,dx,x,c+dx\right)}{d}\\ &= \frac{\text{Subst}\left(\int \frac{1}{x\left(a+b\sin^{-1}(x)\right)}\,dx,x,c+dx\right)}{de}\end{aligned}$$

Mathematica [A] time = 0.7783, size = 0, normalized size = 0.

$$\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])),x]

[Out] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])), x]
```

Maple [A] time = 0.095, size = 0, normalized size = 0.

$$\int \frac{1}{(dex+ce)\,(a+b\arcsin(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c)),x)

[Out] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(dex+ce)(b\arcsin(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c)),x, algorithm="maxima")

[Out] integrate(1/((d*e*x + c*e)*(b*arcsin(d*x + c) + a)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{adex+ace+(bdex+bce)\arcsin(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c)),x, algorithm="fricas")

[Out] integral(1/(a*d*e*x + a*c*e + (b*d*e*x + b*c*e)*arcsin(d*x + c)), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{1}{ac+adx+bc\operatorname{asin}(c+dx)+bdx\operatorname{asin}(c+dx)}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*asin(d*x+c)),x)
```

```
[Out] Integral(1/(a*c + a*d*x + b*c*asin(c + d*x) + b*d*x*asin(c + d*x)), x)/e
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(dex+ce)(b\arcsin(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(1/((d*e*x + c*e)*(b*arcsin(d*x + c) + a)), x)
```

3.221 $\int \frac{(ce+dex)^4}{\left(a+b\sin^{-1}(c+dx)\right)^2}\,dx$

Optimal. Leaf size=258

$$\frac{e^4\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{8b^2d}-\frac{9e^4\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{16b^2d}+\frac{5e^4\sin\left(\frac{5a}{b}\right)\text{CosIntegral}\left(\frac{5(a+}{}\right.}{16b^2d}$$

```
[Out] -((e^4*(c + d*x)^4*Sqrt[1 - (c + d*x)^2])/(b*d*(a + b*ArcSin[c + d*x]))) +
(e^4*CosIntegral[(a + b*ArcSin[c + d*x])/b]*Sin[a/b])/(8*b^2*d) - (9*e^4*Co
sIntegral[(3*(a + b*ArcSin[c + d*x]))/b]*Sin[(3*a)/b])/(16*b^2*d) + (5*e^4*
CosIntegral[(5*(a + b*ArcSin[c + d*x]))/b]*Sin[(5*a)/b])/(16*b^2*d) - (e^4*
Cos[a/b]*SinIntegral[(a + b*ArcSin[c + d*x])/b])/(8*b^2*d) + (9*e^4*Cos[(3*
a)/b]*SinIntegral[(3*(a + b*ArcSin[c + d*x]))/b])/(16*b^2*d) - (5*e^4*Cos[(
5*a)/b]*SinIntegral[(5*(a + b*ArcSin[c + d*x]))/b])/(16*b^2*d)
```

Rubi [A] time = 0.367686, antiderivative size = 254, normalized size of antiderivative = 0.98, number of steps used = 13, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.261, Rules used = {4805, 12, 4631, 3303, 3299, 3302}

$$\frac{e^4\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)}{8b^2d}-\frac{9e^4\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(c+dx)\right)}{16b^2d}+\frac{5e^4\sin\left(\frac{5a}{b}\right)\text{CosInte}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^4/(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] -((e^4*(c + d*x)^4*Sqrt[1 - (c + d*x)^2])/(b*d*(a + b*ArcSin[c + d*x]))) +
(e^4*CosIntegral[a/b + ArcSin[c + d*x]]*Sin[a/b])/(8*b^2*d) - (9*e^4*CosInt
egral[(3*a)/b + 3*ArcSin[c + d*x]]*Sin[(3*a)/b])/(16*b^2*d) + (5*e^4*CosInt
egral[(5*a)/b + 5*ArcSin[c + d*x]]*Sin[(5*a)/b])/(16*b^2*d) - (e^4*Cos[a/b]
*SinIntegral[a/b + ArcSin[c + d*x]])/(8*b^2*d) + (9*e^4*Cos[(3*a)/b]*SinInt
egral[(3*a)/b + 3*ArcSin[c + d*x]])/(16*b^2*d) - (5*e^4*Cos[(5*a)/b]*SinInt
egral[(5*a)/b + 5*ArcSin[c + d*x]])/(16*b^2*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
```

```
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rubi steps

$$\int \frac{(ce+dex)^4}{\left(a+b\sin^{-1}(c+dx)\right)^2}\,dx = \frac{\text{Subst}\left(\int \frac{e^4x^4}{\left(a+b\sin^{-1}(x)\right)^2}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^4\,\text{Subst}\left(\int \frac{x^4}{\left(a+b\sin^{-1}(x)\right)^2}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} + \frac{e^4\,\text{Subst}\left(\int \left(-\frac{\sin(x)}{8(a+bx)} + \frac{9\sin(3x)}{16(a+bx)} - \frac{5\sin(5x)}{16(a+bx)}\right)dx, x, \sin^{-1}(c\right.}{bd}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} - \frac{e^4\,\text{Subst}\left(\int \frac{\sin(x)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{8bd} - \frac{\left(5e^4\right)\text{Subst}\left(\int\right.}{}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} - \frac{\left(e^4\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{8bd} + \frac{\left(9e\right.}{}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} + \frac{e^4\textbf{Ci}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)\sin\left(\frac{a}{b}\right)}{8b^2d} - \frac{9e^4\textbf{Ci}\left(\frac{3a}{b}+3\sin^{-1}(c\right.}{16b^2d}$$

Mathematica [A] time = 1.16289, size = 283, normalized size = 1.1

$$\frac{e^4\left(16\left(-3\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)+\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(3\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)\right)+3\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^4/(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (e^4*((-16*b*(c + d*x)^4*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*x]) + 1
6*(-3*CosIntegral[a/b + ArcSin[c + d*x]]*Sin[a/b] + CosIntegral[3*(a/b + Ar
cSin[c + d*x])]*Sin[(3*a)/b] + 3*Cos[a/b]*SinIntegral[a/b + ArcSin[c + d*x]
] - Cos[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c + d*x])]) + 5*(10*CosIntegra
l[a/b + ArcSin[c + d*x]]*Sin[a/b] - 5*CosIntegral[3*(a/b + ArcSin[c + d*x])
]*Sin[(3*a)/b] + CosIntegral[5*(a/b + ArcSin[c + d*x])]*Sin[(5*a)/b] - 10*C
os[a/b]*SinIntegral[a/b + ArcSin[c + d*x]] + 5*Cos[(3*a)/b]*SinIntegral[3*(
a/b + ArcSin[c + d*x])] - Cos[(5*a)/b]*SinIntegral[5*(a/b + ArcSin[c + d*x]
)])))/(16*b^2*d)
```

Maple [A] time = 0.055, size = 396, normalized size = 1.5

$$-\frac{e^4}{16\,d\,(a+b\arcsin(dx+c))\,b^2}\left(5\arcsin(dx+c)\cos\left(5\,\frac{a}{b}\right)\mathrm{Si}\left(5\arcsin(dx+c)+5\,\frac{a}{b}\right)b-5\arcsin(dx+c)\,\mathrm{Ci}\left(5\,\mathrm{arcs}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^2,x)
```

```
[Out] -1/16/d*e^4*(5*arcsin(d*x+c)*cos(5*a/b)*Si(5*arcsin(d*x+c)+5*a/b)*b-5*arcsi
n(d*x+c)*Ci(5*arcsin(d*x+c)+5*a/b)*sin(5*a/b)*b+2*arcsin(d*x+c)*Si(arcsin(d
*x+c)+a/b)*cos(a/b)*b-2*arcsin(d*x+c)*Ci(arcsin(d*x+c)+a/b)*sin(a/b)*b-9*ar
csin(d*x+c)*Si(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b)*b+9*arcsin(d*x+c)*Ci(3*arc
sin(d*x+c)+3*a/b)*sin(3*a/b)*b+5*cos(5*a/b)*Si(5*arcsin(d*x+c)+5*a/b)*a-5*C
i(5*arcsin(d*x+c)+5*a/b)*sin(5*a/b)*a+2*Si(arcsin(d*x+c)+a/b)*cos(a/b)*a-2*
Ci(arcsin(d*x+c)+a/b)*sin(a/b)*a-9*Si(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b)*a+9
*Ci(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)*a+2*(1-(d*x+c)^2)^(1/2)*b+cos(5*arcsi
n(d*x+c))*b-3*cos(3*arcsin(d*x+c))*b)/(a+b*arcsin(d*x+c))/b^2
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{d^4e^4x^4+4\,cd^3e^4x^3+6\,c^2d^2e^4x^2+4\,c^3de^4x+c^4e^4}{b^2\arcsin(dx+c)^2+2\,ab\arcsin(dx+c)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] integral((d^4*e^4*x^4 + 4*c*d^3*e^4*x^3 + 6*c^2*d^2*e^4*x^2 + 4*c^3*d*e^4*x
 + c^4*e^4)/(b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**4/(a+b*asin(d*x+c))**2,x)
```

```
[Out] Timed out
```

Giac [B] time = 1.5291, size = 1855, normalized size = 7.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] 5*b*arcsin(d*x + c)*cos(a/b)^4*cos_integral(5*a/b + 5*arcsin(d*x + c))*e^4*
sin(a/b)/(b^3*d*arcsin(d*x + c) + a*b^2*d) - 5*b*arcsin(d*x + c)*cos(a/b)^5
*e^4*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2
*d) + 5*a*cos(a/b)^4*cos_integral(5*a/b + 5*arcsin(d*x + c))*e^4*sin(a/b)/(
b^3*d*arcsin(d*x + c) + a*b^2*d) - 5*a*cos(a/b)^5*e^4*sin_integral(5*a/b +
5*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) - 15/4*b*arcsin(d*x +
c)*cos(a/b)^2*cos_integral(5*a/b + 5*arcsin(d*x + c))*e^4*sin(a/b)/(b^3*d*a
rcsin(d*x + c) + a*b^2*d) - 9/4*b*arcsin(d*x + c)*cos(a/b)^2*cos_integral(3
*a/b + 3*arcsin(d*x + c))*e^4*sin(a/b)/(b^3*d*arcsin(d*x + c) + a*b^2*d) +
25/4*b*arcsin(d*x + c)*cos(a/b)^3*e^4*sin_integral(5*a/b + 5*arcsin(d*x + c
))/(b^3*d*arcsin(d*x + c) + a*b^2*d) + 9/4*b*arcsin(d*x + c)*cos(a/b)^3*e^4
*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d)
- 15/4*a*cos(a/b)^2*cos_integral(5*a/b + 5*arcsin(d*x + c))*e^4*sin(a/b)/(b
^3*d*arcsin(d*x + c) + a*b^2*d) - 9/4*a*cos(a/b)^2*cos_integral(3*a/b + 3*a
rcsin(d*x + c))*e^4*sin(a/b)/(b^3*d*arcsin(d*x + c) + a*b^2*d) + 25/4*a*cos
(a/b)^3*e^4*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c)
+ a*b^2*d) + 9/4*a*cos(a/b)^3*e^4*sin_integral(3*a/b + 3*arcsin(d*x + c))/(
b^3*d*arcsin(d*x + c) + a*b^2*d) + 5/16*b*arcsin(d*x + c)*cos_integral(5*a/
```

```
b + 5*arcsin(d*x + c))*e^4*sin(a/b)/(b^3*d*arcsin(d*x + c) + a*b^2*d) + 9/1
6*b*arcsin(d*x + c)*cos_integral(3*a/b + 3*arcsin(d*x + c))*e^4*sin(a/b)/(b
^3*d*arcsin(d*x + c) + a*b^2*d) + 1/8*b*arcsin(d*x + c)*cos_integral(a/b +
arcsin(d*x + c))*e^4*sin(a/b)/(b^3*d*arcsin(d*x + c) + a*b^2*d) - 25/16*b*a
rcsin(d*x + c)*cos(a/b)*e^4*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^3*d*
arcsin(d*x + c) + a*b^2*d) - 27/16*b*arcsin(d*x + c)*cos(a/b)*e^4*sin_integ
ral(3*a/b + 3*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) - 1/8*b*ar
csin(d*x + c)*cos(a/b)*e^4*sin_integral(a/b + arcsin(d*x + c))/(b^3*d*arcsi
n(d*x + c) + a*b^2*d) - ((d*x + c)^2 - 1)^2*sqrt(-(d*x + c)^2 + 1)*b*e^4/(b
^3*d*arcsin(d*x + c) + a*b^2*d) + 5/16*a*cos_integral(5*a/b + 5*arcsin(d*x
+ c))*e^4*sin(a/b)/(b^3*d*arcsin(d*x + c) + a*b^2*d) + 9/16*a*cos_integral(
3*a/b + 3*arcsin(d*x + c))*e^4*sin(a/b)/(b^3*d*arcsin(d*x + c) + a*b^2*d) +
 1/8*a*cos_integral(a/b + arcsin(d*x + c))*e^4*sin(a/b)/(b^3*d*arcsin(d*x +
 c) + a*b^2*d) - 25/16*a*cos(a/b)*e^4*sin_integral(5*a/b + 5*arcsin(d*x + c
))/(b^3*d*arcsin(d*x + c) + a*b^2*d) - 27/16*a*cos(a/b)*e^4*sin_integral(3*
a/b + 3*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) - 1/8*a*cos(a/b)
*e^4*sin_integral(a/b + arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d)
+ 2*(-(d*x + c)^2 + 1)^(3/2)*b*e^4/(b^3*d*arcsin(d*x + c) + a*b^2*d) - sqrt
(-(d*x + c)^2 + 1)*b*e^4/(b^3*d*arcsin(d*x + c) + a*b^2*d)
```

3.222 $\int \frac{(ce+dex)^3}{\left(a+b\sin^{-1}(c+dx)\right)^2}\,dx$

Optimal. Leaf size=190

$$\frac{e^3\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{2b^2d}-\frac{e^3\cos\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{2b^2d}+\frac{e^3\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{2b^2d}$$

```
[Out] -((e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(b*d*(a + b*ArcSin[c + d*x]))) +
(e^3*Cos[(2*a)/b]*CosIntegral[(2*(a + b*ArcSin[c + d*x]))/b])/(2*b^2*d) - (
e^3*Cos[(4*a)/b]*CosIntegral[(4*(a + b*ArcSin[c + d*x]))/b])/(2*b^2*d) + (e
^3*Sin[(2*a)/b]*SinIntegral[(2*(a + b*ArcSin[c + d*x]))/b])/(2*b^2*d) - (e^
3*Sin[(4*a)/b]*SinIntegral[(4*(a + b*ArcSin[c + d*x]))/b])/(2*b^2*d)
```

Rubi [A] time = 0.294796, antiderivative size = 190, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.261, Rules used = {4805, 12, 4631, 3303, 3299, 3302}

$$\frac{e^3\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(c+dx)\right)}{2b^2d}-\frac{e^3\cos\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4a}{b}+4\sin^{-1}(c+dx)\right)}{2b^2d}+\frac{e^3\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+\right.}{2b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] -((e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(b*d*(a + b*ArcSin[c + d*x]))) +
(e^3*Cos[(2*a)/b]*CosIntegral[(2*a)/b + 2*ArcSin[c + d*x]])/(2*b^2*d) - (e^
3*Cos[(4*a)/b]*CosIntegral[(4*a)/b + 4*ArcSin[c + d*x]])/(2*b^2*d) + (e^3*S
in[(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c + d*x]])/(2*b^2*d) - (e^3*Sin[
(4*a)/b]*SinIntegral[(4*a)/b + 4*ArcSin[c + d*x]])/(2*b^2*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rubi steps

$$\int \frac{(ce+dex)^3}{\left(a+b\sin^{-1}(c+dx)\right)^2}\,dx = \frac{\text{Subst}\left(\int \frac{e^3x^3}{\left(a+b\sin^{-1}(x)\right)^2}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^3\,\text{Subst}\left(\int \frac{x^3}{\left(a+b\sin^{-1}(x)\right)^2}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} + \frac{e^3\,\text{Subst}\left(\int \left(\frac{\cos(2x)}{2(a+bx)} - \frac{\cos(4x)}{2(a+bx)}\right)dx, x, \sin^{-1}(c+dx)\right)}{bd}$$

$$= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} + \frac{e^3\,\text{Subst}\left(\int \frac{\cos(2x)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{2bd} - \frac{e^3\,\text{Subst}\left(\int \frac{\cos}{a\cdots}\right.}{}$$

$$= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} + \frac{\left(e^3\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{2bd} - \cdots$$

$$= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} + \frac{e^3\cos\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(c+dx)\right)}{2b^2d} - \frac{e^3\cos\left(\frac{4a}{b}\right)\text{Ci}\left(\frac{4a}{b}\cdots\right.}{2b\cdots}$$

Mathematica [A] time = 0.875986, size = 220, normalized size = 1.16

$$-\frac{e^3\left(3\left(\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(2\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)\right)+\sin\left(\frac{2a}{b}\right)\text{Si}\left(2\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)\right)-\log\left(a+b\sin^{-1}(c+dx)\right)\right)\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] -(e^3*((2*b*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*x]) - 4*
Cos[(2*a)/b]*CosIntegral[2*(a/b + ArcSin[c + d*x])] + Cos[(4*a)/b]*CosInteg
ral[4*(a/b + ArcSin[c + d*x])] + 3*Log[a + b*ArcSin[c + d*x]] - 4*Sin[(2*a)
/b]*SinIntegral[2*(a/b + ArcSin[c + d*x])] + 3*(Cos[(2*a)/b]*CosIntegral[2*
(a/b + ArcSin[c + d*x])] - Log[a + b*ArcSin[c + d*x]] + Sin[(2*a)/b]*SinInt
egral[2*(a/b + ArcSin[c + d*x])]) + Sin[(4*a)/b]*SinIntegral[4*(a/b + ArcSi
n[c + d*x])]))/(2*b^2*d)
```

Maple [A] time = 0.039, size = 281, normalized size = 1.5

$$-\frac{e^3}{8\,d\,(a+b\arcsin(dx+c))\,b^2}\left(4\arcsin(dx+c)\,\mathrm{Si}\left(4\arcsin(dx+c)+4\,\frac{a}{b}\right)\sin\left(4\,\frac{a}{b}\right)b+4\arcsin(dx+c)\,\mathrm{Ci}\left(4\arcsin\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^2,x)
```

```
[Out] -1/8/d*e^3*(4*arcsin(d*x+c)*Si(4*arcsin(d*x+c)+4*a/b)*sin(4*a/b)*b+4*arcsin
(d*x+c)*Ci(4*arcsin(d*x+c)+4*a/b)*cos(4*a/b)*b-4*arcsin(d*x+c)*Si(2*arcsin(
d*x+c)+2*a/b)*sin(2*a/b)*b-4*arcsin(d*x+c)*Ci(2*arcsin(d*x+c)+2*a/b)*cos(2*
a/b)*b+4*Si(4*arcsin(d*x+c)+4*a/b)*sin(4*a/b)*a+4*Ci(4*arcsin(d*x+c)+4*a/b)
*cos(4*a/b)*a-4*Si(2*arcsin(d*x+c)+2*a/b)*sin(2*a/b)*a-4*Ci(2*arcsin(d*x+c)
+2*a/b)*cos(2*a/b)*a-sin(4*arcsin(d*x+c))*b+2*sin(2*arcsin(d*x+c))*b)/(a+b*
arcsin(d*x+c))/b^2
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{d^3e^3x^3+3\,cd^2e^3x^2+3\,c^2de^3x+c^3e^3}{b^2\arcsin(dx+c)^2+2\,ab\arcsin(dx+c)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] integral((d^3*e^3*x^3 + 3*c*d^2*e^3*x^2 + 3*c^2*d*e^3*x + c^3*e^3)/(b^2*arc
sin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e^3\left(\int \frac{c^3}{a^2+2ab\,\mathrm{asin}\,(c+dx)+b^2\,\mathrm{asin}^2\,(c+dx)}\,dx+\int \frac{d^3x^3}{a^2+2ab\,\mathrm{asin}\,(c+dx)+b^2\,\mathrm{asin}^2\,(c+dx)}\,dx+\int \frac{}{a^2+2ab\,\mathrm{asi}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3/(a+b*asin(d*x+c))**2,x)
```

```
[Out] e**3*(Integral(c**3/(a**2 + 2*a*b*asin(c + d*x) + b**2*asin(c + d*x)**2), x
) + Integral(d**3*x**3/(a**2 + 2*a*b*asin(c + d*x) + b**2*asin(c + d*x)**2)
, x) + Integral(3*c*d**2*x**2/(a**2 + 2*a*b*asin(c + d*x) + b**2*asin(c + d
*x)**2), x) + Integral(3*c**2*d*x/(a**2 + 2*a*b*asin(c + d*x) + b**2*asin(c
 + d*x)**2), x))
```

Giac [B] time = 1.49088, size = 1229, normalized size = 6.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] -4*b*arcsin(d*x + c)*cos(a/b)^4*cos_integral(4*a/b + 4*arcsin(d*x + c))*e^3
/(b^3*d*arcsin(d*x + c) + a*b^2*d) - 4*b*arcsin(d*x + c)*cos(a/b)^3*e^3*sin
(a/b)*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^
2*d) - 4*a*cos(a/b)^4*cos_integral(4*a/b + 4*arcsin(d*x + c))*e^3/(b^3*d*ar
csin(d*x + c) + a*b^2*d) - 4*a*cos(a/b)^3*e^3*sin(a/b)*sin_integral(4*a/b +
 4*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) + 4*b*arcsin(d*x + c)
*cos(a/b)^2*cos_integral(4*a/b + 4*arcsin(d*x + c))*e^3/(b^3*d*arcsin(d*x +
 c) + a*b^2*d) + b*arcsin(d*x + c)*cos(a/b)^2*cos_integral(2*a/b + 2*arcsin
(d*x + c))*e^3/(b^3*d*arcsin(d*x + c) + a*b^2*d) + 2*b*arcsin(d*x + c)*cos(
a/b)*e^3*sin(a/b)*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^3*d*arcsin(d*x
 + c) + a*b^2*d) + b*arcsin(d*x + c)*cos(a/b)*e^3*sin(a/b)*sin_integral(2*a
/b + 2*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) + 4*a*cos(a/b)^2*
cos_integral(4*a/b + 4*arcsin(d*x + c))*e^3/(b^3*d*arcsin(d*x + c) + a*b^2*
d) + a*cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(d*x + c))*e^3/(b^3*d*arcsin
(d*x + c) + a*b^2*d) + 2*a*cos(a/b)*e^3*sin(a/b)*sin_integral(4*a/b + 4*arc
sin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) + a*cos(a/b)*e^3*sin(a/b)*s
in_integral(2*a/b + 2*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) +
```

```
(-(d*x + c)^2 + 1)^(3/2)*(d*x + c)*b*e^3/(b^3*d*arcsin(d*x + c) + a*b^2*d)
- 1/2*b*arcsin(d*x + c)*cos_integral(4*a/b + 4*arcsin(d*x + c))*e^3/(b^3*d*
arcsin(d*x + c) + a*b^2*d) - 1/2*b*arcsin(d*x + c)*cos_integral(2*a/b + 2*a
rcsin(d*x + c))*e^3/(b^3*d*arcsin(d*x + c) + a*b^2*d) - sqrt(-(d*x + c)^2 +
 1)*(d*x + c)*b*e^3/(b^3*d*arcsin(d*x + c) + a*b^2*d) - 1/2*a*cos_integral(
4*a/b + 4*arcsin(d*x + c))*e^3/(b^3*d*arcsin(d*x + c) + a*b^2*d) - 1/2*a*co
s_integral(2*a/b + 2*arcsin(d*x + c))*e^3/(b^3*d*arcsin(d*x + c) + a*b^2*d)
```

3.223 $\int \frac{(ce+dex)^2}{\left(a+b\sin^{-1}(c+dx)\right)^2}\,dx$

Optimal. Leaf size=186

$$\frac{e^2\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{4b^2d}-\frac{3e^2\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{4b^2d}-\frac{e^2\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{4b^2d}+$$

```
[Out] -((e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(b*d*(a + b*ArcSin[c + d*x]))) +
(e^2*CosIntegral[(a + b*ArcSin[c + d*x])/b]*Sin[a/b])/(4*b^2*d) - (3*e^2*Co
sIntegral[(3*(a + b*ArcSin[c + d*x]))/b]*Sin[(3*a)/b])/(4*b^2*d) - (e^2*Cos
[a/b]*SinIntegral[(a + b*ArcSin[c + d*x])/b])/(4*b^2*d) + (3*e^2*Cos[(3*a)/
b]*SinIntegral[(3*(a + b*ArcSin[c + d*x]))/b])/(4*b^2*d)
```

Rubi [A] time = 0.264746, antiderivative size = 182, normalized size of antiderivative = 0.98, number of steps used = 10, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.261, Rules used = {4805, 12, 4631, 3303, 3299, 3302}

$$\frac{e^2\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)}{4b^2d}-\frac{3e^2\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(c+dx)\right)}{4b^2d}-\frac{e^2\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}\right.}{4b^2d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] -((e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(b*d*(a + b*ArcSin[c + d*x]))) +
(e^2*CosIntegral[a/b + ArcSin[c + d*x]]*Sin[a/b])/(4*b^2*d) - (3*e^2*CosInt
egral[(3*a)/b + 3*ArcSin[c + d*x]]*Sin[(3*a)/b])/(4*b^2*d) - (e^2*Cos[a/b]*
SinIntegral[a/b + ArcSin[c + d*x]])/(4*b^2*d) + (3*e^2*Cos[(3*a)/b]*SinInte
gral[(3*a)/b + 3*ArcSin[c + d*x]])/(4*b^2*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rubi steps

$$\int \frac{(ce+dex)^2}{\left(a+b\sin^{-1}(c+dx)\right)^2}\,dx = \frac{\text{Subst}\left(\int \frac{e^2x^2}{\left(a+b\sin^{-1}(x)\right)^2}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^2\,\text{Subst}\left(\int \frac{x^2}{\left(a+b\sin^{-1}(x)\right)^2}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} + \frac{e^2\,\text{Subst}\left(\int \left(-\frac{\sin(x)}{4(a+bx)} + \frac{3\sin(3x)}{4(a+bx)}\right)dx, x, \sin^{-1}(c+dx)\right)}{bd}$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} - \frac{e^2\,\text{Subst}\left(\int \frac{\sin(x)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{4bd} + \frac{\left(3e^2\right)\text{Subst}\left(\int\right.}{}$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} - \frac{\left(e^2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{4bd} + \frac{\left(3e^2\right.}{}$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} + \frac{e^2\text{Ci}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)\sin\left(\frac{a}{b}\right)}{4b^2d} - \frac{3e^2\text{Ci}\left(\frac{3a}{b}+3\sin^{-1}(c\right.}{4b^2d}$$

Mathematica [A] time = 0.783611, size = 140, normalized size = 0.75

$$\frac{e^2\left(\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right) - 3\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(3\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)\right) - \cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(c\right.\right.}{4b^2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (e^2*((-4*b*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*x]) + Co
sIntegral[a/b + ArcSin[c + d*x]]*Sin[a/b] - 3*CosIntegral[3*(a/b + ArcSin[c
 + d*x])]*Sin[(3*a)/b] - Cos[a/b]*SinIntegral[a/b + ArcSin[c + d*x]] + 3*Co
s[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c + d*x])]))/(4*b^2*d)
```

Maple [A] time = 0.048, size = 266, normalized size = 1.4

$$-\frac{e^2}{4\,d\,(a+b\arcsin(dx+c))\,b^2}\left(\arcsin(dx+c)\,\text{Si}\left(\arcsin(dx+c)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)b - \arcsin(dx+c)\,\text{Ci}\left(\arcsin(dx+c)\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^2,x)
```

```
[Out] -1/4/d*e^2*(arcsin(d*x+c)*Si(arcsin(d*x+c)+a/b)*cos(a/b)*b-arcsin(d*x+c)*Ci
(arcsin(d*x+c)+a/b)*sin(a/b)*b-3*arcsin(d*x+c)*Si(3*arcsin(d*x+c)+3*a/b)*co
s(3*a/b)*b+3*arcsin(d*x+c)*Ci(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)*b+Si(arcsin
(d*x+c)+a/b)*cos(a/b)*a-Ci(arcsin(d*x+c)+a/b)*sin(a/b)*a-3*Si(3*arcsin(d*x+
c)+3*a/b)*cos(3*a/b)*a+3*Ci(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)*a+(1-(d*x+c)^
2)^(1/2)*b-cos(3*arcsin(d*x+c))*b)/(a+b*arcsin(d*x+c))/b^2
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{d^2e^2x^2 + 2\,cde^2x + c^2e^2}{b^2\arcsin\left(dx + c\right)^2 + 2\,ab\arcsin\left(dx + c\right) + a^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] integral((d^2*e^2*x^2 + 2*c*d*e^2*x + c^2*e^2)/(b^2*arcsin(d*x + c)^2 + 2*a
*b*arcsin(d*x + c) + a^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e^2\left(\int\frac{c^2}{a^2 + 2ab\operatorname{asin}\left(c + dx\right) + b^2\operatorname{asin}^2\left(c + dx\right)}\,dx + \int\frac{d^2x^2}{a^2 + 2ab\operatorname{asin}\left(c + dx\right) + b^2\operatorname{asin}^2\left(c + dx\right)}\,dx + \int\frac{}{a^2 + 2ab\operatorname{asin}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2/(a+b*asin(d*x+c))**2,x)
```

```
[Out] e**2*(Integral(c**2/(a**2 + 2*a*b*asin(c + d*x) + b**2*asin(c + d*x)**2), x
) + Integral(d**2*x**2/(a**2 + 2*a*b*asin(c + d*x) + b**2*asin(c + d*x)**2)
, x) + Integral(2*c*d*x/(a**2 + 2*a*b*asin(c + d*x) + b**2*asin(c + d*x)**2
), x))
```

Giac [B] time = 1.46423, size = 923, normalized size = 4.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] -3*b*arcsin(d*x + c)*cos(a/b)^2*cos_integral(3*a/b + 3*arcsin(d*x + c))*e^2
*sin(a/b)/(b^3*d*arcsin(d*x + c) + a*b^2*d) + 3*b*arcsin(d*x + c)*cos(a/b)^
3*e^2*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^
2*d) - 3*a*cos(a/b)^2*cos_integral(3*a/b + 3*arcsin(d*x + c))*e^2*sin(a/b)/
(b^3*d*arcsin(d*x + c) + a*b^2*d) + 3*a*cos(a/b)^3*e^2*sin_integral(3*a/b +
 3*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) + 3/4*b*arcsin(d*x +
c)*cos_integral(3*a/b + 3*arcsin(d*x + c))*e^2*sin(a/b)/(b^3*d*arcsin(d*x +
 c) + a*b^2*d) + 1/4*b*arcsin(d*x + c)*cos_integral(a/b + arcsin(d*x + c))*
e^2*sin(a/b)/(b^3*d*arcsin(d*x + c) + a*b^2*d) - 9/4*b*arcsin(d*x + c)*cos(
a/b)*e^2*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a
*b^2*d) - 1/4*b*arcsin(d*x + c)*cos(a/b)*e^2*sin_integral(a/b + arcsin(d*x
+ c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) + 3/4*a*cos_integral(3*a/b + 3*arcs
in(d*x + c))*e^2*sin(a/b)/(b^3*d*arcsin(d*x + c) + a*b^2*d) + 1/4*a*cos_int
egral(a/b + arcsin(d*x + c))*e^2*sin(a/b)/(b^3*d*arcsin(d*x + c) + a*b^2*d)
 - 9/4*a*cos(a/b)*e^2*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^3*d*arcsin
(d*x + c) + a*b^2*d) - 1/4*a*cos(a/b)*e^2*sin_integral(a/b + arcsin(d*x + c
))/(b^3*d*arcsin(d*x + c) + a*b^2*d) + (-(d*x + c)^2 + 1)^(3/2)*b*e^2/(b^3*
d*arcsin(d*x + c) + a*b^2*d) - sqrt(-(d*x + c)^2 + 1)*b*e^2/(b^3*d*arcsin(d
*x + c) + a*b^2*d)
```

3.224 $\int \frac{ce+dex}{\left(a+b\sin^{-1}(c+dx)\right)^2}\,dx$

Optimal. Leaf size=104

$$\frac{e\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{b^2d}+\frac{e\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{b^2d}-\frac{e\sqrt{1-(c+dx)^2}(c+dx)}{bd\left(a+b\sin^{-1}(c+dx)\right)}$$

```
[Out] -((e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(b*d*(a + b*ArcSin[c + d*x]))) + (e*C
os[(2*a)/b]*CosIntegral[(2*(a + b*ArcSin[c + d*x]))/b])/(b^2*d) + (e*Sin[(2
*a)/b]*SinIntegral[(2*(a + b*ArcSin[c + d*x]))/b])/(b^2*d)
```

Rubi [A] time = 0.14108, antiderivative size = 104, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4805, 12, 4631, 3303, 3299, 3302}

$$\frac{e\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(c+dx)\right)}{b^2d}+\frac{e\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\sin^{-1}(c+dx)\right)}{b^2d}-\frac{e\sqrt{1-(c+dx)^2}(c+dx)}{bd\left(a+b\sin^{-1}(c+dx)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)/(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] -((e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(b*d*(a + b*ArcSin[c + d*x]))) + (e*C
os[(2*a)/b]*CosIntegral[(2*a)/b + 2*ArcSin[c + d*x]])/(b^2*d) + (e*Sin[(2*a
)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c + d*x]])/(b^2*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rubi steps

$$\int \frac{ce+dex}{\left(a+b\sin^{-1}(c+dx)\right)^2}\,dx = \frac{\text{Subst}\left(\int \frac{ex}{\left(a+b\sin^{-1}(x)\right)^2}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e\,\text{Subst}\left(\int \frac{x}{\left(a+b\sin^{-1}(x)\right)^2}\,dx,x,c+dx\right)}{d}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} + \frac{e\,\text{Subst}\left(\int \frac{\cos(2x)}{a+bx}\,dx,x,\sin^{-1}(c+dx)\right)}{bd}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} + \frac{\left(e\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx,x,\sin^{-1}(c+dx)\right)}{bd} + \frac{\left(e\sin\right.}{}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} + \frac{e\cos\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(c+dx)\right)}{b^2d} + \frac{e\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\sin\right.}{b^2d}$$

Mathematica [A] time = 0.294227, size = 99, normalized size = 0.95

$$\frac{e\left(-\frac{b\sqrt{-c^2-2cdx-d^2x^2+1}(c+dx)}{a+b\sin^{-1}(c+dx)}+\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(2\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)\right)+\sin\left(\frac{2a}{b}\right)\text{Si}\left(2\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)\right)\right)}{b^2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)/(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (e*(-((b*(c + d*x)*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2])/(a + b*ArcSin[c + d*x
])) + Cos[(2*a)/b]*CosIntegral[2*(a/b + ArcSin[c + d*x])] + Sin[(2*a)/b]*Si
nIntegral[2*(a/b + ArcSin[c + d*x])]))/(b^2*d)
```

Maple [A] time = 0.033, size = 151, normalized size = 1.5

$$\frac{e}{2d\left(a+b\arcsin(dx+c)\right)b^2}\left(2\arcsin(dx+c)\,\text{Si}\left(2\arcsin(dx+c)+2\frac{a}{b}\right)\sin\left(2\frac{a}{b}\right)b+2\arcsin(dx+c)\,\text{Ci}\left(2\arcsin\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)/(a+b*arcsin(d*x+c))^2,x)
```

```
[Out] 1/2/d*e*(2*arcsin(d*x+c)*Si(2*arcsin(d*x+c)+2*a/b)*sin(2*a/b)*b+2*arcsin(d*
x+c)*Ci(2*arcsin(d*x+c)+2*a/b)*cos(2*a/b)*b+2*Si(2*arcsin(d*x+c)+2*a/b)*sin
(2*a/b)*a+2*Ci(2*arcsin(d*x+c)+2*a/b)*cos(2*a/b)*a-sin(2*arcsin(d*x+c))*b)/
(a+b*arcsin(d*x+c))/b^2
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{dex+ce}{b^2\arcsin\left(dx+c\right)^2+2\,ab\arcsin\left(dx+c\right)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] integral((d*e*x + c*e)/(b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2
), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e\left(\int\frac{c}{a^2+2ab\operatorname{asin}\left(c+dx\right)+b^2\operatorname{asin}^2\left(c+dx\right)}\,dx+\int\frac{dx}{a^2+2ab\operatorname{asin}\left(c+dx\right)+b^2\operatorname{asin}^2\left(c+dx\right)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*asin(d*x+c))**2,x)
```

```
[Out] e*(Integral(c/(a**2 + 2*a*b*asin(c + d*x) + b**2*asin(c + d*x)**2), x) + In
tegral(d*x/(a**2 + 2*a*b*asin(c + d*x) + b**2*asin(c + d*x)**2), x))
```

Giac [B] time = 1.44294, size = 470, normalized size = 4.52

$$\frac{2\,b\arcsin\left(dx+c\right)\cos\left(\frac{a}{b}\right)^{2}\mathrm{Ci}\left(\frac{2\,a}{b}+2\,\arcsin\left(dx+c\right)\right)e}{b^{3}d\arcsin\left(dx+c\right)+ab^{2}d}+\frac{2\,b\arcsin\left(dx+c\right)\cos\left(\frac{a}{b}\right)e\sin\left(\frac{a}{b}\right)\mathrm{Si}\left(\frac{2\,a}{b}+2\,\arcsin\left(dx+c\right.\right.}{b^{3}d\arcsin\left(dx+c\right)+ab^{2}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] 2*b*arcsin(d*x + c)*cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(d*x + c))*e/(b
^3*d*arcsin(d*x + c) + a*b^2*d) + 2*b*arcsin(d*x + c)*cos(a/b)*e*sin(a/b)*s
in_integral(2*a/b + 2*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) +
2*a*cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(d*x + c))*e/(b^3*d*arcsin(d*x
+ c) + a*b^2*d) + 2*a*cos(a/b)*e*sin(a/b)*sin_integral(2*a/b + 2*arcsin(d*x
 + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) - b*arcsin(d*x + c)*cos_integral(2
*a/b + 2*arcsin(d*x + c))*e/(b^3*d*arcsin(d*x + c) + a*b^2*d) - sqrt(-(d*x
+ c)^2 + 1)*(d*x + c)*b*e/(b^3*d*arcsin(d*x + c) + a*b^2*d) - a*cos_integra
l(2*a/b + 2*arcsin(d*x + c))*e/(b^3*d*arcsin(d*x + c) + a*b^2*d)
```

3.225 $\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^2}\,dx$

Optimal. Leaf size=93

$$\frac{\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{b^2d}-\frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{b^2d}-\frac{\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)}$$

```
[Out] -(Sqrt[1 - (c + d*x)^2]/(b*d*(a + b*ArcSin[c + d*x]))) + (CosIntegral[(a +
b*ArcSin[c + d*x])/b]*Sin[a/b])/(b^2*d) - (Cos[a/b]*SinIntegral[(a + b*ArcS
in[c + d*x])/b])/(b^2*d)
```

Rubi [A] time = 0.171562, antiderivative size = 89, normalized size of antiderivative = 0.96, number of steps used = 6, number of rules used = 6, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {4803, 4621, 4723, 3303, 3299, 3302}

$$\frac{\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)}{b^2d}-\frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)}{b^2d}-\frac{\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(-2),x]
```

```
[Out] -(Sqrt[1 - (c + d*x)^2]/(b*d*(a + b*ArcSin[c + d*x]))) + (CosIntegral[a/b +
 ArcSin[c + d*x]]*Sin[a/b])/(b^2*d) - (Cos[a/b]*SinIntegral[a/b + ArcSin[c
+ d*x]])/(b^2*d)
```

Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^2}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\sin^{-1}(x)\right)^2}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} - \frac{\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)}\,dx, x, c+dx\right)}{bd}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} - \frac{\text{Subst}\left(\int \frac{\sin(x)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{bd}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} - \frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{bd} + \frac{\sin\left(\frac{a}{b}\right)\text{Su}}{}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} + \frac{\text{Ci}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)\sin\left(\frac{a}{b}\right)}{b^2d} - \frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(c+a\right.}{b^2d}$$

Mathematica [A] time = 0.286741, size = 182, normalized size = 1.96

$$\frac{\sin\left(\frac{a}{b}\right)\left(a+b\sin^{-1}(c+dx)\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)-\cos\left(\frac{a}{b}\right)\left(a+b\sin^{-1}(c+dx)\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)+b}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(-2),x]
```

```
[Out] (-(b*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2]) + a*c*Log[a + b*ArcSin[c + d*x]] +
b*c*ArcSin[c + d*x]*Log[a + b*ArcSin[c + d*x]] - a*c*Log[d*(a + b*ArcSin[c
+ d*x])] - b*c*ArcSin[c + d*x]*Log[d*(a + b*ArcSin[c + d*x])] + (a + b*ArcS
in[c + d*x])*CosIntegral[a/b + ArcSin[c + d*x]]*Sin[a/b] - (a + b*ArcSin[c
+ d*x])*Cos[a/b]*SinIntegral[a/b + ArcSin[c + d*x]])/(b^2*d*(a + b*ArcSin[c
 + d*x]))
```

Maple [A] time = 0.034, size = 83, normalized size = 0.9

$$\frac{1}{d}\left(-\frac{1}{(a+b\arcsin(dx+c))\,b}\sqrt{1-(dx+c)^2}-\frac{1}{b^2}\left(\text{Si}\left(\arcsin(dx+c)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)-\text{Ci}\left(\arcsin(dx+c)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c))^2,x)
```

```
[Out] 1/d*(-(1-(d*x+c)^2)^(1/2)/(a+b*arcsin(d*x+c))/b-(Si(arcsin(d*x+c)+a/b)*cos(
a/b)-Ci(arcsin(d*x+c)+a/b)*sin(a/b))/b^2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{b^2 \arcsin\left(dx+c\right)^2 + 2\,ab\arcsin\left(dx+c\right) + a^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a + b\operatorname{asin}\left(c + dx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c))**2,x)
```

```
[Out] Integral((a + b*asin(c + d*x))**(-2), x)
```

Giac [B] time = 1.17332, size = 290, normalized size = 3.12

$$\frac{b\arcsin\left(dx+c\right)\operatorname{Ci}\left(\frac{a}{b}+\arcsin\left(dx+c\right)\right)\sin\left(\frac{a}{b}\right)}{b^{3}d\arcsin\left(dx+c\right)+ab^{2}d}-\frac{b\arcsin\left(dx+c\right)\cos\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a}{b}+\arcsin\left(dx+c\right)\right)}{b^{3}d\arcsin\left(dx+c\right)+ab^{2}d}+\frac{a\operatorname{Ci}\left(\frac{a}{b}+\operatorname{arcsi}\right.}{b^{3}d\arcsin\left(\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] b*arcsin(d*x + c)*cos_integral(a/b + arcsin(d*x + c))*sin(a/b)/(b^3*d*arcsi
n(d*x + c) + a*b^2*d) - b*arcsin(d*x + c)*cos(a/b)*sin_integral(a/b + arcsi
n(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) + a*cos_integral(a/b + arcsin
(d*x + c))*sin(a/b)/(b^3*d*arcsin(d*x + c) + a*b^2*d) - a*cos(a/b)*sin_inte
gral(a/b + arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) - sqrt(-(d*x
+ c)^2 + 1)*b/(b^3*d*arcsin(d*x + c) + a*b^2*d)
```

3.226 $\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^2}\,dx$

Optimal. Leaf size=26

$$\frac{\text{Unintegrable}\left(\frac{1}{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^2},x\right)}{e}$$

```
[Out] Unintegrable[1/((c + d*x)*(a + b*ArcSin[c + d*x])^2), x]/e
```

Rubi [A] time = 0.0592427, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$, Rules used = {}

$$\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^2),x]
```

```
[Out] Defer[Subst][Defer[Int][1/(x*(a + b*ArcSin[x])^2), x], x, c + d*x]/(d*e)
```

Rubi steps

$$\begin{aligned}
\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^2}\,dx &= \frac{\text{Subst}\left(\int \frac{1}{ex\left(a+b\sin^{-1}(x)\right)^2}\,dx,x,c+dx\right)}{d}\\
&= \frac{\text{Subst}\left(\int \frac{1}{x\left(a+b\sin^{-1}(x)\right)^2}\,dx,x,c+dx\right)}{de}
\end{aligned}$$

Mathematica [A] time = 2.56167, size = 0, normalized size = 0.

$$\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^2),x]
```

```
[Out] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^2), x]
```

Maple [A] time = 0.088, size = 0, normalized size = 0.

$$\int \frac{1}{(dex + ce)(a + b \arcsin(dx + c))^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^2,x)
```

```
[Out] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^2,x)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{a^2dex + a^2ce + \left(b^2dex + b^2ce\right)\arcsin(dx + c)^2 + 2\,(abdex + abce)\arcsin(dx + c)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(a^2*d*e*x + a^2*c*e + (b^2*d*e*x + b^2*c*e)*arcsin(d*x + c)^2 +
 2*(a*b*d*e*x + a*b*c*e)*arcsin(d*x + c)), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{1}{a^2c+a^2dx+2abc\operatorname{asin}(c+dx)+2abdx\operatorname{asin}(c+dx)+b^2c\operatorname{asin}^2(c+dx)+b^2dx\operatorname{asin}^2(c+dx)}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*asin(d*x+c))**2,x)
```

```
[Out] Integral(1/(a**2*c + a**2*d*x + 2*a*b*c*asin(c + d*x) + 2*a*b*d*x*asin(c +
d*x) + b**2*c*asin(c + d*x)**2 + b**2*d*x*asin(c + d*x)**2), x)/e
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(dex+ce)(b\arcsin(dx+c)+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((d*e*x + c*e)*(b*arcsin(d*x + c) + a)^2), x)
```

3.227 $\int \frac{(ce+dex)^4}{\left(a+b\sin^{-1}(c+dx)\right)^3}\,dx$

Optimal. Leaf size=322

$$-\frac{e^4\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{16b^3d}+\frac{27e^4\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{32b^3d}-\frac{25e^4\cos\left(\frac{5a}{b}\right)\text{CosIntegral}}{32b^3d}$$

```
[Out] -(e^4*(c + d*x)^4*Sqrt[1 - (c + d*x)^2])/(2*b*d*(a + b*ArcSin[c + d*x])^2)
- (2*e^4*(c + d*x)^3)/(b^2*d*(a + b*ArcSin[c + d*x])) + (5*e^4*(c + d*x)^5)
/(2*b^2*d*(a + b*ArcSin[c + d*x])) - (e^4*Cos[a/b]*CosIntegral[(a + b*ArcSi
n[c + d*x])/b])/(16*b^3*d) + (27*e^4*Cos[(3*a)/b]*CosIntegral[(3*(a + b*Arc
Sin[c + d*x]))/b])/(32*b^3*d) - (25*e^4*Cos[(5*a)/b]*CosIntegral[(5*(a + b*
ArcSin[c + d*x]))/b])/(32*b^3*d) - (e^4*Sin[a/b]*SinIntegral[(a + b*ArcSin[
c + d*x])/b])/(16*b^3*d) + (27*e^4*Sin[(3*a)/b]*SinIntegral[(3*(a + b*ArcSi
n[c + d*x]))/b])/(32*b^3*d) - (25*e^4*Sin[(5*a)/b]*SinIntegral[(5*(a + b*Ar
cSin[c + d*x]))/b])/(32*b^3*d)
```

Rubi [A] time = 0.862384, antiderivative size = 318, normalized size of antiderivative = 0.99, number of steps used = 26, number of rules used = 9, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.391, Rules used = {4805, 12, 4633, 4719, 4635, 4406, 3303, 3299, 3302}

$$-\frac{e^4\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)}{16b^3d}+\frac{27e^4\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(c+dx)\right)}{32b^3d}-\frac{25e^4\cos\left(\frac{5a}{b}\right)\text{Cos}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^4/(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] -(e^4*(c + d*x)^4*Sqrt[1 - (c + d*x)^2])/(2*b*d*(a + b*ArcSin[c + d*x])^2)
- (2*e^4*(c + d*x)^3)/(b^2*d*(a + b*ArcSin[c + d*x])) + (5*e^4*(c + d*x)^5)
/(2*b^2*d*(a + b*ArcSin[c + d*x])) - (e^4*Cos[a/b]*CosIntegral[a/b + ArcSin
[c + d*x]])/(16*b^3*d) + (27*e^4*Cos[(3*a)/b]*CosIntegral[(3*a)/b + 3*ArcSi
n[c + d*x]])/(32*b^3*d) - (25*e^4*Cos[(5*a)/b]*CosIntegral[(5*a)/b + 5*ArcS
in[c + d*x]])/(32*b^3*d) - (e^4*Sin[a/b]*SinIntegral[a/b + ArcSin[c + d*x]]
)/(16*b^3*d) + (27*e^4*Sin[(3*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c + d*x]
])/(32*b^3*d) - (25*e^4*Sin[(5*a)/b]*SinIntegral[(5*a)/b + 5*ArcSin[c + d*x
]])/(32*b^3*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4633

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (Dis
t[(c*(m + 1))/(b*(n + 1)), Int[(x^(m + 1)*(a + b*ArcSin[c*x])^(n + 1))/Sqrt
[1 - c^2*x^2], x], x] - Dist[m/(b*c*(n + 1)), Int[(x^(m - 1)*(a + b*ArcSin[
c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
```

```
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rubi steps

$$\int \frac{(ce+dex)^4}{\left(a+b\sin^{-1}(c+dx)\right)^3}\,dx = \frac{\text{Subst}\left(\int \frac{e^4x^4}{\left(a+b\sin^{-1}(x)\right)^3}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^4\,\text{Subst}\left(\int \frac{x^4}{\left(a+b\sin^{-1}(x)\right)^3}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{(2e^4)\,\text{Subst}\left(\int \frac{x^3}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^2}\,dx, x, c+dx\right)}{bd} - \frac{(5e^4)\,\text{Su}}{}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{2e^4(c+dx)^3}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{5e^4(c+dx)^5}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{(6}{}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{2e^4(c+dx)^3}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{5e^4(c+dx)^5}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{(6}{}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{2e^4(c+dx)^3}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{5e^4(c+dx)^5}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{(6}{}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{2e^4(c+dx)^3}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{5e^4(c+dx)^5}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} - \frac{(2}{}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{2e^4(c+dx)^3}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{5e^4(c+dx)^5}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{(3}{}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{2e^4(c+dx)^3}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{5e^4(c+dx)^5}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} - \frac{e^4}{}$$

Mathematica [A] time = 1.47909, size = 317, normalized size = 0.98

$$\frac{e^4\left(-\frac{16b^2\sqrt{1-(c+dx)^2}(c+dx)^4}{\left(a+b\sin^{-1}(c+dx)\right)^2} + 48\left(\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right) - \cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(3\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)\right)\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^4/(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] (e^4*((-16*b^2*(c + d*x)^4*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*x])^2
 + (16*b*(-4*(c + d*x)^3 + 5*(c + d*x)^5))/(a + b*ArcSin[c + d*x]) + 48*(Co
s[a/b]*CosIntegral[a/b + ArcSin[c + d*x]] - Cos[(3*a)/b]*CosIntegral[3*(a/b
 + ArcSin[c + d*x])] + Sin[a/b]*SinIntegral[a/b + ArcSin[c + d*x]] - Sin[(3
*a)/b]*SinIntegral[3*(a/b + ArcSin[c + d*x])]) - 25*(2*Cos[a/b]*CosIntegral
[a/b + ArcSin[c + d*x]] - 3*Cos[(3*a)/b]*CosIntegral[3*(a/b + ArcSin[c + d*
x])] + Cos[(5*a)/b]*CosIntegral[5*(a/b + ArcSin[c + d*x])] + 2*Sin[a/b]*Sin
Integral[a/b + ArcSin[c + d*x]] - 3*Sin[(3*a)/b]*SinIntegral[3*(a/b + ArcSi
n[c + d*x])] + Sin[(5*a)/b]*SinIntegral[5*(a/b + ArcSin[c + d*x])])))/(32*b
^3*d)
```

Maple [B] time = 0.064, size = 720, normalized size = 2.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^3,x)
```

```
[Out] 1/32/d*e^4*(27*arcsin(d*x+c)^2*Si(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)*b^2+27*
arcsin(d*x+c)^2*Ci(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b)*b^2-25*arcsin(d*x+c)^2
*Si(5*arcsin(d*x+c)+5*a/b)*sin(5*a/b)*b^2-25*arcsin(d*x+c)^2*Ci(5*arcsin(d*
x+c)+5*a/b)*cos(5*a/b)*b^2-2*arcsin(d*x+c)^2*Si(arcsin(d*x+c)+a/b)*sin(a/b)
*b^2-2*arcsin(d*x+c)^2*Ci(arcsin(d*x+c)+a/b)*cos(a/b)*b^2+54*arcsin(d*x+c)*
Si(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)*a*b+54*arcsin(d*x+c)*Ci(3*arcsin(d*x+c
)+3*a/b)*cos(3*a/b)*a*b-50*arcsin(d*x+c)*Si(5*arcsin(d*x+c)+5*a/b)*sin(5*a/
b)*a*b-50*arcsin(d*x+c)*Ci(5*arcsin(d*x+c)+5*a/b)*cos(5*a/b)*a*b-4*arcsin(d
*x+c)*Si(arcsin(d*x+c)+a/b)*sin(a/b)*a*b-4*arcsin(d*x+c)*Ci(arcsin(d*x+c)+a
/b)*cos(a/b)*a*b-9*sin(3*arcsin(d*x+c))*a*b+5*arcsin(d*x+c)*sin(5*arcsin(d*
x+c))*b^2-25*Si(5*arcsin(d*x+c)+5*a/b)*sin(5*a/b)*a^2-25*Ci(5*arcsin(d*x+c)
+5*a/b)*cos(5*a/b)*a^2+5*sin(5*arcsin(d*x+c))*a*b+2*arcsin(d*x+c)*(d*x+c)*b
^2-2*Si(arcsin(d*x+c)+a/b)*sin(a/b)*a^2-2*Ci(arcsin(d*x+c)+a/b)*cos(a/b)*a^
2-9*arcsin(d*x+c)*sin(3*arcsin(d*x+c))*b^2+2*(d*x+c)*a*b+27*Si(3*arcsin(d*x
+c)+3*a/b)*sin(3*a/b)*a^2+27*Ci(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b)*a^2-cos(5
*arcsin(d*x+c))*b^2-2*(1-(d*x+c)^2)^(1/2)*b^2+3*cos(3*arcsin(d*x+c))*b^2)/(
a+b*arcsin(d*x+c))^2/b^3
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{d^4e^4x^4 + 4\,cd^3e^4x^3 + 6\,c^2d^2e^4x^2 + 4\,c^3de^4x + c^4e^4}{b^3\arcsin\left(dx+c\right)^3 + 3\,ab^2\arcsin\left(dx+c\right)^2 + 3\,a^2b\arcsin\left(dx+c\right) + a^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] integral((d^4*e^4*x^4 + 4*c*d^3*e^4*x^3 + 6*c^2*d^2*e^4*x^2 + 4*c^3*d*e^4*x
 + c^4*e^4)/(b^3*arcsin(d*x + c)^3 + 3*a*b^2*arcsin(d*x + c)^2 + 3*a^2*b*ar
csin(d*x + c) + a^3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e^4\left(\int \frac{c^4}{a^3 + 3a^2b\,\text{asin}\,(c+dx) + 3ab^2\,\text{asin}^2\,(c+dx) + b^3\,\text{asin}^3\,(c+dx)}\,dx + \int \frac{d^4x^4}{a^3 + 3a^2b\,\text{asin}\,(c+dx) + 3ab^2\,\text{asin}^2\,(c+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**4/(a+b*asin(d*x+c))**3,x)
```

```
[Out] e**4*(Integral(c**4/(a**3 + 3*a**2*b*asin(c + d*x) + 3*a*b**2*asin(c + d*x)
**2 + b**3*asin(c + d*x)**3), x) + Integral(d**4*x**4/(a**3 + 3*a**2*b*asin
(c + d*x) + 3*a*b**2*asin(c + d*x)**2 + b**3*asin(c + d*x)**3), x) + Integr
al(4*c*d**3*x**3/(a**3 + 3*a**2*b*asin(c + d*x) + 3*a*b**2*asin(c + d*x)**2
 + b**3*asin(c + d*x)**3), x) + Integral(6*c**2*d**2*x**2/(a**3 + 3*a**2*b*
asin(c + d*x) + 3*a*b**2*asin(c + d*x)**2 + b**3*asin(c + d*x)**3), x) + In
tegral(4*c**3*d*x/(a**3 + 3*a**2*b*asin(c + d*x) + 3*a*b**2*asin(c + d*x)**
```

```
2 + b**3*asin(c + d*x)**3), x))
```

Giac [B] time = 2.1016, size = 4232, normalized size = 13.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] -25/2*b^2*arcsin(d*x + c)^2*cos(a/b)^5*cos_integral(5*a/b + 5*arcsin(d*x +
c))*e^4/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) -
 25/2*b^2*arcsin(d*x + c)^2*cos(a/b)^4*e^4*sin(a/b)*sin_integral(5*a/b + 5*
arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2
*b^3*d) - 25*a*b*arcsin(d*x + c)*cos(a/b)^5*cos_integral(5*a/b + 5*arcsin(d
*x + c))*e^4/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3
*d) - 25*a*b*arcsin(d*x + c)*cos(a/b)^4*e^4*sin(a/b)*sin_integral(5*a/b + 5
*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^
2*b^3*d) + 125/8*b^2*arcsin(d*x + c)^2*cos(a/b)^3*cos_integral(5*a/b + 5*ar
csin(d*x + c))*e^4/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a
^2*b^3*d) - 25/2*a^2*cos(a/b)^5*cos_integral(5*a/b + 5*arcsin(d*x + c))*e^4
/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 27/8*b
^2*arcsin(d*x + c)^2*cos(a/b)^3*cos_integral(3*a/b + 3*arcsin(d*x + c))*e^4
/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 75/8*b
^2*arcsin(d*x + c)^2*cos(a/b)^2*e^4*sin(a/b)*sin_integral(5*a/b + 5*arcsin(
d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d)
 - 25/2*a^2*cos(a/b)^4*e^4*sin(a/b)*sin_integral(5*a/b + 5*arcsin(d*x + c))
/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 27/8*b
^2*arcsin(d*x + c)^2*cos(a/b)^2*e^4*sin(a/b)*sin_integral(3*a/b + 3*arcsin(
d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d)
 + 125/4*a*b*arcsin(d*x + c)*cos(a/b)^3*cos_integral(5*a/b + 5*arcsin(d*x +
 c))*e^4/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d)
+ 27/4*a*b*arcsin(d*x + c)*cos(a/b)^3*cos_integral(3*a/b + 3*arcsin(d*x + c
))*e^4/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) +
75/4*a*b*arcsin(d*x + c)*cos(a/b)^2*e^4*sin(a/b)*sin_integral(5*a/b + 5*arc
sin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^
3*d) + 27/4*a*b*arcsin(d*x + c)*cos(a/b)^2*e^4*sin(a/b)*sin_integral(3*a/b
+ 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) +
 a^2*b^3*d) + 5/2*((d*x + c)^2 - 1)^2*(d*x + c)*b^2*arcsin(d*x + c)*e^4/(b^
5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 125/32*b^2
*arcsin(d*x + c)^2*cos(a/b)*cos_integral(5*a/b + 5*arcsin(d*x + c))*e^4/(b^
5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 125/8*a^2*
```

cos(a/b)^3*cos_integral(5*a/b + 5*arcsin(d*x + c))*e^4/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 81/32*b^2*arcsin(d*x + c)^2 *cos(a/b)*cos_integral(3*a/b + 3*arcsin(d*x + c))*e^4/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 27/8*a^2*cos(a/b)^3*cos_inte gral(3*a/b + 3*arcsin(d*x + c))*e^4/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*ar csin(d*x + c) + a^2*b^3*d) - 1/16*b^2*arcsin(d*x + c)^2*cos(a/b)*cos_integr al(a/b + arcsin(d*x + c))*e^4/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d *x + c) + a^2*b^3*d) - 25/32*b^2*arcsin(d*x + c)^2*e^4*sin(a/b)*sin_integra l(5*a/b + 5*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d* x + c) + a^2*b^3*d) + 75/8*a^2*cos(a/b)^2*e^4*sin(a/b)*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 27/32*b^2*arcsin(d*x + c)^2*e^4*sin(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a ^2*b^3*d) + 27/8*a^2*cos(a/b)^2*e^4*sin(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/16*b^2*arcsin(d*x + c)^2*e^4*sin(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 5/2 *((d*x + c)^2 - 1)^2*(d*x + c)*a*b*e^4/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d *arcsin(d*x + c) + a^2*b^3*d) + 3*((d*x + c)^2 - 1)*(d*x + c)*b^2*arcsin(d* x + c)*e^4/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 125/16*a*b*arcsin(d*x + c)*cos(a/b)*cos_integral(5*a/b + 5*arcsin(d*x + c))*e^4/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 81/16*a*b*arcsin(d*x + c)*cos(a/b)*cos_integral(3*a/b + 3*arcsin(d*x + c))*e^4/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1 /8*a*b*arcsin(d*x + c)*cos(a/b)*cos_integral(a/b + arcsin(d*x + c))*e^4/(b^ 5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 25/16*a*b* arcsin(d*x + c)*e^4*sin(a/b)*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^5*d *arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 27/16*a*b*arc sin(d*x + c)*e^4*sin(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*ar csin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/8*a*b*arcsin(d *x + c)*e^4*sin(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/2*((d*x + c)^2 - 1)^2*s qrt(-(d*x + c)^2 + 1)*b^2*e^4/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d *x + c) + a^2*b^3*d) + 3*((d*x + c)^2 - 1)*(d*x + c)*a*b*e^4/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 1/2*(d*x + c)*b^2*arc sin(d*x + c)*e^4/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2 *b^3*d) - 125/32*a^2*cos(a/b)*cos_integral(5*a/b + 5*arcsin(d*x + c))*e^4/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 81/32*a^ 2*cos(a/b)*cos_integral(3*a/b + 3*arcsin(d*x + c))*e^4/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/16*a^2*cos(a/b)*cos_integ ral(a/b + arcsin(d*x + c))*e^4/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 25/32*a^2*e^4*sin(a/b)*sin_integral(5*a/b + 5*arcsi n(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3* d) - 27/32*a^2*e^4*sin(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d* arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/16*a^2*e^4*s

```
in(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*
b^4*d*arcsin(d*x + c) + a^2*b^3*d) + (-(d*x + c)^2 + 1)^(3/2)*b^2*e^4/(b^5*
d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 1/2*(d*x + c
)*a*b*e^4/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d)
 - 1/2*sqrt(-(d*x + c)^2 + 1)*b^2*e^4/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*
arcsin(d*x + c) + a^2*b^3*d)
```

3.228 $\int \frac{(ce+dex)^3}{\left(a+b\sin^{-1}(c+dx)\right)^3}\,dx$

Optimal. Leaf size=249

$$\frac{e^3\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{2b^3d}-\frac{e^3\sin\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{b^3d}-\frac{e^3\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{b}\right.}{2b^3d}$$

```
[Out] -(e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(2*b*d*(a + b*ArcSin[c + d*x])^2)
- (3*e^3*(c + d*x)^2)/(2*b^2*d*(a + b*ArcSin[c + d*x])) + (2*e^3*(c + d*x)^
4)/(b^2*d*(a + b*ArcSin[c + d*x])) + (e^3*CosIntegral[(2*(a + b*ArcSin[c +
d*x]))/b]*Sin[(2*a)/b])/(2*b^3*d) - (e^3*CosIntegral[(4*(a + b*ArcSin[c + d
*x]))/b]*Sin[(4*a)/b])/(b^3*d) - (e^3*Cos[(2*a)/b]*SinIntegral[(2*(a + b*Ar
cSin[c + d*x]))/b])/(2*b^3*d) + (e^3*Cos[(4*a)/b]*SinIntegral[(4*(a + b*Arc
Sin[c + d*x]))/b])/(b^3*d)
```

Rubi [A] time = 0.659939, antiderivative size = 249, normalized size of antiderivative = 1., number of steps used = 20, number of rules used = 9, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.391, Rules used = {4805, 12, 4633, 4719, 4635, 4406, 3303, 3299, 3302}

$$\frac{e^3\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(c+dx)\right)}{2b^3d}-\frac{e^3\sin\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4a}{b}+4\sin^{-1}(c+dx)\right)}{b^3d}-\frac{e^3\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\right.}{2b^3d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] -(e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(2*b*d*(a + b*ArcSin[c + d*x])^2)
- (3*e^3*(c + d*x)^2)/(2*b^2*d*(a + b*ArcSin[c + d*x])) + (2*e^3*(c + d*x)^
4)/(b^2*d*(a + b*ArcSin[c + d*x])) + (e^3*CosIntegral[(2*a)/b + 2*ArcSin[c
+ d*x]]*Sin[(2*a)/b])/(2*b^3*d) - (e^3*CosIntegral[(4*a)/b + 4*ArcSin[c + d
*x]]*Sin[(4*a)/b])/(b^3*d) - (e^3*Cos[(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcS
in[c + d*x]])/(2*b^3*d) + (e^3*Cos[(4*a)/b]*SinIntegral[(4*a)/b + 4*ArcSin[
c + d*x]])/(b^3*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
```

```
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4633

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (Dis
t[(c*(m + 1))/(b*(n + 1)), Int[(x^(m + 1)*(a + b*ArcSin[c*x])^(n + 1))/Sqrt
[1 - c^2*x^2], x], x] - Dist[m/(b*c*(n + 1)), Int[(x^(m - 1)*(a + b*ArcSin[
c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rubi steps

$$\int \frac{(ce+dex)^3}{\left(a+b\sin^{-1}(c+dx)\right)^3}\,dx = \frac{\text{Subst}\left(\int \frac{e^3x^3}{\left(a+b\sin^{-1}(x)\right)^3}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^3\,\text{Subst}\left(\int \frac{x^3}{\left(a+b\sin^{-1}(x)\right)^3}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{(3e^3)\,\text{Subst}\left(\int \frac{x^2}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^2}\,dx, x, c+dx\right)}{2bd} - \frac{(2e^3)\,\text{S}}{}$$

$$= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{3e^3(c+dx)^2}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{2e^3(c+dx)^4}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} +$$

$$= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{3e^3(c+dx)^2}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{2e^3(c+dx)^4}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} +$$

$$= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{3e^3(c+dx)^2}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{2e^3(c+dx)^4}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} +$$

$$= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{3e^3(c+dx)^2}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{2e^3(c+dx)^4}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} +$$

$$= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{3e^3(c+dx)^2}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{2e^3(c+dx)^4}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} +$$

$$= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{3e^3(c+dx)^2}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{2e^3(c+dx)^4}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} +$$

Mathematica [A] time = 0.705064, size = 181, normalized size = 0.73

$$\frac{e^3\left(-\frac{b^2\sqrt{1-(c+dx)^2}(c+dx)^3}{\left(a+b\sin^{-1}(c+dx)\right)^2} + \sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(2\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)\right) - 2\sin\left(\frac{4a}{b}\right)\text{CosIntegral}\left(4\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)\right.\right.}{2b^3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] (e^3*(-((b^2*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*x])^2)
+ (b*(-3*(c + d*x)^2 + 4*(c + d*x)^4))/(a + b*ArcSin[c + d*x]) + CosIntegra
l[2*(a/b + ArcSin[c + d*x])]*Sin[(2*a)/b] - 2*CosIntegral[4*(a/b + ArcSin[c
 + d*x])]*Sin[(4*a)/b] - Cos[(2*a)/b]*SinIntegral[2*(a/b + ArcSin[c + d*x])
] + 2*Cos[(4*a)/b]*SinIntegral[4*(a/b + ArcSin[c + d*x])]))/(2*b^3*d)
```

Maple [B] time = 0.044, size = 506, normalized size = 2.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^3,x)
```

```
[Out] 1/16/d*e^3*(16*arcsin(d*x+c)^2*Si(4*arcsin(d*x+c)+4*a/b)*cos(4*a/b)*b^2-16*
arcsin(d*x+c)^2*Ci(4*arcsin(d*x+c)+4*a/b)*sin(4*a/b)*b^2-8*arcsin(d*x+c)^2*
Si(2*arcsin(d*x+c)+2*a/b)*cos(2*a/b)*b^2+8*arcsin(d*x+c)^2*Ci(2*arcsin(d*x+
c)+2*a/b)*sin(2*a/b)*b^2+32*arcsin(d*x+c)*Si(4*arcsin(d*x+c)+4*a/b)*cos(4*a
/b)*a*b-32*arcsin(d*x+c)*Ci(4*arcsin(d*x+c)+4*a/b)*sin(4*a/b)*a*b-16*arcsin
(d*x+c)*Si(2*arcsin(d*x+c)+2*a/b)*cos(2*a/b)*a*b+16*arcsin(d*x+c)*Ci(2*arcs
in(d*x+c)+2*a/b)*sin(2*a/b)*a*b+4*arcsin(d*x+c)*cos(4*arcsin(d*x+c))*b^2-4*
arcsin(d*x+c)*cos(2*arcsin(d*x+c))*b^2+16*Si(4*arcsin(d*x+c)+4*a/b)*cos(4*a
/b)*a^2-16*Ci(4*arcsin(d*x+c)+4*a/b)*sin(4*a/b)*a^2-8*Si(2*arcsin(d*x+c)+2*
a/b)*cos(2*a/b)*a^2+8*Ci(2*arcsin(d*x+c)+2*a/b)*sin(2*a/b)*a^2+sin(4*arcsin
(d*x+c))*b^2+4*cos(4*arcsin(d*x+c))*a*b-2*sin(2*arcsin(d*x+c))*b^2-4*cos(2*
arcsin(d*x+c))*a*b)/(a+b*arcsin(d*x+c))^2/b^3
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{d^3e^3x^3 + 3\,cd^2e^3x^2 + 3\,c^2de^3x + c^3e^3}{b^3\arcsin\left(dx+c\right)^3 + 3\,ab^2\arcsin\left(dx+c\right)^2 + 3\,a^2b\arcsin\left(dx+c\right) + a^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] integral((d^3*e^3*x^3 + 3*c*d^2*e^3*x^2 + 3*c^2*d*e^3*x + c^3*e^3)/(b^3*arc
sin(d*x + c)^3 + 3*a*b^2*arcsin(d*x + c)^2 + 3*a^2*b*arcsin(d*x + c) + a^3)
, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e^3\left(\int\frac{c^3}{a^3 + 3a^2b\operatorname{asin}\left(c+dx\right) + 3ab^2\operatorname{asin}^2\left(c+dx\right) + b^3\operatorname{asin}^3\left(c+dx\right)}\,dx + \int\frac{d^3x^3}{a^3 + 3a^2b\operatorname{asin}\left(c+dx\right) + 3ab^2\operatorname{asin}^2\left(c-\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3/(a+b*asin(d*x+c))**3,x)
```

```
[Out] e**3*(Integral(c**3/(a**3 + 3*a**2*b*asin(c + d*x) + 3*a*b**2*asin(c + d*x)
**2 + b**3*asin(c + d*x)**3), x) + Integral(d**3*x**3/(a**3 + 3*a**2*b*asin
(c + d*x) + 3*a*b**2*asin(c + d*x)**2 + b**3*asin(c + d*x)**3), x) + Integr
al(3*c*d**2*x**2/(a**3 + 3*a**2*b*asin(c + d*x) + 3*a*b**2*asin(c + d*x)**2
 + b**3*asin(c + d*x)**3), x) + Integral(3*c**2*d*x/(a**3 + 3*a**2*b*asin(c
 + d*x) + 3*a*b**2*asin(c + d*x)**2 + b**3*asin(c + d*x)**3), x))
```

Giac [B] time = 2.01396, size = 2928, normalized size = 11.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^3,x, algorithm="giac")
```

[Out] -8*b^2*arcsin(d*x + c)^2*cos(a/b)^3*cos_integral(4*a/b + 4*arcsin(d*x + c))*e^3*sin(a/b)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 8*b^2*arcsin(d*x + c)^2*cos(a/b)^4*e^3*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 16*a*b*arcsin(d*x + c)*cos(a/b)^3*cos_integral(4*a/b + 4*arcsin(d*x + c))*e^3*sin(a/b)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 16*a*b*arcsin(d*x + c)*cos(a/b)^4*e^3*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 4*b^2*arcsin(d*x + c)^2*cos(a/b)*cos_integral(4*a/b + 4*arcsin(d*x + c))*e^3*sin(a/b)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 8*a^2*cos(a/b)^3*cos_integral(4*a/b + 4*arcsin(d*x + c))*e^3*sin(a/b)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + b^2*arcsin(d*x + c)^2*cos(a/b)*cos_integral(2*a/b + 2*arcsin(d*x + c))*e^3*sin(a/b)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 8*b^2*arcsin(d*x + c)^2*cos(a/b)^2*e^3*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 8*a^2*cos(a/b)^4*e^3*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - b^2*arcsin(d*x + c)^2*cos(a/b)^2*e^3*sin_integral(2*a/b + 2*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 8*a*b*arcsin(d*x + c)*cos(a/b)*cos_integral(4*a/b + 4*arcsin(d*x + c))*e^3*sin(a/b)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 2*a*b*arcsin(d*x + c)*cos(a/b)*cos_integral(2*a/b + 2*arcsin(d*x + c))*e^3*sin(a/b)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 16*a*b*arcsin(d*x + c)*cos(a/b)^2*e^3*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 2*a*b*arcsin(d*x + c)*cos(a/b)^2*e^3*sin_integral(2*a/b + 2*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 2*((d*x + c)^2 - 1)^2*b^2*arcsin(d*x + c)*e^3/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 4*a^2*cos(a/b)*cos_integral(4*a/b + 4*arcsin(d*x + c))*e^3*sin(a/b)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + a^2*cos(a/b)*cos_integral(2*a/b + 2*arcsin(d*x + c))*e^3*sin(a/b)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + b^2*arcsin(d*x + c)^2*e^3*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 8*a^2*cos(a/b)^2*e^3*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 1/2*b^2*arcsin(d*x + c)^2*e^3*sin_integral(2*a/b + 2*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - a^2*cos(a/b)^2*e^3*sin_integral(2*a/b + 2*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 1/2*(-(d*x + c)^2 + 1)^(3/2)*(d*x + c)*b^2*e^3/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 2*((d*x + c)^2 - 1)^2*a*b*e^3/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 5/2*((d*x + c)^2 - 1)*b^2*arcsin(d*x + c)*e^3/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 2*a*b*arcsin(d*x + c)*e^3*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^5*

```
d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + a*b*arcsin(d
*x + c)*e^3*sin_integral(2*a/b + 2*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^
2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/2*sqrt(-(d*x + c)^2 + 1)*(d*
x + c)*b^2*e^3/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b
^3*d) + 5/2*((d*x + c)^2 - 1)*a*b*e^3/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*
arcsin(d*x + c) + a^2*b^3*d) + 1/2*b^2*arcsin(d*x + c)*e^3/(b^5*d*arcsin(d*
x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + a^2*e^3*sin_integral(4*
a/b + 4*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x +
c) + a^2*b^3*d) + 1/2*a^2*e^3*sin_integral(2*a/b + 2*arcsin(d*x + c))/(b^5*
d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 1/2*a*b*e^3/
(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d)
```

3.229 $\int \frac{(ce+dex)^2}{\left(a+b\sin^{-1}(c+dx)\right)^3}\,dx$

Optimal. Leaf size=248

$$-\frac{e^2\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{8b^3d}+\frac{9e^2\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{8b^3d}-\frac{e^2\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{8b^3d}+$$

```
[Out] -(e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(2*b*d*(a + b*ArcSin[c + d*x])^2)
- (e^2*(c + d*x))/(b^2*d*(a + b*ArcSin[c + d*x])) + (3*e^2*(c + d*x)^3)/(2*
b^2*d*(a + b*ArcSin[c + d*x])) - (e^2*Cos[a/b]*CosIntegral[(a + b*ArcSin[c
+ d*x])/b])/(8*b^3*d) + (9*e^2*Cos[(3*a)/b]*CosIntegral[(3*(a + b*ArcSin[c
+ d*x]))/b])/(8*b^3*d) - (e^2*Sin[a/b]*SinIntegral[(a + b*ArcSin[c + d*x])/
b])/(8*b^3*d) + (9*e^2*Sin[(3*a)/b]*SinIntegral[(3*(a + b*ArcSin[c + d*x]))
/b])/(8*b^3*d)
```

Rubi [A] time = 0.577872, antiderivative size = 306, normalized size of antiderivative = 1.23, number of steps used = 18, number of rules used = 10, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.435, Rules used = {4805, 12, 4633, 4719, 4635, 4406, 3303, 3299, 3302, 4623}

$$-\frac{9e^2\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)}{8b^3d}+\frac{9e^2\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(c+dx)\right)}{8b^3d}+\frac{e^2\cos\left(\frac{a}{b}\right)\text{CosInteg}}{b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] -(e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(2*b*d*(a + b*ArcSin[c + d*x])^2)
- (e^2*(c + d*x))/(b^2*d*(a + b*ArcSin[c + d*x])) + (3*e^2*(c + d*x)^3)/(2*
b^2*d*(a + b*ArcSin[c + d*x])) - (9*e^2*Cos[a/b]*CosIntegral[a/b + ArcSin[c
 + d*x]])/(8*b^3*d) + (9*e^2*Cos[(3*a)/b]*CosIntegral[(3*a)/b + 3*ArcSin[c
+ d*x]])/(8*b^3*d) + (e^2*Cos[a/b]*CosIntegral[(a + b*ArcSin[c + d*x])/b])/
(b^3*d) - (9*e^2*Sin[a/b]*SinIntegral[a/b + ArcSin[c + d*x]])/(8*b^3*d) + (
9*e^2*Sin[(3*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c + d*x]])/(8*b^3*d) + (e
^2*Sin[a/b]*SinIntegral[(a + b*ArcSin[c + d*x])/b])/(b^3*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4633

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (Dis
t[(c*(m + 1))/(b*(n + 1)), Int[(x^(m + 1)*(a + b*ArcSin[c*x])^(n + 1))/Sqrt
[1 - c^2*x^2], x], x] - Dist[m/(b*c*(n + 1)), Int[(x^(m - 1)*(a + b*ArcSin[
c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
```

```
 NeQ[d*e - c*f, 0]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^2}{\left(a+b\sin^{-1}(c+dx)\right)^3}\,dx = \frac{\text{Subst}\left(\int \frac{e^2x^2}{\left(a+b\sin^{-1}(x)\right)^3}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^2\,\text{Subst}\left(\int \frac{x^2}{\left(a+b\sin^{-1}(x)\right)^3}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{e^2\,\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^2}\,dx, x, c+dx\right)}{bd} - \frac{\left(3e^2\right)\text{Subs}}{}$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{e^2(c+dx)}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{3e^2(c+dx)^3}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} +$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{e^2(c+dx)}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{3e^2(c+dx)^3}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} +$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{e^2(c+dx)}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{3e^2(c+dx)^3}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} -$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{e^2(c+dx)}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{3e^2(c+dx)^3}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} +$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{e^2(c+dx)}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{3e^2(c+dx)^3}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} +$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{e^2(c+dx)}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{3e^2(c+dx)^3}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} -$$

Mathematica [A] time = 0.799369, size = 219, normalized size = 0.88

$$e^2\left(-\frac{4b^2\sqrt{1-(c+dx)^2}(c+dx)^2}{\left(a+b\sin^{-1}(c+dx)\right)^2} + 8\left(\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right) + \sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)\right) + 9\left(-\cos\left(\frac{a}{b}\right)\text{C}\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] (e^2*((-4*b^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*x])^2
+ (4*b*(-2*(c + d*x) + 3*(c + d*x)^3))/(a + b*ArcSin[c + d*x]) + 8*(Cos[a/b
]*CosIntegral[a/b + ArcSin[c + d*x]] + Sin[a/b]*SinIntegral[a/b + ArcSin[c
+ d*x]]) + 9*(-(Cos[a/b]*CosIntegral[a/b + ArcSin[c + d*x]]) + Cos[(3*a)/b]
*CosIntegral[3*(a/b + ArcSin[c + d*x])] - Sin[a/b]*SinIntegral[a/b + ArcSin
[c + d*x]] + Sin[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c + d*x])])))/(8*b^3*
d)
```

Maple [B] time = 0.053, size = 474, normalized size = 1.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^3,x)
```

```
[Out] -1/8/d*e^2*(arcsin(d*x+c)^2*Si(arcsin(d*x+c)+a/b)*sin(a/b)*b^2+arcsin(d*x+c
)^2*Ci(arcsin(d*x+c)+a/b)*cos(a/b)*b^2-9*arcsin(d*x+c)^2*Si(3*arcsin(d*x+c)
+3*a/b)*sin(3*a/b)*b^2-9*arcsin(d*x+c)^2*Ci(3*arcsin(d*x+c)+3*a/b)*cos(3*a/
b)*b^2+2*arcsin(d*x+c)*Si(arcsin(d*x+c)+a/b)*sin(a/b)*a*b+2*arcsin(d*x+c)*C
i(arcsin(d*x+c)+a/b)*cos(a/b)*a*b-18*arcsin(d*x+c)*Si(3*arcsin(d*x+c)+3*a/b
)*sin(3*a/b)*a*b-18*arcsin(d*x+c)*Ci(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b)*a*b+
3*arcsin(d*x+c)*sin(3*arcsin(d*x+c))*b^2-arcsin(d*x+c)*(d*x+c)*b^2+Si(arcsi
n(d*x+c)+a/b)*sin(a/b)*a^2+Ci(arcsin(d*x+c)+a/b)*cos(a/b)*a^2-9*Si(3*arcsin
(d*x+c)+3*a/b)*sin(3*a/b)*a^2-9*Ci(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b)*a^2+(1
-(d*x+c)^2)^(1/2)*b^2-cos(3*arcsin(d*x+c))*b^2+3*sin(3*arcsin(d*x+c))*a*b-(
d*x+c)*a*b)/(a+b*arcsin(d*x+c))^2/b^3
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{d^2e^2x^2 + 2\,cde^2x + c^2e^2}{b^3\arcsin\left(dx + c\right)^3 + 3\,ab^2\arcsin\left(dx + c\right)^2 + 3\,a^2b\arcsin\left(dx + c\right) + a^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] integral((d^2*e^2*x^2 + 2*c*d*e^2*x + c^2*e^2)/(b^3*arcsin(d*x + c)^3 + 3*a
*b^2*arcsin(d*x + c)^2 + 3*a^2*b*arcsin(d*x + c) + a^3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e^2\left(\int\frac{c^2}{a^3 + 3a^2b\operatorname{asin}\left(c + dx\right) + 3ab^2\operatorname{asin}^2\left(c + dx\right) + b^3\operatorname{asin}^3\left(c + dx\right)}\,dx + \int\frac{d^2x^2}{a^3 + 3a^2b\operatorname{asin}\left(c + dx\right) + 3ab^2\operatorname{asin}^2\left(c -\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2/(a+b*asin(d*x+c))**3,x)
```

```
[Out] e**2*(Integral(c**2/(a**3 + 3*a**2*b*asin(c + d*x) + 3*a*b**2*asin(c + d*x)
**2 + b**3*asin(c + d*x)**3), x) + Integral(d**2*x**2/(a**3 + 3*a**2*b*asin
(c + d*x) + 3*a*b**2*asin(c + d*x)**2 + b**3*asin(c + d*x)**3), x) + Integr
al(2*c*d*x/(a**3 + 3*a**2*b*asin(c + d*x) + 3*a*b**2*asin(c + d*x)**2 + b**
3*asin(c + d*x)**3), x))
```

Giac [B] time = 1.99738, size = 2183, normalized size = 8.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] 9/2*b^2*arcsin(d*x + c)^2*cos(a/b)^3*cos_integral(3*a/b + 3*arcsin(d*x + c)
)*e^2/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 9
```

/2*b^2*arcsin(d*x + c)^2*cos(a/b)^2*e^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 9*a*b*arcsin(d*x + c)*cos(a/b)^3*cos_integral(3*a/b + 3*arcsin(d*x + c))*e^2/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 9*a*b*arcsin(d*x + c)*cos(a/b)^2*e^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 27/8*b^2*arcsin(d*x + c)^2*cos(a/b)*cos_integral(3*a/b + 3*arcsin(d*x + c))*e^2/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 9/2*a^2*cos(a/b)^3*cos_integral(3*a/b + 3*arcsin(d*x + c))*e^2/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/8*b^2*arcsin(d*x + c)^2*cos(a/b)*cos_integral(a/b + arcsin(d*x + c))*e^2/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 9/8*b^2*arcsin(d*x + c)^2*e^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 9/2*a^2*cos(a/b)^2*e^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/8*b^2*arcsin(d*x + c)^2*e^2*sin(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 3/2*((d*x + c)^2 - 1)*(d*x + c)*b^2*arcsin(d*x + c)*e^2/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 27/4*a*b*arcsin(d*x + c)*cos(a/b)*cos_integral(3*a/b + 3*arcsin(d*x + c))*e^2/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/4*a*b*arcsin(d*x + c)*cos(a/b)*cos_integral(a/b + arcsin(d*x + c))*e^2/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 9/4*a*b*arcsin(d*x + c)*e^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/4*a*b*arcsin(d*x + c)*e^2*sin(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 3/2*((d*x + c)^2 - 1)*(d*x + c)*a*b*e^2/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 1/2*(d*x + c)*b^2*arcsin(d*x + c)*e^2/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 27/8*a^2*cos(a/b)*cos_integral(3*a/b + 3*arcsin(d*x + c))*e^2/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/8*a^2*cos(a/b)*cos_integral(a/b + arcsin(d*x + c))*e^2/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 9/8*a^2*e^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/8*a^2*e^2*sin(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 1/2*(-(d*x + c)^2 + 1)^(3/2)*b^2*e^2/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 1/2*(d*x + c)*a*b*e^2/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/2*sqrt(-(d*x + c)^2 + 1)*b^2*e^2/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d)

3.230 $\int \frac{ce+dex}{\left(a+b\sin^{-1}(c+dx)\right)^3}\,dx$

Optimal. Leaf size=157

$$\frac{e\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{b^3d}-\frac{e\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{b^3d}+\frac{e(c+dx)^2}{b^2d\left(a+b\sin^{-1}(c+dx)\right)}-\frac{e}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)}$$

```
[Out] -(e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(2*b*d*(a + b*ArcSin[c + d*x])^2) - e/
(2*b^2*d*(a + b*ArcSin[c + d*x])) + (e*(c + d*x)^2)/(b^2*d*(a + b*ArcSin[c
+ d*x])) + (e*CosIntegral[(2*(a + b*ArcSin[c + d*x]))/b]*Sin[(2*a)/b])/(b^3
*d) - (e*Cos[(2*a)/b]*SinIntegral[(2*(a + b*ArcSin[c + d*x]))/b])/(b^3*d)
```

Rubi [A] time = 0.329673, antiderivative size = 157, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.476, Rules used = {4805, 12, 4633, 4719, 4635, 4406, 3303, 3299, 3302, 4641}

$$\frac{e\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(c+dx)\right)}{b^3d}-\frac{e\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\sin^{-1}(c+dx)\right)}{b^3d}+\frac{e(c+dx)^2}{b^2d\left(a+b\sin^{-1}(c+dx)\right)}-\frac{e}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)/(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] -(e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(2*b*d*(a + b*ArcSin[c + d*x])^2) - e/
(2*b^2*d*(a + b*ArcSin[c + d*x])) + (e*(c + d*x)^2)/(b^2*d*(a + b*ArcSin[c
+ d*x])) + (e*CosIntegral[(2*a)/b + 2*ArcSin[c + d*x]]*Sin[(2*a)/b])/(b^3*d
) - (e*Cos[(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c + d*x]])/(b^3*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4633

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (Dis
t[(c*(m + 1))/(b*(n + 1)), Int[(x^(m + 1)*(a + b*ArcSin[c*x])^(n + 1))/Sqrt
[1 - c^2*x^2], x], x] - Dist[m/(b*c*(n + 1)), Int[(x^(m - 1)*(a + b*ArcSin[
c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
```

```
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{ce+dex}{\left(a+b\sin^{-1}(c+dx)\right)^3}\,dx = \frac{\text{Subst}\left(\int \frac{ex}{\left(a+b\sin^{-1}(x)\right)^3}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e\,\text{Subst}\left(\int \frac{x}{\left(a+b\sin^{-1}(x)\right)^3}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{e\,\text{Subst}\left(\int \frac{1}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^2}\,dx, x, c+dx\right)}{2bd} - \frac{e\,\text{Subst}\left(\int \frac{}{\sqrt{}}\right.}{}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{e}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{e(c+dx)^2}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} - \frac{(2}{}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{e}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{e(c+dx)^2}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} - \frac{(2}{}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{e}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{e(c+dx)^2}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} - \frac{(2}{}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{e}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{e(c+dx)^2}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} - \frac{e\,S}{}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{e}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{e(c+dx)^2}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} - \frac{\left(e\right.}{}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{e}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{e(c+dx)^2}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{eC}{}$$

Mathematica [A] time = 0.57071, size = 107, normalized size = 0.68

$$-\frac{e\left(-4\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(2\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)\right)+4\cos\left(\frac{2a}{b}\right)\text{Si}\left(2\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)\right)+\frac{b\left(2\cos\left(2\sin^{-1}(c+dx)\right)\left(a+b\sin^{-1}(\right.\right.}{\left(a+b\sin^{-1}(\right.}\right.}{4b^3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)/(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] -(e*(-4*CosIntegral[2*(a/b + ArcSin[c + d*x])]*Sin[(2*a)/b] + (b*(2*(a + b*
ArcSin[c + d*x])*Cos[2*ArcSin[c + d*x]] + b*Sin[2*ArcSin[c + d*x]]))/(a + b
*ArcSin[c + d*x])^2 + 4*Cos[(2*a)/b]*SinIntegral[2*(a/b + ArcSin[c + d*x])]
))/(4*b^3*d)
```

Maple [A] time = 0.035, size = 263, normalized size = 1.7

$$-\frac{e}{4\,d\,(a+b\arcsin(dx+c))^2\,b^3}\left(4\,(\arcsin(dx+c))^2\,\mathrm{Si}\left(2\,\arcsin(dx+c)+2\,\frac{a}{b}\right)\cos\left(2\,\frac{a}{b}\right)b^2-4\,(\arcsin(dx+c))^2\,\mathrm{Ci}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)/(a+b*arcsin(d*x+c))^3,x)
```

```
[Out] -1/4/d*e*(4*arcsin(d*x+c)^2*Si(2*arcsin(d*x+c)+2*a/b)*cos(2*a/b)*b^2-4*arcs
in(d*x+c)^2*Ci(2*arcsin(d*x+c)+2*a/b)*sin(2*a/b)*b^2+8*arcsin(d*x+c)*Si(2*a
rcsin(d*x+c)+2*a/b)*cos(2*a/b)*a*b-8*arcsin(d*x+c)*Ci(2*arcsin(d*x+c)+2*a/b
)*sin(2*a/b)*a*b+2*arcsin(d*x+c)*cos(2*arcsin(d*x+c))*b^2+4*Si(2*arcsin(d*x
+c)+2*a/b)*cos(2*a/b)*a^2-4*Ci(2*arcsin(d*x+c)+2*a/b)*sin(2*a/b)*a^2+sin(2*
arcsin(d*x+c))*b^2+2*cos(2*arcsin(d*x+c))*a*b)/(a+b*arcsin(d*x+c))^2/b^3
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{dex+ce}{b^3\arcsin(dx+c)^3+3\,ab^2\arcsin(dx+c)^2+3\,a^2b\arcsin(dx+c)+a^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] integral((d*e*x + c*e)/(b^3*arcsin(d*x + c)^3 + 3*a*b^2*arcsin(d*x + c)^2 +
 3*a^2*b*arcsin(d*x + c) + a^3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e\left(\int \frac{c}{a^3 + 3a^2b\operatorname{asin}(c+dx) + 3ab^2\operatorname{asin}^2(c+dx) + b^3\operatorname{asin}^3(c+dx)}\,dx + \int \frac{dx}{a^3 + 3a^2b\operatorname{asin}(c+dx) + 3ab^2\operatorname{asin}^2(c+d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*asin(d*x+c))**3,x)
```

```
[Out] e*(Integral(c/(a**3 + 3*a**2*b*asin(c + d*x) + 3*a*b**2*asin(c + d*x)**2 +
b**3*asin(c + d*x)**3), x) + Integral(d*x/(a**3 + 3*a**2*b*asin(c + d*x) +
3*a*b**2*asin(c + d*x)**2 + b**3*asin(c + d*x)**3), x))
```

Giac [B] time = 1.84671, size = 1218, normalized size = 7.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] 2*b^2*arcsin(d*x + c)^2*cos(a/b)*cos_integral(2*a/b + 2*arcsin(d*x + c))*e*
sin(a/b)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d)
- 2*b^2*arcsin(d*x + c)^2*cos(a/b)^2*e*sin_integral(2*a/b + 2*arcsin(d*x +
c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 4*a
*b*arcsin(d*x + c)*cos(a/b)*cos_integral(2*a/b + 2*arcsin(d*x + c))*e*sin(a
/b)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 4*a
*b*arcsin(d*x + c)*cos(a/b)^2*e*sin_integral(2*a/b + 2*arcsin(d*x + c))/(b^
5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 2*a^2*cos(
a/b)*cos_integral(2*a/b + 2*arcsin(d*x + c))*e*sin(a/b)/(b^5*d*arcsin(d*x +
 c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + b^2*arcsin(d*x + c)^2*e*si
n_integral(2*a/b + 2*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*
```

```
arcsin(d*x + c) + a^2*b^3*d) - 2*a^2*cos(a/b)^2*e*sin_integral(2*a/b + 2*ar
csin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b
^3*d) + ((d*x + c)^2 - 1)*b^2*arcsin(d*x + c)*e/(b^5*d*arcsin(d*x + c)^2 +
2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 2*a*b*arcsin(d*x + c)*e*sin_integr
al(2*a/b + 2*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d
*x + c) + a^2*b^3*d) - 1/2*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*b^2*e/(b^5*d*ar
csin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + ((d*x + c)^2 - 1
)*a*b*e/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) +
 1/2*b^2*arcsin(d*x + c)*e/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x
+ c) + a^2*b^3*d) + a^2*e*sin_integral(2*a/b + 2*arcsin(d*x + c))/(b^5*d*ar
csin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 1/2*a*b*e/(b^5*d
*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d)
```

3.231 $\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^3}\,dx$

Optimal. Leaf size=127

$$-\frac{\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{2b^3d}-\frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{2b^3d}+\frac{c+dx}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)}-\frac{\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+d$$

```
[Out] -Sqrt[1 - (c + d*x)^2]/(2*b*d*(a + b*ArcSin[c + d*x])^2) + (c + d*x)/(2*b^2
*d*(a + b*ArcSin[c + d*x])) - (Cos[a/b]*CosIntegral[(a + b*ArcSin[c + d*x])
/b])/(2*b^3*d) - (Sin[a/b]*SinIntegral[(a + b*ArcSin[c + d*x])/b])/(2*b^3*d
)
```

Rubi [A] time = 0.172113, antiderivative size = 127, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.583, Rules used = {4803, 4621, 4719, 4623, 3303, 3299, 3302}

$$-\frac{\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{2b^3d}-\frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{2b^3d}+\frac{c+dx}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)}-\frac{\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+d$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(-3),x]
```

```
[Out] -Sqrt[1 - (c + d*x)^2]/(2*b*d*(a + b*ArcSin[c + d*x])^2) + (c + d*x)/(2*b^2
*d*(a + b*ArcSin[c + d*x])) - (Cos[a/b]*CosIntegral[(a + b*ArcSin[c + d*x])
/b])/(2*b^3*d) - (Sin[a/b]*SinIntegral[(a + b*ArcSin[c + d*x])/b])/(2*b^3*d
)
```

Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
```

```
Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
b, c}, x] && LtQ[n, -1]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
n}, x]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
NeQ[d*e - c*f, 0]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^3}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\sin^{-1}(x)\right)^3}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^2}\,dx, x, c+dx\right)}{2bd}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{c+dx}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} - \frac{\text{Subst}\left(\int \frac{1}{a+b\sin^{-1}(x)}\,dx, x, c+\right.}{2b^2d}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{c+dx}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} - \frac{\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}-\frac{x}{b}\right)}{x}\,dx, x, a+b\right.}{2b^3d}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{c+dx}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} - \frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\cos\left(\frac{x}{b}\right)}{x}\,dx, x,\right.}{2b^3d}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{c+dx}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} - \frac{\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{2b^3d} - $$

Mathematica [A] time = 0.621288, size = 100, normalized size = 0.79

$$-\frac{\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)+\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)+\frac{b\left(b\sqrt{1-(c+dx)^2}-(c+dx)\left(a+b\sin^{-1}(c+dx)\right)\right)}{\left(a+b\sin^{-1}(c+dx)\right)^2}}{2b^3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(-3),x]
```

```
[Out] -((b*(b*Sqrt[1 - (c + d*x)^2] - (c + d*x)*(a + b*ArcSin[c + d*x])))/(a + b*
ArcSin[c + d*x])^2 + Cos[a/b]*CosIntegral[a/b + ArcSin[c + d*x]] + Sin[a/b]
*SinIntegral[a/b + ArcSin[c + d*x]])/(2*b^3*d)
```

Maple [A] time = 0.036, size = 158, normalized size = 1.2

$$\frac{1}{d}\left(-\frac{1}{2\,(a+b\arcsin(dx+c))^{2}\,b}\sqrt{1-(dx+c)^{2}}-\frac{1}{(2\,a+2\,b\arcsin(dx+c))\,b^{3}}\left(\arcsin(dx+c)\,\mathrm{Si}\left(\arcsin(dx+c)+\frac{a}{b}\right)\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c))^3,x)
```

```
[Out] 1/d*(-1/2*(1-(d*x+c)^2)^(1/2)/(a+b*arcsin(d*x+c))^2/b-1/2*(arcsin(d*x+c)*Si
(arcsin(d*x+c)+a/b)*sin(a/b)*b+arcsin(d*x+c)*Ci(arcsin(d*x+c)+a/b)*cos(a/b)
*b+Si(arcsin(d*x+c)+a/b)*sin(a/b)*a+Ci(arcsin(d*x+c)+a/b)*cos(a/b)*a-b*(d*x
+c))/(a+b*arcsin(d*x+c))/b^3)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{b^{3}\arcsin(dx+c)^{3}+3\,ab^{2}\arcsin(dx+c)^{2}+3\,a^{2}b\arcsin(dx+c)+a^{3}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] integral(1/(b^3*arcsin(d*x + c)^3 + 3*a*b^2*arcsin(d*x + c)^2 + 3*a^2*b*arc
sin(d*x + c) + a^3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a + b\,\text{asin}\,(c + dx))^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c))**3,x)
```

```
[Out] Integral((a + b*asin(c + d*x))**(-3), x)
```

Giac [B] time = 1.2306, size = 738, normalized size = 5.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] -1/2*b^2*arcsin(d*x + c)^2*cos(a/b)*cos_integral(a/b + arcsin(d*x + c))/(b^
5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/2*b^2*ar
csin(d*x + c)^2*sin(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^5*d*arcsin(
d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - a*b*arcsin(d*x + c)*c
os(a/b)*cos_integral(a/b + arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*
b^4*d*arcsin(d*x + c) + a^2*b^3*d) - a*b*arcsin(d*x + c)*sin(a/b)*sin_integ
ral(a/b + arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x
+ c) + a^2*b^3*d) + 1/2*(d*x + c)*b^2*arcsin(d*x + c)/(b^5*d*arcsin(d*x + c
)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/2*a^2*cos(a/b)*cos_integra
l(a/b + arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x +
c) + a^2*b^3*d) - 1/2*a^2*sin(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^5
*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 1/2*(d*x +
c)*a*b/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) -
1/2*sqrt(-(d*x + c)^2 + 1)*b^2/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(
d*x + c) + a^2*b^3*d)
```

3.232 $\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^3}\,dx$

Optimal. Leaf size=26

$$\frac{\text{Unintegrable}\left(\frac{1}{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^3},x\right)}{e}$$

```
[Out] Unintegrable[1/((c + d*x)*(a + b*ArcSin[c + d*x])^3), x]/e
```

Rubi [A] time = 0.0578594, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^3),x]

[Out] Defer[Subst][Defer[Int][1/(x*(a + b*ArcSin[x])^3), x], x, c + d*x]/(d*e)
```

Rubi steps

$$\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^3}\,dx = \frac{\text{Subst}\left(\int \frac{1}{ex\left(a+b\sin^{-1}(x)\right)^3}\,dx,x,c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{1}{x\left(a+b\sin^{-1}(x)\right)^3}\,dx,x,c+dx\right)}{de}$$

Mathematica [A] time = 1.05217, size = 0, normalized size = 0.

$$\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^3),x]
```

```
[Out] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^3), x]
```

Maple [A] time = 0.102, size = 0, normalized size = 0.

$$\int \frac{1}{(dex+ce)(a+b\arcsin(dx+c))^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^3,x)
```

```
[Out] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^3,x)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{a^3dex+a^3ce+\left(b^3dex+b^3ce\right)\arcsin(dx+c)^3+3\left(ab^2dex+ab^2ce\right)\arcsin(dx+c)^2+3\left(a^2bdex+a^2bce\right)\text{arcs}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] integral(1/(a^3*d*e*x + a^3*c*e + (b^3*d*e*x + b^3*c*e)*arcsin(d*x + c)^3 +
 3*(a*b^2*d*e*x + a*b^2*c*e)*arcsin(d*x + c)^2 + 3*(a^2*b*d*e*x + a^2*b*c*e
)*arcsin(d*x + c)), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{1}{a^3c+a^3dx+3a^2bc\operatorname{asin}(c+dx)+3a^2bdx\operatorname{asin}(c+dx)+3ab^2c\operatorname{asin}^2(c+dx)+3ab^2dx\operatorname{asin}^2(c+dx)+b^3c\operatorname{asin}^3(c+dx)+b^3dx\operatorname{asin}^3(c+dx)}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*asin(d*x+c))**3,x)
```

```
[Out] Integral(1/(a**3*c + a**3*d*x + 3*a**2*b*c*asin(c + d*x) + 3*a**2*b*d*x*asi
n(c + d*x) + 3*a*b**2*c*asin(c + d*x)**2 + 3*a*b**2*d*x*asin(c + d*x)**2 +
b**3*c*asin(c + d*x)**3 + b**3*d*x*asin(c + d*x)**3), x)/e
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(dex+ce)(b\arcsin(dx+c)+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] integrate(1/((d*e*x + c*e)*(b*arcsin(d*x + c) + a)^3), x)
```

3.233 $\int \frac{(ce+dex)^4}{\left(a+b\sin^{-1}(c+dx)\right)^4}\,dx$

Optimal. Leaf size=416

$$-\frac{e^4\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{48b^4d}+\frac{27e^4\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{32b^4d}-\frac{125e^4\sin\left(\frac{5a}{b}\right)\text{CosIntegral}\left(\right.}{96b^4d}$$

```
[Out] -(e^4*(c + d*x)^4*Sqrt[1 - (c + d*x)^2])/(3*b*d*(a + b*ArcSin[c + d*x])^3)
- (2*e^4*(c + d*x)^3)/(3*b^2*d*(a + b*ArcSin[c + d*x])^2) + (5*e^4*(c + d*x
)^5)/(6*b^2*d*(a + b*ArcSin[c + d*x])^2) - (2*e^4*(c + d*x)^2*Sqrt[1 - (c +
 d*x)^2])/(b^3*d*(a + b*ArcSin[c + d*x])) + (25*e^4*(c + d*x)^4*Sqrt[1 - (c
 + d*x)^2])/(6*b^3*d*(a + b*ArcSin[c + d*x])) - (e^4*CosIntegral[(a + b*Arc
Sin[c + d*x])/b]*Sin[a/b])/(48*b^4*d) + (27*e^4*CosIntegral[(3*(a + b*ArcSi
n[c + d*x]))/b]*Sin[(3*a)/b])/(32*b^4*d) - (125*e^4*CosIntegral[(5*(a + b*A
rcSin[c + d*x]))/b]*Sin[(5*a)/b])/(96*b^4*d) + (e^4*Cos[a/b]*SinIntegral[(a
 + b*ArcSin[c + d*x])/b])/(48*b^4*d) - (27*e^4*Cos[(3*a)/b]*SinIntegral[(3*
(a + b*ArcSin[c + d*x]))/b])/(32*b^4*d) + (125*e^4*Cos[(5*a)/b]*SinIntegral
[(5*(a + b*ArcSin[c + d*x]))/b])/(96*b^4*d)
```

Rubi [A] time = 0.863495, antiderivative size = 412, normalized size of antiderivative = 0.99, number of steps used = 24, number of rules used = 8, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.348, Rules used = {4805, 12, 4633, 4719, 4631, 3303, 3299, 3302}

$$-\frac{e^4\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)}{48b^4d}+\frac{27e^4\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(c+dx)\right)}{32b^4d}-\frac{125e^4\sin\left(\frac{5a}{b}\right)\text{CosI}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^4/(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] -(e^4*(c + d*x)^4*Sqrt[1 - (c + d*x)^2])/(3*b*d*(a + b*ArcSin[c + d*x])^3)
- (2*e^4*(c + d*x)^3)/(3*b^2*d*(a + b*ArcSin[c + d*x])^2) + (5*e^4*(c + d*x
)^5)/(6*b^2*d*(a + b*ArcSin[c + d*x])^2) - (2*e^4*(c + d*x)^2*Sqrt[1 - (c +
 d*x)^2])/(b^3*d*(a + b*ArcSin[c + d*x])) + (25*e^4*(c + d*x)^4*Sqrt[1 - (c
 + d*x)^2])/(6*b^3*d*(a + b*ArcSin[c + d*x])) - (e^4*CosIntegral[a/b + ArcS
in[c + d*x]]*Sin[a/b])/(48*b^4*d) + (27*e^4*CosIntegral[(3*a)/b + 3*ArcSin[
c + d*x]]*Sin[(3*a)/b])/(32*b^4*d) - (125*e^4*CosIntegral[(5*a)/b + 5*ArcSi
n[c + d*x]]*Sin[(5*a)/b])/(96*b^4*d) + (e^4*Cos[a/b]*SinIntegral[a/b + ArcS
```

```
in[c + d*x]])/(48*b^4*d) - (27*e^4*Cos[(3*a)/b]*SinIntegral[(3*a)/b + 3*Arc
Sin[c + d*x]])/(32*b^4*d) + (125*e^4*Cos[(5*a)/b]*SinIntegral[(5*a)/b + 5*A
rcSin[c + d*x]])/(96*b^4*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4633

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (Dis
t[(c*(m + 1))/(b*(n + 1)), Int[(x^(m + 1)*(a + b*ArcSin[c*x])^(n + 1))/Sqrt
[1 - c^2*x^2], x], x] - Dist[m/(b*c*(n + 1)), Int[(x^(m - 1)*(a + b*ArcSin[
c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
```

```
NeQ[d*e - c*f, 0]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rubi steps

$$\int \frac{(ce+dex)^4}{\left(a+b\sin^{-1}(c+dx)\right)^4}\,dx = \frac{\text{Subst}\left(\int \frac{e^4x^4}{\left(a+b\sin^{-1}(x)\right)^4}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^4\,\text{Subst}\left(\int \frac{x^4}{\left(a+b\sin^{-1}(x)\right)^4}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{\left(4e^4\right)\text{Subst}\left(\int \frac{x^3}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^3}\,dx, x, c+dx\right)}{3bd} - \frac{\left(5e^4\right)\text{S}}{}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{2e^4(c+dx)^3}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{5e^4(c+dx)^5}{6b^2d\left(a+b\sin^{-1}(c+dx)\right)^2}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{2e^4(c+dx)^3}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{5e^4(c+dx)^5}{6b^2d\left(a+b\sin^{-1}(c+dx)\right)^2}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{2e^4(c+dx)^3}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{5e^4(c+dx)^5}{6b^2d\left(a+b\sin^{-1}(c+dx)\right)^2}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{2e^4(c+dx)^3}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{5e^4(c+dx)^5}{6b^2d\left(a+b\sin^{-1}(c+dx)\right)^2}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{2e^4(c+dx)^3}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{5e^4(c+dx)^5}{6b^2d\left(a+b\sin^{-1}(c+dx)\right)^2}$$

Mathematica [A] time = 1.64222, size = 414, normalized size = 1.

$$\frac{e^4\left(-\frac{32b^3\sqrt{1-(c+dx)^2}(c+dx)^4}{\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{16b^2\left(5(c+dx)^5-4(c+dx)^3\right)}{\left(a+b\sin^{-1}(c+dx)\right)^2} + 384\left(\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right) - \sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^4/(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] (e^4*((-32*b^3*(c + d*x)^4*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*x])^3
 + (16*b^2*(-4*(c + d*x)^3 + 5*(c + d*x)^5))/(a + b*ArcSin[c + d*x])^2 + (1
6*b*Sqrt[1 - (c + d*x)^2]*(-12*(c + d*x)^2 + 25*(c + d*x)^4))/(a + b*ArcSin
[c + d*x]) + 384*(-(CosIntegral[a/b + ArcSin[c + d*x]]*Sin[a/b]) + Cos[a/b]
*SinIntegral[a/b + ArcSin[c + d*x]]) + 544*(3*CosIntegral[a/b + ArcSin[c +
d*x]]*Sin[a/b] - CosIntegral[3*(a/b + ArcSin[c + d*x])]*Sin[(3*a)/b] - 3*Co
s[a/b]*SinIntegral[a/b + ArcSin[c + d*x]] + Cos[(3*a)/b]*SinIntegral[3*(a/b
 + ArcSin[c + d*x])]) - 125*(10*CosIntegral[a/b + ArcSin[c + d*x]]*Sin[a/b]
 - 5*CosIntegral[3*(a/b + ArcSin[c + d*x])]*Sin[(3*a)/b] + CosIntegral[5*(a
/b + ArcSin[c + d*x])]*Sin[(5*a)/b] - 10*Cos[a/b]*SinIntegral[a/b + ArcSin[
c + d*x]] + 5*Cos[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c + d*x])] - Cos[(5*
a)/b]*SinIntegral[5*(a/b + ArcSin[c + d*x])])))/(96*b^4*d)
```

Maple [B] time = 0.099, size = 1138, normalized size = 2.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^4,x)
```

```
[Out] -1/96/d*e^4*(-4*arcsin(d*x+c)*(1-(d*x+c)^2)^(1/2)*a*b^2+81*arcsin(d*x+c)^3*
Si(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b)*b^3-81*arcsin(d*x+c)^3*Ci(3*arcsin(d*x
+c)+3*a/b)*sin(3*a/b)*b^3+54*arcsin(d*x+c)*cos(3*arcsin(d*x+c))*a*b^2-125*a
rcsin(d*x+c)^3*Si(5*arcsin(d*x+c)+5*a/b)*cos(5*a/b)*b^3+125*arcsin(d*x+c)^3
*Ci(5*arcsin(d*x+c)+5*a/b)*sin(5*a/b)*b^3-50*arcsin(d*x+c)*cos(5*arcsin(d*x
+c))*a*b^2-2*arcsin(d*x+c)^3*Si(arcsin(d*x+c)+a/b)*cos(a/b)*b^3+2*arcsin(d*
x+c)^3*Ci(arcsin(d*x+c)+a/b)*sin(a/b)*b^3-243*arcsin(d*x+c)^2*Ci(3*arcsin(d
*x+c)+3*a/b)*sin(3*a/b)*a*b^2-375*arcsin(d*x+c)*Si(5*arcsin(d*x+c)+5*a/b)*c
os(5*a/b)*a^2*b+6*arcsin(d*x+c)*Ci(arcsin(d*x+c)+a/b)*sin(a/b)*a^2*b-6*arcs
in(d*x+c)*Si(arcsin(d*x+c)+a/b)*cos(a/b)*a^2*b-2*arcsin(d*x+c)*(d*x+c)*b^3-
2*Si(arcsin(d*x+c)+a/b)*cos(a/b)*a^3+2*Ci(arcsin(d*x+c)+a/b)*sin(a/b)*a^3-2
*arcsin(d*x+c)^2*(1-(d*x+c)^2)^(1/2)*b^3-2*(1-(d*x+c)^2)^(1/2)*a^2*b-2*(d*x
+c)*a*b^2+9*arcsin(d*x+c)*sin(3*arcsin(d*x+c))*b^3+81*Si(3*arcsin(d*x+c)+3*
a/b)*cos(3*a/b)*a^3-81*Ci(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)*a^3+27*cos(3*ar
csin(d*x+c))*a^2*b+9*sin(3*arcsin(d*x+c))*a*b^2-25*arcsin(d*x+c)^2*cos(5*ar
csin(d*x+c))*b^3-5*arcsin(d*x+c)*sin(5*arcsin(d*x+c))*b^3-125*Si(5*arcsin(d
*x+c)+5*a/b)*cos(5*a/b)*a^3+125*Ci(5*arcsin(d*x+c)+5*a/b)*sin(5*a/b)*a^3-25
*cos(5*arcsin(d*x+c))*a^2*b+27*arcsin(d*x+c)^2*cos(3*arcsin(d*x+c))*b^3+375
*arcsin(d*x+c)^2*Ci(5*arcsin(d*x+c)+5*a/b)*sin(5*a/b)*a*b^2+243*arcsin(d*x+
c)*Si(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b)*a^2*b-5*sin(5*arcsin(d*x+c))*a*b^2+
243*arcsin(d*x+c)^2*Si(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b)*a*b^2+4*(1-(d*x+c)
```

```
^2)^(1/2)*b^3-6*cos(3*arcsin(d*x+c))*b^3+2*cos(5*arcsin(d*x+c))*b^3-243*arc
sin(d*x+c)*Ci(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)*a^2*b+375*arcsin(d*x+c)*Ci(
5*arcsin(d*x+c)+5*a/b)*sin(5*a/b)*a^2*b-6*arcsin(d*x+c)^2*Si(arcsin(d*x+c)+
a/b)*cos(a/b)*a*b^2+6*arcsin(d*x+c)^2*Ci(arcsin(d*x+c)+a/b)*sin(a/b)*a*b^2-
375*arcsin(d*x+c)^2*Si(5*arcsin(d*x+c)+5*a/b)*cos(5*a/b)*a*b^2)/(a+b*arcsin
(d*x+c))^3/b^4
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^4,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{d^4e^4x^4 + 4\,cd^3e^4x^3 + 6\,c^2d^2e^4x^2 + 4\,c^3de^4x + c^4e^4}{b^4\arcsin\left(dx+c\right)^4 + 4\,ab^3\arcsin\left(dx+c\right)^3 + 6\,a^2b^2\arcsin\left(dx+c\right)^2 + 4\,a^3b\arcsin\left(dx+c\right) + a^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^4,x, algorithm="fricas")
```

```
[Out] integral((d^4*e^4*x^4 + 4*c*d^3*e^4*x^3 + 6*c^2*d^2*e^4*x^2 + 4*c^3*d*e^4*x
 + c^4*e^4)/(b^4*arcsin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6*a^2*b^2*
arcsin(d*x + c)^2 + 4*a^3*b*arcsin(d*x + c) + a^4), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**4/(a+b*asin(d*x+c))**4,x)
```

[Out] Timed out

Giac [B] time = 2.73301, size = 7835, normalized size = 18.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^4,x, algorithm="giac")

```
[Out] -125/6*b^3*arcsin(d*x + c)^3*cos(a/b)^4*cos_integral(5*a/b + 5*arcsin(d*x +
 c))*e^4*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 +
3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 125/6*b^3*arcsin(d*x + c)^3*cos(
a/b)^5*e^4*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3
 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) -
 125/2*a*b^2*arcsin(d*x + c)^2*cos(a/b)^4*cos_integral(5*a/b + 5*arcsin(d*x
 + c))*e^4*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2
+ 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 125/2*a*b^2*arcsin(d*x + c)^2*
cos(a/b)^5*e^4*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^7*d*arcsin(d*x +
c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*
d) + 125/8*b^3*arcsin(d*x + c)^3*cos(a/b)^2*cos_integral(5*a/b + 5*arcsin(d
*x + c))*e^4*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^
2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 125/2*a^2*b*arcsin(d*x + c)*
cos(a/b)^4*cos_integral(5*a/b + 5*arcsin(d*x + c))*e^4*sin(a/b)/(b^7*d*arcs
in(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) +
 a^3*b^4*d) + 27/8*b^3*arcsin(d*x + c)^3*cos(a/b)^2*cos_integral(3*a/b + 3*
arcsin(d*x + c))*e^4*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d
*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 625/24*b^3*arcsin(d*
x + c)^3*cos(a/b)^3*e^4*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^7*d*arcs
in(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) +
 a^3*b^4*d) + 125/2*a^2*b*arcsin(d*x + c)*cos(a/b)^5*e^4*sin_integral(5*a/b
 + 5*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^
2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 27/8*b^3*arcsin(d*x + c)^3*c
os(a/b)^3*e^4*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c
)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d
) + 375/8*a*b^2*arcsin(d*x + c)^2*cos(a/b)^2*cos_integral(5*a/b + 5*arcsin(
d*x + c))*e^4*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)
^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 125/6*a^3*cos(a/b)^4*cos_in
tegral(5*a/b + 5*arcsin(d*x + c))*e^4*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3
*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 81/
8*a*b^2*arcsin(d*x + c)^2*cos(a/b)^2*cos_integral(3*a/b + 3*arcsin(d*x + c)
)*e^4*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a
```

^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 625/8*a*b^2*arcsin(d*x + c)^2*cos(a
/b)^3*e^4*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3
+ 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) +
125/6*a^3*cos(a/b)^5*e^4*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^7*d*arc
sin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c)
+ a^3*b^4*d) - 81/8*a*b^2*arcsin(d*x + c)^2*cos(a/b)^3*e^4*sin_integral(3*a
/b + 3*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c
)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 125/96*b^3*arcsin(d*x + c)
^3*cos_integral(5*a/b + 5*arcsin(d*x + c))*e^4*sin(a/b)/(b^7*d*arcsin(d*x +
 c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4
*d) + 375/8*a^2*b*arcsin(d*x + c)*cos(a/b)^2*cos_integral(5*a/b + 5*arcsin(
d*x + c))*e^4*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)
^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 27/32*b^3*arcsin(d*x + c)^3
*cos_integral(3*a/b + 3*arcsin(d*x + c))*e^4*sin(a/b)/(b^7*d*arcsin(d*x + c
)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d
) + 81/8*a^2*b*arcsin(d*x + c)*cos(a/b)^2*cos_integral(3*a/b + 3*arcsin(d*x
 + c))*e^4*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2
+ 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 1/48*b^3*arcsin(d*x + c)^3*cos
_integral(a/b + arcsin(d*x + c))*e^4*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*
a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 625/
96*b^3*arcsin(d*x + c)^3*cos(a/b)*e^4*sin_integral(5*a/b + 5*arcsin(d*x + c
))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arc
sin(d*x + c) + a^3*b^4*d) - 625/8*a^2*b*arcsin(d*x + c)*cos(a/b)^3*e^4*sin_
integral(5*a/b + 5*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*ar
csin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 81/32*b^3*arcs
in(d*x + c)^3*cos(a/b)*e^4*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^7*d*a
rcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c
) + a^3*b^4*d) - 81/8*a^2*b*arcsin(d*x + c)*cos(a/b)^3*e^4*sin_integral(3*a
/b + 3*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c
)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/48*b^3*arcsin(d*x + c)^3
*cos(a/b)*e^4*sin_integral(a/b + arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3
+ 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) +
25/6*((d*x + c)^2 - 1)^2*sqrt(-(d*x + c)^2 + 1)*b^3*arcsin(d*x + c)^2*e^4/(
b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(
d*x + c) + a^3*b^4*d) + 5/6*((d*x + c)^2 - 1)^2*(d*x + c)*b^3*arcsin(d*x +
c)*e^4/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d
*arcsin(d*x + c) + a^3*b^4*d) - 125/32*a*b^2*arcsin(d*x + c)^2*cos_integral
(5*a/b + 5*arcsin(d*x + c))*e^4*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6
*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 125/8*a^3
*cos(a/b)^2*cos_integral(5*a/b + 5*arcsin(d*x + c))*e^4*sin(a/b)/(b^7*d*arc
sin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c)
+ a^3*b^4*d) - 81/32*a*b^2*arcsin(d*x + c)^2*cos_integral(3*a/b + 3*arcsin(
d*x + c))*e^4*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)
^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 27/8*a^3*cos(a/b)^2*cos_int
egral(3*a/b + 3*arcsin(d*x + c))*e^4*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*

```
a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 1/16
*a*b^2*arcsin(d*x + c)^2*cos_integral(a/b + arcsin(d*x + c))*e^4*sin(a/b)/(
b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(
d*x + c) + a^3*b^4*d) + 625/32*a*b^2*arcsin(d*x + c)^2*cos(a/b)*e^4*sin_int
egral(5*a/b + 5*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsi
n(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 625/24*a^3*cos(a/
b)^3*e^4*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 +
 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 2
43/32*a*b^2*arcsin(d*x + c)^2*cos(a/b)*e^4*sin_integral(3*a/b + 3*arcsin(d*
x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*
d*arcsin(d*x + c) + a^3*b^4*d) - 27/8*a^3*cos(a/b)^3*e^4*sin_integral(3*a/b
 + 3*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^
2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/16*a*b^2*arcsin(d*x + c)^2
*cos(a/b)*e^4*sin_integral(a/b + arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3
+ 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) +
25/3*((d*x + c)^2 - 1)^2*sqrt(-(d*x + c)^2 + 1)*a*b^2*arcsin(d*x + c)*e^4/(
b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(
d*x + c) + a^3*b^4*d) - 19/3*(-(d*x + c)^2 + 1)^(3/2)*b^3*arcsin(d*x + c)^2
*e^4/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*a
rcsin(d*x + c) + a^3*b^4*d) + 5/6*((d*x + c)^2 - 1)^2*(d*x + c)*a*b^2*e^4/(
b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(
d*x + c) + a^3*b^4*d) + ((d*x + c)^2 - 1)*(d*x + c)*b^3*arcsin(d*x + c)*e^4
/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsi
n(d*x + c) + a^3*b^4*d) - 125/32*a^2*b*arcsin(d*x + c)*cos_integral(5*a/b +
 5*arcsin(d*x + c))*e^4*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsi
n(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 81/32*a^2*b*arcsi
n(d*x + c)*cos_integral(3*a/b + 3*arcsin(d*x + c))*e^4*sin(a/b)/(b^7*d*arcs
in(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) +
 a^3*b^4*d) - 1/16*a^2*b*arcsin(d*x + c)*cos_integral(a/b + arcsin(d*x + c)
)*e^4*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a
^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 625/32*a^2*b*arcsin(d*x + c)*cos(a/
b)*e^4*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3
*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 243
/32*a^2*b*arcsin(d*x + c)*cos(a/b)*e^4*sin_integral(3*a/b + 3*arcsin(d*x +
c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*ar
csin(d*x + c) + a^3*b^4*d) + 1/16*a^2*b*arcsin(d*x + c)*cos(a/b)*e^4*sin_in
tegral(a/b + arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d
*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 25/6*((d*x + c)^2 -
1)^2*sqrt(-(d*x + c)^2 + 1)*a^2*b*e^4/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*
arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 1/3*((d*x +
c)^2 - 1)^2*sqrt(-(d*x + c)^2 + 1)*b^3*e^4/(b^7*d*arcsin(d*x + c)^3 + 3*a*b
^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 38/3*(-
(d*x + c)^2 + 1)^(3/2)*a*b^2*arcsin(d*x + c)*e^4/(b^7*d*arcsin(d*x + c)^3 +
 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1
3/6*sqrt(-(d*x + c)^2 + 1)*b^3*arcsin(d*x + c)^2*e^4/(b^7*d*arcsin(d*x + c)
```

```
^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d)
 + ((d*x + c)^2 - 1)*(d*x + c)*a*b^2*e^4/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6
*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/6*(d*x
+ c)*b^3*arcsin(d*x + c)*e^4/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*
x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 125/96*a^3*cos_integr
al(5*a/b + 5*arcsin(d*x + c))*e^4*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b
^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 27/32*a
^3*cos_integral(3*a/b + 3*arcsin(d*x + c))*e^4*sin(a/b)/(b^7*d*arcsin(d*x +
 c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4
*d) - 1/48*a^3*cos_integral(a/b + arcsin(d*x + c))*e^4*sin(a/b)/(b^7*d*arcs
in(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) +
 a^3*b^4*d) + 625/96*a^3*cos(a/b)*e^4*sin_integral(5*a/b + 5*arcsin(d*x + c
))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arc
sin(d*x + c) + a^3*b^4*d) + 81/32*a^3*cos(a/b)*e^4*sin_integral(3*a/b + 3*a
rcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*
a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/48*a^3*cos(a/b)*e^4*sin_integral
(a/b + arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c
)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 19/3*(-(d*x + c)^2 + 1)^(3
/2)*a^2*b*e^4/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^
2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 2/3*(-(d*x + c)^2 + 1)^(3/2)*b^3*e^4
/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsi
n(d*x + c) + a^3*b^4*d) + 13/3*sqrt(-(d*x + c)^2 + 1)*a*b^2*arcsin(d*x + c)
*e^4/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*a
rcsin(d*x + c) + a^3*b^4*d) + 1/6*(d*x + c)*a*b^2*e^4/(b^7*d*arcsin(d*x + c
)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d
) + 13/6*sqrt(-(d*x + c)^2 + 1)*a^2*b*e^4/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^
6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 1/3*sqrt
(-(d*x + c)^2 + 1)*b^3*e^4/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x
+ c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d)
```

3.234 $\int \frac{(ce+dex)^3}{\left(a+b\sin^{-1}(c+dx)\right)^4}\,dx$

Optimal. Leaf size=346

$$-\frac{e^3\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{3b^4d}+\frac{4e^3\cos\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{3b^4d}-\frac{e^3\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2\left(a+b\sin^{-1}(c+\right.}{b}\right.}{3b^4d}$$

```
[Out] -(e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(3*b*d*(a + b*ArcSin[c + d*x])^3)
- (e^3*(c + d*x)^2)/(2*b^2*d*(a + b*ArcSin[c + d*x])^2) + (2*e^3*(c + d*x)^
4)/(3*b^2*d*(a + b*ArcSin[c + d*x])^2) - (e^3*(c + d*x)*Sqrt[1 - (c + d*x)^
2])/(b^3*d*(a + b*ArcSin[c + d*x])) + (8*e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)
^2])/(3*b^3*d*(a + b*ArcSin[c + d*x])) - (e^3*Cos[(2*a)/b]*CosIntegral[(2*(
a + b*ArcSin[c + d*x]))/b])/(3*b^4*d) + (4*e^3*Cos[(4*a)/b]*CosIntegral[(4*
(a + b*ArcSin[c + d*x]))/b])/(3*b^4*d) - (e^3*Sin[(2*a)/b]*SinIntegral[(2*(
a + b*ArcSin[c + d*x]))/b])/(3*b^4*d) + (4*e^3*Sin[(4*a)/b]*SinIntegral[(4*
(a + b*ArcSin[c + d*x]))/b])/(3*b^4*d)
```

Rubi [A] time = 0.681397, antiderivative size = 346, normalized size of antiderivative = 1., number of steps used = 17, number of rules used = 8, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.348, Rules used = {4805, 12, 4633, 4719, 4631, 3303, 3299, 3302}

$$-\frac{e^3\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(c+dx)\right)}{3b^4d}+\frac{4e^3\cos\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4a}{b}+4\sin^{-1}(c+dx)\right)}{3b^4d}-\frac{e^3\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}\right.}{3b}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] -(e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(3*b*d*(a + b*ArcSin[c + d*x])^3)
- (e^3*(c + d*x)^2)/(2*b^2*d*(a + b*ArcSin[c + d*x])^2) + (2*e^3*(c + d*x)^
4)/(3*b^2*d*(a + b*ArcSin[c + d*x])^2) - (e^3*(c + d*x)*Sqrt[1 - (c + d*x)^
2])/(b^3*d*(a + b*ArcSin[c + d*x])) + (8*e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)
^2])/(3*b^3*d*(a + b*ArcSin[c + d*x])) - (e^3*Cos[(2*a)/b]*CosIntegral[(2*a
)/b + 2*ArcSin[c + d*x]])/(3*b^4*d) + (4*e^3*Cos[(4*a)/b]*CosIntegral[(4*a)
/b + 4*ArcSin[c + d*x]])/(3*b^4*d) - (e^3*Sin[(2*a)/b]*SinIntegral[(2*a)/b
+ 2*ArcSin[c + d*x]])/(3*b^4*d) + (4*e^3*Sin[(4*a)/b]*SinIntegral[(4*a)/b +
 4*ArcSin[c + d*x]])/(3*b^4*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4633

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (Dis
t[(c*(m + 1))/(b*(n + 1)), Int[(x^(m + 1)*(a + b*ArcSin[c*x])^(n + 1))/Sqrt
[1 - c^2*x^2], x], x] - Dist[m/(b*c*(n + 1)), Int[(x^(m - 1)*(a + b*ArcSin[
c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rubi steps

$$\int \frac{(ce+dex)^3}{\left(a+b\sin^{-1}(c+dx)\right)^4}\,dx = \frac{\text{Subst}\left(\int \frac{e^3x^3}{\left(a+b\sin^{-1}(x)\right)^4}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^3\,\text{Subst}\left(\int \frac{x^3}{\left(a+b\sin^{-1}(x)\right)^4}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{e^3\,\text{Subst}\left(\int \frac{x^2}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^3}\,dx, x, c+dx\right)}{bd} - \frac{\left(4e^3\right)\text{Subst}}{}$$

$$= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e^3(c+dx)^2}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{2e^3(c+dx)^4}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} +$$

$$= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e^3(c+dx)^2}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{2e^3(c+dx)^4}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} -$$

$$= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e^3(c+dx)^2}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{2e^3(c+dx)^4}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} -$$

$$= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e^3(c+dx)^2}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{2e^3(c+dx)^4}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} -$$

$$= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e^3(c+dx)^2}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{2e^3(c+dx)^4}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} -$$

Mathematica [A] time = 0.993745, size = 320, normalized size = 0.92

$$e^3\left(-\frac{2b^3\sqrt{1-(c+dx)^2}(c+dx)^3}{\left(a+b\sin^{-1}(c+dx)\right)^3}+\frac{b^2\left(4(c+dx)^4-3(c+dx)^2\right)}{\left(a+b\sin^{-1}(c+dx)\right)^2}+30\left(\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(2\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)\right)+\sin\left(\frac{2a}{b}\right)\text{Si}\left(2\left(\frac{a}{b}+\text{s}\right.\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] (e^3*((-2*b^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*x])^3
+ (b^2*(-3*(c + d*x)^2 + 4*(c + d*x)^4))/(a + b*ArcSin[c + d*x])^2 + (2*b*S
qrt[1 - (c + d*x)^2]*(-3*(c + d*x) + 8*(c + d*x)^3))/(a + b*ArcSin[c + d*x]
) + 6*Log[a + b*ArcSin[c + d*x]] + 30*(Cos[(2*a)/b]*CosIntegral[2*(a/b + Ar
cSin[c + d*x])] - Log[a + b*ArcSin[c + d*x]] + Sin[(2*a)/b]*SinIntegral[2*(
a/b + ArcSin[c + d*x])]) + 8*(-4*Cos[(2*a)/b]*CosIntegral[2*(a/b + ArcSin[c
 + d*x])] + Cos[(4*a)/b]*CosIntegral[4*(a/b + ArcSin[c + d*x])] + 3*Log[a +
 b*ArcSin[c + d*x]] - 4*Sin[(2*a)/b]*SinIntegral[2*(a/b + ArcSin[c + d*x])]
 + Sin[(4*a)/b]*SinIntegral[4*(a/b + ArcSin[c + d*x])])))/(6*b^4*d)
```

Maple [B] time = 0.048, size = 782, normalized size = 2.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^4,x)
```

```
[Out] 1/24/d*e^3*(32*arcsin(d*x+c)^3*Ci(4*arcsin(d*x+c)+4*a/b)*cos(4*a/b)*b^3-8*a
rcsin(d*x+c)^3*Si(2*arcsin(d*x+c)+2*a/b)*sin(2*a/b)*b^3-8*arcsin(d*x+c)^3*C
i(2*arcsin(d*x+c)+2*a/b)*cos(2*a/b)*b^3-16*arcsin(d*x+c)*sin(4*arcsin(d*x+c
))*a*b^2+8*arcsin(d*x+c)*sin(2*arcsin(d*x+c))*a*b^2+96*arcsin(d*x+c)^2*Si(4
*arcsin(d*x+c)+4*a/b)*sin(4*a/b)*a*b^2+96*arcsin(d*x+c)^2*Ci(4*arcsin(d*x+c
)+4*a/b)*cos(4*a/b)*a*b^2-24*arcsin(d*x+c)^2*Si(2*arcsin(d*x+c)+2*a/b)*sin(
2*a/b)*a*b^2-24*arcsin(d*x+c)^2*Ci(2*arcsin(d*x+c)+2*a/b)*cos(2*a/b)*a*b^2+
96*arcsin(d*x+c)*Si(4*arcsin(d*x+c)+4*a/b)*sin(4*a/b)*a^2*b+96*arcsin(d*x+c
)*Ci(4*arcsin(d*x+c)+4*a/b)*cos(4*a/b)*a^2*b-24*arcsin(d*x+c)*Si(2*arcsin(d
*x+c)+2*a/b)*sin(2*a/b)*a^2*b-24*arcsin(d*x+c)*Ci(2*arcsin(d*x+c)+2*a/b)*co
s(2*a/b)*a^2*b+32*arcsin(d*x+c)^3*Si(4*arcsin(d*x+c)+4*a/b)*sin(4*a/b)*b^3+
4*sin(2*arcsin(d*x+c))*a^2*b-2*cos(2*arcsin(d*x+c))*a*b^2+4*arcsin(d*x+c)^2
*sin(2*arcsin(d*x+c))*b^3+2*arcsin(d*x+c)*cos(4*arcsin(d*x+c))*b^3-2*arcsin
```

```
(d*x+c)*cos(2*arcsin(d*x+c))*b^3+32*Si(4*arcsin(d*x+c)+4*a/b)*sin(4*a/b)*a^
3+32*Ci(4*arcsin(d*x+c)+4*a/b)*cos(4*a/b)*a^3-8*Si(2*arcsin(d*x+c)+2*a/b)*s
in(2*a/b)*a^3-8*Ci(2*arcsin(d*x+c)+2*a/b)*cos(2*a/b)*a^3-8*sin(4*arcsin(d*x
+c))*a^2*b-8*arcsin(d*x+c)^2*sin(4*arcsin(d*x+c))*b^3+2*cos(4*arcsin(d*x+c)
)*a*b^2-2*sin(2*arcsin(d*x+c))*b^3+sin(4*arcsin(d*x+c))*b^3)/(a+b*arcsin(d*
x+c))^3/b^4
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^4,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{d^3e^3x^3 + 3\,cd^2e^3x^2 + 3\,c^2de^3x + c^3e^3}{b^4 \arcsin\left(dx+c\right)^4 + 4\,ab^3 \arcsin\left(dx+c\right)^3 + 6\,a^2b^2 \arcsin\left(dx+c\right)^2 + 4\,a^3b \arcsin\left(dx+c\right) + a^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^4,x, algorithm="fricas")
```

```
[Out] integral((d^3*e^3*x^3 + 3*c*d^2*e^3*x^2 + 3*c^2*d*e^3*x + c^3*e^3)/(b^4*arc
sin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6*a^2*b^2*arcsin(d*x + c)^2 +
4*a^3*b*arcsin(d*x + c) + a^4), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3/(a+b*asin(d*x+c))**4,x)
```

```
[Out] Timed out
```

Giac [B] time = 2.58533, size = 5392, normalized size = 15.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^4,x, algorithm="giac")
```

```
[Out] 32/3*b^3*arcsin(d*x + c)^3*cos(a/b)^4*cos_integral(4*a/b + 4*arcsin(d*x + c
))*e^3/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d
*arcsin(d*x + c) + a^3*b^4*d) + 32/3*b^3*arcsin(d*x + c)^3*cos(a/b)^3*e^3*s
in(a/b)*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 +
3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 32
*a*b^2*arcsin(d*x + c)^2*cos(a/b)^4*cos_integral(4*a/b + 4*arcsin(d*x + c))
*e^3/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*a
rcsin(d*x + c) + a^3*b^4*d) + 32*a*b^2*arcsin(d*x + c)^2*cos(a/b)^3*e^3*sin
(a/b)*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*
a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 32/3
*b^3*arcsin(d*x + c)^3*cos(a/b)^2*cos_integral(4*a/b + 4*arcsin(d*x + c))*e
^3/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arc
sin(d*x + c) + a^3*b^4*d) + 32*a^2*b*arcsin(d*x + c)*cos(a/b)^4*cos_integra
l(4*a/b + 4*arcsin(d*x + c))*e^3/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsi
n(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 2/3*b^3*arcsin(d*
x + c)^3*cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(d*x + c))*e^3/(b^7*d*arcs
in(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) +
 a^3*b^4*d) - 16/3*b^3*arcsin(d*x + c)^3*cos(a/b)*e^3*sin(a/b)*sin_integral
(4*a/b + 4*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x
 + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 32*a^2*b*arcsin(d*x +
c)*cos(a/b)^3*e^3*sin(a/b)*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^7*d*a
rcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c
) + a^3*b^4*d) - 2/3*b^3*arcsin(d*x + c)^3*cos(a/b)*e^3*sin(a/b)*sin_integr
al(2*a/b + 2*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d
*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 32*a*b^2*arcsin(d*x
+ c)^2*cos(a/b)^2*cos_integral(4*a/b + 4*arcsin(d*x + c))*e^3/(b^7*d*arcsin
(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a
^3*b^4*d) + 32/3*a^3*cos(a/b)^4*cos_integral(4*a/b + 4*arcsin(d*x + c))*e^3
/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsi
n(d*x + c) + a^3*b^4*d) - 2*a*b^2*arcsin(d*x + c)^2*cos(a/b)^2*cos_integral
(2*a/b + 2*arcsin(d*x + c))*e^3/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin
(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 16*a*b^2*arcsin(d*
```

x + c)^2*cos(a/b)*e^3*sin(a/b)*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^7
*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x
 + c) + a^3*b^4*d) + 32/3*a^3*cos(a/b)^3*e^3*sin(a/b)*sin_integral(4*a/b +
4*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 +
 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 2*a*b^2*arcsin(d*x + c)^2*cos(a
/b)*e^3*sin(a/b)*sin_integral(2*a/b + 2*arcsin(d*x + c))/(b^7*d*arcsin(d*x
+ c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^
4*d) - 8/3*(-(d*x + c)^2 + 1)^(3/2)*(d*x + c)*b^3*arcsin(d*x + c)^2*e^3/(b^
7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*
x + c) + a^3*b^4*d) + 4/3*b^3*arcsin(d*x + c)^3*cos_integral(4*a/b + 4*arcs
in(d*x + c))*e^3/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3
*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 32*a^2*b*arcsin(d*x + c)*cos(a/b)
^2*cos_integral(4*a/b + 4*arcsin(d*x + c))*e^3/(b^7*d*arcsin(d*x + c)^3 + 3
*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/3
*b^3*arcsin(d*x + c)^3*cos_integral(2*a/b + 2*arcsin(d*x + c))*e^3/(b^7*d*a
rcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c
) + a^3*b^4*d) - 2*a^2*b*arcsin(d*x + c)*cos(a/b)^2*cos_integral(2*a/b + 2*
arcsin(d*x + c))*e^3/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2
 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 16*a^2*b*arcsin(d*x + c)*cos(
a/b)*e^3*sin(a/b)*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^7*d*arcsin(d*x
 + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b
^4*d) - 2*a^2*b*arcsin(d*x + c)*cos(a/b)*e^3*sin(a/b)*sin_integral(2*a/b +
2*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 +
 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 16/3*(-(d*x + c)^2 + 1)^(3/2)*(
d*x + c)*a*b^2*arcsin(d*x + c)*e^3/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arc
sin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 5/3*sqrt(-(d*x
+ c)^2 + 1)*(d*x + c)*b^3*arcsin(d*x + c)^2*e^3/(b^7*d*arcsin(d*x + c)^3 +
3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 2/
3*((d*x + c)^2 - 1)^2*b^3*arcsin(d*x + c)*e^3/(b^7*d*arcsin(d*x + c)^3 + 3*
a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 4*a*
b^2*arcsin(d*x + c)^2*cos_integral(4*a/b + 4*arcsin(d*x + c))*e^3/(b^7*d*ar
csin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c)
 + a^3*b^4*d) - 32/3*a^3*cos(a/b)^2*cos_integral(4*a/b + 4*arcsin(d*x + c))
*e^3/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*a
rcsin(d*x + c) + a^3*b^4*d) + a*b^2*arcsin(d*x + c)^2*cos_integral(2*a/b +
2*arcsin(d*x + c))*e^3/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)
^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 2/3*a^3*cos(a/b)^2*cos_inte
gral(2*a/b + 2*arcsin(d*x + c))*e^3/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*ar
csin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 16/3*a^3*cos(a
/b)*e^3*sin(a/b)*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^7*d*arcsin(d*x
+ c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^
4*d) - 2/3*a^3*cos(a/b)*e^3*sin(a/b)*sin_integral(2*a/b + 2*arcsin(d*x + c)
)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcs
in(d*x + c) + a^3*b^4*d) - 8/3*(-(d*x + c)^2 + 1)^(3/2)*(d*x + c)*a^2*b*e^3
/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsi

```
n(d*x + c) + a^3*b^4*d) + 1/3*(-(d*x + c)^2 + 1)^(3/2)*(d*x + c)*b^3*e^3/(b
^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d
*x + c) + a^3*b^4*d) + 10/3*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*a*b^2*arcsin(d
*x + c)*e^3/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*
b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 2/3*((d*x + c)^2 - 1)^2*a*b^2*e^3/(b^7
*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x
 + c) + a^3*b^4*d) + 5/6*((d*x + c)^2 - 1)*b^3*arcsin(d*x + c)*e^3/(b^7*d*a
rcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c
) + a^3*b^4*d) + 4*a^2*b*arcsin(d*x + c)*cos_integral(4*a/b + 4*arcsin(d*x
+ c))*e^3/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^
5*d*arcsin(d*x + c) + a^3*b^4*d) + a^2*b*arcsin(d*x + c)*cos_integral(2*a/b
 + 2*arcsin(d*x + c))*e^3/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x +
 c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 5/3*sqrt(-(d*x + c)^2 +
1)*(d*x + c)*a^2*b*e^3/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)
^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 1/3*sqrt(-(d*x + c)^2 + 1)*
(d*x + c)*b^3*e^3/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 +
3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 5/6*((d*x + c)^2 - 1)*a*b^2*e^3/
(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin
(d*x + c) + a^3*b^4*d) + 1/6*b^3*arcsin(d*x + c)*e^3/(b^7*d*arcsin(d*x + c)
^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d)
 + 4/3*a^3*cos_integral(4*a/b + 4*arcsin(d*x + c))*e^3/(b^7*d*arcsin(d*x +
c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*
d) + 1/3*a^3*cos_integral(2*a/b + 2*arcsin(d*x + c))*e^3/(b^7*d*arcsin(d*x
+ c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^
4*d) + 1/6*a*b^2*e^3/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2
 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d)
```

3.235 $\int \frac{(ce+dex)^2}{\left(a+b\sin^{-1}(c+dx)\right)^4}\,dx$

Optimal. Leaf size=337

$$-\frac{e^2\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{24b^4d}+\frac{9e^2\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{8b^4d}+\frac{e^2\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{24b^4d}-$$

```
[Out] -(e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(3*b*d*(a + b*ArcSin[c + d*x])^3)
- (e^2*(c + d*x))/(3*b^2*d*(a + b*ArcSin[c + d*x])^2) + (e^2*(c + d*x)^3)/(
2*b^2*d*(a + b*ArcSin[c + d*x])^2) - (e^2*Sqrt[1 - (c + d*x)^2])/(3*b^3*d*(
a + b*ArcSin[c + d*x])) + (3*e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(2*b^3*
d*(a + b*ArcSin[c + d*x])) - (e^2*CosIntegral[(a + b*ArcSin[c + d*x])/b]*Si
n[a/b])/(24*b^4*d) + (9*e^2*CosIntegral[(3*(a + b*ArcSin[c + d*x]))/b]*Sin[
(3*a)/b])/(8*b^4*d) + (e^2*Cos[a/b]*SinIntegral[(a + b*ArcSin[c + d*x])/b])
/(24*b^4*d) - (9*e^2*Cos[(3*a)/b]*SinIntegral[(3*(a + b*ArcSin[c + d*x]))/b
])/(8*b^4*d)
```

Rubi [A] time = 0.669889, antiderivative size = 333, normalized size of antiderivative = 0.99, number of steps used = 18, number of rules used = 10, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.435, Rules used = {4805, 12, 4633, 4719, 4631, 3303, 3299, 3302, 4621, 4723}

$$-\frac{e^2\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)}{24b^4d}+\frac{9e^2\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(c+dx)\right)}{8b^4d}+\frac{e^2\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}\right.}{24b^4d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] -(e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(3*b*d*(a + b*ArcSin[c + d*x])^3)
- (e^2*(c + d*x))/(3*b^2*d*(a + b*ArcSin[c + d*x])^2) + (e^2*(c + d*x)^3)/(
2*b^2*d*(a + b*ArcSin[c + d*x])^2) - (e^2*Sqrt[1 - (c + d*x)^2])/(3*b^3*d*(
a + b*ArcSin[c + d*x])) + (3*e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(2*b^3*
d*(a + b*ArcSin[c + d*x])) - (e^2*CosIntegral[a/b + ArcSin[c + d*x]]*Sin[a/
b])/(24*b^4*d) + (9*e^2*CosIntegral[(3*a)/b + 3*ArcSin[c + d*x]]*Sin[(3*a)/
b])/(8*b^4*d) + (e^2*Cos[a/b]*SinIntegral[a/b + ArcSin[c + d*x]])/(24*b^4*d
) - (9*e^2*Cos[(3*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c + d*x]])/(8*b^4*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4633

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (Dis
t[(c*(m + 1))/(b*(n + 1)), Int[(x^(m + 1)*(a + b*ArcSin[c*x])^(n + 1))/Sqrt
[1 - c^2*x^2], x], x] - Dist[m/(b*c*(n + 1)), Int[(x^(m - 1)*(a + b*ArcSin[
c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{(ce+dex)^2}{\left(a+b\sin^{-1}(c+dx)\right)^4}\,dx = \frac{\text{Subst}\left(\int \frac{e^2x^2}{\left(a+b\sin^{-1}(x)\right)^4}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^2\,\text{Subst}\left(\int \frac{x^2}{\left(a+b\sin^{-1}(x)\right)^4}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{\left(2e^2\right)\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^3}\,dx, x, c+dx\right)}{3bd} - \frac{e^2\,\text{Subs}}{}$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e^2(c+dx)}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{e^2(c+dx)^3}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)^2}$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e^2(c+dx)}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{e^2(c+dx)^3}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)^2}$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e^2(c+dx)}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{e^2(c+dx)^3}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)^2}$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e^2(c+dx)}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{e^2(c+dx)^3}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)^2}$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e^2(c+dx)}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{e^2(c+dx)^3}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)^2}$$

Mathematica [A] time = 1.10191, size = 264, normalized size = 0.78

$$\frac{e^2\left(-\frac{8b^3(c+dx)^2\sqrt{1-(c+dx)^2}}{\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{4b^2\left(3(c+dx)^3-2(c+dx)\right)}{\left(a+b\sin^{-1}(c+dx)\right)^2} + 80\left(\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right) - \cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(c+\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] (e^2*((-8*b^3*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*x])^3
+ (4*b^2*(-2*(c + d*x) + 3*(c + d*x)^3))/(a + b*ArcSin[c + d*x])^2 + (4*b*S
qrt[1 - (c + d*x)^2]*(-2 + 9*(c + d*x)^2))/(a + b*ArcSin[c + d*x]) + 80*(Co
sIntegral[a/b + ArcSin[c + d*x]]*Sin[a/b] - Cos[a/b]*SinIntegral[a/b + ArcS
in[c + d*x]]) + 27*(-3*CosIntegral[a/b + ArcSin[c + d*x]]*Sin[a/b] + CosInt
egral[3*(a/b + ArcSin[c + d*x])]*Sin[(3*a)/b] + 3*Cos[a/b]*SinIntegral[a/b
+ ArcSin[c + d*x]] - Cos[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c + d*x])])))
/(24*b^4*d)
```

Maple [B] time = 0.088, size = 753, normalized size = 2.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^4,x)
```

```
[Out] 1/24/d*e^2*(2*arcsin(d*x+c)*(1-(d*x+c)^2)^(1/2)*a*b^2-27*arcsin(d*x+c)^3*Si
(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b)*b^3+27*arcsin(d*x+c)^3*Ci(3*arcsin(d*x+c
)+3*a/b)*sin(3*a/b)*b^3-18*arcsin(d*x+c)*cos(3*arcsin(d*x+c))*a*b^2+arcsin(
d*x+c)^3*Si(arcsin(d*x+c)+a/b)*cos(a/b)*b^3-arcsin(d*x+c)^3*Ci(arcsin(d*x+c
)+a/b)*sin(a/b)*b^3+81*arcsin(d*x+c)^2*Ci(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)
*a*b^2-3*arcsin(d*x+c)*Ci(arcsin(d*x+c)+a/b)*sin(a/b)*a^2*b+3*arcsin(d*x+c)
*Si(arcsin(d*x+c)+a/b)*cos(a/b)*a^2*b+arcsin(d*x+c)*(d*x+c)*b^3+Si(arcsin(d
*x+c)+a/b)*cos(a/b)*a^3-Ci(arcsin(d*x+c)+a/b)*sin(a/b)*a^3+arcsin(d*x+c)^2*
(1-(d*x+c)^2)^(1/2)*b^3+(1-(d*x+c)^2)^(1/2)*a^2*b+(d*x+c)*a*b^2-3*arcsin(d*
x+c)*sin(3*arcsin(d*x+c))*b^3-27*Si(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b)*a^3+2
7*Ci(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)*a^3-9*cos(3*arcsin(d*x+c))*a^2*b-3*s
in(3*arcsin(d*x+c))*a*b^2-9*arcsin(d*x+c)^2*cos(3*arcsin(d*x+c))*b^3-81*arc
sin(d*x+c)*Si(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b)*a^2*b-81*arcsin(d*x+c)^2*Si
(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b)*a*b^2-2*(1-(d*x+c)^2)^(1/2)*b^3+2*cos(3*
arcsin(d*x+c))*b^3+81*arcsin(d*x+c)*Ci(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)*a^
2*b+3*arcsin(d*x+c)^2*Si(arcsin(d*x+c)+a/b)*cos(a/b)*a*b^2-3*arcsin(d*x+c)^
2*Ci(arcsin(d*x+c)+a/b)*sin(a/b)*a*b^2)/(a+b*arcsin(d*x+c))^3/b^4
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^4,x, algorithm="maxima")

[Out] Timed out

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{d^2e^2x^2 + 2\,cde^2x + c^2e^2}{b^4\arcsin\left(dx+c\right)^4 + 4\,ab^3\arcsin\left(dx+c\right)^3 + 6\,a^2b^2\arcsin\left(dx+c\right)^2 + 4\,a^3b\arcsin\left(dx+c\right) + a^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^4,x, algorithm="fricas")

[Out] integral((d^2*e^2*x^2 + 2*c*d*e^2*x + c^2*e^2)/(b^4*arcsin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6*a^2*b^2*arcsin(d*x + c)^2 + 4*a^3*b*arcsin(d*x + c) + a^4), x)

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*e*x+c*e)**2/(a+b*asin(d*x+c))**4,x)

[Out] Timed out

Giac [B] time = 2.57492, size = 4149, normalized size = 12.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^4,x, algorithm="giac")

[Out] 9/2*b^3*arcsin(d*x + c)^3*cos(a/b)^2*cos_integral(3*a/b + 3*arcsin(d*x + c))*e^2*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a

```
^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 9/2*b^3*arcsin(d*x + c)^3*cos(a/b)^
3*e^2*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*
a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 27/2
*a*b^2*arcsin(d*x + c)^2*cos(a/b)^2*cos_integral(3*a/b + 3*arcsin(d*x + c))
*e^2*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^
2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 27/2*a*b^2*arcsin(d*x + c)^2*cos(a/b
)^3*e^2*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 +
3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 9/
8*b^3*arcsin(d*x + c)^3*cos_integral(3*a/b + 3*arcsin(d*x + c))*e^2*sin(a/b
)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcs
in(d*x + c) + a^3*b^4*d) + 27/2*a^2*b*arcsin(d*x + c)*cos(a/b)^2*cos_integr
al(3*a/b + 3*arcsin(d*x + c))*e^2*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b
^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 1/24*b^
3*arcsin(d*x + c)^3*cos_integral(a/b + arcsin(d*x + c))*e^2*sin(a/b)/(b^7*d
*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x +
 c) + a^3*b^4*d) + 27/8*b^3*arcsin(d*x + c)^3*cos(a/b)*e^2*sin_integral(3*a
/b + 3*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c
)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 27/2*a^2*b*arcsin(d*x + c)
*cos(a/b)^3*e^2*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^7*d*arcsin(d*x +
 c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4
*d) + 1/24*b^3*arcsin(d*x + c)^3*cos(a/b)*e^2*sin_integral(a/b + arcsin(d*x
 + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d
*arcsin(d*x + c) + a^3*b^4*d) - 27/8*a*b^2*arcsin(d*x + c)^2*cos_integral(3
*a/b + 3*arcsin(d*x + c))*e^2*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d
*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 9/2*a^3*cos
(a/b)^2*cos_integral(3*a/b + 3*arcsin(d*x + c))*e^2*sin(a/b)/(b^7*d*arcsin(
d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^
3*b^4*d) - 1/8*a*b^2*arcsin(d*x + c)^2*cos_integral(a/b + arcsin(d*x + c))*
e^2*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2
*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 81/8*a*b^2*arcsin(d*x + c)^2*cos(a/b)
*e^2*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a
*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 9/2*a
^3*cos(a/b)^3*e^2*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^7*d*arcsin(d*x
 + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b
^4*d) + 1/8*a*b^2*arcsin(d*x + c)^2*cos(a/b)*e^2*sin_integral(a/b + arcsin(
d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^
5*d*arcsin(d*x + c) + a^3*b^4*d) - 3/2*(-(d*x + c)^2 + 1)^(3/2)*b^3*arcsin(
d*x + c)^2*e^2/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a
^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/2*((d*x + c)^2 - 1)*(d*x + c)*b^3
*arcsin(d*x + c)*e^2/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2
 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 27/8*a^2*b*arcsin(d*x + c)*co
s_integral(3*a/b + 3*arcsin(d*x + c))*e^2*sin(a/b)/(b^7*d*arcsin(d*x + c)^3
 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) -
 1/8*a^2*b*arcsin(d*x + c)*cos_integral(a/b + arcsin(d*x + c))*e^2*sin(a/b)
/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsi
```

```
n(d*x + c) + a^3*b^4*d) + 81/8*a^2*b*arcsin(d*x + c)*cos(a/b)*e^2*sin_integ
ral(3*a/b + 3*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(
d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/8*a^2*b*arcsin(d*
x + c)*cos(a/b)*e^2*sin_integral(a/b + arcsin(d*x + c))/(b^7*d*arcsin(d*x +
 c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4
*d) - 3*(-(d*x + c)^2 + 1)^(3/2)*a*b^2*arcsin(d*x + c)*e^2/(b^7*d*arcsin(d*
x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*
b^4*d) + 7/6*sqrt(-(d*x + c)^2 + 1)*b^3*arcsin(d*x + c)^2*e^2/(b^7*d*arcsin
(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a
^3*b^4*d) + 1/2*((d*x + c)^2 - 1)*(d*x + c)*a*b^2*e^2/(b^7*d*arcsin(d*x + c
)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d
) + 1/6*(d*x + c)*b^3*arcsin(d*x + c)*e^2/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^
6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 9/8*a^3*
cos_integral(3*a/b + 3*arcsin(d*x + c))*e^2*sin(a/b)/(b^7*d*arcsin(d*x + c)
^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d)
 - 1/24*a^3*cos_integral(a/b + arcsin(d*x + c))*e^2*sin(a/b)/(b^7*d*arcsin(
d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^
3*b^4*d) + 27/8*a^3*cos(a/b)*e^2*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b
^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d
*x + c) + a^3*b^4*d) + 1/24*a^3*cos(a/b)*e^2*sin_integral(a/b + arcsin(d*x
+ c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*
arcsin(d*x + c) + a^3*b^4*d) - 3/2*(-(d*x + c)^2 + 1)^(3/2)*a^2*b*e^2/(b^7*
d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x
+ c) + a^3*b^4*d) + 1/3*(-(d*x + c)^2 + 1)^(3/2)*b^3*e^2/(b^7*d*arcsin(d*x
+ c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^
4*d) + 7/3*sqrt(-(d*x + c)^2 + 1)*a*b^2*arcsin(d*x + c)*e^2/(b^7*d*arcsin(d
*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3
*b^4*d) + 1/6*(d*x + c)*a*b^2*e^2/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcs
in(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 7/6*sqrt(-(d*x +
 c)^2 + 1)*a^2*b*e^2/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2
 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 1/3*sqrt(-(d*x + c)^2 + 1)*b^
3*e^2/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*
arcsin(d*x + c) + a^3*b^4*d)
```

3.236 $\int \frac{ce+dex}{\left(a+b\sin^{-1}(c+dx)\right)^4}\,dx$

Optimal. Leaf size=208

$$-\frac{2e\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{3b^4d}-\frac{2e\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)}{3b^4d}+\frac{e(c+dx)^2}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2}+\frac{2e\sqrt{1-}}{3b^3d\,(a-}$$

```
[Out] -(e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(3*b*d*(a + b*ArcSin[c + d*x])^3) - e/
(6*b^2*d*(a + b*ArcSin[c + d*x])^2) + (e*(c + d*x)^2)/(3*b^2*d*(a + b*ArcSi
n[c + d*x])^2) + (2*e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(3*b^3*d*(a + b*ArcS
in[c + d*x])) - (2*e*Cos[(2*a)/b]*CosIntegral[(2*(a + b*ArcSin[c + d*x]))/b
])/(3*b^4*d) - (2*e*Sin[(2*a)/b]*SinIntegral[(2*(a + b*ArcSin[c + d*x]))/b]
)/(3*b^4*d)
```

Rubi [A] time = 0.330869, antiderivative size = 208, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 9, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {4805, 12, 4633, 4719, 4631, 3303, 3299, 3302, 4641}

$$-\frac{2e\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(c+dx)\right)}{3b^4d}-\frac{2e\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\sin^{-1}(c+dx)\right)}{3b^4d}+\frac{e(c+dx)^2}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2}+$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)/(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] -(e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(3*b*d*(a + b*ArcSin[c + d*x])^3) - e/
(6*b^2*d*(a + b*ArcSin[c + d*x])^2) + (e*(c + d*x)^2)/(3*b^2*d*(a + b*ArcSi
n[c + d*x])^2) + (2*e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(3*b^3*d*(a + b*ArcS
in[c + d*x])) - (2*e*Cos[(2*a)/b]*CosIntegral[(2*a)/b + 2*ArcSin[c + d*x]])
/(3*b^4*d) - (2*e*Sin[(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c + d*x]])/(3
*b^4*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4633

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (Dis
t[(c*(m + 1))/(b*(n + 1)), Int[(x^(m + 1)*(a + b*ArcSin[c*x])^(n + 1))/Sqrt
[1 - c^2*x^2], x], x] - Dist[m/(b*c*(n + 1)), Int[(x^(m - 1)*(a + b*ArcSin[
c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
```

```
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{ce+dex}{\left(a+b\sin^{-1}(c+dx)\right)^4}\,dx = \frac{\text{Subst}\left(\int \frac{ex}{\left(a+b\sin^{-1}(x)\right)^4}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e\,\text{Subst}\left(\int \frac{x}{\left(a+b\sin^{-1}(x)\right)^4}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{e\,\text{Subst}\left(\int \frac{1}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^3}\,dx, x, c+dx\right)}{3bd} - \frac{(2e)\,\text{Subst}\left(\int\right.}{}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e}{6b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{e(c+dx)^2}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} -$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e}{6b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{e(c+dx)^2}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} +$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e}{6b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{e(c+dx)^2}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} +$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e}{6b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{e(c+dx)^2}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} +$$

Mathematica [A] time = 0.728307, size = 186, normalized size = 0.89

$$\frac{e\left(-\frac{2b^3(c+dx)\sqrt{1-(c+dx)^2}}{\left(a+b\sin^{-1}(c+dx)\right)^3}+\frac{b^2\left(2(c+dx)^2-1\right)}{\left(a+b\sin^{-1}(c+dx)\right)^2}-4\left(\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(2\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)\right)+\sin\left(\frac{2a}{b}\right)\text{Si}\left(2\left(\frac{a}{b}+\sin^{-1}(c\right.\right.\right.\right.}{6b^4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)/(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] (e*((-2*b^3*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*x])^3 + (b
^2*(-1 + 2*(c + d*x)^2))/(a + b*ArcSin[c + d*x])^2 + (4*b*(c + d*x)*Sqrt[1
- (c + d*x)^2])/(a + b*ArcSin[c + d*x]) - 4*Log[a + b*ArcSin[c + d*x]] - 4*
(Cos[(2*a)/b]*CosIntegral[2*(a/b + ArcSin[c + d*x])] - Log[a + b*ArcSin[c +
 d*x]] + Sin[(2*a)/b]*SinIntegral[2*(a/b + ArcSin[c + d*x])])))/(6*b^4*d)
```

Maple [B] time = 0.037, size = 399, normalized size = 1.9

$$-\frac{e}{6\,d\,(a+b\arcsin(dx+c))^3\,b^4}\left(4\,(\arcsin(dx+c))^3\,\text{Si}\left(2\,\arcsin(dx+c)+2\,\frac{a}{b}\right)\sin\left(2\,\frac{a}{b}\right)b^3+4\,(\arcsin(dx+c))^3\,\text{Ci}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)/(a+b*arcsin(d*x+c))^4,x)
```

```
[Out] -1/6/d*e*(4*arcsin(d*x+c)^3*Si(2*arcsin(d*x+c)+2*a/b)*sin(2*a/b)*b^3+4*arcs
in(d*x+c)^3*Ci(2*arcsin(d*x+c)+2*a/b)*cos(2*a/b)*b^3+12*arcsin(d*x+c)^2*Si(
2*arcsin(d*x+c)+2*a/b)*sin(2*a/b)*a*b^2+12*arcsin(d*x+c)^2*Ci(2*arcsin(d*x+
c)+2*a/b)*cos(2*a/b)*a*b^2-2*arcsin(d*x+c)^2*sin(2*arcsin(d*x+c))*b^3+12*ar
csin(d*x+c)*Si(2*arcsin(d*x+c)+2*a/b)*sin(2*a/b)*a^2*b+12*arcsin(d*x+c)*Ci(
2*arcsin(d*x+c)+2*a/b)*cos(2*a/b)*a^2*b-4*arcsin(d*x+c)*sin(2*arcsin(d*x+c)
)*a*b^2+arcsin(d*x+c)*cos(2*arcsin(d*x+c))*b^3+4*Si(2*arcsin(d*x+c)+2*a/b)*
sin(2*a/b)*a^3+4*Ci(2*arcsin(d*x+c)+2*a/b)*cos(2*a/b)*a^3-2*sin(2*arcsin(d*
x+c))*a^2*b+sin(2*arcsin(d*x+c))*b^3+cos(2*arcsin(d*x+c))*a*b^2)/(a+b*arcsi
n(d*x+c))^3/b^4
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^4,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{dex+ce}{b^4\arcsin(dx+c)^4+4\,ab^3\arcsin(dx+c)^3+6\,a^2b^2\arcsin(dx+c)^2+4\,a^3b\arcsin(dx+c)+a^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^4,x, algorithm="fricas")
```

```
[Out] integral((d*e*x + c*e)/(b^4*arcsin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 +
 6*a^2*b^2*arcsin(d*x + c)^2 + 4*a^3*b*arcsin(d*x + c) + a^4), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*asin(d*x+c))**4,x)
```

```
[Out] Timed out
```

Giac [B] time = 2.29532, size = 2275, normalized size = 10.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^4,x, algorithm="giac")
```

```
[Out] -4/3*b^3*arcsin(d*x + c)^3*cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(d*x + c
))*e/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*a
rcsin(d*x + c) + a^3*b^4*d) - 4/3*b^3*arcsin(d*x + c)^3*cos(a/b)*e*sin(a/b)
*sin_integral(2*a/b + 2*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6
*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 4*a*b^2*a
rcsin(d*x + c)^2*cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(d*x + c))*e/(b^7*
d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x
+ c) + a^3*b^4*d) - 4*a*b^2*arcsin(d*x + c)^2*cos(a/b)*e*sin(a/b)*sin_integ
ral(2*a/b + 2*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(
d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 2/3*b^3*arcsin(d*x
+ c)^3*cos_integral(2*a/b + 2*arcsin(d*x + c))*e/(b^7*d*arcsin(d*x + c)^3 +
 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 4
*a^2*b*arcsin(d*x + c)*cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(d*x + c))*e
/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsi
n(d*x + c) + a^3*b^4*d) - 4*a^2*b*arcsin(d*x + c)*cos(a/b)*e*sin(a/b)*sin_i
ntegral(2*a/b + 2*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arc
sin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 2/3*sqrt(-(d*x
+ c)^2 + 1)*(d*x + c)*b^3*arcsin(d*x + c)^2*e/(b^7*d*arcsin(d*x + c)^3 + 3*
a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 2*a*
b^2*arcsin(d*x + c)^2*cos_integral(2*a/b + 2*arcsin(d*x + c))*e/(b^7*d*arcs
in(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) +
 a^3*b^4*d) - 4/3*a^3*cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(d*x + c))*e/
(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin
(d*x + c) + a^3*b^4*d) - 4/3*a^3*cos(a/b)*e*sin(a/b)*sin_integral(2*a/b + 2
*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 +
3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 4/3*sqrt(-(d*x + c)^2 + 1)*(d*x
+ c)*a*b^2*arcsin(d*x + c)*e/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*
x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/3*((d*x + c)^2 - 1)
*b^3*arcsin(d*x + c)*e/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)
^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 2*a^2*b*arcsin(d*x + c)*cos
_integral(2*a/b + 2*arcsin(d*x + c))*e/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d
*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 2/3*sqrt(-(
d*x + c)^2 + 1)*(d*x + c)*a^2*b*e/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcs
in(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 1/3*sqrt(-(d*x +
 c)^2 + 1)*(d*x + c)*b^3*e/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x
+ c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/3*((d*x + c)^2 - 1)*a
*b^2*e/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d
*arcsin(d*x + c) + a^3*b^4*d) + 1/6*b^3*arcsin(d*x + c)*e/(b^7*d*arcsin(d*x
 + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b
^4*d) + 2/3*a^3*cos_integral(2*a/b + 2*arcsin(d*x + c))*e/(b^7*d*arcsin(d*x
 + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b
^4*d) + 1/6*a*b^2*e/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2
+ 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d)
```

3.237 $\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^4}\,dx$

Optimal. Leaf size=164

$$-\frac{\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{6b^4d}+\frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{6b^4d}+\frac{c+dx}{6b^2d\left(a+b\sin^{-1}(c+dx)\right)^2}+\frac{\sqrt{1-(c+dx)^2}}{6b^3d\left(a+b\sin^{-1}(c+\right.}$$

```
[Out] -Sqrt[1 - (c + d*x)^2]/(3*b*d*(a + b*ArcSin[c + d*x])^3) + (c + d*x)/(6*b^2
*d*(a + b*ArcSin[c + d*x])^2) + Sqrt[1 - (c + d*x)^2]/(6*b^3*d*(a + b*ArcSi
n[c + d*x])) - (CosIntegral[(a + b*ArcSin[c + d*x])/b]*Sin[a/b])/(6*b^4*d)
+ (Cos[a/b]*SinIntegral[(a + b*ArcSin[c + d*x])/b])/(6*b^4*d)
```

Rubi [A] time = 0.268409, antiderivative size = 160, normalized size of antiderivative = 0.98, number of steps used = 8, number of rules used = 7, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.583, Rules used = {4803, 4621, 4719, 4723, 3303, 3299, 3302}

$$-\frac{\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)}{6b^4d}+\frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)}{6b^4d}+\frac{c+dx}{6b^2d\left(a+b\sin^{-1}(c+dx)\right)^2}+\frac{\sqrt{1-(}}{6b^3d\left(a+b\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(-4),x]
```

```
[Out] -Sqrt[1 - (c + d*x)^2]/(3*b*d*(a + b*ArcSin[c + d*x])^3) + (c + d*x)/(6*b^2
*d*(a + b*ArcSin[c + d*x])^2) + Sqrt[1 - (c + d*x)^2]/(6*b^3*d*(a + b*ArcSi
n[c + d*x])) - (CosIntegral[a/b + ArcSin[c + d*x]]*Sin[a/b])/(6*b^4*d) + (C
os[a/b]*SinIntegral[a/b + ArcSin[c + d*x]])/(6*b^4*d)
```

Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
```

```
 b, c}, x] && LtQ[n, -1]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^4}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\sin^{-1}(x)\right)^4}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^3}\,dx, x, c+dx\right)}{3bd}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{c+dx}{6b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\sin^{-1}(x)\right)^2}\,dx, x,\right.}{6b^2d}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{c+dx}{6b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{\sqrt{1-(c+dx)^2}}{6b^3d\left(a+b\sin^{-1}(c+dx)\right)} +$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{c+dx}{6b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{\sqrt{1-(c+dx)^2}}{6b^3d\left(a+b\sin^{-1}(c+dx)\right)} +$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{c+dx}{6b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{\sqrt{1-(c+dx)^2}}{6b^3d\left(a+b\sin^{-1}(c+dx)\right)} +$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{c+dx}{6b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{\sqrt{1-(c+dx)^2}}{6b^3d\left(a+b\sin^{-1}(c+dx)\right)} -$$

Mathematica [A] time = 0.308903, size = 134, normalized size = 0.82

$$\frac{-\frac{2b^3\sqrt{1-(c+dx)^2}}{\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{b^2(c+dx)}{\left(a+b\sin^{-1}(c+dx)\right)^2} - \sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right) + \cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right) + \frac{b\sqrt{1-(c}{a+b\sin^{-1}}}{6b^4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(-4),x]
```

```
[Out] ((-2*b^3*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*x])^3 + (b^2*(c + d*x))
/(a + b*ArcSin[c + d*x])^2 + (b*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*
x]) - CosIntegral[a/b + ArcSin[c + d*x]]*Sin[a/b] + Cos[a/b]*SinIntegral[a/
b + ArcSin[c + d*x]])/(6*b^4*d)
```

Maple [A] time = 0.065, size = 270, normalized size = 1.7

$$\frac{1}{d}\left(-\frac{1}{3\,(a+b\arcsin(dx+c))^3\,b}\sqrt{1-(dx+c)^2}+\frac{1}{6\,(a+b\arcsin(dx+c))^2\,b^4}\left((\arcsin(dx+c))^2\operatorname{Si}\left(\arcsin(dx+c)+\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c))^4,x)
```

```
[Out] 1/d*(-1/3*(1-(d*x+c)^2)^(1/2)/(a+b*arcsin(d*x+c))^3/b+1/6*(arcsin(d*x+c)^2*
Si(arcsin(d*x+c)+a/b)*cos(a/b)*b^2-arcsin(d*x+c)^2*Ci(arcsin(d*x+c)+a/b)*si
n(a/b)*b^2+2*arcsin(d*x+c)*Si(arcsin(d*x+c)+a/b)*cos(a/b)*a*b-2*arcsin(d*x+
c)*Ci(arcsin(d*x+c)+a/b)*sin(a/b)*a*b+arcsin(d*x+c)*(1-(d*x+c)^2)^(1/2)*b^2
+Si(arcsin(d*x+c)+a/b)*cos(a/b)*a^2-Ci(arcsin(d*x+c)+a/b)*sin(a/b)*a^2+(1-(
d*x+c)^2)^(1/2)*a*b+(d*x+c)*b^2)/(a+b*arcsin(d*x+c))^2/b^4)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^4,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{b^4\arcsin(dx+c)^4+4\,ab^3\arcsin(dx+c)^3+6\,a^2b^2\arcsin(dx+c)^2+4\,a^3b\arcsin(dx+c)+a^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^4,x, algorithm="fricas")
```

```
[Out] integral(1/(b^4*arcsin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6*a^2*b^2*a
rcsin(d*x + c)^2 + 4*a^3*b*arcsin(d*x + c) + a^4), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a + b \operatorname{asin}\left(c + dx\right)\right)^{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c))**4,x)
```

```
[Out] Integral((a + b*asin(c + d*x))**(-4), x)
```

Giac [B] time = 1.29513, size = 1501, normalized size = 9.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^4,x, algorithm="giac")
```

```
[Out] -1/6*b^3*arcsin(d*x + c)^3*cos_integral(a/b + arcsin(d*x + c))*sin(a/b)/(b^
7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*
x + c) + a^3*b^4*d) + 1/6*b^3*arcsin(d*x + c)^3*cos(a/b)*sin_integral(a/b +
 arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 +
3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 1/2*a*b^2*arcsin(d*x + c)^2*cos_
integral(a/b + arcsin(d*x + c))*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6
*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/2*a*b^2
*arcsin(d*x + c)^2*cos(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^7*d*arcs
in(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) +
 a^3*b^4*d) - 1/2*a^2*b*arcsin(d*x + c)*cos_integral(a/b + arcsin(d*x + c))
*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^
5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/2*a^2*b*arcsin(d*x + c)*cos(a/b)*sin_i
ntegral(a/b + arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(
d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/6*sqrt(-(d*x + c)
^2 + 1)*b^3*arcsin(d*x + c)^2/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d
*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/6*(d*x + c)*b^3*ar
csin(d*x + c)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^
2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 1/6*a^3*cos_integral(a/b + arcsin(d*
x + c))*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3
*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/6*a^3*cos(a/b)*sin_integral(a/b
 + arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2
```

```
+ 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/3*sqrt(-(d*x + c)^2 + 1)*a*b
^2*arcsin(d*x + c)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 +
 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/6*(d*x + c)*a*b^2/(b^7*d*arcs
in(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) +
 a^3*b^4*d) + 1/6*sqrt(-(d*x + c)^2 + 1)*a^2*b/(b^7*d*arcsin(d*x + c)^3 + 3
*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 1/3
*sqrt(-(d*x + c)^2 + 1)*b^3/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x
 + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d)
```

3.238 $\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^4}\,dx$

Optimal. Leaf size=26

$$\frac{\text{Unintegrable}\left(\frac{1}{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^4},x\right)}{e}$$

```
[Out] Unintegrable[1/((c + d*x)*(a + b*ArcSin[c + d*x])^4), x]/e
```

Rubi [A] time = 0.0592177, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^4}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^4),x]
```

```
[Out] Defer[Subst][Defer[Int][1/(x*(a + b*ArcSin[x])^4), x], x, c + d*x]/(d*e)
```

Rubi steps

$$\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^4}\,dx = \frac{\text{Subst}\left(\int \frac{1}{ex\left(a+b\sin^{-1}(x)\right)^4}\,dx,x,c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{1}{x\left(a+b\sin^{-1}(x)\right)^4}\,dx,x,c+dx\right)}{de}$$

Mathematica [A] time = 5.78724, size = 0, normalized size = 0.

$$\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^4}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^4),x]
```

```
[Out] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^4), x]
```

Maple [A] time = 0.521, size = 0, normalized size = 0.

$$\int \frac{1}{(dex + ce)(a + b\arcsin(dx + c))^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^4,x)
```

```
[Out] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^4,x)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^4,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{a^4dex + a^4ce + \left(b^4dex + b^4ce\right)\arcsin(dx+c)^4 + 4\left(ab^3dex + ab^3ce\right)\arcsin(dx+c)^3 + 6\left(a^2b^2dex + a^2b^2ce\right)a\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^4,x, algorithm="fricas")
```

[Out] integral(1/(a^4*d*e*x + a^4*c*e + (b^4*d*e*x + b^4*c*e)*arcsin(d*x + c)^4 +
 4*(a*b^3*d*e*x + a*b^3*c*e)*arcsin(d*x + c)^3 + 6*(a^2*b^2*d*e*x + a^2*b^2
*c*e)*arcsin(d*x + c)^2 + 4*(a^3*b*d*e*x + a^3*b*c*e)*arcsin(d*x + c)), x)

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{1}{a^{4}c+a^{4}dx+4a^{3}bc\operatorname{asin}(c+dx)+4a^{3}bdx\operatorname{asin}(c+dx)+6a^{2}b^{2}c\operatorname{asin}^{2}(c+dx)+6a^{2}b^{2}dx\operatorname{asin}^{2}(c+dx)+4ab^{3}c\operatorname{asin}^{3}(c+dx)+4ab^{3}dx\operatorname{asin}^{3}(c+dx)+b^{4}c\operatorname{asin}^{4}(c+dx)+b^{4}}}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(d*e*x+c*e)/(a+b*asin(d*x+c))**4,x)

[Out] Integral(1/(a**4*c + a**4*d*x + 4*a**3*b*c*asin(c + d*x) + 4*a**3*b*d*x*asi
n(c + d*x) + 6*a**2*b**2*c*asin(c + d*x)**2 + 6*a**2*b**2*d*x*asin(c + d*x)
2 + 4*a*b3*c*asin(c + d*x)**3 + 4*a*b**3*d*x*asin(c + d*x)**3 + b**4*c*
asin(c + d*x)**4 + b**4*d*x*asin(c + d*x)**4), x)/e

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(dex+ce)(b\arcsin(dx+c)+a)^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^4,x, algorithm="giac")

[Out] integrate(1/((d*e*x + c*e)*(b*arcsin(d*x + c) + a)^4), x)

3.239 $\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^5}\,dx$

Optimal. Leaf size=191

$$\frac{\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{24b^5d}+\frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{24b^5d}-\frac{c+dx}{24b^4d\left(a+b\sin^{-1}(c+dx)\right)}+\frac{c+dx}{12b^2d\left(a+b\sin^{-1}(c\right.}$$

```
[Out] -Sqrt[1 - (c + d*x)^2]/(4*b*d*(a + b*ArcSin[c + d*x])^4) + (c + d*x)/(12*b^
2*d*(a + b*ArcSin[c + d*x])^3) + Sqrt[1 - (c + d*x)^2]/(24*b^3*d*(a + b*Arc
Sin[c + d*x])^2) - (c + d*x)/(24*b^4*d*(a + b*ArcSin[c + d*x])) + (Cos[a/b]
*CosIntegral[(a + b*ArcSin[c + d*x])/b])/(24*b^5*d) + (Sin[a/b]*SinIntegral
[(a + b*ArcSin[c + d*x])/b])/(24*b^5*d)
```

Rubi [A] time = 0.281997, antiderivative size = 191, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.583, Rules used = {4803, 4621, 4719, 4623, 3303, 3299, 3302}

$$\frac{\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{24b^5d}+\frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{24b^5d}-\frac{c+dx}{24b^4d\left(a+b\sin^{-1}(c+dx)\right)}+\frac{c+dx}{12b^2d\left(a+b\sin^{-1}(c\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(-5),x]
```

```
[Out] -Sqrt[1 - (c + d*x)^2]/(4*b*d*(a + b*ArcSin[c + d*x])^4) + (c + d*x)/(12*b^
2*d*(a + b*ArcSin[c + d*x])^3) + Sqrt[1 - (c + d*x)^2]/(24*b^3*d*(a + b*Arc
Sin[c + d*x])^2) - (c + d*x)/(24*b^4*d*(a + b*ArcSin[c + d*x])) + (Cos[a/b]
*CosIntegral[(a + b*ArcSin[c + d*x])/b])/(24*b^5*d) + (Sin[a/b]*SinIntegral
[(a + b*ArcSin[c + d*x])/b])/(24*b^5*d)
```

Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^5}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\sin^{-1}(x)\right)^5}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{4bd\left(a+b\sin^{-1}(c+dx)\right)^4} - \frac{\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^4}\,dx, x, c+dx\right)}{4bd}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{4bd\left(a+b\sin^{-1}(c+dx)\right)^4} + \frac{c+dx}{12b^2d\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\sin^{-1}(x)\right)^3}\,dx,\right.}{12b^2d}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{4bd\left(a+b\sin^{-1}(c+dx)\right)^4} + \frac{c+dx}{12b^2d\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{\sqrt{1-(c+dx)^2}}{24b^3d\left(a+b\sin^{-1}(c+dx\right.}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{4bd\left(a+b\sin^{-1}(c+dx)\right)^4} + \frac{c+dx}{12b^2d\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{\sqrt{1-(c+dx)^2}}{24b^3d\left(a+b\sin^{-1}(c+dx\right.}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{4bd\left(a+b\sin^{-1}(c+dx)\right)^4} + \frac{c+dx}{12b^2d\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{\sqrt{1-(c+dx)^2}}{24b^3d\left(a+b\sin^{-1}(c+dx\right.}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{4bd\left(a+b\sin^{-1}(c+dx)\right)^4} + \frac{c+dx}{12b^2d\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{\sqrt{1-(c+dx)^2}}{24b^3d\left(a+b\sin^{-1}(c+dx\right.}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{4bd\left(a+b\sin^{-1}(c+dx)\right)^4} + \frac{c+dx}{12b^2d\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{\sqrt{1-(c+dx)^2}}{24b^3d\left(a+b\sin^{-1}(c+dx\right.}$$

Mathematica [A] time = 0.413517, size = 156, normalized size = 0.82

$$\frac{-\frac{6b^4\sqrt{1-(c+dx)^2}}{\left(a+b\sin^{-1}(c+dx)\right)^4} + \frac{2b^3(c+dx)}{\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{b^2\sqrt{1-(c+dx)^2}}{\left(a+b\sin^{-1}(c+dx)\right)^2} + \cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right) + \sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}\right.}{24b^5d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(-5),x]
```

```
[Out] ((-6*b^4*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*x])^4 + (2*b^3*(c + d*x
))/(a + b*ArcSin[c + d*x])^3 + (b^2*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c
+ d*x])^2 - (b*(c + d*x))/(a + b*ArcSin[c + d*x]) + Cos[a/b]*CosIntegral[a/
b + ArcSin[c + d*x]] + Sin[a/b]*SinIntegral[a/b + ArcSin[c + d*x]])/(24*b^5
*d)
```

Maple [B] time = 0.075, size = 387, normalized size = 2.

$$\frac{1}{d}\left(-\frac{1}{4\left(a+b\arcsin\left(dx+c\right)\right)^{4}b}\sqrt{1-\left(dx+c\right)^{2}}+\frac{1}{24\left(a+b\arcsin\left(dx+c\right)\right)^{3}b^{5}}\left(\left(\arcsin\left(dx+c\right)\right)^{3}\mathrm{Si}\left(\arcsin\left(dx+c\right)+\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c))^5,x)
```

```
[Out] 1/d*(-1/4*(1-(d*x+c)^2)^(1/2)/(a+b*arcsin(d*x+c))^4/b+1/24*(arcsin(d*x+c)^3
*Si(arcsin(d*x+c)+a/b)*sin(a/b)*b^3+arcsin(d*x+c)^3*Ci(arcsin(d*x+c)+a/b)*c
os(a/b)*b^3+3*arcsin(d*x+c)^2*Si(arcsin(d*x+c)+a/b)*sin(a/b)*a*b^2+3*arcsin
(d*x+c)^2*Ci(arcsin(d*x+c)+a/b)*cos(a/b)*a*b^2-arcsin(d*x+c)^2*(d*x+c)*b^3+
3*arcsin(d*x+c)*Si(arcsin(d*x+c)+a/b)*sin(a/b)*a^2*b+3*arcsin(d*x+c)*Ci(arc
sin(d*x+c)+a/b)*cos(a/b)*a^2*b+(1-(d*x+c)^2)^(1/2)*arcsin(d*x+c)*b^3-2*arcs
in(d*x+c)*(d*x+c)*a*b^2+Si(arcsin(d*x+c)+a/b)*sin(a/b)*a^3+Ci(arcsin(d*x+c)
+a/b)*cos(a/b)*a^3+(1-(d*x+c)^2)^(1/2)*a*b^2-(d*x+c)*a^2*b+2*(d*x+c)*b^3)/(
a+b*arcsin(d*x+c))^3/b^5)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^5,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{b^{5}\arcsin\left(dx+c\right)^{5}+5\,ab^{4}\arcsin\left(dx+c\right)^{4}+10\,a^{2}b^{3}\arcsin\left(dx+c\right)^{3}+10\,a^{3}b^{2}\arcsin\left(dx+c\right)^{2}+5\,a^{4}b\arcsin\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^5,x, algorithm="fricas")
```

```
[Out] integral(1/(b^5*arcsin(d*x + c)^5 + 5*a*b^4*arcsin(d*x + c)^4 + 10*a^2*b^3*
arcsin(d*x + c)^3 + 10*a^3*b^2*arcsin(d*x + c)^2 + 5*a^4*b*arcsin(d*x + c)
+ a^5), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c))**5,x)
```

```
[Out] Timed out
```

Giac [B] time = 1.26283, size = 2585, normalized size = 13.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^5,x, algorithm="giac")
```

```
[Out] 1/24*b^4*arcsin(d*x + c)^4*cos(a/b)*cos_integral(a/b + arcsin(d*x + c))/(b^
9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6*a^2*b^7*d*arcsin(d*
x + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d) + 1/24*b^4*arcsin(d*x +
 c)^4*sin(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^9*d*arcsin(d*x + c)^4
 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6*a^2*b^7*d*arcsin(d*x + c)^2 + 4*a^3*b^6*
d*arcsin(d*x + c) + a^4*b^5*d) + 1/6*a*b^3*arcsin(d*x + c)^3*cos(a/b)*cos_i
ntegral(a/b + arcsin(d*x + c))/(b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(
d*x + c)^3 + 6*a^2*b^7*d*arcsin(d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) +
a^4*b^5*d) + 1/6*a*b^3*arcsin(d*x + c)^3*sin(a/b)*sin_integral(a/b + arcsin
(d*x + c))/(b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6*a^2*b
^7*d*arcsin(d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d) - 1/24*(d
*x + c)*b^4*arcsin(d*x + c)^3/(b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d
*x + c)^3 + 6*a^2*b^7*d*arcsin(d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a
```

```
^4*b^5*d) + 1/4*a^2*b^2*arcsin(d*x + c)^2*cos(a/b)*cos_integral(a/b + arcsi
n(d*x + c))/(b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6*a^2*
b^7*d*arcsin(d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d) + 1/4*a^
2*b^2*arcsin(d*x + c)^2*sin(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^9*d
*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6*a^2*b^7*d*arcsin(d*x +
 c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d) - 1/8*(d*x + c)*a*b^3*arcs
in(d*x + c)^2/(b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6*a^
2*b^7*d*arcsin(d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d) + 1/6*
a^3*b*arcsin(d*x + c)*cos(a/b)*cos_integral(a/b + arcsin(d*x + c))/(b^9*d*a
rcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6*a^2*b^7*d*arcsin(d*x + c
)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d) + 1/6*a^3*b*arcsin(d*x + c)*
sin(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^9*d*arcsin(d*x + c)^4 + 4*a
*b^8*d*arcsin(d*x + c)^3 + 6*a^2*b^7*d*arcsin(d*x + c)^2 + 4*a^3*b^6*d*arcs
in(d*x + c) + a^4*b^5*d) + 1/24*sqrt(-(d*x + c)^2 + 1)*b^4*arcsin(d*x + c)^
2/(b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6*a^2*b^7*d*arcs
in(d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d) - 1/8*(d*x + c)*a^
2*b^2*arcsin(d*x + c)/(b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^
3 + 6*a^2*b^7*d*arcsin(d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d
) + 1/12*(d*x + c)*b^4*arcsin(d*x + c)/(b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d
*arcsin(d*x + c)^3 + 6*a^2*b^7*d*arcsin(d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x
 + c) + a^4*b^5*d) + 1/24*a^4*cos(a/b)*cos_integral(a/b + arcsin(d*x + c))/
(b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6*a^2*b^7*d*arcsin
(d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d) + 1/24*a^4*sin(a/b)*
sin_integral(a/b + arcsin(d*x + c))/(b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*ar
csin(d*x + c)^3 + 6*a^2*b^7*d*arcsin(d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x +
c) + a^4*b^5*d) + 1/12*sqrt(-(d*x + c)^2 + 1)*a*b^3*arcsin(d*x + c)/(b^9*d*
arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6*a^2*b^7*d*arcsin(d*x +
c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d) - 1/24*(d*x + c)*a^3*b/(b^9
*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6*a^2*b^7*d*arcsin(d*x
 + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d) + 1/12*(d*x + c)*a*b^3/(
b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6*a^2*b^7*d*arcsin(
d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d) + 1/24*sqrt(-(d*x + c
)^2 + 1)*a^2*b^2/(b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6
*a^2*b^7*d*arcsin(d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d) - 1
/4*sqrt(-(d*x + c)^2 + 1)*b^4/(b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d
*x + c)^3 + 6*a^2*b^7*d*arcsin(d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a
^4*b^5*d)
```

3.240 $\int (ce+dex)^3 \sqrt{a+b\sin^{-1}(c+dx)}\,dx$

Optimal. Leaf size=288

$$-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}e^3\cos\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{64d}+\frac{\sqrt{\pi}\sqrt{b}e^3\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{16d}+\sqrt{\pi}\sqrt{b}e^3\sin\left(\frac{2a}{b}\right.$$

```
[Out] (-3*e^3*Sqrt[a + b*ArcSin[c + d*x]])/(32*d) + (e^3*(c + d*x)^4*Sqrt[a + b*A
rcSin[c + d*x]])/(4*d) - (Sqrt[b]*e^3*Sqrt[Pi/2]*Cos[(4*a)/b]*FresnelC[(2*S
qrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(64*d) + (Sqrt[b]*e^3*Sqrt
[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi
])])/(16*d) + (Sqrt[b]*e^3*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]]
)/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(16*d) - (Sqrt[b]*e^3*Sqrt[Pi/2]*Fresne
lS[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(4*a)/b])/(64*d)
```

Rubi [A] time = 0.723537, antiderivative size = 288, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.4, Rules used = {4805, 12, 4629, 4723, 3312, 3306, 3305, 3351, 3304, 3352}

$$-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}e^3\cos\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{64d}+\frac{\sqrt{\pi}\sqrt{b}e^3\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{16d}+\sqrt{\pi}\sqrt{b}e^3\sin\left(\frac{2a}{b}\right.$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3*Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (-3*e^3*Sqrt[a + b*ArcSin[c + d*x]])/(32*d) + (e^3*(c + d*x)^4*Sqrt[a + b*A
rcSin[c + d*x]])/(4*d) - (Sqrt[b]*e^3*Sqrt[Pi/2]*Cos[(4*a)/b]*FresnelC[(2*S
qrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(64*d) + (Sqrt[b]*e^3*Sqrt
[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi
])])/(16*d) + (Sqrt[b]*e^3*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]]
)/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(16*d) - (Sqrt[b]*e^3*Sqrt[Pi/2]*Fresne
lS[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(4*a)/b])/(64*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
```

```
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4629

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^(m + 1)*(a + b*ArcSin[c*x])^n)/(m + 1), x] - Dist[(b*c*n)/(m + 1), Int[(x
^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int (ce+dex)^3\sqrt{a+b\sin^{-1}(c+dx)}\,dx = \frac{\text{Subst}\left(\int e^3x^3\sqrt{a+b\sin^{-1}(x)}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e^3\,\text{Subst}\left(\int x^3\sqrt{a+b\sin^{-1}(x)}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e^3(c+dx)^4\sqrt{a+b\sin^{-1}(c+dx)}}{4d} - \frac{\left(be^3\right)\text{Subst}\left(\int \frac{x^4}{\sqrt{1-x^2}\sqrt{a+b\sin^{-1}(x)}}\,dx,x,c+d$$

$$= \frac{e^3(c+dx)^4\sqrt{a+b\sin^{-1}(c+dx)}}{4d} - \frac{\left(be^3\right)\text{Subst}\left(\int \frac{\sin^4(x)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(c+dx)\right)}{8d}$$

$$= \frac{e^3(c+dx)^4\sqrt{a+b\sin^{-1}(c+dx)}}{4d} - \frac{\left(be^3\right)\text{Subst}\left(\int \left(\frac{3}{8\sqrt{a+bx}} - \frac{\cos(2x)}{2\sqrt{a+bx}} + \frac{\cos(4x)}{8\sqrt{a+bx}}\right)\right.}{8d}$$

$$= -\frac{3e^3\sqrt{a+b\sin^{-1}(c+dx)}}{32d} + \frac{e^3(c+dx)^4\sqrt{a+b\sin^{-1}(c+dx)}}{4d} - \frac{\left(be^3\right)\text{Subst}\left(\int\right.}{}$$

$$= -\frac{3e^3\sqrt{a+b\sin^{-1}(c+dx)}}{32d} + \frac{e^3(c+dx)^4\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{\left(be^3\cos\left(\frac{2a}{b}\right)\right)}{}$$

$$= -\frac{3e^3\sqrt{a+b\sin^{-1}(c+dx)}}{32d} + \frac{e^3(c+dx)^4\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{\left(e^3\cos\left(\frac{2a}{b}\right)\right)\text{S}}{}$$

$$= -\frac{3e^3\sqrt{a+b\sin^{-1}(c+dx)}}{32d} + \frac{e^3(c+dx)^4\sqrt{a+b\sin^{-1}(c+dx)}}{4d} - \frac{\sqrt{b}e^3\sqrt{\frac{\pi}{2}}\cos\left(\right.}{}$$

Mathematica [C] time = 0.185268, size = 269, normalized size = 0.93

$$\frac{e^3 e^{-\frac{4ia}{b}}\sqrt{a+b\sin^{-1}(c+dx)}\left(-4\sqrt{2}e^{\frac{2ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{3}{2},-\frac{2i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)-4\sqrt{2}e^{\frac{6ia}{b}}\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gar}\right.}{128d}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*e + d*e*x)^3*Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (e^3*Sqrt[a + b*ArcSin[c + d*x]]*(-4*Sqrt[2]*E^(((2*I)*a)/b)*Sqrt[(I*(a + b
*ArcSin[c + d*x]))/b]*Gamma[3/2, ((-2*I)*(a + b*ArcSin[c + d*x]))/b] - 4*Sq
rt[2]*E^(((6*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((2
*I)*(a + b*ArcSin[c + d*x]))/b] + Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma
[3/2, ((-4*I)*(a + b*ArcSin[c + d*x]))/b] + E^(((8*I)*a)/b)*Sqrt[((-I)*(a +
 b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((4*I)*(a + b*ArcSin[c + d*x]))/b]))/(12
8*d*E^(((4*I)*a)/b)*Sqrt[(a + b*ArcSin[c + d*x])^2/b^2])
```

Maple [A] time = 0.099, size = 374, normalized size = 1.3

$$\frac{e^3}{128\,d}\left(-\sqrt{2}\sqrt{\pi}\sqrt{b^{-1}}\sqrt{a+b\arcsin(dx+c)}\text{FresnelC}\left(2\,\frac{\sqrt{2}\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\sqrt{b^{-1}}b}\right)\cos\left(4\,\frac{a}{b}\right)b-\sqrt{2}\sqrt{\pi}\sqrt{b^{-1}}\sqrt{a+b\,\text{arcs}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^(1/2),x)
```

```
[Out] 1/128/d*e^3/(a+b*arcsin(d*x+c))^(1/2)*(-2^(1/2)*Pi^(1/2)*(1/b)^(1/2)*(a+b*a
rcsin(d*x+c))^(1/2)*FresnelC(2*2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x
+c))^(1/2)/b)*cos(4*a/b)*b-2^(1/2)*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+c))
^(1/2)*FresnelS(2*2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)
*sin(4*a/b)*b+8*(1/b)^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(2*a/b)*F
resnelC(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b+8*(1/b)^(1/2)
*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*FresnelS(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*ar
csin(d*x+c))^(1/2)/b)*sin(2*a/b)*b+4*arcsin(d*x+c)*cos(4*(a+b*arcsin(d*x+c)
)/b-4*a/b)*b+4*cos(4*(a+b*arcsin(d*x+c))/b-4*a/b)*a-16*arcsin(d*x+c)*cos(2*
(a+b*arcsin(d*x+c))/b-2*a/b)*b-16*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dex+ce)^3\sqrt{b\arcsin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)^3*sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e^3\left(\int c^3\sqrt{a+b\,\mathrm{asin}\,(c+dx)}\,dx+\int d^3x^3\sqrt{a+b\,\mathrm{asin}\,(c+dx)}\,dx+\int 3cd^2x^2\sqrt{a+b\,\mathrm{asin}\,(c+dx)}\,dx+\int 3c^2dx\sqrt{a+b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3*(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] e**3*(Integral(c**3*sqrt(a + b*asin(c + d*x)), x) + Integral(d**3*x**3*sqrt
(a + b*asin(c + d*x)), x) + Integral(3*c*d**2*x**2*sqrt(a + b*asin(c + d*x)
), x) + Integral(3*c**2*d*x*sqrt(a + b*asin(c + d*x)), x))
```

Giac [A] time = 2.03682, size = 586, normalized size = 2.03

$$-\frac{\sqrt{\pi}b\,\mathrm{erf}\left(\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}\sqrt{b}i}{|b|}-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}}{\sqrt{b}}\right)e^{\left(-\frac{4ai}{b}+3\right)}}{128\left(\frac{\sqrt{2}b^{\frac{3}{2}}i}{|b|}-\sqrt{2}\sqrt{b}\right)d}+\frac{\sqrt{\pi}\sqrt{b}\,\mathrm{erf}\left(-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}\sqrt{b}i}{|b|}-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}}{\sqrt{b}}\right.}{128\left(\frac{\sqrt{2}bi}{|b|}+\sqrt{2}\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] -1/128*sqrt(pi)*b*erf(sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b)
- sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-4*a*i/b + 3)/((sqrt(2)*b
^(3/2)*i/abs(b) - sqrt(2)*sqrt(b))*d) + 1/128*sqrt(pi)*sqrt(b)*erf(-sqrt(2)
*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(2)*sqrt(b*arcsin(d*x +
 c) + a)/sqrt(b))*e^(4*a*i/b + 3)/((sqrt(2)*b*i/abs(b) + sqrt(2))*d) - 1/32
*sqrt(pi)*sqrt(b)*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(
b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b + 3)/(d*(b*i/abs(b) + 1)) + 1/32
*sqrt(pi)*sqrt(b)*erf(sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b
*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b + 3)/(d*(b*i/abs(b) - 1)) + 1/64
*sqrt(b*arcsin(d*x + c) + a)*e^(4*i*arcsin(d*x + c) + 3)/d - 1/16*sqrt(b*ar
csin(d*x + c) + a)*e^(2*i*arcsin(d*x + c) + 3)/d - 1/16*sqrt(b*arcsin(d*x +
 c) + a)*e^(-2*i*arcsin(d*x + c) + 3)/d + 1/64*sqrt(b*arcsin(d*x + c) + a)*
e^(-4*i*arcsin(d*x + c) + 3)/d
```

3.241 $\int (ce+dex)^2\sqrt{a+b\sin^{-1}(c+dx)}\,dx$

Optimal. Leaf size=274

$$\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}e^2\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{4d}-\frac{\sqrt{\frac{\pi}{6}}\sqrt{b}e^2\sin\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{12d}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}e^2\cos\left(\frac{a}{b}\right)S}{}$$

```
[Out] (e^2*(c + d*x)^3*Sqrt[a + b*ArcSin[c + d*x]])/(3*d) - (Sqrt[b]*e^2*Sqrt[Pi/
2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(4*
d) + (Sqrt[b]*e^2*Sqrt[Pi/6]*Cos[(3*a)/b]*FresnelS[(Sqrt[6/Pi]*Sqrt[a + b*A
rcSin[c + d*x]])/Sqrt[b]])/(12*d) + (Sqrt[b]*e^2*Sqrt[Pi/2]*FresnelC[(Sqrt[
2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(4*d) - (Sqrt[b]*e^2*
Sqrt[Pi/6]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(
3*a)/b])/(12*d)
```

Rubi [A] time = 0.748132, antiderivative size = 274, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.4, Rules used = {4805, 12, 4629, 4723, 3312, 3306, 3305, 3351, 3304, 3352}

$$\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}e^2\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{4d}-\frac{\sqrt{\frac{\pi}{6}}\sqrt{b}e^2\sin\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{12d}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}e^2\cos\left(\frac{a}{b}\right)S}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2*Sqrt[a + b*ArcSin[c + d*x]],x]
```


```
[Out] (e^2*(c + d*x)^3*Sqrt[a + b*ArcSin[c + d*x]])/(3*d) - (Sqrt[b]*e^2*Sqrt[Pi/
2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(4*
d) + (Sqrt[b]*e^2*Sqrt[Pi/6]*Cos[(3*a)/b]*FresnelS[(Sqrt[6/Pi]*Sqrt[a + b*A
rcSin[c + d*x]])/Sqrt[b]])/(12*d) + (Sqrt[b]*e^2*Sqrt[Pi/2]*FresnelC[(Sqrt[
2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(4*d) - (Sqrt[b]*e^2*
Sqrt[Pi/6]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(
3*a)/b])/(12*d)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
```

```
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4629

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^(m + 1)*(a + b*ArcSin[c*x])^n)/(m + 1), x] - Dist[(b*c*n)/(m + 1), Int[(x
^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int (ce+dex)^2\sqrt{a+b\sin^{-1}(c+dx)}\,dx = \frac{\text{Subst}\left(\int e^2x^2\sqrt{a+b\sin^{-1}(x)}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e^2\,\text{Subst}\left(\int x^2\sqrt{a+b\sin^{-1}(x)}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e^2(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{3d} - \frac{\left(be^2\right)\text{Subst}\left(\int \frac{x^3}{\sqrt{1-x^2}\sqrt{a+b\sin^{-1}(x)}}\,dx,x,c+d\right.}{6d}$$

$$= \frac{e^2(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{3d} - \frac{\left(be^2\right)\text{Subst}\left(\int \frac{\sin^3(x)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(c+dx)\right)}{6d}$$

$$= \frac{e^2(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{3d} - \frac{\left(be^2\right)\text{Subst}\left(\int \left(\frac{3\sin(x)}{4\sqrt{a+bx}}-\frac{\sin(3x)}{4\sqrt{a+bx}}\right)dx,x,\sin\right.}{6d}$$

$$= \frac{e^2(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{3d} + \frac{\left(be^2\right)\text{Subst}\left(\int \frac{\sin(3x)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(c+dx)\right)}{24d}$$

$$= \frac{e^2(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{3d} - \frac{\left(be^2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(\right.}{8d}$$

$$= \frac{e^2(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{3d} - \frac{\left(e^2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \sin\left(\frac{x^2}{b}\right)dx,x,\sqrt{a+b}\right.}{4d}$$

$$= \frac{e^2(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{3d} - \frac{\sqrt{b}e^2\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{4d} + \frac{\sqrt{}}{}$$

Mathematica [C] time = 0.287771, size = 269, normalized size = 0.98

$$-\frac{ie^2e^{-\frac{3ia}{b}}\sqrt{a+b\sin^{-1}(c+dx)}\left(9e^{\frac{2ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{3}{2},-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)-9e^{\frac{4ia}{b}}\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\right.\right.}{72d}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*e + d*e*x)^2*Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] ((-I/72)*e^2*Sqrt[a + b*ArcSin[c + d*x]]*(9*E^(((2*I)*a)/b)*Sqrt[(I*(a + b*
ArcSin[c + d*x]))/b]*Gamma[3/2, ((-I)*(a + b*ArcSin[c + d*x]))/b] - 9*E^(((
4*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, (I*(a + b*ArcS
in[c + d*x]))/b] + Sqrt[3]*(-(Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2
, ((-3*I)*(a + b*ArcSin[c + d*x]))/b]) + E^(((6*I)*a)/b)*Sqrt[((-I)*(a + b*
ArcSin[c + d*x]))/b]*Gamma[3/2, ((3*I)*(a + b*ArcSin[c + d*x]))/b])))/(d*E^
(((3*I)*a)/b)*Sqrt[(a + b*ArcSin[c + d*x])^2/b^2])
```

Maple [A] time = 0.103, size = 389, normalized size = 1.4

$$\frac{e^2}{72\,d}\left(\sqrt{3}\cos\left(3\,\frac{a}{b}\right)\text{FresnelS}\left(\frac{\sqrt{2}\sqrt{3}}{\sqrt{\pi}b}\sqrt{a+b\arcsin(dx+c)}\frac{1}{\sqrt{b^{-1}}}\right)\sqrt{b^{-1}}\sqrt{\pi}\sqrt{2}\sqrt{a+b\arcsin(dx+c)}b-\sqrt{3}\sin\left(3\,\frac{a}{b}\right)\text{Fr}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(1/2),x)
```

```
[Out] 1/72/d*e^2/(a+b*arcsin(d*x+c))^(1/2)*(3^(1/2)*cos(3*a/b)*FresnelS(2^(1/2)/P
i^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(1/b)^(1/2)*Pi^(1/
2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*b-3^(1/2)*sin(3*a/b)*FresnelC(2^(1/2)/
Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(1/b)^(1/2)*Pi^(1
/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*b-9*2^(1/2)*Pi^(1/2)*(1/b)^(1/2)*(a+b
*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*a
rcsin(d*x+c))^(1/2)/b)*b+9*2^(1/2)*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+c))
^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(
1/2)/b)*b+18*arcsin(d*x+c)*sin((a+b*arcsin(d*x+c))/b-a/b)*b+18*sin((a+b*arc
sin(d*x+c))/b-a/b)*a-6*arcsin(d*x+c)*sin(3*(a+b*arcsin(d*x+c))/b-3*a/b)*b-6
*sin(3*(a+b*arcsin(d*x+c))/b-3*a/b)*a)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dex + ce)^2 \sqrt{b \arcsin (dx + c) + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)^2*sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e^2 \left(\int c^2 \sqrt{a + b \operatorname{asin}(c + dx)}\, dx + \int d^2 x^2 \sqrt{a + b \operatorname{asin}(c + dx)}\, dx + \int 2cdx \sqrt{a + b \operatorname{asin}(c + dx)}\, dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2*(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] e**2*(Integral(c**2*sqrt(a + b*asin(c + d*x)), x) + Integral(d**2*x**2*sqrt
(a + b*asin(c + d*x)), x) + Integral(2*c*d*x*sqrt(a + b*asin(c + d*x)), x))
```

Giac [B] time = 2.17925, size = 625, normalized size = 2.28

$$\frac{\sqrt{2}\sqrt{\pi}bi \operatorname{erf}\left(-\frac{\sqrt{2}\sqrt{b \arcsin(dx+c)+a}i}{2\sqrt{|b|}} - \frac{\sqrt{2}\sqrt{b \arcsin(dx+c)+a}\sqrt{|b|}}{2b}\right) e^{\left(\frac{ai}{b}+2\right)}}{16\left(\frac{bi}{\sqrt{|b|}} + \sqrt{|b|}\right)d} + \frac{\sqrt{2}\sqrt{\pi}bi \operatorname{erf}\left(\frac{\sqrt{2}\sqrt{b \arcsin(dx+c)+a}i}{2\sqrt{|b|}} - \frac{\sqrt{2}\sqrt{b \arcsin(dx+c)+a}}{2b}\right.}{16\left(\frac{bi}{\sqrt{|b|}} - \sqrt{|b|}\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] 1/16*sqrt(2)*sqrt(pi)*b*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sq
rt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i
/b + 2)/((b*i/sqrt(abs(b)) + sqrt(abs(b)))*d) + 1/16*sqrt(2)*sqrt(pi)*b*i*e
rf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqr
t(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b + 2)/((b*i/sqrt(abs(b))
- sqrt(abs(b)))*d) - 1/24*sqrt(pi)*sqrt(b)*i*erf(-1/2*sqrt(6)*sqrt(b*arcsin
(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/s
qrt(b))*e^(3*a*i/b + 2)/((sqrt(6)*b*i/abs(b) + sqrt(6))*d) - 1/24*sqrt(pi)*
sqrt(b)*i*erf(1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/
2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-3*a*i/b + 2)/((sqrt(6)*b
*i/abs(b) - sqrt(6))*d) + 1/24*sqrt(b*arcsin(d*x + c) + a)*i*e^(3*i*arcsin(
d*x + c) + 2)/d - 1/8*sqrt(b*arcsin(d*x + c) + a)*i*e^(i*arcsin(d*x + c) +
2)/d + 1/8*sqrt(b*arcsin(d*x + c) + a)*i*e^(-i*arcsin(d*x + c) + 2)/d - 1/2
4*sqrt(b*arcsin(d*x + c) + a)*i*e^(-3*i*arcsin(d*x + c) + 2)/d
```

3.242 $\int (ce+dex)\sqrt{a+b\sin^{-1}(c+dx)}\,dx$

Optimal. Leaf size=156

$$\frac{\sqrt{\pi}\sqrt{b}e\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{8d}+\frac{\sqrt{\pi}\sqrt{b}e\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{8d}+\frac{e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{2d}$$

```
[Out] -(e*Sqrt[a + b*ArcSin[c + d*x]])/(4*d) + (e*(c + d*x)^2*Sqrt[a + b*ArcSin[c
 + d*x]])/(2*d) + (Sqrt[b]*e*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*A
rcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(8*d) + (Sqrt[b]*e*Sqrt[Pi]*FresnelS[
(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(8*d)
```

Rubi [A] time = 0.424398, antiderivative size = 156, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 10, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.435, Rules used = {4805, 12, 4629, 4723, 3312, 3306, 3305, 3351, 3304, 3352}

$$\frac{\sqrt{\pi}\sqrt{b}e\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{8d}+\frac{\sqrt{\pi}\sqrt{b}e\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{8d}+\frac{e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{2d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)*Sqrt[a + b*ArcSin[c + d*x]],x]
```


```
[Out] -(e*Sqrt[a + b*ArcSin[c + d*x]])/(4*d) + (e*(c + d*x)^2*Sqrt[a + b*ArcSin[c
 + d*x]])/(2*d) + (Sqrt[b]*e*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*A
rcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(8*d) + (Sqrt[b]*e*Sqrt[Pi]*FresnelS[
(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(8*d)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4629

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^(m + 1)*(a + b*ArcSin[c*x])^n)/(m + 1), x] - Dist[(b*c*n)/(m + 1), Int[(x
^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int (ce+dex)\sqrt{a+b\sin^{-1}(c+dx)}\,dx = \frac{\text{Subst}\left(\int ex\sqrt{a+b\sin^{-1}(x)}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e\,\text{Subst}\left(\int x\sqrt{a+b\sin^{-1}(x)}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{2d} - \frac{(be)\,\text{Subst}\left(\int \frac{x^2}{\sqrt{1-x^2}\sqrt{a+b\sin^{-1}(x)}}\,dx,x,c+dx\right)}{4d}$$

$$= \frac{e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{2d} - \frac{(be)\,\text{Subst}\left(\int \frac{\sin^2(x)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(c+dx)\right)}{4d}$$

$$= \frac{e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{2d} - \frac{(be)\,\text{Subst}\left(\int \left(\frac{1}{2\sqrt{a+bx}} - \frac{\cos(2x)}{2\sqrt{a+bx}}\right) dx,x,\sin^{-1}(c\right.}{4d}$$

$$= -\frac{e\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{2d} + \frac{(be)\,\text{Subst}\left(\int \frac{\cos(2}{\sqrt{a+b}}\right.}{}$$

$$= -\frac{e\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{2d} + \frac{\left(be\cos\left(\frac{2a}{b}\right)\right)\text{Subs}}{}$$

$$= -\frac{e\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{2d} + \frac{\left(e\cos\left(\frac{2a}{b}\right)\right)\text{Subst}}{}$$

$$= -\frac{e\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{2d} + \frac{\sqrt{b}e\sqrt{\pi}\cos\left(\frac{2a}{b}\right)C}{8d}$$

Mathematica [C] time = 0.0745581, size = 154, normalized size = 0.99

$$-\frac{ee^{-\frac{2ia}{b}}\sqrt{a+b\sin^{-1}(c+dx)}\left(\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{3}{2},-\frac{2i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)+e^{\frac{4ia}{b}}\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{3}{2},\frac{2i(}{}\right.\right.}{8\sqrt{2}d\sqrt{\frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{b^2}}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*e + d*e*x)*Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] -(e*Sqrt[a + b*ArcSin[c + d*x]]*(Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[
3/2, ((-2*I)*(a + b*ArcSin[c + d*x]))/b] + E^(((4*I)*a)/b)*Sqrt[((-I)*(a +
b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((2*I)*(a + b*ArcSin[c + d*x]))/b]))/(8*S
qrt[2]*d*E^(((2*I)*a)/b)*Sqrt[(a + b*ArcSin[c + d*x])^2/b^2])
```

Maple [A] time = 0.074, size = 190, normalized size = 1.2

$$-\frac{e}{8d}\left(-\sqrt{b^{-1}}\sqrt{\pi}\sqrt{a+b\arcsin(dx+c)}\mathrm{FresnelS}\left(2\frac{\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\sqrt{b^{-1}}b}\right)\sin\left(2\frac{a}{b}\right)b-\sqrt{b^{-1}}\sqrt{\pi}\sqrt{a+b\arcsin(dx+c)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(1/2),x)
```

```
[Out] -1/8*e/d/(a+b*arcsin(d*x+c))^(1/2)*(-(1/b)^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c
))^(1/2)*FresnelS(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*sin(2
*a/b)*b-(1/b)^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(2*a/b)*FresnelC(
2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b+2*arcsin(d*x+c)*cos(2
*(a+b*arcsin(d*x+c))/b-2*a/b)*b+2*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int(dex+ce)\sqrt{b\arcsin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)*sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e\left(\int c\sqrt{a+b\,\mathrm{asin}\,(c+dx)}\,dx+\int dx\sqrt{a+b\,\mathrm{asin}\,(c+dx)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] e*(Integral(c*sqrt(a + b*asin(c + d*x)), x) + Integral(d*x*sqrt(a + b*asin(
c + d*x)), x))
```

Giac [A] time = 1.82442, size = 275, normalized size = 1.76

$$-\frac{\sqrt{\pi}\sqrt{b}\,\mathrm{erf}\left(-\frac{\sqrt{b\arcsin(dx+c)+a}\sqrt{b}i}{|b|}-\frac{\sqrt{b\arcsin(dx+c)+a}}{\sqrt{b}}\right)e^{\left(\frac{2\,ai}{b}+1\right)}}{16\,d\left(\frac{bi}{|b|}+1\right)}+\frac{\sqrt{\pi}\sqrt{b}\,\mathrm{erf}\left(\frac{\sqrt{b\arcsin(dx+c)+a}\sqrt{b}i}{|b|}-\frac{\sqrt{b\arcsin(dx+c)+a}}{\sqrt{b}}\right)e^{\left(-\frac{2\,ai}{b}+1\right)}}{16\,d\left(\frac{bi}{|b|}-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] -1/16*sqrt(pi)*sqrt(b)*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) -
sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b + 1)/(d*(b*i/abs(b) + 1)) +
 1/16*sqrt(pi)*sqrt(b)*erf(sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - s
qrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b + 1)/(d*(b*i/abs(b) - 1)) -
 1/8*sqrt(b*arcsin(d*x + c) + a)*e^(2*i*arcsin(d*x + c) + 1)/d - 1/8*sqrt(b
*arcsin(d*x + c) + a)*e^(-2*i*arcsin(d*x + c) + 1)/d
```

3.243 $\int \sqrt{a+b\sin^{-1}(c+dx)}\,dx$

Optimal. Leaf size=133

$$\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{d}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{d}+\frac{(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d}$$

```
[Out] ((c + d*x)*Sqrt[a + b*ArcSin[c + d*x]])/d - (Sqrt[b]*Sqrt[Pi/2]*Cos[a/b]*Fr
esnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/d + (Sqrt[b]*Sqrt
[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])
/d
```

Rubi [A] time = 0.272595, antiderivative size = 133, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.571, Rules used = {4803, 4619, 4723, 3306, 3305, 3351, 3304, 3352}

$$\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{d}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{d}+\frac{(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*ArcSin[c + d*x]],x]
```


```
[Out] ((c + d*x)*Sqrt[a + b*ArcSin[c + d*x]])/d - (Sqrt[b]*Sqrt[Pi/2]*Cos[a/b]*Fr
esnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/d + (Sqrt[b]*Sqrt
[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])
/d
```


Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
```

```
c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \sqrt{a+b\sin^{-1}(c+dx)}\,dx = \frac{\text{Subst}\left(\int \sqrt{a+b\sin^{-1}(x)}\,dx, x, c+dx\right)}{d}$$

$$= \frac{(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d} - \frac{b\,\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\sqrt{a+b\sin^{-1}(x)}}\,dx, x, c+dx\right)}{2d}$$

$$= \frac{(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d} - \frac{b\,\text{Subst}\left(\int \frac{\sin(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{2d}$$

$$= \frac{(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d} - \frac{\left(b\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{2d} + \frac{\left(b\sin\right.}{}$$

$$= \frac{(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d} - \frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \sin\left(\frac{x^2}{b}\right)dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{d} + \frac{\text{s}}{}$$

$$= \frac{(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d} - \frac{\sqrt{b}\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{d} + \frac{\sqrt{b}\sqrt{\frac{\pi}{2}}C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\,\text{s}}}{\sqrt{}}\right.}{d}$$

Mathematica [C] time = 0.0567237, size = 129, normalized size = 0.97

$$\frac{be^{-\frac{ia}{b}}\left(\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{3}{2},-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)+e^{\frac{2ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{3}{2},\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)\right)}{2d\sqrt{a+b\sin^{-1}(c+dx)}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (b*(Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((-I)*(a + b*ArcSin[c
 + d*x]))/b] + E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/
2, (I*(a + b*ArcSin[c + d*x]))/b]))/(2*d*E^((I*a)/b)*Sqrt[a + b*ArcSin[c +
d*x]])
```

Maple [A] time = 0., size = 194, normalized size = 1.5

$$\frac{1}{2d}\left(-\sqrt{2}\sqrt{\pi}\sqrt{b^{-1}}\sqrt{a+b\arcsin(dx+c)}\cos\left(\frac{a}{b}\right)\text{FresnelS}\left(\frac{\sqrt{2}}{\sqrt{\pi}b}\sqrt{a+b\arcsin(dx+c)}\frac{1}{\sqrt{b^{-1}}}\right)b+\sqrt{2}\sqrt{\pi}\sqrt{b^{-1}}\sqrt{a+b\,\text{ar}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^(1/2),x)
```

```
[Out] 1/2/d/(a+b*arcsin(d*x+c))^(1/2)*(-2^(1/2)*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcsin(
d*x+c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*
x+c))^(1/2)/b)*b+2^(1/2)*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin
(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b+
2*arcsin(d*x+c)*sin((a+b*arcsin(d*x+c))/b-a/b)*b+2*sin((a+b*arcsin(d*x+c))/
b-a/b)*a)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{b \arcsin (dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{a+b \operatorname{asin}(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*asin(c + d*x)), x)
```

Giac [B] time = 1.46163, size = 301, normalized size = 2.26

$$\frac{\sqrt{2}\sqrt{\pi}bi\,\mathrm{erf}\left(-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}i}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}\sqrt{|b|}}{2b}\right)e^{\left(\frac{ai}{b}\right)}}{4\left(\frac{bi}{\sqrt{|b|}}+\sqrt{|b|}\right)d}+\frac{\sqrt{2}\sqrt{\pi}bi\,\mathrm{erf}\left(\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}i}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}\sqrt{|b|}}{2b}\right)}{4\left(\frac{bi}{\sqrt{|b|}}-\sqrt{|b|}\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*sqrt(2)*sqrt(pi)*b*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqr
t(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/
b)/((b*i/sqrt(abs(b)) + sqrt(abs(b)))*d) + 1/4*sqrt(2)*sqrt(pi)*b*i*erf(1/2
*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*ar
csin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b*i/sqrt(abs(b)) - sqrt(abs
(b)))*d) - 1/2*sqrt(b*arcsin(d*x + c) + a)*i*e^(i*arcsin(d*x + c))/d + 1/2*
sqrt(b*arcsin(d*x + c) + a)*i*e^(-i*arcsin(d*x + c))/d
```

3.244 $\int \frac{\sqrt{a+b\sin^{-1}(c+dx)}}{ce+dex}\,dx$

Optimal. Leaf size=28

$$\frac{\text{Unintegrable}\left(\frac{\sqrt{a+b\sin^{-1}(c+dx)}}{c+dx},x\right)}{e}$$

```
[Out] Unintegrable[Sqrt[a + b*ArcSin[c + d*x]]/(c + d*x), x]/e
```

Rubi [A] time = 0.0825867, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$, Rules used = {}

$$\int \frac{\sqrt{a+b\sin^{-1}(c+dx)}}{ce+dex}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[a + b*ArcSin[c + d*x]]/(c*e + d*e*x),x]
```

```
[Out] Defer[Subst][Defer[Int][Sqrt[a + b*ArcSin[x]]/x, x], x, c + d*x]/(d*e)
```

Rubi steps

$$\begin{aligned}\int \frac{\sqrt{a+b\sin^{-1}(c+dx)}}{ce+dex}\,dx &= \frac{\text{Subst}\left(\int \frac{\sqrt{a+b\sin^{-1}(x)}}{ex}\,dx,x,c+dx\right)}{d}\\ &= \frac{\text{Subst}\left(\int \frac{\sqrt{a+b\sin^{-1}(x)}}{x}\,dx,x,c+dx\right)}{de}\end{aligned}$$

Mathematica [A] time = 2.31972, size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+b\sin^{-1}(c+dx)}}{ce+dex}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[a + b*ArcSin[c + d*x]]/(c*e + d*e*x),x]
```

```
[Out] Integrate[Sqrt[a + b*ArcSin[c + d*x]]/(c*e + d*e*x), x]
```

Maple [A] time = 0.091, size = 0, normalized size = 0.

$$\int \frac{1}{dex+ce}\sqrt{a+b\arcsin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^(1/2)/(d*e*x+c*e),x)
```

```
[Out] int((a+b*arcsin(d*x+c))^(1/2)/(d*e*x+c*e),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{b\arcsin\left(dx+c\right)+a}}{dex+ce}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(1/2)/(d*e*x+c*e),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*arcsin(d*x + c) + a)/(d*e*x + c*e), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(1/2)/(d*e*x+c*e),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{\sqrt{a+b\,\mathrm{asin}\,(c+dx)}}{c+dx}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**(1/2)/(d*e*x+c*e),x)
```

```
[Out] Integral(sqrt(a + b*asin(c + d*x))/(c + d*x), x)/e
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{b \arcsin\left(dx + c\right) + a}}{dex + ce}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(1/2)/(d*e*x+c*e),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*arcsin(d*x + c) + a)/(d*e*x + c*e), x)
```

3.245 $\int (ce+dex)^3 \left(a+b\sin^{-1}(c+dx)\right)^{3/2}\,dx$

Optimal. Leaf size=380

$$\frac{3\sqrt{\pi}b^{3/2}e^3\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{64d}-\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}e^3\sin\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{512d}+\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}e^3\cos\left(\right.}{}$$

```
[Out] (9*b*e^3*(c + d*x)*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(64*d
) + (3*b*e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])
/(32*d) - (3*e^3*(a + b*ArcSin[c + d*x])^(3/2))/(32*d) + (e^3*(c + d*x)^4*(
a + b*ArcSin[c + d*x])^(3/2))/(4*d) + (3*b^(3/2)*e^3*Sqrt[Pi/2]*Cos[(4*a)/b
]*FresnelS[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(512*d) - (
3*b^(3/2)*e^3*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]]
)/(Sqrt[b]*Sqrt[Pi])])/(64*d) + (3*b^(3/2)*e^3*Sqrt[Pi]*FresnelC[(2*Sqrt[a
+ b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(64*d) - (3*b^(3/2)
*e^3*Sqrt[Pi/2]*FresnelC[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]
]*Sin[(4*a)/b])/(512*d)
```

Rubi [A] time = 1.12443, antiderivative size = 380, normalized size of antiderivative = 1., number of steps used = 27, number of rules used = 12, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.48, Rules used = {4805, 12, 4629, 4707, 4641, 4635, 4406, 3306, 3305, 3351, 3304, 3352}

$$\frac{3\sqrt{\pi}b^{3/2}e^3\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{64d}-\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}e^3\sin\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{512d}+\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}e^3\cos\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3*(a + b*ArcSin[c + d*x])^(3/2),x]
```


```
[Out] (9*b*e^3*(c + d*x)*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(64*d
) + (3*b*e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])
/(32*d) - (3*e^3*(a + b*ArcSin[c + d*x])^(3/2))/(32*d) + (e^3*(c + d*x)^4*(
a + b*ArcSin[c + d*x])^(3/2))/(4*d) + (3*b^(3/2)*e^3*Sqrt[Pi/2]*Cos[(4*a)/b
]*FresnelS[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(512*d) - (
3*b^(3/2)*e^3*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]]
)/(Sqrt[b]*Sqrt[Pi])])/(64*d) + (3*b^(3/2)*e^3*Sqrt[Pi]*FresnelC[(2*Sqrt[a
+ b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(64*d) - (3*b^(3/2)
*e^3*Sqrt[Pi/2]*FresnelC[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]
```

```
]*Sin[(4*a)/b])/(512*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4629

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^(m + 1)*(a + b*ArcSin[c*x])^n)/(m + 1), x] - Dist[(b*c*n)/(m + 1), Int[(x
^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int (ce+dex)^3 \left(a+b\sin^{-1}(c+dx)\right)^{3/2} dx = \frac{\text{Subst}\left(\int e^3x^3\left(a+b\sin^{-1}(x)\right)^{3/2} dx, x, c+dx\right)}{d}$$

$$= \frac{e^3\,\text{Subst}\left(\int x^3\left(a+b\sin^{-1}(x)\right)^{3/2} dx, x, c+dx\right)}{d}$$

$$= \frac{e^3(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{4d} - \frac{\left(3be^3\right)\text{Subst}\left(\int \frac{x^4\sqrt{a+b\sin^{-1}(x)}}{\sqrt{1-x^2}} dx, x, c\right.}{8d}$$

$$= \frac{3be^3(c+dx)^3\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{32d} + \frac{e^3(c+dx)^4\left(a+b\sin^{-1}\right.}{4d}$$

$$= \frac{9be^3(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{64d} + \frac{3be^3(c+dx)^3\sqrt{1-(c+d}}{32}$$

$$= \frac{9be^3(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{64d} + \frac{3be^3(c+dx)^3\sqrt{1-(c+d}}{32}$$

$$= \frac{9be^3(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{64d} + \frac{3be^3(c+dx)^3\sqrt{1-(c+d}}{32}$$

$$= \frac{9be^3(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{64d} + \frac{3be^3(c+dx)^3\sqrt{1-(c+d}}{32}$$

$$= \frac{9be^3(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{64d} + \frac{3be^3(c+dx)^3\sqrt{1-(c+d}}{32}$$

$$= \frac{9be^3(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{64d} + \frac{3be^3(c+dx)^3\sqrt{1-(c+d}}{32}$$

$$= \frac{9be^3(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{64d} + \frac{3be^3(c+dx)^3\sqrt{1-(c+d}}{32}$$

Mathematica [C] time = 0.186122, size = 273, normalized size = 0.72

$$-\frac{ibe^3e^{-\frac{4ia}{b}}\sqrt{a+b\sin^{-1}(c+dx)}\left(8\sqrt{2}e^{\frac{2ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{5}{2},-\frac{2i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)-8\sqrt{2}e^{\frac{6ia}{b}}\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\right.}{5}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*e + d*e*x)^3*(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] ((-I/512)*b*e^3*Sqrt[a + b*ArcSin[c + d*x]]*(8*Sqrt[2]*E^(((2*I)*a)/b)*Sqrt
[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[5/2, ((-2*I)*(a + b*ArcSin[c + d*x]))
/b] - 8*Sqrt[2]*E^(((6*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamm
a[5/2, ((2*I)*(a + b*ArcSin[c + d*x]))/b] - Sqrt[(I*(a + b*ArcSin[c + d*x])
)/b]*Gamma[5/2, ((-4*I)*(a + b*ArcSin[c + d*x]))/b] + E^(((8*I)*a)/b)*Sqrt[
((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[5/2, ((4*I)*(a + b*ArcSin[c + d*x])
)/b]))/(d*E^(((4*I)*a)/b)*Sqrt[(a + b*ArcSin[c + d*x])^2/b^2])
```

Maple [A] time = 0.12, size = 582, normalized size = 1.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^(3/2),x)
```

```
[Out] 1/1024/d*e^3*(3*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(4*a/b)*FresnelS(2*2^(
1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(1/b)^(1/2)*Pi^(1/2)
*b^2-3*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(4*a/b)*FresnelC(2*2^(1/2)/Pi^(
1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(1/b)^(1/2)*Pi^(1/2)*b^2-48*(
1/b)^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(2*a/b)*FresnelS(2/Pi^(1/2
)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b^2+48*(1/b)^(1/2)*Pi^(1/2)*(a+b
*arcsin(d*x+c))^(1/2)*sin(2*a/b)*FresnelC(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsi
n(d*x+c))^(1/2)/b)*b^2+32*arcsin(d*x+c)^2*cos(4*(a+b*arcsin(d*x+c))/b-4*a/b
)*b^2-128*arcsin(d*x+c)^2*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*b^2+64*arcsin(
d*x+c)*cos(4*(a+b*arcsin(d*x+c))/b-4*a/b)*a*b-12*arcsin(d*x+c)*sin(4*(a+b*a
rcsin(d*x+c))/b-4*a/b)*b^2-256*arcsin(d*x+c)*cos(2*(a+b*arcsin(d*x+c))/b-2*
a/b)*a*b+96*arcsin(d*x+c)*sin(2*(a+b*arcsin(d*x+c))/b-2*a/b)*b^2+32*cos(4*(
a+b*arcsin(d*x+c))/b-4*a/b)*a^2-12*sin(4*(a+b*arcsin(d*x+c))/b-4*a/b)*a*b-1
28*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a^2+96*sin(2*(a+b*arcsin(d*x+c))/b-2*
a/b)*a*b)/(a+b*arcsin(d*x+c))^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dex + ce)^3 (b \arcsin (dx + c) + a)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)^3*(b*arcsin(d*x + c) + a)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3*(a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] Timed out
```

Giac [B] time = 2.27437, size = 1890, normalized size = 4.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] -3/1024*sqrt(pi)*b^4*i*erf(sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/ab
s(b) - sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-4*a*i/b + 3)/((sqrt
```

(2)*b^(7/2)*i/abs(b) - sqrt(2)*b^(5/2))*d) - 3/1024*sqrt(pi)*b^(7/2)*i*erf(
-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(2)*sqrt(b*arcs
in(d*x + c) + a)/sqrt(b))*e^(4*a*i/b + 3)/((sqrt(2)*b^3*i/abs(b) + sqrt(2)*
b^2)*d) + 3/128*sqrt(pi)*b^(7/2)*i*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)
*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b + 3)/((b^3*i/ab
s(b) + b^2)*d) + 3/128*sqrt(pi)*b^(7/2)*i*erf(sqrt(b*arcsin(d*x + c) + a)*s
qrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b + 3)/((b
^3*i/abs(b) - b^2)*d) - 1/128*sqrt(pi)*a*b^3*erf(-sqrt(2)*sqrt(b*arcsin(d*x
 + c) + a)*sqrt(b)*i/abs(b) - sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*
e^(4*a*i/b + 3)/((sqrt(2)*b^(7/2)*i/abs(b) + sqrt(2)*b^(5/2))*d) + 1/128*sq
rt(pi)*a*b^3*erf(sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqr
t(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-4*a*i/b + 3)/((sqrt(2)*b^(7/2
)*i/abs(b) - sqrt(2)*b^(5/2))*d) + 1/32*sqrt(pi)*a*b^(5/2)*erf(-sqrt(b*arcs
in(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^
(2*a*i/b + 3)/((b^3*i/abs(b) + b^2)*d) - 1/32*sqrt(pi)*a*b^(5/2)*erf(sqrt(b
*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b
))*e^(-2*a*i/b + 3)/((b^3*i/abs(b) - b^2)*d) - 1/128*sqrt(pi)*a*b^2*erf(sqr
t(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(2)*sqrt(b*arcsin(d
*x + c) + a)/sqrt(b))*e^(-4*a*i/b + 3)/((sqrt(2)*b^(5/2)*i/abs(b) - sqrt(2)
*b^(3/2))*d) + 1/128*sqrt(pi)*a*b^(3/2)*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c)
 + a)*sqrt(b)*i/abs(b) - sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(4*
a*i/b + 3)/((sqrt(2)*b^2*i/abs(b) + sqrt(2)*b)*d) - 1/32*sqrt(pi)*a*b^(3/2)
*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c)
 + a)/sqrt(b))*e^(2*a*i/b + 3)/((b^2*i/abs(b) + b)*d) + 1/32*sqrt(pi)*a*b^(
3/2)*erf(sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x +
 c) + a)/sqrt(b))*e^(-2*a*i/b + 3)/((b^2*i/abs(b) - b)*d) + 3/512*sqrt(b*ar
csin(d*x + c) + a)*b*i*e^(4*i*arcsin(d*x + c) + 3)/d + 1/64*sqrt(b*arcsin(d
*x + c) + a)*b*arcsin(d*x + c)*e^(4*i*arcsin(d*x + c) + 3)/d - 3/64*sqrt(b*
arcsin(d*x + c) + a)*b*i*e^(2*i*arcsin(d*x + c) + 3)/d - 1/16*sqrt(b*arcsin
(d*x + c) + a)*b*arcsin(d*x + c)*e^(2*i*arcsin(d*x + c) + 3)/d + 3/64*sqrt(
b*arcsin(d*x + c) + a)*b*i*e^(-2*i*arcsin(d*x + c) + 3)/d - 1/16*sqrt(b*arc
sin(d*x + c) + a)*b*arcsin(d*x + c)*e^(-2*i*arcsin(d*x + c) + 3)/d - 3/512*
sqrt(b*arcsin(d*x + c) + a)*b*i*e^(-4*i*arcsin(d*x + c) + 3)/d + 1/64*sqrt(
b*arcsin(d*x + c) + a)*b*arcsin(d*x + c)*e^(-4*i*arcsin(d*x + c) + 3)/d + 1
/64*sqrt(b*arcsin(d*x + c) + a)*a*e^(4*i*arcsin(d*x + c) + 3)/d - 1/16*sqrt
(b*arcsin(d*x + c) + a)*a*e^(2*i*arcsin(d*x + c) + 3)/d - 1/16*sqrt(b*arcsi
n(d*x + c) + a)*a*e^(-2*i*arcsin(d*x + c) + 3)/d + 1/64*sqrt(b*arcsin(d*x +
 c) + a)*a*e^(-4*i*arcsin(d*x + c) + 3)/d

3.246 $\int (ce+dex)^2 \left(a+b\sin^{-1}(c+dx)\right)^{3/2} dx$

Optimal. Leaf size=361

$$-\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}e^2\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{8d}+\frac{\sqrt{\frac{\pi}{6}}b^{3/2}e^2\cos\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{24d}-\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}e^2\sin}{}$$

```
[Out] (b*e^2*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(3*d) + (b*e^2*(c
 + d*x)^2*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(6*d) + (e^2*(
c + d*x)^3*(a + b*ArcSin[c + d*x])^(3/2))/(3*d) - (3*b^(3/2)*e^2*Sqrt[Pi/2]
*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(8*d)
 + (b^(3/2)*e^2*Sqrt[Pi/6]*Cos[(3*a)/b]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*Arc
Sin[c + d*x]])/Sqrt[b]])/(24*d) - (3*b^(3/2)*e^2*Sqrt[Pi/2]*FresnelS[(Sqrt[
2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(8*d) + (b^(3/2)*e^2*
Sqrt[Pi/6]*FresnelS[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(
3*a)/b])/(24*d)
```

Rubi [A] time = 1.03263, antiderivative size = 361, normalized size of antiderivative = 1., number of steps used = 24, number of rules used = 13, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.52, Rules used = {4805, 12, 4629, 4707, 4677, 4623, 3306, 3305, 3351, 3304, 3352, 4635, 4406}

$$-\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}e^2\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{8d}+\frac{\sqrt{\frac{\pi}{6}}b^{3/2}e^2\cos\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{24d}-\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}e^2\sin}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x])^(3/2),x]
```


```
[Out] (b*e^2*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(3*d) + (b*e^2*(c
 + d*x)^2*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(6*d) + (e^2*(
c + d*x)^3*(a + b*ArcSin[c + d*x])^(3/2))/(3*d) - (3*b^(3/2)*e^2*Sqrt[Pi/2]
*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(8*d)
 + (b^(3/2)*e^2*Sqrt[Pi/6]*Cos[(3*a)/b]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*Arc
Sin[c + d*x]])/Sqrt[b]])/(24*d) - (3*b^(3/2)*e^2*Sqrt[Pi/2]*FresnelS[(Sqrt[
2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(8*d) + (b^(3/2)*e^2*
Sqrt[Pi/6]*FresnelS[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(
3*a)/b])/(24*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4629

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^(m + 1)*(a + b*ArcSin[c*x])^n)/(m + 1), x] - Dist[(b*c*n)/(m + 1), Int[(x
^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rubi steps

$$\int (ce+dex)^2 \left(a+b\sin^{-1}(c+dx)\right)^{3/2} dx = \frac{\text{Subst}\left(\int e^2x^2 \left(a+b\sin^{-1}(x)\right)^{3/2} dx, x, c+dx\right)}{d}$$

$$= \frac{e^2 \text{Subst}\left(\int x^2 \left(a+b\sin^{-1}(x)\right)^{3/2} dx, x, c+dx\right)}{d}$$

$$= \frac{e^2(c+dx)^3 \left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{3d} - \frac{(be^2) \text{Subst}\left(\int \frac{x^3\sqrt{a+b\sin^{-1}(x)}}{\sqrt{1-x^2}} dx, x, c+d\right.}{2d}$$

$$= \frac{be^2(c+dx)^2\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{6d} + \frac{e^2(c+dx)^3 \left(a+b\sin^{-1}(c\right.}{3d}$$

$$= \frac{be^2\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{3d} + \frac{be^2(c+dx)^2\sqrt{1-(c+dx)^2}\sqrt{a+b\,\mathrm{s}}}{6d}$$

$$= \frac{be^2\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{3d} + \frac{be^2(c+dx)^2\sqrt{1-(c+dx)^2}\sqrt{a+b\,\mathrm{s}}}{6d}$$

$$= \frac{be^2\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{3d} + \frac{be^2(c+dx)^2\sqrt{1-(c+dx)^2}\sqrt{a+b\,\mathrm{s}}}{6d}$$

$$= \frac{be^2\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{3d} + \frac{be^2(c+dx)^2\sqrt{1-(c+dx)^2}\sqrt{a+b\,\mathrm{s}}}{6d}$$

$$= \frac{be^2\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{3d} + \frac{be^2(c+dx)^2\sqrt{1-(c+dx)^2}\sqrt{a+b\,\mathrm{s}}}{6d}$$

$$= \frac{be^2\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{3d} + \frac{be^2(c+dx)^2\sqrt{1-(c+dx)^2}\sqrt{a+b\,\mathrm{s}}}{6d}$$

Mathematica [C] time = 0.272283, size = 268, normalized size = 0.74

$$\frac{be^2e^{-\frac{3ia}{b}}\sqrt{a+b\sin^{-1}(c+dx)}\left(27e^{\frac{2ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{5}{2},-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)+27e^{\frac{4ia}{b}}\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\right.}{216d}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (b*e^2*Sqrt[a + b*ArcSin[c + d*x]]*(27*E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSi
n[c + d*x]))/b]*Gamma[5/2, ((-I)*(a + b*ArcSin[c + d*x]))/b] + 27*E^(((4*I)
*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[5/2, (I*(a + b*ArcSin[c
 + d*x]))/b] - Sqrt[3]*(Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[5/2, ((-3
*I)*(a + b*ArcSin[c + d*x]))/b] + E^(((6*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[
c + d*x]))/b]*Gamma[5/2, ((3*I)*(a + b*ArcSin[c + d*x]))/b])))/(216*d*E^(((
3*I)*a)/b)*Sqrt[(a + b*ArcSin[c + d*x])^2/b^2])
```

Maple [B] time = 0.122, size = 593, normalized size = 1.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(3/2),x)
```

```
[Out] 1/144/d*e^2/(a+b*arcsin(d*x+c))^(1/2)*(3^(1/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+
c))^(1/2)*cos(3*a/b)*FresnelC(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arc
sin(d*x+c))^(1/2)/b)*Pi^(1/2)*2^(1/2)*b^2+3^(1/2)*(1/b)^(1/2)*(a+b*arcsin(d
*x+c))^(1/2)*sin(3*a/b)*FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*
arcsin(d*x+c))^(1/2)/b)*Pi^(1/2)*2^(1/2)*b^2-27*(1/b)^(1/2)*Pi^(1/2)*2^(1/2
)*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*
(a+b*arcsin(d*x+c))^(1/2)/b)*b^2-27*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsi
n(d*x+c))^(1/2)*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(
d*x+c))^(1/2)/b)*b^2+36*arcsin(d*x+c)^2*sin((a+b*arcsin(d*x+c))/b-a/b)*b^2-
12*arcsin(d*x+c)^2*sin(3*(a+b*arcsin(d*x+c))/b-3*a/b)*b^2+72*arcsin(d*x+c)*
sin((a+b*arcsin(d*x+c))/b-a/b)*a*b+54*arcsin(d*x+c)*cos((a+b*arcsin(d*x+c))
/b-a/b)*b^2-24*arcsin(d*x+c)*sin(3*(a+b*arcsin(d*x+c))/b-3*a/b)*a*b-6*arcsi
n(d*x+c)*cos(3*(a+b*arcsin(d*x+c))/b-3*a/b)*b^2+36*sin((a+b*arcsin(d*x+c))/
b-a/b)*a^2+54*cos((a+b*arcsin(d*x+c))/b-a/b)*a*b-12*sin(3*(a+b*arcsin(d*x+c
))/b-3*a/b)*a^2-6*cos(3*(a+b*arcsin(d*x+c))/b-3*a/b)*a*b)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dex + ce)^2 (b \arcsin (dx + c) + a)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)^2*(b*arcsin(d*x + c) + a)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e^2\left(\int ac^2\sqrt{a+b\operatorname{asin}(c+dx)}\,dx+\int ad^2x^2\sqrt{a+b\operatorname{asin}(c+dx)}\,dx+\int bc^2\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)\,dx+\int 2a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2*(a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] e**2*(Integral(a*c**2*sqrt(a + b*asin(c + d*x)), x) + Integral(a*d**2*x**2*
sqrt(a + b*asin(c + d*x)), x) + Integral(b*c**2*sqrt(a + b*asin(c + d*x))*a
sin(c + d*x), x) + Integral(2*a*c*d*x*sqrt(a + b*asin(c + d*x)), x) + Integ
ral(b*d**2*x**2*sqrt(a + b*asin(c + d*x))*asin(c + d*x), x) + Integral(2*b*
c*d*x*sqrt(a + b*asin(c + d*x))*asin(c + d*x), x))
```

Giac [B] time = 2.92723, size = 2016, normalized size = 5.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

[Out] -1/16*sqrt(2)*sqrt(pi)*a*b^3*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b + 2)/((b^3*i/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d) - 1/16*sqrt(2)*sqrt(pi)*a*b^3*i*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b + 2)/((b^3*i/sqrt(abs(b)) - b^2*sqrt(abs(b)))*d) + 1/24*sqrt(pi)*a*b^(5/2)*i*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(3*a*i/b + 2)/((sqrt(6)*b^3*i/abs(b) + sqrt(6)*b^2)*d) + 3/32*sqrt(2)*sqrt(pi)*b^4*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b + 2)/((b^3*i/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d) + 1/16*sqrt(2)*sqrt(pi)*a*b^2*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b + 2)/((b^2*i/sqrt(abs(b)) + b*sqrt(abs(b)))*d) - 3/32*sqrt(2)*sqrt(pi)*b^4*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b + 2)/((b^3*i/sqrt(abs(b)) - b^2*sqrt(abs(b)))*d) + 1/16*sqrt(2)*sqrt(pi)*a*b^2*i*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b + 2)/((b^2*i/sqrt(abs(b)) - b*sqrt(abs(b)))*d) + 1/24*sqrt(pi)*a*b^(5/2)*i*erf(1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-3*a*i/b + 2)/((sqrt(6)*b^3*i/abs(b) - sqrt(6)*b^2)*d) - 1/48*sqrt(pi)*b^(7/2)*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(3*a*i/b + 2)/((sqrt(6)*b^3*i/abs(b) + sqrt(6)*b^2)*d) - 1/24*sqrt(pi)*a*b^(3/2)*i*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(3*a*i/b + 2)/((sqrt(6)*b^2*i/abs(b) + sqrt(6)*b)*d) + 1/48*sqrt(pi)*b^(7/2)*erf(1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-3*a*i/b + 2)/((sqrt(6)*b^3*i/abs(b) - sqrt(6)*b^2)*d) - 1/24*sqrt(pi)*a*b^(3/2)*i*erf(1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-3*a*i/b + 2)/((sqrt(6)*b^2*i/abs(b) - sqrt(6)*b)*d) + 1/24*sqrt(b*arcsin(d*x + c) + a)*b*i*arcsin(d*x + c)*e^(3*i*arcsin(d*x + c) + 2)/d - 1/8*sqrt(b*arcsin(d*x + c) + a)*b*i*arcsin(d*x + c)*e^(i*arcsin(d*x + c) + 2)/d + 1/8*sqrt(b*arcsin(d*x + c) + a)*b*i*arcsin(d*x + c)*e^(-i*arcsin(d*x + c) + 2)/d - 1/24*sqrt(b*arcsin(d*x + c) + a)*b*i*arcsin(d*x + c)*e^(-3*i*arcsin(d*x + c) + 2)/d + 1/24*sqrt(b*arcsin(d*x + c) + a)*a*i*e^(3*i*arcsin(d*x + c) + 2)/d - 1/8*sqrt(b*arcsin(d*x + c) + a)*a*i*e^(i*arcsin(d*x + c) + 2)/d + 1/8*sqrt(b*arcsin(d*x + c) + a)*a*i*e^(-i*arcsin(d*x + c) + 2)/d - 1/24*sqrt(b*arcsin(d*x + c) + a)*a*i*e^(-3*i*arcsin(d*x + c) + 2)/d - 1/48*sqrt(b*arcsin(d*x + c) + a)*b*e^(3*i*arcsin(d*x + c) + 2)/d + 3/16*sqrt(b*arcsin(d*x + c) + a)*b*e^(i*arcsin(d*x + c) + 2)/d + 3/16*sqrt(b*arcsin(d*x + c) + a)*b*e^(-i*arcsin(d*x + c) + 2)/d - 1/48*sqrt(b*arcsin(d*x + c) + a)*b*e^(-3*i*arcsin(d*x + c) + 2)/d

3.247 $\int (ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}\,dx$

Optimal. Leaf size=199

$$\frac{3\sqrt{\pi}b^{3/2}e\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{32d}-\frac{3\sqrt{\pi}b^{3/2}e\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{32d}+\frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)}{2d}$$

```
[Out] (3*b*e*(c + d*x)*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(8*d) -
 (e*(a + b*ArcSin[c + d*x])^(3/2))/(4*d) + (e*(c + d*x)^2*(a + b*ArcSin[c +
 d*x])^(3/2))/(2*d) - (3*b^(3/2)*e*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqrt[a
 + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(32*d) + (3*b^(3/2)*e*Sqrt[Pi]*
FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/
(32*d)
```

Rubi [A] time = 0.49308, antiderivative size = 199, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 12, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.522, Rules used = {4805, 12, 4629, 4707, 4641, 4635, 4406, 3306, 3305, 3351, 3304, 3352}

$$\frac{3\sqrt{\pi}b^{3/2}e\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{32d}-\frac{3\sqrt{\pi}b^{3/2}e\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{32d}+\frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)}{2d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (3*b*e*(c + d*x)*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(8*d) -
 (e*(a + b*ArcSin[c + d*x])^(3/2))/(4*d) + (e*(c + d*x)^2*(a + b*ArcSin[c +
 d*x])^(3/2))/(2*d) - (3*b^(3/2)*e*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqrt[a
 + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(32*d) + (3*b^(3/2)*e*Sqrt[Pi]*
FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/
(32*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4629

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^(m + 1)*(a + b*ArcSin[c*x])^n)/(m + 1), x] - Dist[(b*c*n)/(m + 1), Int[(x
^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
```

```
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int (ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}\,dx = \frac{\text{Subst}\left(\int ex\left(a+b\sin^{-1}(x)\right)^{3/2}\,dx,x,c+dx\right)}{d}$$
$$= \frac{e\,\text{Subst}\left(\int x\left(a+b\sin^{-1}(x)\right)^{3/2}\,dx,x,c+dx\right)}{d}$$
$$= \frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{2d} - \frac{(3be)\,\text{Subst}\left(\int \frac{x^2\sqrt{a+b\sin^{-1}(x)}}{\sqrt{1-x^2}}\,dx,x,c+d\right.}{4d}$$
$$= \frac{3be(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d} + \frac{e(c+dx)^2\left(a+b\sin^{-1}(c+\right.}{2d}$$
$$= \frac{3be(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d} - \frac{e\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{4d} +$$
$$= \frac{3be(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d} - \frac{e\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{4d} +$$
$$= \frac{3be(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d} - \frac{e\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{4d} +$$
$$= \frac{3be(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d} - \frac{e\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{4d} +$$
$$= \frac{3be(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d} - \frac{e\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{4d} +$$
$$= \frac{3be(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d} - \frac{e\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{4d} +$$

Mathematica [C] time = 0.0621734, size = 137, normalized size = 0.69

$$\frac{b^2ee^{-\frac{2ia}{b}}\left(\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{5}{2},-\frac{2i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)+e^{\frac{4ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{5}{2},\frac{2i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)\right)}{16\sqrt{2}d\sqrt{a+b\sin^{-1}(c+dx)}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (b^2*e*(Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[5/2, ((-2*I)*(a + b*Ar
cSin[c + d*x]))/b] + E^(((4*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Ga
mma[5/2, ((2*I)*(a + b*ArcSin[c + d*x]))/b]))/(16*Sqrt[2]*d*E^(((2*I)*a)/b)
*Sqrt[a + b*ArcSin[c + d*x]])
```

Maple [A] time = 0.088, size = 294, normalized size = 1.5

$$-\frac{e}{32\,d}\left(3\,\sqrt{b^{-1}}\sqrt{\pi}\sqrt{a+b\arcsin\left(dx+c\right)}\cos\left(2\,\frac{a}{b}\right)\mathrm{FresnelS}\left(2\,\frac{\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{b^{-1}}\sqrt{\pi}b}\right)b^{2}-3\,\sqrt{b^{-1}}\sqrt{\pi}\sqrt{a+b\arcsin\left(dx\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(3/2),x)
```

```
[Out] -1/32*e/d*(3*(1/b)^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(2*a/b)*Fres
nelS(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b^2-3*(1/b)^(1/2)*
Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(2*a/b)*FresnelC(2/Pi^(1/2)/(1/b)^(1/
2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b^2+8*arcsin(d*x+c)^2*cos(2*(a+b*arcsin(d*x
+c))/b-2*a/b)*b^2+16*arcsin(d*x+c)*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a*b-6
*arcsin(d*x+c)*sin(2*(a+b*arcsin(d*x+c))/b-2*a/b)*b^2+8*cos(2*(a+b*arcsin(d
*x+c))/b-2*a/b)*a^2-6*sin(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a*b)/(a+b*arcsin(d
*x+c))^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dex+ce)(b\arcsin(dx+c)+a)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)*(b*arcsin(d*x + c) + a)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e\left(\int ac\sqrt{a+b\operatorname{asin}(c+dx)}\,dx+\int adx\sqrt{a+b\operatorname{asin}(c+dx)}\,dx+\int bc\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)\,dx+\int bdx\sqrt{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] e*(Integral(a*c*sqrt(a + b*asin(c + d*x)), x) + Integral(a*d*x*sqrt(a + b*a
sin(c + d*x)), x) + Integral(b*c*sqrt(a + b*asin(c + d*x))*asin(c + d*x), x
) + Integral(b*d*x*sqrt(a + b*asin(c + d*x))*asin(c + d*x), x))
```

Giac [B] time = 1.76328, size = 894, normalized size = 4.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] 3/64*sqrt(pi)*b^(7/2)*i*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) -
 sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b + 1)/((b^3*i/abs(b) + b^2)
*d) + 3/64*sqrt(pi)*b^(7/2)*i*erf(sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs
(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b + 1)/((b^3*i/abs(b)
- b^2)*d) + 1/16*sqrt(pi)*a*b^(5/2)*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b
)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b + 1)/((b^3*i/a
bs(b) + b^2)*d) - 1/16*sqrt(pi)*a*b^(5/2)*erf(sqrt(b*arcsin(d*x + c) + a)*s
qrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b + 1)/((b
^3*i/abs(b) - b^2)*d) - 1/16*sqrt(pi)*a*b^(3/2)*erf(-sqrt(b*arcsin(d*x + c)
 + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b +
1)/((b^2*i/abs(b) + b)*d) + 1/16*sqrt(pi)*a*b^(3/2)*erf(sqrt(b*arcsin(d*x +
 c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/
```

```
b + 1)/((b^2*i/abs(b) - b)*d) - 3/32*sqrt(b*arcsin(d*x + c) + a)*b*i*e^(2*i
*arcsin(d*x + c) + 1)/d - 1/8*sqrt(b*arcsin(d*x + c) + a)*b*arcsin(d*x + c)
*e^(2*i*arcsin(d*x + c) + 1)/d + 3/32*sqrt(b*arcsin(d*x + c) + a)*b*i*e^(-2
*i*arcsin(d*x + c) + 1)/d - 1/8*sqrt(b*arcsin(d*x + c) + a)*b*arcsin(d*x +
c)*e^(-2*i*arcsin(d*x + c) + 1)/d - 1/8*sqrt(b*arcsin(d*x + c) + a)*a*e^(2*
i*arcsin(d*x + c) + 1)/d - 1/8*sqrt(b*arcsin(d*x + c) + a)*a*e^(-2*i*arcsin
(d*x + c) + 1)/d
```

3.248 $\int \left(a+b\sin^{-1}(c+dx)\right)^{3/2}\,dx$

Optimal. Leaf size=175

$$-\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{2d}-\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{2d}+\frac{3b\sqrt{1-(c+dx)^2}\sqrt{a+b\,\mathrm{s}}}{2d}$$

```
[Out] (3*b*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(2*d) + ((c + d*x)*
(a + b*ArcSin[c + d*x])^(3/2))/d - (3*b^(3/2)*Sqrt[Pi/2]*Cos[a/b]*FresnelC[
(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(2*d) - (3*b^(3/2)*Sqrt[
Pi/2]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/
(2*d)
```

Rubi [A] time = 0.263416, antiderivative size = 175, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 9, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.643, Rules used = {4803, 4619, 4677, 4623, 3306, 3305, 3351, 3304, 3352}

$$-\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{2d}-\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{2d}+\frac{3b\sqrt{1-(c+dx)^2}\sqrt{a+b\,\mathrm{s}}}{2d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (3*b*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(2*d) + ((c + d*x)*
(a + b*ArcSin[c + d*x])^(3/2))/d - (3*b^(3/2)*Sqrt[Pi/2]*Cos[a/b]*FresnelC[
(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(2*d) - (3*b^(3/2)*Sqrt[
Pi/2]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/
(2*d)
```

Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \left(a+b\sin^{-1}(c+dx)\right)^{3/2} dx = \frac{\text{Subst}\left(\int \left(a+b\sin^{-1}(x)\right)^{3/2} dx, x, c+dx\right)}{d}$$

$$= \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{d} - \frac{(3b)\,\text{Subst}\left(\int \frac{x\sqrt{a+b\sin^{-1}(x)}}{\sqrt{1-x^2}} dx, x, c+dx\right)}{2d}$$

$$= \frac{3b\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{d} - \frac{\left(3b^2\right)\text{Subs}}{}$$

$$= \frac{3b\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{d} - \frac{(3b)\,\text{Subst}}{}$$

$$= \frac{3b\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{d} - \frac{\left(3b\cos\left(\frac{a}{b}\right.\right.}{}$$

$$= \frac{3b\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{d} - \frac{\left(3b\cos\left(\frac{a}{b}\right.\right.}{}$$

$$= \frac{3b\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{d} - \frac{3b^{3/2}\sqrt{\frac{\pi}{2}}\,\text{c}}{}$$

Mathematica [C] time = 2.90637, size = 313, normalized size = 1.79

$$b\left(\frac{2ae^{-\frac{ia}{b}}\left(\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\,\text{Gamma}\left(\frac{3}{2},-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)+e^{\frac{2ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\,\text{Gamma}\left(\frac{3}{2},\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)\right)}{\sqrt{a+b\sin^{-1}(c+dx)}} - \sqrt{2\pi}\sqrt{\frac{1}{b}}\left(2a\sin\left(\frac{a}{b}\right)+3b\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (b*(2*Sqrt[a + b*ArcSin[c + d*x]]*(3*Sqrt[1 - (c + d*x)^2] + 2*(c + d*x)*Ar
cSin[c + d*x]) + (2*a*(Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((
-I)*(a + b*ArcSin[c + d*x]))/b] + E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c +
 d*x]))/b]*Gamma[3/2, (I*(a + b*ArcSin[c + d*x]))/b]))/(E^((I*a)/b)*Sqrt[a
+ b*ArcSin[c + d*x]]) - Sqrt[b^(-1)]*Sqrt[2*Pi]*FresnelC[Sqrt[b^(-1)]*Sqrt[
2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]]*(3*b*Cos[a/b] + 2*a*Sin[a/b]) + Sqrt[b^(
-1)]*Sqrt[2*Pi]*FresnelS[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]
]]*(2*a*Cos[a/b] - 3*b*Sin[a/b])))/(4*d)
```

Maple [B] time = 0., size = 296, normalized size = 1.7

$$\frac{1}{4d}\left(-3\sqrt{b^{-1}}\sqrt{\pi}\sqrt{2}\sqrt{a+b\arcsin(dx+c)}\cos\left(\frac{a}{b}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\sqrt{a+b\arcsin(dx+c)}}{\sqrt{b^{-1}}\sqrt{\pi}b}\right)b^2-3\sqrt{b^{-1}}\sqrt{\pi}\sqrt{2}\sqrt{a+b\arcsi$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^(3/2),x)
```

```
[Out] 1/4/d/(a+b*arcsin(d*x+c))^(1/2)*(-3*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsi
n(d*x+c))^(1/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(
d*x+c))^(1/2)/b)*b^2-3*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/
2)*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)
/b)*b^2+4*arcsin(d*x+c)^2*sin((a+b*arcsin(d*x+c))/b-a/b)*b^2+8*arcsin(d*x+c
)*sin((a+b*arcsin(d*x+c))/b-a/b)*a*b+6*arcsin(d*x+c)*cos((a+b*arcsin(d*x+c)
)/b-a/b)*b^2+4*sin((a+b*arcsin(d*x+c))/b-a/b)*a^2+6*cos((a+b*arcsin(d*x+c))
/b-a/b)*a*b)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (b\arcsin(dx+c)+a)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")

[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (a + b \operatorname{asin}(c + dx))^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**(3/2),x)

[Out] Integral((a + b*asin(c + d*x))**(3/2), x)
```

Giac [B] time = 1.87629, size = 980, normalized size = 5.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")

[Out] -1/4*sqrt(2)*sqrt(pi)*a*b^3*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*
i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^
(a*i/b)/((b^3*i/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d) - 1/4*sqrt(2)*sqrt(pi)*
a*b^3*i*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sq
rt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^3*i/sqrt(a
bs(b)) - b^2*sqrt(abs(b)))*d) + 3/8*sqrt(2)*sqrt(pi)*b^4*erf(-1/2*sqrt(2)*s
qrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x +
 c) + a)*sqrt(abs(b))/b)*e^(a*i/b)/((b^3*i/sqrt(abs(b)) + b^2*sqrt(abs(b)))
*d) + 1/4*sqrt(2)*sqrt(pi)*a*b^2*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c)
+ a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/
```

```
b)*e^(a*i/b)/((b^2*i/sqrt(abs(b)) + b*sqrt(abs(b)))*d) - 3/8*sqrt(2)*sqrt(p
i)*b^4*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqr
t(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^3*i/sqrt(ab
s(b)) - b^2*sqrt(abs(b)))*d) + 1/4*sqrt(2)*sqrt(pi)*a*b^2*i*erf(1/2*sqrt(2)
*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x
 + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^2*i/sqrt(abs(b)) - b*sqrt(abs(b))
)*d) - 1/2*sqrt(b*arcsin(d*x + c) + a)*b*i*arcsin(d*x + c)*e^(i*arcsin(d*x
+ c))/d + 1/2*sqrt(b*arcsin(d*x + c) + a)*b*i*arcsin(d*x + c)*e^(-i*arcsin(
d*x + c))/d - 1/2*sqrt(b*arcsin(d*x + c) + a)*a*i*e^(i*arcsin(d*x + c))/d +
 1/2*sqrt(b*arcsin(d*x + c) + a)*a*i*e^(-i*arcsin(d*x + c))/d + 3/4*sqrt(b*
arcsin(d*x + c) + a)*b*e^(i*arcsin(d*x + c))/d + 3/4*sqrt(b*arcsin(d*x + c)
 + a)*b*e^(-i*arcsin(d*x + c))/d
```

3.249 $\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{ce+dex}\,dx$

Optimal. Leaf size=28

$$\frac{\text{Unintegrable}\left(\frac{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{c+dx},x\right)}{e}$$

```
[Out] Unintegrable[(a + b*ArcSin[c + d*x])^(3/2)/(c + d*x), x]/e
```

Rubi [A] time = 0.0967922, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{ce+dex}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*ArcSin[c + d*x])^(3/2)/(c*e + d*e*x),x]
```

```
[Out] Defer[Subst][Defer[Int][(a + b*ArcSin[x])^(3/2)/x, x], x, c + d*x]/(d*e)
```

Rubi steps

$$\begin{aligned}\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{ce+dex}\,dx &= \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^{3/2}}{ex}\,dx,x,c+dx\right)}{d}\\ &= \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^{3/2}}{x}\,dx,x,c+dx\right)}{de}\end{aligned}$$

Mathematica [A] time = 1.92472, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{ce+dex}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(3/2)/(c*e + d*e*x),x]
```

```
[Out] Integrate[(a + b*ArcSin[c + d*x])^(3/2)/(c*e + d*e*x), x]
```

Maple [A] time = 0.09, size = 0, normalized size = 0.

$$\int \frac{1}{dex + ce} (a + b \arcsin(dx + c))^{\frac{3}{2}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^(3/2)/(d*e*x+c*e),x)
```

```
[Out] int((a+b*arcsin(d*x+c))^(3/2)/(d*e*x+c*e),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b \arcsin(dx + c) + a)^{\frac{3}{2}}}{dex + ce} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(3/2)/(d*e*x+c*e),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(3/2)/(d*e*x + c*e), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(3/2)/(d*e*x+c*e),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{a\sqrt{a+b\operatorname{asin}(c+dx)}}{c+dx}\,dx+\int \frac{b\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)}{c+dx}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**(3/2)/(d*e*x+c*e),x)
```

```
[Out] (Integral(a*sqrt(a + b*asin(c + d*x))/(c + d*x), x) + Integral(b*sqrt(a + b
*asin(c + d*x))*asin(c + d*x)/(c + d*x), x))/e
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b\arcsin(dx+c)+a)^{\frac{3}{2}}}{dex+ce}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(3/2)/(d*e*x+c*e),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(3/2)/(d*e*x + c*e), x)
```

3.250 $\int (ce+dex)^3 \left(a+b\sin^{-1}(c+dx)\right)^{5/2} dx$

Optimal. Leaf size=475

$$\frac{15\sqrt{\frac{\pi}{2}}b^{5/2}e^3\cos\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{4096d}-\frac{15\sqrt{\pi}b^{5/2}e^3\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{256d}-\frac{15\sqrt{\pi}b^{5/2}e^3\text{si}}{}$$

```
[Out] (225*b^2*e^3*Sqrt[a + b*ArcSin[c + d*x]])/(2048*d) - (45*b^2*e^3*(c + d*x)^
2*Sqrt[a + b*ArcSin[c + d*x]])/(256*d) - (15*b^2*e^3*(c + d*x)^4*Sqrt[a + b
*ArcSin[c + d*x]])/(256*d) + (15*b*e^3*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a +
 b*ArcSin[c + d*x])^(3/2))/(64*d) + (5*b*e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)
^2]*(a + b*ArcSin[c + d*x])^(3/2))/(32*d) - (3*e^3*(a + b*ArcSin[c + d*x])^
(5/2))/(32*d) + (e^3*(c + d*x)^4*(a + b*ArcSin[c + d*x])^(5/2))/(4*d) + (15
*b^(5/2)*e^3*Sqrt[Pi/2]*Cos[(4*a)/b]*FresnelC[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcS
in[c + d*x]])/Sqrt[b]])/(4096*d) - (15*b^(5/2)*e^3*Sqrt[Pi]*Cos[(2*a)/b]*Fr
esnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(256*d) - (15*b
^(5/2)*e^3*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[
Pi])]*Sin[(2*a)/b])/(256*d) + (15*b^(5/2)*e^3*Sqrt[Pi/2]*FresnelS[(2*Sqrt[2
/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(4*a)/b])/(4096*d)
```

Rubi [A] time = 1.60005, antiderivative size = 475, normalized size of antiderivative = 1., number of steps used = 29, number of rules used = 12, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.48, Rules used = {4805, 12, 4629, 4707, 4641, 4723, 3312, 3306, 3305, 3351, 3304, 3352}

$$\frac{15\sqrt{\frac{\pi}{2}}b^{5/2}e^3\cos\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{4096d}-\frac{15\sqrt{\pi}b^{5/2}e^3\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{256d}-\frac{15\sqrt{\pi}b^{5/2}e^3\text{si}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3*(a + b*ArcSin[c + d*x])^(5/2),x]
```


```
[Out] (225*b^2*e^3*Sqrt[a + b*ArcSin[c + d*x]])/(2048*d) - (45*b^2*e^3*(c + d*x)^
2*Sqrt[a + b*ArcSin[c + d*x]])/(256*d) - (15*b^2*e^3*(c + d*x)^4*Sqrt[a + b
*ArcSin[c + d*x]])/(256*d) + (15*b*e^3*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a +
 b*ArcSin[c + d*x])^(3/2))/(64*d) + (5*b*e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)
^2]*(a + b*ArcSin[c + d*x])^(3/2))/(32*d) - (3*e^3*(a + b*ArcSin[c + d*x])^
(5/2))/(32*d) + (e^3*(c + d*x)^4*(a + b*ArcSin[c + d*x])^(5/2))/(4*d) + (15
*b^(5/2)*e^3*Sqrt[Pi/2]*Cos[(4*a)/b]*FresnelC[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcS
in[c + d*x]])/Sqrt[b]])/(4096*d) - (15*b^(5/2)*e^3*Sqrt[Pi]*Cos[(2*a)/b]*Fr
```

```
esnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]])/(256*d) - (15*b
^(5/2)*e^3*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[
Pi])]*Sin[(2*a)/b])/(256*d) + (15*b^(5/2)*e^3*Sqrt[Pi/2]*FresnelS[(2*Sqrt[2
/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(4*a)/b])/(4096*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4629

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^(m + 1)*(a + b*ArcSin[c*x])^n)/(m + 1), x] - Dist[(b*c*n)/(m + 1), Int[(x
^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
```

```
Q[p] || GtQ[d, 0])
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int (ce+dex)^3 \left(a+b\sin^{-1}(c+dx)\right)^{5/2} dx = \frac{\text{Subst}\left(\int e^3x^3 \left(a+b\sin^{-1}(x)\right)^{5/2} dx, x, c+dx\right)}{d}$$

$$= \frac{e^3 \text{Subst}\left(\int x^3 \left(a+b\sin^{-1}(x)\right)^{5/2} dx, x, c+dx\right)}{d}$$

$$= \frac{e^3(c+dx)^4 \left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{4d} - \frac{\left(5be^3\right) \text{Subst}\left(\int \frac{x^4\left(a+b\sin^{-1}(x)\right)^{3/2}}{\sqrt{1-x^2}} dx, x,\right.}{8d}$$

$$= \frac{5be^3(c+dx)^3\sqrt{1-(c+dx)^2} \left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{32d} + \frac{e^3(c+dx)^4 \left(a+b\sin\right.}{4d}$$

$$= -\frac{15b^2e^3(c+dx)^4\sqrt{a+b\sin^{-1}(c+dx)}}{256d} + \frac{15be^3(c+dx)\sqrt{1-(c+dx)^2} \left(a+b\right.}{64d}$$

$$= -\frac{45b^2e^3(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{256d} - \frac{15b^2e^3(c+dx)^4\sqrt{a+b\sin^{-1}(c+d}}{256d}$$

$$= -\frac{45b^2e^3(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{256d} - \frac{15b^2e^3(c+dx)^4\sqrt{a+b\sin^{-1}(c+d}}{256d}$$

$$= \frac{45b^2e^3\sqrt{a+b\sin^{-1}(c+dx)}}{2048d} - \frac{45b^2e^3(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{256d} - \frac{15b^2e}{}$$

$$= \frac{225b^2e^3\sqrt{a+b\sin^{-1}(c+dx)}}{2048d} - \frac{45b^2e^3(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{256d} - \frac{15b^2}{}$$

$$= \frac{225b^2e^3\sqrt{a+b\sin^{-1}(c+dx)}}{2048d} - \frac{45b^2e^3(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{256d} - \frac{15b^2}{}$$

$$= \frac{225b^2e^3\sqrt{a+b\sin^{-1}(c+dx)}}{2048d} - \frac{45b^2e^3(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{256d} - \frac{15b^2}{}$$

$$= \frac{225b^2e^3\sqrt{a+b\sin^{-1}(c+dx)}}{2048d} - \frac{45b^2e^3(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{256d} - \frac{15b^2}{}$$

Mathematica [C] time = 0.285422, size = 269, normalized size = 0.57

$$-\frac{e^3 e^{-\frac{4ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^{5/2}\left(-16\sqrt{2}e^{\frac{2ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\mathrm{Gamma}\left(\frac{7}{2},-\frac{2i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)-16\sqrt{2}e^{\frac{6ia}{b}}\sqrt{-\frac{i\left(a+b\sin^{-1}(c+d\right.}{b}}\right.}{20}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*e + d*e*x)^3*(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] -(e^3*(a + b*ArcSin[c + d*x])^(5/2)*(-16*Sqrt[2]*E^(((2*I)*a)/b)*Sqrt[(I*(a
 + b*ArcSin[c + d*x]))/b]*Gamma[7/2, ((-2*I)*(a + b*ArcSin[c + d*x]))/b] -
16*Sqrt[2]*E^(((6*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[7/2
, ((2*I)*(a + b*ArcSin[c + d*x]))/b] + Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*
Gamma[7/2, ((-4*I)*(a + b*ArcSin[c + d*x]))/b] + E^(((8*I)*a)/b)*Sqrt[((-I)
*(a + b*ArcSin[c + d*x]))/b]*Gamma[7/2, ((4*I)*(a + b*ArcSin[c + d*x]))/b])
)/(2048*d*E^(((4*I)*a)/b)*((a + b*ArcSin[c + d*x])^2/b^2)^(3/2))
```

Maple [B] time = 0.142, size = 864, normalized size = 1.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^(5/2),x)
```

```
[Out] -1/8192/d*e^3*(-15*2^(1/2)*(1/b)^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*c
os(4*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)
/b)*b^3-15*2^(1/2)*(1/b)^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(4*a/b
)*FresnelS(2*2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b^3+
480*(1/b)^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(2*a/b)*FresnelC(2/Pi
^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b^3+480*(1/b)^(1/2)*Pi^(1/2
)*(a+b*arcsin(d*x+c))^(1/2)*sin(2*a/b)*FresnelS(2/Pi^(1/2)/(1/b)^(1/2)*(a+b
*arcsin(d*x+c))^(1/2)/b)*b^3+1024*arcsin(d*x+c)^3*cos(2*(a+b*arcsin(d*x+c))
/b-2*a/b)*b^3-256*arcsin(d*x+c)^3*cos(4*(a+b*arcsin(d*x+c))/b-4*a/b)*b^3+30
72*arcsin(d*x+c)^2*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a*b^2-1280*arcsin(d*x
+c)^2*sin(2*(a+b*arcsin(d*x+c))/b-2*a/b)*b^3-768*arcsin(d*x+c)^2*cos(4*(a+b
*arcsin(d*x+c))/b-4*a/b)*a*b^2+160*arcsin(d*x+c)^2*sin(4*(a+b*arcsin(d*x+c)
)/b-4*a/b)*b^3+3072*arcsin(d*x+c)*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a^2*b-
```

```
960*arcsin(d*x+c)*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*b^3-2560*arcsin(d*x+c)
*sin(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a*b^2-768*arcsin(d*x+c)*cos(4*(a+b*arcs
in(d*x+c))/b-4*a/b)*a^2*b+60*arcsin(d*x+c)*cos(4*(a+b*arcsin(d*x+c))/b-4*a/
b)*b^3+320*arcsin(d*x+c)*sin(4*(a+b*arcsin(d*x+c))/b-4*a/b)*a*b^2+1024*cos(
2*(a+b*arcsin(d*x+c))/b-2*a/b)*a^3-960*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a
*b^2-1280*sin(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a^2*b-256*cos(4*(a+b*arcsin(d*
x+c))/b-4*a/b)*a^3+60*cos(4*(a+b*arcsin(d*x+c))/b-4*a/b)*a*b^2+160*sin(4*(a
+b*arcsin(d*x+c))/b-4*a/b)*a^2*b)/(a+b*arcsin(d*x+c))^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dex + ce)^3 (b \arcsin (dx + c) + a)^{\frac{5}{2}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)^3*(b*arcsin(d*x + c) + a)^(5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3*(a+b*asin(d*x+c))**(5/2),x)
```

[Out] Timed out

Giac [B] time = 3.18584, size = 3783, normalized size = 7.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] -3/512*sqrt(pi)*a*b^4*i*erf(sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/a
bs(b) - sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-4*a*i/b + 3)/((sqr
t(2)*b^(7/2)*i/abs(b) - sqrt(2)*b^(5/2))*d) - 3/512*sqrt(pi)*a*b^(7/2)*i*er
f(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(2)*sqrt(b*ar
csin(d*x + c) + a)/sqrt(b))*e^(4*a*i/b + 3)/((sqrt(2)*b^3*i/abs(b) + sqrt(2
)*b^2)*d) + 3/64*sqrt(pi)*a*b^(7/2)*i*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt
(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b + 3)/((b^3*i
/abs(b) + b^2)*d) + 3/64*sqrt(pi)*a*b^(7/2)*i*erf(sqrt(b*arcsin(d*x + c) +
a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b + 3)
/((b^3*i/abs(b) - b^2)*d) - 1/64*sqrt(pi)*a^2*b^3*erf(-sqrt(2)*sqrt(b*arcsi
n(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt
(b))*e^(4*a*i/b + 3)/((sqrt(2)*b^(7/2)*i/abs(b) + sqrt(2)*b^(5/2))*d) + 3/5
12*sqrt(pi)*a*b^3*i*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(
b) - sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(4*a*i/b + 3)/((sqrt(2)
*b^(5/2)*i/abs(b) + sqrt(2)*b^(3/2))*d) + 1/64*sqrt(pi)*a^2*b^3*erf(sqrt(2)
*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(2)*sqrt(b*arcsin(d*x +
 c) + a)/sqrt(b))*e^(-4*a*i/b + 3)/((sqrt(2)*b^(7/2)*i/abs(b) - sqrt(2)*b^(
5/2))*d) + 1/16*sqrt(pi)*a^2*b^(5/2)*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(
b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b + 3)/((b^3*i/
abs(b) + b^2)*d) - 3/64*sqrt(pi)*a*b^(5/2)*i*erf(-sqrt(b*arcsin(d*x + c) +
a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b + 3)/
((b^2*i/abs(b) + b)*d) - 1/16*sqrt(pi)*a^2*b^(5/2)*erf(sqrt(b*arcsin(d*x +
c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b
 + 3)/((b^3*i/abs(b) - b^2)*d) - 3/64*sqrt(pi)*a*b^(5/2)*i*erf(sqrt(b*arcsi
n(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(
-2*a*i/b + 3)/((b^2*i/abs(b) - b)*d) + 3/512*sqrt(pi)*a*b^(5/2)*i*erf(sqrt(
2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(2)*sqrt(b*arcsin(d*x
 + c) + a)/sqrt(b))*e^(-4*a*i/b + 3)/((sqrt(2)*b^2*i/abs(b) - sqrt(2)*b)*d)
 + 5/512*sqrt(b*arcsin(d*x + c) + a)*b^2*i*arcsin(d*x + c)*e^(4*i*arcsin(d*
x + c) + 3)/d + 1/64*sqrt(b*arcsin(d*x + c) + a)*b^2*arcsin(d*x + c)^2*e^(4
*i*arcsin(d*x + c) + 3)/d - 5/64*sqrt(b*arcsin(d*x + c) + a)*b^2*i*arcsin(d
*x + c)*e^(2*i*arcsin(d*x + c) + 3)/d - 1/16*sqrt(b*arcsin(d*x + c) + a)*b^
```

2*arcsin(d*x + c)^2*e^(2*i*arcsin(d*x + c) + 3)/d + 5/64*sqrt(b*arcsin(d*x + c) + a)*b^2*i*arcsin(d*x + c)*e^(-2*i*arcsin(d*x + c) + 3)/d - 1/16*sqrt(b*arcsin(d*x + c) + a)*b^2*arcsin(d*x + c)^2*e^(-2*i*arcsin(d*x + c) + 3)/d - 5/512*sqrt(b*arcsin(d*x + c) + a)*b^2*i*arcsin(d*x + c)*e^(-4*i*arcsin(d*x + c) + 3)/d + 1/64*sqrt(b*arcsin(d*x + c) + a)*b^2*arcsin(d*x + c)^2*e^(-4*i*arcsin(d*x + c) + 3)/d + 1/128*sqrt(pi)*a^2*b^2*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(4*a*i/b + 3)/((sqrt(2)*b^(5/2)*i/abs(b) + sqrt(2)*b^(3/2))*d) - 15/8192*sqrt(pi)*b^4*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(4*a*i/b + 3)/((sqrt(2)*b^(5/2)*i/abs(b) + sqrt(2)*b^(3/2))*d) - 1/32*sqrt(pi)*a^2*b^2*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b + 3)/((b^(5/2)*i/abs(b) + b^(3/2))*d) + 1/32*sqrt(pi)*a^2*b^2*erf(sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b + 3)/((b^(5/2)*i/abs(b) - b^(3/2))*d) - 1/64*sqrt(pi)*a^2*b^2*erf(sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-4*a*i/b + 3)/((sqrt(2)*b^(5/2)*i/abs(b) - sqrt(2)*b^(3/2))*d) + 15/8192*sqrt(pi)*b^4*erf(sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-4*a*i/b + 3)/((sqrt(2)*b^(5/2)*i/abs(b) - sqrt(2)*b^(3/2))*d) + 1/128*sqrt(pi)*a^2*b^(3/2)*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(4*a*i/b + 3)/((sqrt(2)*b^2*i/abs(b) + sqrt(2)*b)*d) - 1/32*sqrt(pi)*a^2*b^(3/2)*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b + 3)/((b^2*i/abs(b) + b)*d) + 15/512*sqrt(pi)*b^(7/2)*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b + 3)/((b^2*i/abs(b) + b)*d) + 1/32*sqrt(pi)*a^2*b^(3/2)*erf(sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b + 3)/((b^2*i/abs(b) - b)*d) - 15/512*sqrt(pi)*b^(7/2)*erf(sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b + 3)/((b^2*i/abs(b) - b)*d) + 5/512*sqrt(b*arcsin(d*x + c) + a)*a*b*i*e^(4*i*arcsin(d*x + c) + 3)/d + 1/32*sqrt(b*arcsin(d*x + c) + a)*a*b*arcsin(d*x + c)*e^(4*i*arcsin(d*x + c) + 3)/d - 5/64*sqrt(b*arcsin(d*x + c) + a)*a*b*i*e^(2*i*arcsin(d*x + c) + 3)/d - 1/8*sqrt(b*arcsin(d*x + c) + a)*a*b*arcsin(d*x + c)*e^(2*i*arcsin(d*x + c) + 3)/d + 5/64*sqrt(b*arcsin(d*x + c) + a)*a*b*i*e^(-2*i*arcsin(d*x + c) + 3)/d - 1/8*sqrt(b*arcsin(d*x + c) + a)*a*b*arcsin(d*x + c)*e^(-2*i*arcsin(d*x + c) + 3)/d - 5/512*sqrt(b*arcsin(d*x + c) + a)*a*b*i*e^(-4*i*arcsin(d*x + c) + 3)/d + 1/32*sqrt(b*arcsin(d*x + c) + a)*a*b*arcsin(d*x + c)*e^(-4*i*arcsin(d*x + c) + 3)/d + 1/64*sqrt(b*arcsin(d*x + c) + a)*a^2*e^(4*i*arcsin(d*x + c) + 3)/d - 15/4096*sqrt(b*arcsin(d*x + c) + a)*b^2*e^(4*i*arcsin(d*x + c) + 3)/d - 1/16*sqrt(b*arcsin(d*x + c) + a)*a^2*e^(2*i*arcsin(d*x + c) + 3)/d + 15/256*sqrt(b*arcsin(d*x + c) + a)*b^2*e^(2*i*arcsin(d*x + c) + 3)/d - 1/16*sqrt(b*arcsin(d*x + c) + a)*a^2*e^(-2*i*arcsin(d*x + c) + 3)/d + 15/256*sqrt(b*arcsin(d*x + c) + a)*b^2*e^(-2*i*arcsin(d*x + c) + 3)/d + 1/64*sqrt(b

```
*arcsin(d*x + c) + a)*a^2*e^(-4*i*arcsin(d*x + c) + 3)/d - 15/4096*sqrt(b*a
rcsin(d*x + c) + a)*b^2*e^(-4*i*arcsin(d*x + c) + 3)/d
```

3.251 $\int (ce+dex)^2 \left(a+b\sin^{-1}(c+dx)\right)^{5/2}\,dx$

Optimal. Leaf size=427

$$-\frac{15\sqrt{\frac{\pi}{2}}b^{5/2}e^2\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{16d}+\frac{5\sqrt{\frac{\pi}{6}}b^{5/2}e^2\sin\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{144d}+15\sqrt{\frac{\pi}{2}}b^{5/2}e^2$$

```
[Out] (-5*b^2*e^2*(c + d*x)*Sqrt[a + b*ArcSin[c + d*x]])/(6*d) - (5*b^2*e^2*(c +
d*x)^3*Sqrt[a + b*ArcSin[c + d*x]])/(36*d) + (5*b*e^2*Sqrt[1 - (c + d*x)^2]
*(a + b*ArcSin[c + d*x])^(3/2))/(9*d) + (5*b*e^2*(c + d*x)^2*Sqrt[1 - (c +
d*x)^2]*(a + b*ArcSin[c + d*x])^(3/2))/(18*d) + (e^2*(c + d*x)^3*(a + b*Arc
Sin[c + d*x])^(5/2))/(3*d) + (15*b^(5/2)*e^2*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(
Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(16*d) - (5*b^(5/2)*e^2*S
qrt[Pi/6]*Cos[(3*a)/b]*FresnelS[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sq
rt[b]])/(144*d) - (15*b^(5/2)*e^2*Sqrt[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a +
b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(16*d) + (5*b^(5/2)*e^2*Sqrt[Pi/6]*F
resnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(3*a)/b])/(14
4*d)
```

Rubi [A] time = 1.32544, antiderivative size = 427, normalized size of antiderivative = 1., number of steps used = 26, number of rules used = 13, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.52, Rules used = {4805, 12, 4629, 4707, 4677, 4619, 4723, 3306, 3305, 3351, 3304, 3352, 3312}

$$-\frac{15\sqrt{\frac{\pi}{2}}b^{5/2}e^2\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{16d}+\frac{5\sqrt{\frac{\pi}{6}}b^{5/2}e^2\sin\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{144d}+15\sqrt{\frac{\pi}{2}}b^{5/2}e^2$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] (-5*b^2*e^2*(c + d*x)*Sqrt[a + b*ArcSin[c + d*x]])/(6*d) - (5*b^2*e^2*(c +
d*x)^3*Sqrt[a + b*ArcSin[c + d*x]])/(36*d) + (5*b*e^2*Sqrt[1 - (c + d*x)^2]
*(a + b*ArcSin[c + d*x])^(3/2))/(9*d) + (5*b*e^2*(c + d*x)^2*Sqrt[1 - (c +
d*x)^2]*(a + b*ArcSin[c + d*x])^(3/2))/(18*d) + (e^2*(c + d*x)^3*(a + b*Arc
Sin[c + d*x])^(5/2))/(3*d) + (15*b^(5/2)*e^2*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(
Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(16*d) - (5*b^(5/2)*e^2*S
qrt[Pi/6]*Cos[(3*a)/b]*FresnelS[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sq
rt[b]])/(144*d) - (15*b^(5/2)*e^2*Sqrt[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a +
```

```
b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(16*d) + (5*b^(5/2)*e^2*Sqrt[Pi/6]*F
resnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(3*a)/b])/(14
4*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4629

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^(m + 1)*(a + b*ArcSin[c*x])^n)/(m + 1), x] - Dist[(b*c*n)/(m + 1), Int[(x
^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
```

```
c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\int (ce+dex)^2 \left(a+b\sin^{-1}(c+dx)\right)^{5/2}\, dx = \frac{\text{Subst}\left(\int e^2x^2\left(a+b\sin^{-1}(x)\right)^{5/2}\, dx, x, c+dx\right)}{d}$$

$$= \frac{e^2\,\text{Subst}\left(\int x^2\left(a+b\sin^{-1}(x)\right)^{5/2}\, dx, x, c+dx\right)}{d}$$

$$= \frac{e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{3d} - \frac{\left(5be^2\right)\text{Subst}\left(\int \frac{x^3\left(a+b\sin^{-1}(x)\right)^{3/2}}{\sqrt{1-x^2}}\, dx, x, c\right.}{6d}$$

$$= \frac{5be^2(c+dx)^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{18d} + \frac{e^2(c+dx)^3\left(a+b\sin^{-}\right.}{3d}$$

$$= -\frac{5b^2e^2(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{36d} + \frac{5be^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+d\right.}{9d}$$

$$= -\frac{5b^2e^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{6d} - \frac{5b^2e^2(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{36d} +$$

$$= -\frac{5b^2e^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{6d} - \frac{5b^2e^2(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{36d} +$$

$$= -\frac{5b^2e^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{6d} - \frac{5b^2e^2(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{36d} +$$

$$= -\frac{5b^2e^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{6d} - \frac{5b^2e^2(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{36d} +$$

$$= -\frac{5b^2e^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{6d} - \frac{5b^2e^2(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{36d} +$$

$$= -\frac{5b^2e^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{6d} - \frac{5b^2e^2(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{36d} +$$

Mathematica [C] time = 0.258587, size = 249, normalized size = 0.58

$$\frac{b^3e^2e^{-\frac{3ia}{b}}\left(-81e^{\frac{2ia}{b}}\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{7}{2},-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)-81e^{\frac{4ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{7}{2},\frac{i\left(a+b\sin^{-1}(c+dx\right.}{b}\right.\right.}{648d\sqrt{a+b\,\mathrm{si}}}$$

Warning: Unable to verify antiderivative.

[In] Integrate[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x])^(5/2),x]

[Out] (b^3*e^2*(-81*E^(((2*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[7/2, ((-I)*(a + b*ArcSin[c + d*x]))/b] - 81*E^(((4*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[7/2, (I*(a + b*ArcSin[c + d*x]))/b] + Sqrt[3]*(Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[7/2, ((-3*I)*(a + b*ArcSin[c + d*x]))/b] + E^(((6*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[7/2, ((3*I)*(a + b*ArcSin[c + d*x]))/b])))/(648*d*E^(((3*I)*a)/b)*Sqrt[a + b*ArcSin[c + d*x]])

Maple [B] time = 0.145, size = 873, normalized size = 2.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(5/2),x)

[Out] 1/864/d*e^2/(a+b*arcsin(d*x+c))^(1/2)*(-5*3^(1/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*Pi^(1/2)*2^(1/2)*cos(3*a/b)*FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b^3+5*3^(1/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*Pi^(1/2)*2^(1/2)*sin(3*a/b)*FresnelC(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b^3+405*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b^3-405*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b^3+216*arcsin(d*x+c)^3*sin((a+b*arcsin(d*x+c))/b-a/b)*b^3-72*arcsin(d*x+c)^3*sin(3*(a+b*arcsin(d*x+c))/b-3*a/b)*b^3+648*arcsin(d*x+c)^2*sin((a+b*arcsin(d*x+c))/b-a/b)*a*b^2+540*arcsin(d*x+c)^2*cos((a+b*arcsin(d*x+c))/b-a/b)*b^3-216*arcsin(d*x+c)^2*sin(3*(a+b*arcsin(d*x+c))/b-3*a/b)*a*b^2-60*arcsin(d*x+c)^2*cos(3*(a+b*arcsin(d*x+c))/b-3*a/b)*b^3+648*arcsin(d*x+c)*sin((a+b*arcsin(d*x+c))/b-a/b)*a^2*b-810*arcsin(d*x+c)*sin((

```
a+b*arcsin(d*x+c))/b-a/b)*b^3+1080*arcsin(d*x+c)*cos((a+b*arcsin(d*x+c))/b-
a/b)*a*b^2-216*arcsin(d*x+c)*sin(3*(a+b*arcsin(d*x+c))/b-3*a/b)*a^2*b+30*ar
csin(d*x+c)*sin(3*(a+b*arcsin(d*x+c))/b-3*a/b)*b^3-120*arcsin(d*x+c)*cos(3*
(a+b*arcsin(d*x+c))/b-3*a/b)*a*b^2+216*sin((a+b*arcsin(d*x+c))/b-a/b)*a^3-8
10*sin((a+b*arcsin(d*x+c))/b-a/b)*a*b^2+540*cos((a+b*arcsin(d*x+c))/b-a/b)*
a^2*b-72*sin(3*(a+b*arcsin(d*x+c))/b-3*a/b)*a^3+30*sin(3*(a+b*arcsin(d*x+c)
)/b-3*a/b)*a*b^2-60*cos(3*(a+b*arcsin(d*x+c))/b-3*a/b)*a^2*b)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dex + ce)^2 (b \arcsin(dx + c) + a)^{\frac{5}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)^2*(b*arcsin(d*x + c) + a)^(5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2*(a+b*asin(d*x+c))**(5/2),x)
```

[Out] Timed out

Giac [B] time = 4.17627, size = 3895, normalized size = 9.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] -1/8*sqrt(2)*sqrt(pi)*a^2*b^3*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a
)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*
e^(a*i/b + 2)/((b^3*i/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d) - 1/8*sqrt(2)*sqr
t(pi)*a^2*b^3*i*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b))
- 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b + 2)/((
b^3*i/sqrt(abs(b)) - b^2*sqrt(abs(b)))*d) + 1/12*sqrt(pi)*a^2*b^(5/2)*i*erf
(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sq
rt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(3*a*i/b + 2)/((sqrt(6)*b^3*i/abs(b) +
 sqrt(6)*b^2)*d) + 3/16*sqrt(2)*sqrt(pi)*a*b^4*erf(-1/2*sqrt(2)*sqrt(b*arcs
in(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*s
qrt(abs(b))/b)*e^(a*i/b + 2)/((b^3*i/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d) +
1/8*sqrt(2)*sqrt(pi)*a^2*b^2*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)
*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e
^(a*i/b + 2)/((b^2*i/sqrt(abs(b)) + b*sqrt(abs(b)))*d) - 15/64*sqrt(2)*sqrt
(pi)*b^4*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/
2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b + 2)/((b^2*i
/sqrt(abs(b)) + b*sqrt(abs(b)))*d) - 3/16*sqrt(2)*sqrt(pi)*a*b^4*erf(1/2*sq
rt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsi
n(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b + 2)/((b^3*i/sqrt(abs(b)) - b^2*s
qrt(abs(b)))*d) + 1/8*sqrt(2)*sqrt(pi)*a^2*b^2*i*erf(1/2*sqrt(2)*sqrt(b*arc
sin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*
sqrt(abs(b))/b)*e^(-a*i/b + 2)/((b^2*i/sqrt(abs(b)) - b*sqrt(abs(b)))*d) -
15/64*sqrt(2)*sqrt(pi)*b^4*i*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/
sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-
a*i/b + 2)/((b^2*i/sqrt(abs(b)) - b*sqrt(abs(b)))*d) + 1/12*sqrt(pi)*a^2*b^
(5/2)*i*erf(1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*
sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-3*a*i/b + 2)/((sqrt(6)*b^3
*i/abs(b) - sqrt(6)*b^2)*d) + 1/24*sqrt(b*arcsin(d*x + c) + a)*b^2*i*arcsin
(d*x + c)^2*e^(3*i*arcsin(d*x + c) + 2)/d - 1/8*sqrt(b*arcsin(d*x + c) + a)
*b^2*i*arcsin(d*x + c)^2*e^(i*arcsin(d*x + c) + 2)/d + 1/8*sqrt(b*arcsin(d*
x + c) + a)*b^2*i*arcsin(d*x + c)^2*e^(-i*arcsin(d*x + c) + 2)/d - 1/24*sqr
t(b*arcsin(d*x + c) + a)*b^2*i*arcsin(d*x + c)^2*e^(-3*i*arcsin(d*x + c) +
```

2)/d - 1/24*sqrt(pi)*a^2*b^2*i*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(3*a*i/b + 2)/((sqrt(6)*b^(5/2)*i/abs(b) + sqrt(6)*b^(3/2))*d) - 1/24*sqrt(pi)*a^2*b^2*i*erf(1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-3*a*i/b + 2)/((sqrt(6)*b^(5/2)*i/abs(b) - sqrt(6)*b^(3/2))*d) - 1/24*sqrt(pi)*a*b^(7/2)*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(3*a*i/b + 2)/((sqrt(6)*b^3*i/abs(b) + sqrt(6)*b^2)*d) - 1/24*sqrt(pi)*a^2*b^(3/2)*i*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(3*a*i/b + 2)/((sqrt(6)*b^2*i/abs(b) + sqrt(6)*b)*d) + 5/288*sqrt(pi)*b^(7/2)*i*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(3*a*i/b + 2)/((sqrt(6)*b^2*i/abs(b) + sqrt(6)*b)*d) - 3/16*sqrt(2)*sqrt(pi)*a*b^3*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b + 2)/((b^2*i/sqrt(abs(b)) + b*sqrt(abs(b)))*d) + 3/16*sqrt(2)*sqrt(pi)*a*b^3*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b + 2)/((b^2*i/sqrt(abs(b)) - b*sqrt(abs(b)))*d) + 1/24*sqrt(pi)*a*b^(7/2)*erf(1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-3*a*i/b + 2)/((sqrt(6)*b^3*i/abs(b) - sqrt(6)*b^2)*d) - 1/24*sqrt(pi)*a^2*b^(3/2)*i*erf(1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-3*a*i/b + 2)/((sqrt(6)*b^2*i/abs(b) - sqrt(6)*b)*d) + 5/288*sqrt(pi)*b^(7/2)*i*erf(1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-3*a*i/b + 2)/((sqrt(6)*b^2*i/abs(b) - sqrt(6)*b)*d) + 1/12*sqrt(b*arcsin(d*x + c) + a)*a*b*i*arcsin(d*x + c)*e^(3*i*arcsin(d*x + c) + 2)/d - 1/4*sqrt(b*arcsin(d*x + c) + a)*a*b*i*arcsin(d*x + c)*e^(i*arcsin(d*x + c) + 2)/d + 1/4*sqrt(b*arcsin(d*x + c) + a)*a*b*i*arcsin(d*x + c)*e^(-i*arcsin(d*x + c) + 2)/d - 1/12*sqrt(b*arcsin(d*x + c) + a)*a*b*i*arcsin(d*x + c)*e^(-3*i*arcsin(d*x + c) + 2)/d + 1/24*sqrt(pi)*a*b^(5/2)*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(3*a*i/b + 2)/((sqrt(6)*b^2*i/abs(b) + sqrt(6)*b)*d) - 1/24*sqrt(pi)*a*b^(5/2)*erf(1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-3*a*i/b + 2)/((sqrt(6)*b^2*i/abs(b) - sqrt(6)*b)*d) + 1/24*sqrt(b*arcsin(d*x + c) + a)*a^2*i*e^(3*i*arcsin(d*x + c) + 2)/d - 5/288*sqrt(b*arcsin(d*x + c) + a)*b^2*i*e^(3*i*arcsin(d*x + c) + 2)/d - 5/144*sqrt(b*arcsin(d*x + c) + a)*b^2*arcsin(d*x + c)*e^(3*i*arcsin(d*x + c) + 2)/d - 1/8*sqrt(b*arcsin(d*x + c) + a)*a^2*i*e^(i*arcsin(d*x + c) + 2)/d + 15/32*sqrt(b*arcsin(d*x + c) + a)*b^2*i*e^(i*arcsin(d*x + c) + 2)/d + 5/16*sqrt(b*arcsin(d*x + c) + a)*b^2*arcsin(d*x + c)*e^(i*arcsin(d*x + c) + 2)/d + 1/8*sqrt(b*arcsin(d*x + c) + a)*a^2*i*e^(-i*arcsin(d*x + c) + 2)/d - 15/32*sqrt(b*arcsin(d*x + c) + a)*b^2*i*e^(-i*arcsin(d*x + c) + 2)/d + 5/16*sqrt(b*arcsin(d*x + c) + a)*b^2*arcsin(d*x + c) *e^(-i*arcsin(d*x + c) + 2)/d - 1/24*sqrt(b*arcsin(d*x + c) + a)*a^2*i*e^(-3*i*arcsin(d*x + c) + 2)/d + 5/288*sqrt(b*arcsin(d*x + c) + a)*b^2*i*e^(-3*i*arcsin(d*x + c) + 2)/d - 5/144*sqrt(b*arcsin(d*x + c) + a)*b^2*arcsin(d*x + c)*e^(-3*i*arcsin(d*x + c) + 2)/d - 5/144*sqrt(b*arcsin(d*x + c) + a)*a*b*e^(3*i*arcsin(d*x + c) + 2)/d + 5/16*sqrt(b*arcsin(d*x + c) + a)*a*b*e^(i*arcsin(d*x + c) + 2)/d + 5/16*sqrt(b*arcsin(d*x + c) + a)*a*b*e^(-i*arcsin(d*x + c) + 2)/d - 5/144*sqrt(b*arcsin(d*x + c) + a)*a*b*e^(-3*i*arcsin(d*x + c) + 2)/d

3.252 $\int (ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^{5/2}\,dx$

Optimal. Leaf size=256

$$-\frac{15\sqrt{\pi}b^{5/2}e\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{128d}-\frac{15\sqrt{\pi}b^{5/2}e\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{128d}-\frac{15b^2e(c+dx)^2\sqrt{a+b\sin^{-}\cdots}}{32d}$$

```
[Out] (15*b^2*e*Sqrt[a + b*ArcSin[c + d*x]])/(64*d) - (15*b^2*e*(c + d*x)^2*Sqrt[
a + b*ArcSin[c + d*x]])/(32*d) + (5*b*e*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a
+ b*ArcSin[c + d*x])^(3/2))/(8*d) - (e*(a + b*ArcSin[c + d*x])^(5/2))/(4*d)
 + (e*(c + d*x)^2*(a + b*ArcSin[c + d*x])^(5/2))/(2*d) - (15*b^(5/2)*e*Sqrt
[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi
])])/(128*d) - (15*b^(5/2)*e*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x
]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(128*d)
```

Rubi [A] time = 0.719408, antiderivative size = 256, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 12, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.522, Rules used = {4805, 12, 4629, 4707, 4641, 4723, 3312, 3306, 3305, 3351, 3304, 3352}

$$-\frac{15\sqrt{\pi}b^{5/2}e\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{128d}-\frac{15\sqrt{\pi}b^{5/2}e\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{128d}-\frac{15b^2e(c+dx)^2\sqrt{a+b\sin^{-}\cdots}}{32d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] (15*b^2*e*Sqrt[a + b*ArcSin[c + d*x]])/(64*d) - (15*b^2*e*(c + d*x)^2*Sqrt[
a + b*ArcSin[c + d*x]])/(32*d) + (5*b*e*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a
+ b*ArcSin[c + d*x])^(3/2))/(8*d) - (e*(a + b*ArcSin[c + d*x])^(5/2))/(4*d)
 + (e*(c + d*x)^2*(a + b*ArcSin[c + d*x])^(5/2))/(2*d) - (15*b^(5/2)*e*Sqrt
[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi
])])/(128*d) - (15*b^(5/2)*e*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x
]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(128*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
```

```
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4629

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^(m + 1)*(a + b*ArcSin[c*x])^n)/(m + 1), x] - Dist[(b*c*n)/(m + 1), Int[(x
^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int (ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^{5/2}dx=\frac{\text{Subst}\left(\int ex\left(a+b\sin^{-1}(x)\right)^{5/2}dx,x,c+dx\right)}{d}$$

$$=\frac{e\,\text{Subst}\left(\int x\left(a+b\sin^{-1}(x)\right)^{5/2}dx,x,c+dx\right)}{d}$$

$$=\frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{2d}-\frac{(5be)\,\text{Subst}\left(\int \frac{x^2\left(a+b\sin^{-1}(x)\right)^{3/2}}{\sqrt{1-x^2}}dx,x,c+\right.}{4d}$$

$$=\frac{5be(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{8d}+\frac{e(c+dx)^2\left(a+b\sin^{-1}(c\right.}{2d}$$

$$=-\frac{15b^2e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{32d}+\frac{5be(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin\right.}{8d}$$

$$=-\frac{15b^2e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{32d}+\frac{5be(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin\right.}{8d}$$

$$=-\frac{15b^2e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{32d}+\frac{5be(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin\right.}{8d}$$

$$=\frac{15b^2e\sqrt{a+b\sin^{-1}(c+dx)}}{64d}-\frac{15b^2e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{32d}+\frac{5be(c+}{}$$

$$=\frac{15b^2e\sqrt{a+b\sin^{-1}(c+dx)}}{64d}-\frac{15b^2e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{32d}+\frac{5be(c+}{}$$

$$=\frac{15b^2e\sqrt{a+b\sin^{-1}(c+dx)}}{64d}-\frac{15b^2e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{32d}+\frac{5be(c+}{}$$

$$=\frac{15b^2e\sqrt{a+b\sin^{-1}(c+dx)}}{64d}-\frac{15b^2e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{32d}+\frac{5be(c+}{}$$

Mathematica [C] time = 0.0939008, size = 154, normalized size = 0.6

$$\frac{ee^{-\frac{2ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^{5/2}\left(\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{7}{2},-\frac{2i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)+e^{\frac{4ia}{b}}\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{7}{2},\frac{2}{}\right.\right.}{32\sqrt{2}d\left(\frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{b^2}\right)^{3/2}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] (e*(a + b*ArcSin[c + d*x])^(5/2)*(Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma
[7/2, ((-2*I)*(a + b*ArcSin[c + d*x]))/b] + E^(((4*I)*a)/b)*Sqrt[((-I)*(a +
 b*ArcSin[c + d*x]))/b]*Gamma[7/2, ((2*I)*(a + b*ArcSin[c + d*x]))/b]))/(32
*Sqrt[2]*d*E^(((2*I)*a)/b)*((a + b*ArcSin[c + d*x])^2/b^2)^(3/2))
```

Maple [B] time = 0.095, size = 435, normalized size = 1.7

$$-\frac{e}{128\,d}\left(15\,\sqrt{b^{-1}}\sqrt{\pi}\sqrt{a+b\arcsin(dx+c)}\cos\left(2\,\frac{a}{b}\right)\mathrm{FresnelC}\left(2\,\frac{\sqrt{a+b\arcsin(dx+c)}}{\sqrt{b^{-1}}\sqrt{\pi}b}\right)b^{3}+15\,\sqrt{b^{-1}}\sqrt{\pi}\sqrt{a+b\arcsin}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(5/2),x)
```

```
[Out] -1/128*e/d*(15*(1/b)^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(2*a/b)*Fr
esnelC(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b^3+15*(1/b)^(1/
2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(2*a/b)*FresnelS(2/Pi^(1/2)/(1/b)^
(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b^3+32*arcsin(d*x+c)^3*cos(2*(a+b*arcsin
(d*x+c))/b-2*a/b)*b^3+96*arcsin(d*x+c)^2*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)
*a*b^2-40*arcsin(d*x+c)^2*sin(2*(a+b*arcsin(d*x+c))/b-2*a/b)*b^3+96*arcsin(
d*x+c)*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a^2*b-30*arcsin(d*x+c)*cos(2*(a+b
*arcsin(d*x+c))/b-2*a/b)*b^3-80*arcsin(d*x+c)*sin(2*(a+b*arcsin(d*x+c))/b-2
*a/b)*a*b^2+32*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a^3-30*cos(2*(a+b*arcsin(
d*x+c))/b-2*a/b)*a*b^2-40*sin(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a^2*b)/(a+b*ar
csin(d*x+c))^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dex+ce)(b\arcsin(dx+c)+a)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)*(b*arcsin(d*x + c) + a)^(5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*asin(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [B] time = 2.17891, size = 1848, normalized size = 7.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] 3/32*sqrt(pi)*a*b^(7/2)*i*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b)
 - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b + 1)/((b^3*i/abs(b) + b^
2)*d) + 3/32*sqrt(pi)*a*b^(7/2)*i*erf(sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i
/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b + 1)/((b^3*i/abs
(b) - b^2)*d) + 1/8*sqrt(pi)*a^2*b^(5/2)*erf(-sqrt(b*arcsin(d*x + c) + a)*s
qrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b + 1)/((b^
3*i/abs(b) + b^2)*d) - 3/32*sqrt(pi)*a*b^(5/2)*i*erf(-sqrt(b*arcsin(d*x + c
```

```
) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b +
 1)/((b^2*i/abs(b) + b)*d) - 1/8*sqrt(pi)*a^2*b^(5/2)*erf(sqrt(b*arcsin(d*x
 + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*
i/b + 1)/((b^3*i/abs(b) - b^2)*d) - 3/32*sqrt(pi)*a*b^(5/2)*i*erf(sqrt(b*ar
csin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*
e^(-2*a*i/b + 1)/((b^2*i/abs(b) - b)*d) - 5/32*sqrt(b*arcsin(d*x + c) + a)*
b^2*i*arcsin(d*x + c)*e^(2*i*arcsin(d*x + c) + 1)/d - 1/8*sqrt(b*arcsin(d*x
 + c) + a)*b^2*arcsin(d*x + c)^2*e^(2*i*arcsin(d*x + c) + 1)/d + 5/32*sqrt(
b*arcsin(d*x + c) + a)*b^2*i*arcsin(d*x + c)*e^(-2*i*arcsin(d*x + c) + 1)/d
 - 1/8*sqrt(b*arcsin(d*x + c) + a)*b^2*arcsin(d*x + c)^2*e^(-2*i*arcsin(d*x
 + c) + 1)/d - 1/16*sqrt(pi)*a^2*b^2*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(
b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b + 1)/((b^(5/2
)*i/abs(b) + b^(3/2))*d) + 1/16*sqrt(pi)*a^2*b^2*erf(sqrt(b*arcsin(d*x + c)
 + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b +
 1)/((b^(5/2)*i/abs(b) - b^(3/2))*d) - 1/16*sqrt(pi)*a^2*b^(3/2)*erf(-sqrt(
b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(
b))*e^(2*a*i/b + 1)/((b^2*i/abs(b) + b)*d) + 15/256*sqrt(pi)*b^(7/2)*erf(-s
qrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/s
qrt(b))*e^(2*a*i/b + 1)/((b^2*i/abs(b) + b)*d) + 1/16*sqrt(pi)*a^2*b^(3/2)*
erf(sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) +
 a)/sqrt(b))*e^(-2*a*i/b + 1)/((b^2*i/abs(b) - b)*d) - 15/256*sqrt(pi)*b^(7
/2)*erf(sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x +
c) + a)/sqrt(b))*e^(-2*a*i/b + 1)/((b^2*i/abs(b) - b)*d) - 5/32*sqrt(b*arcs
in(d*x + c) + a)*a*b*i*e^(2*i*arcsin(d*x + c) + 1)/d - 1/4*sqrt(b*arcsin(d*
x + c) + a)*a*b*arcsin(d*x + c)*e^(2*i*arcsin(d*x + c) + 1)/d + 5/32*sqrt(b
*arcsin(d*x + c) + a)*a*b*i*e^(-2*i*arcsin(d*x + c) + 1)/d - 1/4*sqrt(b*arc
sin(d*x + c) + a)*a*b*arcsin(d*x + c)*e^(-2*i*arcsin(d*x + c) + 1)/d - 1/8*
sqrt(b*arcsin(d*x + c) + a)*a^2*e^(2*i*arcsin(d*x + c) + 1)/d + 15/128*sqrt
(b*arcsin(d*x + c) + a)*b^2*e^(2*i*arcsin(d*x + c) + 1)/d - 1/8*sqrt(b*arcs
in(d*x + c) + a)*a^2*e^(-2*i*arcsin(d*x + c) + 1)/d + 15/128*sqrt(b*arcsin(
d*x + c) + a)*b^2*e^(-2*i*arcsin(d*x + c) + 1)/d
```

3.253 $\int \left(a+b\sin^{-1}(c+dx)\right)^{5/2}\,dx$

Optimal. Leaf size=204

$$-\frac{15\sqrt{\frac{\pi}{2}}b^{5/2}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{4d}+\frac{15\sqrt{\frac{\pi}{2}}b^{5/2}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{4d}-\frac{15b^2(c+dx)\sqrt{a+b\sin}}{4d}$$

```
[Out] (-15*b^2*(c + d*x)*Sqrt[a + b*ArcSin[c + d*x]])/(4*d) + (5*b*Sqrt[1 - (c +
d*x)^2]*(a + b*ArcSin[c + d*x])^(3/2))/(2*d) + ((c + d*x)*(a + b*ArcSin[c +
 d*x])^(5/2))/d + (15*b^(5/2)*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt
[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(4*d) - (15*b^(5/2)*Sqrt[Pi/2]*FresnelC[
(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(4*d)
```

Rubi [A] time = 0.415817, antiderivative size = 204, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 9, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.643, Rules used = {4803, 4619, 4677, 4723, 3306, 3305, 3351, 3304, 3352}

$$-\frac{15\sqrt{\frac{\pi}{2}}b^{5/2}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{4d}+\frac{15\sqrt{\frac{\pi}{2}}b^{5/2}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{4d}-\frac{15b^2(c+dx)\sqrt{a+b\sin}}{4d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] (-15*b^2*(c + d*x)*Sqrt[a + b*ArcSin[c + d*x]])/(4*d) + (5*b*Sqrt[1 - (c +
d*x)^2]*(a + b*ArcSin[c + d*x])^(3/2))/(2*d) + ((c + d*x)*(a + b*ArcSin[c +
 d*x])^(5/2))/d + (15*b^(5/2)*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt
[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(4*d) - (15*b^(5/2)*Sqrt[Pi/2]*FresnelC[
(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(4*d)
```

Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \left(a+b\sin^{-1}(c+dx)\right)^{5/2} dx = \frac{\text{Subst}\left(\int \left(a+b\sin^{-1}(x)\right)^{5/2} dx, x, c+dx\right)}{d}$$

$$= \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{d} - \frac{(5b)\,\text{Subst}\left(\int \frac{x\left(a+b\sin^{-1}(x)\right)^{3/2}}{\sqrt{1-x^2}} dx, x, c+dx\right)}{2d}$$

$$= \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{2d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{d} - \frac{\left(15b^2\right) \mathrm{S}}{}$$

$$= -\frac{15b^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{2d} + \frac{(c+}{}$$

$$= -\frac{15b^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{2d} + \frac{(c+}{}$$

$$= -\frac{15b^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{2d} + \frac{(c+}{}$$

$$= -\frac{15b^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{2d} + \frac{(c+}{}$$

$$= -\frac{15b^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{2d} + \frac{(c+}{}$$

Mathematica [C] time = 1.57182, size = 432, normalized size = 2.12

$$\frac{e^{-\frac{ia}{b}}\left(2b\left(2a^2\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{3}{2},-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)+2a^2e^{\frac{2ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{3}{2},\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] ((I*(4*a^2 + 15*b^2)*(-1 + E^(((2*I)*a)/b))*Sqrt[Pi/2]*Sqrt[a + b*ArcSin[c
+ d*x]]*FresnelC[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]])/Sqrt
[b^(-1)] + ((4*a^2 + 15*b^2)*(1 + E^(((2*I)*a)/b))*Sqrt[Pi/2]*Sqrt[a + b*Ar
cSin[c + d*x]]*FresnelS[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]
])/Sqrt[b^(-1)] + 2*b*(E^((I*a)/b)*(a + b*ArcSin[c + d*x])*(-15*b*(c + d*x)
 + 10*a*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2] + 2*(4*a*(c + d*x) + 5*b*Sqrt[1 -
 c^2 - 2*c*d*x - d^2*x^2])*ArcSin[c + d*x] + 4*b*(c + d*x)*ArcSin[c + d*x]^
2) + 2*a^2*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((-I)*(a + b*A
rcSin[c + d*x]))/b] + 2*a^2*E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x])
)/b]*Gamma[3/2, (I*(a + b*ArcSin[c + d*x]))/b]))/(8*d*E^((I*a)/b)*Sqrt[a +
b*ArcSin[c + d*x]])
```

Maple [B] time = 0., size = 433, normalized size = 2.1

$$\frac{1}{8d}\left(15\sqrt{b^{-1}}\sqrt{\pi}\sqrt{2}\sqrt{a+b\arcsin(dx+c)}\cos\left(\frac{a}{b}\right)\mathrm{FresnelS}\left(\frac{\sqrt{2}\sqrt{a+b\arcsin(dx+c)}}{\sqrt{b^{-1}}\sqrt{\pi}b}\right)b^3-15\sqrt{b^{-1}}\sqrt{\pi}\sqrt{2}\sqrt{a+b\arcs$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^(5/2),x)
```

```
[Out] 1/8/d/(a+b*arcsin(d*x+c))^(1/2)*(15*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsi
n(d*x+c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(
d*x+c))^(1/2)/b)*b^3-15*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1
/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2
)/b)*b^3+8*arcsin(d*x+c)^3*sin((a+b*arcsin(d*x+c))/b-a/b)*b^3+24*arcsin(d*x
+c)^2*sin((a+b*arcsin(d*x+c))/b-a/b)*a*b^2+20*arcsin(d*x+c)^2*cos((a+b*arcs
in(d*x+c))/b-a/b)*b^3+24*arcsin(d*x+c)*sin((a+b*arcsin(d*x+c))/b-a/b)*a^2*b
-30*arcsin(d*x+c)*sin((a+b*arcsin(d*x+c))/b-a/b)*b^3+40*arcsin(d*x+c)*cos((
a+b*arcsin(d*x+c))/b-a/b)*a*b^2+8*sin((a+b*arcsin(d*x+c))/b-a/b)*a^3-30*sin
((a+b*arcsin(d*x+c))/b-a/b)*a*b^2+20*cos((a+b*arcsin(d*x+c))/b-a/b)*a^2*b)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (b\arcsin(dx+c)+a)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [B] time = 2.47833, size = 1766, normalized size = 8.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(2)*sqrt(pi)*a^2*b^3*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a
)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*
e^(a*i/b)/((b^3*i/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d) - 1/2*sqrt(2)*sqrt(pi
)*a^2*b^3*i*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/
```

```
2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^3*i/sq
rt(abs(b)) - b^2*sqrt(abs(b)))*d) + 3/4*sqrt(2)*sqrt(pi)*a*b^4*erf(-1/2*sqr
t(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin
(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b)/((b^3*i/sqrt(abs(b)) + b^2*sqrt(ab
s(b)))*d) + 1/2*sqrt(2)*sqrt(pi)*a^2*b^2*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d
*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(
abs(b))/b)*e^(a*i/b)/((b^2*i/sqrt(abs(b)) + b*sqrt(abs(b)))*d) - 15/16*sqrt
(2)*sqrt(pi)*b^4*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(
b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b)/((b
^2*i/sqrt(abs(b)) + b*sqrt(abs(b)))*d) - 3/4*sqrt(2)*sqrt(pi)*a*b^4*erf(1/2
*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*ar
csin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^3*i/sqrt(abs(b)) - b^2*sq
rt(abs(b)))*d) + 1/2*sqrt(2)*sqrt(pi)*a^2*b^2*i*erf(1/2*sqrt(2)*sqrt(b*arcs
in(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*s
qrt(abs(b))/b)*e^(-a*i/b)/((b^2*i/sqrt(abs(b)) - b*sqrt(abs(b)))*d) - 15/16
*sqrt(2)*sqrt(pi)*b^4*i*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(
abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b
)/((b^2*i/sqrt(abs(b)) - b*sqrt(abs(b)))*d) - 1/2*sqrt(b*arcsin(d*x + c) +
a)*b^2*i*arcsin(d*x + c)^2*e^(i*arcsin(d*x + c))/d + 1/2*sqrt(b*arcsin(d*x
+ c) + a)*b^2*i*arcsin(d*x + c)^2*e^(-i*arcsin(d*x + c))/d - 3/4*sqrt(2)*sq
rt(pi)*a*b^3*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) -
1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b)/((b^2*i/s
qrt(abs(b)) + b*sqrt(abs(b)))*d) + 3/4*sqrt(2)*sqrt(pi)*a*b^3*erf(1/2*sqrt(
2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d
*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^2*i/sqrt(abs(b)) - b*sqrt(abs(b
)))*d) - sqrt(b*arcsin(d*x + c) + a)*a*b*i*arcsin(d*x + c)*e^(i*arcsin(d*x
+ c))/d + sqrt(b*arcsin(d*x + c) + a)*a*b*i*arcsin(d*x + c)*e^(-i*arcsin(d*
x + c))/d - 1/2*sqrt(b*arcsin(d*x + c) + a)*a^2*i*e^(i*arcsin(d*x + c))/d +
 15/8*sqrt(b*arcsin(d*x + c) + a)*b^2*i*e^(i*arcsin(d*x + c))/d + 5/4*sqrt(
b*arcsin(d*x + c) + a)*b^2*arcsin(d*x + c)*e^(i*arcsin(d*x + c))/d + 1/2*sq
rt(b*arcsin(d*x + c) + a)*a^2*i*e^(-i*arcsin(d*x + c))/d - 15/8*sqrt(b*arcs
in(d*x + c) + a)*b^2*i*e^(-i*arcsin(d*x + c))/d + 5/4*sqrt(b*arcsin(d*x + c
) + a)*b^2*arcsin(d*x + c)*e^(-i*arcsin(d*x + c))/d + 5/4*sqrt(b*arcsin(d*x
 + c) + a)*a*b*e^(i*arcsin(d*x + c))/d + 5/4*sqrt(b*arcsin(d*x + c) + a)*a*
b*e^(-i*arcsin(d*x + c))/d
```

3.254 $\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{ce+dex}\,dx$

Optimal. Leaf size=28

$$\frac{\text{Unintegrable}\left(\frac{\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{c+dx},x\right)}{e}$$

```
[Out] Unintegrable[(a + b*ArcSin[c + d*x])^(5/2)/(c + d*x), x]/e
```

Rubi [A] time = 0.0940867, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{ce+dex}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*ArcSin[c + d*x])^(5/2)/(c*e + d*e*x),x]
```

```
[Out] Defer[Subst][Defer[Int][(a + b*ArcSin[x])^(5/2)/x, x], x, c + d*x]/(d*e)
```

Rubi steps

$$\begin{aligned}\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{ce+dex}\,dx &= \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^{5/2}}{ex}\,dx,x,c+dx\right)}{d}\\ &= \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^{5/2}}{x}\,dx,x,c+dx\right)}{de}\end{aligned}$$

Mathematica [A] time = 1.3861, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{ce+dex}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(5/2)/(c*e + d*e*x),x]
```

```
[Out] Integrate[(a + b*ArcSin[c + d*x])^(5/2)/(c*e + d*e*x), x]
```

Maple [A] time = 0.089, size = 0, normalized size = 0.

$$\int \frac{1}{dex + ce} (a + b \arcsin(dx + c))^{\frac{5}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^(5/2)/(d*e*x+c*e),x)
```

```
[Out] int((a+b*arcsin(d*x+c))^(5/2)/(d*e*x+c*e),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b \arcsin(dx + c) + a)^{\frac{5}{2}}}{dex + ce} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(5/2)/(d*e*x+c*e),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(5/2)/(d*e*x + c*e), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(5/2)/(d*e*x+c*e),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**(5/2)/(d*e*x+c*e),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b \arcsin (dx + c) + a)^{\frac{5}{2}}}{dex + ce} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(5/2)/(d*e*x+c*e),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(5/2)/(d*e*x + c*e), x)
```

3.255 $\int (ce+dex)^2 \left(a+b\sin^{-1}(c+dx)\right)^{7/2} dx$

Optimal. Leaf size=518

$$\frac{105\sqrt{\frac{\pi}{2}}b^{7/2}e^2\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{32d}-\frac{35\sqrt{\frac{\pi}{6}}b^{7/2}e^2\cos\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{864d}+\frac{105\sqrt{\frac{\pi}{2}}b^{7/2}e}{}$$

```
[Out] (-175*b^3*e^2*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(54*d) - (
35*b^3*e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(
216*d) - (35*b^2*e^2*(c + d*x)*(a + b*ArcSin[c + d*x])^(3/2))/(18*d) - (35*
b^2*e^2*(c + d*x)^3*(a + b*ArcSin[c + d*x])^(3/2))/(108*d) + (7*b*e^2*Sqrt[
1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^(5/2))/(9*d) + (7*b*e^2*(c + d*x)^
2*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^(5/2))/(18*d) + (e^2*(c + d
*x)^3*(a + b*ArcSin[c + d*x])^(7/2))/(3*d) + (105*b^(7/2)*e^2*Sqrt[Pi/2]*Co
s[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(32*d) -
 (35*b^(7/2)*e^2*Sqrt[Pi/6]*Cos[(3*a)/b]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*Ar
cSin[c + d*x]])/Sqrt[b]])/(864*d) + (105*b^(7/2)*e^2*Sqrt[Pi/2]*FresnelS[(S
qrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(32*d) - (35*b^(7
/2)*e^2*Sqrt[Pi/6]*FresnelS[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b
]]*Sin[(3*a)/b])/(864*d)
```

Rubi [A] time = 1.61466, antiderivative size = 518, normalized size of antiderivative = 1., number of steps used = 35, number of rules used = 14, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.56, Rules used = {4805, 12, 4629, 4707, 4677, 4619, 4623, 3306, 3305, 3351, 3304, 3352, 4635, 4406}

$$\frac{105\sqrt{\frac{\pi}{2}}b^{7/2}e^2\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{32d}-\frac{35\sqrt{\frac{\pi}{6}}b^{7/2}e^2\cos\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{864d}+\frac{105\sqrt{\frac{\pi}{2}}b^{7/2}e}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x])^(7/2),x]
```


```
[Out] (-175*b^3*e^2*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(54*d) - (
35*b^3*e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(
216*d) - (35*b^2*e^2*(c + d*x)*(a + b*ArcSin[c + d*x])^(3/2))/(18*d) - (35*
b^2*e^2*(c + d*x)^3*(a + b*ArcSin[c + d*x])^(3/2))/(108*d) + (7*b*e^2*Sqrt[
1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^(5/2))/(9*d) + (7*b*e^2*(c + d*x)^
2*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^(5/2))/(18*d) + (e^2*(c + d
```

```
*x)^3*(a + b*ArcSin[c + d*x])^(7/2))/(3*d) + (105*b^(7/2)*e^2*Sqrt[Pi/2]*Co
s[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(32*d) -
 (35*b^(7/2)*e^2*Sqrt[Pi/6]*Cos[(3*a)/b]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*Ar
cSin[c + d*x]])/Sqrt[b]])/(864*d) + (105*b^(7/2)*e^2*Sqrt[Pi/2]*FresnelS[(S
qrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(32*d) - (35*b^(7
/2)*e^2*Sqrt[Pi/6]*FresnelS[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b
]]*Sin[(3*a)/b])/(864*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4629

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^(m + 1)*(a + b*ArcSin[c*x])^n)/(m + 1), x] - Dist[(b*c*n)/(m + 1), Int[(x
^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
```

```
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rubi steps

$$\int (ce+dex)^2 \left(a+b\sin^{-1}(c+dx)\right)^{7/2} dx = \frac{\text{Subst}\left(\int e^2x^2\left(a+b\sin^{-1}(x)\right)^{7/2} dx, x, c+dx\right)}{d}$$

$$= \frac{e^2\,\text{Subst}\left(\int x^2\left(a+b\sin^{-1}(x)\right)^{7/2} dx, x, c+dx\right)}{d}$$

$$= \frac{e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}{3d} - \frac{\left(7be^2\right)\text{Subst}\left(\int \frac{x^3\left(a+b\sin^{-1}(x)\right)^{5/2}}{\sqrt{1-x^2}} dx, x, c\right.}{6d}$$

$$= \frac{7be^2(c+dx)^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{18d} + \frac{e^2(c+dx)^3\left(a+b\sin^{-}\right.}{3d}$$

$$= -\frac{35b^2e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{108d} + \frac{7be^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c\right.}{9d}$$

$$= -\frac{35b^3e^2(c+dx)^2\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{216d} - \frac{35b^2e^2(c+dx)\left(a+b\right.}{18d}$$

$$= -\frac{175b^3e^2\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{54d} - \frac{35b^3e^2(c+dx)^2\sqrt{1-(c+dx)}}{216d}$$

$$= -\frac{175b^3e^2\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{54d} - \frac{35b^3e^2(c+dx)^2\sqrt{1-(c+dx)}}{216d}$$

$$= -\frac{175b^3e^2\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{54d} - \frac{35b^3e^2(c+dx)^2\sqrt{1-(c+dx)}}{216d}$$

$$= -\frac{175b^3e^2\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{54d} - \frac{35b^3e^2(c+dx)^2\sqrt{1-(c+dx)}}{216d}$$

$$= -\frac{175b^3e^2\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{54d} - \frac{35b^3e^2(c+dx)^2\sqrt{1-(c+dx)}}{216d}$$

$$= -\frac{175b^3e^2\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{54d} - \frac{35b^3e^2(c+dx)^2\sqrt{1-(c+dx)}}{216d}$$

Mathematica [C] time = 0.313504, size = 267, normalized size = 0.52

$$\frac{be^2e^{-\frac{3ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^{5/2}\left(-243e^{\frac{2ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{9}{2},-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)-243e^{\frac{4ia}{b}}\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{G}\cdots\right.}{19\cdots}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] (b*e^2*(a + b*ArcSin[c + d*x])^(5/2)*(-243*E^(((2*I)*a)/b)*Sqrt[(I*(a + b*A
rcSin[c + d*x]))/b]*Gamma[9/2, ((-I)*(a + b*ArcSin[c + d*x]))/b] - 243*E^((
(4*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[9/2, (I*(a + b*Arc
Sin[c + d*x]))/b] + Sqrt[3]*(Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[9/2,
 ((-3*I)*(a + b*ArcSin[c + d*x]))/b] + E^(((6*I)*a)/b)*Sqrt[((-I)*(a + b*Ar
cSin[c + d*x]))/b]*Gamma[9/2, ((3*I)*(a + b*ArcSin[c + d*x]))/b])))/(1944*d
*E^(((3*I)*a)/b)*((a + b*ArcSin[c + d*x])^2/b^2)^(3/2))
```

Maple [B] time = 0.172, size = 1228, normalized size = 2.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(7/2),x)
```

```
[Out] 1/5184/d*e^2/(a+b*arcsin(d*x+c))^(1/2)*(5184*arcsin(d*x+c)*sin((a+b*arcsin(
d*x+c))/b-a/b)*a^3*b-22680*arcsin(d*x+c)*sin((a+b*arcsin(d*x+c))/b-a/b)*a*b
^3+13608*arcsin(d*x+c)*cos((a+b*arcsin(d*x+c))/b-a/b)*a^2*b^2+5184*arcsin(d
*x+c)^3*sin((a+b*arcsin(d*x+c))/b-a/b)*a*b^3+7776*arcsin(d*x+c)^2*sin((a+b*
arcsin(d*x+c))/b-a/b)*a^2*b^2+13608*arcsin(d*x+c)^2*cos((a+b*arcsin(d*x+c))
/b-a/b)*a*b^3+210*arcsin(d*x+c)*cos(3*(a+b*arcsin(d*x+c))/b-3*a/b)*b^4+420*
sin(3*(a+b*arcsin(d*x+c))/b-3*a/b)*a^2*b^2-432*arcsin(d*x+c)^4*sin(3*(a+b*a
rcsin(d*x+c))/b-3*a/b)*b^4-504*cos(3*(a+b*arcsin(d*x+c))/b-3*a/b)*a^3*b+210
*cos(3*(a+b*arcsin(d*x+c))/b-3*a/b)*a*b^3+420*arcsin(d*x+c)^2*sin(3*(a+b*ar
csin(d*x+c))/b-3*a/b)*b^4+8505*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x
+c))^(1/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c
))^(1/2)/b)*b^4+8505*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)
*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b
```

```
)*b^4+1296*arcsin(d*x+c)^4*sin((a+b*arcsin(d*x+c))/b-a/b)*b^4+4536*arcsin(d
*x+c)^3*cos((a+b*arcsin(d*x+c))/b-a/b)*b^4-11340*arcsin(d*x+c)^2*sin((a+b*a
rcsin(d*x+c))/b-a/b)*b^4-17010*arcsin(d*x+c)*cos((a+b*arcsin(d*x+c))/b-a/b)
*b^4-11340*sin((a+b*arcsin(d*x+c))/b-a/b)*a^2*b^2+4536*cos((a+b*arcsin(d*x+
c))/b-a/b)*a^3*b-17010*cos((a+b*arcsin(d*x+c))/b-a/b)*a*b^3-504*arcsin(d*x+
c)^3*cos(3*(a+b*arcsin(d*x+c))/b-3*a/b)*b^4+1296*sin((a+b*arcsin(d*x+c))/b-
a/b)*a^4-1512*arcsin(d*x+c)^2*cos(3*(a+b*arcsin(d*x+c))/b-3*a/b)*a*b^3+840*
arcsin(d*x+c)*sin(3*(a+b*arcsin(d*x+c))/b-3*a/b)*a*b^3-1512*arcsin(d*x+c)*c
os(3*(a+b*arcsin(d*x+c))/b-3*a/b)*a^2*b^2-2592*arcsin(d*x+c)^2*sin(3*(a+b*a
rcsin(d*x+c))/b-3*a/b)*a^2*b^2-1728*arcsin(d*x+c)*sin(3*(a+b*arcsin(d*x+c))
/b-3*a/b)*a^3*b-1728*arcsin(d*x+c)^3*sin(3*(a+b*arcsin(d*x+c))/b-3*a/b)*a*b
^3-35*3^(1/2)*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(3*
a/b)*FresnelC(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2
)/b)*b^4-35*3^(1/2)*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*
sin(3*a/b)*FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c)
)^(1/2)/b)*b^4-432*sin(3*(a+b*arcsin(d*x+c))/b-3*a/b)*a^4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dex + ce)^2 (b \arcsin (dx + c) + a)^{\frac{7}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)^2*(b*arcsin(d*x + c) + a)^(7/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2*(a+b*asin(d*x+c))**(7/2),x)
```

```
[Out] Timed out
```

Giac [B] time = 6.11319, size = 5272, normalized size = 10.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(7/2),x, algorithm="giac")
```

```
[Out] -1/4*sqrt(2)*sqrt(pi)*a^3*b^3*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a
)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*
e^(a*i/b + 2)/((b^3*i/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d) - 1/4*sqrt(2)*sqr
t(pi)*a^3*b^3*i*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b))
 - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b + 2)/((
b^3*i/sqrt(abs(b)) - b^2*sqrt(abs(b)))*d) + 1/24*sqrt(b*arcsin(d*x + c) + a
)*b^3*i*arcsin(d*x + c)^3*e^(3*i*arcsin(d*x + c) + 2)/d - 1/8*sqrt(b*arcsin
(d*x + c) + a)*b^3*i*arcsin(d*x + c)^3*e^(i*arcsin(d*x + c) + 2)/d + 1/8*sq
rt(b*arcsin(d*x + c) + a)*b^3*i*arcsin(d*x + c)^3*e^(-i*arcsin(d*x + c) + 2
)/d - 1/24*sqrt(b*arcsin(d*x + c) + a)*b^3*i*arcsin(d*x + c)^3*e^(-3*i*arcs
in(d*x + c) + 2)/d + 1/24*sqrt(pi)*a^3*b^3*i*erf(-1/2*sqrt(6)*sqrt(b*arcsin
(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/s
qrt(b))*e^(3*a*i/b + 2)/((sqrt(6)*b^(7/2)*i/abs(b) + sqrt(6)*b^(5/2))*d) +
1/24*sqrt(pi)*a^3*b^3*i*erf(1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)
*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-3*a*i/b +
2)/((sqrt(6)*b^(7/2)*i/abs(b) - sqrt(6)*b^(5/2))*d) + 1/8*sqrt(pi)*a^3*b^(5
/2)*i*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*s
qrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(3*a*i/b + 2)/((sqrt(6)*b^3*i
/abs(b) + sqrt(6)*b^2)*d) + 9/32*sqrt(2)*sqrt(pi)*a^2*b^4*erf(-1/2*sqrt(2)*
sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x
+ c) + a)*sqrt(abs(b))/b)*e^(a*i/b + 2)/((b^3*i/sqrt(abs(b)) + b^2*sqrt(abs
(b)))*d) + 1/4*sqrt(2)*sqrt(pi)*a^3*b^2*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*
x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(a
bs(b))/b)*e^(a*i/b + 2)/((b^2*i/sqrt(abs(b)) + b*sqrt(abs(b)))*d) - 9/32*sq
```

rt(2)*sqrt(pi)*a^2*b^4*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(a
bs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b
+ 2)/((b^3*i/sqrt(abs(b)) - b^2*sqrt(abs(b)))*d) + 1/4*sqrt(2)*sqrt(pi)*a^3
*b^2*i*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqr
t(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b + 2)/((b^2*i/sqr
t(abs(b)) - b*sqrt(abs(b)))*d) + 1/8*sqrt(pi)*a^3*b^(5/2)*i*erf(1/2*sqrt(6)
*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d
*x + c) + a)/sqrt(b))*e^(-3*a*i/b + 2)/((sqrt(6)*b^3*i/abs(b) - sqrt(6)*b^2
)*d) + 1/8*sqrt(b*arcsin(d*x + c) + a)*a*b^2*i*arcsin(d*x + c)^2*e^(3*i*arc
sin(d*x + c) + 2)/d - 3/8*sqrt(b*arcsin(d*x + c) + a)*a*b^2*i*arcsin(d*x +
c)^2*e^(i*arcsin(d*x + c) + 2)/d + 3/8*sqrt(b*arcsin(d*x + c) + a)*a*b^2*i*
arcsin(d*x + c)^2*e^(-i*arcsin(d*x + c) + 2)/d - 1/8*sqrt(b*arcsin(d*x + c)
 + a)*a*b^2*i*arcsin(d*x + c)^2*e^(-3*i*arcsin(d*x + c) + 2)/d - 1/8*sqrt(p
i)*a^3*b^2*i*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b)
- 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(3*a*i/b + 2)/((sqrt(6
)*b^(5/2)*i/abs(b) + sqrt(6)*b^(3/2))*d) - 1/8*sqrt(pi)*a^3*b^2*i*erf(1/2*s
qrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*ar
csin(d*x + c) + a)/sqrt(b))*e^(-3*a*i/b + 2)/((sqrt(6)*b^(5/2)*i/abs(b) - s
qrt(6)*b^(3/2))*d) - 1/16*sqrt(pi)*a^2*b^(7/2)*erf(-1/2*sqrt(6)*sqrt(b*arcs
in(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)
/sqrt(b))*e^(3*a*i/b + 2)/((sqrt(6)*b^3*i/abs(b) + sqrt(6)*b^2)*d) - 1/24*s
qrt(pi)*a^3*b^(3/2)*i*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*
i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(3*a*i/b + 2)
/((sqrt(6)*b^2*i/abs(b) + sqrt(6)*b)*d) - 9/32*sqrt(2)*sqrt(pi)*a^2*b^3*erf
(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt
(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b + 2)/((b^2*i/sqrt(abs(b))
+ b*sqrt(abs(b)))*d) - 105/128*sqrt(2)*sqrt(pi)*b^5*erf(-1/2*sqrt(2)*sqrt(b
*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) +
 a)*sqrt(abs(b))/b)*e^(a*i/b + 2)/((b^2*i/sqrt(abs(b)) + b*sqrt(abs(b)))*d)
 + 9/32*sqrt(2)*sqrt(pi)*a^2*b^3*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a
)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*
e^(-a*i/b + 2)/((b^2*i/sqrt(abs(b)) - b*sqrt(abs(b)))*d) + 105/128*sqrt(2)*
sqrt(pi)*b^5*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1
/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b + 2)/((b^2
*i/sqrt(abs(b)) - b*sqrt(abs(b)))*d) + 1/16*sqrt(pi)*a^2*b^(7/2)*erf(1/2*sq
rt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arc
sin(d*x + c) + a)/sqrt(b))*e^(-3*a*i/b + 2)/((sqrt(6)*b^3*i/abs(b) - sqrt(6
)*b^2)*d) - 1/24*sqrt(pi)*a^3*b^(3/2)*i*erf(1/2*sqrt(6)*sqrt(b*arcsin(d*x +
 c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b)
)*e^(-3*a*i/b + 2)/((sqrt(6)*b^2*i/abs(b) - sqrt(6)*b)*d) + 1/8*sqrt(b*arcs
in(d*x + c) + a)*a^2*b*i*arcsin(d*x + c)*e^(3*i*arcsin(d*x + c) + 2)/d - 35
/864*sqrt(b*arcsin(d*x + c) + a)*b^3*i*arcsin(d*x + c)*e^(3*i*arcsin(d*x +
c) + 2)/d - 7/144*sqrt(b*arcsin(d*x + c) + a)*b^3*arcsin(d*x + c)^2*e^(3*i*
arcsin(d*x + c) + 2)/d - 3/8*sqrt(b*arcsin(d*x + c) + a)*a^2*b*i*arcsin(d*x
 + c)*e^(i*arcsin(d*x + c) + 2)/d + 35/32*sqrt(b*arcsin(d*x + c) + a)*b^3*i

```
*arcsin(d*x + c)*e^(i*arcsin(d*x + c) + 2)/d + 7/16*sqrt(b*arcsin(d*x + c)
+ a)*b^3*arcsin(d*x + c)^2*e^(i*arcsin(d*x + c) + 2)/d + 3/8*sqrt(b*arcsin(
d*x + c) + a)*a^2*b*i*arcsin(d*x + c)*e^(-i*arcsin(d*x + c) + 2)/d - 35/32*
sqrt(b*arcsin(d*x + c) + a)*b^3*i*arcsin(d*x + c)*e^(-i*arcsin(d*x + c) + 2
)/d + 7/16*sqrt(b*arcsin(d*x + c) + a)*b^3*arcsin(d*x + c)^2*e^(-i*arcsin(d
*x + c) + 2)/d - 1/8*sqrt(b*arcsin(d*x + c) + a)*a^2*b*i*arcsin(d*x + c)*e^
(-3*i*arcsin(d*x + c) + 2)/d + 35/864*sqrt(b*arcsin(d*x + c) + a)*b^3*i*arc
sin(d*x + c)*e^(-3*i*arcsin(d*x + c) + 2)/d - 7/144*sqrt(b*arcsin(d*x + c)
+ a)*b^3*arcsin(d*x + c)^2*e^(-3*i*arcsin(d*x + c) + 2)/d - 1/16*sqrt(pi)*a
^2*b^3*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*
sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(3*a*i/b + 2)/((sqrt(6)*b^(5
/2)*i/abs(b) + sqrt(6)*b^(3/2))*d) + 1/16*sqrt(pi)*a^2*b^3*erf(1/2*sqrt(6)*
sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*
x + c) + a)/sqrt(b))*e^(-3*a*i/b + 2)/((sqrt(6)*b^(5/2)*i/abs(b) - sqrt(6)*
b^(3/2))*d) + 1/8*sqrt(pi)*a^2*b^(5/2)*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x +
 c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b)
)*e^(3*a*i/b + 2)/((sqrt(6)*b^2*i/abs(b) + sqrt(6)*b)*d) + 35/1728*sqrt(pi)
*b^(9/2)*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/
2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(3*a*i/b + 2)/((sqrt(6)*b^
2*i/abs(b) + sqrt(6)*b)*d) - 1/8*sqrt(pi)*a^2*b^(5/2)*erf(1/2*sqrt(6)*sqrt(
b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c
) + a)/sqrt(b))*e^(-3*a*i/b + 2)/((sqrt(6)*b^2*i/abs(b) - sqrt(6)*b)*d) - 3
5/1728*sqrt(pi)*b^(9/2)*erf(1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)
*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-3*a*i/b +
2)/((sqrt(6)*b^2*i/abs(b) - sqrt(6)*b)*d) + 1/24*sqrt(b*arcsin(d*x + c) + a
)*a^3*i*e^(3*i*arcsin(d*x + c) + 2)/d - 35/864*sqrt(b*arcsin(d*x + c) + a)*
a*b^2*i*e^(3*i*arcsin(d*x + c) + 2)/d - 7/72*sqrt(b*arcsin(d*x + c) + a)*a*
b^2*arcsin(d*x + c)*e^(3*i*arcsin(d*x + c) + 2)/d - 1/8*sqrt(b*arcsin(d*x +
 c) + a)*a^3*i*e^(i*arcsin(d*x + c) + 2)/d + 35/32*sqrt(b*arcsin(d*x + c) +
 a)*a*b^2*i*e^(i*arcsin(d*x + c) + 2)/d + 7/8*sqrt(b*arcsin(d*x + c) + a)*a
*b^2*arcsin(d*x + c)*e^(i*arcsin(d*x + c) + 2)/d + 1/8*sqrt(b*arcsin(d*x +
c) + a)*a^3*i*e^(-i*arcsin(d*x + c) + 2)/d - 35/32*sqrt(b*arcsin(d*x + c) +
 a)*a*b^2*i*e^(-i*arcsin(d*x + c) + 2)/d + 7/8*sqrt(b*arcsin(d*x + c) + a)*
a*b^2*arcsin(d*x + c)*e^(-i*arcsin(d*x + c) + 2)/d - 1/24*sqrt(b*arcsin(d*x
 + c) + a)*a^3*i*e^(-3*i*arcsin(d*x + c) + 2)/d + 35/864*sqrt(b*arcsin(d*x
+ c) + a)*a*b^2*i*e^(-3*i*arcsin(d*x + c) + 2)/d - 7/72*sqrt(b*arcsin(d*x +
 c) + a)*a*b^2*arcsin(d*x + c)*e^(-3*i*arcsin(d*x + c) + 2)/d - 7/144*sqrt(
b*arcsin(d*x + c) + a)*a^2*b*e^(3*i*arcsin(d*x + c) + 2)/d + 35/1728*sqrt(b
*arcsin(d*x + c) + a)*b^3*e^(3*i*arcsin(d*x + c) + 2)/d + 7/16*sqrt(b*arcsi
n(d*x + c) + a)*a^2*b*e^(i*arcsin(d*x + c) + 2)/d - 105/64*sqrt(b*arcsin(d*
x + c) + a)*b^3*e^(i*arcsin(d*x + c) + 2)/d + 7/16*sqrt(b*arcsin(d*x + c) +
 a)*a^2*b*e^(-i*arcsin(d*x + c) + 2)/d - 105/64*sqrt(b*arcsin(d*x + c) + a)
*b^3*e^(-i*arcsin(d*x + c) + 2)/d - 7/144*sqrt(b*arcsin(d*x + c) + a)*a^2*b
*e^(-3*i*arcsin(d*x + c) + 2)/d + 35/1728*sqrt(b*arcsin(d*x + c) + a)*b^3*e
^(-3*i*arcsin(d*x + c) + 2)/d
```

3.256 $\int (ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^{7/2}\,dx$

Optimal. Leaf size=301

$$-\frac{105\sqrt{\pi}b^{7/2}e\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{512d}+\frac{105\sqrt{\pi}b^{7/2}e\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{512d}-\frac{105b^3e(c+dx)\sqrt{1-(c}{}$$

```
[Out] (-105*b^3*e*(c + d*x)*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(1
28*d) + (35*b^2*e*(a + b*ArcSin[c + d*x])^(3/2))/(64*d) - (35*b^2*e*(c + d*
x)^2*(a + b*ArcSin[c + d*x])^(3/2))/(32*d) + (7*b*e*(c + d*x)*Sqrt[1 - (c +
 d*x)^2]*(a + b*ArcSin[c + d*x])^(5/2))/(8*d) - (e*(a + b*ArcSin[c + d*x])^
(7/2))/(4*d) + (e*(c + d*x)^2*(a + b*ArcSin[c + d*x])^(7/2))/(2*d) + (105*b
^(7/2)*e*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sq
rt[b]*Sqrt[Pi])])/(512*d) - (105*b^(7/2)*e*Sqrt[Pi]*FresnelC[(2*Sqrt[a + b*
ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(512*d)
```

Rubi [A] time = 0.762957, antiderivative size = 301, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 12, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.522, Rules used = {4805, 12, 4629, 4707, 4641, 4635, 4406, 3306, 3305, 3351, 3304, 3352}

$$-\frac{105\sqrt{\pi}b^{7/2}e\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{512d}+\frac{105\sqrt{\pi}b^{7/2}e\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{512d}-\frac{105b^3e(c+dx)\sqrt{1-(c}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(7/2),x]
```


```
[Out] (-105*b^3*e*(c + d*x)*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(1
28*d) + (35*b^2*e*(a + b*ArcSin[c + d*x])^(3/2))/(64*d) - (35*b^2*e*(c + d*
x)^2*(a + b*ArcSin[c + d*x])^(3/2))/(32*d) + (7*b*e*(c + d*x)*Sqrt[1 - (c +
 d*x)^2]*(a + b*ArcSin[c + d*x])^(5/2))/(8*d) - (e*(a + b*ArcSin[c + d*x])^
(7/2))/(4*d) + (e*(c + d*x)^2*(a + b*ArcSin[c + d*x])^(7/2))/(2*d) + (105*b
^(7/2)*e*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sq
rt[b]*Sqrt[Pi])])/(512*d) - (105*b^(7/2)*e*Sqrt[Pi]*FresnelC[(2*Sqrt[a + b*
ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(512*d)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4629

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^(m + 1)*(a + b*ArcSin[c*x])^n)/(m + 1), x] - Dist[(b*c*n)/(m + 1), Int[(x
^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int (ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^{7/2}\,dx=\frac{\text{Subst}\left(\int ex\left(a+b\sin^{-1}(x)\right)^{7/2}\,dx,x,c+dx\right)}{d}$$

$$=\frac{e\,\text{Subst}\left(\int x\left(a+b\sin^{-1}(x)\right)^{7/2}\,dx,x,c+dx\right)}{d}$$

$$=\frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}{2d}-\frac{(7be)\,\text{Subst}\left(\int\frac{x^2\left(a+b\sin^{-1}(x)\right)^{5/2}}{\sqrt{1-x^2}}\,dx,x,c+\right.}{4d}$$

$$=\frac{7be(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{8d}+\frac{e(c+dx)^2\left(a+b\sin^{-1}(c\right.}{2d}$$

$$=-\frac{35b^2e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{32d}+\frac{7be(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin\right.}{8d}$$

$$=-\frac{105b^3e(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{128d}-\frac{35b^2e(c+dx)^2\left(a+b\sin\right.}{32d}$$

$$=-\frac{105b^3e(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{128d}+\frac{35b^2e\left(a+b\sin^{-1}(c+\right.}{64d}$$

$$=-\frac{105b^3e(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{128d}+\frac{35b^2e\left(a+b\sin^{-1}(c+\right.}{64d}$$

$$=-\frac{105b^3e(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{128d}+\frac{35b^2e\left(a+b\sin^{-1}(c+\right.}{64d}$$

$$=-\frac{105b^3e(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{128d}+\frac{35b^2e\left(a+b\sin^{-1}(c+\right.}{64d}$$

$$=-\frac{105b^3e(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{128d}+\frac{35b^2e\left(a+b\sin^{-1}(c+\right.}{64d}$$

$$=-\frac{105b^3e(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{128d}+\frac{35b^2e\left(a+b\sin^{-1}(c+\right.}{64d}$$

Mathematica [C] time = 0.0616176, size = 137, normalized size = 0.46

$$-\frac{b^4 e e^{-\frac{2ia}{b}}\left(\sqrt{-\frac{i(a+b\sin^{-1}(c+dx))}{b}}\text{Gamma}\left(\frac{9}{2},-\frac{2i(a+b\sin^{-1}(c+dx))}{b}\right)+e^{\frac{4ia}{b}}\sqrt{\frac{i(a+b\sin^{-1}(c+dx))}{b}}\text{Gamma}\left(\frac{9}{2},\frac{2i(a+b\sin^{-1}(c+dx))}{b}\right)\right)}{64\sqrt{2}d\sqrt{a+b\sin^{-1}(c+dx)}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] -(b^4*e*(Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[9/2, ((-2*I)*(a + b*A
rcSin[c + d*x]))/b] + E^(((4*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*G
amma[9/2, ((2*I)*(a + b*ArcSin[c + d*x]))/b]))/(64*Sqrt[2]*d*E^(((2*I)*a)/b
)*Sqrt[a + b*ArcSin[c + d*x]])
```

Maple [B] time = 0.116, size = 622, normalized size = 2.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(7/2),x)
```

```
[Out] -1/512*e/d*b*(128*arcsin(d*x+c)^3*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos
(2*(a+b*arcsin(d*x+c))/b-2*a/b)*Pi^(1/2)*b^3+384*arcsin(d*x+c)^2*(1/b)^(1/2
)*(a+b*arcsin(d*x+c))^(1/2)*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*Pi^(1/2)*a*b
^2-224*arcsin(d*x+c)^2*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(2*(a+b*arc
sin(d*x+c))/b-2*a/b)*Pi^(1/2)*b^3+384*arcsin(d*x+c)*(1/b)^(1/2)*(a+b*arcsin
(d*x+c))^(1/2)*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*Pi^(1/2)*a^2*b-280*arcsin
(d*x+c)*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(2*(a+b*arcsin(d*x+c))/b-2
*a/b)*Pi^(1/2)*b^3-448*arcsin(d*x+c)*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*
sin(2*(a+b*arcsin(d*x+c))/b-2*a/b)*Pi^(1/2)*a*b^2+128*(1/b)^(1/2)*(a+b*arcs
in(d*x+c))^(1/2)*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*Pi^(1/2)*a^3-280*(1/b)^
(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*Pi^(1/2)
*a*b^2-224*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(2*(a+b*arcsin(d*x+c))/
b-2*a/b)*Pi^(1/2)*a^2*b+210*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(2*(a+
b*arcsin(d*x+c))/b-2*a/b)*Pi^(1/2)*b^3-105*Pi*b^3*cos(2*a/b)*FresnelS(2/Pi^
(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)+105*Pi*b^3*sin(2*a/b)*Fresne
lC(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b))*(1/b)^(1/2)/Pi^(1/2
)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dex + ce)(b \arcsin (dx + c) + a)^{\frac{7}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)*(b*arcsin(d*x + c) + a)^(7/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*asin(d*x+c))**(7/2),x)
```

```
[Out] Timed out
```

Giac [B] time = 2.73384, size = 2728, normalized size = 9.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(7/2),x, algorithm="giac")
```

```
[Out] 9/64*sqrt(pi)*a^2*b^(7/2)*i*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(
b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b + 1)/((b^3*i/abs(b) +
b^2)*d) + 9/64*sqrt(pi)*a^2*b^(7/2)*i*erf(sqrt(b*arcsin(d*x + c) + a)*sqrt(
b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b + 1)/((b^3*i
/abs(b) - b^2)*d) - 7/32*sqrt(b*arcsin(d*x + c) + a)*b^3*i*arcsin(d*x + c)^
2*e^(2*i*arcsin(d*x + c) + 1)/d - 1/8*sqrt(b*arcsin(d*x + c) + a)*b^3*arcsi
n(d*x + c)^3*e^(2*i*arcsin(d*x + c) + 1)/d + 7/32*sqrt(b*arcsin(d*x + c) +
a)*b^3*i*arcsin(d*x + c)^2*e^(-2*i*arcsin(d*x + c) + 1)/d - 1/8*sqrt(b*arcs
in(d*x + c) + a)*b^3*arcsin(d*x + c)^3*e^(-2*i*arcsin(d*x + c) + 1)/d + 1/1
6*sqrt(pi)*a^3*b^3*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt
(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b + 1)/((b^(7/2)*i/abs(b) + b^(5/
2))*d) + 9/64*sqrt(pi)*a^2*b^3*i*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i
/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b + 1)/((b^(5/2)*i/
abs(b) + b^(3/2))*d) - 1/16*sqrt(pi)*a^3*b^3*erf(sqrt(b*arcsin(d*x + c) + a
)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b + 1)/
((b^(7/2)*i/abs(b) - b^(5/2))*d) + 9/64*sqrt(pi)*a^2*b^3*i*erf(sqrt(b*arcsi
n(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(
-2*a*i/b + 1)/((b^(5/2)*i/abs(b) - b^(3/2))*d) + 3/16*sqrt(pi)*a^3*b^(5/2)*
erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c)
+ a)/sqrt(b))*e^(2*a*i/b + 1)/((b^3*i/abs(b) + b^2)*d) - 9/32*sqrt(pi)*a^2*
b^(5/2)*i*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin
(d*x + c) + a)/sqrt(b))*e^(2*a*i/b + 1)/((b^2*i/abs(b) + b)*d) - 105/1024*s
qrt(pi)*b^(9/2)*i*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(
b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b + 1)/((b^2*i/abs(b) + b)*d) - 3/
16*sqrt(pi)*a^3*b^(5/2)*erf(sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) -
sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b + 1)/((b^3*i/abs(b) - b^2)
*d) - 9/32*sqrt(pi)*a^2*b^(5/2)*i*erf(sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i
/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b + 1)/((b^2*i/abs
(b) - b)*d) - 105/1024*sqrt(pi)*b^(9/2)*i*erf(sqrt(b*arcsin(d*x + c) + a)*s
qrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b + 1)/((b
^2*i/abs(b) - b)*d) - 7/16*sqrt(b*arcsin(d*x + c) + a)*a*b^2*i*arcsin(d*x +
 c)*e^(2*i*arcsin(d*x + c) + 1)/d - 3/8*sqrt(b*arcsin(d*x + c) + a)*a*b^2*a
rcsin(d*x + c)^2*e^(2*i*arcsin(d*x + c) + 1)/d + 7/16*sqrt(b*arcsin(d*x + c
) + a)*a*b^2*i*arcsin(d*x + c)*e^(-2*i*arcsin(d*x + c) + 1)/d - 3/8*sqrt(b*
arcsin(d*x + c) + a)*a*b^2*arcsin(d*x + c)^2*e^(-2*i*arcsin(d*x + c) + 1)/d
 - 3/16*sqrt(pi)*a^3*b^2*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b)
- sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b + 1)/((b^(5/2)*i/abs(b) +
 b^(3/2))*d) + 3/16*sqrt(pi)*a^3*b^2*erf(sqrt(b*arcsin(d*x + c) + a)*sqrt(b
)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b + 1)/((b^(5/2
)*i/abs(b) - b^(3/2))*d) - 1/16*sqrt(pi)*a^3*b^(3/2)*erf(-sqrt(b*arcsin(d*x
 + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i
/b + 1)/((b^2*i/abs(b) + b)*d) + 1/16*sqrt(pi)*a^3*b^(3/2)*erf(sqrt(b*arcsi
```

```
n(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(
-2*a*i/b + 1)/((b^2*i/abs(b) - b)*d) - 7/32*sqrt(b*arcsin(d*x + c) + a)*a^2
*b*i*e^(2*i*arcsin(d*x + c) + 1)/d + 105/512*sqrt(b*arcsin(d*x + c) + a)*b^
3*i*e^(2*i*arcsin(d*x + c) + 1)/d - 3/8*sqrt(b*arcsin(d*x + c) + a)*a^2*b*a
rcsin(d*x + c)*e^(2*i*arcsin(d*x + c) + 1)/d + 35/128*sqrt(b*arcsin(d*x + c
) + a)*b^3*arcsin(d*x + c)*e^(2*i*arcsin(d*x + c) + 1)/d + 7/32*sqrt(b*arcs
in(d*x + c) + a)*a^2*b*i*e^(-2*i*arcsin(d*x + c) + 1)/d - 105/512*sqrt(b*ar
csin(d*x + c) + a)*b^3*i*e^(-2*i*arcsin(d*x + c) + 1)/d - 3/8*sqrt(b*arcsin
(d*x + c) + a)*a^2*b*arcsin(d*x + c)*e^(-2*i*arcsin(d*x + c) + 1)/d + 35/12
8*sqrt(b*arcsin(d*x + c) + a)*b^3*arcsin(d*x + c)*e^(-2*i*arcsin(d*x + c) +
 1)/d - 1/8*sqrt(b*arcsin(d*x + c) + a)*a^3*e^(2*i*arcsin(d*x + c) + 1)/d +
 35/128*sqrt(b*arcsin(d*x + c) + a)*a*b^2*e^(2*i*arcsin(d*x + c) + 1)/d - 1
/8*sqrt(b*arcsin(d*x + c) + a)*a^3*e^(-2*i*arcsin(d*x + c) + 1)/d + 35/128*
sqrt(b*arcsin(d*x + c) + a)*a*b^2*e^(-2*i*arcsin(d*x + c) + 1)/d
```

3.257 $\int \left(a+b\sin^{-1}(c+dx)\right)^{7/2}\,dx$

Optimal. Leaf size=243

$$\frac{105\sqrt{\frac{\pi}{2}}b^{7/2}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{8d}+\frac{105\sqrt{\frac{\pi}{2}}b^{7/2}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{8d}-\frac{105b^3\sqrt{1-(c+dx)^2}\sqrt{}}{8d}$$

```
[Out] (-105*b^3*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(8*d) - (35*b^
2*(c + d*x)*(a + b*ArcSin[c + d*x])^(3/2))/(4*d) + (7*b*Sqrt[1 - (c + d*x)^
2]*(a + b*ArcSin[c + d*x])^(5/2))/(2*d) + ((c + d*x)*(a + b*ArcSin[c + d*x]
)^(7/2))/d + (105*b^(7/2)*Sqrt[Pi/2]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a +
 b*ArcSin[c + d*x]])/Sqrt[b]])/(8*d) + (105*b^(7/2)*Sqrt[Pi/2]*FresnelS[(Sq
rt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(8*d)
```

Rubi [A] time = 0.410371, antiderivative size = 243, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 9, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.643, Rules used = {4803, 4619, 4677, 4623, 3306, 3305, 3351, 3304, 3352}

$$\frac{105\sqrt{\frac{\pi}{2}}b^{7/2}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{8d}+\frac{105\sqrt{\frac{\pi}{2}}b^{7/2}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{8d}-\frac{105b^3\sqrt{1-(c+dx)^2}\sqrt{}}{8d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(7/2),x]
```


```
[Out] (-105*b^3*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(8*d) - (35*b^
2*(c + d*x)*(a + b*ArcSin[c + d*x])^(3/2))/(4*d) + (7*b*Sqrt[1 - (c + d*x)^
2]*(a + b*ArcSin[c + d*x])^(5/2))/(2*d) + ((c + d*x)*(a + b*ArcSin[c + d*x]
)^(7/2))/d + (105*b^(7/2)*Sqrt[Pi/2]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a +
 b*ArcSin[c + d*x]])/Sqrt[b]])/(8*d) + (105*b^(7/2)*Sqrt[Pi/2]*FresnelS[(Sq
rt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(8*d)
```


Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \left(a+b\sin^{-1}(c+dx)\right)^{7/2}\,dx=\frac{\text{Subst}\left(\int \left(a+b\sin^{-1}(x)\right)^{7/2}\,dx,x,c+dx\right)}{d}$$

$$=\frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}{d}-\frac{(7b)\,\text{Subst}\left(\int \frac{x\left(a+b\sin^{-1}(x)\right)^{5/2}}{\sqrt{1-x^2}}\,dx,x,c+dx\right)}{2d}$$

$$=\frac{7b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{2d}+\frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}{d}-\frac{\left(35b^2\right)\text{S}}{}$$

$$=-\frac{35b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{4d}+\frac{7b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{2d}+\frac{(c}{}$$

$$=-\frac{105b^3\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d}-\frac{35b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{4d}+\frac{7}{}$$

$$=-\frac{105b^3\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d}-\frac{35b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{4d}+\frac{7}{}$$

$$=-\frac{105b^3\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d}-\frac{35b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{4d}+\frac{7}{}$$

$$=-\frac{105b^3\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d}-\frac{35b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{4d}+\frac{7}{}$$

$$=-\frac{105b^3\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d}-\frac{35b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{4d}+\frac{7}{}$$

Mathematica [C] time = 2.00505, size = 551, normalized size = 2.27

$$e^{-\frac{ia}{b}}\left(\frac{4\left(4a^3\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{3}{2},-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)+4a^3e^{\frac{2ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{3}{2},\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)+e^{\frac{ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)\left(7\left(4a^2\sqrt{-c^2\cdots}\right.\right.\right.}{\cdots}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] (((8*I)*a^3*(-1 + E^(((2*I)*a)/b)) + 105*b^3*(1 + E^(((2*I)*a)/b)))*Sqrt[2*
Pi]*Sqrt[a + b*ArcSin[c + d*x]]*FresnelC[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b
*ArcSin[c + d*x]]] - I*(105*b^3*(-1 + E^(((2*I)*a)/b)) + (8*I)*a^3*(1 + E^(
((2*I)*a)/b)))*Sqrt[2*Pi]*Sqrt[a + b*ArcSin[c + d*x]]*FresnelS[Sqrt[b^(-1)]
*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]] + (4*(E^((I*a)/b)*(a + b*ArcSin[c
+ d*x])*(7*(-10*a*b*(c + d*x) + 4*a^2*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2] - 1
5*b^2*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2]) + (24*a^2*(c + d*x) - 70*b^2*(c +
d*x) + 56*a*b*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2])*ArcSin[c + d*x] + 4*b*(6*a
*(c + d*x) + 7*b*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2])*ArcSin[c + d*x]^2 + 8*b
^2*(c + d*x)*ArcSin[c + d*x]^3) + 4*a^3*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))
/b]*Gamma[3/2, ((-I)*(a + b*ArcSin[c + d*x]))/b] + 4*a^3*E^(((2*I)*a)/b)*Sq
rt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, (I*(a + b*ArcSin[c + d*x]))/b]
))/Sqrt[b^(-1)])/(32*Sqrt[b^(-1)]*d*E^((I*a)/b)*Sqrt[a + b*ArcSin[c + d*x]]
)
```

Maple [B] time = 0., size = 608, normalized size = 2.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^(7/2),x)
```

```
[Out] 1/16/d/(a+b*arcsin(d*x+c))^(1/2)*(105*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arc
sin(d*x+c))^(1/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsi
n(d*x+c))^(1/2)/b)*b^4+105*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))
^(1/2)*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(
1/2)/b)*b^4+16*arcsin(d*x+c)^4*sin((a+b*arcsin(d*x+c))/b-a/b)*b^4+64*arcsin
```

```
(d*x+c)^3*sin((a+b*arcsin(d*x+c))/b-a/b)*a*b^3+56*arcsin(d*x+c)^3*cos((a+b*
arcsin(d*x+c))/b-a/b)*b^4+96*arcsin(d*x+c)^2*sin((a+b*arcsin(d*x+c))/b-a/b)
*a^2*b^2-140*arcsin(d*x+c)^2*sin((a+b*arcsin(d*x+c))/b-a/b)*b^4+168*arcsin(
d*x+c)^2*cos((a+b*arcsin(d*x+c))/b-a/b)*a*b^3+64*arcsin(d*x+c)*sin((a+b*arc
sin(d*x+c))/b-a/b)*a^3*b-280*arcsin(d*x+c)*sin((a+b*arcsin(d*x+c))/b-a/b)*a
*b^3+168*arcsin(d*x+c)*cos((a+b*arcsin(d*x+c))/b-a/b)*a^2*b^2-210*arcsin(d*
x+c)*cos((a+b*arcsin(d*x+c))/b-a/b)*b^4+16*sin((a+b*arcsin(d*x+c))/b-a/b)*a
^4-140*sin((a+b*arcsin(d*x+c))/b-a/b)*a^2*b^2+56*cos((a+b*arcsin(d*x+c))/b-
a/b)*a^3*b-210*cos((a+b*arcsin(d*x+c))/b-a/b)*a*b^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (b \arcsin(dx+c)+a)^{\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(7/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**(7/2),x)
```

[Out] Timed out

Giac [B] time = 3.28124, size = 2175, normalized size = 8.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*arcsin(d*x+c))^(7/2),x, algorithm="giac")

```
[Out] -sqrt(2)*sqrt(pi)*a^3*b^3*i*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/
sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a
*i/b)/((b^3*i/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d) - sqrt(2)*sqrt(pi)*a^3*b^
3*i*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2
)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^3*i/sqrt(abs(b
)) - b^2*sqrt(abs(b)))*d) - 1/2*sqrt(b*arcsin(d*x + c) + a)*b^3*i*arcsin(d*
x + c)^3*e^(i*arcsin(d*x + c))/d + 1/2*sqrt(b*arcsin(d*x + c) + a)*b^3*i*ar
csin(d*x + c)^3*e^(-i*arcsin(d*x + c))/d + 9/8*sqrt(2)*sqrt(pi)*a^2*b^4*erf
(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt
(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b)/((b^3*i/sqrt(abs(b)) + b^
2*sqrt(abs(b)))*d) + sqrt(2)*sqrt(pi)*a^3*b^2*i*erf(-1/2*sqrt(2)*sqrt(b*arc
sin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*
sqrt(abs(b))/b)*e^(a*i/b)/((b^2*i/sqrt(abs(b)) + b*sqrt(abs(b)))*d) - 9/8*s
qrt(2)*sqrt(pi)*a^2*b^4*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(
abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b
)/((b^3*i/sqrt(abs(b)) - b^2*sqrt(abs(b)))*d) + sqrt(2)*sqrt(pi)*a^3*b^2*i*
erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sq
rt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^2*i/sqrt(abs(b)) -
 b*sqrt(abs(b)))*d) - 3/2*sqrt(b*arcsin(d*x + c) + a)*a*b^2*i*arcsin(d*x +
c)^2*e^(i*arcsin(d*x + c))/d + 3/2*sqrt(b*arcsin(d*x + c) + a)*a*b^2*i*arcs
in(d*x + c)^2*e^(-i*arcsin(d*x + c))/d - 9/8*sqrt(2)*sqrt(pi)*a^2*b^3*erf(-
1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b
*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b)/((b^2*i/sqrt(abs(b)) + b*sq
rt(abs(b)))*d) - 105/32*sqrt(2)*sqrt(pi)*b^5*erf(-1/2*sqrt(2)*sqrt(b*arcsin
(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqr
t(abs(b))/b)*e^(a*i/b)/((b^2*i/sqrt(abs(b)) + b*sqrt(abs(b)))*d) + 9/8*sqrt
(2)*sqrt(pi)*a^2*b^3*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs
(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/(
(b^2*i/sqrt(abs(b)) - b*sqrt(abs(b)))*d) + 105/32*sqrt(2)*sqrt(pi)*b^5*erf(
1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b
*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b)/((b^2*i/sqrt(abs(b)) - b*s
qrt(abs(b)))*d) - 3/2*sqrt(b*arcsin(d*x + c) + a)*a^2*b*i*arcsin(d*x + c)*e
```

```
^(i*arcsin(d*x + c))/d + 35/8*sqrt(b*arcsin(d*x + c) + a)*b^3*i*arcsin(d*x
+ c)*e^(i*arcsin(d*x + c))/d + 7/4*sqrt(b*arcsin(d*x + c) + a)*b^3*arcsin(d
*x + c)^2*e^(i*arcsin(d*x + c))/d + 3/2*sqrt(b*arcsin(d*x + c) + a)*a^2*b*i
*arcsin(d*x + c)*e^(-i*arcsin(d*x + c))/d - 35/8*sqrt(b*arcsin(d*x + c) + a
)*b^3*i*arcsin(d*x + c)*e^(-i*arcsin(d*x + c))/d + 7/4*sqrt(b*arcsin(d*x +
c) + a)*b^3*arcsin(d*x + c)^2*e^(-i*arcsin(d*x + c))/d - 1/2*sqrt(b*arcsin(
d*x + c) + a)*a^3*i*e^(i*arcsin(d*x + c))/d + 35/8*sqrt(b*arcsin(d*x + c) +
 a)*a*b^2*i*e^(i*arcsin(d*x + c))/d + 7/2*sqrt(b*arcsin(d*x + c) + a)*a*b^2
*arcsin(d*x + c)*e^(i*arcsin(d*x + c))/d + 1/2*sqrt(b*arcsin(d*x + c) + a)*
a^3*i*e^(-i*arcsin(d*x + c))/d - 35/8*sqrt(b*arcsin(d*x + c) + a)*a*b^2*i*e
^(-i*arcsin(d*x + c))/d + 7/2*sqrt(b*arcsin(d*x + c) + a)*a*b^2*arcsin(d*x
+ c)*e^(-i*arcsin(d*x + c))/d + 7/4*sqrt(b*arcsin(d*x + c) + a)*a^2*b*e^(i*
arcsin(d*x + c))/d - 105/16*sqrt(b*arcsin(d*x + c) + a)*b^3*e^(i*arcsin(d*x
 + c))/d + 7/4*sqrt(b*arcsin(d*x + c) + a)*a^2*b*e^(-i*arcsin(d*x + c))/d -
 105/16*sqrt(b*arcsin(d*x + c) + a)*b^3*e^(-i*arcsin(d*x + c))/d
```

3.258 $\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}{ce+dex}\,dx$

Optimal. Leaf size=28

$$\frac{\text{Unintegrable}\left(\frac{\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}{c+dx},x\right)}{e}$$

[Out] Unintegrable[(a + b*ArcSin[c + d*x])^(7/2)/(c + d*x), x]/e

---

Rubi [A] time = 0.0946881, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}{ce+dex}\,dx$$

Verification is Not applicable to the result.

[In] Int[(a + b*ArcSin[c + d*x])^(7/2)/(c*e + d*e*x),x]

[Out] Defer[Subst][Defer[Int][(a + b*ArcSin[x])^(7/2)/x, x], x, c + d*x]/(d*e)

Rubi steps

$$\begin{aligned}\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}{ce+dex}\,dx &= \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^{7/2}}{ex}\,dx,x,c+dx\right)}{d}\\ &= \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^{7/2}}{x}\,dx,x,c+dx\right)}{de}\end{aligned}$$

Mathematica [A] time = 1.35545, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}{ce+dex}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(7/2)/(c*e + d*e*x),x]
```

```
[Out] Integrate[(a + b*ArcSin[c + d*x])^(7/2)/(c*e + d*e*x), x]
```

Maple [A] time = 0.195, size = 0, normalized size = 0.

$$\int \frac{1}{dex+ce}\left(a+b\arcsin\left(dx+c\right)\right)^{\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^(7/2)/(d*e*x+c*e),x)
```

```
[Out] int((a+b*arcsin(d*x+c))^(7/2)/(d*e*x+c*e),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\arcsin\left(dx+c\right)+a\right)^{\frac{7}{2}}}{dex+ce}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(7/2)/(d*e*x+c*e),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(7/2)/(d*e*x + c*e), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(7/2)/(d*e*x+c*e),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**(7/2)/(d*e*x+c*e),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b \arcsin(dx+c)+a)^{\frac{7}{2}}}{dex+ce}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(7/2)/(d*e*x+c*e),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(7/2)/(d*e*x + c*e), x)
```

3.259 $\int \frac{(ce+dex)^4}{\sqrt{a+b\sin^{-1}(c+dx)}}\,dx$

Optimal. Leaf size=365

$$\frac{\sqrt{\frac{\pi}{2}}e^4\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{4\sqrt{b}d}-\frac{\sqrt{\frac{3\pi}{2}}e^4\cos\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{8\sqrt{b}d}+\frac{\sqrt{\frac{\pi}{10}}e^4\cos\left(\frac{5a}{b}\right)\text{Fresne}}{8}$$

```
[Out] (e^4*Sqrt[Pi/2]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/
Sqrt[b]])/(4*Sqrt[b]*d) - (e^4*Sqrt[(3*Pi)/2]*Cos[(3*a)/b]*FresnelC[(Sqrt[6
/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(8*Sqrt[b]*d) + (e^4*Sqrt[Pi/10
]*Cos[(5*a)/b]*FresnelC[(Sqrt[10/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])
/(8*Sqrt[b]*d) + (e^4*Sqrt[Pi/2]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c +
 d*x]])/Sqrt[b]]*Sin[a/b])/(4*Sqrt[b]*d) - (e^4*Sqrt[(3*Pi)/2]*FresnelS[(Sq
rt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(3*a)/b])/(8*Sqrt[b]*d)
+ (e^4*Sqrt[Pi/10]*FresnelS[(Sqrt[10/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[
b]]*Sin[(5*a)/b])/(8*Sqrt[b]*d)
```

Rubi [A] time = 0.916338, antiderivative size = 365, normalized size of antiderivative = 1., number of steps used = 20, number of rules used = 9, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.36, Rules used = {4805, 12, 4635, 4406, 3306, 3305, 3351, 3304, 3352}

$$\frac{\sqrt{\frac{\pi}{2}}e^4\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{4\sqrt{b}d}-\frac{\sqrt{\frac{3\pi}{2}}e^4\cos\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{8\sqrt{b}d}+\frac{\sqrt{\frac{\pi}{10}}e^4\cos\left(\frac{5a}{b}\right)\text{Fresne}}{8}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^4/Sqrt[a + b*ArcSin[c + d*x]],x]
```


```
[Out] (e^4*Sqrt[Pi/2]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/
Sqrt[b]])/(4*Sqrt[b]*d) - (e^4*Sqrt[(3*Pi)/2]*Cos[(3*a)/b]*FresnelC[(Sqrt[6
/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(8*Sqrt[b]*d) + (e^4*Sqrt[Pi/10
]*Cos[(5*a)/b]*FresnelC[(Sqrt[10/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])
/(8*Sqrt[b]*d) + (e^4*Sqrt[Pi/2]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c +
 d*x]])/Sqrt[b]]*Sin[a/b])/(4*Sqrt[b]*d) - (e^4*Sqrt[(3*Pi)/2]*FresnelS[(Sq
rt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(3*a)/b])/(8*Sqrt[b]*d)
+ (e^4*Sqrt[Pi/10]*FresnelS[(Sqrt[10/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[
b]]*Sin[(5*a)/b])/(8*Sqrt[b]*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^4}{\sqrt{a+b\sin^{-1}(c+dx)}}\,dx = \frac{\text{Subst}\left(\int \frac{e^4x^4}{\sqrt{a+b\sin^{-1}(x)}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^4\,\text{Subst}\left(\int \frac{x^4}{\sqrt{a+b\sin^{-1}(x)}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^4\,\text{Subst}\left(\int \frac{\cos(x)\sin^4(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{e^4\,\text{Subst}\left(\int \left(\frac{\cos(x)}{8\sqrt{a+bx}} - \frac{3\cos(3x)}{16\sqrt{a+bx}} + \frac{\cos(5x)}{16\sqrt{a+bx}}\right) dx, x, \sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{e^4\,\text{Subst}\left(\int \frac{\cos(5x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{16d} + \frac{e^4\,\text{Subst}\left(\int \frac{\cos(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{8d} - \frac{(3e^4}{}$$

$$= \frac{\left(e^4\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+x\right)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{8d} - \frac{\left(3e^4\cos\left(\frac{3a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{3a}{b}+3x\right)}{\sqrt{a+bx}}\right.}{16d}$$

$$= \frac{\left(e^4\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \cos\left(\frac{x^2}{b}\right) dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{4bd} - \frac{\left(3e^4\cos\left(\frac{3a}{b}\right)\right)\text{Subst}\left(\int \text{co}\right.}{}$$

$$= \frac{e^4\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{4\sqrt{b}d} - \frac{e^4\sqrt{\frac{3\pi}{2}}\cos\left(\frac{3a}{b}\right)C\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{8\sqrt{b}d} + \frac{e^4\sqrt{\frac{\pi}{10}}\,\text{co}}{}$$

Mathematica [C] time = 0.245863, size = 370, normalized size = 1.01

$$\frac{ie^4e^{-\frac{5ia}{b}}\left(-10e^{\frac{4ia}{b}}\sqrt{-\frac{i(a+b\sin^{-1}(c+dx))}{b}}\text{Gamma}\left(\frac{1}{2},-\frac{i(a+b\sin^{-1}(c+dx))}{b}\right)+10e^{\frac{6ia}{b}}\sqrt{\frac{i(a+b\sin^{-1}(c+dx))}{b}}\text{Gamma}\left(\frac{1}{2},\frac{i(a+b\sin^{-1}(c+dx))}{b}\right)\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*e + d*e*x)^4/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] ((I/160)*e^4*(-10*E^(((4*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Ga
mma[1/2, ((-I)*(a + b*ArcSin[c + d*x]))/b] + 10*E^(((6*I)*a)/b)*Sqrt[(I*(a
+ b*ArcSin[c + d*x]))/b]*Gamma[1/2, (I*(a + b*ArcSin[c + d*x]))/b] + 5*Sqrt
[3]*E^(((2*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((-3*
I)*(a + b*ArcSin[c + d*x]))/b] - 5*Sqrt[3]*E^(((8*I)*a)/b)*Sqrt[(I*(a + b*A
rcSin[c + d*x]))/b]*Gamma[1/2, ((3*I)*(a + b*ArcSin[c + d*x]))/b] - Sqrt[5]
*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((-5*I)*(a + b*ArcSin[c
+ d*x]))/b] + Sqrt[5]*E^(((10*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*
Gamma[1/2, ((5*I)*(a + b*ArcSin[c + d*x]))/b]))/(d*E^(((5*I)*a)/b)*Sqrt[a +
 b*ArcSin[c + d*x]])
```

Maple [A] time = 0.086, size = 263, normalized size = 0.7

$$\frac{e^4\sqrt{\pi}\sqrt{2}}{80\,d}\sqrt{b^{-1}}\left(\sqrt{5}\cos\left(5\,\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{2}\sqrt{5}}{\sqrt{\pi}b}\sqrt{a+b\arcsin(dx+c)}\frac{1}{\sqrt{b^{-1}}}\right)+\sqrt{5}\sin\left(5\,\frac{a}{b}\right)\text{FresnelS}\left(\frac{\sqrt{2}\sqrt{5}}{\sqrt{\pi}b}\sqrt{a+b\arcsin\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^(1/2),x)
```

```
[Out] 1/80/d*e^4*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(5^(1/2)*cos(5*a/b)*FresnelC(2^(1/2
)/Pi^(1/2)*5^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)+5^(1/2)*sin(5*a
/b)*FresnelS(2^(1/2)/Pi^(1/2)*5^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)
/b)-5*3^(1/2)*cos(3*a/b)*FresnelC(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b
*arcsin(d*x+c))^(1/2)/b)-5*3^(1/2)*sin(3*a/b)*FresnelS(2^(1/2)/Pi^(1/2)*3^(
1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)+10*cos(a/b)*FresnelC(2^(1/2)/
Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)+10*sin(a/b)*FresnelS(2^(1
/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dex + ce)^4}{\sqrt{b \arcsin(dx + c) + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)^4/sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e^4 \left(\int \frac{c^4}{\sqrt{a + b \operatorname{asin}(c + dx)}}\,dx + \int \frac{d^4x^4}{\sqrt{a + b \operatorname{asin}(c + dx)}}\,dx + \int \frac{4cd^3x^3}{\sqrt{a + b \operatorname{asin}(c + dx)}}\,dx + \int \frac{6c^2d^2x^2}{\sqrt{a + b \operatorname{asin}(c + dx)}}\,dx\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**4/(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] e**4*(Integral(c**4/sqrt(a + b*asin(c + d*x)), x) + Integral(d**4*x**4/sqrt
(a + b*asin(c + d*x)), x) + Integral(4*c*d**3*x**3/sqrt(a + b*asin(c + d*x)
), x) + Integral(6*c**2*d**2*x**2/sqrt(a + b*asin(c + d*x)), x) + Integral(
4*c**3*d*x/sqrt(a + b*asin(c + d*x)), x))
```

Giac [A] time = 2.50202, size = 694, normalized size = 1.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] -1/16*sqrt(pi)*erf(-1/2*sqrt(10)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(
b) - 1/2*sqrt(10)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(5*a*i/b + 4)/((sq
rt(10)*b^(3/2)*i/abs(b) + sqrt(10)*sqrt(b))*d) + 1/32*sqrt(6)*sqrt(pi)*erf(
-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqr
t(b*arcsin(d*x + c) + a)/sqrt(b))*e^(3*a*i/b + 4)/(sqrt(b)*d*(b*i/abs(b) +
1)) - 1/8*sqrt(pi)*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(
b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b + 4)
/((sqrt(2)*b*i/sqrt(abs(b)) + sqrt(2)*sqrt(abs(b)))*d) + 1/8*sqrt(pi)*erf(1
/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*
arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-a*i/b + 4)/((sqrt(2)*b*i/sqrt(abs(
b)) - sqrt(2)*sqrt(abs(b)))*d) - 1/32*sqrt(6)*sqrt(pi)*erf(1/2*sqrt(6)*sqrt
(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqrt(6)*sqrt(b*arcsin(d*x +
c) + a)/sqrt(b))*e^(-3*a*i/b + 4)/(sqrt(b)*d*(b*i/abs(b) - 1)) + 1/16*sqrt(
pi)*erf(1/2*sqrt(10)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*sqr
t(10)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-5*a*i/b + 4)/((sqrt(10)*b^(3
/2)*i/abs(b) - sqrt(10)*sqrt(b))*d)
```

3.260 $\int \frac{(ce+dex)^3}{\sqrt{a+b\sin^{-1}(c+dx)}}\,dx$

Optimal. Leaf size=233

$$-\frac{\sqrt{\pi}e^3\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{4\sqrt{b}d}+\frac{\sqrt{\frac{\pi}{2}}e^3\sin\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{8\sqrt{b}d}-\frac{\sqrt{\frac{\pi}{2}}e^3\cos\left(\frac{4a}{b}\right)S\left(2\sqrt{\frac{2}{\pi}}\right.}{8\sqrt{b}d}$$

```
[Out] -(e^3*Sqrt[Pi/2]*Cos[(4*a)/b]*FresnelS[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c +
d*x]])/Sqrt[b]])/(8*Sqrt[b]*d) + (e^3*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqr
t[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(4*Sqrt[b]*d) - (e^3*Sqrt[Pi
]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b]
)/(4*Sqrt[b]*d) + (e^3*Sqrt[Pi/2]*FresnelC[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[
c + d*x]])/Sqrt[b]]*Sin[(4*a)/b])/(8*Sqrt[b]*d)
```

Rubi [A] time = 0.51703, antiderivative size = 233, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 9, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.36, Rules used = {4805, 12, 4635, 4406, 3306, 3305, 3351, 3304, 3352}

$$-\frac{\sqrt{\pi}e^3\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{4\sqrt{b}d}+\frac{\sqrt{\frac{\pi}{2}}e^3\sin\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{8\sqrt{b}d}-\frac{\sqrt{\frac{\pi}{2}}e^3\cos\left(\frac{4a}{b}\right)S\left(2\sqrt{\frac{2}{\pi}}\right.}{8\sqrt{b}d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3/Sqrt[a + b*ArcSin[c + d*x]],x]
```


```
[Out] -(e^3*Sqrt[Pi/2]*Cos[(4*a)/b]*FresnelS[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c +
d*x]])/Sqrt[b]])/(8*Sqrt[b]*d) + (e^3*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqr
t[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(4*Sqrt[b]*d) - (e^3*Sqrt[Pi
]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b]
)/(4*Sqrt[b]*d) + (e^3*Sqrt[Pi/2]*FresnelC[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[
c + d*x]])/Sqrt[b]]*Sin[(4*a)/b])/(8*Sqrt[b]*d)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^3}{\sqrt{a+b\sin^{-1}(c+dx)}}\,dx = \frac{\text{Subst}\left(\int \frac{e^3x^3}{\sqrt{a+b\sin^{-1}(x)}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^3\,\text{Subst}\left(\int \frac{x^3}{\sqrt{a+b\sin^{-1}(x)}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^3\,\text{Subst}\left(\int \frac{\cos(x)\sin^3(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{e^3\,\text{Subst}\left(\int \left(\frac{\sin(2x)}{4\sqrt{a+bx}} - \frac{\sin(4x)}{8\sqrt{a+bx}}\right)dx, x, \sin^{-1}(c+dx)\right)}{d}$$

$$= -\frac{e^3\,\text{Subst}\left(\int \frac{\sin(4x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{8d} + \frac{e^3\,\text{Subst}\left(\int \frac{\sin(2x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{4d}$$

$$= \frac{\left(e^3\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{2a}{b}+2x\right)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{4d} - \frac{\left(e^3\cos\left(\frac{4a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{4a}{b}+4x\right.}{\sqrt{a+bx}}\right.}{8d}$$

$$= \frac{\left(e^3\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \sin\left(\frac{2x^2}{b}\right)dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{2bd} - \frac{\left(e^3\cos\left(\frac{4a}{b}\right)\right)\text{Subst}\left(\int \text{s}\right.}{}$$

$$= -\frac{e^3\sqrt{\frac{\pi}{2}}\cos\left(\frac{4a}{b}\right)S\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{8\sqrt{b}d} + \frac{e^3\sqrt{\pi}\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{4\sqrt{b}d} - \frac{e^3\sqrt{\pi}C\left(\right.}{}$$

Mathematica [C] time = 0.137109, size = 249, normalized size = 1.07

$$\frac{e^3e^{-\frac{4ia}{b}}\left(-2\sqrt{2}e^{\frac{2ia}{b}}\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{1}{2},-\frac{2i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right) - 2\sqrt{2}e^{\frac{6ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{1}{2},\frac{2i\left(a+b\sin^{-1}(\right.}{b}\right.\right.}{32d\sqrt{a+b\sin}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*e + d*e*x)^3/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (e^3*(-2*Sqrt[2]*E^(((2*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gam
ma[1/2, ((-2*I)*(a + b*ArcSin[c + d*x]))/b] - 2*Sqrt[2]*E^(((6*I)*a)/b)*Sqr
t[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((2*I)*(a + b*ArcSin[c + d*x]))
/b] + Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((-4*I)*(a + b*ArcS
in[c + d*x]))/b] + E^(((8*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamm
a[1/2, ((4*I)*(a + b*ArcSin[c + d*x]))/b]))/(32*d*E^(((4*I)*a)/b)*Sqrt[a +
b*ArcSin[c + d*x]])
```

Maple [A] time = 0.066, size = 169, normalized size = 0.7

$$\frac{e^3\sqrt{\pi}}{16\,d}\sqrt{b^{-1}}\left(-\cos\left(4\,\frac{a}{b}\right)\mathrm{FresnelS}\left(2\,\frac{\sqrt{2}\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\sqrt{b^{-1}}b}\right)\sqrt{2}+\sin\left(4\,\frac{a}{b}\right)\mathrm{FresnelC}\left(2\,\frac{\sqrt{2}\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\sqrt{b^{-1}}b}\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(1/2),x)
```

```
[Out] 1/16/d*e^3*(1/b)^(1/2)*Pi^(1/2)*(-cos(4*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(1
/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)+sin(4*a/b)*FresnelC(2*2^(1/2
)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)+4*cos(2*a/b)*Fr
esnelS(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)-4*sin(2*a/b)*Fre
snelC(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dex+ce)^3}{\sqrt{b\arcsin(dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)^3/sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e^{3}\left(\int\frac{c^{3}}{\sqrt{a+b\operatorname{asin}\left(c+dx\right)}}\,dx+\int\frac{d^{3}x^{3}}{\sqrt{a+b\operatorname{asin}\left(c+dx\right)}}\,dx+\int\frac{3cd^{2}x^{2}}{\sqrt{a+b\operatorname{asin}\left(c+dx\right)}}\,dx+\int\frac{3c^{2}dx}{\sqrt{a+b\operatorname{asin}\left(c+dx\right)}}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3/(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] e**3*(Integral(c**3/sqrt(a + b*asin(c + d*x)), x) + Integral(d**3*x**3/sqrt
(a + b*asin(c + d*x)), x) + Integral(3*c*d**2*x**2/sqrt(a + b*asin(c + d*x)
), x) + Integral(3*c**2*d*x/sqrt(a + b*asin(c + d*x)), x))
```

Giac [A] time = 2.27816, size = 441, normalized size = 1.89

$$\frac{\sqrt{\pi}i\operatorname{erf}\left(-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}\sqrt{b}i}{|b|}-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}}{\sqrt{b}}\right)e^{\left(\frac{4ai}{b}+3\right)}}{16\left(\frac{\sqrt{2}b^{\frac{3}{2}}i}{|b|}+\sqrt{2}\sqrt{b}\right)d}-\frac{\sqrt{\pi}i\operatorname{erf}\left(\frac{\sqrt{b\arcsin(dx+c)+a}\sqrt{b}i}{|b|}-\frac{\sqrt{b\arcsin(dx+c)+a}}{\sqrt{b}}\right)e^{\left(-\frac{2ai}{b}+3\right)}}{8\left(\frac{b^{\frac{3}{2}}i}{|b|}-\sqrt{b}\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] 1/16*sqrt(pi)*i*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) -
 sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(4*a*i/b + 3)/((sqrt(2)*b^(
3/2)*i/abs(b) + sqrt(2)*sqrt(b))*d) - 1/8*sqrt(pi)*i*erf(sqrt(b*arcsin(d*x
+ c) + a)*sqrt(b)*i/abs(b) - sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i
```

```
/b + 3)/((b^(3/2)*i/abs(b) - sqrt(b))*d) + 1/16*sqrt(pi)*i*erf(sqrt(2)*sqrt
(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(2)*sqrt(b*arcsin(d*x + c) +
 a)/sqrt(b))*e^(-4*a*i/b + 3)/((sqrt(2)*b^(3/2)*i/abs(b) - sqrt(2)*sqrt(b))
*d) - 1/8*sqrt(pi)*i*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sq
rt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b + 3)/(sqrt(b)*d*(b*i/abs(b) +
 1))
```

3.261 $\int \frac{(ce+dex)^2}{\sqrt{a+b\sin^{-1}(c+dx)}}\,dx$

Optimal. Leaf size=243

$$\frac{\sqrt{\frac{\pi}{2}}e^2\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{2\sqrt{b}d}-\frac{\sqrt{\frac{\pi}{6}}e^2\cos\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{2\sqrt{b}d}+\frac{\sqrt{\frac{\pi}{2}}e^2\sin\left(\frac{a}{b}\right)S\left(\sqrt{\frac{2}{\pi}}\sqrt{a+\right.}{2\sqrt{b}d}$$

```
[Out] (e^2*Sqrt[Pi/2]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/
Sqrt[b]])/(2*Sqrt[b]*d) - (e^2*Sqrt[Pi/6]*Cos[(3*a)/b]*FresnelC[(Sqrt[6/Pi]
*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(2*Sqrt[b]*d) + (e^2*Sqrt[Pi/2]*Fre
snelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(2*Sqrt[b
]*d) - (e^2*Sqrt[Pi/6]*FresnelS[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sq
rt[b]]*Sin[(3*a)/b])/(2*Sqrt[b]*d)
```

Rubi [A] time = 0.566976, antiderivative size = 243, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 9, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.36, Rules used = {4805, 12, 4635, 4406, 3306, 3305, 3351, 3304, 3352}

$$\frac{\sqrt{\frac{\pi}{2}}e^2\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{2\sqrt{b}d}-\frac{\sqrt{\frac{\pi}{6}}e^2\cos\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{2\sqrt{b}d}+\frac{\sqrt{\frac{\pi}{2}}e^2\sin\left(\frac{a}{b}\right)S\left(\sqrt{\frac{2}{\pi}}\sqrt{a+\right.}{2\sqrt{b}d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (e^2*Sqrt[Pi/2]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/
Sqrt[b]])/(2*Sqrt[b]*d) - (e^2*Sqrt[Pi/6]*Cos[(3*a)/b]*FresnelC[(Sqrt[6/Pi]
*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(2*Sqrt[b]*d) + (e^2*Sqrt[Pi/2]*Fre
snelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(2*Sqrt[b
]*d) - (e^2*Sqrt[Pi/6]*FresnelS[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sq
rt[b]]*Sin[(3*a)/b])/(2*Sqrt[b]*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^2}{\sqrt{a+b\sin^{-1}(c+dx)}}\,dx = \frac{\text{Subst}\left(\int \frac{e^2x^2}{\sqrt{a+b\sin^{-1}(x)}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^2\,\text{Subst}\left(\int \frac{x^2}{\sqrt{a+b\sin^{-1}(x)}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^2\,\text{Subst}\left(\int \frac{\cos(x)\sin^2(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{e^2\,\text{Subst}\left(\int \left(\frac{\cos(x)}{4\sqrt{a+bx}} - \frac{\cos(3x)}{4\sqrt{a+bx}}\right)dx, x, \sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{e^2\,\text{Subst}\left(\int \frac{\cos(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{4d} - \frac{e^2\,\text{Subst}\left(\int \frac{\cos(3x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{4d}$$

$$= \frac{\left(e^2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+x\right)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{4d} - \frac{\left(e^2\cos\left(\frac{3a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{3a}{b}+3x\right)}{\sqrt{a+bx}}\,d\right.}{4d}$$

$$= \frac{\left(e^2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \cos\left(\frac{x^2}{b}\right)dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{2bd} - \frac{\left(e^2\cos\left(\frac{3a}{b}\right)\right)\text{Subst}\left(\int \cos\right.}{}$$

$$= \frac{e^2\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{2\sqrt{b}d} - \frac{e^2\sqrt{\frac{\pi}{6}}\cos\left(\frac{3a}{b}\right)C\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{2\sqrt{b}d} + \frac{e^2\sqrt{\frac{\pi}{2}}S\left(\right.}{}$$

Mathematica [C] time = 0.253284, size = 249, normalized size = 1.02

$$-\frac{ie^2e^{-\frac{3ia}{b}}\left(3e^{\frac{2ia}{b}}\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{1}{2}, -\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right) - 3e^{\frac{4ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{1}{2}, \frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)\right.}{24d\sqrt{a+b\sin}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*e + d*e*x)^2/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] ((-I/24)*e^2*(3*E^(((2*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamm
a[1/2, ((-I)*(a + b*ArcSin[c + d*x]))/b] - 3*E^(((4*I)*a)/b)*Sqrt[(I*(a + b
*ArcSin[c + d*x]))/b]*Gamma[1/2, (I*(a + b*ArcSin[c + d*x]))/b] + Sqrt[3]*(
-(Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((-3*I)*(a + b*ArcSin[c
 + d*x]))/b]) + E^(((6*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[1
/2, ((3*I)*(a + b*ArcSin[c + d*x]))/b])))/(d*E^(((3*I)*a)/b)*Sqrt[a + b*Arc
Sin[c + d*x]])
```

Maple [A] time = 0.061, size = 179, normalized size = 0.7

$$\frac{e^2\sqrt{2}\sqrt{\pi}}{12\,d}\sqrt{b^{-1}}\left(-\sqrt{3}\cos\left(3\,\frac{a}{b}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\sqrt{3}}{\sqrt{\pi}b}\sqrt{a+b\arcsin\left(dx+c\right)}\frac{1}{\sqrt{b^{-1}}}\right)-\sqrt{3}\sin\left(3\,\frac{a}{b}\right)\mathrm{FresnelS}\left(\frac{\sqrt{2}\sqrt{3}}{\sqrt{\pi}b}\sqrt{a+b\,\mathrm{a}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(1/2),x)
```

```
[Out] 1/12/d*e^2*2^(1/2)*(1/b)^(1/2)*Pi^(1/2)*(-3^(1/2)*cos(3*a/b)*FresnelC(2^(1/
2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)-3^(1/2)*sin(3*
a/b)*FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2
)/b)+3*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(
1/2)/b)+3*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c)
)^(1/2)/b))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dex+ce)^2}{\sqrt{b\arcsin\left(dx+c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)^2/sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e^{2}\left(\int\frac{c^{2}}{\sqrt{a+b\operatorname{asin}\left(c+dx\right)}}\,dx+\int\frac{d^{2}x^{2}}{\sqrt{a+b\operatorname{asin}\left(c+dx\right)}}\,dx+\int\frac{2cdx}{\sqrt{a+b\operatorname{asin}\left(c+dx\right)}}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2/(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] e**2*(Integral(c**2/sqrt(a + b*asin(c + d*x)), x) + Integral(d**2*x**2/sqrt
(a + b*asin(c + d*x)), x) + Integral(2*c*d*x/sqrt(a + b*asin(c + d*x)), x))
```

Giac [A] time = 2.35676, size = 473, normalized size = 1.95

$$\frac{\sqrt{\pi}\operatorname{erf}\left(-\frac{\sqrt{6}\sqrt{b\arcsin(dx+c)+a}\sqrt{b}i}{2|b|}-\frac{\sqrt{6}\sqrt{b\arcsin(dx+c)+a}}{2\sqrt{b}}\right)e^{\left(\frac{3ai}{b}+2\right)}}{4\left(\frac{\sqrt{6}b^{\frac{3}{2}}i}{|b|}+\sqrt{6}\sqrt{b}\right)d}-\frac{\sqrt{\pi}\operatorname{erf}\left(-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}i}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}\sqrt{|b|}}{2b}\right)e^{\left(\frac{ai}{b}+2\right)}}{4\left(\frac{\sqrt{2}bi}{\sqrt{|b|}}+\sqrt{2}\sqrt{|b|}\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*sqrt(pi)*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b)
- 1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(3*a*i/b + 2)/((sqrt(6
)*b^(3/2)*i/abs(b) + sqrt(6)*sqrt(b))*d) - 1/4*sqrt(pi)*erf(-1/2*sqrt(2)*sq
rt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x +
c) + a)*sqrt(abs(b))/b)*e^(a*i/b + 2)/((sqrt(2)*b*i/sqrt(abs(b)) + sqrt(2)*
```

```
sqrt(abs(b)))*d) + 1/4*sqrt(pi)*erf(1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)
*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e
^(-a*i/b + 2)/((sqrt(2)*b*i/sqrt(abs(b)) - sqrt(2)*sqrt(abs(b)))*d) - 1/4*s
qrt(pi)*erf(1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - 1/2*
sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(-3*a*i/b + 2)/((sqrt(6)*b^(
3/2)*i/abs(b) - sqrt(6)*sqrt(b))*d)
```

3.262 $\int \frac{ce+dex}{\sqrt{a+b\sin^{-1}(c+dx)}}\,dx$

Optimal. Leaf size=105

$$\frac{\sqrt{\pi}e\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{2\sqrt{b}d}-\frac{\sqrt{\pi}e\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{2\sqrt{b}d}$$

```
[Out] (e*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*
Sqrt[Pi])])/(2*Sqrt[b]*d) - (e*Sqrt[Pi]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d
*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(2*Sqrt[b]*d)
```

Rubi [A] time = 0.234942, antiderivative size = 105, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 9, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.391, Rules used = {4805, 12, 4635, 4406, 3306, 3305, 3351, 3304, 3352}

$$\frac{\sqrt{\pi}e\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{2\sqrt{b}d}-\frac{\sqrt{\pi}e\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{2\sqrt{b}d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (e*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*
Sqrt[Pi])])/(2*Sqrt[b]*d) - (e*Sqrt[Pi]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d
*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(2*Sqrt[b]*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{ce+dex}{\sqrt{a+b\sin^{-1}(c+dx)}}\,dx = \frac{\text{Subst}\left(\int \frac{ex}{\sqrt{a+b\sin^{-1}(x)}}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e\,\text{Subst}\left(\int \frac{x}{\sqrt{a+b\sin^{-1}(x)}}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e\,\text{Subst}\left(\int \frac{\cos(x)\sin(x)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{e\,\text{Subst}\left(\int \frac{\sin(2x)}{2\sqrt{a+bx}}\,dx,x,\sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{e\,\text{Subst}\left(\int \frac{\sin(2x)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(c+dx)\right)}{2d}$$

$$= \frac{\left(e\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{2a}{b}+2x\right)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(c+dx)\right)}{2d} - \frac{\left(e\sin\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{2a}{b}+2x\right)}{\sqrt{a+bx}}\,d\right.}{2d}$$

$$= \frac{\left(e\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \sin\left(\frac{2x^2}{b}\right)\,dx,x,\sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd} - \frac{\left(e\sin\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \cos\right.}{}$$

$$= \frac{e\sqrt{\pi}\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{2\sqrt{b}d} - \frac{e\sqrt{\pi}C\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)\sin\left(\frac{2a}{b}\right)}{2\sqrt{b}d}$$

Mathematica [C] time = 0.063711, size = 134, normalized size = 1.28

$$-\frac{ee^{-\frac{2ia}{b}}\left(\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{1}{2},-\frac{2i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)+e^{\frac{4ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{1}{2},\frac{2i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)\right)}{4\sqrt{2}d\sqrt{a+b\sin^{-1}(c+dx)}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*e + d*e*x)/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] -(e*(Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((-2*I)*(a + b*ArcSi
n[c + d*x]))/b] + E^(((4*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma
[1/2, ((2*I)*(a + b*ArcSin[c + d*x]))/b]))/(4*Sqrt[2]*d*E^(((2*I)*a)/b)*Sqr
```

```
t[a + b*ArcSin[c + d*x]])
```

Maple [A] time = 0.042, size = 85, normalized size = 0.8

$$\frac{\sqrt{\pi}e}{2d}\sqrt{b^{-1}}\left(\cos\left(2\frac{a}{b}\right)\mathrm{FresnelS}\left(2\frac{\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\sqrt{b^{-1}}b}\right)-\sin\left(2\frac{a}{b}\right)\mathrm{FresnelC}\left(2\frac{\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\sqrt{b^{-1}}b}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(1/2),x)
```

```
[Out] 1/2*Pi^(1/2)*(1/b)^(1/2)*e*(cos(2*a/b)*FresnelS(2/Pi^(1/2)/(1/b)^(1/2)*(a+b
*arcsin(d*x+c))^(1/2)/b)-sin(2*a/b)*FresnelC(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*ar
csin(d*x+c))^(1/2)/b))/d
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{dex+ce}{\sqrt{b\arcsin(dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)/sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e\left(\int \frac{c}{\sqrt{a+b\operatorname{asin}(c+dx)}}\,dx+\int \frac{dx}{\sqrt{a+b\operatorname{asin}(c+dx)}}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] e*(Integral(c/sqrt(a + b*asin(c + d*x)), x) + Integral(d*x/sqrt(a + b*asin(
c + d*x)), x))
```

Giac [A] time = 2.12984, size = 204, normalized size = 1.94

$$-\frac{\sqrt{\pi}i\operatorname{erf}\left(\frac{\sqrt{b\arcsin(dx+c)+a}\sqrt{b}i}{|b|}-\frac{\sqrt{b\arcsin(dx+c)+a}}{\sqrt{b}}\right)e^{\left(-\frac{2ai}{b}+1\right)}}{4\left(\frac{b^{\frac{3}{2}}i}{|b|}-\sqrt{b}\right)d}-\frac{\sqrt{\pi}i\operatorname{erf}\left(-\frac{\sqrt{b\arcsin(dx+c)+a}\sqrt{b}i}{|b|}-\frac{\sqrt{b\arcsin(dx+c)+a}}{\sqrt{b}}\right)e^{\left(\frac{2ai}{b}+1\right)}}{4\sqrt{b}d\left(\frac{bi}{|b|}+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] -1/4*sqrt(pi)*i*erf(sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sqrt(b*a
rcsin(d*x + c) + a)/sqrt(b))*e^(-2*a*i/b + 1)/((b^(3/2)*i/abs(b) - sqrt(b))
*d) - 1/4*sqrt(pi)*i*erf(-sqrt(b*arcsin(d*x + c) + a)*sqrt(b)*i/abs(b) - sq
rt(b*arcsin(d*x + c) + a)/sqrt(b))*e^(2*a*i/b + 1)/(sqrt(b)*d*(b*i/abs(b) +
 1))
```

3.263 $\int \frac{1}{\sqrt{a+b\sin^{-1}(c+dx)}}\,dx$

Optimal. Leaf size=105

$$\frac{\sqrt{2\pi}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}d}+\frac{\sqrt{2\pi}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}d}$$

```
[Out] (Sqrt[2*Pi]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt
[b]])/(Sqrt[b]*d) + (Sqrt[2*Pi]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c +
d*x]])/Sqrt[b]]*Sin[a/b])/(Sqrt[b]*d)
```

Rubi [A] time = 0.127753, antiderivative size = 105, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {4803, 4623, 3306, 3305, 3351, 3304, 3352}

$$\frac{\sqrt{2\pi}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}d}+\frac{\sqrt{2\pi}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}d}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (Sqrt[2*Pi]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt
[b]])/(Sqrt[b]*d) + (Sqrt[2*Pi]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c +
d*x]])/Sqrt[b]]*Sin[a/b])/(Sqrt[b]*d)
```

Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{1}{\sqrt{a+b\sin^{-1}(c+dx)}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\sqrt{a+b\sin^{-1}(x)}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}-\frac{x}{b}\right)}{\sqrt{x}}\,dx, x, a+b\sin^{-1}(c+dx)\right)}{bd}$$

$$= \frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\cos\left(\frac{x}{b}\right)}{\sqrt{x}}\,dx, x, a+b\sin^{-1}(c+dx)\right)}{bd} + \frac{\sin\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\sin\left(\frac{x}{b}\right)}{\sqrt{x}}\,dx, x, a+b\sin\right.}{bd}$$

$$= \frac{\left(2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \cos\left(\frac{x^2}{b}\right)\,dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd} + \frac{\left(2\sin\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \sin\left(\frac{x^2}{b}\right.\right.}{b}$$

$$= \frac{\sqrt{2\pi}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}d} + \frac{\sqrt{2\pi}S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)\sin\left(\frac{a}{b}\right)}{\sqrt{b}d}$$

Mathematica [F] time = 0.0318726, size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+b\sin^{-1}(c+dx)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] Integrate[1/Sqrt[a + b*ArcSin[c + d*x]], x]
```

Maple [A] time = 0., size = 87, normalized size = 0.8

$$\frac{\sqrt{2}\sqrt{\pi}}{d}\sqrt{b^{-1}}\left(\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{2}}{\sqrt{\pi}b}\sqrt{a+b\arcsin(dx+c)}\frac{1}{\sqrt{b^{-1}}}\right)+\sin\left(\frac{a}{b}\right)\text{FresnelS}\left(\frac{\sqrt{2}}{\sqrt{\pi}b}\sqrt{a+b\arcsin(dx+c)}\frac{1}{\sqrt{b}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c))^(1/2),x)
```

```
[Out] 2^(1/2)*Pi^(1/2)*(1/b)^(1/2)*(cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2
)*(a+b*arcsin(d*x+c))^(1/2)/b)+sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/
2)*(a+b*arcsin(d*x+c))^(1/2)/b))/d
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{b \arcsin(dx + c) + a}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a + b \operatorname{asin}(c + dx)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] Integral(1/sqrt(a + b*asin(c + d*x)), x)
```

Giac [A] time = 1.88713, size = 230, normalized size = 2.19

$$-\frac{\sqrt{\pi}\,\text{erf}\left(-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}i}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}\sqrt{|b|}}{2b}\right)e^{\left(\frac{ai}{b}\right)}}{\left(\frac{\sqrt{2}bi}{\sqrt{|b|}}+\sqrt{2}\sqrt{|b|}\right)d}+\frac{\sqrt{\pi}\,\text{erf}\left(\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}i}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}\sqrt{|b|}}{2b}\right)e^{\left(-\frac{ai}{b}\right)}}{\left(\frac{\sqrt{2}bi}{\sqrt{|b|}}-\sqrt{2}\sqrt{|b|}\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] -sqrt(pi)*erf(-1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2
*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(a*i/b)/((sqrt(2)*b*
i/sqrt(abs(b)) + sqrt(2)*sqrt(abs(b)))*d) + sqrt(pi)*erf(1/2*sqrt(2)*sqrt(b
*arcsin(d*x + c) + a)*i/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) +
 a)*sqrt(abs(b))/b)*e^(-a*i/b)/((sqrt(2)*b*i/sqrt(abs(b)) - sqrt(2)*sqrt(ab
s(b)))*d)
```

3.264 $\int \frac{1}{(ce+dex)\sqrt{a+b\sin^{-1}(c+dx)}}\,dx$

Optimal. Leaf size=28

$$\frac{\text{Unintegrable}\left(\frac{1}{(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}},x\right)}{e}$$

```
[Out] Unintegrable[1/((c + d*x)*Sqrt[a + b*ArcSin[c + d*x]]), x]/e
```

Rubi [A] time = 0.0907175, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(ce+dex)\sqrt{a+b\sin^{-1}(c+dx)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c*e + d*e*x)*Sqrt[a + b*ArcSin[c + d*x]]),x]
```

```
[Out] Defer[Subst][Defer[Int][1/(x*Sqrt[a + b*ArcSin[x]]), x], x, c + d*x]/(d*e)
```

Rubi steps

$$\int \frac{1}{(ce+dex)\sqrt{a+b\sin^{-1}(c+dx)}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{ex\sqrt{a+b\sin^{-1}(x)}}\,dx,x,c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{1}{x\sqrt{a+b\sin^{-1}(x)}}\,dx,x,c+dx\right)}{de}$$

Mathematica [A] time = 0.0713928, size = 0, normalized size = 0.

$$\int \frac{1}{(ce+dex)\sqrt{a+b\sin^{-1}(c+dx)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c*e + d*e*x)*Sqrt[a + b*ArcSin[c + d*x]]),x]
```

```
[Out] Integrate[1/((c*e + d*e*x)*Sqrt[a + b*ArcSin[c + d*x]]), x]
```

Maple [A] time = 0.088, size = 0, normalized size = 0.

$$\int \frac{1}{dex + ce} \frac{1}{\sqrt{a + b \arcsin (dx + c)}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(1/2),x)
```

```
[Out] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(1/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(dex + ce)\sqrt{b \arcsin (dx + c) + a}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/((d*e*x + c*e)*sqrt(b*arcsin(d*x + c) + a)), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{1}{c\sqrt{a+b\operatorname{asin}(c+dx)}+dx\sqrt{a+b\operatorname{asin}(c+dx)}}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] Integral(1/(c*sqrt(a + b*asin(c + d*x)) + d*x*sqrt(a + b*asin(c + d*x))), x
)/e
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(dex+ce)\sqrt{b\arcsin(dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/((d*e*x + c*e)*sqrt(b*arcsin(d*x + c) + a)), x)
```

3.265 $\int \frac{(ce+dex)^4}{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}\,dx$

Optimal. Leaf size=412

$$\frac{\sqrt{\frac{\pi}{2}}e^4\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{2b^{3/2}d}-\frac{3\sqrt{\frac{3\pi}{2}}e^4\sin\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{4b^{3/2}d}+\frac{\sqrt{\frac{5\pi}{2}}e^4\sin\left(\frac{5a}{b}\right)\text{Fresnel}}{4b^3}$$

```
[Out] (-2*e^4*(c + d*x)^4*Sqrt[1 - (c + d*x)^2])/(b*d*Sqrt[a + b*ArcSin[c + d*x]]
) - (e^4*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x
]])/Sqrt[b]])/(2*b^(3/2)*d) + (3*e^4*Sqrt[(3*Pi)/2]*Cos[(3*a)/b]*FresnelS[(
Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(4*b^(3/2)*d) - (e^4*Sqrt
[(5*Pi)/2]*Cos[(5*a)/b]*FresnelS[(Sqrt[10/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/
Sqrt[b]])/(4*b^(3/2)*d) + (e^4*Sqrt[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*A
rcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(2*b^(3/2)*d) - (3*e^4*Sqrt[(3*Pi)/2]*F
resnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(3*a)/b])/(4*
b^(3/2)*d) + (e^4*Sqrt[(5*Pi)/2]*FresnelC[(Sqrt[10/Pi]*Sqrt[a + b*ArcSin[c
+ d*x]])/Sqrt[b]]*Sin[(5*a)/b])/(4*b^(3/2)*d)
```

Rubi [A] time = 0.866043, antiderivative size = 412, normalized size of antiderivative = 1., number of steps used = 19, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.32, Rules used = {4805, 12, 4631, 3306, 3305, 3351, 3304, 3352}

$$\frac{\sqrt{\frac{\pi}{2}}e^4\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{2b^{3/2}d}-\frac{3\sqrt{\frac{3\pi}{2}}e^4\sin\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{4b^{3/2}d}+\frac{\sqrt{\frac{5\pi}{2}}e^4\sin\left(\frac{5a}{b}\right)\text{Fresnel}}{4b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^4/(a + b*ArcSin[c + d*x])^(3/2),x]
```


```
[Out] (-2*e^4*(c + d*x)^4*Sqrt[1 - (c + d*x)^2])/(b*d*Sqrt[a + b*ArcSin[c + d*x]]
) - (e^4*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x
]])/Sqrt[b]])/(2*b^(3/2)*d) + (3*e^4*Sqrt[(3*Pi)/2]*Cos[(3*a)/b]*FresnelS[(
Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(4*b^(3/2)*d) - (e^4*Sqrt
[(5*Pi)/2]*Cos[(5*a)/b]*FresnelS[(Sqrt[10/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/
Sqrt[b]])/(4*b^(3/2)*d) + (e^4*Sqrt[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*A
rcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(2*b^(3/2)*d) - (3*e^4*Sqrt[(3*Pi)/2]*F
```

```
resnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(3*a)/b])/(4*
b^(3/2)*d) + (e^4*Sqrt[(5*Pi)/2]*FresnelC[(Sqrt[10/Pi]*Sqrt[a + b*ArcSin[c
+ d*x]])/Sqrt[b]]*Sin[(5*a)/b])/(4*b^(3/2)*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
```

```
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^4}{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{e^4x^4}{\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^4\,\text{Subst}\left(\int \frac{x^4}{\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{\left(2e^4\right)\text{Subst}\left(\int \left(-\frac{\sin(x)}{8\sqrt{a+bx}} + \frac{9\sin(3x)}{16\sqrt{a+bx}} - \frac{5\sin(5x)}{16\sqrt{a+bx}}\right) dx, x, \sin\right.}{bd}$$

$$= -\frac{2e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{e^4\,\text{Subst}\left(\int \frac{\sin(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{4bd} - \frac{\left(5e^4\right)\text{Subst}\left(\int\right.}{}$$

$$= -\frac{2e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{\left(e^4\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{4bd} + \frac{\left(9e\right.}{}$$

$$= -\frac{2e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{\left(e^4\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \sin\left(\frac{x^2}{b}\right) dx, x, \sqrt{a+b\sin^{-1}(c+dx}\right.}{2b^2d}$$

$$= -\frac{2e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{e^4\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{2b^{3/2}d} + \frac{3e^4\sqrt{\frac{3\pi}{2}}\cos\left(\frac{3a}{b}\right)S}{4}$$

Mathematica [C] time = 0.649081, size = 572, normalized size = 1.39

$$e^4 e^{-\frac{5i(a+b\sin^{-1}(c+dx))}{b}}\left(2e^{\frac{4ia}{b}+5i\sin^{-1}(c+dx)}\sqrt{-\frac{i(a+b\sin^{-1}(c+dx))}{b}}\text{Gamma}\left(\frac{1}{2},-\frac{i(a+b\sin^{-1}(c+dx))}{b}\right)+2e^{\frac{6ia}{b}+5i\sin^{-1}(c+dx)}\sqrt{\frac{i(a+b\sin^{-1}(c+\cdots}{b}}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*e + d*e*x)^4/(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (e^4*(-E^(((5*I)*a)/b) + 3*E^(((5*I)*a)/b + (2*I)*ArcSin[c + d*x]) - 2*E^((
(5*I)*a)/b + (4*I)*ArcSin[c + d*x]) - 2*E^(((5*I)*a)/b + (6*I)*ArcSin[c + d
*x]) + 3*E^(((5*I)*a)/b + (8*I)*ArcSin[c + d*x]) - E^(((5*I)*(a + 2*b*ArcSi
n[c + d*x]))/b) + 2*E^(((4*I)*a)/b + (5*I)*ArcSin[c + d*x])*Sqrt[((-I)*(a +
 b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((-I)*(a + b*ArcSin[c + d*x]))/b] + 2*E^
(((6*I)*a)/b + (5*I)*ArcSin[c + d*x])*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*G
amma[1/2, (I*(a + b*ArcSin[c + d*x]))/b] - 3*Sqrt[3]*E^(((2*I)*a)/b + (5*I)
*ArcSin[c + d*x])*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((-3*I)
*(a + b*ArcSin[c + d*x]))/b] - 3*Sqrt[3]*E^(((8*I)*a)/b + (5*I)*ArcSin[c +
d*x])*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((3*I)*(a + b*ArcSin[c
 + d*x]))/b] + Sqrt[5]*E^((5*I)*ArcSin[c + d*x])*Sqrt[((-I)*(a + b*ArcSin[c
 + d*x]))/b]*Gamma[1/2, ((-5*I)*(a + b*ArcSin[c + d*x]))/b] + Sqrt[5]*E^(((
5*I)*(2*a + b*ArcSin[c + d*x]))/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamm
a[1/2, ((5*I)*(a + b*ArcSin[c + d*x]))/b]))/(16*b*d*E^(((5*I)*(a + b*ArcSin
[c + d*x]))/b)*Sqrt[a + b*ArcSin[c + d*x]])
```

Maple [A] time = 0.117, size = 478, normalized size = 1.2

$$-\frac{e^4}{8\,bd}\left(\sqrt{5}\sqrt{b^{-1}}\sqrt{\pi}\sqrt{2}\sqrt{a+b\arcsin(dx+c)}\cos\left(5\,\frac{a}{b}\right)\text{FresnelS}\left(\frac{\sqrt{2}\sqrt{5}}{\sqrt{\pi}b}\sqrt{a+b\arcsin(dx+c)}\frac{1}{\sqrt{b^{-1}}}\right)-\sqrt{5}\sqrt{b^{-1}}\sqrt{\pi}\sqrt{2}\cdots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^(3/2),x)
```

```
[Out] -1/8/d*e^4/b*(5^(1/2)*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2
)*cos(5*a/b)*FresnelS(2^(1/2)/Pi^(1/2)*5^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+
c))^(1/2)/b)-5^(1/2)*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)
*sin(5*a/b)*FresnelC(2^(1/2)/Pi^(1/2)*5^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c
))^(1/2)/b)-3*(1/b)^(1/2)*3^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2
```

```
)*cos(3*a/b)*FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+
c))^(1/2)/b)+3*(1/b)^(1/2)*3^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/
2)*sin(3*a/b)*FresnelC(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x
+c))^(1/2)/b)+2*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(
a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)-2*(
1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelC(2^(
1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)+2*cos((a+b*arcsin(d*
x+c))/b-a/b)-3*cos(3*(a+b*arcsin(d*x+c))/b-3*a/b)+cos(5*(a+b*arcsin(d*x+c))
/b-5*a/b))/(a+b*arcsin(d*x+c))^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dex+ce)^4}{(b\arcsin(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)^4/(b*arcsin(d*x + c) + a)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e^4\left(\int \frac{c^4}{a\sqrt{a+b\operatorname{asin}(c+dx)}+b\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)}\,dx+\int \frac{d^4x^4}{a\sqrt{a+b\operatorname{asin}(c+dx)}+b\sqrt{a+b\operatorname{asin}(c+dx)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**4/(a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] e**4*(Integral(c**4/(a*sqrt(a + b*asin(c + d*x)) + b*sqrt(a + b*asin(c + d*
x))*asin(c + d*x)), x) + Integral(d**4*x**4/(a*sqrt(a + b*asin(c + d*x)) +
b*sqrt(a + b*asin(c + d*x))*asin(c + d*x)), x) + Integral(4*c*d**3*x**3/(a*
sqrt(a + b*asin(c + d*x)) + b*sqrt(a + b*asin(c + d*x))*asin(c + d*x)), x)
+ Integral(6*c**2*d**2*x**2/(a*sqrt(a + b*asin(c + d*x)) + b*sqrt(a + b*asi
n(c + d*x))*asin(c + d*x)), x) + Integral(4*c**3*d*x/(a*sqrt(a + b*asin(c +
 d*x)) + b*sqrt(a + b*asin(c + d*x))*asin(c + d*x)), x))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dex + ce)^4}{(b \arcsin(dx + c) + a)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)^4/(b*arcsin(d*x + c) + a)^(3/2), x)
```

3.266 $\int \frac{(ce+dex)^3}{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}\,dx$

Optimal. Leaf size=270

$$-\frac{\sqrt{\frac{\pi}{2}}e^3\cos\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}+\frac{\sqrt{\pi}e^3\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{b^{3/2}d}+\frac{\sqrt{\pi}e^3\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\,s}}{\sqrt{}}\right.}{b^{3/2}d}$$

```
[Out] (-2*e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(b*d*Sqrt[a + b*ArcSin[c + d*x]]
) - (e^3*Sqrt[Pi/2]*Cos[(4*a)/b]*FresnelC[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c
 + d*x]])/Sqrt[b]])/(b^(3/2)*d) + (e^3*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sq
rt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(b^(3/2)*d) + (e^3*Sqrt[Pi]
*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])
/(b^(3/2)*d) - (e^3*Sqrt[Pi/2]*FresnelS[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c +
 d*x]])/Sqrt[b]]*Sin[(4*a)/b])/(b^(3/2)*d)
```

Rubi [A] time = 0.516021, antiderivative size = 270, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.32, Rules used = {4805, 12, 4631, 3306, 3305, 3351, 3304, 3352}

$$-\frac{\sqrt{\frac{\pi}{2}}e^3\cos\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}+\frac{\sqrt{\pi}e^3\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{b^{3/2}d}+\frac{\sqrt{\pi}e^3\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\,s}}{\sqrt{}}\right.}{b^{3/2}d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (-2*e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(b*d*Sqrt[a + b*ArcSin[c + d*x]]
) - (e^3*Sqrt[Pi/2]*Cos[(4*a)/b]*FresnelC[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c
 + d*x]])/Sqrt[b]])/(b^(3/2)*d) + (e^3*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sq
rt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(b^(3/2)*d) + (e^3*Sqrt[Pi]
*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])
/(b^(3/2)*d) - (e^3*Sqrt[Pi/2]*FresnelS[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c +
 d*x]])/Sqrt[b]]*Sin[(4*a)/b])/(b^(3/2)*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^3}{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{e^3x^3}{\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e^3\,\text{Subst}\left(\int \frac{x^3}{\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx,x,c+dx\right)}{d}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{\left(2e^3\right)\text{Subst}\left(\int\left(\frac{\cos(2x)}{2\sqrt{a+bx}}-\frac{\cos(4x)}{2\sqrt{a+bx}}\right)dx,x,\sin^{-1}(c+dx)\right)}{bd}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{e^3\,\text{Subst}\left(\int\frac{\cos(2x)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(c+dx)\right)}{bd} - \frac{e^3\,\text{Subst}\left(\int \frac{\text{co}}{\sqrt{}}\right.}{}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{\left(e^3\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int\frac{\cos\left(\frac{2a}{b}+2x\right)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(c+dx)\right)}{bd} -$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{\left(2e^3\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int\cos\left(\frac{2x^2}{b}\right)dx,x,\sqrt{a+b\sin^{-1}(c+}\right.}{b^2d}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{e^3\sqrt{\frac{\pi}{2}}\cos\left(\frac{4a}{b}\right)C\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d} + \frac{e^3\sqrt{\pi}\cos\left(\frac{2a}{b}\right)C}{b}$$

Mathematica [C] time = 0.309863, size = 300, normalized size = 1.11

$$-\frac{ie^3e^{-\frac{4ia}{b}}\left(\sqrt{2}e^{\frac{2ia}{b}}\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{1}{2},-\frac{2i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)-\sqrt{2}e^{\frac{6ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{1}{2},\frac{2i\left(a+b\sin^{-1}(c+dx\right.}{b}\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] ((-I/4)*e^3*(Sqrt[2]*E^(((2*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]
*Gamma[1/2, ((-2*I)*(a + b*ArcSin[c + d*x]))/b] - Sqrt[2]*E^(((6*I)*a)/b)*S
qrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((2*I)*(a + b*ArcSin[c + d*x]
))/b] - Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((-4*I)*(a + b*Ar
cSin[c + d*x]))/b] + E^(((8*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Ga
mma[1/2, ((4*I)*(a + b*ArcSin[c + d*x]))/b] - (2*I)*E^(((4*I)*a)/b)*Sin[2*A
rcSin[c + d*x]] + I*E^(((4*I)*a)/b)*Sin[4*ArcSin[c + d*x]]))/(b*d*E^(((4*I)
*a)/b)*Sqrt[a + b*ArcSin[c + d*x]])
```

Maple [A] time = 0.092, size = 307, normalized size = 1.1

$$-\frac{e^3}{4\,bd}\left(2\,\sqrt{b^{-1}}\sqrt{\pi}\sqrt{2}\sqrt{a+b\arcsin(dx+c)}\cos\left(4\,\frac{a}{b}\right)\text{FresnelC}\left(2\,\frac{\sqrt{2}\sqrt{a+b\arcsin(dx+c)}}{\sqrt{b^{-1}}\sqrt{\pi}b}\right)+2\,\sqrt{b^{-1}}\sqrt{\pi}\sqrt{2}\sqrt{a+b\,\mathrm{a}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(3/2),x)
```

```
[Out] -1/4/d*e^3/b*(2*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(
4*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)
+2*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(4*a/b)*Fresne
lS(2*2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)-4*(1/b)^(1/2
)*(a+b*arcsin(d*x+c))^(1/2)*cos(2*a/b)*FresnelC(2/Pi^(1/2)/(1/b)^(1/2)*(a+b
*arcsin(d*x+c))^(1/2)/b)*Pi^(1/2)-4*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*s
in(2*a/b)*FresnelS(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*Pi^(
1/2)+2*sin(2*(a+b*arcsin(d*x+c))/b-2*a/b)-sin(4*(a+b*arcsin(d*x+c))/b-4*a/b
))/(a+b*arcsin(d*x+c))^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dex+ce)^3}{(b\arcsin(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)^3/(b*arcsin(d*x + c) + a)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e^3\left(\int\frac{c^3}{a\sqrt{a+b\operatorname{asin}(c+dx)}+b\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)}\,dx+\int\frac{d^3x^3}{a\sqrt{a+b\operatorname{asin}(c+dx)}+b\sqrt{a+b\operatorname{asin}(c+dx)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3/(a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] e**3*(Integral(c**3/(a*sqrt(a + b*asin(c + d*x)) + b*sqrt(a + b*asin(c + d*
x))*asin(c + d*x)), x) + Integral(d**3*x**3/(a*sqrt(a + b*asin(c + d*x)) +
b*sqrt(a + b*asin(c + d*x))*asin(c + d*x)), x) + Integral(3*c*d**2*x**2/(a*
sqrt(a + b*asin(c + d*x)) + b*sqrt(a + b*asin(c + d*x))*asin(c + d*x)), x)
+ Integral(3*c**2*d*x/(a*sqrt(a + b*asin(c + d*x)) + b*sqrt(a + b*asin(c +
d*x))*asin(c + d*x)), x))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{(dex+ce)^3}{(b\arcsin(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)^3/(b*arcsin(d*x + c) + a)^(3/2), x)
```

3.267 $\int \frac{(ce+dex)^2}{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}\,dx$

Optimal. Leaf size=280

$$\frac{\sqrt{\frac{\pi}{2}}e^2\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}-\frac{\sqrt{\frac{3\pi}{2}}e^2\sin\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}-\frac{\sqrt{\frac{\pi}{2}}e^2\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a\cdots}}{\cdots}\right)}{b^{3/2}d}$$

```
[Out] (-2*e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(b*d*Sqrt[a + b*ArcSin[c + d*x]]
) - (e^2*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x
]])/Sqrt[b]])/(b^(3/2)*d) + (e^2*Sqrt[(3*Pi)/2]*Cos[(3*a)/b]*FresnelS[(Sqrt
[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(b^(3/2)*d) + (e^2*Sqrt[Pi/2]
*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(b^(3
/2)*d) - (e^2*Sqrt[(3*Pi)/2]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x
]])/Sqrt[b]]*Sin[(3*a)/b])/(b^(3/2)*d)
```

Rubi [A] time = 0.549166, antiderivative size = 280, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.32, Rules used = {4805, 12, 4631, 3306, 3305, 3351, 3304, 3352}

$$\frac{\sqrt{\frac{\pi}{2}}e^2\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}-\frac{\sqrt{\frac{3\pi}{2}}e^2\sin\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}-\frac{\sqrt{\frac{\pi}{2}}e^2\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a\cdots}}{\cdots}\right)}{b^{3/2}d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (-2*e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(b*d*Sqrt[a + b*ArcSin[c + d*x]]
) - (e^2*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x
]])/Sqrt[b]])/(b^(3/2)*d) + (e^2*Sqrt[(3*Pi)/2]*Cos[(3*a)/b]*FresnelS[(Sqrt
[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(b^(3/2)*d) + (e^2*Sqrt[Pi/2]
*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(b^(3
/2)*d) - (e^2*Sqrt[(3*Pi)/2]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x
]])/Sqrt[b]]*Sin[(3*a)/b])/(b^(3/2)*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^2}{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{e^2x^2}{\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e^2\,\text{Subst}\left(\int \frac{x^2}{\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx,x,c+dx\right)}{d}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{\left(2e^2\right)\text{Subst}\left(\int\left(-\frac{\sin(x)}{4\sqrt{a+bx}}+\frac{3\sin(3x)}{4\sqrt{a+bx}}\right)dx,x,\sin^{-1}(c+dx\right.}{bd}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{e^2\,\text{Subst}\left(\int\frac{\sin(x)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(c+dx)\right)}{2bd} + \frac{\left(3e^2\right)\text{Subst}\left(\right.}{}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{\left(e^2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int\frac{\sin\left(\frac{a}{b}+x\right)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(c+dx)\right)}{2bd} + \frac{\left(\right.}{}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{\left(e^2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int\sin\left(\frac{x^2}{b}\right)dx,x,\sqrt{a+b\sin^{-1}(c+\right.}{b^2d}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{e^2\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d} + \frac{e^2\sqrt{\frac{3\pi}{2}}\cos\left(\frac{3a}{b}\right)}{}$$

Mathematica [C] time = 0.387556, size = 380, normalized size = 1.36

$$\frac{e^2e^{-\frac{3i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\left(e^{\frac{2ia}{b}+3i\sin^{-1}(c+dx)}\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{1}{2},-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)+e^{\frac{4ia}{b}+3i\sin^{-1}(c+dx)}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (e^2*(E^(((3*I)*a)/b) - E^(((3*I)*a)/b + (2*I)*ArcSin[c + d*x]) - E^(((3*I)
*a)/b + (4*I)*ArcSin[c + d*x]) + E^(((3*I)*(a + 2*b*ArcSin[c + d*x]))/b) +
E^(((2*I)*a)/b + (3*I)*ArcSin[c + d*x])*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))
/b]*Gamma[1/2, ((-I)*(a + b*ArcSin[c + d*x]))/b] + E^(((4*I)*a)/b + (3*I)*A
rcSin[c + d*x])*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, (I*(a + b*Ar
cSin[c + d*x]))/b] - Sqrt[3]*E^((3*I)*ArcSin[c + d*x])*Sqrt[((-I)*(a + b*Ar
cSin[c + d*x]))/b]*Gamma[1/2, ((-3*I)*(a + b*ArcSin[c + d*x]))/b] - Sqrt[3]
*E^((3*I)*((2*a)/b + ArcSin[c + d*x]))*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*
Gamma[1/2, ((3*I)*(a + b*ArcSin[c + d*x]))/b]))/(4*b*d*E^(((3*I)*(a + b*Arc
Sin[c + d*x]))/b)*Sqrt[a + b*ArcSin[c + d*x]])
```

Maple [A] time = 0.093, size = 320, normalized size = 1.1

$$-\frac{e^2}{2\,bd}\left(-\sqrt{b^{-1}}\sqrt{3}\sqrt{\pi}\sqrt{2}\sqrt{a+b\arcsin(dx+c)}\cos\left(3\,\frac{a}{b}\right)\mathrm{FresnelS}\left(\frac{\sqrt{2}\sqrt{3}}{\sqrt{\pi}b}\sqrt{a+b\arcsin(dx+c)}\frac{1}{\sqrt{b^{-1}}}\right)+\sqrt{b^{-1}}\sqrt{3}\sqrt{\pi}\sqrt{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(3/2),x)
```

```
[Out] -1/2/d*e^2/b/(a+b*arcsin(d*x+c))^(1/2)*(-(1/b)^(1/2)*3^(1/2)*Pi^(1/2)*2^(1/
2)*(a+b*arcsin(d*x+c))^(1/2)*cos(3*a/b)*FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(
1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)+(1/b)^(1/2)*3^(1/2)*Pi^(1/2)*2^(1/2
)*(a+b*arcsin(d*x+c))^(1/2)*sin(3*a/b)*FresnelC(2^(1/2)/Pi^(1/2)*3^(1/2)/(1
/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)+(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*ar
csin(d*x+c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcs
in(d*x+c))^(1/2)/b)-(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*
sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)
+cos((a+b*arcsin(d*x+c))/b-a/b)-cos(3*(a+b*arcsin(d*x+c))/b-3*a/b))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dex+ce)^2}{(b\arcsin(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)^2/(b*arcsin(d*x + c) + a)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e^2\left(\int \frac{c^2}{a\sqrt{a+b\operatorname{asin}(c+dx)}+b\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)}\,dx+\int \frac{d^2x^2}{a\sqrt{a+b\operatorname{asin}(c+dx)}+b\sqrt{a+b\operatorname{asin}(c+dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2/(a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] e**2*(Integral(c**2/(a*sqrt(a + b*asin(c + d*x)) + b*sqrt(a + b*asin(c + d*
x))*asin(c + d*x)), x) + Integral(d**2*x**2/(a*sqrt(a + b*asin(c + d*x)) +
b*sqrt(a + b*asin(c + d*x))*asin(c + d*x)), x) + Integral(2*c*d*x/(a*sqrt(a
 + b*asin(c + d*x)) + b*sqrt(a + b*asin(c + d*x))*asin(c + d*x)), x))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dex+ce)^2}{(b\arcsin(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)^2/(b*arcsin(d*x + c) + a)^(3/2), x)
```

3.268 $\int \frac{ce+dex}{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}\,dx$

Optimal. Leaf size=144

$$\frac{2\sqrt{\pi}e\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{b^{3/2}d}+\frac{2\sqrt{\pi}e\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{b^{3/2}d}-\frac{2e\sqrt{1-(c+dx)^2}(c+dx)}{bd\sqrt{a+b\sin^{-1}(c+dx)}}$$

```
[Out] (-2*e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(b*d*Sqrt[a + b*ArcSin[c + d*x]]) +
(2*e*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b
]*Sqrt[Pi])])/(b^(3/2)*d) + (2*e*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c +
 d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(b^(3/2)*d)
```

Rubi [A] time = 0.230992, antiderivative size = 144, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.348, Rules used = {4805, 12, 4631, 3306, 3305, 3351, 3304, 3352}

$$\frac{2\sqrt{\pi}e\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{b^{3/2}d}+\frac{2\sqrt{\pi}e\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{b^{3/2}d}-\frac{2e\sqrt{1-(c+dx)^2}(c+dx)}{bd\sqrt{a+b\sin^{-1}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)/(a + b*ArcSin[c + d*x])^(3/2),x]
```


```
[Out] (-2*e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(b*d*Sqrt[a + b*ArcSin[c + d*x]]) +
(2*e*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b
]*Sqrt[Pi])])/(b^(3/2)*d) + (2*e*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c +
 d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(b^(3/2)*d)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{ce+dex}{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}\,dx=\frac{\text{Subst}\left(\int \frac{ex}{\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx,x,c+dx\right)}{d}$$

$$=\frac{e\,\text{Subst}\left(\int \frac{x}{\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx,x,c+dx\right)}{d}$$

$$=-\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}}+\frac{(2e)\,\text{Subst}\left(\int \frac{\cos(2x)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(c+dx)\right)}{bd}$$

$$=-\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}}+\frac{\left(2e\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{2a}{b}+2x\right)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(c+dx)\right)}{bd}+ \cdots$$

$$=-\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}}+\frac{\left(4e\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \cos\left(\frac{2x^2}{b}\right)dx,x,\sqrt{a+b\sin^{-1}(c+d}\right.}{b^2d}$$

$$=-\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}}+\frac{2e\sqrt{\pi}\cos\left(\frac{2a}{b}\right)C\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{b^{3/2}d}+\frac{2e\sqrt{\pi}S\left(\frac{2\sqrt{a+b\sin^{-1}(c}}{\sqrt{b}\sqrt{\pi}}\right.}{b^{3/2}d}$$

Mathematica [C] time = 0.147742, size = 168, normalized size = 1.17

$$\frac{iee^{-\frac{2ia}{b}}\left(-\sqrt{2}\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{1}{2},-\frac{2i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)+\sqrt{2}e^{\frac{4ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{1}{2},\frac{2i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right) \cdots\right.}{2bd\sqrt{a+b\sin^{-1}(c+dx)}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*e + d*e*x)/(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] ((I/2)*e*(-(Sqrt[2]*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((-2*
I)*(a + b*ArcSin[c + d*x]))/b]) + Sqrt[2]*E^(((4*I)*a)/b)*Sqrt[(I*(a + b*Ar
cSin[c + d*x]))/b]*Gamma[1/2, ((2*I)*(a + b*ArcSin[c + d*x]))/b] + (2*I)*E^
(((2*I)*a)/b)*Sin[2*ArcSin[c + d*x]]))/(b*d*E^(((2*I)*a)/b)*Sqrt[a + b*ArcS
in[c + d*x]])
```

Maple [A] time = 0.073, size = 156, normalized size = 1.1

$$-\frac{e}{bd}\left(-2\sqrt{b^{-1}}\sqrt{a+b\arcsin\left(dx+c\right)}\cos\left(2\frac{a}{b}\right)\mathrm{FresnelC}\left(2\frac{\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\sqrt{b^{-1}}b}\right)\sqrt{\pi}-2\sqrt{b^{-1}}\sqrt{a+b\arcsin\left(dx+c\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(3/2),x)
```

```
[Out] -e/d/b/(a+b*arcsin(d*x+c))^(1/2)*(-2*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*
cos(2*a/b)*FresnelC(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*Pi^
(1/2)-2*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(2*a/b)*FresnelS(2/Pi^(1/2
)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*Pi^(1/2)+sin(2*(a+b*arcsin(d*x+c
))/b-2*a/b))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{dex+ce}{\left(b\arcsin\left(dx+c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)/(b*arcsin(d*x + c) + a)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e\left(\int \frac{c}{a\sqrt{a+b\,\mathrm{asin}\,(c+dx)}+b\sqrt{a+b\,\mathrm{asin}\,(c+dx)}\,\mathrm{asin}\,(c+dx)}\,dx+\int \frac{dx}{a\sqrt{a+b\,\mathrm{asin}\,(c+dx)}+b\sqrt{a+b\,\mathrm{asin}\,(c+dx)}\,\mathrm{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] e*(Integral(c/(a*sqrt(a + b*asin(c + d*x)) + b*sqrt(a + b*asin(c + d*x))*as
in(c + d*x)), x) + Integral(d*x/(a*sqrt(a + b*asin(c + d*x)) + b*sqrt(a + b
*asin(c + d*x))*asin(c + d*x)), x))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{dex+ce}{(b\arcsin(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)/(b*arcsin(d*x + c) + a)^(3/2), x)
```

3.269 $\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}\,dx$

Optimal. Leaf size=144

$$\frac{2\sqrt{2\pi}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}-\frac{2\sqrt{2\pi}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}-\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}}$$

```
[Out] (-2*Sqrt[1 - (c + d*x)^2])/(b*d*Sqrt[a + b*ArcSin[c + d*x]]) - (2*Sqrt[2*Pi
]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(b^(
3/2)*d) + (2*Sqrt[2*Pi]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/S
qrt[b]]*Sin[a/b])/(b^(3/2)*d)
```

Rubi [A] time = 0.286833, antiderivative size = 144, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.571, Rules used = {4803, 4621, 4723, 3306, 3305, 3351, 3304, 3352}

$$\frac{2\sqrt{2\pi}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}-\frac{2\sqrt{2\pi}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}-\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(-3/2),x]
```


```
[Out] (-2*Sqrt[1 - (c + d*x)^2])/(b*d*Sqrt[a + b*ArcSin[c + d*x]]) - (2*Sqrt[2*Pi
]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(b^(
3/2)*d) + (2*Sqrt[2*Pi]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/S
qrt[b]]*Sin[a/b])/(b^(3/2)*d)
```


Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}\,dx=\frac{\text{Subst}\left(\int \frac{1}{\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx,x,c+dx\right)}{d}$$

$$=-\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}}-\frac{2\,\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\sqrt{a+b\sin^{-1}(x)}}\,dx,x,c+dx\right)}{bd}$$

$$=-\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}}-\frac{2\,\text{Subst}\left(\int \frac{\sin(x)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(c+dx)\right)}{bd}$$

$$=-\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}}-\frac{\left(2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(c+dx)\right)}{bd}+\frac{\left(2\sin\right.}{}$$

$$=-\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}}-\frac{\left(4\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \sin\left(\frac{x^2}{b}\right)\,dx,x,\sqrt{a+b\sin^{-1}(c+dx)}\right)}{b^2d}$$

$$=-\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}}-\frac{2\sqrt{2\pi}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}+\frac{2\sqrt{2\pi}C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin}}{\sqrt{b}}\right.}{b^{3/2}}$$

Mathematica [F] time = 0.0348103, size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(-3/2),x]
```

```
[Out] Integrate[(a + b*ArcSin[c + d*x])^(-3/2), x]
```

Maple [A] time = 0., size = 161, normalized size = 1.1

$$-2\frac{1}{db\sqrt{a+b\arcsin(dx+c)}}\left(\sqrt{b^{-1}}\sqrt{\pi}\sqrt{2}\sqrt{a+b\arcsin(dx+c)}\cos\left(\frac{a}{b}\right)\text{FresnelS}\left(\frac{\sqrt{2}\sqrt{a+b\arcsin(dx+c)}}{\sqrt{b^{-1}}\sqrt{\pi}b}\right)-\sqrt{b^{-1}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c))^(3/2),x)
```

```
[Out] -2/d/b*((1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*Fre
snelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)-(1/b)^(1/2)
*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1
/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)+cos((a+b*arcsin(d*x+c))/b-a/b)
)/(a+b*arcsin(d*x+c))^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b \arcsin\left(dx + c\right) + a\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(-3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a + b \operatorname{asin}\left(c + dx\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**(-3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(b \arcsin (dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(-3/2), x)
```

3.270 $\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}\,dx$

Optimal. Leaf size=28

$$\frac{\text{Unintegrable}\left(\frac{1}{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}},x\right)}{e}$$

```
[Out] Unintegrable[1/((c + d*x)*(a + b*ArcSin[c + d*x])^(3/2)), x]/e
```

Rubi [A] time = 0.105367, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(3/2)),x]
```

```
[Out] Defer[Subst][Defer[Int][1/(x*(a + b*ArcSin[x])^(3/2)), x], x, c + d*x]/(d*e
)
```

Rubi steps

$$\begin{aligned}\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}\,dx &= \frac{\text{Subst}\left(\int \frac{1}{ex\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx,x,c+dx\right)}{d}\\ &= \frac{\text{Subst}\left(\int \frac{1}{x\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx,x,c+dx\right)}{de}\end{aligned}$$

Mathematica [A] time = 0.077332, size = 0, normalized size = 0.

$$\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(3/2)),x]
```

```
[Out] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(3/2)), x]
```

Maple [A] time = 0.194, size = 0, normalized size = 0.

$$\int \frac{1}{dex+ce}\left(a+b\arcsin\left(dx+c\right)\right)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(3/2),x)
```

```
[Out] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(3/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(dex+ce)(b\arcsin\left(dx+c\right)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(1/((d*e*x + c*e)*(b*arcsin(d*x + c) + a)^(3/2)), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{1}{ac\sqrt{a+b\operatorname{asin}(c+dx)}+adx\sqrt{a+b\operatorname{asin}(c+dx)}+bc\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)+bdx\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] Integral(1/(a*c*sqrt(a + b*asin(c + d*x)) + a*d*x*sqrt(a + b*asin(c + d*x))
 + b*c*sqrt(a + b*asin(c + d*x))*asin(c + d*x) + b*d*x*sqrt(a + b*asin(c +
d*x))*asin(c + d*x)), x)/e
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(dex+ce)(b\arcsin(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(1/((d*e*x + c*e)*(b*arcsin(d*x + c) + a)^(3/2)), x)
```

3.271 $\int \frac{(ce+dex)^3}{\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}\,dx$

Optimal. Leaf size=344

$$\frac{4\sqrt{\pi}e^3\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{3b^{5/2}d}-\frac{4\sqrt{2\pi}e^3\sin\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d}+\frac{4\sqrt{2\pi}e^3\cos\left(\frac{4a}{b}\right)S\left(\cdots\right.}{3b^{5/2}\cdots}$$

```
[Out] (-2*e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(3*b*d*(a + b*ArcSin[c + d*x])^(
3/2)) - (4*e^3*(c + d*x)^2)/(b^2*d*Sqrt[a + b*ArcSin[c + d*x]]) + (16*e^3*(
c + d*x)^4)/(3*b^2*d*Sqrt[a + b*ArcSin[c + d*x]]) + (4*e^3*Sqrt[2*Pi]*Cos[(
4*a)/b]*FresnelS[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(3*b^
(5/2)*d) - (4*e^3*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d
*x]])/(Sqrt[b]*Sqrt[Pi])])/(3*b^(5/2)*d) + (4*e^3*Sqrt[Pi]*FresnelC[(2*Sqrt
[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(3*b^(5/2)*d) -
(4*e^3*Sqrt[2*Pi]*FresnelC[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[
b]]*Sin[(4*a)/b])/(3*b^(5/2)*d)
```

Rubi [A] time = 1.17264, antiderivative size = 344, normalized size of antiderivative = 1., number of steps used = 26, number of rules used = 11, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.44, Rules used = {4805, 12, 4633, 4719, 4635, 4406, 3306, 3305, 3351, 3304, 3352}

$$\frac{4\sqrt{\pi}e^3\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{3b^{5/2}d}-\frac{4\sqrt{2\pi}e^3\sin\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d}+\frac{4\sqrt{2\pi}e^3\cos\left(\frac{4a}{b}\right)S\left(\cdots\right.}{3b^{5/2}\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] (-2*e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(3*b*d*(a + b*ArcSin[c + d*x])^(
3/2)) - (4*e^3*(c + d*x)^2)/(b^2*d*Sqrt[a + b*ArcSin[c + d*x]]) + (16*e^3*(
c + d*x)^4)/(3*b^2*d*Sqrt[a + b*ArcSin[c + d*x]]) + (4*e^3*Sqrt[2*Pi]*Cos[(
4*a)/b]*FresnelS[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(3*b^
(5/2)*d) - (4*e^3*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d
*x]])/(Sqrt[b]*Sqrt[Pi])])/(3*b^(5/2)*d) + (4*e^3*Sqrt[Pi]*FresnelC[(2*Sqrt
[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(3*b^(5/2)*d) -
(4*e^3*Sqrt[2*Pi]*FresnelC[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[
```

```
b]]*Sin[(4*a)/b])/(3*b^(5/2)*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4633

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (Dis
t[(c*(m + 1))/(b*(n + 1)), Int[(x^(m + 1)*(a + b*ArcSin[c*x])^(n + 1))/Sqrt
[1 - c^2*x^2], x], x] - Dist[m/(b*c*(n + 1)), Int[(x^(m - 1)*(a + b*ArcSin[
c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^3}{\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{e^3x^3}{\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^3\,\text{Subst}\left(\int \frac{x^3}{\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{\left(2e^3\right)\text{Subst}\left(\int \frac{x^2}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx, x, c+dx\right)}{bd} - \frac{\left(8e^3\right)}{}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4e^3(c+dx)^2}{b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{16e^3(c+dx)^4}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} +$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4e^3(c+dx)^2}{b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{16e^3(c+dx)^4}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} +$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4e^3(c+dx)^2}{b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{16e^3(c+dx)^4}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} +$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4e^3(c+dx)^2}{b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{16e^3(c+dx)^4}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} +$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4e^3(c+dx)^2}{b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{16e^3(c+dx)^4}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} +$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4e^3(c+dx)^2}{b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{16e^3(c+dx)^4}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} +$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4e^3(c+dx)^2}{b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{16e^3(c+dx)^4}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} +$$

Mathematica [C] time = 2.02095, size = 351, normalized size = 1.02

$$e^3\left(-4\left(a+b\sin^{-1}(c+dx)\right)\left(-\sqrt{2}e^{-\frac{2ia}{b}}\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{1}{2},-\frac{2i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)-\sqrt{2}e^{\frac{2ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Ga}\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] (e^3*(-4*(a + b*ArcSin[c + d*x])*(E^((-2*I)*ArcSin[c + d*x]) + E^((2*I)*Arc
Sin[c + d*x]) - (Sqrt[2]*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2,
((-2*I)*(a + b*ArcSin[c + d*x]))/b])/E^(((2*I)*a)/b) - Sqrt[2]*E^(((2*I)*a)
/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((2*I)*(a + b*ArcSin[c +
 d*x]))/b]) + 4*(a + b*ArcSin[c + d*x])*(E^((-4*I)*ArcSin[c + d*x]) + E^((4
*I)*ArcSin[c + d*x]) - (2*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2,
 ((-4*I)*(a + b*ArcSin[c + d*x]))/b])/E^(((4*I)*a)/b) - 2*E^(((4*I)*a)/b)*S
qrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((4*I)*(a + b*ArcSin[c + d*x]
))/b]) - 2*b*Sin[2*ArcSin[c + d*x]] + b*Sin[4*ArcSin[c + d*x]]))/(12*b^2*d*
(a + b*ArcSin[c + d*x])^(3/2))
```

Maple [B] time = 0.117, size = 689, normalized size = 2.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(5/2),x)
```

```
[Out] -1/12/d*e^3/b^2*(-16*arcsin(d*x+c)*(a+b*arcsin(d*x+c))^(1/2)*2^(1/2)*(1/b)^
(1/2)*Pi^(1/2)*cos(4*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcs
in(d*x+c))^(1/2)/b)*b+16*arcsin(d*x+c)*(a+b*arcsin(d*x+c))^(1/2)*2^(1/2)*(1
/b)^(1/2)*Pi^(1/2)*sin(4*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*
arcsin(d*x+c))^(1/2)/b)*b+16*arcsin(d*x+c)*Pi^(1/2)*(1/b)^(1/2)*cos(2*a/b)*
FresnelS(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*
x+c))^(1/2)*b-16*arcsin(d*x+c)*Pi^(1/2)*(1/b)^(1/2)*sin(2*a/b)*FresnelC(2/P
i^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+c))^(1/2)*
b-16*(a+b*arcsin(d*x+c))^(1/2)*2^(1/2)*(1/b)^(1/2)*Pi^(1/2)*cos(4*a/b)*Fres
nelS(2*2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*a+16*(a+b*
arcsin(d*x+c))^(1/2)*2^(1/2)*(1/b)^(1/2)*Pi^(1/2)*sin(4*a/b)*FresnelC(2*2^(
1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*a+16*Pi^(1/2)*(1/b)^
```

```
(1/2)*cos(2*a/b)*FresnelS(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/
b)*(a+b*arcsin(d*x+c))^(1/2)*a-16*Pi^(1/2)*(1/b)^(1/2)*sin(2*a/b)*FresnelC(
2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+c))^(1/
2)*a+8*arcsin(d*x+c)*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*b-8*arcsin(d*x+c)*c
os(4*(a+b*arcsin(d*x+c))/b-4*a/b)*b+2*sin(2*(a+b*arcsin(d*x+c))/b-2*a/b)*b+
8*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a-sin(4*(a+b*arcsin(d*x+c))/b-4*a/b)*b
-8*cos(4*(a+b*arcsin(d*x+c))/b-4*a/b)*a)/(a+b*arcsin(d*x+c))^(3/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dex+ce)^3}{(b\arcsin(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)^3/(b*arcsin(d*x + c) + a)^(5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e^3\left(\int \frac{c^3}{a^2\sqrt{a+b\operatorname{asin}(c+dx)}+2ab\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)+b^2\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^2(c+dx)}\,dx+\int \frac{}{a^2\sqrt{}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3/(a+b*asin(d*x+c))**(5/2),x)
```

```
[Out] e**3*(Integral(c**3/(a**2*sqrt(a + b*asin(c + d*x)) + 2*a*b*sqrt(a + b*asin
(c + d*x))*asin(c + d*x) + b**2*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**2)
, x) + Integral(d**3*x**3/(a**2*sqrt(a + b*asin(c + d*x)) + 2*a*b*sqrt(a +
b*asin(c + d*x))*asin(c + d*x) + b**2*sqrt(a + b*asin(c + d*x))*asin(c + d*
x)**2), x) + Integral(3*c*d**2*x**2/(a**2*sqrt(a + b*asin(c + d*x)) + 2*a*b
*sqrt(a + b*asin(c + d*x))*asin(c + d*x) + b**2*sqrt(a + b*asin(c + d*x))*a
sin(c + d*x)**2), x) + Integral(3*c**2*d*x/(a**2*sqrt(a + b*asin(c + d*x))
+ 2*a*b*sqrt(a + b*asin(c + d*x))*asin(c + d*x) + b**2*sqrt(a + b*asin(c +
d*x))*asin(c + d*x)**2), x))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dex + ce)^3}{(b \arcsin(dx + c) + a)^{\frac{5}{2}}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)^3/(b*arcsin(d*x + c) + a)^(5/2), x)
```

3.272 $\int \frac{(ce+dex)^2}{\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}\,dx$

Optimal. Leaf size=342

$$-\frac{\sqrt{2\pi}e^2\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d}+\frac{\sqrt{6\pi}e^2\cos\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{b^{5/2}d}-\frac{\sqrt{2\pi}e^2\sin\left(\frac{a}{b}\right)S\left(\sqrt{\frac{2}{\pi}}\right.}{3b^{5/2}d}$$

```
[Out] (-2*e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(3*b*d*(a + b*ArcSin[c + d*x])^(
3/2)) - (8*e^2*(c + d*x))/(3*b^2*d*Sqrt[a + b*ArcSin[c + d*x]]) + (4*e^2*(c
 + d*x)^3)/(b^2*d*Sqrt[a + b*ArcSin[c + d*x]]) - (e^2*Sqrt[2*Pi]*Cos[a/b]*F
resnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(3*b^(5/2)*d) +
(e^2*Sqrt[6*Pi]*Cos[(3*a)/b]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x
]])/Sqrt[b]])/(b^(5/2)*d) - (e^2*Sqrt[2*Pi]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b
*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(3*b^(5/2)*d) + (e^2*Sqrt[6*Pi]*Fresn
elS[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(3*a)/b])/(b^(5/2
)*d)
```

Rubi [A] time = 1.05408, antiderivative size = 342, normalized size of antiderivative = 1., number of steps used = 24, number of rules used = 12, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.48, Rules used = {4805, 12, 4633, 4719, 4635, 4406, 3306, 3305, 3351, 3304, 3352, 4623}

$$-\frac{\sqrt{2\pi}e^2\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d}+\frac{\sqrt{6\pi}e^2\cos\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{b^{5/2}d}-\frac{\sqrt{2\pi}e^2\sin\left(\frac{a}{b}\right)S\left(\sqrt{\frac{2}{\pi}}\right.}{3b^{5/2}d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] (-2*e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(3*b*d*(a + b*ArcSin[c + d*x])^(
3/2)) - (8*e^2*(c + d*x))/(3*b^2*d*Sqrt[a + b*ArcSin[c + d*x]]) + (4*e^2*(c
 + d*x)^3)/(b^2*d*Sqrt[a + b*ArcSin[c + d*x]]) - (e^2*Sqrt[2*Pi]*Cos[a/b]*F
resnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(3*b^(5/2)*d) +
(e^2*Sqrt[6*Pi]*Cos[(3*a)/b]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x
]])/Sqrt[b]])/(b^(5/2)*d) - (e^2*Sqrt[2*Pi]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b
*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(3*b^(5/2)*d) + (e^2*Sqrt[6*Pi]*Fresn
elS[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(3*a)/b])/(b^(5/2
```

```
)*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4633

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (Dis
t[(c*(m + 1))/(b*(n + 1)), Int[(x^(m + 1)*(a + b*ArcSin[c*x])^(n + 1))/Sqrt
[1 - c^2*x^2], x], x] - Dist[m/(b*c*(n + 1)), Int[(x^(m - 1)*(a + b*ArcSin[
c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^2}{\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{e^2x^2}{\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^2\,\text{Subst}\left(\int \frac{x^2}{\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{\left(4e^2\right)\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx, x, c+dx\right)}{3bd} - \frac{(2e}{}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{8e^2(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{4e^2(c+dx)^3}{b^2d\sqrt{a+b\sin^{-1}(c+dx)}}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{8e^2(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{4e^2(c+dx)^3}{b^2d\sqrt{a+b\sin^{-1}(c+dx)}}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{8e^2(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{4e^2(c+dx)^3}{b^2d\sqrt{a+b\sin^{-1}(c+dx)}}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{8e^2(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{4e^2(c+dx)^3}{b^2d\sqrt{a+b\sin^{-1}(c+dx)}}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{8e^2(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{4e^2(c+dx)^3}{b^2d\sqrt{a+b\sin^{-1}(c+dx)}}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{8e^2(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{4e^2(c+dx)^3}{b^2d\sqrt{a+b\sin^{-1}(c+dx)}}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{8e^2(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{4e^2(c+dx)^3}{b^2d\sqrt{a+b\sin^{-1}(c+dx)}}$$

Mathematica [C] time = 1.84144, size = 411, normalized size = 1.2

$$e^2\left(-2be^{-\frac{ia}{b}}\left(-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)+6\sqrt{3}be^{-\frac{3ia}{b}}\left(-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},-\frac{3i\left(a+b\sin\right.}{}\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] (e^2*(((-6*I)*a)/E^((3*I)*ArcSin[c + d*x]) + (b*(1 - (6*I)*ArcSin[c + d*x])
)/E^((3*I)*ArcSin[c + d*x]) + E^((3*I)*ArcSin[c + d*x])*((6*I)*a + b + (6*I
)*b*ArcSin[c + d*x]) - I*E^(I*ArcSin[c + d*x])*(2*a - I*b + 2*b*ArcSin[c +
d*x]) - (2*b*(((-I)*(a + b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1/2, ((-I)*(a +
 b*ArcSin[c + d*x]))/b])/E^((I*a)/b) + (I*(2*a + I*b + 2*b*ArcSin[c + d*x]
+ (2*I)*b*E^((I*(a + b*ArcSin[c + d*x]))/b)*((I*(a + b*ArcSin[c + d*x]))/b)
^(3/2)*Gamma[1/2, (I*(a + b*ArcSin[c + d*x]))/b]))/E^(I*ArcSin[c + d*x]) +
(6*Sqrt[3]*b*(((-I)*(a + b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1/2, ((-3*I)*(a
 + b*ArcSin[c + d*x]))/b])/E^(((3*I)*a)/b) + 6*Sqrt[3]*b*E^(((3*I)*a)/b)*((
I*(a + b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1/2, ((3*I)*(a + b*ArcSin[c + d*x
]))/b]))/(12*b^2*d*(a + b*ArcSin[c + d*x])^(3/2))
```

Maple [B] time = 0.121, size = 721, normalized size = 2.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(5/2),x)
```

```
[Out] 1/6/d*e^2/b^2*(6*arcsin(d*x+c)*3^(1/2)*2^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))
^(1/2)*cos(3*a/b)*FresnelC(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin
(d*x+c))^(1/2)/b)*(1/b)^(1/2)*b+6*arcsin(d*x+c)*3^(1/2)*2^(1/2)*Pi^(1/2)*(a
+b*arcsin(d*x+c))^(1/2)*sin(3*a/b)*FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^
(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(1/b)^(1/2)*b-2*arcsin(d*x+c)*2^(1/2)*Pi
^(1/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(
1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b-2*arcsin(d*x+c)*2^(1/2)*Pi^
(1/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelS(2^(1/2)/Pi^(1
/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b+6*3^(1/2)*2^(1/2)*Pi^(1/2)*(
a+b*arcsin(d*x+c))^(1/2)*cos(3*a/b)*FresnelC(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)
```

```
^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(1/b)^(1/2)*a+6*3^(1/2)*2^(1/2)*Pi^(1/2
)*(a+b*arcsin(d*x+c))^(1/2)*sin(3*a/b)*FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(1
/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(1/b)^(1/2)*a-2*2^(1/2)*Pi^(1/2)*(1/
b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)
^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*a-2*2^(1/2)*Pi^(1/2)*(1/b)^(1/2)*(a+b*a
rcsin(d*x+c))^(1/2)*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arc
sin(d*x+c))^(1/2)/b)*a+2*arcsin(d*x+c)*sin((a+b*arcsin(d*x+c))/b-a/b)*b-6*a
rcsin(d*x+c)*sin(3*(a+b*arcsin(d*x+c))/b-3*a/b)*b-cos((a+b*arcsin(d*x+c))/b
-a/b)*b+2*sin((a+b*arcsin(d*x+c))/b-a/b)*a+cos(3*(a+b*arcsin(d*x+c))/b-3*a/
b)*b-6*sin(3*(a+b*arcsin(d*x+c))/b-3*a/b)*a)/(a+b*arcsin(d*x+c))^(3/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dex+ce)^2}{(b\arcsin(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)^2/(b*arcsin(d*x + c) + a)^(5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e^2\left(\int \frac{c^2}{a^2\sqrt{a+b\operatorname{asin}(c+dx)}+2ab\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)+b^2\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^2(c+dx)}\,dx+\int \frac{}{a^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2/(a+b*asin(d*x+c))**(5/2),x)
```

```
[Out] e**2*(Integral(c**2/(a**2*sqrt(a + b*asin(c + d*x)) + 2*a*b*sqrt(a + b*asin
(c + d*x))*asin(c + d*x) + b**2*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**2)
, x) + Integral(d**2*x**2/(a**2*sqrt(a + b*asin(c + d*x)) + 2*a*b*sqrt(a +
b*asin(c + d*x))*asin(c + d*x) + b**2*sqrt(a + b*asin(c + d*x))*asin(c + d*
x)**2), x) + Integral(2*c*d*x/(a**2*sqrt(a + b*asin(c + d*x)) + 2*a*b*sqrt(
a + b*asin(c + d*x))*asin(c + d*x) + b**2*sqrt(a + b*asin(c + d*x))*asin(c
+ d*x)**2), x))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dex+ce)^2}{(b\arcsin(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)^2/(b*arcsin(d*x + c) + a)^(5/2), x)
```

3.273 $\int \frac{ce+dex}{\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}\,dx$

Optimal. Leaf size=207

$$\frac{8\sqrt{\pi}e\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{3b^{5/2}d}-\frac{8\sqrt{\pi}e\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{3b^{5/2}d}+\frac{8e(c+dx)^2}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}}-\frac{}{3b^2d\sqrt{}}$$

```
[Out] (-2*e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(3*b*d*(a + b*ArcSin[c + d*x])^(3/2)
) - (4*e)/(3*b^2*d*Sqrt[a + b*ArcSin[c + d*x]]) + (8*e*(c + d*x)^2)/(3*b^2*
d*Sqrt[a + b*ArcSin[c + d*x]]) - (8*e*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqr
t[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(3*b^(5/2)*d) + (8*e*Sqrt[Pi
]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b]
)/(3*b^(5/2)*d)
```

Rubi [A] time = 0.535887, antiderivative size = 207, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 12, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.522, Rules used = {4805, 12, 4633, 4719, 4635, 4406, 3306, 3305, 3351, 3304, 3352, 4641}

$$\frac{8\sqrt{\pi}e\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{3b^{5/2}d}-\frac{8\sqrt{\pi}e\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{3b^{5/2}d}+\frac{8e(c+dx)^2}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}}-\frac{}{3b^2d\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)/(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] (-2*e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(3*b*d*(a + b*ArcSin[c + d*x])^(3/2)
) - (4*e)/(3*b^2*d*Sqrt[a + b*ArcSin[c + d*x]]) + (8*e*(c + d*x)^2)/(3*b^2*
d*Sqrt[a + b*ArcSin[c + d*x]]) - (8*e*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqr
t[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(3*b^(5/2)*d) + (8*e*Sqrt[Pi
]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b]
)/(3*b^(5/2)*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
```

```
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4633

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (Dis
t[(c*(m + 1))/(b*(n + 1)), Int[(x^(m + 1)*(a + b*ArcSin[c*x])^(n + 1))/Sqrt
[1 - c^2*x^2], x], x] - Dist[m/(b*c*(n + 1)), Int[(x^(m - 1)*(a + b*ArcSin[
c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{ce+dex}{\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{ex}{\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e\,\text{Subst}\left(\int \frac{x}{\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx,x,c+dx\right)}{d}$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{(2e)\,\text{Subst}\left(\int \frac{1}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx,x,c+dx\right)}{3bd} - \frac{(4e)\,\text{Su}}{}$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4e}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{8e(c+dx)^2}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} -$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4e}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{8e(c+dx)^2}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} -$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4e}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{8e(c+dx)^2}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} -$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4e}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{8e(c+dx)^2}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} -$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4e}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{8e(c+dx)^2}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} -$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4e}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{8e(c+dx)^2}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} -$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4e}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{8e(c+dx)^2}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} -$$

Mathematica [C] time = 1.17985, size = 192, normalized size = 0.93

$$-\frac{e\left(b\sin\left(2\sin^{-1}(c+dx)\right)+2\left(a+b\sin^{-1}(c+dx)\right)\left(-\sqrt{2}e^{-\frac{2ia}{b}}\sqrt{-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{1}{2},-\frac{2i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)-\sqrt{2}e\right.\right.}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*e + d*e*x)/(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] -(e*(2*(a + b*ArcSin[c + d*x])*(E^((-2*I)*ArcSin[c + d*x]) + E^((2*I)*ArcSi
n[c + d*x]) - (Sqrt[2]*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((
-2*I)*(a + b*ArcSin[c + d*x]))/b])/E^(((2*I)*a)/b) - Sqrt[2]*E^(((2*I)*a)/b
)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((2*I)*(a + b*ArcSin[c + d
*x]))/b]) + b*Sin[2*ArcSin[c + d*x]]))/(3*b^2*d*(a + b*ArcSin[c + d*x])^(3/
2))
```

Maple [B] time = 0.086, size = 342, normalized size = 1.7

$$-\frac{e}{3\,b^2d}\left(8\,\arcsin(dx+c)\sqrt{\pi}\sqrt{b^{-1}}\cos\left(2\,\frac{a}{b}\right)\text{FresnelS}\left(2\,\frac{\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\sqrt{b^{-1}}b}\right)\sqrt{a+b\arcsin(dx+c)}b-8\,\arcsin(d\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(5/2),x)
```

```
[Out] -1/3*e/d/b^2*(8*arcsin(d*x+c)*Pi^(1/2)*(1/b)^(1/2)*cos(2*a/b)*FresnelS(2/Pi
^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+c))^(1/2)*b
-8*arcsin(d*x+c)*Pi^(1/2)*(1/b)^(1/2)*sin(2*a/b)*FresnelC(2/Pi^(1/2)/(1/b)^
(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+c))^(1/2)*b+8*Pi^(1/2)*(
1/b)^(1/2)*cos(2*a/b)*FresnelS(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(
1/2)/b)*(a+b*arcsin(d*x+c))^(1/2)*a-8*Pi^(1/2)*(1/b)^(1/2)*sin(2*a/b)*Fresn
elC(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+c))
^(1/2)*a+4*arcsin(d*x+c)*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*b+sin(2*(a+b*ar
csin(d*x+c))/b-2*a/b)*b+4*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a)/(a+b*arcsin
(d*x+c))^(3/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{dex + ce}{(b\arcsin(dx + c) + a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)/(b*arcsin(d*x + c) + a)^(5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e\left(\int \frac{c}{a^2\sqrt{a + b\,\mathrm{asin}\,(c + dx)} + 2ab\sqrt{a + b\,\mathrm{asin}\,(c + dx)}\,\mathrm{asin}\,(c + dx) + b^2\sqrt{a + b\,\mathrm{asin}\,(c + dx)}\,\mathrm{asin}^2\,(c + dx)}\,dx + \int \frac{}{a^2\sqrt{}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*asin(d*x+c))**(5/2),x)
```

```
[Out] e*(Integral(c/(a**2*sqrt(a + b*asin(c + d*x)) + 2*a*b*sqrt(a + b*asin(c + d
*x))*asin(c + d*x) + b**2*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**2), x) +
 Integral(d*x/(a**2*sqrt(a + b*asin(c + d*x)) + 2*a*b*sqrt(a + b*asin(c + d
*x))*asin(c + d*x) + b**2*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**2), x))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{dex + ce}{(b \arcsin(dx + c) + a)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)/(b*arcsin(d*x + c) + a)^(5/2), x)
```

3.274 $\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}\,dx$

Optimal. Leaf size=179

$$-\frac{4\sqrt{2\pi}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d}-\frac{4\sqrt{2\pi}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d}+\frac{4(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}}-\frac{}{3bd}$$

```
[Out] (-2*Sqrt[1 - (c + d*x)^2])/(3*b*d*(a + b*ArcSin[c + d*x])^(3/2)) + (4*(c +
d*x))/(3*b^2*d*Sqrt[a + b*ArcSin[c + d*x]]) - (4*Sqrt[2*Pi]*Cos[a/b]*Fresne
lC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(3*b^(5/2)*d) - (4*Sq
rt[2*Pi]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b
])/(3*b^(5/2)*d)
```

Rubi [A] time = 0.280521, antiderivative size = 179, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 9, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.643, Rules used = {4803, 4621, 4719, 4623, 3306, 3305, 3351, 3304, 3352}

$$-\frac{4\sqrt{2\pi}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d}-\frac{4\sqrt{2\pi}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d}+\frac{4(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}}-\frac{}{3bd}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(-5/2),x]
```


```
[Out] (-2*Sqrt[1 - (c + d*x)^2])/(3*b*d*(a + b*ArcSin[c + d*x])^(3/2)) + (4*(c +
d*x))/(3*b^2*d*Sqrt[a + b*ArcSin[c + d*x]]) - (4*Sqrt[2*Pi]*Cos[a/b]*Fresne
lC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(3*b^(5/2)*d) - (4*Sq
rt[2*Pi]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b
])/(3*b^(5/2)*d)
```


Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{2\,\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx, x, c+dx\right)}{3bd}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{4(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{4\,\text{Subst}\left(\int \frac{1}{\sqrt{a+b\sin^{-1}(x)}}\,dx, \ldots\right.}{3b^2d}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{4(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{4\,\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}-\frac{x}{b}\right)}{\sqrt{x}}\,dx, x, a \ldots\right.}{3b^3d}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{4(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{\left(4\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{x}{b}\right)}{\sqrt{x}} \ldots\right.}{3b \ldots}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{4(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{\left(8\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \cos\left(\ldots\right.\right.}{\ldots}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{4(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{4\sqrt{2\pi}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin \ldots}}{\sqrt{b} \ldots}\right.}{3b^{5/2}d}$$

Mathematica [F] time = 0.034665, size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(-5/2),x]
```

```
[Out] Integrate[(a + b*ArcSin[c + d*x])^(-5/2), x]
```

Maple [B] time = 0., size = 355, normalized size = 2.

$$\frac{2}{3\,db^2}\left(-2\,\arcsin\left(dx+c\right)\sqrt{2}\sqrt{\pi}\sqrt{b^{-1}}\sqrt{a+b\arcsin\left(dx+c\right)}\cos\left(\frac{a}{b}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\sqrt{b^{-1}}b}\right)b-2\,\mathrm{arcsi}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c))^(5/2),x)
```

```
[Out] 2/3/d/b^2*(-2*arcsin(d*x+c)*2^(1/2)*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+c)
)^(1/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^
(1/2)/b)*b-2*arcsin(d*x+c)*2^(1/2)*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+c))
^(1/2)*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(
1/2)/b)*b-2*2^(1/2)*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)
*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*a-2*2^(
1/2)*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelS(2^(1/
2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*a+2*arcsin(d*x+c)*sin(
(a+b*arcsin(d*x+c))/b-a/b)*b-cos((a+b*arcsin(d*x+c))/b-a/b)*b+2*sin((a+b*ar
csin(d*x+c))/b-a/b)*a)/(a+b*arcsin(d*x+c))^(3/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b\arcsin\left(dx+c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(-5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+b\operatorname{asin}(c+dx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c))**(5/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**(-5/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(b\arcsin(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(-5/2), x)
```

3.275 $\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}\,dx$

Optimal. Leaf size=28

$$\frac{\text{Unintegrable}\left(\frac{1}{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{5/2}},x\right)}{e}$$

```
[Out] Unintegrable[1/((c + d*x)*(a + b*ArcSin[c + d*x])^(5/2)), x]/e
```

Rubi [A] time = 0.101762, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(5/2)),x]
```

```
[Out] Defer[Subst][Defer[Int][1/(x*(a + b*ArcSin[x])^(5/2)), x], x, c + d*x]/(d*e
)
```

Rubi steps

$$\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{ex\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx,x,c+dx\right)}{d}$$
$$= \frac{\text{Subst}\left(\int \frac{1}{x\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx,x,c+dx\right)}{de}$$

Mathematica [A] time = 0.079108, size = 0, normalized size = 0.

$$\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(5/2)),x]
```

```
[Out] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(5/2)), x]
```

Maple [A] time = 0.186, size = 0, normalized size = 0.

$$\int \frac{1}{dex+ce} \left(a+b\arcsin \left(dx+c\right)\right)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(5/2),x)
```

```
[Out] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(5/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(dex+ce)(b\arcsin \left(dx+c\right)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(1/((d*e*x + c*e)*(b*arcsin(d*x + c) + a)^(5/2)), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*asin(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(dex+ce)(b\arcsin{(dx+c)}+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(1/((d*e*x + c*e)*(b*arcsin(d*x + c) + a)^(5/2)), x)
```

3.276 $\int \frac{(ce+dex)^3}{\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}\,dx$

Optimal. Leaf size=442

$$\frac{32\sqrt{2\pi}e^3\cos\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{15b^{7/2}d}-\frac{16\sqrt{\pi}e^3\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{15b^{7/2}d}-\frac{16\sqrt{\pi}e^3\sin\left(\frac{2a}{b}\right)S\left(\right.}{15b^{7/2}}$$

```
[Out] (-2*e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(5*b*d*(a + b*ArcSin[c + d*x])^(
5/2)) - (4*e^3*(c + d*x)^2)/(5*b^2*d*(a + b*ArcSin[c + d*x])^(3/2)) + (16*e
^3*(c + d*x)^4)/(15*b^2*d*(a + b*ArcSin[c + d*x])^(3/2)) - (16*e^3*(c + d*x
)*Sqrt[1 - (c + d*x)^2])/(5*b^3*d*Sqrt[a + b*ArcSin[c + d*x]]) + (128*e^3*(
c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(15*b^3*d*Sqrt[a + b*ArcSin[c + d*x]]) +
(32*e^3*Sqrt[2*Pi]*Cos[(4*a)/b]*FresnelC[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c
+ d*x]])/Sqrt[b]])/(15*b^(7/2)*d) - (16*e^3*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[
(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(15*b^(7/2)*d) - (16*e
^3*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Si
n[(2*a)/b])/(15*b^(7/2)*d) + (32*e^3*Sqrt[2*Pi]*FresnelS[(2*Sqrt[2/Pi]*Sqrt
[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(4*a)/b])/(15*b^(7/2)*d)
```

Rubi [A] time = 1.13726, antiderivative size = 442, normalized size of antiderivative = 1., number of steps used = 23, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.4, Rules used = {4805, 12, 4633, 4719, 4631, 3306, 3305, 3351, 3304, 3352}

$$\frac{32\sqrt{2\pi}e^3\cos\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{15b^{7/2}d}-\frac{16\sqrt{\pi}e^3\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{15b^{7/2}d}-\frac{16\sqrt{\pi}e^3\sin\left(\frac{2a}{b}\right)S\left(\right.}{15b^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] (-2*e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(5*b*d*(a + b*ArcSin[c + d*x])^(
5/2)) - (4*e^3*(c + d*x)^2)/(5*b^2*d*(a + b*ArcSin[c + d*x])^(3/2)) + (16*e
^3*(c + d*x)^4)/(15*b^2*d*(a + b*ArcSin[c + d*x])^(3/2)) - (16*e^3*(c + d*x
)*Sqrt[1 - (c + d*x)^2])/(5*b^3*d*Sqrt[a + b*ArcSin[c + d*x]]) + (128*e^3*(
c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(15*b^3*d*Sqrt[a + b*ArcSin[c + d*x]]) +
(32*e^3*Sqrt[2*Pi]*Cos[(4*a)/b]*FresnelC[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c
```

```
+ d*x]])/Sqrt[b]])/(15*b^(7/2)*d) - (16*e^3*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[
(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(15*b^(7/2)*d) - (16*e
^3*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Si
n[(2*a)/b])/(15*b^(7/2)*d) + (32*e^3*Sqrt[2*Pi]*FresnelS[(2*Sqrt[2/Pi]*Sqrt
[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(4*a)/b])/(15*b^(7/2)*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4633

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (Dis
t[(c*(m + 1))/(b*(n + 1)), Int[(x^(m + 1)*(a + b*ArcSin[c*x])^(n + 1))/Sqrt
[1 - c^2*x^2], x], x] - Dist[m/(b*c*(n + 1)), Int[(x^(m - 1)*(a + b*ArcSin[
c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^3}{\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}\,dx = \frac{\text{Subst}\left(\int \frac{e^3x^3}{\left(a+b\sin^{-1}(x)\right)^{7/2}}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e^3\,\text{Subst}\left(\int \frac{x^3}{\left(a+b\sin^{-1}(x)\right)^{7/2}}\,dx,x,c+dx\right)}{d}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{\left(6e^3\right)\text{Subst}\left(\int \frac{x^2}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx,x,c+dx\right)}{5bd} - \frac{\left(8e\right.}{}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{4e^3(c+dx)^2}{5b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{16e^3(c+dx)^4}{15b^2d\left(a+b\sin^{-1}(c+\right.}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{4e^3(c+dx)^2}{5b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{16e^3(c+dx)^4}{15b^2d\left(a+b\sin^{-1}(c+\right.}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{4e^3(c+dx)^2}{5b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{16e^3(c+dx)^4}{15b^2d\left(a+b\sin^{-1}(c+\right.}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{4e^3(c+dx)^2}{5b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{16e^3(c+dx)^4}{15b^2d\left(a+b\sin^{-1}(c+\right.}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{4e^3(c+dx)^2}{5b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{16e^3(c+dx)^4}{15b^2d\left(a+b\sin^{-1}(c+\right.}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{4e^3(c+dx)^2}{5b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{16e^3(c+dx)^4}{15b^2d\left(a+b\sin^{-1}(c+\right.}$$

Mathematica [C] time = 2.286, size = 445, normalized size = 1.01

$$e^3\Bigg(-4\left(a+b\sin^{-1}(c+dx)\right)\Bigg(4\sqrt{2}be^{-\frac{2ia}{b}}\left(-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},-\frac{2i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)+e^{-2i\sin^{-1}(c+dx)}\Bigg(4\sqrt{2}be^{\frac{2i(a+b}{}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] (e^3*(-4*(a + b*ArcSin[c + d*x])*(E^((2*I)*ArcSin[c + d*x])*((4*I)*a + b +
(4*I)*b*ArcSin[c + d*x]) + (4*Sqrt[2]*b*(((-I)*(a + b*ArcSin[c + d*x]))/b)^
(3/2)*Gamma[1/2, ((-2*I)*(a + b*ArcSin[c + d*x]))/b])/E^(((2*I)*a)/b) + ((-
4*I)*a + b - (4*I)*b*ArcSin[c + d*x] + 4*Sqrt[2]*b*E^(((2*I)*(a + b*ArcSin[
c + d*x]))/b)*((I*(a + b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1/2, ((2*I)*(a +
b*ArcSin[c + d*x]))/b])/E^((2*I)*ArcSin[c + d*x])) + 4*(a + b*ArcSin[c + d*
x])*(((-8*I)*a + b - (8*I)*b*ArcSin[c + d*x])/E^((4*I)*ArcSin[c + d*x]) + E
^((4*I)*ArcSin[c + d*x])*((8*I)*a + b + (8*I)*b*ArcSin[c + d*x]) + (16*b*((
(-I)*(a + b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1/2, ((-4*I)*(a + b*ArcSin[c +
 d*x]))/b])/E^(((4*I)*a)/b) + 16*b*E^(((4*I)*a)/b)*((I*(a + b*ArcSin[c + d*
x]))/b)^(3/2)*Gamma[1/2, ((4*I)*(a + b*ArcSin[c + d*x]))/b]) - 6*b^2*Sin[2*
ArcSin[c + d*x]] + 3*b^2*Sin[4*ArcSin[c + d*x]]))/(60*b^3*d*(a + b*ArcSin[c
 + d*x])^(5/2))
```

Maple [B] time = 0.148, size = 1181, normalized size = 2.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(7/2),x)
```

```
[Out] 1/60/d*e^3/b^3*(128*arcsin(d*x+c)^2*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+c)
)^(1/2)*cos(4*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+
c))^(1/2)/b)*2^(1/2)*b^2+128*arcsin(d*x+c)^2*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcs
in(d*x+c))^(1/2)*sin(4*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*ar
csin(d*x+c))^(1/2)/b)*2^(1/2)*b^2-64*arcsin(d*x+c)^2*Pi^(1/2)*(1/b)^(1/2)*c
os(2*a/b)*FresnelC(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b
*arcsin(d*x+c))^(1/2)*b^2-64*arcsin(d*x+c)^2*Pi^(1/2)*(1/b)^(1/2)*sin(2*a/b
)*FresnelS(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(
```

```
d*x+c))^(1/2)*b^2+256*arcsin(d*x+c)*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+c)
)^(1/2)*cos(4*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+
c))^(1/2)/b)*2^(1/2)*a*b+256*arcsin(d*x+c)*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcsin
(d*x+c))^(1/2)*sin(4*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcs
in(d*x+c))^(1/2)/b)*2^(1/2)*a*b-128*arcsin(d*x+c)*Pi^(1/2)*(1/b)^(1/2)*cos(
2*a/b)*FresnelC(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*ar
csin(d*x+c))^(1/2)*a*b-128*arcsin(d*x+c)*Pi^(1/2)*(1/b)^(1/2)*sin(2*a/b)*Fr
esnelS(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+
c))^(1/2)*a*b+128*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(4*a/b)
*FresnelC(2*2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/
2)*a^2+128*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(4*a/b)*Fresne
lS(2*2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*a^2-
64*Pi^(1/2)*(1/b)^(1/2)*cos(2*a/b)*FresnelC(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arc
sin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+c))^(1/2)*a^2-64*Pi^(1/2)*(1/b)^(1/2)*
sin(2*a/b)*FresnelS(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+
b*arcsin(d*x+c))^(1/2)*a^2+32*arcsin(d*x+c)^2*sin(2*(a+b*arcsin(d*x+c))/b-2
*a/b)*b^2-64*arcsin(d*x+c)^2*sin(4*(a+b*arcsin(d*x+c))/b-4*a/b)*b^2+64*arcs
in(d*x+c)*sin(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a*b-8*arcsin(d*x+c)*cos(2*(a+b
*arcsin(d*x+c))/b-2*a/b)*b^2-128*arcsin(d*x+c)*sin(4*(a+b*arcsin(d*x+c))/b-
4*a/b)*a*b+8*arcsin(d*x+c)*cos(4*(a+b*arcsin(d*x+c))/b-4*a/b)*b^2+32*sin(2*
(a+b*arcsin(d*x+c))/b-2*a/b)*a^2-6*sin(2*(a+b*arcsin(d*x+c))/b-2*a/b)*b^2-8
*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a*b-64*sin(4*(a+b*arcsin(d*x+c))/b-4*a/
b)*a^2+3*sin(4*(a+b*arcsin(d*x+c))/b-4*a/b)*b^2+8*cos(4*(a+b*arcsin(d*x+c))
/b-4*a/b)*a*b)/(a+b*arcsin(d*x+c))^(5/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dex+ce)^3}{(b\arcsin(dx+c)+a)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)^3/(b*arcsin(d*x + c) + a)^(7/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3/(a+b*asin(d*x+c))**(7/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dex+ce)^3}{(b\arcsin(dx+c)+a)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)^3/(b*arcsin(d*x + c) + a)^(7/2), x)
```

3.277 $\int \frac{(ce+dex)^2}{\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}\,dx$

Optimal. Leaf size=441

$$-\frac{2\sqrt{2\pi}e^2\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{15b^{7/2}d}+\frac{6\sqrt{6\pi}e^2\sin\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{5b^{7/2}d}+\frac{2\sqrt{2\pi}e^2\cos\left(\frac{a}{b}\right)S}{15b}$$

```
[Out] (-2*e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(5*b*d*(a + b*ArcSin[c + d*x])^(
5/2)) - (8*e^2*(c + d*x))/(15*b^2*d*(a + b*ArcSin[c + d*x])^(3/2)) + (4*e^2
*(c + d*x)^3)/(5*b^2*d*(a + b*ArcSin[c + d*x])^(3/2)) - (16*e^2*Sqrt[1 - (c
 + d*x)^2])/(15*b^3*d*Sqrt[a + b*ArcSin[c + d*x]]) + (24*e^2*(c + d*x)^2*Sq
rt[1 - (c + d*x)^2])/(5*b^3*d*Sqrt[a + b*ArcSin[c + d*x]]) + (2*e^2*Sqrt[2*
Pi]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(1
5*b^(7/2)*d) - (6*e^2*Sqrt[6*Pi]*Cos[(3*a)/b]*FresnelS[(Sqrt[6/Pi]*Sqrt[a +
 b*ArcSin[c + d*x]])/Sqrt[b]])/(5*b^(7/2)*d) - (2*e^2*Sqrt[2*Pi]*FresnelC[(
Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(15*b^(7/2)*d) +
 (6*e^2*Sqrt[6*Pi]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b
]]*Sin[(3*a)/b])/(5*b^(7/2)*d)
```

Rubi [A] time = 1.19786, antiderivative size = 441, normalized size of antiderivative = 1., number of steps used = 24, number of rules used = 12, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.48, Rules used = {4805, 12, 4633, 4719, 4631, 3306, 3305, 3351, 3304, 3352, 4621, 4723}

$$-\frac{2\sqrt{2\pi}e^2\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{15b^{7/2}d}+\frac{6\sqrt{6\pi}e^2\sin\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{5b^{7/2}d}+\frac{2\sqrt{2\pi}e^2\cos\left(\frac{a}{b}\right)S}{15b}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x])^(7/2),x]
```


```
[Out] (-2*e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(5*b*d*(a + b*ArcSin[c + d*x])^(
5/2)) - (8*e^2*(c + d*x))/(15*b^2*d*(a + b*ArcSin[c + d*x])^(3/2)) + (4*e^2
*(c + d*x)^3)/(5*b^2*d*(a + b*ArcSin[c + d*x])^(3/2)) - (16*e^2*Sqrt[1 - (c
 + d*x)^2])/(15*b^3*d*Sqrt[a + b*ArcSin[c + d*x]]) + (24*e^2*(c + d*x)^2*Sq
rt[1 - (c + d*x)^2])/(5*b^3*d*Sqrt[a + b*ArcSin[c + d*x]]) + (2*e^2*Sqrt[2*
Pi]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(1
```

```
5*b^(7/2)*d) - (6*e^2*Sqrt[6*Pi]*Cos[(3*a)/b]*FresnelS[(Sqrt[6/Pi]*Sqrt[a +
 b*ArcSin[c + d*x]])/Sqrt[b]])/(5*b^(7/2)*d) - (2*e^2*Sqrt[2*Pi]*FresnelC[(
Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(15*b^(7/2)*d) +
 (6*e^2*Sqrt[6*Pi]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b
]]*Sin[(3*a)/b])/(5*b^(7/2)*d)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4633

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (Dis
t[(c*(m + 1))/(b*(n + 1)), Int[(x^(m + 1)*(a + b*ArcSin[c*x])^(n + 1))/Sqrt
[1 - c^2*x^2], x], x] - Dist[m/(b*c*(n + 1)), Int[(x^(m - 1)*(a + b*ArcSin[
c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{(ce+dex)^2}{\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}\,dx = \frac{\text{Subst}\left(\int \frac{e^2x^2}{\left(a+b\sin^{-1}(x)\right)^{7/2}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^2\,\text{Subst}\left(\int \frac{x^2}{\left(a+b\sin^{-1}(x)\right)^{7/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{\left(4e^2\right)\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx, x, c+dx\right)}{5bd} - \frac{\left(6e^2\right)}{}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{8e^2(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{4e^2(c+dx)^3}{5b^2d\left(a+b\sin^{-1}(c+dx\right.}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{8e^2(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{4e^2(c+dx)^3}{5b^2d\left(a+b\sin^{-1}(c+dx\right.}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{8e^2(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{4e^2(c+dx)^3}{5b^2d\left(a+b\sin^{-1}(c+dx\right.}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{8e^2(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{4e^2(c+dx)^3}{5b^2d\left(a+b\sin^{-1}(c+dx\right.}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{8e^2(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{4e^2(c+dx)^3}{5b^2d\left(a+b\sin^{-1}(c+dx\right.}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{8e^2(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{4e^2(c+dx)^3}{5b^2d\left(a+b\sin^{-1}(c+dx\right.}$$

Mathematica [C] time = 1.77886, size = 538, normalized size = 1.22

$$e^2\left(e^{-i\sin^{-1}(c+dx)}\left(-4e^{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\left(a+b\sin^{-1}(c+dx)\right)^2\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\text{Gamma}\left(\frac{1}{2},\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)+4a^2+2ab\left(4\sin\right.\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] (e^2*(-3*b^2*E^(I*ArcSin[c + d*x]) + 3*b^2*E^((3*I)*ArcSin[c + d*x]) + (2*(
a + b*ArcSin[c + d*x])*(E^((I*(a + b*ArcSin[c + d*x]))/b)*(2*a - I*b + 2*b*
ArcSin[c + d*x]) - (2*I)*b*(((-I)*(a + b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1
/2, ((-I)*(a + b*ArcSin[c + d*x]))/b]))/E^((I*a)/b) + (4*a^2 + 2*a*b*(I + 4
*ArcSin[c + d*x]) + b^2*(-3 + (2*I)*ArcSin[c + d*x] + 4*ArcSin[c + d*x]^2)
- 4*E^((I*(a + b*ArcSin[c + d*x]))/b)*(a + b*ArcSin[c + d*x])^2*Sqrt[(I*(a
+ b*ArcSin[c + d*x]))/b]*Gamma[1/2, (I*(a + b*ArcSin[c + d*x]))/b])/E^(I*Ar
cSin[c + d*x]) - (6*(a + b*ArcSin[c + d*x])*(E^(((3*I)*(a + b*ArcSin[c + d*
x]))/b)*(6*a - I*b + 6*b*ArcSin[c + d*x]) - (6*I)*Sqrt[3]*b*(((-I)*(a + b*A
rcSin[c + d*x]))/b)^(3/2)*Gamma[1/2, ((-3*I)*(a + b*ArcSin[c + d*x]))/b]))/
E^(((3*I)*a)/b) + (3*(b^2 - 2*(a + b*ArcSin[c + d*x])*(6*a + I*b + 6*b*ArcS
in[c + d*x] + (6*I)*Sqrt[3]*b*E^(((3*I)*(a + b*ArcSin[c + d*x]))/b)*((I*(a
+ b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1/2, ((3*I)*(a + b*ArcSin[c + d*x]))/b
])))/E^((3*I)*ArcSin[c + d*x])))/(60*b^3*d*(a + b*ArcSin[c + d*x])^(5/2))
```

Maple [B] time = 0.155, size = 1229, normalized size = 2.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(7/2),x)
```

```
[Out] 1/30/d*e^2/b^3*(-36*arcsin(d*x+c)^2*3^(1/2)*2^(1/2)*Pi^(1/2)*(1/b)^(1/2)*(a
+b*arcsin(d*x+c))^(1/2)*cos(3*a/b)*FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^
(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b^2+36*arcsin(d*x+c)^2*3^(1/2)*2^(1/2)*P
i^(1/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(3*a/b)*FresnelC(2^(1/2)/P
i^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b^2+4*arcsin(d*x+c
)^2*(1/b)^(1/2)*2^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*Fresnel
S(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b^2-4*arcsin(d*
```

```
x+c)^2*(1/b)^(1/2)*2^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*Fres
nelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b^2-72*arcsi
n(d*x+c)*3^(1/2)*2^(1/2)*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos
(3*a/b)*FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(
1/2)/b)*a*b+72*arcsin(d*x+c)*3^(1/2)*2^(1/2)*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcs
in(d*x+c))^(1/2)*sin(3*a/b)*FresnelC(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(
a+b*arcsin(d*x+c))^(1/2)/b)*a*b+8*arcsin(d*x+c)*(1/b)^(1/2)*2^(1/2)*Pi^(1/2
)*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*
(a+b*arcsin(d*x+c))^(1/2)/b)*a*b-8*arcsin(d*x+c)*(1/b)^(1/2)*2^(1/2)*Pi^(1/
2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)
*(a+b*arcsin(d*x+c))^(1/2)/b)*a*b-36*3^(1/2)*2^(1/2)*Pi^(1/2)*(1/b)^(1/2)*(
a+b*arcsin(d*x+c))^(1/2)*cos(3*a/b)*FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)
^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*a^2+36*3^(1/2)*2^(1/2)*Pi^(1/2)*(1/b)^(
1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(3*a/b)*FresnelC(2^(1/2)/Pi^(1/2)*3^(1/2)
/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*a^2+4*(1/b)^(1/2)*2^(1/2)*Pi^(1/2
)*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*
(a+b*arcsin(d*x+c))^(1/2)/b)*a^2-4*(1/b)^(1/2)*2^(1/2)*Pi^(1/2)*(a+b*arcsin
(d*x+c))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d
*x+c))^(1/2)/b)*a^2+4*arcsin(d*x+c)^2*cos((a+b*arcsin(d*x+c))/b-a/b)*b^2-36
*arcsin(d*x+c)^2*cos(3*(a+b*arcsin(d*x+c))/b-3*a/b)*b^2+8*arcsin(d*x+c)*cos
((a+b*arcsin(d*x+c))/b-a/b)*a*b+2*arcsin(d*x+c)*sin((a+b*arcsin(d*x+c))/b-a
/b)*b^2-72*arcsin(d*x+c)*cos(3*(a+b*arcsin(d*x+c))/b-3*a/b)*a*b-6*arcsin(d*
x+c)*sin(3*(a+b*arcsin(d*x+c))/b-3*a/b)*b^2+4*cos((a+b*arcsin(d*x+c))/b-a/b
)*a^2-3*cos((a+b*arcsin(d*x+c))/b-a/b)*b^2+2*sin((a+b*arcsin(d*x+c))/b-a/b)
*a*b-36*cos(3*(a+b*arcsin(d*x+c))/b-3*a/b)*a^2+3*cos(3*(a+b*arcsin(d*x+c))/
b-3*a/b)*b^2-6*sin(3*(a+b*arcsin(d*x+c))/b-3*a/b)*a*b)/(a+b*arcsin(d*x+c))^
(5/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dex + ce)^2}{(b \arcsin(dx + c) + a)^{\frac{7}{2}}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)^2/(b*arcsin(d*x + c) + a)^(7/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2/(a+b*asin(d*x+c))**(7/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dex+ce)^2}{(b\arcsin(dx+c)+a)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)^2/(b*arcsin(d*x + c) + a)^(7/2), x)
```

3.278 $\int \frac{ce+dex}{\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}\,dx$

Optimal. Leaf size=252

$$-\frac{32\sqrt{\pi}e\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{15b^{7/2}d}-\frac{32\sqrt{\pi}e\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{15b^{7/2}d}+\frac{8e(c+dx)^2}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}+\cdots$$

```
[Out] (-2*e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(5*b*d*(a + b*ArcSin[c + d*x])^(5/2)
) - (4*e)/(15*b^2*d*(a + b*ArcSin[c + d*x])^(3/2)) + (8*e*(c + d*x)^2)/(15*
b^2*d*(a + b*ArcSin[c + d*x])^(3/2)) + (32*e*(c + d*x)*Sqrt[1 - (c + d*x)^2
])/(15*b^3*d*Sqrt[a + b*ArcSin[c + d*x]]) - (32*e*Sqrt[Pi]*Cos[(2*a)/b]*Fre
snelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(15*b^(7/2)*d) -
 (32*e*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])
]*Sin[(2*a)/b])/(15*b^(7/2)*d)
```

Rubi [A] time = 0.541254, antiderivative size = 252, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 11, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.478, Rules used = {4805, 12, 4633, 4719, 4631, 3306, 3305, 3351, 3304, 3352, 4641}

$$-\frac{32\sqrt{\pi}e\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{15b^{7/2}d}-\frac{32\sqrt{\pi}e\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{15b^{7/2}d}+\frac{8e(c+dx)^2}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}+\cdots$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)/(a + b*ArcSin[c + d*x])^(7/2),x]
```


```
[Out] (-2*e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(5*b*d*(a + b*ArcSin[c + d*x])^(5/2)
) - (4*e)/(15*b^2*d*(a + b*ArcSin[c + d*x])^(3/2)) + (8*e*(c + d*x)^2)/(15*
b^2*d*(a + b*ArcSin[c + d*x])^(3/2)) + (32*e*(c + d*x)*Sqrt[1 - (c + d*x)^2
])/(15*b^3*d*Sqrt[a + b*ArcSin[c + d*x]]) - (32*e*Sqrt[Pi]*Cos[(2*a)/b]*Fre
snelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(15*b^(7/2)*d) -
 (32*e*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])
]*Sin[(2*a)/b])/(15*b^(7/2)*d)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4633

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (Dis
t[(c*(m + 1))/(b*(n + 1)), Int[(x^(m + 1)*(a + b*ArcSin[c*x])^(n + 1))/Sqrt
[1 - c^2*x^2], x], x] - Dist[m/(b*c*(n + 1)), Int[(x^(m - 1)*(a + b*ArcSin[
c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
```

```
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{ce+dex}{\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}\,dx = \frac{\text{Subst}\left(\int \frac{ex}{\left(a+b\sin^{-1}(x)\right)^{7/2}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e\,\text{Subst}\left(\int \frac{x}{\left(a+b\sin^{-1}(x)\right)^{7/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{(2e)\,\text{Subst}\left(\int \frac{1}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx, x, c+dx\right)}{5bd} - \frac{(4e)\,}{}$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{4e}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{8e(c+dx)^2}{15b^2d\left(a+b\sin^{-1}(c+\right.}$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{4e}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{8e(c+dx)^2}{15b^2d\left(a+b\sin^{-1}(c+\right.}$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{4e}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{8e(c+dx)^2}{15b^2d\left(a+b\sin^{-1}(c+\right.}$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{4e}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{8e(c+dx)^2}{15b^2d\left(a+b\sin^{-1}(c+\right.}$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{4e}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{8e(c+dx)^2}{15b^2d\left(a+b\sin^{-1}(c+\right.}$$

Mathematica [C] time = 1.00285, size = 254, normalized size = 1.01

$$-\frac{e\left(3b^2\sin\left(2\sin^{-1}(c+dx)\right)+\left(a+b\sin^{-1}(c+dx)\right)\left(e^{-\frac{2ia}{b}}\left(8\sqrt{2}b\left(-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},-\frac{2i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)\right.\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*e + d*e*x)/(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] -(e*((a + b*ArcSin[c + d*x])*((2*E^(((2*I)*(a + b*ArcSin[c + d*x]))/b)*((4*
I)*a + b + (4*I)*b*ArcSin[c + d*x]) + 8*Sqrt[2]*b*(((-I)*(a + b*ArcSin[c +
d*x]))/b)^(3/2)*Gamma[1/2, ((-2*I)*(a + b*ArcSin[c + d*x]))/b])/E^(((2*I)*a
)/b) + (2*((-4*I)*a + b - (4*I)*b*ArcSin[c + d*x] + 4*Sqrt[2]*b*E^(((2*I)*(
a + b*ArcSin[c + d*x]))/b)*((I*(a + b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1/2,
 ((2*I)*(a + b*ArcSin[c + d*x]))/b]))/E^((2*I)*ArcSin[c + d*x])) + 3*b^2*Si
n[2*ArcSin[c + d*x]]))/(15*b^3*d*(a + b*ArcSin[c + d*x])^(5/2))
```

Maple [B] time = 0.102, size = 583, normalized size = 2.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(7/2),x)
```

```
[Out] 1/15*e/d/b^3*(-32*arcsin(d*x+c)^2*Pi^(1/2)*(1/b)^(1/2)*cos(2*a/b)*FresnelC(
2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+c))^(1/
2)*b^2-32*arcsin(d*x+c)^2*Pi^(1/2)*(1/b)^(1/2)*sin(2*a/b)*FresnelS(2/Pi^(1/
2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+c))^(1/2)*b^2-6
4*arcsin(d*x+c)*Pi^(1/2)*(1/b)^(1/2)*cos(2*a/b)*FresnelC(2/Pi^(1/2)/(1/b)^(
1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+c))^(1/2)*a*b-64*arcsin(d
*x+c)*Pi^(1/2)*(1/b)^(1/2)*sin(2*a/b)*FresnelS(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*
arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+c))^(1/2)*a*b-32*Pi^(1/2)*(1/b)^(1/
2)*cos(2*a/b)*FresnelC(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*
(a+b*arcsin(d*x+c))^(1/2)*a^2-32*Pi^(1/2)*(1/b)^(1/2)*sin(2*a/b)*FresnelS(2
/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+c))^(1/2
)*a^2+16*arcsin(d*x+c)^2*sin(2*(a+b*arcsin(d*x+c))/b-2*a/b)*b^2+32*arcsin(d
*x+c)*sin(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a*b-4*arcsin(d*x+c)*cos(2*(a+b*arc
sin(d*x+c))/b-2*a/b)*b^2+16*sin(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a^2-3*sin(2*
(a+b*arcsin(d*x+c))/b-2*a/b)*b^2-4*cos(2*(a+b*arcsin(d*x+c))/b-2*a/b)*a*b)/
(a+b*arcsin(d*x+c))^(5/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{dex + ce}{(b \arcsin(dx + c) + a)^{\frac{7}{2}}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)/(b*arcsin(d*x + c) + a)^(7/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*asin(d*x+c))**(7/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{dex + ce}{(b \arcsin(dx + c) + a)^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)/(b*arcsin(d*x + c) + a)^(7/2), x)
```

3.279 $\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}\,dx$

Optimal. Leaf size=218

$$-\frac{8\sqrt{2\pi}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{15b^{7/2}d}+\frac{8\sqrt{2\pi}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{15b^{7/2}d}+\frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}+$$

```
[Out] (-2*Sqrt[1 - (c + d*x)^2])/(5*b*d*(a + b*ArcSin[c + d*x])^(5/2)) + (4*(c +
d*x))/(15*b^2*d*(a + b*ArcSin[c + d*x])^(3/2)) + (8*Sqrt[1 - (c + d*x)^2])/
(15*b^3*d*Sqrt[a + b*ArcSin[c + d*x]]) + (8*Sqrt[2*Pi]*Cos[a/b]*FresnelS[(S
qrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(15*b^(7/2)*d) - (8*Sqrt[2
*Pi]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(
15*b^(7/2)*d)
```

Rubi [A] time = 0.451615, antiderivative size = 218, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 9, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.643, Rules used = {4803, 4621, 4719, 4723, 3306, 3305, 3351, 3304, 3352}

$$-\frac{8\sqrt{2\pi}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{15b^{7/2}d}+\frac{8\sqrt{2\pi}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{15b^{7/2}d}+\frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}+$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(-7/2),x]
```


```
[Out] (-2*Sqrt[1 - (c + d*x)^2])/(5*b*d*(a + b*ArcSin[c + d*x])^(5/2)) + (4*(c +
d*x))/(15*b^2*d*(a + b*ArcSin[c + d*x])^(3/2)) + (8*Sqrt[1 - (c + d*x)^2])/
(15*b^3*d*Sqrt[a + b*ArcSin[c + d*x]]) + (8*Sqrt[2*Pi]*Cos[a/b]*FresnelS[(S
qrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(15*b^(7/2)*d) - (8*Sqrt[2
*Pi]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(
15*b^(7/2)*d)
```


Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
```

```
}, x]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\sin^{-1}(x)\right)^{7/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{2\,\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx, x, c+dx\right)}{5bd}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4\,\text{Subst}\left(\int \frac{1}{\left(a+b\sin^{-1}(x\right.}\right.}{15b^2d}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{8\sqrt{1-(c+dx)^2}}{15b^3d\sqrt{a+b\sin^{-1}(c}}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{8\sqrt{1-(c+dx)^2}}{15b^3d\sqrt{a+b\sin^{-1}(c}}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{8\sqrt{1-(c+dx)^2}}{15b^3d\sqrt{a+b\sin^{-1}(c}}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{8\sqrt{1-(c+dx)^2}}{15b^3d\sqrt{a+b\sin^{-1}(c}}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{8\sqrt{1-(c+dx)^2}}{15b^3d\sqrt{a+b\sin^{-1}(c}}$$

Mathematica [C] time = 0.244318, size = 287, normalized size = 1.32

$$e^{-i\sin^{-1}(c+dx)}\left(-8e^{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\left(a+b\sin^{-1}(c+dx)\right)^2\sqrt{\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}}\,\text{Gamma}\left(\frac{1}{2}, \frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right) + 8a^2 + 4ab\left(4\sin^{-1}\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(-7/2),x]
```

```
[Out] (-6*b^2*E^(I*ArcSin[c + d*x]) + (4*(a + b*ArcSin[c + d*x])*(E^((I*(a + b*Ar
cSin[c + d*x]))/b)*(2*a + b*(-I + 2*ArcSin[c + d*x])) - (2*I)*b*(((-I)*(a +
 b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1/2, ((-I)*(a + b*ArcSin[c + d*x]))/b])
)/E^((I*a)/b) + (8*a^2 + 4*a*b*(I + 4*ArcSin[c + d*x]) + 2*b^2*(-3 + (2*I)*
ArcSin[c + d*x] + 4*ArcSin[c + d*x]^2) - 8*E^((I*(a + b*ArcSin[c + d*x]))/b
)*(a + b*ArcSin[c + d*x])^2*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2,
(I*(a + b*ArcSin[c + d*x]))/b])/E^(I*ArcSin[c + d*x]))/(30*b^3*d*(a + b*Arc
Sin[c + d*x])^(5/2))
```

Maple [B] time = 0., size = 600, normalized size = 2.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c))^(7/2),x)
```

```
[Out] 2/15/d/b^3*(4*arcsin(d*x+c)^2*(1/b)^(1/2)*2^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+
c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c)
)^(1/2)/b)*b^2-4*arcsin(d*x+c)^2*(1/b)^(1/2)*2^(1/2)*Pi^(1/2)*(a+b*arcsin(d
*x+c))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x
+c))^(1/2)/b)*b^2+8*arcsin(d*x+c)*(1/b)^(1/2)*2^(1/2)*Pi^(1/2)*(a+b*arcsin(
d*x+c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*
x+c))^(1/2)/b)*a*b-8*arcsin(d*x+c)*(1/b)^(1/2)*2^(1/2)*Pi^(1/2)*(a+b*arcsin
(d*x+c))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d
*x+c))^(1/2)/b)*a*b+4*(1/b)^(1/2)*2^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2
)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/
b)*a^2-4*(1/b)^(1/2)*2^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*Fr
esnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*a^2+4*arcs
in(d*x+c)^2*cos((a+b*arcsin(d*x+c))/b-a/b)*b^2+8*arcsin(d*x+c)*cos((a+b*arc
sin(d*x+c))/b-a/b)*a*b+2*arcsin(d*x+c)*sin((a+b*arcsin(d*x+c))/b-a/b)*b^2+4
*cos((a+b*arcsin(d*x+c))/b-a/b)*a^2-3*cos((a+b*arcsin(d*x+c))/b-a/b)*b^2+2*
sin((a+b*arcsin(d*x+c))/b-a/b)*a*b)/(a+b*arcsin(d*x+c))^(5/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(b \arcsin(dx + c) + a)^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(-7/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c))**(7/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(b \arcsin(dx+c)+a)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(-7/2), x)
```

3.280 $\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}\,dx$

Optimal. Leaf size=28

$$\frac{\text{Unintegrable}\left(\frac{1}{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{7/2}},x\right)}{e}$$

```
[Out] Unintegrable[1/((c + d*x)*(a + b*ArcSin[c + d*x])^(7/2)), x]/e
```

Rubi [A] time = 0.102109, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(7/2)),x]
```

```
[Out] Defer[Subst][Defer[Int][1/(x*(a + b*ArcSin[x])^(7/2)), x], x, c + d*x]/(d*e
)
```

Rubi steps

$$\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{ex\left(a+b\sin^{-1}(x)\right)^{7/2}}\,dx,x,c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{1}{x\left(a+b\sin^{-1}(x)\right)^{7/2}}\,dx,x,c+dx\right)}{de}$$

Mathematica [A] time = 0.0846093, size = 0, normalized size = 0.

$$\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(7/2)),x]
```

```
[Out] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(7/2)), x]
```

Maple [A] time = 0.191, size = 0, normalized size = 0.

$$\int \frac{1}{dex + ce} (a + b \arcsin(dx + c))^{-\frac{7}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(7/2),x)
```

```
[Out] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(7/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(dex + ce)(b \arcsin(dx + c) + a)^{\frac{7}{2}}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate(1/((d*e*x + c*e)*(b*arcsin(d*x + c) + a)^(7/2)), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*asin(d*x+c))**(7/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(dex+ce)(b\arcsin(dx+c)+a)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="giac")
```

```
[Out] integrate(1/((d*e*x + c*e)*(b*arcsin(d*x + c) + a)^(7/2)), x)
```

3.281 $\int (ce+dex)^{7/2} \left(a+b\sin^{-1}(c+dx)\right) dx$

Optimal. Leaf size=156

$$\frac{2(e(c+dx))^{9/2}\left(a+b\sin^{-1}(c+dx)\right)}{9de}+\frac{28be^2\sqrt{1-(c+dx)^2}(e(c+dx))^{3/2}}{405d}+\frac{28be^3\sqrt{e(c+dx)}E\left(\sin^{-1}\left(\frac{\sqrt{-c-dx+1}}{\sqrt{2}}\right)\middle|2\right)}{135d\sqrt{c+dx}}+$$

```
[Out] (28*b*e^2*(e*(c + d*x))^(3/2)*Sqrt[1 - (c + d*x)^2])/(405*d) + (4*b*(e*(c +
 d*x))^(7/2)*Sqrt[1 - (c + d*x)^2])/(81*d) + (2*(e*(c + d*x))^(9/2)*(a + b*
ArcSin[c + d*x]))/(9*d*e) + (28*b*e^3*Sqrt[e*(c + d*x)]*EllipticE[ArcSin[Sq
rt[1 - c - d*x]/Sqrt[2]], 2])/(135*d*Sqrt[c + d*x])
```

Rubi [A] time = 0.124094, antiderivative size = 156, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.261, Rules used = {4805, 4627, 321, 320, 318, 424}

$$\frac{2(e(c+dx))^{9/2}\left(a+b\sin^{-1}(c+dx)\right)}{9de}+\frac{28be^2\sqrt{1-(c+dx)^2}(e(c+dx))^{3/2}}{405d}+\frac{28be^3\sqrt{e(c+dx)}E\left(\sin^{-1}\left(\frac{\sqrt{-c-dx+1}}{\sqrt{2}}\right)\middle|2\right)}{135d\sqrt{c+dx}}+$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^(7/2)*(a + b*ArcSin[c + d*x]),x]
```


```
[Out] (28*b*e^2*(e*(c + d*x))^(3/2)*Sqrt[1 - (c + d*x)^2])/(405*d) + (4*b*(e*(c +
 d*x))^(7/2)*Sqrt[1 - (c + d*x)^2])/(81*d) + (2*(e*(c + d*x))^(9/2)*(a + b*
ArcSin[c + d*x]))/(9*d*e) + (28*b*e^3*Sqrt[e*(c + d*x)]*EllipticE[ArcSin[Sq
rt[1 - c - d*x]/Sqrt[2]], 2])/(135*d*Sqrt[c + d*x])
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
```

```
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 320

```
Int[Sqrt[(c_)*(x_)]/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[c*x]/
Sqrt[x], Int[Sqrt[x]/Sqrt[a + b*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[
-(b/a), 0]
```

Rule 318

```
Int[Sqrt[x_]/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Dist[-2/(Sqrt[a]*(-(b/
a))^(3/4)), Subst[Int[Sqrt[1 - 2*x^2]/Sqrt[1 - x^2], x], x, Sqrt[1 - Sqrt[-
(b/a)]*x]/Sqrt[2]], x] /; FreeQ[{a, b}, x] && GtQ[-(b/a), 0] && GtQ[a, 0]
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rubi steps

$$\int (ce+dex)^{7/2}\left(a+b\sin^{-1}(c+dx)\right)\,dx = \frac{\text{Subst}\left(\int (ex)^{7/2}\left(a+b\sin^{-1}(x)\right)\,dx,x,c+dx\right)}{d}$$

$$= \frac{2(e(c+dx))^{9/2}\left(a+b\sin^{-1}(c+dx)\right)}{9de} - \frac{(2b)\,\text{Subst}\left(\int \frac{(ex)^{9/2}}{\sqrt{1-x^2}}\,dx,x,c+dx\right)}{9de}$$

$$= \frac{4b(e(c+dx))^{7/2}\sqrt{1-(c+dx)^2}}{81d} + \frac{2(e(c+dx))^{9/2}\left(a+b\sin^{-1}(c+dx)\right)}{9de} - \frac{(14b\ldots}{}$$

$$= \frac{28be^2(e(c+dx))^{3/2}\sqrt{1-(c+dx)^2}}{405d} + \frac{4b(e(c+dx))^{7/2}\sqrt{1-(c+dx)^2}}{81d} + \frac{2(e(c+\ldots}{}$$

$$= \frac{28be^2(e(c+dx))^{3/2}\sqrt{1-(c+dx)^2}}{405d} + \frac{4b(e(c+dx))^{7/2}\sqrt{1-(c+dx)^2}}{81d} + \frac{2(e(c+\ldots}{}$$

$$= \frac{28be^2(e(c+dx))^{3/2}\sqrt{1-(c+dx)^2}}{405d} + \frac{4b(e(c+dx))^{7/2}\sqrt{1-(c+dx)^2}}{81d} + \frac{2(e(c+\ldots}{}$$

$$= \frac{28be^2(e(c+dx))^{3/2}\sqrt{1-(c+dx)^2}}{405d} + \frac{4b(e(c+dx))^{7/2}\sqrt{1-(c+dx)^2}}{81d} + \frac{2(e(c+\ldots}{}$$

Mathematica [C] time = 0.221958, size = 115, normalized size = 0.74

$$\frac{2(e(c+dx))^{7/2}\left(-14b\text{Hypergeometric2F1}\left(\frac{1}{2},\frac{3}{4},\frac{7}{4},(c+dx)^2\right)+45a(c+dx)^3+10b\sqrt{1-(c+dx)^2}(c+dx)^2+14b\sqrt{1-\ldots}\right)}{405d(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^(7/2)*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (2*(e*(c + d*x))^(7/2)*(45*a*(c + d*x)^3 + 14*b*Sqrt[1 - (c + d*x)^2] + 10*
b*(c + d*x)^2*Sqrt[1 - (c + d*x)^2] + 45*b*(c + d*x)^3*ArcSin[c + d*x] - 14
*b*Hypergeometric2F1[1/2, 3/4, 7/4, (c + d*x)^2]))/(405*d*(c + d*x)^2)
```

Maple [C] time = 0.027, size = 228, normalized size = 1.5

$$2\,\frac{1}{de}\left(1/9\,(dex+ce)^{9/2}a+b\left(1/9\,(dex+ce)^{9/2}\arcsin\left(\frac{dex+ce}{e}\right)-2/9\,\frac{1}{e}\left(-1/9\,e^2\,(dex+ce)^{7/2}\sqrt{-\frac{(dex+ce)^2}{e^2}+1}-\frac{7\,e^4}{}\ldots\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^(7/2)*(a+b*arcsin(d*x+c)),x)
```

```
[Out] 2/d/e*(1/9*(d*e*x+c*e)^(9/2)*a+b*(1/9*(d*e*x+c*e)^(9/2)*arcsin((d*e*x+c*e)/
e)-2/9/e*(-1/9*e^2*(d*e*x+c*e)^(7/2)*(-(d*e*x+c*e)^2/e^2+1)^(1/2)-7/45*e^4*
(d*e*x+c*e)^(3/2)*(-(d*e*x+c*e)^2/e^2+1)^(1/2)-7/15*e^5/(1/e)^(1/2)*(1-(d*e
*x+c*e)/e)^(1/2)*((d*e*x+c*e)/e+1)^(1/2)/(-(d*e*x+c*e)^2/e^2+1)^(1/2)*(Elli
pticF((d*e*x+c*e)^(1/2)*(1/e)^(1/2),I)-EllipticE((d*e*x+c*e)^(1/2)*(1/e)^(1
/2),I)))))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(7/2)*(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(ad^3e^3x^3 + 3\,acd^2e^3x^2 + 3\,ac^2de^3x + ac^3e^3 + \left(bd^3e^3x^3 + 3\,bcd^2e^3x^2 + 3\,bc^2de^3x + bc^3e^3\right)\arcsin\left(dx + c\right)\right)\sqrt{dex +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(7/2)*(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral((a*d^3*e^3*x^3 + 3*a*c*d^2*e^3*x^2 + 3*a*c^2*d*e^3*x + a*c^3*e^3 +
 (b*d^3*e^3*x^3 + 3*b*c*d^2*e^3*x^2 + 3*b*c^2*d*e^3*x + b*c^3*e^3)*arcsin(d
*x + c))*sqrt(d*e*x + c*e), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**(7/2)*(a+b*asin(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (dex+ce)^{\frac{7}{2}}(b\arcsin(dx+c)+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(7/2)*(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)^(7/2)*(b*arcsin(d*x + c) + a), x)
```

3.282 $\int (ce+dex)^{5/2} \left(a+b\sin^{-1}(c+dx)\right) dx$

Optimal. Leaf size=136

$$-\frac{20be^{5/2}\text{EllipticF}\left(\sin^{-1}\left(\frac{\sqrt{e(c+dx)}}{\sqrt{e}}\right),-1\right)}{147d}+\frac{2(e(c+dx))^{7/2}\left(a+b\sin^{-1}(c+dx)\right)}{7de}+\frac{20be^2\sqrt{1-(c+dx)^2}\sqrt{e(c+dx)}}{147d}+\frac{4b\sqrt{}}{}$$

```
[Out] (20*b*e^2*Sqrt[e*(c + d*x)]*Sqrt[1 - (c + d*x)^2])/(147*d) + (4*b*(e*(c + d
*x))^(5/2)*Sqrt[1 - (c + d*x)^2])/(49*d) + (2*(e*(c + d*x))^(7/2)*(a + b*Ar
cSin[c + d*x]))/(7*d*e) - (20*b*e^(5/2)*EllipticF[ArcSin[Sqrt[e*(c + d*x)]/
Sqrt[e]], -1])/(147*d)
```

Rubi [A] time = 0.113345, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {4805, 4627, 321, 329, 221}

$$\frac{2(e(c+dx))^{7/2}\left(a+b\sin^{-1}(c+dx)\right)}{7de}+\frac{20be^2\sqrt{1-(c+dx)^2}\sqrt{e(c+dx)}}{147d}-\frac{20be^{5/2}F\left(\sin^{-1}\left(\frac{\sqrt{e(c+dx)}}{\sqrt{e}}\right)\middle|-1\right)}{147d}+\frac{4b\sqrt{1-(c+}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^(5/2)*(a + b*ArcSin[c + d*x]),x]
```


```
[Out] (20*b*e^2*Sqrt[e*(c + d*x)]*Sqrt[1 - (c + d*x)^2])/(147*d) + (4*b*(e*(c + d
*x))^(5/2)*Sqrt[1 - (c + d*x)^2])/(49*d) + (2*(e*(c + d*x))^(7/2)*(a + b*Ar
cSin[c + d*x]))/(7*d*e) - (20*b*e^(5/2)*EllipticF[ArcSin[Sqrt[e*(c + d*x)]/
Sqrt[e]], -1])/(147*d)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 221

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[(Rt[-b,
 4]*x)/Rt[a, 4]], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
b/a] && GtQ[a, 0]
```

Rubi steps

$$\int (ce+dex)^{5/2}\left(a+b\sin^{-1}(c+dx)\right)dx = \frac{\text{Subst}\left(\int (ex)^{5/2}\left(a+b\sin^{-1}(x)\right)dx, x, c+dx\right)}{d}$$

$$= \frac{2(e(c+dx))^{7/2}\left(a+b\sin^{-1}(c+dx)\right)}{7de} - \frac{(2b)\,\text{Subst}\left(\int \frac{(ex)^{7/2}}{\sqrt{1-x^2}}dx, x, c+dx\right)}{7de}$$

$$= \frac{4b(e(c+dx))^{5/2}\sqrt{1-(c+dx)^2}}{49d} + \frac{2(e(c+dx))^{7/2}\left(a+b\sin^{-1}(c+dx)\right)}{7de} - \frac{(10b\cdots}{\cdots}$$

$$= \frac{20be^2\sqrt{e(c+dx)}\sqrt{1-(c+dx)^2}}{147d} + \frac{4b(e(c+dx))^{5/2}\sqrt{1-(c+dx)^2}}{49d} + \frac{2(e(c+d\cdots}{\cdots}$$

$$= \frac{20be^2\sqrt{e(c+dx)}\sqrt{1-(c+dx)^2}}{147d} + \frac{4b(e(c+dx))^{5/2}\sqrt{1-(c+dx)^2}}{49d} + \frac{2(e(c+d\cdots}{\cdots}$$

$$= \frac{20be^2\sqrt{e(c+dx)}\sqrt{1-(c+dx)^2}}{147d} + \frac{4b(e(c+dx))^{5/2}\sqrt{1-(c+dx)^2}}{49d} + \frac{2(e(c+d\cdots}{\cdots}$$

Mathematica [C] time = 0.161036, size = 115, normalized size = 0.85

$$\frac{2(e(c+dx))^{5/2}\left(-10b\text{Hypergeometric2F1}\left(\frac{1}{4},\frac{1}{2},\frac{5}{4},(c+dx)^2\right)+21a(c+dx)^3+6b\sqrt{1-(c+dx)^2}(c+dx)^2+10b\sqrt{1-(c}{147d(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^(5/2)*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (2*(e*(c + d*x))^(5/2)*(21*a*(c + d*x)^3 + 10*b*Sqrt[1 - (c + d*x)^2] + 6*b
*(c + d*x)^2*Sqrt[1 - (c + d*x)^2] + 21*b*(c + d*x)^3*ArcSin[c + d*x] - 10*
b*Hypergeometric2F1[1/4, 1/2, 5/4, (c + d*x)^2]))/(147*d*(c + d*x)^2)
```

Maple [A] time = 0.009, size = 206, normalized size = 1.5

$$2\frac{1}{de}\left(1/7\ (dex+ce)^{7/2}a+b\left(1/7\ (dex+ce)^{7/2}\arcsin\left(\frac{dex+ce}{e}\right)-2/7\frac{1}{e}\left(-1/7\,e^2\,(dex+ce)^{5/2}\sqrt{-\frac{(dex+ce)^2}{e^2}+1}-\frac{5\,e^4\sqrt{}}{}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^(5/2)*(a+b*arcsin(d*x+c)),x)
```

```
[Out] 2/d/e*(1/7*(d*e*x+c*e)^(7/2)*a+b*(1/7*(d*e*x+c*e)^(7/2)*arcsin((d*e*x+c*e)/
e)-2/7/e*(-1/7*e^2*(d*e*x+c*e)^(5/2)*(-(d*e*x+c*e)^2/e^2+1)^(1/2)-5/21*e^4*
(d*e*x+c*e)^(1/2)*(-(d*e*x+c*e)^2/e^2+1)^(1/2)+5/21*e^4/(1/e)^(1/2)*(1-(d*e
*x+c*e)/e)^(1/2)*((d*e*x+c*e)/e+1)^(1/2)/(-(d*e*x+c*e)^2/e^2+1)^(1/2)*Ellip
ticF((d*e*x+c*e)^(1/2)*(1/e)^(1/2),I))))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(5/2)*(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(ad^2e^2x^2 + 2\,acde^2x + ac^2e^2 + \left(bd^2e^2x^2 + 2\,bcde^2x + bc^2e^2\right)\arcsin\left(dx + c\right)\right)\sqrt{dex + ce}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(5/2)*(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral((a*d^2*e^2*x^2 + 2*a*c*d*e^2*x + a*c^2*e^2 + (b*d^2*e^2*x^2 + 2*b*
c*d*e^2*x + b*c^2*e^2)*arcsin(d*x + c))*sqrt(d*e*x + c*e), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**(5/2)*(a+b*asin(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (dex + ce)^{\frac{5}{2}}(b\arcsin\left(dx + c\right) + a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(5/2)*(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)^(5/2)*(b*arcsin(d*x + c) + a), x)
```

3.283 $\int (ce+dex)^{3/2} \left(a+b\sin^{-1}(c+dx)\right) dx$

Optimal. Leaf size=117

$$\frac{2(e(c+dx))^{5/2}\left(a+b\sin^{-1}(c+dx)\right)}{5de}+\frac{4b\sqrt{1-(c+dx)^2}(e(c+dx))^{3/2}}{25d}+\frac{12be\sqrt{e(c+dx)}E\left(\sin^{-1}\left(\frac{\sqrt{-c-dx+1}}{\sqrt{2}}\right)\middle|2\right)}{25d\sqrt{c+dx}}$$

```
[Out] (4*b*(e*(c + d*x))^(3/2)*Sqrt[1 - (c + d*x)^2])/(25*d) + (2*(e*(c + d*x))^(
5/2)*(a + b*ArcSin[c + d*x]))/(5*d*e) + (12*b*e*Sqrt[e*(c + d*x)]*EllipticE
[ArcSin[Sqrt[1 - c - d*x]/Sqrt[2]], 2])/(25*d*Sqrt[c + d*x])
```

Rubi [A] time = 0.0974955, antiderivative size = 117, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.261, Rules used = {4805, 4627, 321, 320, 318, 424}

$$\frac{2(e(c+dx))^{5/2}\left(a+b\sin^{-1}(c+dx)\right)}{5de}+\frac{4b\sqrt{1-(c+dx)^2}(e(c+dx))^{3/2}}{25d}+\frac{12be\sqrt{e(c+dx)}E\left(\sin^{-1}\left(\frac{\sqrt{-c-dx+1}}{\sqrt{2}}\right)\middle|2\right)}{25d\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^(3/2)*(a + b*ArcSin[c + d*x]),x]
```


```
[Out] (4*b*(e*(c + d*x))^(3/2)*Sqrt[1 - (c + d*x)^2])/(25*d) + (2*(e*(c + d*x))^(
5/2)*(a + b*ArcSin[c + d*x]))/(5*d*e) + (12*b*e*Sqrt[e*(c + d*x)]*EllipticE
[ArcSin[Sqrt[1 - c - d*x]/Sqrt[2]], 2])/(25*d*Sqrt[c + d*x])
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 320

```
Int[Sqrt[(c_)*(x_)]/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[c*x]/
Sqrt[x], Int[Sqrt[x]/Sqrt[a + b*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[
-(b/a), 0]
```

Rule 318

```
Int[Sqrt[x_]/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Dist[-2/(Sqrt[a]*(-(b/
a))^(3/4)), Subst[Int[Sqrt[1 - 2*x^2]/Sqrt[1 - x^2], x], x, Sqrt[1 - Sqrt[-
(b/a)]*x]/Sqrt[2]], x] /; FreeQ[{a, b}, x] && GtQ[-(b/a), 0] && GtQ[a, 0]
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rubi steps

$$\int (ce+dex)^{3/2}\left(a+b\sin^{-1}(c+dx)\right)dx = \frac{\text{Subst}\left(\int (ex)^{3/2}\left(a+b\sin^{-1}(x)\right)dx, x, c+dx\right)}{d}$$

$$= \frac{2(e(c+dx))^{5/2}\left(a+b\sin^{-1}(c+dx)\right)}{5de} - \frac{(2b)\,\text{Subst}\left(\int \frac{(ex)^{5/2}}{\sqrt{1-x^2}}dx, x, c+dx\right)}{5de}$$

$$= \frac{4b(e(c+dx))^{3/2}\sqrt{1-(c+dx)^2}}{25d} + \frac{2(e(c+dx))^{5/2}\left(a+b\sin^{-1}(c+dx)\right)}{5de} - \frac{(6be)\,\text{S}}{}$$

$$= \frac{4b(e(c+dx))^{3/2}\sqrt{1-(c+dx)^2}}{25d} + \frac{2(e(c+dx))^{5/2}\left(a+b\sin^{-1}(c+dx)\right)}{5de} - \frac{(6be\sqrt{}}{}$$

$$= \frac{4b(e(c+dx))^{3/2}\sqrt{1-(c+dx)^2}}{25d} + \frac{2(e(c+dx))^{5/2}\left(a+b\sin^{-1}(c+dx)\right)}{5de} + \frac{(12be}{}$$

$$= \frac{4b(e(c+dx))^{3/2}\sqrt{1-(c+dx)^2}}{25d} + \frac{2(e(c+dx))^{5/2}\left(a+b\sin^{-1}(c+dx)\right)}{5de} + \frac{12be\sqrt{}}{}$$

Mathematica [C] time = 0.0482779, size = 87, normalized size = 0.74

$$\frac{2(e(c+dx))^{3/2}\left(-2b\text{Hypergeometric2F1}\left(\frac{1}{2},\frac{3}{4},\frac{7}{4},(c+dx)^2\right)+5ac+5adx+2b\sqrt{1-(c+dx)^2}+5bc\sin^{-1}(c+dx)+5bd\right.}{25d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^(3/2)*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (2*(e*(c + d*x))^(3/2)*(5*a*c + 5*a*d*x + 2*b*Sqrt[1 - (c + d*x)^2] + 5*b*c
*ArcSin[c + d*x] + 5*b*d*x*ArcSin[c + d*x] - 2*b*Hypergeometric2F1[1/2, 3/4
, 7/4, (c + d*x)^2]))/(25*d)
```

Maple [C] time = 0.009, size = 194, normalized size = 1.7

$$2\frac{1}{de}\left(1/5\,(dex+ce)^{5/2}a+b\left(1/5\,(dex+ce)^{5/2}\arcsin\left(\frac{dex+ce}{e}\right)-2/5\frac{1}{e}\left(-1/5\,e^2(dex+ce)^{3/2}\sqrt{-\frac{(dex+ce)^2}{e^2}+1}-3/5\frac{e^3}{}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^(3/2)*(a+b*arcsin(d*x+c)),x)
```

```
[Out] 2/d/e*(1/5*(d*e*x+c*e)^(5/2)*a+b*(1/5*(d*e*x+c*e)^(5/2)*arcsin((d*e*x+c*e)/
e)-2/5/e*(-1/5*e^2*(d*e*x+c*e)^(3/2)*(-(d*e*x+c*e)^2/e^2+1)^(1/2)-3/5*e^3/(
1/e)^(1/2)*(1-(d*e*x+c*e)/e)^(1/2)*((d*e*x+c*e)/e+1)^(1/2)/(-(d*e*x+c*e)^2/
e^2+1)^(1/2)*(EllipticF((d*e*x+c*e)^(1/2)*(1/e)^(1/2),I)-EllipticE((d*e*x+c
*e)^(1/2)*(1/e)^(1/2),I)))))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(3/2)*(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((adex + ace + (bdex + bce)\arcsin(dx + c))\sqrt{dex + ce}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(3/2)*(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral((a*d*e*x + a*c*e + (b*d*e*x + b*c*e)*arcsin(d*x + c))*sqrt(d*e*x +
 c*e), x)
```

Sympy [A] time = 39.7859, size = 156, normalized size = 1.33

$$ace\left(\begin{cases} x\sqrt{ce} & \text{for}\ d = 0 \\ 0 & \text{for}\ e = 0 \\ \frac{2(ce+dex)^{\frac{3}{2}}}{3de} & \text{otherwise} \end{cases}\right) - \frac{2ac(ce + dex)^{\frac{3}{2}}}{3d} + \frac{2a(ce + dex)^{\frac{5}{2}}}{5de} + \frac{2b(ce + dex)^{\frac{5}{2}}\operatorname{asin}(c + dx)}{5de} - \frac{b(ce + dex)^{\frac{7}{2}}\Gamma\left(\frac{7}{4}\right)2}{5de^2]}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**(3/2)*(a+b*asin(d*x+c)),x)
```

```
[Out] a*c*e*Piecewise((x*sqrt(c*e), Eq(d, 0)), (0, Eq(e, 0)), (2*(c*e + d*e*x)**(
3/2)/(3*d*e), True)) - 2*a*c*(c*e + d*e*x)**(3/2)/(3*d) + 2*a*(c*e + d*e*x)
**(5/2)/(5*d*e) + 2*b*(c*e + d*e*x)**(5/2)*asin(c + d*x)/(5*d*e) - b*(c*e +
 d*e*x)**(7/2)*gamma(7/4)*hyper((1/2, 7/4), (11/4,), (c*e + d*e*x)**2*exp_p
olar(2*I*pi)/e**2)/(5*d*e**2*gamma(11/4))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (dex + ce)^{\frac{3}{2}} (b \arcsin (dx + c) + a) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(3/2)*(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)^(3/2)*(b*arcsin(d*x + c) + a), x)
```

3.284 $\int \sqrt{ce+dex}\left(a+b\sin^{-1}(c+dx)\right)dx$

Optimal. Leaf size=99

$$-\frac{4b\sqrt{e}\text{EllipticF}\left(\sin^{-1}\left(\frac{\sqrt{e(c+dx)}}{\sqrt{e}}\right),-1\right)}{9d}+\frac{2(e(c+dx))^{3/2}\left(a+b\sin^{-1}(c+dx)\right)}{3de}+\frac{4b\sqrt{1-(c+dx)^2}\sqrt{e(c+dx)}}{9d}$$

```
[Out] (4*b*Sqrt[e*(c + d*x)]*Sqrt[1 - (c + d*x)^2])/(9*d) + (2*(e*(c + d*x))^(3/2
)*(a + b*ArcSin[c + d*x]))/(3*d*e) - (4*b*Sqrt[e]*EllipticF[ArcSin[Sqrt[e*(
c + d*x)]/Sqrt[e]], -1])/(9*d)
```

Rubi [A] time = 0.0809253, antiderivative size = 99, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {4805, 4627, 321, 329, 221}

$$\frac{2(e(c+dx))^{3/2}\left(a+b\sin^{-1}(c+dx)\right)}{3de}+\frac{4b\sqrt{1-(c+dx)^2}\sqrt{e(c+dx)}}{9d}-\frac{4b\sqrt{e}F\left(\sin^{-1}\left(\frac{\sqrt{e(c+dx)}}{\sqrt{e}}\right)\middle|-1\right)}{9d}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[c*e + d*e*x]*(a + b*ArcSin[c + d*x]),x]
```


```
[Out] (4*b*Sqrt[e*(c + d*x)]*Sqrt[1 - (c + d*x)^2])/(9*d) + (2*(e*(c + d*x))^(3/2
)*(a + b*ArcSin[c + d*x]))/(3*d*e) - (4*b*Sqrt[e]*EllipticF[ArcSin[Sqrt[e*(
c + d*x)]/Sqrt[e]], -1])/(9*d)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 221

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[(Rt[-b,
 4]*x)/Rt[a, 4]], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
b/a] && GtQ[a, 0]
```

Rubi steps

$$\int \sqrt{ce+dex}\left(a+b\sin^{-1}(c+dx)\right)dx = \frac{\text{Subst}\left(\int \sqrt{ex}\left(a+b\sin^{-1}(x)\right)dx, x, c+dx\right)}{d}$$

$$= \frac{2(e(c+dx))^{3/2}\left(a+b\sin^{-1}(c+dx)\right)}{3de} - \frac{(2b)\,\text{Subst}\left(\int \frac{(ex)^{3/2}}{\sqrt{1-x^2}}dx, x, c+dx\right)}{3de}$$

$$= \frac{4b\sqrt{e(c+dx)}\sqrt{1-(c+dx)^2}}{9d} + \frac{2(e(c+dx))^{3/2}\left(a+b\sin^{-1}(c+dx)\right)}{3de} - \frac{(2be)\,\text{Subs}}{}$$

$$= \frac{4b\sqrt{e(c+dx)}\sqrt{1-(c+dx)^2}}{9d} + \frac{2(e(c+dx))^{3/2}\left(a+b\sin^{-1}(c+dx)\right)}{3de} - \frac{(4b)\,\text{Subst}}{}$$

$$= \frac{4b\sqrt{e(c+dx)}\sqrt{1-(c+dx)^2}}{9d} + \frac{2(e(c+dx))^{3/2}\left(a+b\sin^{-1}(c+dx)\right)}{3de} - \frac{4b\sqrt{e}F\left(\text{si}\right.}{}$$

Mathematica [C] time = 0.0315626, size = 87, normalized size = 0.88

$$\frac{2\sqrt{e(c+dx)}\left(-2b\text{Hypergeometric2F1}\left(\frac{1}{4},\frac{1}{2},\frac{5}{4},(c+dx)^2\right)+3ac+3adx+2b\sqrt{1-(c+dx)^2}+3bc\sin^{-1}(c+dx)+3bdx\right.}{9d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[c*e + d*e*x]*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (2*Sqrt[e*(c + d*x)]*(3*a*c + 3*a*d*x + 2*b*Sqrt[1 - (c + d*x)^2] + 3*b*c*A
rcSin[c + d*x] + 3*b*d*x*ArcSin[c + d*x] - 2*b*Hypergeometric2F1[1/4, 1/2,
5/4, (c + d*x)^2]))/(9*d)
```

Maple [B] time = 0.011, size = 172, normalized size = 1.7

$$2\frac{1}{de}\left(1/3\,(dex+ce)^{3/2}a+b\left(1/3\,(dex+ce)^{3/2}\arcsin\left(\frac{dex+ce}{e}\right)-2/3\,\frac{1}{e}\left(-1/3\,e^2\sqrt{dex+ce}\sqrt{-\frac{(dex+ce)^2}{e^2}+1}+1/3\,\frac{e^2\mathrm{E}}{}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c)),x)
```

```
[Out] 2/d/e*(1/3*(d*e*x+c*e)^(3/2)*a+b*(1/3*(d*e*x+c*e)^(3/2)*arcsin((d*e*x+c*e)/
e)-2/3/e*(-1/3*e^2*(d*e*x+c*e)^(1/2)*(-(d*e*x+c*e)^2/e^2+1)^(1/2)+1/3*e^2/(
1/e)^(1/2)*(1-(d*e*x+c*e)/e)^(1/2)*((d*e*x+c*e)/e+1)^(1/2)/(-(d*e*x+c*e)^2/
e^2+1)^(1/2)*EllipticF((d*e*x+c*e)^(1/2)*(1/e)^(1/2),I))))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\sqrt{dex+ce}(b\arcsin(dx+c)+a),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*e*x + c*e)*(b*arcsin(d*x + c) + a), x)
```

Sympy [A] time = 2.51641, size = 104, normalized size = 1.05

$$\frac{2a(ce+dex)^{\frac{3}{2}}}{3de}+\frac{2b(ce+dex)^{\frac{3}{2}}\operatorname{asin}(c+dx)}{3de}-\frac{b(ce+dex)^{\frac{5}{2}}\Gamma\left(\frac{5}{4}\right){}_2F_1\left(\begin{matrix}\frac{1}{2},\frac{5}{4}\\\frac{9}{4}\end{matrix}\middle|\frac{(ce+dex)^2e^{2i\pi}}{e^2}\right)}{3de^2\Gamma\left(\frac{9}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**(1/2)*(a+b*asin(d*x+c)),x)
```

```
[Out] 2*a*(c*e + d*e*x)**(3/2)/(3*d*e) + 2*b*(c*e + d*e*x)**(3/2)*asin(c + d*x)/(
3*d*e) - b*(c*e + d*e*x)**(5/2)*gamma(5/4)*hyper((1/2, 5/4), (9/4,), (c*e +
 d*e*x)**2*exp_polar(2*I*pi)/e**2)/(3*d*e**2*gamma(9/4))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\sqrt{dex+ce}(b\arcsin(dx+c)+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*e*x + c*e)*(b*arcsin(d*x + c) + a), x)
```

3.285 $\int \frac{a+b\sin^{-1}(c+dx)}{\sqrt{ce+dex}}\,dx$

Optimal. Leaf size=81

$$\frac{2\sqrt{e(c+dx)}\left(a+b\sin^{-1}(c+dx)\right)}{de}+\frac{4b\sqrt{e(c+dx)}E\left(\sin^{-1}\left(\frac{\sqrt{-c-dx+1}}{\sqrt{2}}\right)\middle|2\right)}{de\sqrt{c+dx}}$$

```
[Out] (2*Sqrt[e*(c + d*x)]*(a + b*ArcSin[c + d*x]))/(d*e) + (4*b*Sqrt[e*(c + d*x)
]*EllipticE[ArcSin[Sqrt[1 - c - d*x]/Sqrt[2]], 2])/(d*e*Sqrt[c + d*x])
```

Rubi [A] time = 0.0759981, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {4805, 4627, 320, 318, 424}

$$\frac{2\sqrt{e(c+dx)}\left(a+b\sin^{-1}(c+dx)\right)}{de}+\frac{4b\sqrt{e(c+dx)}E\left(\sin^{-1}\left(\frac{\sqrt{-c-dx+1}}{\sqrt{2}}\right)\middle|2\right)}{de\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])/Sqrt[c*e + d*e*x],x]
```

```
[Out] (2*Sqrt[e*(c + d*x)]*(a + b*ArcSin[c + d*x]))/(d*e) + (4*b*Sqrt[e*(c + d*x)
]*EllipticE[ArcSin[Sqrt[1 - c - d*x]/Sqrt[2]], 2])/(d*e*Sqrt[c + d*x])
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 320

```
Int[Sqrt[(c_)*(x_)]/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[c*x]/
Sqrt[x], Int[Sqrt[x]/Sqrt[a + b*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[
-(b/a), 0]
```

Rule 318

```
Int[Sqrt[x_]/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Dist[-2/(Sqrt[a]*(-(b/
a))^(3/4)), Subst[Int[Sqrt[1 - 2*x^2]/Sqrt[1 - x^2], x], x, Sqrt[1 - Sqrt[-
(b/a)]*x]/Sqrt[2]], x] /; FreeQ[{a, b}, x] && GtQ[-(b/a), 0] && GtQ[a, 0]
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}(c+dx)}{\sqrt{ce+dex}}\,dx &= \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{\sqrt{ex}}\,dx, x, c+dx\right)}{d}\\
&= \frac{2\sqrt{e(c+dx)}\left(a+b\sin^{-1}(c+dx)\right)}{de} - \frac{(2b)\,\text{Subst}\left(\int \frac{\sqrt{ex}}{\sqrt{1-x^2}}\,dx, x, c+dx\right)}{de}\\
&= \frac{2\sqrt{e(c+dx)}\left(a+b\sin^{-1}(c+dx)\right)}{de} - \frac{\left(2b\sqrt{e(c+dx)}\right)\text{Subst}\left(\int \frac{\sqrt{x}}{\sqrt{1-x^2}}\,dx, x, c+dx\right)}{de\sqrt{c+dx}}\\
&= \frac{2\sqrt{e(c+dx)}\left(a+b\sin^{-1}(c+dx)\right)}{de} + \frac{\left(4b\sqrt{e(c+dx)}\right)\text{Subst}\left(\int \frac{\sqrt{1-2x^2}}{\sqrt{1-x^2}}\,dx, x, \frac{\sqrt{1-c-dx}}{\sqrt{2}}\right)}{de\sqrt{c+dx}}\\
&= \frac{2\sqrt{e(c+dx)}\left(a+b\sin^{-1}(c+dx)\right)}{de} + \frac{4b\sqrt{e(c+dx)}E\left(\sin^{-1}\left(\frac{\sqrt{1-c-dx}}{\sqrt{2}}\right)\middle|2\right)}{de\sqrt{c+dx}}
\end{aligned}$$

Mathematica [C] time = 0.0311126, size = 59, normalized size = 0.73

$$-\frac{2\sqrt{e(c+dx)}\left(2b(c+dx)\text{Hypergeometric2F1}\left(\frac{1}{2},\frac{3}{4},\frac{7}{4},(c+dx)^2\right)-3\left(a+b\sin^{-1}(c+dx)\right)\right)}{3de}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])/Sqrt[c*e + d*e*x],x]
```

```
[Out] (-2*Sqrt[e*(c + d*x)]*(-3*(a + b*ArcSin[c + d*x]) + 2*b*(c + d*x)*Hypergeom
etric2F1[1/2, 3/4, 7/4, (c + d*x)^2]))/(3*d*e)
```

Maple [C] time = 0.008, size = 149, normalized size = 1.8

$$2\frac{1}{de}\left(a\sqrt{dex+ce}+b\left(\sqrt{dex+ce}\arcsin\left(\frac{dex+ce}{e}\right)+2\,\frac{\mathrm{EllipticF}\left(\sqrt{dex+ce}\sqrt{e^{-1}},i\right)-\mathrm{EllipticE}\left(\sqrt{dex+ce}\sqrt{e^{-1}},i\right)}{\sqrt{e^{-1}}}\sqrt{\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(1/2),x)
```

```
[Out] 2/d/e*(a*(d*e*x+c*e)^(1/2)+b*((d*e*x+c*e)^(1/2)*arcsin((d*e*x+c*e)/e)+2/(1/
e)^(1/2)*(1-(d*e*x+c*e)/e)^(1/2)*((d*e*x+c*e)/e+1)^(1/2)/(-(d*e*x+c*e)^2/e^
2+1)^(1/2)*(EllipticF((d*e*x+c*e)^(1/2)*(1/e)^(1/2),I)-EllipticE((d*e*x+c*e
)^(1/2)*(1/e)^(1/2),I))))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b\arcsin\left(dx+c\right)+a}{\sqrt{dex+ce}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(d*x + c) + a)/sqrt(d*e*x + c*e), x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))/(d*e*x+c*e)**(1/2),x)
```

```
[Out] Exception raised: TypeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \arcsin(dx + c) + a}{\sqrt{dex + ce}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)/sqrt(d*e*x + c*e), x)
```

3.286 $\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^{3/2}}\,dx$

Optimal. Leaf size=61

$$\frac{4b\text{EllipticF}\left(\sin^{-1}\left(\frac{\sqrt{e(c+dx)}}{\sqrt{e}}\right),-1\right)}{de^{3/2}}-\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{de\sqrt{e(c+dx)}}$$

```
[Out] (-2*(a + b*ArcSin[c + d*x]))/(d*e*Sqrt[e*(c + d*x)]) + (4*b*EllipticF[ArcSi
n[Sqrt[e*(c + d*x)]/Sqrt[e]], -1])/(d*e^(3/2))
```

Rubi [A] time = 0.0680877, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {4805, 4627, 329, 221}

$$\frac{4bF\left(\sin^{-1}\left(\frac{\sqrt{e(c+dx)}}{\sqrt{e}}\right)\middle|-1\right)}{de^{3/2}}-\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{de\sqrt{e(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^(3/2),x]
```

```
[Out] (-2*(a + b*ArcSin[c + d*x]))/(d*e*Sqrt[e*(c + d*x)]) + (4*b*EllipticF[ArcSi
n[Sqrt[e*(c + d*x)]/Sqrt[e]], -1])/(d*e^(3/2))
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 221

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[(Rt[-b,
 4]*x)/Rt[a, 4]], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
b/a] && GtQ[a, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^{3/2}}\,dx &= \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{(ex)^{3/2}}\,dx, x, c+dx\right)}{d}\\
&= -\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{de\sqrt{e(c+dx)}}+\frac{(2b)\,\text{Subst}\left(\int \frac{1}{\sqrt{ex}\sqrt{1-x^2}}\,dx, x, c+dx\right)}{de}\\
&= -\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{de\sqrt{e(c+dx)}}+\frac{(4b)\,\text{Subst}\left(\int \frac{1}{\sqrt{1-\frac{x^4}{e^2}}}\,dx, x, \sqrt{e(c+dx)}\right)}{de^2}\\
&= -\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{de\sqrt{e(c+dx)}}+\frac{4bF\left(\sin^{-1}\left(\frac{\sqrt{e(c+dx)}}{\sqrt{e}}\right)\middle|-1\right)}{de^{3/2}}
\end{aligned}
$$

Mathematica [C] time = 0.0235713, size = 54, normalized size = 0.89

$$
-\frac{2\left(-2b(c+dx)\text{Hypergeometric2F1}\left(\frac{1}{4},\frac{1}{2},\frac{5}{4},(c+dx)^2\right)+a+b\sin^{-1}(c+dx)\right)}{de\sqrt{e(c+dx)}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^(3/2),x]
```

```
[Out] (-2*(a + b*ArcSin[c + d*x] - 2*b*(c + d*x)*Hypergeometric2F1[1/4, 1/2, 5/4,
 (c + d*x)^2]))/(d*e*Sqrt[e*(c + d*x)])
```

Maple [B] time = 0.01, size = 132, normalized size = 2.2

$$2\frac{1}{de}\left(-\frac{a}{\sqrt{dex+ce}}+b\left(-\frac{1}{\sqrt{dex+ce}}\arcsin\left(\frac{dex+ce}{e}\right)+2\frac{\text{EllipticF}\left(\sqrt{dex+ce}\sqrt{e^{-1}},i\right)}{e\sqrt{e^{-1}}}\sqrt{1-\frac{dex+ce}{e}}\sqrt{\frac{dex+ce}{e}+1}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(3/2),x)
```

```
[Out] 2/d/e*(-1/(d*e*x+c*e)^(1/2)*a+b*(-1/(d*e*x+c*e)^(1/2)*arcsin((d*e*x+c*e)/e)
+2/e/(1/e)^(1/2)*(1-(d*e*x+c*e)/e)^(1/2)*((d*e*x+c*e)/e+1)^(1/2)/(-(d*e*x+c
*e)^2/e^2+1)^(1/2)*EllipticF((d*e*x+c*e)^(1/2)*(1/e)^(1/2),I)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{dex+ce}(b\arcsin(dx+c)+a)}{d^2e^2x^2+2\,cde^2x+c^2e^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*e*x + c*e)*(b*arcsin(d*x + c) + a)/(d^2*e^2*x^2 + 2*c*d*e^2
*x + c^2*e^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a + b\,\mathrm{asin}\,(c + dx)}{(e\,(c + dx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))/(d*e*x+c*e)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))/(e*(c + d*x))**(3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\arcsin\,(dx + c) + a}{(dex + ce)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)/(d*e*x + c*e)^(3/2), x)
```

3.287 $\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^{5/2}}\,dx$

Optimal. Leaf size=122

$$-\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{3de(e(c+dx))^{3/2}}-\frac{4b\sqrt{1-(c+dx)^2}}{3de^2\sqrt{e(c+dx)}}+\frac{4b\sqrt{e(c+dx)}E\left(\sin^{-1}\left(\frac{\sqrt{-c-dx+1}}{\sqrt{2}}\right)\middle|2\right)}{3de^3\sqrt{c+dx}}$$

```
[Out] (-4*b*Sqrt[1 - (c + d*x)^2])/(3*d*e^2*Sqrt[e*(c + d*x)]) - (2*(a + b*ArcSin
[c + d*x]))/(3*d*e*(e*(c + d*x))^(3/2)) + (4*b*Sqrt[e*(c + d*x)]*EllipticE[
ArcSin[Sqrt[1 - c - d*x]/Sqrt[2]], 2])/(3*d*e^3*Sqrt[c + d*x])
```

Rubi [A] time = 0.104981, antiderivative size = 122, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.261, Rules used = {4805, 4627, 325, 320, 318, 424}

$$-\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{3de(e(c+dx))^{3/2}}-\frac{4b\sqrt{1-(c+dx)^2}}{3de^2\sqrt{e(c+dx)}}+\frac{4b\sqrt{e(c+dx)}E\left(\sin^{-1}\left(\frac{\sqrt{-c-dx+1}}{\sqrt{2}}\right)\middle|2\right)}{3de^3\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^(5/2),x]
```

```
[Out] (-4*b*Sqrt[1 - (c + d*x)^2])/(3*d*e^2*Sqrt[e*(c + d*x)]) - (2*(a + b*ArcSin
[c + d*x]))/(3*d*e*(e*(c + d*x))^(3/2)) + (4*b*Sqrt[e*(c + d*x)]*EllipticE[
ArcSin[Sqrt[1 - c - d*x]/Sqrt[2]], 2])/(3*d*e^3*Sqrt[c + d*x])
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 325

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c*
x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] - Dist[(b*(m + n*(p + 1)
+ 1))/(a*c^n*(m + 1)), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 320

```
Int[Sqrt[(c_)*(x_)]/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[c*x]/
Sqrt[x], Int[Sqrt[x]/Sqrt[a + b*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[
-(b/a), 0]
```

Rule 318

```
Int[Sqrt[x_]/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Dist[-2/(Sqrt[a]*(-(b/
a))^(3/4)), Subst[Int[Sqrt[1 - 2*x^2]/Sqrt[1 - x^2], x], x, Sqrt[1 - Sqrt[-
(b/a)]*x]/Sqrt[2]], x] /; FreeQ[{a, b}, x] && GtQ[-(b/a), 0] && GtQ[a, 0]
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{(ex)^{5/2}}\,dx,x,c+dx\right)}{d}$$

$$= -\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{3de(e(c+dx))^{3/2}} + \frac{(2b)\,\text{Subst}\left(\int \frac{1}{(ex)^{3/2}\sqrt{1-x^2}}\,dx,x,c+dx\right)}{3de}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{3de^2\sqrt{e(c+dx)}} - \frac{2\left(a+b\sin^{-1}(c+dx)\right)}{3de(e(c+dx))^{3/2}} - \frac{(2b)\,\text{Subst}\left(\int \frac{\sqrt{ex}}{\sqrt{1-x^2}}\,dx,x,c+dx\right)}{3de^3}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{3de^2\sqrt{e(c+dx)}} - \frac{2\left(a+b\sin^{-1}(c+dx)\right)}{3de(e(c+dx))^{3/2}} - \frac{\left(2b\sqrt{e(c+dx)}\right)\text{Subst}\left(\int \frac{\sqrt{x}}{\sqrt{1-x^2}}\,dx,x,c+dx\right.}{3de^3\sqrt{c+dx}}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{3de^2\sqrt{e(c+dx)}} - \frac{2\left(a+b\sin^{-1}(c+dx)\right)}{3de(e(c+dx))^{3/2}} + \frac{\left(4b\sqrt{e(c+dx)}\right)\text{Subst}\left(\int \frac{\sqrt{1-2x^2}}{\sqrt{1-x^2}}\,dx,x,\frac{\sqrt{1-c-}}{\sqrt{2}}\right.}{3de^3\sqrt{c+dx}}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{3de^2\sqrt{e(c+dx)}} - \frac{2\left(a+b\sin^{-1}(c+dx)\right)}{3de(e(c+dx))^{3/2}} + \frac{4b\sqrt{e(c+dx)}E\left(\sin^{-1}\left(\frac{\sqrt{1-c-dx}}{\sqrt{2}}\right)\middle|2\right)}{3de^3\sqrt{c+dx}}$$

Mathematica [C] time = 0.0299242, size = 56, normalized size = 0.46

$$-\frac{2\left(2b(c+dx)\text{Hypergeometric2F1}\left(-\frac{1}{4},\frac{1}{2},\frac{3}{4},(c+dx)^2\right)+a+b\sin^{-1}(c+dx)\right)}{3de(e(c+dx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^(5/2),x]
```

```
[Out] (-2*(a + b*ArcSin[c + d*x] + 2*b*(c + d*x)*Hypergeometric2F1[-1/4, 1/2, 3/4
, (c + d*x)^2]))/(3*d*e*(e*(c + d*x))^(3/2))
```

Maple [C] time = 0.011, size = 190, normalized size = 1.6

$$2\,\frac{1}{de}\left(-1/3\,\frac{a}{(dex+ce)^{3/2}}+b\left(-1/3\,\frac{1}{(dex+ce)^{3/2}}\arcsin\left(\frac{dex+ce}{e}\right)+2/3\,\frac{1}{e}\left(-\frac{1}{\sqrt{dex+ce}}\sqrt{-\frac{(dex+ce)^2}{e^2}+1}+\frac{\text{EllipticF}}{}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(5/2),x)
```

```
[Out] 2/d/e*(-1/3*a/(d*e*x+c*e)^(3/2)+b*(-1/3/(d*e*x+c*e)^(3/2)*arcsin((d*e*x+c*e
)/e)+2/3/e*(-(-(d*e*x+c*e)^2/e^2+1)^(1/2)/(d*e*x+c*e)^(1/2)+1/e/(1/e)^(1/2)
*(1-(d*e*x+c*e)/e)^(1/2)*((d*e*x+c*e)/e+1)^(1/2)/(-(d*e*x+c*e)^2/e^2+1)^(1/
2)*(EllipticF((d*e*x+c*e)^(1/2)*(1/e)^(1/2),I)-EllipticE((d*e*x+c*e)^(1/2)*
(1/e)^(1/2),I)))))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{dex+ce}(b\arcsin(dx+c)+a)}{d^3e^3x^3+3\,cd^2e^3x^2+3\,c^2de^3x+c^3e^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*e*x + c*e)*(b*arcsin(d*x + c) + a)/(d^3*e^3*x^3 + 3*c*d^2*e
^3*x^2 + 3*c^2*d*e^3*x + c^3*e^3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{a+b\,\mathrm{asin}\,(c+dx)}{(e\,(c+dx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))/(d*e*x+c*e)**(5/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))/(e*(c + d*x))**(5/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \arcsin (dx + c) + a}{(dex + ce)^{\frac{5}{2}}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)/(d*e*x + c*e)^(5/2), x)
```

3.288 $\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^{7/2}}\,dx$

Optimal. Leaf size=102

$$\frac{4b\text{EllipticF}\left(\sin^{-1}\left(\frac{\sqrt{e(c+dx)}}{\sqrt{e}}\right),-1\right)}{15de^{7/2}}-\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{5de(e(c+dx))^{5/2}}-\frac{4b\sqrt{1-(c+dx)^2}}{15de^2(e(c+dx))^{3/2}}$$

```
[Out] (-4*b*Sqrt[1 - (c + d*x)^2])/(15*d*e^2*(e*(c + d*x))^(3/2)) - (2*(a + b*Arc
Sin[c + d*x]))/(5*d*e*(e*(c + d*x))^(5/2)) + (4*b*EllipticF[ArcSin[Sqrt[e*(
c + d*x)]/Sqrt[e]], -1])/(15*d*e^(7/2))
```

Rubi [A] time = 0.0905582, antiderivative size = 102, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {4805, 4627, 325, 329, 221}

$$-\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{5de(e(c+dx))^{5/2}}-\frac{4b\sqrt{1-(c+dx)^2}}{15de^2(e(c+dx))^{3/2}}+\frac{4bF\left(\sin^{-1}\left(\frac{\sqrt{e(c+dx)}}{\sqrt{e}}\right)\middle|-1\right)}{15de^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^(7/2),x]
```


```
[Out] (-4*b*Sqrt[1 - (c + d*x)^2])/(15*d*e^2*(e*(c + d*x))^(3/2)) - (2*(a + b*Arc
Sin[c + d*x]))/(5*d*e*(e*(c + d*x))^(5/2)) + (4*b*EllipticF[ArcSin[Sqrt[e*(
c + d*x)]/Sqrt[e]], -1])/(15*d*e^(7/2))
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
 :> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 325

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c*
x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] - Dist[(b*(m + n*(p + 1)
+ 1))/(a*c^n*(m + 1)), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 221

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[(Rt[-b,
 4]*x)/Rt[a, 4]], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
b/a] && GtQ[a, 0]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^{7/2}}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{(ex)^{7/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{5de(e(c+dx))^{5/2}} + \frac{(2b)\,\text{Subst}\left(\int \frac{1}{(ex)^{5/2}\sqrt{1-x^2}}\,dx, x, c+dx\right)}{5de}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{15de^2(e(c+dx))^{3/2}} - \frac{2\left(a+b\sin^{-1}(c+dx)\right)}{5de(e(c+dx))^{5/2}} + \frac{(2b)\,\text{Subst}\left(\int \frac{1}{\sqrt{ex}\sqrt{1-x^2}}\,dx, x, c+dx\right)}{15de^3}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{15de^2(e(c+dx))^{3/2}} - \frac{2\left(a+b\sin^{-1}(c+dx)\right)}{5de(e(c+dx))^{5/2}} + \frac{(4b)\,\text{Subst}\left(\int \frac{1}{\sqrt{1-\frac{x^4}{e^2}}}\,dx, x, \sqrt{e(c+dx)}\right)}{15de^4}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{15de^2(e(c+dx))^{3/2}} - \frac{2\left(a+b\sin^{-1}(c+dx)\right)}{5de(e(c+dx))^{5/2}} + \frac{4bF\left(\sin^{-1}\left(\frac{\sqrt{e(c+dx)}}{\sqrt{e}}\right)\middle|-1\right)}{15de^{7/2}}$$

Mathematica [C] time = 0.0364516, size = 59, normalized size = 0.58

$$\frac{-4b(c+dx)\text{Hypergeometric2F1}\left(-\frac{3}{4},\frac{1}{2},\frac{1}{4},(c+dx)^2\right)-6\left(a+b\sin^{-1}(c+dx)\right)}{15de(e(c+dx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^(7/2),x]
```

```
[Out] (-6*(a + b*ArcSin[c + d*x]) - 4*b*(c + d*x)*Hypergeometric2F1[-3/4, 1/2, 1/
4, (c + d*x)^2])/(15*d*e*(e*(c + d*x))^(5/2))
```

Maple [A] time = 0.014, size = 169, normalized size = 1.7

$$2\frac{1}{de}\left(-1/5\frac{a}{(dex+ce)^{5/2}}+b\left(-1/5\frac{1}{(dex+ce)^{5/2}}\arcsin\left(\frac{dex+ce}{e}\right)+2/5\frac{1}{e}\left(-1/3\frac{1}{(dex+ce)^{3/2}}\sqrt{-\frac{(dex+ce)^2}{e^2}+1}+1/3\frac{\text{El}}{}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(7/2),x)
```

```
[Out] 2/d/e*(-1/5*a/(d*e*x+c*e)^(5/2)+b*(-1/5/(d*e*x+c*e)^(5/2)*arcsin((d*e*x+c*e
)/e)+2/5/e*(-1/3*(-(d*e*x+c*e)^2/e^2+1)^(1/2)/(d*e*x+c*e)^(3/2)+1/3/e^2/(1/
e)^(1/2)*(1-(d*e*x+c*e)/e)^(1/2)*((d*e*x+c*e)/e+1)^(1/2)/(-(d*e*x+c*e)^2/e^
2+1)^(1/2)*EllipticF((d*e*x+c*e)^(1/2)*(1/e)^(1/2),I))))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\sqrt{dex+ce}(b\arcsin{(dx+c)}+a)}{d^4e^4x^4+4\,cd^3e^4x^3+6\,c^2d^2e^4x^2+4\,c^3de^4x+c^4e^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(7/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*e*x + c*e)*(b*arcsin(d*x + c) + a)/(d^4*e^4*x^4 + 4*c*d^3*e
^4*x^3 + 6*c^2*d^2*e^4*x^2 + 4*c^3*d*e^4*x + c^4*e^4), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))/(d*e*x+c*e)**(7/2),x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(7/2),x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError
```

3.289 $\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^{9/2}}\,dx$

Optimal. Leaf size=159

$$-\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{7de(e(c+dx))^{7/2}}-\frac{12b\sqrt{1-(c+dx)^2}}{35de^4\sqrt{e(c+dx)}}-\frac{4b\sqrt{1-(c+dx)^2}}{35de^2(e(c+dx))^{5/2}}+\frac{12b\sqrt{e(c+dx)}E\left(\sin^{-1}\left(\frac{\sqrt{-c-dx+1}}{\sqrt{2}}\right)\middle|2\right)}{35de^5\sqrt{c+dx}}$$

```
[Out] (-4*b*Sqrt[1 - (c + d*x)^2])/(35*d*e^2*(e*(c + d*x))^(5/2)) - (12*b*Sqrt[1
- (c + d*x)^2])/(35*d*e^4*Sqrt[e*(c + d*x)]) - (2*(a + b*ArcSin[c + d*x]))/
(7*d*e*(e*(c + d*x))^(7/2)) + (12*b*Sqrt[e*(c + d*x)]*EllipticE[ArcSin[Sqrt
[1 - c - d*x]/Sqrt[2]], 2])/(35*d*e^5*Sqrt[c + d*x])
```

Rubi [A] time = 0.127513, antiderivative size = 159, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.261, Rules used = {4805, 4627, 325, 320, 318, 424}

$$-\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{7de(e(c+dx))^{7/2}}-\frac{12b\sqrt{1-(c+dx)^2}}{35de^4\sqrt{e(c+dx)}}-\frac{4b\sqrt{1-(c+dx)^2}}{35de^2(e(c+dx))^{5/2}}+\frac{12b\sqrt{e(c+dx)}E\left(\sin^{-1}\left(\frac{\sqrt{-c-dx+1}}{\sqrt{2}}\right)\middle|2\right)}{35de^5\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^(9/2),x]
```


```
[Out] (-4*b*Sqrt[1 - (c + d*x)^2])/(35*d*e^2*(e*(c + d*x))^(5/2)) - (12*b*Sqrt[1
- (c + d*x)^2])/(35*d*e^4*Sqrt[e*(c + d*x)]) - (2*(a + b*ArcSin[c + d*x]))/
(7*d*e*(e*(c + d*x))^(7/2)) + (12*b*Sqrt[e*(c + d*x)]*EllipticE[ArcSin[Sqrt
[1 - c - d*x]/Sqrt[2]], 2])/(35*d*e^5*Sqrt[c + d*x])
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
```

```
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 325

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c*
x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] - Dist[(b*(m + n*(p + 1)
+ 1))/(a*c^n*(m + 1)), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 320

```
Int[Sqrt[(c_)*(x_)]/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[c*x]/
Sqrt[x], Int[Sqrt[x]/Sqrt[a + b*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[
-(b/a), 0]
```

Rule 318

```
Int[Sqrt[x_]/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Dist[-2/(Sqrt[a]*(-(b/
a))^(3/4)), Subst[Int[Sqrt[1 - 2*x^2]/Sqrt[1 - x^2], x], x, Sqrt[1 - Sqrt[-
(b/a)]*x]/Sqrt[2]], x] /; FreeQ[{a, b}, x] && GtQ[-(b/a), 0] && GtQ[a, 0]
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^{9/2}}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{(ex)^{9/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{7de(e(c+dx))^{7/2}} + \frac{(2b)\,\text{Subst}\left(\int \frac{1}{(ex)^{7/2}\sqrt{1-x^2}}\,dx, x, c+dx\right)}{7de}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{35de^2(e(c+dx))^{5/2}} - \frac{2\left(a+b\sin^{-1}(c+dx)\right)}{7de(e(c+dx))^{7/2}} + \frac{(6b)\,\text{Subst}\left(\int \frac{1}{(ex)^{3/2}\sqrt{1-x^2}}\,dx, x, c+dx\right)}{35de^3}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{35de^2(e(c+dx))^{5/2}} - \frac{12b\sqrt{1-(c+dx)^2}}{35de^4\sqrt{e(c+dx)}} - \frac{2\left(a+b\sin^{-1}(c+dx)\right)}{7de(e(c+dx))^{7/2}} - \frac{(6b)\,\text{Subst}\left(\int \frac{\sqrt{ex}}{\sqrt{1-x^2}}\,d\right.}{35de^5}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{35de^2(e(c+dx))^{5/2}} - \frac{12b\sqrt{1-(c+dx)^2}}{35de^4\sqrt{e(c+dx)}} - \frac{2\left(a+b\sin^{-1}(c+dx)\right)}{7de(e(c+dx))^{7/2}} - \frac{\left(6b\sqrt{e(c+dx)}\right)\text{Subst}}{35de^5}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{35de^2(e(c+dx))^{5/2}} - \frac{12b\sqrt{1-(c+dx)^2}}{35de^4\sqrt{e(c+dx)}} - \frac{2\left(a+b\sin^{-1}(c+dx)\right)}{7de(e(c+dx))^{7/2}} + \frac{\left(12b\sqrt{e(c+dx)}\right)\text{Subs}}{35de}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{35de^2(e(c+dx))^{5/2}} - \frac{12b\sqrt{1-(c+dx)^2}}{35de^4\sqrt{e(c+dx)}} - \frac{2\left(a+b\sin^{-1}(c+dx)\right)}{7de(e(c+dx))^{7/2}} + \frac{12b\sqrt{e(c+dx)}E\left(\sin^{-}\right.}{35de^5\sqrt{c+}}$$

Mathematica [C] time = 0.0436403, size = 66, normalized size = 0.42

$$-\frac{2\sqrt{e(c+dx)}\left(2b(c+dx)\text{Hypergeometric2F1}\left(-\frac{5}{4},\frac{1}{2},-\frac{1}{4},(c+dx)^2\right)+5\left(a+b\sin^{-1}(c+dx)\right)\right)}{35de^5(c+dx)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^(9/2),x]
```

```
[Out] (-2*Sqrt[e*(c + d*x)]*(5*(a + b*ArcSin[c + d*x]) + 2*b*(c + d*x)*Hypergeome
tric2F1[-5/4, 1/2, -1/4, (c + d*x)^2]))/(35*d*e^5*(c + d*x)^4)
```

Maple [C] time = 0.015, size = 225, normalized size = 1.4

$$2\frac{1}{de}\left(-1/7\frac{a}{(dex+ce)^{7/2}}+b\left(-1/7\frac{1}{(dex+ce)^{7/2}}\arcsin\left(\frac{dex+ce}{e}\right)+2/7\frac{1}{e}\left(-1/5\frac{1}{(dex+ce)^{5/2}}\sqrt{-\frac{(dex+ce)^2}{e^2}+1}-3/5\frac{}{e^{2}}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(9/2),x)
```

```
[Out] 2/d/e*(-1/7*a/(d*e*x+c*e)^(7/2)+b*(-1/7/(d*e*x+c*e)^(7/2)*arcsin((d*e*x+c*e
)/e)+2/7/e*(-1/5*(-(d*e*x+c*e)^2/e^2+1)^(1/2)/(d*e*x+c*e)^(5/2)-3/5/e^2*(-(
d*e*x+c*e)^2/e^2+1)^(1/2)/(d*e*x+c*e)^(1/2)+3/5/e^3/(1/e)^(1/2)*(1-(d*e*x+c
*e)/e)^(1/2)*((d*e*x+c*e)/e+1)^(1/2)/(-(d*e*x+c*e)^2/e^2+1)^(1/2)*(Elliptic
F((d*e*x+c*e)^(1/2)*(1/e)^(1/2),I)-EllipticE((d*e*x+c*e)^(1/2)*(1/e)^(1/2),
I)))))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(9/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{dex + ce}(b \arcsin(dx + c) + a)}{d^5e^5x^5 + 5\,cd^4e^5x^4 + 10\,c^2d^3e^5x^3 + 10\,c^3d^2e^5x^2 + 5\,c^4de^5x + c^5e^5}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(9/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*e*x + c*e)*(b*arcsin(d*x + c) + a)/(d^5*e^5*x^5 + 5*c*d^4*e
^5*x^4 + 10*c^2*d^3*e^5*x^3 + 10*c^3*d^2*e^5*x^2 + 5*c^4*d*e^5*x + c^5*e^5)
, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))/(d*e*x+c*e)**(9/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(9/2),x, algorithm="giac")
```

```
[Out] Timed out
```

3.290 $\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^{11/2}}\,dx$

Optimal. Leaf size=139

$$\frac{20b\text{EllipticF}\left(\sin^{-1}\left(\frac{\sqrt{e(c+dx)}}{\sqrt{e}}\right),-1\right)}{189de^{11/2}}-\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{9de(e(c+dx))^{9/2}}-\frac{20b\sqrt{1-(c+dx)^2}}{189de^4(e(c+dx))^{3/2}}-\frac{4b\sqrt{1-(c+dx)^2}}{63de^2(e(c+dx))^{7/2}}$$

```
[Out] (-4*b*Sqrt[1 - (c + d*x)^2])/(63*d*e^2*(e*(c + d*x))^(7/2)) - (20*b*Sqrt[1
- (c + d*x)^2])/(189*d*e^4*(e*(c + d*x))^(3/2)) - (2*(a + b*ArcSin[c + d*x]
))/(9*d*e*(e*(c + d*x))^(9/2)) + (20*b*EllipticF[ArcSin[Sqrt[e*(c + d*x)]/S
qrt[e]], -1])/(189*d*e^(11/2))
```

Rubi [A] time = 0.113851, antiderivative size = 139, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {4805, 4627, 325, 329, 221}

$$-\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{9de(e(c+dx))^{9/2}}-\frac{20b\sqrt{1-(c+dx)^2}}{189de^4(e(c+dx))^{3/2}}-\frac{4b\sqrt{1-(c+dx)^2}}{63de^2(e(c+dx))^{7/2}}+\frac{20bF\left(\sin^{-1}\left(\frac{\sqrt{e(c+dx)}}{\sqrt{e}}\right)\middle|-1\right)}{189de^{11/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^(11/2),x]
```

```
[Out] (-4*b*Sqrt[1 - (c + d*x)^2])/(63*d*e^2*(e*(c + d*x))^(7/2)) - (20*b*Sqrt[1
- (c + d*x)^2])/(189*d*e^4*(e*(c + d*x))^(3/2)) - (2*(a + b*ArcSin[c + d*x]
))/(9*d*e*(e*(c + d*x))^(9/2)) + (20*b*EllipticF[ArcSin[Sqrt[e*(c + d*x)]/S
qrt[e]], -1])/(189*d*e^(11/2))
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
```

```
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 325

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c*
x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] - Dist[(b*(m + n*(p + 1)
+ 1))/(a*c^n*(m + 1)), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 221

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[(Rt[-b,
 4]*x)/Rt[a, 4]], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
b/a] && GtQ[a, 0]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^{11/2}}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{(ex)^{11/2}}\,dx,x,c+dx\right)}{d}$$

$$= -\frac{2\left(a+b\sin^{-1}(c+dx)\right)}{9de(e(c+dx))^{9/2}} + \frac{(2b)\,\text{Subst}\left(\int \frac{1}{(ex)^{9/2}\sqrt{1-x^2}}\,dx,x,c+dx\right)}{9de}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{63de^2(e(c+dx))^{7/2}} - \frac{2\left(a+b\sin^{-1}(c+dx)\right)}{9de(e(c+dx))^{9/2}} + \frac{(10b)\,\text{Subst}\left(\int \frac{1}{(ex)^{5/2}\sqrt{1-x^2}}\,dx,x,c+dx\right)}{63de^3}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{63de^2(e(c+dx))^{7/2}} - \frac{20b\sqrt{1-(c+dx)^2}}{189de^4(e(c+dx))^{3/2}} - \frac{2\left(a+b\sin^{-1}(c+dx)\right)}{9de(e(c+dx))^{9/2}} + \frac{(10b)\,\text{Subst}\left(\int \frac{}{\sqrt{ex}\ldots}\right.}{189\ldots}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{63de^2(e(c+dx))^{7/2}} - \frac{20b\sqrt{1-(c+dx)^2}}{189de^4(e(c+dx))^{3/2}} - \frac{2\left(a+b\sin^{-1}(c+dx)\right)}{9de(e(c+dx))^{9/2}} + \frac{(20b)\,\text{Subst}\left(\int \frac{}{\sqrt{1\ldots}}\right.}{18\ldots}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{63de^2(e(c+dx))^{7/2}} - \frac{20b\sqrt{1-(c+dx)^2}}{189de^4(e(c+dx))^{3/2}} - \frac{2\left(a+b\sin^{-1}(c+dx)\right)}{9de(e(c+dx))^{9/2}} + \frac{20bF\left(\sin^{-1}\left(\frac{\sqrt{e(c+\ldots}}{\sqrt{e}\ldots}\right.\right.}{189de^{11/2}\ldots}$$

Mathematica [C] time = 0.0446952, size = 66, normalized size = 0.47

$$-\frac{2\sqrt{e(c+dx)}\left(2b(c+dx)\text{Hypergeometric2F1}\left(-\frac{7}{4},\frac{1}{2},-\frac{3}{4},(c+dx)^2\right)+7\left(a+b\sin^{-1}(c+dx)\right)\right)}{63de^6(c+dx)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^(11/2),x]
```

```
[Out] (-2*Sqrt[e*(c + d*x)]*(7*(a + b*ArcSin[c + d*x]) + 2*b*(c + d*x)*Hypergeome
tric2F1[-7/4, 1/2, -3/4, (c + d*x)^2]))/(63*d*e^6*(c + d*x)^5)
```

Maple [A] time = 0.017, size = 203, normalized size = 1.5

$$2\,\frac{1}{de}\left(-1/9\,\frac{a}{(dex+ce)^{9/2}}+b\left(-1/9\,\frac{1}{(dex+ce)^{9/2}}\arcsin\left(\frac{dex+ce}{e}\right)+2/9\,\frac{1}{e}\left(-1/7\,\frac{1}{(dex+ce)^{7/2}}\sqrt{-\frac{(dex+ce)^2}{e^2}+1}-\frac{}{21\,e^2\ldots}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(11/2),x)
```

```
[Out] 2/d/e*(-1/9*a/(d*e*x+c*e)^(9/2)+b*(-1/9/(d*e*x+c*e)^(9/2)*arcsin((d*e*x+c*e
)/e)+2/9/e*(-1/7*(-(d*e*x+c*e)^2/e^2+1)^(1/2)/(d*e*x+c*e)^(7/2)-5/21/e^2*(-
(d*e*x+c*e)^2/e^2+1)^(1/2)/(d*e*x+c*e)^(3/2)+5/21/e^4/(1/e)^(1/2)*(1-(d*e*x
+c*e)/e)^(1/2)*((d*e*x+c*e)/e+1)^(1/2)/(-(d*e*x+c*e)^2/e^2+1)^(1/2)*Ellipti
cF((d*e*x+c*e)^(1/2)*(1/e)^(1/2),I))))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(11/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{dex+ce}(b\arcsin(dx+c)+a)}{d^6e^6x^6+6\,cd^5e^6x^5+15\,c^2d^4e^6x^4+20\,c^3d^3e^6x^3+15\,c^4d^2e^6x^2+6\,c^5de^6x+c^6e^6},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(11/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*e*x + c*e)*(b*arcsin(d*x + c) + a)/(d^6*e^6*x^6 + 6*c*d^5*e
^6*x^5 + 15*c^2*d^4*e^6*x^4 + 20*c^3*d^3*e^6*x^3 + 15*c^4*d^2*e^6*x^2 + 6*c
^5*d*e^6*x + c^6*e^6), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))/(d*e*x+c*e)**(11/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(11/2),x, algorithm="giac")
```

```
[Out] Timed out
```

3.291 $\int (ce+dex)^{7/2} \left(a+b\sin^{-1}(c+dx)\right)^2 \, dx$

Optimal. Leaf size=130

$$\frac{16b^2(e(c+dx))^{13/2}\text{HypergeometricPFQ}\left(\left\{1,\frac{13}{4},\frac{13}{4}\right\},\left\{\frac{15}{4},\frac{17}{4}\right\},(c+dx)^2\right)}{1287de^3}-\frac{8b(e(c+dx))^{11/2}\text{Hypergeometric2F1}\left(\frac{1}{2},\right.}{99de^2}$$

```
[Out] (2*(e*(c + d*x))^(9/2)*(a + b*ArcSin[c + d*x])^2)/(9*d*e) - (8*b*(e*(c + d*
x))^(11/2)*(a + b*ArcSin[c + d*x])*Hypergeometric2F1[1/2, 11/4, 15/4, (c +
d*x)^2])/(99*d*e^2) + (16*b^2*(e*(c + d*x))^(13/2)*HypergeometricPFQ[{1, 13
/4, 13/4}, {15/4, 17/4}, (c + d*x)^2])/(1287*d*e^3)
```

Rubi [A] time = 0.205076, antiderivative size = 130, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.12, Rules used = {4805, 4627, 4711}

$$\frac{16b^2(e(c+dx))^{13/2}\,{}_3F_2\left(1,\frac{13}{4},\frac{13}{4};\frac{15}{4},\frac{17}{4};(c+dx)^2\right)}{1287de^3}-\frac{8b(e(c+dx))^{11/2}\,{}_2F_1\left(\frac{1}{2},\frac{11}{4};\frac{15}{4};(c+dx)^2\right)\left(a+b\sin^{-1}(c+dx)\right)}{99de^2}+\frac{2(e}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^(7/2)*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (2*(e*(c + d*x))^(9/2)*(a + b*ArcSin[c + d*x])^2)/(9*d*e) - (8*b*(e*(c + d*
x))^(11/2)*(a + b*ArcSin[c + d*x])*Hypergeometric2F1[1/2, 11/4, 15/4, (c +
d*x)^2])/(99*d*e^2) + (16*b^2*(e*(c + d*x))^(13/2)*HypergeometricPFQ[{1, 13
/4, 13/4}, {15/4, 17/4}, (c + d*x)^2])/(1287*d*e^3)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4711

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*(a + b*ArcSin[c*x])*Hypergeomet
ric2F1[1/2, (1 + m)/2, (3 + m)/2, c^2*x^2])/(Sqrt[d]*f*(m + 1)), x] - Simp[
(b*c*(f*x)^(m + 2)*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 +
 m/2}, c^2*x^2])/(Sqrt[d]*f^2*(m + 1)*(m + 2)), x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] &&  !IntegerQ[m]
```

Rubi steps

$$\int (ce+dex)^{7/2}\left(a+b\sin^{-1}(c+dx)\right)^2\,dx=\frac{\text{Subst}\left(\int (ex)^{7/2}\left(a+b\sin^{-1}(x)\right)^2\,dx,x,c+dx\right)}{d}$$

$$=\frac{2(e(c+dx))^{9/2}\left(a+b\sin^{-1}(c+dx)\right)^2}{9de}-\frac{(4b)\,\text{Subst}\left(\int \frac{(ex)^{9/2}\left(a+b\sin^{-1}(x)\right)}{\sqrt{1-x^2}}\,dx,x\right.}{9de}$$

$$=\frac{2(e(c+dx))^{9/2}\left(a+b\sin^{-1}(c+dx)\right)^2}{9de}-\frac{8b(e(c+dx))^{11/2}\left(a+b\sin^{-1}(c+dx\right.}{99de^2}$$

Mathematica [A] time = 0.108491, size = 114, normalized size = 0.88

$$\frac{2e^3(c+dx)^4\sqrt{e(c+dx)}\left(8b^2(c+dx)^2\text{HypergeometricPFQ}\left(\left\{1,\frac{13}{4},\frac{13}{4}\right\},\left\{\frac{15}{4},\frac{17}{4}\right\},(c+dx)^2\right)+13\left(a+b\sin^{-1}(c+dx)\right.\right.}{1287d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^(7/2)*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (2*e^3*(c + d*x)^4*Sqrt[e*(c + d*x)]*(13*(a + b*ArcSin[c + d*x])*(11*(a + b
*ArcSin[c + d*x]) - 4*b*(c + d*x)*Hypergeometric2F1[1/2, 11/4, 15/4, (c + d
*x)^2]) + 8*b^2*(c + d*x)^2*HypergeometricPFQ[{1, 13/4, 13/4}, {15/4, 17/4}
, (c + d*x)^2]))/(1287*d)
```

Maple [F] time = 0.3, size = 0, normalized size = 0.

$$\int (dex+ce)^{\frac{7}{2}}\left(a+b\arcsin(dx+c)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^(7/2)*(a+b*arcsin(d*x+c))^2,x)
```

```
[Out] int((d*e*x+c*e)^(7/2)*(a+b*arcsin(d*x+c))^2,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(7/2)*(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(a^2 d^3 e^3 x^3 + 3\,a^2 c d^2 e^3 x^2 + 3\,a^2 c^2 d e^3 x + a^2 c^3 e^3 + \left(b^2 d^3 e^3 x^3 + 3\,b^2 c d^2 e^3 x^2 + 3\,b^2 c^2 d e^3 x + b^2 c^3 e^3\right) \arcsin\left(dx + c\right)\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(7/2)*(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] integral((a^2*d^3*e^3*x^3 + 3*a^2*c*d^2*e^3*x^2 + 3*a^2*c^2*d*e^3*x + a^2*c
^3*e^3 + (b^2*d^3*e^3*x^3 + 3*b^2*c*d^2*e^3*x^2 + 3*b^2*c^2*d*e^3*x + b^2*c
^3*e^3)*arcsin(d*x + c)^2 + 2*(a*b*d^3*e^3*x^3 + 3*a*b*c*d^2*e^3*x^2 + 3*a*
b*c^2*d*e^3*x + a*b*c^3*e^3)*arcsin(d*x + c))*sqrt(d*e*x + c*e), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**(7/2)*(a+b*asin(d*x+c))**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (dex+ce)^{\frac{7}{2}}(b\arcsin(dx+c)+a)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(7/2)*(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)^(7/2)*(b*arcsin(d*x + c) + a)^2, x)
```

3.292 $\int (ce+dex)^{5/2}\left(a+b\sin^{-1}(c+dx)\right)^2\,dx$

Optimal. Leaf size=130

$$\frac{16b^2(e(c+dx))^{11/2}\text{HypergeometricPFQ}\left(\left\{1,\frac{11}{4},\frac{11}{4}\right\},\left\{\frac{13}{4},\frac{15}{4}\right\},(c+dx)^2\right)}{693de^3}-\frac{8b(e(c+dx))^{9/2}\text{Hypergeometric2F1}\left(\frac{1}{2},\frac{9}{4}\right.}{63de^2}$$

```
[Out] (2*(e*(c + d*x))^(7/2)*(a + b*ArcSin[c + d*x])^2)/(7*d*e) - (8*b*(e*(c + d*
x))^(9/2)*(a + b*ArcSin[c + d*x])*Hypergeometric2F1[1/2, 9/4, 13/4, (c + d*
x)^2])/(63*d*e^2) + (16*b^2*(e*(c + d*x))^(11/2)*HypergeometricPFQ[{1, 11/4
, 11/4}, {13/4, 15/4}, (c + d*x)^2])/(693*d*e^3)
```

Rubi [A] time = 0.206382, antiderivative size = 130, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.12, Rules used = {4805, 4627, 4711}

$$\frac{16b^2(e(c+dx))^{11/2}\,{}_3F_2\left(1,\frac{11}{4},\frac{11}{4};\frac{13}{4},\frac{15}{4};(c+dx)^2\right)}{693de^3}-\frac{8b(e(c+dx))^{9/2}\,{}_2F_1\left(\frac{1}{2},\frac{9}{4};\frac{13}{4};(c+dx)^2\right)\left(a+b\sin^{-1}(c+dx)\right)}{63de^2}+\frac{2(e(c}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^(5/2)*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (2*(e*(c + d*x))^(7/2)*(a + b*ArcSin[c + d*x])^2)/(7*d*e) - (8*b*(e*(c + d*
x))^(9/2)*(a + b*ArcSin[c + d*x])*Hypergeometric2F1[1/2, 9/4, 13/4, (c + d*
x)^2])/(63*d*e^2) + (16*b^2*(e*(c + d*x))^(11/2)*HypergeometricPFQ[{1, 11/4
, 11/4}, {13/4, 15/4}, (c + d*x)^2])/(693*d*e^3)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4711

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*(a + b*ArcSin[c*x])*Hypergeomet
ric2F1[1/2, (1 + m)/2, (3 + m)/2, c^2*x^2])/(Sqrt[d]*f*(m + 1)), x] - Simp[
(b*c*(f*x)^(m + 2)*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 +
 m/2}, c^2*x^2])/(Sqrt[d]*f^2*(m + 1)*(m + 2)), x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] &&  !IntegerQ[m]
```

Rubi steps

$$\int (ce+dex)^{5/2}\left(a+b\sin^{-1}(c+dx)\right)^2\,dx=\frac{\operatorname{Subst}\left(\int (ex)^{5/2}\left(a+b\sin^{-1}(x)\right)^2\,dx,x,c+dx\right)}{d}$$

$$=\frac{2(e(c+dx))^{7/2}\left(a+b\sin^{-1}(c+dx)\right)^2}{7de}-\frac{(4b)\operatorname{Subst}\left(\int \frac{(ex)^{7/2}\left(a+b\sin^{-1}(x)\right)}{\sqrt{1-x^2}}\,dx,x$$

$$=\frac{2(e(c+dx))^{7/2}\left(a+b\sin^{-1}(c+dx)\right)^2}{7de}-\frac{8b(e(c+dx))^{9/2}\left(a+b\sin^{-1}(c+dx)\right.}{63de^2}$$

Mathematica [A] time = 0.118324, size = 106, normalized size = 0.82

$$\frac{2(e(c+dx))^{7/2}\left(8b^2(c+dx)^2\text{HypergeometricPFQ}\left(\left\{1,\frac{11}{4},\frac{11}{4}\right\},\left\{\frac{13}{4},\frac{15}{4}\right\},(c+dx)^2\right)-44b(c+dx)\text{Hypergeometric2I}\right.}{693de}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^(5/2)*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (2*(e*(c + d*x))^(7/2)*(99*(a + b*ArcSin[c + d*x])^2 - 44*b*(c + d*x)*(a +
b*ArcSin[c + d*x])*Hypergeometric2F1[1/2, 9/4, 13/4, (c + d*x)^2] + 8*b^2*(
c + d*x)^2*HypergeometricPFQ[{1, 11/4, 11/4}, {13/4, 15/4}, (c + d*x)^2]))/
(693*d*e)
```

Maple [F] time = 0.293, size = 0, normalized size = 0.

$$\int (dex+ce)^{\frac{5}{2}}\left(a+b\arcsin(dx+c)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^(5/2)*(a+b*arcsin(d*x+c))^2,x)
```

```
[Out] int((d*e*x+c*e)^(5/2)*(a+b*arcsin(d*x+c))^2,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(5/2)*(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(a^2d^2e^2x^2 + 2\,a^2cde^2x + a^2c^2e^2 + \left(b^2d^2e^2x^2 + 2\,b^2cde^2x + b^2c^2e^2\right)\arcsin\left(dx + c\right)^2 + 2\left(abd^2e^2x^2 + 2\,abcde^2x + \right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(5/2)*(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] integral((a^2*d^2*e^2*x^2 + 2*a^2*c*d*e^2*x + a^2*c^2*e^2 + (b^2*d^2*e^2*x^
2 + 2*b^2*c*d*e^2*x + b^2*c^2*e^2)*arcsin(d*x + c)^2 + 2*(a*b*d^2*e^2*x^2 +
 2*a*b*c*d*e^2*x + a*b*c^2*e^2)*arcsin(d*x + c))*sqrt(d*e*x + c*e), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**(5/2)*(a+b*asin(d*x+c))**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (dex+ce)^{\frac{5}{2}}(b\arcsin(dx+c)+a)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(5/2)*(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)^(5/2)*(b*arcsin(d*x + c) + a)^2, x)
```

3.293 $\int (ce+dex)^{3/2} \left(a+b\sin^{-1}(c+dx)\right)^2 \, dx$

Optimal. Leaf size=130

$$\frac{16b^2(e(c+dx))^{9/2}\text{HypergeometricPFQ}\left(\left\{1,\frac{9}{4},\frac{9}{4}\right\},\left\{\frac{11}{4},\frac{13}{4}\right\},(c+dx)^2\right)}{315de^3}-\frac{8b(e(c+dx))^{7/2}\text{Hypergeometric2F1}\left(\frac{1}{2},\frac{7}{4},\frac{1}{\cdot}\right.}{35de^2}$$

```
[Out] (2*(e*(c + d*x))^(5/2)*(a + b*ArcSin[c + d*x])^2)/(5*d*e) - (8*b*(e*(c + d*
x))^(7/2)*(a + b*ArcSin[c + d*x])*Hypergeometric2F1[1/2, 7/4, 11/4, (c + d*
x)^2])/(35*d*e^2) + (16*b^2*(e*(c + d*x))^(9/2)*HypergeometricPFQ[{1, 9/4,
9/4}, {11/4, 13/4}, (c + d*x)^2])/(315*d*e^3)
```

Rubi [A] time = 0.205796, antiderivative size = 130, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.12, Rules used = {4805, 4627, 4711}

$$\frac{16b^2(e(c+dx))^{9/2}\,{}_3F_2\left(1,\frac{9}{4},\frac{9}{4};\frac{11}{4},\frac{13}{4};(c+dx)^2\right)}{315de^3}-\frac{8b(e(c+dx))^{7/2}\,{}_2F_1\left(\frac{1}{2},\frac{7}{4};\frac{11}{4};(c+dx)^2\right)\left(a+b\sin^{-1}(c+dx)\right)}{35de^2}+\frac{2(e(c+}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^(3/2)*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (2*(e*(c + d*x))^(5/2)*(a + b*ArcSin[c + d*x])^2)/(5*d*e) - (8*b*(e*(c + d*
x))^(7/2)*(a + b*ArcSin[c + d*x])*Hypergeometric2F1[1/2, 7/4, 11/4, (c + d*
x)^2])/(35*d*e^2) + (16*b^2*(e*(c + d*x))^(9/2)*HypergeometricPFQ[{1, 9/4,
9/4}, {11/4, 13/4}, (c + d*x)^2])/(315*d*e^3)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4711

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*(a + b*ArcSin[c*x])*Hypergeomet
ric2F1[1/2, (1 + m)/2, (3 + m)/2, c^2*x^2])/(Sqrt[d]*f*(m + 1)), x] - Simp[
(b*c*(f*x)^(m + 2)*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 +
 m/2}, c^2*x^2])/(Sqrt[d]*f^2*(m + 1)*(m + 2)), x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] &&  !IntegerQ[m]
```

Rubi steps

$$\int (ce+dex)^{3/2}\left(a+b\sin^{-1}(c+dx)\right)^2\,dx=\frac{\text{Subst}\left(\int (ex)^{3/2}\left(a+b\sin^{-1}(x)\right)^2\,dx,x,c+dx\right)}{d}$$

$$=\frac{2(e(c+dx))^{5/2}\left(a+b\sin^{-1}(c+dx)\right)^2}{5de}-\frac{(4b)\,\text{Subst}\left(\int\frac{(ex)^{5/2}\left(a+b\sin^{-1}(x)\right)}{\sqrt{1-x^2}}\,dx,x\right.}{5de}$$

$$=\frac{2(e(c+dx))^{5/2}\left(a+b\sin^{-1}(c+dx)\right)^2}{5de}-\frac{8b(e(c+dx))^{7/2}\left(a+b\sin^{-1}(c+dx)\right.}{35de^2}$$

Mathematica [A] time = 0.107328, size = 107, normalized size = 0.82

$$\frac{2(e(c+dx))^{5/2}\left(8b^2(c+dx)^2\text{HypergeometricPFQ}\left(\left\{1,\frac{9}{4},\frac{9}{4}\right\},\left\{\frac{11}{4},\frac{13}{4}\right\},(c+dx)^2\right)+9\left(a+b\sin^{-1}(c+dx)\right)\left(7\left(a+b\,\text{si}\right.\right.\right.}{315de}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^(3/2)*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (2*(e*(c + d*x))^(5/2)*(9*(a + b*ArcSin[c + d*x])*(7*(a + b*ArcSin[c + d*x]
) - 4*b*(c + d*x)*Hypergeometric2F1[1/2, 7/4, 11/4, (c + d*x)^2]) + 8*b^2*(
c + d*x)^2*HypergeometricPFQ[{1, 9/4, 9/4}, {11/4, 13/4}, (c + d*x)^2]))/(3
15*d*e)
```

Maple [F] time = 0.293, size = 0, normalized size = 0.

$$\int (dex+ce)^{\frac{3}{2}}\left(a+b\arcsin(dx+c)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^(3/2)*(a+b*arcsin(d*x+c))^2,x)
```

```
[Out] int((d*e*x+c*e)^(3/2)*(a+b*arcsin(d*x+c))^2,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(3/2)*(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\left(a^2dex + a^2ce + \left(b^2dex + b^2ce\right)\arcsin\left(dx + c\right)^2 + 2\left(abdex + abce\right)\arcsin\left(dx + c\right)\right)\sqrt{dex + ce}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(3/2)*(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] integral((a^2*d*e*x + a^2*c*e + (b^2*d*e*x + b^2*c*e)*arcsin(d*x + c)^2 + 2
*(a*b*d*e*x + a*b*c*e)*arcsin(d*x + c))*sqrt(d*e*x + c*e), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \left(e\left(c + dx\right)\right)^{\frac{3}{2}}\left(a + b\,\mathrm{asin}\left(c + dx\right)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**(3/2)*(a+b*asin(d*x+c))**2,x)
```

```
[Out] Integral((e*(c + d*x))**(3/2)*(a + b*asin(c + d*x))**2, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (dex + ce)^{\frac{3}{2}} (b \arcsin (dx + c) + a)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(3/2)*(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)^(3/2)*(b*arcsin(d*x + c) + a)^2, x)
```

3.294 $\int \sqrt{ce+dex}\left(a+b\sin^{-1}(c+dx)\right)^2\,dx$

Optimal. Leaf size=130

$$\frac{16b^2(e(c+dx))^{7/2}\text{HypergeometricPFQ}\left(\left\{1,\frac{7}{4},\frac{7}{4}\right\},\left\{\frac{9}{4},\frac{11}{4}\right\},(c+dx)^2\right)}{105de^3}-\frac{8b(e(c+dx))^{5/2}\text{Hypergeometric2F1}\left(\frac{1}{2},\frac{5}{4},\frac{9}{4},\right.}{15de^2}$$

```
[Out] (2*(e*(c + d*x))^(3/2)*(a + b*ArcSin[c + d*x])^2)/(3*d*e) - (8*b*(e*(c + d*
x))^(5/2)*(a + b*ArcSin[c + d*x])*Hypergeometric2F1[1/2, 5/4, 9/4, (c + d*x
)^2])/(15*d*e^2) + (16*b^2*(e*(c + d*x))^(7/2)*HypergeometricPFQ[{1, 7/4, 7
/4}, {9/4, 11/4}, (c + d*x)^2])/(105*d*e^3)
```

Rubi [A] time = 0.196717, antiderivative size = 130, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.12, Rules used = {4805, 4627, 4711}

$$\frac{16b^2(e(c+dx))^{7/2}\,{}_3F_2\left(1,\frac{7}{4},\frac{7}{4};\frac{9}{4},\frac{11}{4};(c+dx)^2\right)}{105de^3}-\frac{8b(e(c+dx))^{5/2}\,{}_2F_1\left(\frac{1}{2},\frac{5}{4};\frac{9}{4};(c+dx)^2\right)\left(a+b\sin^{-1}(c+dx)\right)}{15de^2}+\frac{2(e(c+d}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[c*e + d*e*x]*(a + b*ArcSin[c + d*x])^2,x]
```


```
[Out] (2*(e*(c + d*x))^(3/2)*(a + b*ArcSin[c + d*x])^2)/(3*d*e) - (8*b*(e*(c + d*
x))^(5/2)*(a + b*ArcSin[c + d*x])*Hypergeometric2F1[1/2, 5/4, 9/4, (c + d*x
)^2])/(15*d*e^2) + (16*b^2*(e*(c + d*x))^(7/2)*HypergeometricPFQ[{1, 7/4, 7
/4}, {9/4, 11/4}, (c + d*x)^2])/(105*d*e^3)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4711

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*(a + b*ArcSin[c*x])*Hypergeomet
ric2F1[1/2, (1 + m)/2, (3 + m)/2, c^2*x^2])/(Sqrt[d]*f*(m + 1)), x] - Simp[
(b*c*(f*x)^(m + 2)*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 +
 m/2}, c^2*x^2])/(Sqrt[d]*f^2*(m + 1)*(m + 2)), x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] &&  !IntegerQ[m]
```

Rubi steps

$$\int \sqrt{ce+dex}\left(a+b\sin^{-1}(c+dx)\right)^2\,dx=\frac{\text{Subst}\left(\int\sqrt{ex}\left(a+b\sin^{-1}(x)\right)^2\,dx,x,c+dx\right)}{d}$$

$$=\frac{2(e(c+dx))^{3/2}\left(a+b\sin^{-1}(c+dx)\right)^2}{3de}-\frac{(4b)\,\text{Subst}\left(\int\frac{(ex)^{3/2}\left(a+b\sin^{-1}(x)\right)}{\sqrt{1-x^2}}\,dx,x,c\right.}{3de}$$

$$=\frac{2(e(c+dx))^{3/2}\left(a+b\sin^{-1}(c+dx)\right)^2}{3de}-\frac{8b(e(c+dx))^{5/2}\left(a+b\sin^{-1}(c+dx)\right)}{15de^2}$$

Mathematica [A] time = 0.0897491, size = 107, normalized size = 0.82

$$\frac{2(e(c+dx))^{3/2}\left(8b^2(c+dx)^2\text{HypergeometricPFQ}\left(\left\{1,\frac{7}{4},\frac{7}{4}\right\},\left\{\frac{9}{4},\frac{11}{4}\right\},(c+dx)^2\right)+7\left(a+b\sin^{-1}(c+dx)\right)\left(5\left(a+b\sin\right.\right.\right.}{105de}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[c*e + d*e*x]*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (2*(e*(c + d*x))^(3/2)*(7*(a + b*ArcSin[c + d*x])*(5*(a + b*ArcSin[c + d*x]
) - 4*b*(c + d*x)*Hypergeometric2F1[1/2, 5/4, 9/4, (c + d*x)^2]) + 8*b^2*(c
 + d*x)^2*HypergeometricPFQ[{1, 7/4, 7/4}, {9/4, 11/4}, (c + d*x)^2]))/(105
*d*e)
```

Maple [F] time = 0.306, size = 0, normalized size = 0.

$$\int\sqrt{dex+ce}\,(a+b\arcsin(dx+c))^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^2,x)
```

```
[Out] int((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^2,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\left(b^2 \arcsin\left(dx+c\right)^2+2\,ab\arcsin\left(dx+c\right)+a^2\right)\sqrt{dex+ce},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2)*sqrt(d*e*x +
 c*e), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{e\left(c+dx\right)}\left(a+b\operatorname{asin}\left(c+dx\right)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**(1/2)*(a+b*asin(d*x+c))**2,x)
```

```
[Out] Integral(sqrt(e*(c + d*x))*(a + b*asin(c + d*x))**2, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{dex + ce}(b \arcsin(dx + c) + a)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*e*x + c*e)*(b*arcsin(d*x + c) + a)^2, x)
```

3.295 $\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{\sqrt{ce+dex}}\,dx$

Optimal. Leaf size=128

$$\frac{16b^2(e(c+dx))^{5/2}\text{HypergeometricPFQ}\left(\left\{1,\frac{5}{4},\frac{5}{4}\right\},\left\{\frac{7}{4},\frac{9}{4}\right\},(c+dx)^2\right)}{15de^3}-\frac{8b(e(c+dx))^{3/2}\text{Hypergeometric2F1}\left(\frac{1}{2},\frac{3}{4},\frac{7}{4},\right.}{3de^2}$$

```
[Out] (2*Sqrt[e*(c + d*x)]*(a + b*ArcSin[c + d*x])^2)/(d*e) - (8*b*(e*(c + d*x))^
(3/2)*(a + b*ArcSin[c + d*x])*Hypergeometric2F1[1/2, 3/4, 7/4, (c + d*x)^2]
)/(3*d*e^2) + (16*b^2*(e*(c + d*x))^(5/2)*HypergeometricPFQ[{1, 5/4, 5/4},
{7/4, 9/4}, (c + d*x)^2])/(15*d*e^3)
```

Rubi [A] time = 0.193197, antiderivative size = 128, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.12, Rules used = {4805, 4627, 4711}

$$\frac{16b^2(e(c+dx))^{5/2}\,{}_3F_2\left(1,\frac{5}{4},\frac{5}{4};\frac{7}{4},\frac{9}{4};(c+dx)^2\right)}{15de^3}-\frac{8b(e(c+dx))^{3/2}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};(c+dx)^2\right)\left(a+b\sin^{-1}(c+dx)\right)}{3de^2}+\frac{2\sqrt{e(c+d}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^2/Sqrt[c*e + d*e*x],x]
```

```
[Out] (2*Sqrt[e*(c + d*x)]*(a + b*ArcSin[c + d*x])^2)/(d*e) - (8*b*(e*(c + d*x))^
(3/2)*(a + b*ArcSin[c + d*x])*Hypergeometric2F1[1/2, 3/4, 7/4, (c + d*x)^2]
)/(3*d*e^2) + (16*b^2*(e*(c + d*x))^(5/2)*HypergeometricPFQ[{1, 5/4, 5/4},
{7/4, 9/4}, (c + d*x)^2])/(15*d*e^3)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
```

```
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4711

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*(a + b*ArcSin[c*x])*Hypergeomet
ric2F1[1/2, (1 + m)/2, (3 + m)/2, c^2*x^2])/(Sqrt[d]*f*(m + 1)), x] - Simp[
(b*c*(f*x)^(m + 2)*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 +
 m/2}, c^2*x^2])/(Sqrt[d]*f^2*(m + 1)*(m + 2)), x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] &&  !IntegerQ[m]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{\sqrt{ce+dex}}\,dx = \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^2}{\sqrt{ex}}\,dx,x,c+dx\right)}{d}$$

$$= \frac{2\sqrt{e(c+dx)}\left(a+b\sin^{-1}(c+dx)\right)^2}{de} - \frac{(4b)\,\text{Subst}\left(\int \frac{\sqrt{ex}\left(a+b\sin^{-1}(x)\right)}{\sqrt{1-x^2}}\,dx,x,c+dx\right)}{de}$$

$$= \frac{2\sqrt{e(c+dx)}\left(a+b\sin^{-1}(c+dx)\right)^2}{de} - \frac{8b(e(c+dx))^{3/2}\left(a+b\sin^{-1}(c+dx)\right)\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};(\right.}{3de^2}$$

Mathematica [A] time = 0.080617, size = 107, normalized size = 0.84

$$\frac{2\sqrt{e(c+dx)}\left(8b^2(c+dx)^2\text{HypergeometricPFQ}\left(\left\{1,\frac{5}{4},\frac{5}{4}\right\},\left\{\frac{7}{4},\frac{9}{4}\right\},(c+dx)^2\right)+5\left(a+b\sin^{-1}(c+dx)\right)\left(3\left(a+b\sin^{-1}\right.\right.\right.}{15de}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^2/Sqrt[c*e + d*e*x],x]
```

```
[Out] (2*Sqrt[e*(c + d*x)]*(5*(a + b*ArcSin[c + d*x])*(3*(a + b*ArcSin[c + d*x])
- 4*b*(c + d*x)*Hypergeometric2F1[1/2, 3/4, 7/4, (c + d*x)^2]) + 8*b^2*(c +
 d*x)^2*HypergeometricPFQ[{1, 5/4, 5/4}, {7/4, 9/4}, (c + d*x)^2]))/(15*d*e
)
```

Maple [F] time = 0.42, size = 0, normalized size = 0.

$$\int (a+b\arcsin(dx+c))^2 \frac{1}{\sqrt{dex+ce}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(1/2),x)
```

```
[Out] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(1/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b^2\arcsin(dx+c)^2+2\,ab\arcsin(dx+c)+a^2}{\sqrt{dex+ce}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2)/sqrt(d*e*x +
 c*e), x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**2/(d*e*x+c*e)**(1/2),x)
```

```
[Out] Exception raised: TypeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b\arcsin(dx+c)+a)^2}{\sqrt{dex+ce}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^2/sqrt(d*e*x + c*e), x)
```

3.296 $\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{(ce+dex)^{3/2}}\,dx$

Optimal. Leaf size=126

$$-\frac{16b^2(e(c+dx))^{3/2}\text{HypergeometricPFQ}\left(\left\{\frac{3}{4},\frac{3}{4},1\right\},\left\{\frac{5}{4},\frac{7}{4}\right\},(c+dx)^2\right)}{3de^3}+\frac{8b\sqrt{e(c+dx)}\text{Hypergeometric2F1}\left(\frac{1}{4},\frac{1}{2},\frac{5}{4},(\right.}{de^2}$$

```
[Out] (-2*(a + b*ArcSin[c + d*x])^2)/(d*e*Sqrt[e*(c + d*x)]) + (8*b*Sqrt[e*(c + d
*x)]*(a + b*ArcSin[c + d*x])*Hypergeometric2F1[1/4, 1/2, 5/4, (c + d*x)^2])
/(d*e^2) - (16*b^2*(e*(c + d*x))^(3/2)*HypergeometricPFQ[{3/4, 3/4, 1}, {5/
4, 7/4}, (c + d*x)^2])/(3*d*e^3)
```

Rubi [A] time = 0.201211, antiderivative size = 126, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.12, Rules used = {4805, 4627, 4711}

$$-\frac{16b^2(e(c+dx))^{3/2}\,{}_3F_2\left(\frac{3}{4},\frac{3}{4},1;\frac{5}{4},\frac{7}{4};(c+dx)^2\right)}{3de^3}+\frac{8b\sqrt{e(c+dx)}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};(c+dx)^2\right)\left(a+b\sin^{-1}(c+dx)\right)}{de^2}-\frac{2\left(a+b\sin\right.}{de\sqrt{e}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^(3/2),x]
```


```
[Out] (-2*(a + b*ArcSin[c + d*x])^2)/(d*e*Sqrt[e*(c + d*x)]) + (8*b*Sqrt[e*(c + d
*x)]*(a + b*ArcSin[c + d*x])*Hypergeometric2F1[1/4, 1/2, 5/4, (c + d*x)^2])
/(d*e^2) - (16*b^2*(e*(c + d*x))^(3/2)*HypergeometricPFQ[{3/4, 3/4, 1}, {5/
4, 7/4}, (c + d*x)^2])/(3*d*e^3)
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
```

```
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4711

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*(a + b*ArcSin[c*x])*Hypergeomet
ric2F1[1/2, (1 + m)/2, (3 + m)/2, c^2*x^2])/(Sqrt[d]*f*(m + 1)), x] - Simp[
(b*c*(f*x)^(m + 2)*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 +
 m/2}, c^2*x^2])/(Sqrt[d]*f^2*(m + 1)*(m + 2)), x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] &&  !IntegerQ[m]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{(ce+dex)^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^2}{(ex)^{3/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2\left(a+b\sin^{-1}(c+dx)\right)^2}{de\sqrt{e(c+dx)}} + \frac{(4b)\,\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{\sqrt{ex}\sqrt{1-x^2}}\,dx, x, c+dx\right)}{de}$$

$$= -\frac{2\left(a+b\sin^{-1}(c+dx)\right)^2}{de\sqrt{e(c+dx)}} + \frac{8b\sqrt{e(c+dx)}\left(a+b\sin^{-1}(c+dx)\right)\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};(c+dx)^2\right)}{de^2} -$$

Mathematica [A] time = 0.0740805, size = 104, normalized size = 0.83

$$-\frac{2\left(8b^2(c+dx)^2\text{HypergeometricPFQ}\left(\left\{\frac{3}{4},\frac{3}{4},1\right\},\left\{\frac{5}{4},\frac{7}{4}\right\},(c+dx)^2\right)+3\left(a+b\sin^{-1}(c+dx)\right)\left(-4b(c+dx)\text{Hypergeo}\right.\right.}{3de\sqrt{e(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^(3/2),x]
```

```
[Out] (-2*(3*(a + b*ArcSin[c + d*x])*(a + b*ArcSin[c + d*x] - 4*b*(c + d*x)*Hyper
geometric2F1[1/4, 1/2, 5/4, (c + d*x)^2]) + 8*b^2*(c + d*x)^2*Hypergeometri
cPFQ[{3/4, 3/4, 1}, {5/4, 7/4}, (c + d*x)^2]))/(3*d*e*Sqrt[e*(c + d*x)])
```

Maple [F] time = 0.301, size = 0, normalized size = 0.

$$\int (a+b\arcsin(dx+c))^2\,(dex+ce)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(3/2),x)
```

```
[Out] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(3/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(b^2 \arcsin\left(dx+c\right)^2 + 2\,ab\arcsin\left(dx+c\right) + a^2\right)\sqrt{dex+ce}}{d^2e^2x^2 + 2\,cde^2x + c^2e^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2)*sqrt(d*e*x +
 c*e)/(d^2*e^2*x^2 + 2*c*d*e^2*x + c^2*e^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a + b\operatorname{asin}\left(c + dx\right)\right)^2}{\left(e\left(c + dx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**2/(d*e*x+c*e)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**2/(e*(c + d*x))**(3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b\arcsin(dx+c)+a)^2}{(dex+ce)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^2/(d*e*x + c*e)^(3/2), x)
```

3.297 $\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{(ce+dex)^{5/2}}\,dx$

Optimal. Leaf size=130

$$\frac{16b^2\sqrt{e(c+dx)}\text{HypergeometricPFQ}\left(\left\{\frac{1}{4},\frac{1}{4},1\right\},\left\{\frac{3}{4},\frac{5}{4}\right\},(c+dx)^2\right)}{3de^3}-\frac{8b\text{Hypergeometric2F1}\left(-\frac{1}{4},\frac{1}{2},\frac{3}{4},(c+dx)^2\right)(a+}{3de^2\sqrt{e(c+dx)}}$$

```
[Out] (-2*(a + b*ArcSin[c + d*x])^2)/(3*d*e*(e*(c + d*x))^(3/2)) - (8*b*(a + b*Ar
cSin[c + d*x])*Hypergeometric2F1[-1/4, 1/2, 3/4, (c + d*x)^2])/(3*d*e^2*Sqr
t[e*(c + d*x)]) + (16*b^2*Sqrt[e*(c + d*x)]*HypergeometricPFQ[{1/4, 1/4, 1}
, {3/4, 5/4}, (c + d*x)^2])/(3*d*e^3)
```

Rubi [A] time = 0.212859, antiderivative size = 130, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.12, Rules used = {4805, 4627, 4711}

$$\frac{16b^2\sqrt{e(c+dx)}\,{}_3F_2\left(\frac{1}{4},\frac{1}{4},1;\frac{3}{4},\frac{5}{4};(c+dx)^2\right)}{3de^3}-\frac{8b\,{}_2F_1\left(-\frac{1}{4},\frac{1}{2};\frac{3}{4};(c+dx)^2\right)\left(a+b\sin^{-1}(c+dx)\right)}{3de^2\sqrt{e(c+dx)}}-\frac{2\left(a+b\sin^{-1}(c+dx)\right)^2}{3de(e(c+dx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^(5/2),x]
```

```
[Out] (-2*(a + b*ArcSin[c + d*x])^2)/(3*d*e*(e*(c + d*x))^(3/2)) - (8*b*(a + b*Ar
cSin[c + d*x])*Hypergeometric2F1[-1/4, 1/2, 3/4, (c + d*x)^2])/(3*d*e^2*Sqr
t[e*(c + d*x)]) + (16*b^2*Sqrt[e*(c + d*x)]*HypergeometricPFQ[{1/4, 1/4, 1}
, {3/4, 5/4}, (c + d*x)^2])/(3*d*e^3)
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
```

```
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4711

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*(a + b*ArcSin[c*x])*Hypergeomet
ric2F1[1/2, (1 + m)/2, (3 + m)/2, c^2*x^2])/(Sqrt[d]*f*(m + 1)), x] - Simp[
(b*c*(f*x)^(m + 2)*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 +
 m/2}, c^2*x^2])/(Sqrt[d]*f^2*(m + 1)*(m + 2)), x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] &&  !IntegerQ[m]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{(ce+dex)^{5/2}}\,dx=\frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^2}{(ex)^{5/2}}\,dx,x,c+dx\right)}{d}$$

$$=-\frac{2\left(a+b\sin^{-1}(c+dx)\right)^2}{3de(e(c+dx))^{3/2}}+\frac{(4b)\,\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{(ex)^{3/2}\sqrt{1-x^2}}\,dx,x,c+dx\right)}{3de}$$

$$=-\frac{2\left(a+b\sin^{-1}(c+dx)\right)^2}{3de(e(c+dx))^{3/2}}-\frac{8b\left(a+b\sin^{-1}(c+dx)\right)\,{}_2F_1\left(-\frac{1}{4},\frac{1}{2};\frac{3}{4};(c+dx)^2\right)}{3de^2\sqrt{e(c+dx)}}+\frac{16b^2\sqrt{e(}}{}$$

Mathematica [A] time = 0.0802451, size = 102, normalized size = 0.78

$$-\frac{2\left(4b(c+dx)\left(\text{Hypergeometric2F1}\left(-\frac{1}{4},\frac{1}{2},\frac{3}{4},(c+dx)^2\right)\left(a+b\sin^{-1}(c+dx)\right)-2b(c+dx)\text{HypergeometricPFQ}\left(\{\right.\right.\right.}{3de(e(c+dx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^(5/2),x]
```

```
[Out] (-2*((a + b*ArcSin[c + d*x])^2 + 4*b*(c + d*x)*((a + b*ArcSin[c + d*x])*Hyp
ergeometric2F1[-1/4, 1/2, 3/4, (c + d*x)^2] - 2*b*(c + d*x)*HypergeometricP
FQ[{1/4, 1/4, 1}, {3/4, 5/4}, (c + d*x)^2])))/(3*d*e*(e*(c + d*x))^(3/2))
```

Maple [F] time = 0.301, size = 0, normalized size = 0.

$$\int (a+b\arcsin(dx+c))^2(dex+ce)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(5/2),x)
```

```
[Out] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(5/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(b^2\arcsin\left(dx+c\right)^2+2\,ab\arcsin\left(dx+c\right)+a^2\right)\sqrt{dex+ce}}{d^3e^3x^3+3\,cd^2e^3x^2+3\,c^2de^3x+c^3e^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2)*sqrt(d*e*x +
 c*e)/(d^3*e^3*x^3 + 3*c*d^2*e^3*x^2 + 3*c^2*d*e^3*x + c^3*e^3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(a+b\operatorname{asin}\left(c+dx\right)\right)^2}{\left(e\left(c+dx\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**2/(d*e*x+c*e)**(5/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**2/(e*(c + d*x))**(5/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b \arcsin (dx + c) + a)^2}{(dex + ce)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^2/(d*e*x + c*e)^(5/2), x)
```

3.298 $\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{(ce+dex)^{7/2}}\,dx$

Optimal. Leaf size=130

$$-\frac{16b^2\text{HypergeometricPFQ}\left(\left\{-\frac{1}{4},-\frac{1}{4},1\right\},\left\{\frac{1}{4},\frac{3}{4}\right\},(c+dx)^2\right)}{15de^3\sqrt{e(c+dx)}}-\frac{8b\text{Hypergeometric2F1}\left(-\frac{3}{4},\frac{1}{2},\frac{1}{4},(c+dx)^2\right)\left(a+b\sin\right.}{15de^2(e(c+dx))^{3/2}}$$

```
[Out] (-2*(a + b*ArcSin[c + d*x])^2)/(5*d*e*(e*(c + d*x))^(5/2)) - (8*b*(a + b*Ar
cSin[c + d*x])*Hypergeometric2F1[-3/4, 1/2, 1/4, (c + d*x)^2])/(15*d*e^2*(e
*(c + d*x))^(3/2)) - (16*b^2*HypergeometricPFQ[{-1/4, -1/4, 1}, {1/4, 3/4},
 (c + d*x)^2])/(15*d*e^3*Sqrt[e*(c + d*x)])
```

Rubi [A] time = 0.21687, antiderivative size = 130, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.12, Rules used = {4805, 4627, 4711}

$$-\frac{16b^2\,{}_3F_2\left(-\frac{1}{4},-\frac{1}{4},1;\frac{1}{4},\frac{3}{4};(c+dx)^2\right)}{15de^3\sqrt{e(c+dx)}}-\frac{8b\,{}_2F_1\left(-\frac{3}{4},\frac{1}{2};\frac{1}{4};(c+dx)^2\right)\left(a+b\sin^{-1}(c+dx)\right)}{15de^2(e(c+dx))^{3/2}}-\frac{2\left(a+b\sin^{-1}(c+dx)\right)^2}{5de(e(c+dx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^(7/2),x]
```

```
[Out] (-2*(a + b*ArcSin[c + d*x])^2)/(5*d*e*(e*(c + d*x))^(5/2)) - (8*b*(a + b*Ar
cSin[c + d*x])*Hypergeometric2F1[-3/4, 1/2, 1/4, (c + d*x)^2])/(15*d*e^2*(e
*(c + d*x))^(3/2)) - (16*b^2*HypergeometricPFQ[{-1/4, -1/4, 1}, {1/4, 3/4},
 (c + d*x)^2])/(15*d*e^3*Sqrt[e*(c + d*x)])
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
```

```
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4711

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*(a + b*ArcSin[c*x])*Hypergeomet
ric2F1[1/2, (1 + m)/2, (3 + m)/2, c^2*x^2])/(Sqrt[d]*f*(m + 1)), x] - Simp[
(b*c*(f*x)^(m + 2)*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 +
 m/2}, c^2*x^2])/(Sqrt[d]*f^2*(m + 1)*(m + 2)), x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] &&  !IntegerQ[m]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{(ce+dex)^{7/2}}\,dx = \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^2}{(ex)^{7/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2\left(a+b\sin^{-1}(c+dx)\right)^2}{5de(e(c+dx))^{5/2}} + \frac{(4b)\,\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{(ex)^{5/2}\sqrt{1-x^2}}\,dx, x, c+dx\right)}{5de}$$

$$= -\frac{2\left(a+b\sin^{-1}(c+dx)\right)^2}{5de(e(c+dx))^{5/2}} - \frac{8b\left(a+b\sin^{-1}(c+dx)\right){}_2F_1\left(-\frac{3}{4},\frac{1}{2};\frac{1}{4};(c+dx)^2\right)}{15de^2(e(c+dx))^{3/2}} - \frac{16b^2\,{}_3F_2 \cdots}{\cdots}$$

Mathematica [A] time = 0.0780139, size = 106, normalized size = 0.82

$$-\frac{2\left(8b^2(c+dx)^2\text{HypergeometricPFQ}\left(\left\{-\frac{1}{4},-\frac{1}{4},1\right\},\left\{\frac{1}{4},\frac{3}{4}\right\},(c+dx)^2\right)+\left(a+b\sin^{-1}(c+dx)\right)\left(4b(c+dx)\text{Hypergeo}\cdots\right.\right.}{15de(e(c+dx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^(7/2),x]
```

```
[Out] (-2*((a + b*ArcSin[c + d*x])*(3*(a + b*ArcSin[c + d*x]) + 4*b*(c + d*x)*Hyp
ergeometric2F1[-3/4, 1/2, 1/4, (c + d*x)^2]) + 8*b^2*(c + d*x)^2*Hypergeome
tricPFQ[{-1/4, -1/4, 1}, {1/4, 3/4}, (c + d*x)^2]))/(15*d*e*(e*(c + d*x))^(
5/2))
```

Maple [F] time = 0.301, size = 0, normalized size = 0.

$$\int (a + b \arcsin (dx + c))^2 (dex + ce)^{-\frac{7}{2}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(7/2),x)
```

```
[Out] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(7/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(b^2 \arcsin (dx + c)^2 + 2\,ab \arcsin (dx + c) + a^2\right)\sqrt{dex + ce}}{d^4e^4x^4 + 4\,cd^3e^4x^3 + 6\,c^2d^2e^4x^2 + 4\,c^3de^4x + c^4e^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(7/2),x, algorithm="fricas")
```

```
[Out] integral((b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2)*sqrt(d*e*x +
 c*e)/(d^4*e^4*x^4 + 4*c*d^3*e^4*x^3 + 6*c^2*d^2*e^4*x^2 + 4*c^3*d*e^4*x +
c^4*e^4), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**2/(d*e*x+c*e)**(7/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(7/2),x, algorithm="giac")
```

```
[Out] Timed out
```

3.299 $\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{(ce+dex)^{9/2}}\,dx$

Optimal. Leaf size=130

$$-\frac{16b^2\text{HypergeometricPFQ}\left(\left\{-\frac{3}{4},-\frac{3}{4},1\right\},\left\{-\frac{1}{4},\frac{1}{4}\right\},(c+dx)^2\right)}{105de^3(e(c+dx))^{3/2}}-\frac{8b\text{Hypergeometric2F1}\left(-\frac{5}{4},\frac{1}{2},-\frac{1}{4},(c+dx)^2\right)\left(a+b\ldots\right.}{35de^2(e(c+dx))^{5/2}}$$

```
[Out] (-2*(a + b*ArcSin[c + d*x])^2)/(7*d*e*(e*(c + d*x))^(7/2)) - (8*b*(a + b*Ar
cSin[c + d*x])*Hypergeometric2F1[-5/4, 1/2, -1/4, (c + d*x)^2])/(35*d*e^2*(
e*(c + d*x))^(5/2)) - (16*b^2*HypergeometricPFQ[{-3/4, -3/4, 1}, {-1/4, 1/4
}, (c + d*x)^2])/(105*d*e^3*(e*(c + d*x))^(3/2))
```

Rubi [A] time = 0.215817, antiderivative size = 130, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.12, Rules used = {4805, 4627, 4711}

$$-\frac{16b^2\,{}_3F_2\left(-\frac{3}{4},-\frac{3}{4},1;-\frac{1}{4},\frac{1}{4};(c+dx)^2\right)}{105de^3(e(c+dx))^{3/2}}-\frac{8b\,{}_2F_1\left(-\frac{5}{4},\frac{1}{2};-\frac{1}{4};(c+dx)^2\right)\left(a+b\sin^{-1}(c+dx)\right)}{35de^2(e(c+dx))^{5/2}}-\frac{2\left(a+b\sin^{-1}(c+dx)\right)^2}{7de(e(c+dx))^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^(9/2),x]
```


```
[Out] (-2*(a + b*ArcSin[c + d*x])^2)/(7*d*e*(e*(c + d*x))^(7/2)) - (8*b*(a + b*Ar
cSin[c + d*x])*Hypergeometric2F1[-5/4, 1/2, -1/4, (c + d*x)^2])/(35*d*e^2*(
e*(c + d*x))^(5/2)) - (16*b^2*HypergeometricPFQ[{-3/4, -3/4, 1}, {-1/4, 1/4
}, (c + d*x)^2])/(105*d*e^3*(e*(c + d*x))^(3/2))
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
```

```
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4711

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*(a + b*ArcSin[c*x])*Hypergeomet
ric2F1[1/2, (1 + m)/2, (3 + m)/2, c^2*x^2])/(Sqrt[d]*f*(m + 1)), x] - Simp[
(b*c*(f*x)^(m + 2)*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 +
 m/2}, c^2*x^2])/(Sqrt[d]*f^2*(m + 1)*(m + 2)), x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] &&  !IntegerQ[m]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{(ce+dex)^{9/2}}\,dx = \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^2}{(ex)^{9/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2\left(a+b\sin^{-1}(c+dx)\right)^2}{7de(e(c+dx))^{7/2}} + \frac{(4b)\,\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{(ex)^{7/2}\sqrt{1-x^2}}\,dx, x, c+dx\right)}{7de}$$

$$= -\frac{2\left(a+b\sin^{-1}(c+dx)\right)^2}{7de(e(c+dx))^{7/2}} - \frac{8b\left(a+b\sin^{-1}(c+dx)\right)\,{}_2F_1\left(-\frac{5}{4},\frac{1}{2};-\frac{1}{4};(c+dx)^2\right)}{35de^2(e(c+dx))^{5/2}} - \frac{16b^2\,{}_3F}{}$$

Mathematica [A] time = 0.0882999, size = 114, normalized size = 0.88

$$-\frac{2\sqrt{e(c+dx)}\left(8b^2(c+dx)^2\text{HypergeometricPFQ}\left(\left\{-\frac{3}{4},-\frac{3}{4},1\right\},\left\{-\frac{1}{4},\frac{1}{4}\right\},(c+dx)^2\right)+3\left(a+b\sin^{-1}(c+dx)\right)\left(4b(c+\right.\right.}{105de^5(c+dx)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^(9/2),x]
```

```
[Out] (-2*Sqrt[e*(c + d*x)]*(3*(a + b*ArcSin[c + d*x])*(5*(a + b*ArcSin[c + d*x])
 + 4*b*(c + d*x)*Hypergeometric2F1[-5/4, 1/2, -1/4, (c + d*x)^2]) + 8*b^2*(
c + d*x)^2*HypergeometricPFQ[{-3/4, -3/4, 1}, {-1/4, 1/4}, (c + d*x)^2]))/(
105*d*e^5*(c + d*x)^4)
```

Maple [F] time = 0.299, size = 0, normalized size = 0.

$$\int (a + b \arcsin (dx + c))^2 (dex + ce)^{-\frac{9}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(9/2),x)
```

```
[Out] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(9/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(9/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(b^2 \arcsin (dx + c)^2 + 2\, ab \arcsin (dx + c) + a^2\right)\sqrt{dex + ce}}{d^5e^5x^5 + 5\, cd^4e^5x^4 + 10\, c^2d^3e^5x^3 + 10\, c^3d^2e^5x^2 + 5\, c^4de^5x + c^5e^5}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(9/2),x, algorithm="fricas")
```

```
[Out] integral((b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2)*sqrt(d*e*x +
 c*e)/(d^5*e^5*x^5 + 5*c*d^4*e^5*x^4 + 10*c^2*d^3*e^5*x^3 + 10*c^3*d^2*e^5*
x^2 + 5*c^4*d*e^5*x + c^5*e^5), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**2/(d*e*x+c*e)**(9/2),x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(9/2),x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError
```

3.300 $\int \sqrt{ce+dex}\left(a+b\sin^{-1}(c+dx)\right)^3\,dx$

Optimal. Leaf size=81

$$\frac{2(e(c+dx))^{3/2}\left(a+b\sin^{-1}(c+dx)\right)^3}{3de}-\frac{2b\text{Unintegrable}\left(\frac{(e(c+dx))^{3/2}\left(a+b\sin^{-1}(c+dx)\right)^2}{\sqrt{1-(c+dx)^2}},x\right)}{e}$$

```
[Out] (2*(e*(c + d*x))^(3/2)*(a + b*ArcSin[c + d*x])^3)/(3*d*e) - (2*b*Unintegrab
le[((e*(c + d*x))^(3/2)*(a + b*ArcSin[c + d*x])^2)/Sqrt[1 - (c + d*x)^2], x
])/e
```

Rubi [A] time = 0.197187, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \sqrt{ce+dex}\left(a+b\sin^{-1}(c+dx)\right)^3\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[c*e + d*e*x]*(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] (2*(e*(c + d*x))^(3/2)*(a + b*ArcSin[c + d*x])^3)/(3*d*e) - (2*b*Defer[Subs
t][Defer[Int][((e*x)^(3/2)*(a + b*ArcSin[x])^2)/Sqrt[1 - x^2], x], x, c + d
*x])/(d*e)
```

Rubi steps

$$\int \sqrt{ce+dex}\left(a+b\sin^{-1}(c+dx)\right)^3\,dx=\frac{\text{Subst}\left(\int \sqrt{ex}\left(a+b\sin^{-1}(x)\right)^3\,dx,x,c+dx\right)}{d}$$

$$=\frac{2(e(c+dx))^{3/2}\left(a+b\sin^{-1}(c+dx)\right)^3}{3de}-\frac{(2b)\,\text{Subst}\left(\int \frac{(ex)^{3/2}\left(a+b\sin^{-1}(x)\right)^2}{\sqrt{1-x^2}}\,dx,x,c\right.}{de}$$

Mathematica [F] time = 180.002, size = 0, normalized size = 0.

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[c*e + d*e*x]*(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] $Aborted
```

Maple [A] time = 0.313, size = 0, normalized size = 0.

$$\int \sqrt{dex+ce}\,(a+b\arcsin(dx+c))^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^3,x)
```

```
[Out] int((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^3,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\left(b^3\arcsin(dx+c)^3+3\,ab^2\arcsin(dx+c)^2+3\,a^2b\arcsin(dx+c)+a^3\right)\sqrt{dex+ce},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] integral((b^3*arcsin(d*x + c)^3 + 3*a*b^2*arcsin(d*x + c)^2 + 3*a^2*b*arcsi
n(d*x + c) + a^3)*sqrt(d*e*x + c*e), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{e(c+dx)}\,(a+b\operatorname{asin}(c+dx))^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**(1/2)*(a+b*asin(d*x+c))**3,x)
```

```
[Out] Integral(sqrt(e*(c + d*x))*(a + b*asin(c + d*x))**3, x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{dex+ce}(b\arcsin(dx+c)+a)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*e*x + c*e)*(b*arcsin(d*x + c) + a)^3, x)
```

3.301 $\int \frac{(a+b\sin^{-1}(c+dx))^3}{\sqrt{ce+dex}}\,dx$

Optimal. Leaf size=79

$$\frac{2\sqrt{e(c+dx)}\left(a+b\sin^{-1}(c+dx)\right)^3}{de}-\frac{6b\text{Unintegrable}\left(\frac{\sqrt{e(c+dx)}\left(a+b\sin^{-1}(c+dx)\right)^2}{\sqrt{1-(c+dx)^2}},x\right)}{e}$$

```
[Out] (2*Sqrt[e*(c + d*x)]*(a + b*ArcSin[c + d*x])^3)/(d*e) - (6*b*Unintegrable[(
Sqrt[e*(c + d*x)]*(a + b*ArcSin[c + d*x])^2)/Sqrt[1 - (c + d*x)^2], x])/e
```

Rubi [A] time = 0.183767, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{\sqrt{ce+dex}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*ArcSin[c + d*x])^3/Sqrt[c*e + d*e*x],x]
```

```
[Out] (2*Sqrt[e*(c + d*x)]*(a + b*ArcSin[c + d*x])^3)/(d*e) - (6*b*Defer[Subst][D
efer[Int][(Sqrt[e*x]*(a + b*ArcSin[x])^2)/Sqrt[1 - x^2], x], x, c + d*x])/(
d*e)
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{\sqrt{ce+dex}}\,dx=\frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^3}{\sqrt{ex}}\,dx,x,c+dx\right)}{d}$$

$$=\frac{2\sqrt{e(c+dx)}\left(a+b\sin^{-1}(c+dx)\right)^3}{de}-\frac{(6b)\,\text{Subst}\left(\int \frac{\sqrt{ex}\left(a+b\sin^{-1}(x)\right)^2}{\sqrt{1-x^2}}\,dx,x,c+dx\right)}{de}$$

Mathematica [A] time = 21.125, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{\sqrt{ce+dex}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^3/Sqrt[c*e + d*e*x],x]
```

```
[Out] Integrate[(a + b*ArcSin[c + d*x])^3/Sqrt[c*e + d*e*x], x]
```

Maple [A] time = 0.284, size = 0, normalized size = 0.

$$\int (a+b\arcsin(dx+c))^3\frac{1}{\sqrt{dex+ce}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(1/2),x)
```

```
[Out] int((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(1/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^3\arcsin(dx+c)^3+3\,ab^2\arcsin(dx+c)^2+3\,a^2b\arcsin(dx+c)+a^3}{\sqrt{dex+ce}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((b^3*arcsin(d*x + c)^3 + 3*a*b^2*arcsin(d*x + c)^2 + 3*a^2*b*arcsi
n(d*x + c) + a^3)/sqrt(d*e*x + c*e), x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**3/(d*e*x+c*e)**(1/2),x)
```

```
[Out] Exception raised: TypeError
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b\arcsin(dx+c)+a)^3}{\sqrt{dex+ce}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^3/sqrt(d*e*x + c*e), x)
```

3.302 $\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{(ce+dex)^{3/2}}\,dx$

Optimal. Leaf size=79

$$\frac{6b\text{Unintegrable}\left(\frac{\left(a+b\sin^{-1}(c+dx)\right)^2}{\sqrt{1-(c+dx)^2}\sqrt{e(c+dx)}},x\right)}{e}-\frac{2\left(a+b\sin^{-1}(c+dx)\right)^3}{de\sqrt{e(c+dx)}}$$

```
[Out] (-2*(a + b*ArcSin[c + d*x])^3)/(d*e*Sqrt[e*(c + d*x)]) + (6*b*Unintegrable[
(a + b*ArcSin[c + d*x])^2/(Sqrt[e*(c + d*x)]*Sqrt[1 - (c + d*x)^2]), x])/e
```

Rubi [A] time = 0.191605, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{(ce+dex)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x)^(3/2),x]
```

```
[Out] (-2*(a + b*ArcSin[c + d*x])^3)/(d*e*Sqrt[e*(c + d*x)]) + (6*b*Defer[Subst][
Defer[Int][(a + b*ArcSin[x])^2/(Sqrt[e*x]*Sqrt[1 - x^2]), x], x, c + d*x])/
(d*e)
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{(ce+dex)^{3/2}}\,dx=\frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^3}{(ex)^{3/2}}\,dx,x,c+dx\right)}{d}$$

$$=-\frac{2\left(a+b\sin^{-1}(c+dx)\right)^3}{de\sqrt{e(c+dx)}}+\frac{(6b)\,\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^2}{\sqrt{ex}\sqrt{1-x^2}}\,dx,x,c+dx\right)}{de}$$

Mathematica [A] time = 40.7531, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{(ce+dex)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x)^(3/2),x]
```

```
[Out] Integrate[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x)^(3/2), x]
```

Maple [A] time = 0.299, size = 0, normalized size = 0.

$$\int (a+b\arcsin(dx+c))^3 (dex+ce)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(3/2),x)
```

```
[Out] int((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(3/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(b^3\arcsin(dx+c)^3+3\,ab^2\arcsin(dx+c)^2+3\,a^2b\arcsin(dx+c)+a^3\right)\sqrt{dex+ce}}{d^2e^2x^2+2\,cde^2x+c^2e^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((b^3*arcsin(d*x + c)^3 + 3*a*b^2*arcsin(d*x + c)^2 + 3*a^2*b*arcsi
n(d*x + c) + a^3)*sqrt(d*e*x + c*e)/(d^2*e^2*x^2 + 2*c*d*e^2*x + c^2*e^2),
x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + b\operatorname{asin}(c + dx))^3}{(e(c + dx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**3/(d*e*x+c*e)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**3/(e*(c + d*x))**(3/2), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b\arcsin(dx + c) + a)^3}{(dex + ce)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^3/(d*e*x + c*e)^(3/2), x)
```

3.303 $\int \frac{(a+b\sin^{-1}(c+dx))^3}{(ce+dex)^{5/2}}\,dx$

Optimal. Leaf size=81

$$\frac{2b\text{Unintegrable}\left(\frac{(a+b\sin^{-1}(c+dx))^2}{\sqrt{1-(c+dx)^2}(e(c+dx))^{3/2}},x\right)}{e}-\frac{2\left(a+b\sin^{-1}(c+dx)\right)^3}{3de(e(c+dx))^{3/2}}$$

```
[Out] (-2*(a + b*ArcSin[c + d*x])^3)/(3*d*e*(e*(c + d*x))^(3/2)) + (2*b*Unintegra
ble[(a + b*ArcSin[c + d*x])^2/((e*(c + d*x))^(3/2)*Sqrt[1 - (c + d*x)^2]),
x])/e
```

Rubi [A] time = 0.206229, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{(ce+dex)^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x)^(5/2),x]
```

```
[Out] (-2*(a + b*ArcSin[c + d*x])^3)/(3*d*e*(e*(c + d*x))^(3/2)) + (2*b*Defer[Sub
st][Defer[Int][(a + b*ArcSin[x])^2/((e*x)^(3/2)*Sqrt[1 - x^2]), x], x, c +
d*x])/(d*e)
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{(ce+dex)^{5/2}}\,dx &= \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^3}{(ex)^{5/2}}\,dx,x,c+dx\right)}{d}\\
&= -\frac{2\left(a+b\sin^{-1}(c+dx)\right)^3}{3de(e(c+dx))^{3/2}}+\frac{(2b)\,\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^2}{(ex)^{3/2}\sqrt{1-x^2}}\,dx,x,c+dx\right)}{de}
\end{aligned}$$

Mathematica [A] time = 25.5124, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{(ce+dex)^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x)^(5/2),x]
```

```
[Out] Integrate[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x)^(5/2), x]
```

Maple [A] time = 0.303, size = 0, normalized size = 0.

$$\int (a+b\arcsin(dx+c))^3 (dex+ce)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(5/2),x)
```

```
[Out] int((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(5/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(b^3\arcsin(dx+c)^3+3\,ab^2\arcsin(dx+c)^2+3\,a^2b\arcsin(dx+c)+a^3\right)\sqrt{dex+ce}}{d^3e^3x^3+3\,cd^2e^3x^2+3\,c^2de^3x+c^3e^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((b^3*arcsin(d*x + c)^3 + 3*a*b^2*arcsin(d*x + c)^2 + 3*a^2*b*arcsi
n(d*x + c) + a^3)*sqrt(d*e*x + c*e)/(d^3*e^3*x^3 + 3*c*d^2*e^3*x^2 + 3*c^2*
d*e^3*x + c^3*e^3), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + b \operatorname{asin}(c + dx))^3}{(e(c + dx))^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**3/(d*e*x+c*e)**(5/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**3/(e*(c + d*x))**(5/2), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b \arcsin(dx + c) + a)^3}{(dex + ce)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^3/(d*e*x + c*e)^(5/2), x)
```

3.304 $\int \sqrt{ce+dex}\left(a+b\sin^{-1}(c+dx)\right)^4\,dx$

Optimal. Leaf size=83

$$\frac{2(e(c+dx))^{3/2}\left(a+b\sin^{-1}(c+dx)\right)^4}{3de}-\frac{8b\text{Unintegrable}\left(\frac{(e(c+dx))^{3/2}\left(a+b\sin^{-1}(c+dx)\right)^3}{\sqrt{1-(c+dx)^2}},x\right)}{3e}$$

```
[Out] (2*(e*(c + d*x))^(3/2)*(a + b*ArcSin[c + d*x])^4)/(3*d*e) - (8*b*Unintegrab
le[((e*(c + d*x))^(3/2)*(a + b*ArcSin[c + d*x])^3)/Sqrt[1 - (c + d*x)^2], x
])/(3*e)
```

Rubi [A] time = 0.193571, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \sqrt{ce+dex}\left(a+b\sin^{-1}(c+dx)\right)^4\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[c*e + d*e*x]*(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] (2*(e*(c + d*x))^(3/2)*(a + b*ArcSin[c + d*x])^4)/(3*d*e) - (8*b*Defer[Subs
t][Defer[Int][((e*x)^(3/2)*(a + b*ArcSin[x])^3)/Sqrt[1 - x^2], x], x, c + d
*x])/(3*d*e)
```

Rubi steps

$$\begin{aligned}\int \sqrt{ce+dex}\left(a+b\sin^{-1}(c+dx)\right)^4\,dx &= \frac{\text{Subst}\left(\int \sqrt{ex}\left(a+b\sin^{-1}(x)\right)^4\,dx,x,c+dx\right)}{d}\\ &= \frac{2(e(c+dx))^{3/2}\left(a+b\sin^{-1}(c+dx)\right)^4}{3de}-\frac{(8b)\,\text{Subst}\left(\int \frac{(ex)^{3/2}\left(a+b\sin^{-1}(x)\right)^3}{\sqrt{1-x^2}}\,dx,x,c\right.}{3de}\end{aligned}$$

Mathematica [F] time = 180.002, size = 0, normalized size = 0.

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[c*e + d*e*x]*(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] $Aborted
```

Maple [A] time = 0.314, size = 0, normalized size = 0.

$$\int \sqrt{dex+ce}\,(a+b\arcsin(dx+c))^4\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^4,x)
```

```
[Out] int((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^4,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\left(b^4\arcsin(dx+c)^4+4\,ab^3\arcsin(dx+c)^3+6\,a^2b^2\arcsin(dx+c)^2+4\,a^3b\arcsin(dx+c)+a^4\right)\sqrt{dex+ce},\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^4,x, algorithm="fricas")
```

```
[Out] integral((b^4*arcsin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6*a^2*b^2*arc
sin(d*x + c)^2 + 4*a^3*b*arcsin(d*x + c) + a^4)*sqrt(d*e*x + c*e), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{e\left(c+dx\right)}\left(a+b\operatorname{asin}\left(c+dx\right)\right)^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**(1/2)*(a+b*asin(d*x+c))**4,x)
```

```
[Out] Integral(sqrt(e*(c + d*x))*(a + b*asin(c + d*x))**4, x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{dex+ce}(b\arcsin\left(dx+c\right)+a)^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^4,x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*e*x + c*e)*(b*arcsin(d*x + c) + a)^4, x)
```

3.305 $\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{\sqrt{ce+dex}}\,dx$

Optimal. Leaf size=79

$$\frac{2\sqrt{e(c+dx)}\left(a+b\sin^{-1}(c+dx)\right)^4}{de}-\frac{8b\text{Unintegrable}\left(\frac{\sqrt{e(c+dx)}\left(a+b\sin^{-1}(c+dx)\right)^3}{\sqrt{1-(c+dx)^2}},x\right)}{e}$$

```
[Out] (2*Sqrt[e*(c + d*x)]*(a + b*ArcSin[c + d*x])^4)/(d*e) - (8*b*Unintegrable[(
Sqrt[e*(c + d*x)]*(a + b*ArcSin[c + d*x])^3)/Sqrt[1 - (c + d*x)^2], x])/e
```

Rubi [A] time = 0.178986, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{\sqrt{ce+dex}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*ArcSin[c + d*x])^4/Sqrt[c*e + d*e*x],x]
```

```
[Out] (2*Sqrt[e*(c + d*x)]*(a + b*ArcSin[c + d*x])^4)/(d*e) - (8*b*Defer[Subst][D
efer[Int][(Sqrt[e*x]*(a + b*ArcSin[x])^3)/Sqrt[1 - x^2], x], x, c + d*x])/(
d*e)
```

Rubi steps

$$\begin{aligned}\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{\sqrt{ce+dex}}\,dx &= \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^4}{\sqrt{ex}}\,dx,x,c+dx\right)}{d}\\ &= \frac{2\sqrt{e(c+dx)}\left(a+b\sin^{-1}(c+dx)\right)^4}{de}-\frac{(8b)\,\text{Subst}\left(\int \frac{\sqrt{ex}\left(a+b\sin^{-1}(x)\right)^3}{\sqrt{1-x^2}}\,dx,x,c+dx\right)}{de}\end{aligned}$$

Mathematica [A] time = 14.1969, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{\sqrt{ce+dex}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^4/Sqrt[c*e + d*e*x],x]
```

```
[Out] Integrate[(a + b*ArcSin[c + d*x])^4/Sqrt[c*e + d*e*x], x]
```

Maple [A] time = 0.286, size = 0, normalized size = 0.

$$\int (a+b\arcsin(dx+c))^4 \frac{1}{\sqrt{dex+ce}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(1/2),x)
```

```
[Out] int((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(1/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^4\arcsin(dx+c)^4+4\,ab^3\arcsin(dx+c)^3+6\,a^2b^2\arcsin(dx+c)^2+4\,a^3b\arcsin(dx+c)+a^4}{\sqrt{dex+ce}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((b^4*arcsin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6*a^2*b^2*arc
sin(d*x + c)^2 + 4*a^3*b*arcsin(d*x + c) + a^4)/sqrt(d*e*x + c*e), x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**4/(d*e*x+c*e)**(1/2),x)
```

```
[Out] Exception raised: TypeError
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b \arcsin(dx + c) + a)^4}{\sqrt{dex + ce}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^4/sqrt(d*e*x + c*e), x)
```

3.306 $\int \frac{(a+b\sin^{-1}(c+dx))^4}{(ce+dex)^{3/2}}\,dx$

Optimal. Leaf size=79

$$\frac{8b\text{Unintegrable}\left(\frac{(a+b\sin^{-1}(c+dx))^3}{\sqrt{1-(c+dx)^2}\sqrt{e(c+dx)}},x\right)}{e}-\frac{2\left(a+b\sin^{-1}(c+dx)\right)^4}{de\sqrt{e(c+dx)}}$$

```
[Out] (-2*(a + b*ArcSin[c + d*x])^4)/(d*e*Sqrt[e*(c + d*x)]) + (8*b*Unintegrable[
(a + b*ArcSin[c + d*x])^3/(Sqrt[e*(c + d*x)]*Sqrt[1 - (c + d*x)^2]), x])/e
```

Rubi [A] time = 0.189141, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{(ce+dex)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x)^(3/2),x]
```

```
[Out] (-2*(a + b*ArcSin[c + d*x])^4)/(d*e*Sqrt[e*(c + d*x)]) + (8*b*Defer[Subst][
Defer[Int][(a + b*ArcSin[x])^3/(Sqrt[e*x]*Sqrt[1 - x^2]), x], x, c + d*x])/
(d*e)
```

Rubi steps

$$\begin{aligned}\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{(ce+dex)^{3/2}}\,dx &= \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^4}{(ex)^{3/2}}\,dx,x,c+dx\right)}{d}\\ &= -\frac{2\left(a+b\sin^{-1}(c+dx)\right)^4}{de\sqrt{e(c+dx)}}+\frac{(8b)\,\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^3}{\sqrt{ex}\sqrt{1-x^2}}\,dx,x,c+dx\right)}{de}\end{aligned}$$

Mathematica [A] time = 52.3539, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{(ce+dex)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x)^(3/2),x]
```

```
[Out] Integrate[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x)^(3/2), x]
```

Maple [A] time = 0.303, size = 0, normalized size = 0.

$$\int (a+b\arcsin(dx+c))^4\,(dex+ce)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(3/2),x)
```

```
[Out] int((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(3/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(b^4\arcsin(dx+c)^4+4\,ab^3\arcsin(dx+c)^3+6\,a^2b^2\arcsin(dx+c)^2+4\,a^3b\arcsin(dx+c)+a^4\right)\sqrt{dex+ce}}{d^2e^2x^2+2\,cde^2x+c^2e^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((b^4*arcsin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6*a^2*b^2*arc
sin(d*x + c)^2 + 4*a^3*b*arcsin(d*x + c) + a^4)*sqrt(d*e*x + c*e)/(d^2*e^2*
x^2 + 2*c*d*e^2*x + c^2*e^2), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + b \operatorname{asin}(c + dx))^4}{(e(c + dx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**4/(d*e*x+c*e)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**4/(e*(c + d*x))**(3/2), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b \arcsin(dx + c) + a)^4}{(dex + ce)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^4/(d*e*x + c*e)^(3/2), x)
```

3.307 $\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{(ce+dex)^{5/2}}\,dx$

Optimal. Leaf size=83

$$\frac{8b\text{Unintegrable}\left(\frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{\sqrt{1-(c+dx)^2}(e(c+dx))^{3/2}},x\right)}{3e}-\frac{2\left(a+b\sin^{-1}(c+dx)\right)^4}{3de(e(c+dx))^{3/2}}$$

```
[Out] (-2*(a + b*ArcSin[c + d*x])^4)/(3*d*e*(e*(c + d*x))^(3/2)) + (8*b*Unintegra
ble[(a + b*ArcSin[c + d*x])^3/((e*(c + d*x))^(3/2)*Sqrt[1 - (c + d*x)^2]),
x])/(3*e)
```

Rubi [A] time = 0.206158, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{(ce+dex)^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x)^(5/2),x]
```

```
[Out] (-2*(a + b*ArcSin[c + d*x])^4)/(3*d*e*(e*(c + d*x))^(3/2)) + (8*b*Defer[Sub
st][Defer[Int][(a + b*ArcSin[x])^3/((e*x)^(3/2)*Sqrt[1 - x^2]), x], x, c +
d*x])/(3*d*e)
```

Rubi steps

$$\begin{aligned}\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{(ce+dex)^{5/2}}\,dx &= \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^4}{(ex)^{5/2}}\,dx,x,c+dx\right)}{d}\\ &= -\frac{2\left(a+b\sin^{-1}(c+dx)\right)^4}{3de(e(c+dx))^{3/2}}+\frac{(8b)\,\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^3}{(ex)^{3/2}\sqrt{1-x^2}}\,dx,x,c+dx\right)}{3de}\end{aligned}$$

Mathematica [A] time = 41.0544, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^4}{(ce+dex)^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x)^(5/2),x]
```

```
[Out] Integrate[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x)^(5/2), x]
```

Maple [A] time = 0.302, size = 0, normalized size = 0.

$$\int (a+b\arcsin(dx+c))^4\,(dex+ce)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(5/2),x)
```

```
[Out] int((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(5/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(b^4\arcsin(dx+c)^4+4\,ab^3\arcsin(dx+c)^3+6\,a^2b^2\arcsin(dx+c)^2+4\,a^3b\arcsin(dx+c)+a^4\right)\sqrt{dex+ce}}{d^3e^3x^3+3\,cd^2e^3x^2+3\,c^2de^3x+c^3e^3},\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((b^4*arcsin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6*a^2*b^2*arc
sin(d*x + c)^2 + 4*a^3*b*arcsin(d*x + c) + a^4)*sqrt(d*e*x + c*e)/(d^3*e^3*
x^3 + 3*c*d^2*e^3*x^2 + 3*c^2*d*e^3*x + c^3*e^3), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + b\operatorname{asin}(c + dx))^4}{(e(c + dx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**4/(d*e*x+c*e)**(5/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**4/(e*(c + d*x))**(5/2), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b\arcsin(dx + c) + a)^4}{(dex + ce)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^4/(d*e*x + c*e)^(5/2), x)
```

3.308 $\int (ce+dex)^m \left(a+b\sin^{-1}(c+dx)\right)^4 \, dx$

Optimal. Leaf size=88

$$\frac{(e(c+dx))^{m+1}\left(a+b\sin^{-1}(c+dx)\right)^4}{de(m+1)}-\frac{4b\text{Unintegrable}\left(\frac{(e(c+dx))^{m+1}\left(a+b\sin^{-1}(c+dx)\right)^3}{\sqrt{1-(c+dx)^2}},x\right)}{e(m+1)}$$

```
[Out] ((e*(c + d*x))^(1 + m)*(a + b*ArcSin[c + d*x])^4)/(d*e*(1 + m)) - (4*b*Unin
tegrable[((e*(c + d*x))^(1 + m)*(a + b*ArcSin[c + d*x])^3)/Sqrt[1 - (c + d*
x)^2], x])/(e*(1 + m))
```

Rubi [A] time = 0.186821, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int (ce+dex)^m \left(a+b\sin^{-1}(c+dx)\right)^4 \, dx$$

Verification is Not applicable to the result.

```
[In] Int[(c*e + d*e*x)^m*(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] ((e*(c + d*x))^(1 + m)*(a + b*ArcSin[c + d*x])^4)/(d*e*(1 + m)) - (4*b*Defe
r[Subst][Defer[Int][((e*x)^(1 + m)*(a + b*ArcSin[x])^3)/Sqrt[1 - x^2], x],
x, c + d*x])/(d*e*(1 + m))
```

Rubi steps

$$\begin{aligned}\int (ce+dex)^m \left(a+b\sin^{-1}(c+dx)\right)^4 \, dx &= \frac{\text{Subst}\left(\int (ex)^m \left(a+b\sin^{-1}(x)\right)^4 \, dx,x,c+dx\right)}{d}\\ &= \frac{(e(c+dx))^{1+m}\left(a+b\sin^{-1}(c+dx)\right)^4}{de(1+m)}-\frac{(4b)\,\text{Subst}\left(\int \frac{(ex)^{1+m}\left(a+b\sin^{-1}(x)\right)^3}{\sqrt{1-x^2}} \, dx,x,\right.}{de(1+m)}\end{aligned}$$

Mathematica [A] time = 2.86894, size = 0, normalized size = 0.

$$\int (ce+dex)^m \left(a+b\sin^{-1}(c+dx)\right)^4 \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c*e + d*e*x)^m*(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] Integrate[(c*e + d*e*x)^m*(a + b*ArcSin[c + d*x])^4, x]
```

Maple [A] time = 1.517, size = 0, normalized size = 0.

$$\int (dex + ce)^m (a + b \arcsin (dx + c))^4 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^4,x)
```

```
[Out] int((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^4,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(b^4 \arcsin (dx + c)^4 + 4\, ab^3 \arcsin (dx + c)^3 + 6\, a^2b^2 \arcsin (dx + c)^2 + 4\, a^3b \arcsin (dx + c) + a^4\right)(dex + ce)^m\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^4,x, algorithm="fricas")
```

```
[Out] integral((b^4*arcsin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6*a^2*b^2*arc
sin(d*x + c)^2 + 4*a^3*b*arcsin(d*x + c) + a^4)*(d*e*x + c*e)^m, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**m*(a+b*asin(d*x+c))**4,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int (b \arcsin (dx + c) + a)^4 (dex + ce)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^4,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^4*(d*e*x + c*e)^m, x)
```

3.309 $\int (ce+dex)^m \left(a+b\sin^{-1}(c+dx)\right)^3 dx$

Optimal. Leaf size=88

$$\frac{(e(c+dx))^{m+1}\left(a+b\sin^{-1}(c+dx)\right)^3}{de(m+1)}-\frac{3b\text{Unintegrable}\left(\frac{(e(c+dx))^{m+1}\left(a+b\sin^{-1}(c+dx)\right)^2}{\sqrt{1-(c+dx)^2}},x\right)}{e(m+1)}$$

```
[Out] ((e*(c + d*x))^(1 + m)*(a + b*ArcSin[c + d*x])^3)/(d*e*(1 + m)) - (3*b*Unin
tegrable[((e*(c + d*x))^(1 + m)*(a + b*ArcSin[c + d*x])^2)/Sqrt[1 - (c + d*
x)^2], x])/(e*(1 + m))
```

Rubi [A] time = 0.178789, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int (ce+dex)^m \left(a+b\sin^{-1}(c+dx)\right)^3 dx$$

Verification is Not applicable to the result.

```
[In] Int[(c*e + d*e*x)^m*(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] ((e*(c + d*x))^(1 + m)*(a + b*ArcSin[c + d*x])^3)/(d*e*(1 + m)) - (3*b*Defe
r[Subst][Defer[Int][((e*x)^(1 + m)*(a + b*ArcSin[x])^2)/Sqrt[1 - x^2], x],
x, c + d*x])/(d*e*(1 + m))
```

Rubi steps

$$\int (ce+dex)^m \left(a+b\sin^{-1}(c+dx)\right)^3 dx=\frac{\text{Subst}\left(\int (ex)^m \left(a+b\sin^{-1}(x)\right)^3 dx,x,c+dx\right)}{d}$$
$$=\frac{(e(c+dx))^{1+m}\left(a+b\sin^{-1}(c+dx)\right)^3}{de(1+m)}-\frac{(3b)\,\text{Subst}\left(\int \frac{(ex)^{1+m}\left(a+b\sin^{-1}(x)\right)^2}{\sqrt{1-x^2}}dx,\right.}{de(1+m)}$$

Mathematica [A] time = 1.8278, size = 0, normalized size = 0.

$$\int (ce+dex)^m \left(a+b\sin^{-1}(c+dx)\right)^3 dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c*e + d*e*x)^m*(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] Integrate[(c*e + d*e*x)^m*(a + b*ArcSin[c + d*x])^3, x]
```

Maple [A] time = 1.286, size = 0, normalized size = 0.

$$\int (dex + ce)^m (a + b \arcsin (dx + c))^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^3,x)
```

```
[Out] int((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^3,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(b^3 \arcsin (dx + c)^3 + 3\,ab^2 \arcsin (dx + c)^2 + 3\,a^2 b \arcsin (dx + c) + a^3\right)(dex + ce)^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] integral((b^3*arcsin(d*x + c)^3 + 3*a*b^2*arcsin(d*x + c)^2 + 3*a^2*b*arcsi
n(d*x + c) + a^3)*(d*e*x + c*e)^m, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**m*(a+b*asin(d*x+c))**3,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int (b\arcsin(dx+c)+a)^3(dex+ce)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^3*(d*e*x + c*e)^m, x)
```

3.310 $\int (ce + dex)^m \left(a + b\sin^{-1}(c + dx)\right)^2 \, dx$

Optimal. Leaf size=183

$$\frac{2b^2(e(c+dx))^{m+3}\text{HypergeometricPFQ}\left(\left\{1, \frac{m}{2}+\frac{3}{2}, \frac{m}{2}+\frac{3}{2}\right\}, \left\{\frac{m}{2}+2, \frac{m}{2}+\frac{5}{2}\right\}, (c+dx)^2\right)}{de^3(m+1)(m+2)(m+3)} - \frac{2b(e(c+dx))^{m+2}\text{Hypergeon}}{}$$

```
[Out] ((e*(c + d*x))^(1 + m)*(a + b*ArcSin[c + d*x])^2)/(d*e*(1 + m)) - (2*b*(e*(
c + d*x))^(2 + m)*(a + b*ArcSin[c + d*x])*Hypergeometric2F1[1/2, (2 + m)/2,
 (4 + m)/2, (c + d*x)^2])/(d*e^2*(1 + m)*(2 + m)) + (2*b^2*(e*(c + d*x))^(3
 + m)*HypergeometricPFQ[{1, 3/2 + m/2, 3/2 + m/2}, {2 + m/2, 5/2 + m/2}, (c
 + d*x)^2])/(d*e^3*(1 + m)*(2 + m)*(3 + m))
```

Rubi [A] time = 0.198848, antiderivative size = 183, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.13, Rules used = {4805, 4627, 4711}

$$\frac{2b^2(e(c+dx))^{m+3}\,{}_3F_2\left(1, \frac{m}{2}+\frac{3}{2}, \frac{m}{2}+\frac{3}{2}; \frac{m}{2}+2, \frac{m}{2}+\frac{5}{2}; (c+dx)^2\right)}{de^3(m+1)(m+2)(m+3)} - \frac{2b(e(c+dx))^{m+2}\,{}_2F_1\left(\frac{1}{2}, \frac{m+2}{2}; \frac{m+4}{2}; (c+dx)^2\right)\left(a+b\sin\right.}{de^2(m+1)(m+2)}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^m*(a + b*ArcSin[c + d*x])^2,x]
```


```
[Out] ((e*(c + d*x))^(1 + m)*(a + b*ArcSin[c + d*x])^2)/(d*e*(1 + m)) - (2*b*(e*(
c + d*x))^(2 + m)*(a + b*ArcSin[c + d*x])*Hypergeometric2F1[1/2, (2 + m)/2,
 (4 + m)/2, (c + d*x)^2])/(d*e^2*(1 + m)*(2 + m)) + (2*b^2*(e*(c + d*x))^(3
 + m)*HypergeometricPFQ[{1, 3/2 + m/2, 3/2 + m/2}, {2 + m/2, 5/2 + m/2}, (c
 + d*x)^2])/(d*e^3*(1 + m)*(2 + m)*(3 + m))
```


Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
```

```
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4711

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*(a + b*ArcSin[c*x])*Hypergeomet
ric2F1[1/2, (1 + m)/2, (3 + m)/2, c^2*x^2])/(Sqrt[d]*f*(m + 1)), x] - Simp[
(b*c*(f*x)^(m + 2)*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 +
 m/2}, c^2*x^2])/(Sqrt[d]*f^2*(m + 1)*(m + 2)), x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] &&  !IntegerQ[m]
```

Rubi steps

$$\int (ce+dex)^m \left(a+b\sin^{-1}(c+dx)\right)^2 dx = \frac{\text{Subst}\left(\int (ex)^m \left(a+b\sin^{-1}(x)\right)^2 dx, x, c+dx\right)}{d}$$

$$= \frac{(e(c+dx))^{1+m}\left(a+b\sin^{-1}(c+dx)\right)^2}{de(1+m)} - \frac{(2b)\,\text{Subst}\left(\int \frac{(ex)^{1+m}\left(a+b\sin^{-1}(x)\right)}{\sqrt{1-x^2}} dx, x\right.}{de(1+m)}$$

$$= \frac{(e(c+dx))^{1+m}\left(a+b\sin^{-1}(c+dx)\right)^2}{de(1+m)} - \frac{2b(e(c+dx))^{2+m}\left(a+b\sin^{-1}(c+dx)\right.}{de^2(1+m)(2}$$

Mathematica [A] time = 0.135545, size = 151, normalized size = 0.83

$$\frac{(c+dx)(e(c+dx))^m\left(\frac{2b^2(c+dx)^2\text{HypergeometricPFQ}\left(\left\{1,\frac{m}{2}+\frac{3}{2},\frac{m}{2}+\frac{3}{2}\right\},\left\{\frac{m}{2}+2,\frac{m}{2}+\frac{5}{2}\right\},(c+dx)^2\right)}{(m+2)(m+3)} - \frac{2b(c+dx)\text{Hypergeometric2F1}\left(\frac{1}{2},\frac{m+2}{2},\frac{m+4}{2},(c+dx\right.}{m+2}\right.}{d(m+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^m*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] ((c + d*x)*(e*(c + d*x))^m*((a + b*ArcSin[c + d*x])^2 - (2*b*(c + d*x)*(a +
 b*ArcSin[c + d*x])*Hypergeometric2F1[1/2, (2 + m)/2, (4 + m)/2, (c + d*x)^
2])/(2 + m) + (2*b^2*(c + d*x)^2*HypergeometricPFQ[{1, 3/2 + m/2, 3/2 + m/2
}, {2 + m/2, 5/2 + m/2}, (c + d*x)^2])/((2 + m)*(3 + m))))/(d*(1 + m))
```

Maple [F] time = 1.165, size = 0, normalized size = 0.

$$\int (dex + ce)^m (a + b\arcsin(dx + c))^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^2,x)
```

```
[Out] int((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^2,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(b^2 \arcsin(dx + c)^2 + 2\,ab\arcsin(dx + c) + a^2\right)(dex + ce)^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2)*(d*e*x + c*e
)^m, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (e(c + dx))^m (a + b\,\mathrm{asin}(c + dx))^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**m*(a+b*asin(d*x+c))**2,x)
```

```
[Out] Integral((e*(c + d*x))**m*(a + b*asin(c + d*x))**2, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (b \arcsin (dx + c) + a)^2 (dex + ce)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^2*(d*e*x + c*e)^m, x)
```

3.311 $\int (ce+dex)^m \left(a+b\sin^{-1}(c+dx)\right) dx$

Optimal. Leaf size=89

$$\frac{(e(c+dx))^{m+1}\left(a+b\sin^{-1}(c+dx)\right)}{de(m+1)}-\frac{b(e(c+dx))^{m+2}\text{Hypergeometric2F1}\left(\frac{1}{2},\frac{m+2}{2},\frac{m+4}{2},(c+dx)^2\right)}{de^2(m+1)(m+2)}$$

```
[Out] ((e*(c + d*x))^(1 + m)*(a + b*ArcSin[c + d*x]))/(d*e*(1 + m)) - (b*(e*(c +
d*x))^(2 + m)*Hypergeometric2F1[1/2, (2 + m)/2, (4 + m)/2, (c + d*x)^2])/(d
*e^2*(1 + m)*(2 + m))
```

Rubi [A] time = 0.0621221, antiderivative size = 89, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {4805, 4627, 364}

$$\frac{(e(c+dx))^{m+1}\left(a+b\sin^{-1}(c+dx)\right)}{de(m+1)}-\frac{b(e(c+dx))^{m+2}\,{}_2F_1\left(\frac{1}{2},\frac{m+2}{2};\frac{m+4}{2};(c+dx)^2\right)}{de^2(m+1)(m+2)}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^m*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] ((e*(c + d*x))^(1 + m)*(a + b*ArcSin[c + d*x]))/(d*e*(1 + m)) - (b*(e*(c +
d*x))^(2 + m)*Hypergeometric2F1[1/2, (2 + m)/2, (4 + m)/2, (c + d*x)^2])/(d
*e^2*(1 + m)*(2 + m))
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rubi steps

$$\int (ce+dex)^m \left(a+b\sin^{-1}(c+dx)\right)dx = \frac{\text{Subst}\left(\int (ex)^m \left(a+b\sin^{-1}(x)\right)dx, x, c+dx\right)}{d}$$
$$= \frac{(e(c+dx))^{1+m}\left(a+b\sin^{-1}(c+dx)\right)}{de(1+m)} - \frac{b\,\text{Subst}\left(\int \frac{(ex)^{1+m}}{\sqrt{1-x^2}}dx, x, c+dx\right)}{de(1+m)}$$
$$= \frac{(e(c+dx))^{1+m}\left(a+b\sin^{-1}(c+dx)\right)}{de(1+m)} - \frac{b(e(c+dx))^{2+m}\,{}_2F_1\left(\frac{1}{2},\frac{2+m}{2};\frac{4+m}{2};(c+d}{de^2(1+m)(2+m)}$$

Mathematica [A] time = 0.0418228, size = 77, normalized size = 0.87

$$-\frac{(c+dx)(e(c+dx))^m\left(b(c+dx)\text{Hypergeometric2F1}\left(\frac{1}{2},\frac{m+2}{2},\frac{m+4}{2},(c+dx)^2\right)-(m+2)\left(a+b\sin^{-1}(c+dx)\right)\right)}{d(m+1)(m+2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^m*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] -(((c + d*x)*(e*(c + d*x))^m*(-((2 + m)*(a + b*ArcSin[c + d*x])) + b*(c + d
*x)*Hypergeometric2F1[1/2, (2 + m)/2, (4 + m)/2, (c + d*x)^2]))/(d*(1 + m)*
(2 + m)))
```

Maple [F] time = 1.263, size = 0, normalized size = 0.

$$\int (dex+ce)^m (a+b\arcsin(dx+c))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^m*(a+b*arcsin(d*x+c)),x)
```

```
[Out] int((d*e*x+c*e)^m*(a+b*arcsin(d*x+c)),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m*(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((b \arcsin(dx+c)+a)(dex+ce)^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m*(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(d*x + c) + a)*(d*e*x + c*e)^m, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (e(c+dx))^m (a+b \operatorname{asin}(c+dx))\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**m*(a+b*asin(d*x+c)),x)
```

```
[Out] Integral((e*(c + d*x))**m*(a + b*asin(c + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (b \arcsin(dx+c)+a)(dex+ce)^m\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m*(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)*(d*e*x + c*e)^m, x)
```

3.312 $\int \frac{(ce+dex)^m}{a+b\sin^{-1}(c+dx)}\,dx$

Optimal. Leaf size=24

$$\text{Unintegrable}\left(\frac{(e(c+dx))^m}{a+b\sin^{-1}(c+dx)},x\right)$$

```
[Out] Unintegrable[(e*(c + d*x))^m/(a + b*ArcSin[c + d*x]), x]
```

Rubi [A] time = 0.0579832, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(ce+dex)^m}{a+b\sin^{-1}(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(c*e + d*e*x)^m/(a + b*ArcSin[c + d*x]),x]
```

```
[Out] Defer[Subst][Defer[Int][(e*x)^m/(a + b*ArcSin[x]), x], x, c + d*x]/d
```

Rubi steps

$$\int \frac{(ce+dex)^m}{a+b\sin^{-1}(c+dx)}\,dx = \frac{\text{Subst}\left(\int \frac{(ex)^m}{a+b\sin^{-1}(x)}\,dx,x,c+dx\right)}{d}$$

Mathematica [A] time = 1.44408, size = 0, normalized size = 0.

$$\int \frac{(ce+dex)^m}{a+b\sin^{-1}(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c*e + d*e*x)^m/(a + b*ArcSin[c + d*x]),x]
```

```
[Out] Integrate[(c*e + d*e*x)^m/(a + b*ArcSin[c + d*x]), x]
```

Maple [A] time = 0.767, size = 0, normalized size = 0.

$$\int \frac{(dex+ce)^m}{a+b\arcsin(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^m/(a+b*arcsin(d*x+c)),x)
```

```
[Out] int((d*e*x+c*e)^m/(a+b*arcsin(d*x+c)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dex+ce)^m}{b\arcsin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m/(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] integrate((d*e*x + c*e)^m/(b*arcsin(d*x + c) + a), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dex+ce)^m}{b\arcsin(dx+c)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m/(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral((d*e*x + c*e)^m/(b*arcsin(d*x + c) + a), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(e(c+dx))^m}{a+b\operatorname{asin}(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**m/(a+b*asin(d*x+c)),x)
```

```
[Out] Integral((e*(c + d*x))**m/(a + b*asin(c + d*x)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dex+ce)^m}{b\arcsin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m/(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)^m/(b*arcsin(d*x + c) + a), x)
```

3.313 $\int \sqrt{1-a^2-2abx-b^2x^2}\sin^{-1}(a+bx)^3\,dx$

Optimal. Leaf size=135

$$\frac{3(a+bx)^2}{8b}+\frac{\sin^{-1}(a+bx)^4}{8b}+\frac{(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)^3}{2b}-\frac{3(a+bx)^2\sin^{-1}(a+bx)^2}{4b}+\frac{3\sin^{-1}(a+bx)^2}{8b}-$$

```
[Out] (3*(a + b*x)^2)/(8*b) - (3*(a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])
/(4*b) + (3*ArcSin[a + b*x]^2)/(8*b) - (3*(a + b*x)^2*ArcSin[a + b*x]^2)/(4
*b) + ((a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^3)/(2*b) + ArcSin[a
+ b*x]^4/(8*b)
```

Rubi [A] time = 0.193401, antiderivative size = 135, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {4807, 4647, 4641, 4627, 4707, 30}

$$\frac{3(a+bx)^2}{8b}+\frac{\sin^{-1}(a+bx)^4}{8b}+\frac{(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)^3}{2b}-\frac{3(a+bx)^2\sin^{-1}(a+bx)^2}{4b}+\frac{3\sin^{-1}(a+bx)^2}{8b}-$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x]^3,x]
```


```
[Out] (3*(a + b*x)^2)/(8*b) - (3*(a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])
/(4*b) + (3*ArcSin[a + b*x]^2)/(8*b) - (3*(a + b*x)^2*ArcSin[a + b*x]^2)/(4
*b) + ((a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^3)/(2*b) + ArcSin[a
+ b*x]^4/(8*b)
```


Rule 4807

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-(C/d^2) + (C*x^2)/d^
2)^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C
, n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
```

```
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rubi steps

$$\int \sqrt{1-a^2-2abx-b^2x^2}\sin^{-1}(a+bx)^3\,dx = \frac{\text{Subst}\left(\int \sqrt{1-x^2}\sin^{-1}(x)^3\,dx,x,a+bx\right)}{b}$$
$$= \frac{(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)^3}{2b} + \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)^3}{\sqrt{1-x^2}}\,dx,x,a+bx\right)}{2b}$$
$$= -\frac{3(a+bx)^2\sin^{-1}(a+bx)^2}{4b} + \frac{(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)^3}{2b} + \text{si}$$
$$= -\frac{3(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{4b} - \frac{3(a+bx)^2\sin^{-1}(a+bx)^2}{4b} + (a$$
$$= \frac{3(a+bx)^2}{8b} - \frac{3(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{4b} + \frac{3\sin^{-1}(a+bx)^2}{8b} -$$

Mathematica [A] time = 0.123856, size = 133, normalized size = 0.99

$$\frac{4(a+bx)\sqrt{-a^2-2abx-b^2x^2+1}\sin^{-1}(a+bx)^3 - 3\left(2a^2+4abx+2b^2x^2-1\right)\sin^{-1}(a+bx)^2 - 6(a+bx)\sqrt{-a^2-2abx-}}{8b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x]^3,x]
```

```
[Out] (3*b*x*(2*a + b*x) - 6*(a + b*x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a
 + b*x] - 3*(-1 + 2*a^2 + 4*a*b*x + 2*b^2*x^2)*ArcSin[a + b*x]^2 + 4*(a + b
*x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x]^3 + ArcSin[a + b*x]^4
)/(8*b)
```

Maple [A] time = 0.085, size = 215, normalized size = 1.6

$$\frac{1}{8b}\left(4\left(\arcsin(bx+a)\right)^3\sqrt{-b^2x^2-2xab-a^2+1}xb - 6\left(\arcsin(bx+a)\right)^2x^2b^2 + 4\left(\arcsin(bx+a)\right)^3\sqrt{-b^2x^2-2xab-}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)^3*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x)
```

```
[Out] 1/8*(4*arcsin(b*x+a)^3*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*x*b-6*arcsin(b*x+a)^2
*x^2*b^2+4*arcsin(b*x+a)^3*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*a-12*arcsin(b*x+a
```

```
)^2*x*a*b+arcsin(b*x+a)^4-6*arcsin(b*x+a)^2*a^2-6*arcsin(b*x+a)*(-b^2*x^2-2
*a*b*x-a^2+1)^(1/2)*x*b+3*b^2*x^2-6*arcsin(b*x+a)*(-b^2*x^2-2*a*b*x-a^2+1)^
(1/2)*a+6*x*a*b+3*arcsin(b*x+a)^2+3*a^2)/b
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^3*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.31098, size = 278, normalized size = 2.06

$$\frac{3\,b^2x^2 + \arcsin\left(bx+a\right)^4 + 6\,abx - 3\left(2\,b^2x^2 + 4\,abx + 2\,a^2 - 1\right)\arcsin\left(bx+a\right)^2 + 2\,\sqrt{-b^2x^2 - 2\,abx - a^2 + 1}\Big(2\left(bx+a\right)\ldots}{8\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^3*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="fric
as")
```

```
[Out] 1/8*(3*b^2*x^2 + arcsin(b*x + a)^4 + 6*a*b*x - 3*(2*b^2*x^2 + 4*a*b*x + 2*a
^2 - 1)*arcsin(b*x + a)^2 + 2*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(2*(b*x +
a)*arcsin(b*x + a)^3 - 3*(b*x + a)*arcsin(b*x + a)))/b
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{-\left(a+bx-1\right)\left(a+bx+1\right)}\,\operatorname{asin}^{3}\left(a+bx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**3*(-b**2*x**2-2*a*b*x-a**2+1)**(1/2),x)
```

```
[Out] Integral(sqrt(-(a + b*x - 1)*(a + b*x + 1))*asin(a + b*x)**3, x)
```

Giac [A] time = 1.29283, size = 219, normalized size = 1.62

$$\frac{\sqrt{-b^2x^2-2\,abx-a^2+1}(bx+a)\arcsin(bx+a)^3}{2\,b}+\frac{\arcsin(bx+a)^4}{8\,b}-\frac{3\left(b^2x^2+2\,abx+a^2-1\right)\arcsin(bx+a)^2}{4\,b}-\frac{3\sqrt{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^3*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="giac
")
```

```
[Out] 1/2*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*x + a)*arcsin(b*x + a)^3/b + 1/8*
arcsin(b*x + a)^4/b - 3/4*(b^2*x^2 + 2*a*b*x + a^2 - 1)*arcsin(b*x + a)^2/b
 - 3/4*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*x + a)*arcsin(b*x + a)/b - 3/8
*arcsin(b*x + a)^2/b + 3/8*(b^2*x^2 + 2*a*b*x + a^2 - 1)/b + 3/16/b
```

3.314 $\int \sqrt{1-a^2-2abx-b^2x^2}\sin^{-1}(a+bx)^2\,dx$

Optimal. Leaf size=111

$$-\frac{(a+bx)\sqrt{1-(a+bx)^2}}{4b}+\frac{\sin^{-1}(a+bx)^3}{6b}+\frac{(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)^2}{2b}-\frac{(a+bx)^2\sin^{-1}(a+bx)}{2b}+\frac{\sin^{-1}(a-}{4b}$$

```
[Out] -((a + b*x)*Sqrt[1 - (a + b*x)^2])/(4*b) + ArcSin[a + b*x]/(4*b) - ((a + b*
x)^2*ArcSin[a + b*x])/(2*b) + ((a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b
*x]^2)/(2*b) + ArcSin[a + b*x]^3/(6*b)
```

Rubi [A] time = 0.12721, antiderivative size = 111, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {4807, 4647, 4641, 4627, 321, 216}

$$-\frac{(a+bx)\sqrt{1-(a+bx)^2}}{4b}+\frac{\sin^{-1}(a+bx)^3}{6b}+\frac{(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)^2}{2b}-\frac{(a+bx)^2\sin^{-1}(a+bx)}{2b}+\frac{\sin^{-1}(a-}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x]^2,x]
```

```
[Out] -((a + b*x)*Sqrt[1 - (a + b*x)^2])/(4*b) + ArcSin[a + b*x]/(4*b) - ((a + b*
x)^2*ArcSin[a + b*x])/(2*b) + ((a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b
*x]^2)/(2*b) + ArcSin[a + b*x]^3/(6*b)
```

Rule 4807

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-(C/d^2) + (C*x^2)/d^
2)^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C
, n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rubi steps

$$\int \sqrt{1-a^2-2abx-b^2x^2}\sin^{-1}(a+bx)^2\,dx = \frac{\text{Subst}\left(\int \sqrt{1-x^2}\sin^{-1}(x)^2\,dx, x, a+bx\right)}{b}$$

$$= \frac{(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)^2}{2b} + \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)^2}{\sqrt{1-x^2}}\,dx, x, a+bx\right)}{2b}$$

$$= -\frac{(a+bx)^2\sin^{-1}(a+bx)}{2b} + \frac{(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)^2}{2b} + \frac{\sin^{-1}}{}$$

$$= -\frac{(a+bx)\sqrt{1-(a+bx)^2}}{4b} - \frac{(a+bx)^2\sin^{-1}(a+bx)}{2b} + \frac{(a+bx)\sqrt{1-(a+b}}{2b}$$

$$= -\frac{(a+bx)\sqrt{1-(a+bx)^2}}{4b} + \frac{\sin^{-1}(a+bx)}{4b} - \frac{(a+bx)^2\sin^{-1}(a+bx)}{2b} + \frac{(a}{}$$

Mathematica [A] time = 0.0988498, size = 116, normalized size = 1.05

$$\frac{-3(a+bx)\sqrt{-a^2-2abx-b^2x^2+1}+6(a+bx)\sqrt{-a^2-2abx-b^2x^2+1}\sin^{-1}(a+bx)^2-3\left(2a^2+4abx+2b^2x^2-1\right)\sin^{-1}}{12b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x]^2,x]
```

```
[Out] (-3*(a + b*x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2] - 3*(-1 + 2*a^2 + 4*a*b*x +
 2*b^2*x^2)*ArcSin[a + b*x] + 6*(a + b*x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]
*ArcSin[a + b*x]^2 + 2*ArcSin[a + b*x]^3)/(12*b)
```

Maple [A] time = 0.059, size = 179, normalized size = 1.6

$$\frac{1}{12\,b}\left(6\,\left(\arcsin\left(bx+a\right)\right)^{2}\sqrt{-b^{2}x^{2}-2\,xab-a^{2}+1}xb-6\,\arcsin\left(bx+a\right)x^{2}b^{2}+6\,\left(\arcsin\left(bx+a\right)\right)^{2}\sqrt{-b^{2}x^{2}-2\,xab-a^{2}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)^2*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x)
```

```
[Out] 1/12*(6*arcsin(b*x+a)^2*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*x*b-6*arcsin(b*x+a)*
x^2*b^2+6*arcsin(b*x+a)^2*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*a-12*arcsin(b*x+a)
*x*a*b+2*arcsin(b*x+a)^3-6*arcsin(b*x+a)*a^2-3*(-b^2*x^2-2*a*b*x-a^2+1)^(1/
2)*x*b-3*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*a+3*arcsin(b*x+a))/b
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.38593, size = 223, normalized size = 2.01

$$\frac{2 \arcsin(bx+a)^3 - 3\left(2b^2x^2 + 4abx + 2a^2 - 1\right)\arcsin(bx+a) + 3\sqrt{-b^2x^2 - 2abx - a^2 + 1}\left(2(bx+a)\arcsin(bx+a\right.}{12b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="fric
as")
```

```
[Out] 1/12*(2*arcsin(b*x + a)^3 - 3*(2*b^2*x^2 + 4*a*b*x + 2*a^2 - 1)*arcsin(b*x
+ a) + 3*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(2*(b*x + a)*arcsin(b*x + a)^2
- b*x - a))/b
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{-(a+bx-1)(a+bx+1)}\,\mathrm{asin}^2(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**2*(-b**2*x**2-2*a*b*x-a**2+1)**(1/2),x)
```

```
[Out] Integral(sqrt(-(a + b*x - 1)*(a + b*x + 1))*asin(a + b*x)**2, x)
```

Giac [A] time = 1.27094, size = 169, normalized size = 1.52

$$\frac{\sqrt{-b^2x^2 - 2abx - a^2 + 1}(bx+a)\arcsin(bx+a)^2}{2b} + \frac{\arcsin(bx+a)^3}{6b} - \frac{\left(b^2x^2 + 2abx + a^2 - 1\right)\arcsin(bx+a)}{2b} - \frac{\sqrt{-b^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="giac
")
```

```
[Out] 1/2*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*x + a)*arcsin(b*x + a)^2/b + 1/6*
arcsin(b*x + a)^3/b - 1/2*(b^2*x^2 + 2*a*b*x + a^2 - 1)*arcsin(b*x + a)/b -
 1/4*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*x + a)/b - 1/4*arcsin(b*x + a)/b
```

3.315 $\int \sqrt{1-a^2-2abx-b^2x^2}\sin^{-1}(a+bx)\,dx$

Optimal. Leaf size=63

$$-\frac{(a+bx)^2}{4b}+\frac{\sqrt{1-(a+bx)^2}(a+bx)\sin^{-1}(a+bx)}{2b}+\frac{\sin^{-1}(a+bx)^2}{4b}$$

```
[Out] -(a + b*x)^2/(4*b) + ((a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/(2*b
) + ArcSin[a + b*x]^2/(4*b)
```

Rubi [A] time = 0.070168, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.129, Rules used = {4807, 4647, 4641, 30}

$$-\frac{(a+bx)^2}{4b}+\frac{\sqrt{1-(a+bx)^2}(a+bx)\sin^{-1}(a+bx)}{2b}+\frac{\sin^{-1}(a+bx)^2}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x],x]
```

```
[Out] -(a + b*x)^2/(4*b) + ((a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/(2*b
) + ArcSin[a + b*x]^2/(4*b)
```

Rule 4807

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-(C/d^2) + (C*x^2)/d^
2)^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C
, n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rubi steps

$$\int \sqrt{1-a^2-2abx-b^2x^2}\sin^{-1}(a+bx)\,dx = \frac{\text{Subst}\left(\int \sqrt{1-x^2}\sin^{-1}(x)\,dx, x, a+bx\right)}{b}$$
$$= \frac{(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{2b} - \frac{\text{Subst}(\int x\,dx, x, a+bx)}{2b} + \frac{\text{Subst}}{}$$
$$= -\frac{(a+bx)^2}{4b} + \frac{(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{2b} + \frac{\sin^{-1}(a+bx)^2}{4b}$$

Mathematica [A] time = 0.0597914, size = 64, normalized size = 1.02

$$\frac{2(a+bx)\sqrt{-a^2-2abx-b^2x^2+1}\sin^{-1}(a+bx) - bx(2a+bx) + \sin^{-1}(a+bx)^2}{4b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x],x]
```

```
[Out] (-(b*x*(2*a + b*x)) + 2*(a + b*x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[
a + b*x] + ArcSin[a + b*x]^2)/(4*b)
```

Maple [A] time = 0.054, size = 96, normalized size = 1.5

$$\frac{1}{4b}\Big(2\arcsin(bx+a)\sqrt{-b^2x^2-2xab-a^2+1}xb - b^2x^2 + 2\arcsin(bx+a)\sqrt{-b^2x^2-2xab-a^2+1}a - 2xab + (\text{arcsi}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x)
```

```
[Out] 1/4*(2*arcsin(b*x+a)*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*x*b-b^2*x^2+2*arcsin(b*
x+a)*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*a-2*x*a*b+arcsin(b*x+a)^2-a^2)/b
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.46247, size = 153, normalized size = 2.43

$$-\frac{b^2x^2 + 2\,abx - 2\,\sqrt{-b^2x^2 - 2\,abx - a^2 + 1}(bx + a)\arcsin\left(bx + a\right) - \arcsin\left(bx + a\right)^2}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="fricas
")
```

```
[Out] -1/4*(b^2*x^2 + 2*a*b*x - 2*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*x + a)*ar
csin(b*x + a) - arcsin(b*x + a)^2)/b
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{-(a + bx - 1)(a + bx + 1)}\,\mathrm{asin}\left(a + bx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)*(-b**2*x**2-2*a*b*x-a**2+1)**(1/2),x)
```

```
[Out] Integral(sqrt(-(a + b*x - 1)*(a + b*x + 1))*asin(a + b*x), x)
```

Giac [A] time = 1.20567, size = 107, normalized size = 1.7

$$\frac{\sqrt{-b^2x^2-2\,abx-a^2+1}(bx+a)\arcsin{(bx+a)}}{2\,b}+\frac{\arcsin{(bx+a)}^2}{4\,b}-\frac{b^2x^2+2\,abx+a^2-1}{4\,b}-\frac{1}{8\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*x + a)*arcsin(b*x + a)/b + 1/4*ar
csin(b*x + a)^2/b - 1/4*(b^2*x^2 + 2*a*b*x + a^2 - 1)/b - 1/8/b
```

3.316 $\int \frac{\sqrt{1-a^2-2abx-b^2x^2}}{\sin^{-1}(a+bx)}\,dx$

Optimal. Leaf size=31

$$\frac{\text{CosIntegral}\left(2\sin^{-1}(a+bx)\right)}{2b}+\frac{\log\left(\sin^{-1}(a+bx)\right)}{2b}$$

```
[Out] CosIntegral[2*ArcSin[a + b*x]]/(2*b) + Log[ArcSin[a + b*x]]/(2*b)
```

Rubi [A] time = 0.121892, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {4807, 4661, 3312, 3302}

$$\frac{\text{CosIntegral}\left(2\sin^{-1}(a+bx)\right)}{2b}+\frac{\log\left(\sin^{-1}(a+bx)\right)}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]/ArcSin[a + b*x],x]
```

```
[Out] CosIntegral[2*ArcSin[a + b*x]]/(2*b) + Log[ArcSin[a + b*x]]/(2*b)
```

Rule 4807

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-(C/d^2) + (C*x^2)/d^
2)^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C
, n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 4661

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[d^p/c, Subst[Int[(a + b*x)^n*Cos[x]^(2*p + 1), x], x, ArcS
in[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IGtQ[2
*p, 0] && (IntegerQ[p] || GtQ[d, 0])
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
```

```
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sqrt{1-a^2-2abx-b^2x^2}}{\sin^{-1}(a+bx)}\,dx &= \frac{\text{Subst}\left(\int \frac{\sqrt{1-x^2}}{\sin^{-1}(x)}\,dx, x, a+bx\right)}{b}\\
&= \frac{\text{Subst}\left(\int \frac{\cos^2(x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b}\\
&= \frac{\text{Subst}\left(\int \left(\frac{1}{2x}+\frac{\cos(2x)}{2x}\right)dx, x, \sin^{-1}(a+bx)\right)}{b}\\
&= \frac{\log\left(\sin^{-1}(a+bx)\right)}{2b}+\frac{\text{Subst}\left(\int \frac{\cos(2x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{2b}\\
&= \frac{\text{Ci}\left(2\sin^{-1}(a+bx)\right)}{2b}+\frac{\log\left(\sin^{-1}(a+bx)\right)}{2b}
\end{aligned}$$

Mathematica [A] time = 0.0668839, size = 24, normalized size = 0.77

$$\frac{\text{CosIntegral}\left(2\sin^{-1}(a+bx)\right)+\log\left(\sin^{-1}(a+bx)\right)}{2b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]/ArcSin[a + b*x],x]
```

```
[Out] (CosIntegral[2*ArcSin[a + b*x]] + Log[ArcSin[a + b*x]])/(2*b)
```

Maple [A] time = 0.053, size = 28, normalized size = 0.9

$$\frac{\text{Ci}\left(2\arcsin(bx+a)\right)}{2b}+\frac{\ln\left(\arcsin(bx+a)\right)}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a),x)
```

```
[Out] 1/2*Ci(2*arcsin(b*x+a))/b+1/2*ln(arcsin(b*x+a))/b
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-b^2x^2 - 2\,abx - a^2 + 1}}{\arcsin\left(bx + a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a),x, algorithm="maxima
")
```

```
[Out] integrate(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)/arcsin(b*x + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\sqrt{-b^2x^2 - 2\,abx - a^2 + 1}}{\arcsin\left(bx + a\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a),x, algorithm="fricas
")
```

```
[Out] integral(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)/arcsin(b*x + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-\left(a + bx - 1\right)\left(a + bx + 1\right)}}{\operatorname{asin}\left(a + bx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b**2*x**2-2*a*b*x-a**2+1)**(1/2)/asin(b*x+a),x)
```

```
[Out] Integral(sqrt(-(a + b*x - 1)*(a + b*x + 1))/asin(a + b*x), x)
```

Giac [A] time = 1.20856, size = 36, normalized size = 1.16

$$\frac{\mathrm{Ci}\left(2\arcsin\left(bx+a\right)\right)}{2\,b}+\frac{\log\left(\arcsin\left(bx+a\right)\right)}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*cos_integral(2*arcsin(b*x + a))/b + 1/2*log(arcsin(b*x + a))/b
```

3.317 $\int \frac{\sqrt{1-a^2-2abx-b^2x^2}}{\sin^{-1}(a+bx)^2}\,dx$

Optimal. Leaf size=39

$$-\frac{\operatorname{Si}\left(2\sin^{-1}(a+bx)\right)}{b}-\frac{1-(a+bx)^2}{b\sin^{-1}(a+bx)}$$

```
[Out] -((1 - (a + b*x)^2)/(b*ArcSin[a + b*x])) - SinIntegral[2*ArcSin[a + b*x]]/b
```

Rubi [A] time = 0.114454, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {4807, 4659, 4635, 4406, 12, 3299}

$$-\frac{\operatorname{Si}\left(2\sin^{-1}(a+bx)\right)}{b}-\frac{1-(a+bx)^2}{b\sin^{-1}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]/ArcSin[a + b*x]^2,x]
```

```
[Out] -((1 - (a + b*x)^2)/(b*ArcSin[a + b*x])) - SinIntegral[2*ArcSin[a + b*x]]/b
```

Rule 4807

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-(C/d^2) + (C*x^2)/d^
2)^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C
, n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 4659

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[(Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*(a + b*ArcSin[c*x])^(n + 1
))/(b*c*(n + 1)), x] + Dist[(c*(2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[
p])/(b*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a
 + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^
2*d + e, 0] && LtQ[n, -1]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sqrt{1-a^2-2abx-b^2x^2}}{\sin^{-1}(a+bx)^2}\,dx &= \frac{\text{Subst}\left(\int \frac{\sqrt{1-x^2}}{\sin^{-1}(x)^2}\,dx, x, a+bx\right)}{b}\\
&= -\frac{1-(a+bx)^2}{b\sin^{-1}(a+bx)} - \frac{2\,\text{Subst}\left(\int \frac{x}{\sin^{-1}(x)}\,dx, x, a+bx\right)}{b}\\
&= -\frac{1-(a+bx)^2}{b\sin^{-1}(a+bx)} - \frac{2\,\text{Subst}\left(\int \frac{\cos(x)\sin(x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b}\\
&= -\frac{1-(a+bx)^2}{b\sin^{-1}(a+bx)} - \frac{2\,\text{Subst}\left(\int \frac{\sin(2x)}{2x}\,dx, x, \sin^{-1}(a+bx)\right)}{b}\\
&= -\frac{1-(a+bx)^2}{b\sin^{-1}(a+bx)} - \frac{\text{Subst}\left(\int \frac{\sin(2x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b}\\
&= -\frac{1-(a+bx)^2}{b\sin^{-1}(a+bx)} - \frac{\text{Si}\left(2\sin^{-1}(a+bx)\right)}{b}
\end{aligned}
$$

Mathematica [A] time = 0.0580095, size = 46, normalized size = 1.18

$$\frac{a^2-\sin^{-1}(a+bx)\mathrm{Si}\left(2\sin^{-1}(a+bx)\right)+2abx+b^2x^2-1}{b\sin^{-1}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]/ArcSin[a + b*x]^2,x]
```

```
[Out] (-1 + a^2 + 2*a*b*x + b^2*x^2 - ArcSin[a + b*x]*SinIntegral[2*ArcSin[a + b*
x]])/(b*ArcSin[a + b*x])
```

Maple [A] time = 0.051, size = 42, normalized size = 1.1

$$-\frac{2\,\mathrm{Si}\left(2\,\arcsin\left(bx+a\right)\right)\arcsin\left(bx+a\right)+\cos\left(2\,\arcsin\left(bx+a\right)\right)+1}{2\,b\arcsin\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a)^2,x)
```

```
[Out] -1/2/b*(2*Si(2*arcsin(b*x+a))*arcsin(b*x+a)+cos(2*arcsin(b*x+a))+1)/arcsin(
b*x+a)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{b^2x^2+2\,abx-2\,b\arctan\left(bx+a,\sqrt{bx+a+1}\sqrt{-bx-a+1}\right)\int\frac{bx+a}{\arctan\left(bx+a,\sqrt{bx+a+1}\sqrt{-bx-a+1}\right)}\,dx+a^2-1}{b\arctan\left(bx+a,\sqrt{bx+a+1}\sqrt{-bx-a+1}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a)^2,x, algorithm="maxi
ma")
```

```
[Out] (b^2*x^2 + 2*a*b*x - b*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1
))*integrate(2*(b*x + a)/arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a +
 1)), x) + a^2 - 1)/(b*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1
```

```
)))
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{-b^{2} x^{2} - 2\,abx - a^{2} + 1}}{\arcsin\left(bx + a\right)^{2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a)^2,x, algorithm="fric
as")
```

```
[Out] integral(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)/arcsin(b*x + a)^2, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-\left(a + bx - 1\right)\left(a + bx + 1\right)}}{\operatorname{asin}^{2}\left(a + bx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b**2*x**2-2*a*b*x-a**2+1)**(1/2)/asin(b*x+a)**2,x)
```

```
[Out] Integral(sqrt(-(a + b*x - 1)*(a + b*x + 1))/asin(a + b*x)**2, x)
```

Giac [A] time = 1.27118, size = 59, normalized size = 1.51

$$-\frac{\operatorname{Si}\left(2\,\arcsin\left(bx + a\right)\right)}{b} + \frac{b^{2} x^{2} + 2\,abx + a^{2} - 1}{b \arcsin\left(bx + a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a)^2,x, algorithm="giac
")
```

```
[Out] -sin_integral(2*arcsin(b*x + a))/b + (b^2*x^2 + 2*a*b*x + a^2 - 1)/(b*arcsi
n(b*x + a))
```

3.318 $\int \frac{\sqrt{1-a^2-2abx-b^2x^2}}{\sin^{-1}(a+bx)^3}\,dx$

Optimal. Leaf size=73

$$-\frac{\text{CosIntegral}\left(2\sin^{-1}(a+bx)\right)}{b}+\frac{\sqrt{1-(a+bx)^2}(a+bx)}{b\sin^{-1}(a+bx)}-\frac{1-(a+bx)^2}{2b\sin^{-1}(a+bx)^2}$$

```
[Out] -(1 - (a + b*x)^2)/(2*b*ArcSin[a + b*x]^2) + ((a + b*x)*Sqrt[1 - (a + b*x)^
2])/(b*ArcSin[a + b*x]) - CosIntegral[2*ArcSin[a + b*x]]/b
```

Rubi [A] time = 0.112751, antiderivative size = 73, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {4807, 4659, 4631, 3302}

$$-\frac{\text{CosIntegral}\left(2\sin^{-1}(a+bx)\right)}{b}+\frac{\sqrt{1-(a+bx)^2}(a+bx)}{b\sin^{-1}(a+bx)}-\frac{1-(a+bx)^2}{2b\sin^{-1}(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]/ArcSin[a + b*x]^3,x]
```

```
[Out] -(1 - (a + b*x)^2)/(2*b*ArcSin[a + b*x]^2) + ((a + b*x)*Sqrt[1 - (a + b*x)^
2])/(b*ArcSin[a + b*x]) - CosIntegral[2*ArcSin[a + b*x]]/b
```

Rule 4807

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-(C/d^2) + (C*x^2)/d^
2)^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C
, n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 4659

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[(Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*(a + b*ArcSin[c*x])^(n + 1
))/(b*c*(n + 1)), x] + Dist[(c*(2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[
p])/(b*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a
 + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^
2*d + e, 0] && LtQ[n, -1]
```

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sqrt{1-a^2-2abx-b^2x^2}}{\sin^{-1}(a+bx)^3}\,dx &= \frac{\text{Subst}\left(\int \frac{\sqrt{1-x^2}}{\sin^{-1}(x)^3}\,dx, x, a+bx\right)}{b}\\
&= -\frac{1-(a+bx)^2}{2b\sin^{-1}(a+bx)^2} - \frac{\text{Subst}\left(\int \frac{x}{\sin^{-1}(x)^2}\,dx, x, a+bx\right)}{b}\\
&= -\frac{1-(a+bx)^2}{2b\sin^{-1}(a+bx)^2} + \frac{(a+bx)\sqrt{1-(a+bx)^2}}{b\sin^{-1}(a+bx)} - \frac{\text{Subst}\left(\int \frac{\cos(2x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b}\\
&= -\frac{1-(a+bx)^2}{2b\sin^{-1}(a+bx)^2} + \frac{(a+bx)\sqrt{1-(a+bx)^2}}{b\sin^{-1}(a+bx)} - \frac{\text{Ci}\left(2\sin^{-1}(a+bx)\right)}{b}
\end{aligned}
$$

Mathematica [A] time = 0.270439, size = 88, normalized size = 1.21

$$
\frac{2(a+bx)\sqrt{-a^2-2abx-b^2x^2+1}\,\sin^{-1}(a+bx)+a^2-2\sin^{-1}(a+bx)^2\text{CosIntegral}\left(2\sin^{-1}(a+bx)\right)+2abx+b^2x^2-}{2b\sin^{-1}(a+bx)^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]/ArcSin[a + b*x]^3,x]
```

```
[Out] (-1 + a^2 + 2*a*b*x + b^2*x^2 + 2*(a + b*x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^
2]*ArcSin[a + b*x] - 2*ArcSin[a + b*x]^2*CosIntegral[2*ArcSin[a + b*x]])/(2
*b*ArcSin[a + b*x]^2)
```

Maple [A] time = 0.05, size = 61, normalized size = 0.8

$$-\frac{4\,\mathrm{Ci}\left(2\arcsin\left(bx+a\right)\right)\left(\arcsin\left(bx+a\right)\right)^{2}-2\sin\left(2\arcsin\left(bx+a\right)\right)\arcsin\left(bx+a\right)+\cos\left(2\arcsin\left(bx+a\right)\right)+1}{4\,b\left(\arcsin\left(bx+a\right)\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a)^3,x)
```

```
[Out] -1/4/b*(4*Ci(2*arcsin(b*x+a))*arcsin(b*x+a)^2-2*sin(2*arcsin(b*x+a))*arcsin
(b*x+a)+cos(2*arcsin(b*x+a))+1)/arcsin(b*x+a)^2
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a)^3,x, algorithm="maxi
ma")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\sqrt{-b^{2}x^{2}-2\,abx-a^{2}+1}}{\arcsin\left(bx+a\right)^{3}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a)^3,x, algorithm="fric
as")
```

```
[Out] integral(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)/arcsin(b*x + a)^3, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-\left(a+bx-1\right)\left(a+bx+1\right)}}{\operatorname{asin}^{3}\left(a+bx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b**2*x**2-2*a*b*x-a**2+1)**(1/2)/asin(b*x+a)**3,x)
```

```
[Out] Integral(sqrt(-(a + b*x - 1)*(a + b*x + 1))/asin(a + b*x)**3, x)
```

Giac [A] time = 1.37681, size = 113, normalized size = 1.55

$$-\frac{\operatorname{Ci}\left(2\arcsin\left(bx+a\right)\right)}{b}+\frac{\sqrt{-b^{2}x^{2}-2\,abx-a^{2}+1}\left(bx+a\right)}{b\arcsin\left(bx+a\right)}+\frac{b^{2}x^{2}+2\,abx+a^{2}-1}{2\,b\arcsin\left(bx+a\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a)^3,x, algorithm="giac
")
```

```
[Out] -cos_integral(2*arcsin(b*x + a))/b + sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*
x + a)/(b*arcsin(b*x + a)) + 1/2*(b^2*x^2 + 2*a*b*x + a^2 - 1)/(b*arcsin(b*
x + a)^2)
```

3.319 $\int \frac{\sqrt{1-a^2-2abx-b^2x^2}}{\sin^{-1}(a+bx)^4}\,dx$

Optimal. Leaf size=115

$$\frac{2\mathrm{Si}\left(2\sin^{-1}(a+bx)\right)}{3b}-\frac{2(a+bx)^2}{3b\sin^{-1}(a+bx)}+\frac{\sqrt{1-(a+bx)^2}(a+bx)}{3b\sin^{-1}(a+bx)^2}+\frac{1}{3b\sin^{-1}(a+bx)}-\frac{1-(a+bx)^2}{3b\sin^{-1}(a+bx)^3}$$

```
[Out] -(1 - (a + b*x)^2)/(3*b*ArcSin[a + b*x]^3) + ((a + b*x)*Sqrt[1 - (a + b*x)^
2])/(3*b*ArcSin[a + b*x]^2) + 1/(3*b*ArcSin[a + b*x]) - (2*(a + b*x)^2)/(3*
b*ArcSin[a + b*x]) + (2*SinIntegral[2*ArcSin[a + b*x]])/(3*b)
```

Rubi [A] time = 0.224037, antiderivative size = 115, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 9, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {4807, 4659, 4633, 4719, 4635, 4406, 12, 3299, 4641}

$$\frac{2\mathrm{Si}\left(2\sin^{-1}(a+bx)\right)}{3b}-\frac{2(a+bx)^2}{3b\sin^{-1}(a+bx)}+\frac{\sqrt{1-(a+bx)^2}(a+bx)}{3b\sin^{-1}(a+bx)^2}+\frac{1}{3b\sin^{-1}(a+bx)}-\frac{1-(a+bx)^2}{3b\sin^{-1}(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]/ArcSin[a + b*x]^4,x]
```


```
[Out] -(1 - (a + b*x)^2)/(3*b*ArcSin[a + b*x]^3) + ((a + b*x)*Sqrt[1 - (a + b*x)^
2])/(3*b*ArcSin[a + b*x]^2) + 1/(3*b*ArcSin[a + b*x]) - (2*(a + b*x)^2)/(3*
b*ArcSin[a + b*x]) + (2*SinIntegral[2*ArcSin[a + b*x]])/(3*b)
```


Rule 4807

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-(C/d^2) + (C*x^2)/d^
2)^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C
, n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 4659

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[(Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*(a + b*ArcSin[c*x])^(n + 1
))/(b*c*(n + 1)), x] + Dist[(c*(2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[
p])/(b*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a
 + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^
```

```
2*d + e, 0] && LtQ[n, -1]
```

Rule 4633

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (Dis
t[(c*(m + 1))/(b*(n + 1)), Int[(x^(m + 1)*(a + b*ArcSin[c*x])^(n + 1))/Sqrt
[1 - c^2*x^2], x], x] - Dist[m/(b*c*(n + 1)), Int[(x^(m - 1)*(a + b*ArcSin[
c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{\sqrt{1-a^2-2abx-b^2x^2}}{\sin^{-1}(a+bx)^4}\,dx = \frac{\text{Subst}\left(\int \frac{\sqrt{1-x^2}}{\sin^{-1}(x)^4}\,dx,x,a+bx\right)}{b}$$

$$= -\frac{1-(a+bx)^2}{3b\sin^{-1}(a+bx)^3} - \frac{2\,\text{Subst}\left(\int \frac{x}{\sin^{-1}(x)^3}\,dx,x,a+bx\right)}{3b}$$

$$= -\frac{1-(a+bx)^2}{3b\sin^{-1}(a+bx)^3} + \frac{(a+bx)\sqrt{1-(a+bx)^2}}{3b\sin^{-1}(a+bx)^2} - \frac{\text{Subst}\left(\int \frac{1}{\sqrt{1-x^2}\sin^{-1}(x)^2}\,dx,x,a+bx\right)}{3b} + \cdots$$

$$= -\frac{1-(a+bx)^2}{3b\sin^{-1}(a+bx)^3} + \frac{(a+bx)\sqrt{1-(a+bx)^2}}{3b\sin^{-1}(a+bx)^2} + \frac{1}{3b\sin^{-1}(a+bx)} - \frac{2(a+bx)^2}{3b\sin^{-1}(a+bx)} + \frac{4\,\text{S}\cdots}{\cdots}$$

$$= -\frac{1-(a+bx)^2}{3b\sin^{-1}(a+bx)^3} + \frac{(a+bx)\sqrt{1-(a+bx)^2}}{3b\sin^{-1}(a+bx)^2} + \frac{1}{3b\sin^{-1}(a+bx)} - \frac{2(a+bx)^2}{3b\sin^{-1}(a+bx)} + \frac{4\,\text{S}\cdots}{\cdots}$$

$$= -\frac{1-(a+bx)^2}{3b\sin^{-1}(a+bx)^3} + \frac{(a+bx)\sqrt{1-(a+bx)^2}}{3b\sin^{-1}(a+bx)^2} + \frac{1}{3b\sin^{-1}(a+bx)} - \frac{2(a+bx)^2}{3b\sin^{-1}(a+bx)} + \frac{4\,\text{S}\cdots}{\cdots}$$

$$= -\frac{1-(a+bx)^2}{3b\sin^{-1}(a+bx)^3} + \frac{(a+bx)\sqrt{1-(a+bx)^2}}{3b\sin^{-1}(a+bx)^2} + \frac{1}{3b\sin^{-1}(a+bx)} - \frac{2(a+bx)^2}{3b\sin^{-1}(a+bx)} + \frac{2\,\text{S}\cdots}{\cdots}$$

$$= -\frac{1-(a+bx)^2}{3b\sin^{-1}(a+bx)^3} + \frac{(a+bx)\sqrt{1-(a+bx)^2}}{3b\sin^{-1}(a+bx)^2} + \frac{1}{3b\sin^{-1}(a+bx)} - \frac{2(a+bx)^2}{3b\sin^{-1}(a+bx)} + \frac{2\text{S}\cdots}{\cdots}$$

Mathematica [A] time = 0.110668, size = 117, normalized size = 1.02

$$\frac{-\left(2a^2+4abx+2b^2x^2-1\right)\sin^{-1}(a+bx)^2+(a+bx)\sqrt{-a^2-2abx-b^2x^2+1}\,\sin^{-1}(a+bx)+a^2+2\sin^{-1}(a+bx)^3\,\text{Si}\left(2\,\text{s}\cdots\right.}{3b\sin^{-1}(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]/ArcSin[a + b*x]^4,x]
```

```
[Out] (-1 + a^2 + 2*a*b*x + b^2*x^2 + (a + b*x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]
*ArcSin[a + b*x] - (-1 + 2*a^2 + 4*a*b*x + 2*b^2*x^2)*ArcSin[a + b*x]^2 + 2
```

```
*ArcSin[a + b*x]^3*SinIntegral[2*ArcSin[a + b*x]])/(3*b*ArcSin[a + b*x]^3)
```

Maple [A] time = 0.053, size = 81, normalized size = 0.7

$$\frac{4\,\mathrm{Si}\left(2\arcsin\left(bx+a\right)\right)\left(\arcsin\left(bx+a\right)\right)^{3}+2\cos\left(2\arcsin\left(bx+a\right)\right)\left(\arcsin\left(bx+a\right)\right)^{2}+\sin\left(2\arcsin\left(bx+a\right)\right)\arcsin}{6\,b\left(\arcsin\left(bx+a\right)\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a)^4,x)
```

```
[Out] 1/6/b*(4*Si(2*arcsin(b*x+a))*arcsin(b*x+a)^3+2*cos(2*arcsin(b*x+a))*arcsin(
b*x+a)^2+sin(2*arcsin(b*x+a))*arcsin(b*x+a)-cos(2*arcsin(b*x+a))-1)/arcsin(
b*x+a)^3
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a)^4,x, algorithm="maxi
ma")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\sqrt{-b^{2}x^{2}-2\,abx-a^{2}+1}}{\arcsin\left(bx+a\right)^{4}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a)^4,x, algorithm="fric
as")
```

```
[Out] integral(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)/arcsin(b*x + a)^4, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-(a+bx-1)(a+bx+1)}}{\operatorname{asin}^4(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b**2*x**2-2*a*b*x-a**2+1)**(1/2)/asin(b*x+a)**4,x)
```

```
[Out] Integral(sqrt(-(a + b*x - 1)*(a + b*x + 1))/asin(a + b*x)**4, x)
```

Giac [A] time = 1.3426, size = 173, normalized size = 1.5

$$\frac{2\,\mathrm{Si}(2\arcsin(bx+a))}{3\,b} - \frac{2\left(b^2x^2+2\,abx+a^2-1\right)}{3\,b\arcsin(bx+a)} + \frac{\sqrt{-b^2x^2-2\,abx-a^2+1}(bx+a)}{3\,b\arcsin(bx+a)^2} - \frac{1}{3\,b\arcsin(bx+a)} + \frac{b^2x^2+2}{3\,b\operatorname{arcs}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a)^4,x, algorithm="giac
")
```

```
[Out] 2/3*sin_integral(2*arcsin(b*x + a))/b - 2/3*(b^2*x^2 + 2*a*b*x + a^2 - 1)/(
b*arcsin(b*x + a)) + 1/3*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*x + a)/(b*ar
csin(b*x + a)^2) - 1/3/(b*arcsin(b*x + a)) + 1/3*(b^2*x^2 + 2*a*b*x + a^2 -
 1)/(b*arcsin(b*x + a)^3)
```

3.320 $\int \left(1-a^2-2abx-b^2x^2\right)^{3/2} \sin^{-1}(a+bx)^3 \, dx$

Optimal. Leaf size=245

$$-\frac{3(a+bx)^4}{128b}+\frac{51(a+bx)^2}{128b}-\frac{9(a+bx)^2\sin^{-1}(a+bx)^2}{16b}+\frac{\left(1-(a+bx)^2\right)^{3/2}(a+bx)\sin^{-1}(a+bx)^3}{4b}+\frac{3\sqrt{1-(a+bx)^2}(a$$

```
[Out] (51*(a + b*x)^2)/(128*b) - (3*(a + b*x)^4)/(128*b) - (45*(a + b*x)*Sqrt[1 -
 (a + b*x)^2]*ArcSin[a + b*x])/(64*b) - (3*(a + b*x)*(1 - (a + b*x)^2)^(3/2
)*ArcSin[a + b*x])/(32*b) + (27*ArcSin[a + b*x]^2)/(128*b) - (9*(a + b*x)^2
*ArcSin[a + b*x]^2)/(16*b) + (3*(1 - (a + b*x)^2)^2*ArcSin[a + b*x]^2)/(16*
b) + (3*(a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^3)/(8*b) + ((a + b*
x)*(1 - (a + b*x)^2)^(3/2)*ArcSin[a + b*x]^3)/(4*b) + (3*ArcSin[a + b*x]^4)
/(32*b)
```

Rubi [A] time = 0.324746, antiderivative size = 245, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 9, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {4807, 4649, 4647, 4641, 4627, 4707, 30, 4677, 14}

$$-\frac{3(a+bx)^4}{128b}+\frac{51(a+bx)^2}{128b}-\frac{9(a+bx)^2\sin^{-1}(a+bx)^2}{16b}+\frac{\left(1-(a+bx)^2\right)^{3/2}(a+bx)\sin^{-1}(a+bx)^3}{4b}+\frac{3\sqrt{1-(a+bx)^2}(a$$

Antiderivative was successfully verified.

```
[In] Int[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)*ArcSin[a + b*x]^3,x]
```


```
[Out] (51*(a + b*x)^2)/(128*b) - (3*(a + b*x)^4)/(128*b) - (45*(a + b*x)*Sqrt[1 -
 (a + b*x)^2]*ArcSin[a + b*x])/(64*b) - (3*(a + b*x)*(1 - (a + b*x)^2)^(3/2
)*ArcSin[a + b*x])/(32*b) + (27*ArcSin[a + b*x]^2)/(128*b) - (9*(a + b*x)^2
*ArcSin[a + b*x]^2)/(16*b) + (3*(1 - (a + b*x)^2)^2*ArcSin[a + b*x]^2)/(16*
b) + (3*(a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^3)/(8*b) + ((a + b*
x)*(1 - (a + b*x)^2)^(3/2)*ArcSin[a + b*x]^3)/(4*b) + (3*ArcSin[a + b*x]^4)
/(32*b)
```


Rule 4807

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-(C/d^2) + (C*x^2)/d^
2)^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C
, n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
```

```
eQ[m, -1]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rubi steps

$$\int \left(1-a^2-2abx-b^2x^2\right)^{3/2}\sin^{-1}(a+bx)^3\,dx = \frac{\text{Subst}\left(\int \left(1-x^2\right)^{3/2}\sin^{-1}(x)^3\,dx, x, a+bx\right)}{b}$$

$$= \frac{(a+bx)\left(1-(a+bx)^2\right)^{3/2}\sin^{-1}(a+bx)^3}{4b} - \frac{3\,\text{Subst}\left(\int x\left(1-x^2\right)\sin^{-1}\right.}{4b}$$

$$= \frac{3\left(1-(a+bx)^2\right)^2\sin^{-1}(a+bx)^2}{16b} + \frac{3(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+}{8b}$$

$$= -\frac{3(a+bx)\left(1-(a+bx)^2\right)^{3/2}\sin^{-1}(a+bx)}{32b} - \frac{9(a+bx)^2\sin^{-1}(a+bx)^2}{16b}$$

$$= -\frac{45(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{64b} - \frac{3(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{32b}$$

$$= \frac{51(a+bx)^2}{128b} - \frac{3(a+bx)^4}{128b} - \frac{45(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{64b} -$$

Mathematica [A] time = 0.216258, size = 272, normalized size = 1.11

$$\frac{3\left(17-6a^2\right)b^2x^2-16\sqrt{-a^2-2abx-b^2x^2+1}\left(6a^2bx+2a^3+6ab^2x^2-5a+2b^3x^3-5bx\right)\sin^{-1}(a+bx)^3+3\left(8a^2\left(6b^2x\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)*ArcSin[a + b*x]^3,x]
```

```
[Out] (6*a*(17 - 2*a^2)*b*x + 3*(17 - 6*a^2)*b^2*x^2 - 12*a*b^3*x^3 - 3*b^4*x^4 +
 6*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*(-17*a + 2*a^3 - 17*b*x + 6*a^2*b*x +
6*a*b^2*x^2 + 2*b^3*x^3)*ArcSin[a + b*x] + 3*(17 + 8*a^4 + 32*a^3*b*x - 40*
b^2*x^2 + 8*b^4*x^4 + 16*a*b*x*(-5 + 2*b^2*x^2) + 8*a^2*(-5 + 6*b^2*x^2))*A
rcSin[a + b*x]^2 - 16*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*(-5*a + 2*a^3 - 5*b
*x + 6*a^2*b*x + 6*a*b^2*x^2 + 2*b^3*x^3)*ArcSin[a + b*x]^3 + 12*ArcSin[a +
 b*x]^4)/(128*b)
```

Maple [B] time = 0.094, size = 628, normalized size = 2.6

$$\frac{1}{128\,b}\Big(-12+51\,a^2-240\,(\arcsin(bx+a))^2\,xab-102\,\arcsin(bx+a)\,\sqrt{-b^2x^2-2\,xab-a^2+1}\,xb+80\,(\arcsin(bx+a))^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)*arcsin(b*x+a)^3,x)
```

```
[Out] 1/128*(-12+51*a^2-240*arcsin(b*x+a)^2*x*a*b-102*arcsin(b*x+a)*(-b^2*x^2-2*a
*b*x-a^2+1)^(1/2)*x*b+80*arcsin(b*x+a)^3*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*x*b
-96*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)^3*x*a^2*b+12*arcsin(b*x+a)
^4+96*arcsin(b*x+a)^2*x^3*a*b^3+144*arcsin(b*x+a)^2*x^2*a^2*b^2+96*arcsin(b
*x+a)^2*x*a^3*b-32*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)^3*x^3*b^3+1
2*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)*x^3*b^3-120*arcsin(b*x+a)^2*
x^2*b^2-18*x^2*a^2*b^2+36*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)*x^2*
a*b^2+36*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)*x*a^2*b-96*(-b^2*x^2-
2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)^3*x^2*a*b^2-12*x^3*a*b^3-12*x*a^3*b+24*a
rcsin(b*x+a)^2*x^4*b^4-32*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)^3*a^
3+12*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)*a^3+80*arcsin(b*x+a)^3*(-
b^2*x^2-2*a*b*x-a^2+1)^(1/2)*a-102*arcsin(b*x+a)*(-b^2*x^2-2*a*b*x-a^2+1)^(
1/2)*a-3*a^4+102*x*a*b-3*x^4*b^4+24*arcsin(b*x+a)^2*a^4-120*arcsin(b*x+a)^2
*a^2+51*b^2*x^2+51*arcsin(b*x+a)^2)/b
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)*arcsin(b*x+a)^3,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.50564, size = 574, normalized size = 2.34

$$-\frac{3\,b^4x^4+12\,ab^3x^3+3\left(6\,a^2-17\right)b^2x^2-12\,\arcsin\left(bx+a\right)^4+6\left(2\,a^3-17\,a\right)bx-3\left(8\,b^4x^4+32\,ab^3x^3+8\left(6\,a^2-5\right)b^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)*arcsin(b*x+a)^3,x, algorithm="fric
as")
```

```
[Out] -1/128*(3*b^4*x^4 + 12*a*b^3*x^3 + 3*(6*a^2 - 17)*b^2*x^2 - 12*arcsin(b*x +
 a)^4 + 6*(2*a^3 - 17*a)*b*x - 3*(8*b^4*x^4 + 32*a*b^3*x^3 + 8*(6*a^2 - 5)*
b^2*x^2 + 8*a^4 + 16*(2*a^3 - 5*a)*b*x - 40*a^2 + 17)*arcsin(b*x + a)^2 + 2
*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(8*(2*b^3*x^3 + 6*a*b^2*x^2 + 2*a^3 + (
6*a^2 - 5)*b*x - 5*a)*arcsin(b*x + a)^3 - 3*(2*b^3*x^3 + 6*a*b^2*x^2 + 2*a^
3 + (6*a^2 - 17)*b*x - 17*a)*arcsin(b*x + a)))/b
```

Sympy [A] time = 26.9102, size = 694, normalized size = 2.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b**2*x**2-2*a*b*x-a**2+1)**(3/2)*asin(b*x+a)**3,x)
```

```
[Out] Piecewise((3*a**4*asin(a + b*x)**2/(16*b) + 3*a**3*x*asin(a + b*x)**2/4 - 3
*a**3*x/32 - a**3*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)**3/(4
*b) + 3*a**3*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/(32*b) + 9
*a**2*b*x**2*asin(a + b*x)**2/8 - 9*a**2*b*x**2/64 - 3*a**2*x*sqrt(-a**2 -
2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)**3/4 + 9*a**2*x*sqrt(-a**2 - 2*a*b*x
 - b**2*x**2 + 1)*asin(a + b*x)/32 - 15*a**2*asin(a + b*x)**2/(16*b) + 3*a*
b**2*x**3*asin(a + b*x)**2/4 - 3*a*b**2*x**3/32 - 3*a*b*x**2*sqrt(-a**2 - 2
*a*b*x - b**2*x**2 + 1)*asin(a + b*x)**3/4 + 9*a*b*x**2*sqrt(-a**2 - 2*a*b*
x - b**2*x**2 + 1)*asin(a + b*x)/32 - 15*a*x*asin(a + b*x)**2/8 + 51*a*x/64
```

```
 + 5*a*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)**3/(8*b) - 51*a*
sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/(64*b) + 3*b**3*x**4*as
in(a + b*x)**2/16 - 3*b**3*x**4/128 - b**2*x**3*sqrt(-a**2 - 2*a*b*x - b**2
*x**2 + 1)*asin(a + b*x)**3/4 + 3*b**2*x**3*sqrt(-a**2 - 2*a*b*x - b**2*x**
2 + 1)*asin(a + b*x)/32 - 15*b*x**2*asin(a + b*x)**2/16 + 51*b*x**2/128 + 5
*x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)**3/8 - 51*x*sqrt(-a*
*2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/64 + 3*asin(a + b*x)**4/(32*b)
+ 51*asin(a + b*x)**2/(128*b), Ne(b, 0)), (x*(1 - a**2)**(3/2)*asin(a)**3,
True))
```

Giac [A] time = 1.31244, size = 400, normalized size = 1.63

$$\frac{\left(-b^2x^2 - 2\,abx - a^2 + 1\right)^{\frac{3}{2}}(bx + a)\arcsin\left(bx + a\right)^3}{4\,b} + \frac{3\,\sqrt{-b^2x^2 - 2\,abx - a^2 + 1}(bx + a)\arcsin\left(bx + a\right)^3}{8\,b} + \frac{3\,\left(b^2x^2 + 2\,a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)*arcsin(b*x+a)^3,x, algorithm="giac
")
```

```
[Out] 1/4*(-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)*(b*x + a)*arcsin(b*x + a)^3/b + 3/
8*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*x + a)*arcsin(b*x + a)^3/b + 3/16*(
b^2*x^2 + 2*a*b*x + a^2 - 1)^2*arcsin(b*x + a)^2/b + 3/32*arcsin(b*x + a)^4
/b - 3/32*(-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)*(b*x + a)*arcsin(b*x + a)/b
- 9/16*(b^2*x^2 + 2*a*b*x + a^2 - 1)*arcsin(b*x + a)^2/b - 45/64*sqrt(-b^2*
x^2 - 2*a*b*x - a^2 + 1)*(b*x + a)*arcsin(b*x + a)/b - 3/128*(b^2*x^2 + 2*a
*b*x + a^2 - 1)^2/b - 45/128*arcsin(b*x + a)^2/b + 45/128*(b^2*x^2 + 2*a*b*
x + a^2 - 1)/b + 189/1024/b
```

3.321 $\int \left(1-a^2-2abx-b^2x^2\right)^{3/2} \sin^{-1}(a+bx)^2 \, dx$

Optimal. Leaf size=199

$$-\frac{(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{32b}-\frac{15(a+bx)\sqrt{1-(a+bx)^2}}{64b}+\frac{\sin^{-1}(a+bx)^3}{8b}+\frac{(a+bx)\left(1-(a+bx)^2\right)^{3/2}\sin^{-1}(a+bx)^2}{4b}+$$

```
[Out] (-15*(a + b*x)*Sqrt[1 - (a + b*x)^2])/(64*b) - ((a + b*x)*(1 - (a + b*x)^2)
^(3/2))/(32*b) + (9*ArcSin[a + b*x])/(64*b) - (3*(a + b*x)^2*ArcSin[a + b*x
])/(8*b) + ((1 - (a + b*x)^2)^2*ArcSin[a + b*x])/(8*b) + (3*(a + b*x)*Sqrt[
1 - (a + b*x)^2]*ArcSin[a + b*x]^2)/(8*b) + ((a + b*x)*(1 - (a + b*x)^2)^(3
/2)*ArcSin[a + b*x]^2)/(4*b) + ArcSin[a + b*x]^3/(8*b)
```

Rubi [A] time = 0.204458, antiderivative size = 199, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 9, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {4807, 4649, 4647, 4641, 4627, 321, 216, 4677, 195}

$$-\frac{(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{32b}-\frac{15(a+bx)\sqrt{1-(a+bx)^2}}{64b}+\frac{\sin^{-1}(a+bx)^3}{8b}+\frac{(a+bx)\left(1-(a+bx)^2\right)^{3/2}\sin^{-1}(a+bx)^2}{4b}+$$

Antiderivative was successfully verified.

```
[In] Int[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)*ArcSin[a + b*x]^2,x]
```


```
[Out] (-15*(a + b*x)*Sqrt[1 - (a + b*x)^2])/(64*b) - ((a + b*x)*(1 - (a + b*x)^2)
^(3/2))/(32*b) + (9*ArcSin[a + b*x])/(64*b) - (3*(a + b*x)^2*ArcSin[a + b*x
])/(8*b) + ((1 - (a + b*x)^2)^2*ArcSin[a + b*x])/(8*b) + (3*(a + b*x)*Sqrt[
1 - (a + b*x)^2]*ArcSin[a + b*x]^2)/(8*b) + ((a + b*x)*(1 - (a + b*x)^2)^(3
/2)*ArcSin[a + b*x]^2)/(4*b) + ArcSin[a + b*x]^3/(8*b)
```


Rule 4807

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-(C/d^2) + (C*x^2)/d^
2)^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C
, n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
```

```
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
```

```
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rubi steps

$$\int \left(1-a^2-2abx-b^2x^2\right)^{3/2}\sin^{-1}(a+bx)^2\,dx = \frac{\text{Subst}\left(\int \left(1-x^2\right)^{3/2}\sin^{-1}(x)^2\,dx, x, a+bx\right)}{b}$$

$$= \frac{(a+bx)\left(1-(a+bx)^2\right)^{3/2}\sin^{-1}(a+bx)^2}{4b} - \frac{\text{Subst}\left(\int x\left(1-x^2\right)\sin^{-1}(x\right.}{2b}$$

$$= \frac{\left(1-(a+bx)^2\right)^2\sin^{-1}(a+bx)}{8b} + \frac{3(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{8b}$$

$$= -\frac{(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{32b} - \frac{3(a+bx)^2\sin^{-1}(a+bx)}{8b} + \frac{\left(1-(a+bx)\right.}{}$$

$$= -\frac{15(a+bx)\sqrt{1-(a+bx)^2}}{64b} - \frac{(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{32b} - \frac{3(a+bx)^2\,\mathrm{s}}{8}$$

$$= -\frac{15(a+bx)\sqrt{1-(a+bx)^2}}{64b} - \frac{(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{32b} + \frac{9\sin^{-1}(a+}{64b}$$

Mathematica [A] time = 0.177784, size = 216, normalized size = 1.09

$$\frac{\sqrt{-a^2-2abx-b^2x^2+1}\left(6a^2bx+2a^3+6ab^2x^2-17a+2b^3x^3-17bx\right)-8\sqrt{-a^2-2abx-b^2x^2+1}\left(6a^2bx+2a^3+6ab^2\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)*ArcSin[a + b*x]^2,x]
```

```
[Out] (Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*(-17*a + 2*a^3 - 17*b*x + 6*a^2*b*x + 6*
a*b^2*x^2 + 2*b^3*x^3) + (17 - 40*a^2 + 8*a^4)*ArcSin[a + b*x] + 8*b*x*(-10
*a + 4*a^3 - 5*b*x + 6*a^2*b*x + 4*a*b^2*x^2 + b^3*x^3)*ArcSin[a + b*x] - 8
*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*(-5*a + 2*a^3 - 5*b*x + 6*a^2*b*x + 6*a*
b^2*x^2 + 2*b^3*x^3)*ArcSin[a + b*x]^2 + 8*ArcSin[a + b*x]^3)/(64*b)
```

Maple [B] time = 0.083, size = 515, normalized size = 2.6

$$\frac{1}{64\,b}\Big(-16\,\sqrt{-b^2x^2-2\,xab-a^2+1}\,(\arcsin(bx+a))^2\,x^3b^3+8\,\arcsin(bx+a)\,x^4b^4-48\,\sqrt{-b^2x^2-2\,xab-a^2+1}\,(\arcsin$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)*arcsin(b*x+a)^2,x)
```

```
[Out] 1/64*(-16*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)^2*x^3*b^3+8*arcsin(b
*x+a)*x^4*b^4-48*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)^2*x^2*a*b^2+3
2*arcsin(b*x+a)*x^3*a*b^3-48*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)^2
*x*a^2*b+48*arcsin(b*x+a)*x^2*a^2*b^2+2*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*x^3*
b^3-16*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)^2*a^3+32*arcsin(b*x+a)*
x*a^3*b+6*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*x^2*a*b^2+40*arcsin(b*x+a)^2*(-b^2
*x^2-2*a*b*x-a^2+1)^(1/2)*x*b-40*arcsin(b*x+a)*x^2*b^2+8*arcsin(b*x+a)*a^4+
6*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*x*a^2*b+40*arcsin(b*x+a)^2*(-b^2*x^2-2*a*b
*x-a^2+1)^(1/2)*a-80*arcsin(b*x+a)*x*a*b+2*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*a
^3+8*arcsin(b*x+a)^3-40*arcsin(b*x+a)*a^2-17*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)
*x*b-17*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*a+17*arcsin(b*x+a))/b
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)*arcsin(b*x+a)^2,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.44476, size = 433, normalized size = 2.18

$$\frac{8 \arcsin(bx+a)^3 + \left(8 b^4 x^4 + 32 a b^3 x^3 + 8 \left(6 a^2 - 5\right) b^2 x^2 + 8 a^4 + 16 \left(2 a^3 - 5 a\right) b x - 40 a^2 + 17\right) \arcsin(bx+a) + (2 \ldots}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)*arcsin(b*x+a)^2,x, algorithm="fric
as")
```

```
[Out] 1/64*(8*arcsin(b*x + a)^3 + (8*b^4*x^4 + 32*a*b^3*x^3 + 8*(6*a^2 - 5)*b^2*x
^2 + 8*a^4 + 16*(2*a^3 - 5*a)*b*x - 40*a^2 + 17)*arcsin(b*x + a) + (2*b^3*x
^3 + 6*a*b^2*x^2 + 2*a^3 + (6*a^2 - 17)*b*x - 8*(2*b^3*x^3 + 6*a*b^2*x^2 +
2*a^3 + (6*a^2 - 5)*b*x - 5*a)*arcsin(b*x + a)^2 - 17*a)*sqrt(-b^2*x^2 - 2*
a*b*x - a^2 + 1))/b
```

Sympy [A] time = 13.4809, size = 568, normalized size = 2.85

$$\begin{cases} \frac{a^4 \operatorname{asin}(a+bx)}{8b} + \frac{a^3 x \operatorname{asin}(a+bx)}{2} - \frac{a^3 \sqrt{-a^2-2abx-b^2x^2+1} \operatorname{asin}^2(a+bx)}{4b} + \frac{a^3 \sqrt{-a^2-2abx-b^2x^2+1}}{32b} + \frac{3a^2bx^2 \operatorname{asin}(a+bx)}{4} - \frac{3a^2 x \sqrt{-a^2-2abx-b^2x^2+1} \operatorname{a}\ldots}{4} \\ x\left(1-a^2\right)^{\frac{3}{2}} \operatorname{asin}^2(a) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b**2*x**2-2*a*b*x-a**2+1)**(3/2)*asin(b*x+a)**2,x)
```

```
[Out] Piecewise((a**4*asin(a + b*x)/(8*b) + a**3*x*asin(a + b*x)/2 - a**3*sqrt(-a
**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)**2/(4*b) + a**3*sqrt(-a**2 - 2
*a*b*x - b**2*x**2 + 1)/(32*b) + 3*a**2*b*x**2*asin(a + b*x)/4 - 3*a**2*x*s
qrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)**2/4 + 3*a**2*x*sqrt(-a*
*2 - 2*a*b*x - b**2*x**2 + 1)/32 - 5*a**2*asin(a + b*x)/(8*b) + a*b**2*x**3
*asin(a + b*x)/2 - 3*a*b*x**2*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a
+ b*x)**2/4 + 3*a*b*x**2*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/32 - 5*a*x*a
sin(a + b*x)/4 + 5*a*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)**2
/(8*b) - 17*a*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/(64*b) + b**3*x**4*asin
(a + b*x)/8 - b**2*x**3*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)
**2/4 + b**2*x**3*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/32 - 5*b*x**2*asin(
a + b*x)/8 + 5*x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)**2/8 -
 17*x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/64 + asin(a + b*x)**3/(8*b) + 1
7*asin(a + b*x)/(64*b), Ne(b, 0)), (x*(1 - a**2)**(3/2)*asin(a)**2, True))
```

Giac [A] time = 1.26463, size = 306, normalized size = 1.54

$$\frac{\left(-b^2x^2-2\,abx-a^2+1\right)^{\frac{3}{2}}(bx+a)\arcsin\left(bx+a\right)^2}{4\,b}+\frac{3\,\sqrt{-b^2x^2-2\,abx-a^2+1}(bx+a)\arcsin\left(bx+a\right)^2}{8\,b}+\frac{\left(b^2x^2+2\,abx\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)*arcsin(b*x+a)^2,x, algorithm="giac
")
```

```
[Out] 1/4*(-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)*(b*x + a)*arcsin(b*x + a)^2/b + 3/
8*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*x + a)*arcsin(b*x + a)^2/b + 1/8*(b
^2*x^2 + 2*a*b*x + a^2 - 1)^2*arcsin(b*x + a)/b + 1/8*arcsin(b*x + a)^3/b -
 1/32*(-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)*(b*x + a)/b - 3/8*(b^2*x^2 + 2*a
*b*x + a^2 - 1)*arcsin(b*x + a)/b - 15/64*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1
)*(b*x + a)/b - 15/64*arcsin(b*x + a)/b
```

3.322 $\int \left(1-a^2-2abx-b^2x^2\right)^{3/2} \sin^{-1}(a+bx)\,dx$

Optimal. Leaf size=110

$$\frac{(a+bx)^4}{16b}-\frac{5(a+bx)^2}{16b}+\frac{\left(1-(a+bx)^2\right)^{3/2}(a+bx)\sin^{-1}(a+bx)}{4b}+\frac{3\sqrt{1-(a+bx)^2}(a+bx)\sin^{-1}(a+bx)}{8b}+\frac{3\sin^{-1}(a$$

```
[Out] (-5*(a + b*x)^2)/(16*b) + (a + b*x)^4/(16*b) + (3*(a + b*x)*Sqrt[1 - (a + b
*x)^2]*ArcSin[a + b*x])/(8*b) + ((a + b*x)*(1 - (a + b*x)^2)^(3/2)*ArcSin[a
 + b*x])/(4*b) + (3*ArcSin[a + b*x]^2)/(16*b)
```

Rubi [A] time = 0.105756, antiderivative size = 110, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {4807, 4649, 4647, 4641, 30, 14}

$$\frac{(a+bx)^4}{16b}-\frac{5(a+bx)^2}{16b}+\frac{\left(1-(a+bx)^2\right)^{3/2}(a+bx)\sin^{-1}(a+bx)}{4b}+\frac{3\sqrt{1-(a+bx)^2}(a+bx)\sin^{-1}(a+bx)}{8b}+\frac{3\sin^{-1}(a$$

Antiderivative was successfully verified.

```
[In] Int[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)*ArcSin[a + b*x],x]
```

```
[Out] (-5*(a + b*x)^2)/(16*b) + (a + b*x)^4/(16*b) + (3*(a + b*x)*Sqrt[1 - (a + b
*x)^2]*ArcSin[a + b*x])/(8*b) + ((a + b*x)*(1 - (a + b*x)^2)^(3/2)*ArcSin[a
 + b*x])/(4*b) + (3*ArcSin[a + b*x]^2)/(16*b)
```

Rule 4807

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-(C/d^2) + (C*x^2)/d^
2)^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C
, n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
```

```
GtQ[p, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rubi steps

$$\int \left(1-a^2-2abx-b^2x^2\right)^{3/2}\sin^{-1}(a+bx)\,dx = \frac{\text{Subst}\left(\int \left(1-x^2\right)^{3/2}\sin^{-1}(x)\,dx, x, a+bx\right)}{b}$$

$$= \frac{(a+bx)\left(1-(a+bx)^2\right)^{3/2}\sin^{-1}(a+bx)}{4b} - \frac{\text{Subst}\left(\int x\left(1-x^2\right)\,dx, x, a+\right.}{4b}$$

$$= \frac{3(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{8b} + \frac{(a+bx)\left(1-(a+bx)^2\right)^{3/2}\sin^{-1}(}{4b}$$

$$= -\frac{5(a+bx)^2}{16b} + \frac{(a+bx)^4}{16b} + \frac{3(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{8b} + \frac{(a+}{}$$

Mathematica [A] time = 0.0678455, size = 129, normalized size = 1.17

$$\frac{1}{16}\left(-\frac{2\sqrt{-a^2-2abx-b^2x^2+1}\left(6a^2bx+2a^3+6ab^2x^2-5a+2b^3x^3-5bx\right)\sin^{-1}(a+bx)}{b}+\left(6a^2-5\right)bx^2+2a\left(2a^2-5\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)*ArcSin[a + b*x],x]
```

```
[Out] (2*a*(-5 + 2*a^2)*x + (-5 + 6*a^2)*b*x^2 + 4*a*b^2*x^3 + b^3*x^4 - (2*Sqrt[
1 - a^2 - 2*a*b*x - b^2*x^2]*(-5*a + 2*a^3 - 5*b*x + 6*a^2*b*x + 6*a*b^2*x^
2 + 2*b^3*x^3)*ArcSin[a + b*x])/b + (3*ArcSin[a + b*x]^2)/b)/16
```

Maple [B] time = 0.061, size = 277, normalized size = 2.5

$$\frac{1}{16b}\left(-4\sqrt{-b^2x^2-2xab-a^2+1}\arcsin(bx+a)x^3b^3+x^4b^4-12\sqrt{-b^2x^2-2xab-a^2+1}\arcsin(bx+a)x^2ab^2+4x^3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)*arcsin(b*x+a),x)
```

```
[Out] 1/16*(-4*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)*x^3*b^3+x^4*b^4-12*(-
b^2*x^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)*x^2*a*b^2+4*x^3*a*b^3-12*(-b^2*x
^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)*x*a^2*b+6*x^2*a^2*b^2-4*(-b^2*x^2-2*a
*b*x-a^2+1)^(1/2)*arcsin(b*x+a)*a^3+4*x*a^3*b+10*arcsin(b*x+a)*(-b^2*x^2-2*
a*b*x-a^2+1)^(1/2)*x*b-5*b^2*x^2+a^4+10*arcsin(b*x+a)*(-b^2*x^2-2*a*b*x-a^2
+1)^(1/2)*a-10*x*a*b+3*arcsin(b*x+a)^2-5*a^2+4)/b
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)*arcsin(b*x+a),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.35912, size = 285, normalized size = 2.59

$$\frac{b^4x^4+4\,ab^3x^3+\left(6\,a^2-5\right)b^2x^2+2\left(2\,a^3-5\,a\right)bx-2\left(2\,b^3x^3+6\,ab^2x^2+2\,a^3+\left(6\,a^2-5\right)bx-5\,a\right)\sqrt{-b^2x^2-2\,abx-a^2}}{16\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)*arcsin(b*x+a),x, algorithm="fricas
")
```

```
[Out] 1/16*(b^4*x^4 + 4*a*b^3*x^3 + (6*a^2 - 5)*b^2*x^2 + 2*(2*a^3 - 5*a)*b*x - 2
*(2*b^3*x^3 + 6*a*b^2*x^2 + 2*a^3 + (6*a^2 - 5)*b*x - 5*a)*sqrt(-b^2*x^2 -
2*a*b*x - a^2 + 1)*arcsin(b*x + a) + 3*arcsin(b*x + a)^2)/b
```

Sympy [A] time = 7.82236, size = 298, normalized size = 2.71

$$\begin{cases}\frac{a^3x}{4}-\frac{a^3\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}(a+bx)}{4b}+\frac{3a^2bx^2}{8}-\frac{3a^2x\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}(a+bx)}{4}+\frac{ab^2x^3}{4}-\frac{3abx^2\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}(a+bx)}{4}-\frac{5ax}{8}+\\ x\left(1-a^2\right)^{\frac{3}{2}}\operatorname{asin}(a)\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b**2*x**2-2*a*b*x-a**2+1)**(3/2)*asin(b*x+a),x)
```

```
[Out] Piecewise((a**3*x/4 - a**3*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b
*x)/(4*b) + 3*a**2*b*x**2/8 - 3*a**2*x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1
)*asin(a + b*x)/4 + a*b**2*x**3/4 - 3*a*b*x**2*sqrt(-a**2 - 2*a*b*x - b**2*
x**2 + 1)*asin(a + b*x)/4 - 5*a*x/8 + 5*a*sqrt(-a**2 - 2*a*b*x - b**2*x**2
+ 1)*asin(a + b*x)/(8*b) + b**3*x**4/16 - b**2*x**3*sqrt(-a**2 - 2*a*b*x -
b**2*x**2 + 1)*asin(a + b*x)/4 - 5*b*x**2/16 + 5*x*sqrt(-a**2 - 2*a*b*x - b
**2*x**2 + 1)*asin(a + b*x)/8 + 3*asin(a + b*x)**2/(16*b), Ne(b, 0)), (x*(1
 - a**2)**(3/2)*asin(a), True))
```

Giac [A] time = 1.25101, size = 190, normalized size = 1.73

$$\frac{\left(-b^2x^2-2\,abx-a^2+1\right)^{\frac{3}{2}}(bx+a)\arcsin(bx+a)}{4\,b}+\frac{3\sqrt{-b^2x^2-2\,abx-a^2+1}(bx+a)\arcsin(bx+a)}{8\,b}+\frac{\left(b^2x^2+2\,abx+\right.}{16\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)*arcsin(b*x+a),x, algorithm="giac")
```

```
[Out] 1/4*(-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)*(b*x + a)*arcsin(b*x + a)/b + 3/8*
sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*x + a)*arcsin(b*x + a)/b + 1/16*(b^2*
x^2 + 2*a*b*x + a^2 - 1)^2/b + 3/16*arcsin(b*x + a)^2/b - 3/16*(b^2*x^2 + 2
*a*b*x + a^2 - 1)/b - 15/128/b
```

3.323 $\int \frac{\left(1-a^2-2abx-b^2x^2\right)^{3/2}}{\sin^{-1}(a+bx)}\,dx$

Optimal. Leaf size=47

$$\frac{\text{CosIntegral}\left(2\sin^{-1}(a+bx)\right)}{2b}+\frac{\text{CosIntegral}\left(4\sin^{-1}(a+bx)\right)}{8b}+\frac{3\log\left(\sin^{-1}(a+bx)\right)}{8b}$$

```
[Out] CosIntegral[2*ArcSin[a + b*x]]/(2*b) + CosIntegral[4*ArcSin[a + b*x]]/(8*b)
 + (3*Log[ArcSin[a + b*x]])/(8*b)
```

Rubi [A] time = 0.138157, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {4807, 4661, 3312, 3302}

$$\frac{\text{CosIntegral}\left(2\sin^{-1}(a+bx)\right)}{2b}+\frac{\text{CosIntegral}\left(4\sin^{-1}(a+bx)\right)}{8b}+\frac{3\log\left(\sin^{-1}(a+bx)\right)}{8b}$$

Antiderivative was successfully verified.

```
[In] Int[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)/ArcSin[a + b*x],x]
```

```
[Out] CosIntegral[2*ArcSin[a + b*x]]/(2*b) + CosIntegral[4*ArcSin[a + b*x]]/(8*b)
 + (3*Log[ArcSin[a + b*x]])/(8*b)
```

Rule 4807

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-(C/d^2) + (C*x^2)/d^
2)^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C
, n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 4661

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[d^p/c, Subst[Int[(a + b*x)^n*Cos[x]^(2*p + 1), x], x, ArcS
in[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IGtQ[2
*p, 0] && (IntegerQ[p] || GtQ[d, 0])
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(1-a^2-2abx-b^2x^2\right)^{3/2}}{\sin^{-1}(a+bx)}\,dx &= \frac{\text{Subst}\left(\int \frac{\left(1-x^2\right)^{3/2}}{\sin^{-1}(x)}\,dx,x,a+bx\right)}{b}\\
&= \frac{\text{Subst}\left(\int \frac{\cos^4(x)}{x}\,dx,x,\sin^{-1}(a+bx)\right)}{b}\\
&= \frac{\text{Subst}\left(\int \left(\frac{3}{8x}+\frac{\cos(2x)}{2x}+\frac{\cos(4x)}{8x}\right)dx,x,\sin^{-1}(a+bx)\right)}{b}\\
&= \frac{3\log\left(\sin^{-1}(a+bx)\right)}{8b}+\frac{\text{Subst}\left(\int \frac{\cos(4x)}{x}\,dx,x,\sin^{-1}(a+bx)\right)}{8b}+\frac{\text{Subst}\left(\int \frac{\cos(2x)}{x}\,dx,\right.}{2b}\\
&= \frac{\text{Ci}\left(2\sin^{-1}(a+bx)\right)}{2b}+\frac{\text{Ci}\left(4\sin^{-1}(a+bx)\right)}{8b}+\frac{3\log\left(\sin^{-1}(a+bx)\right)}{8b}
\end{aligned}$$

Mathematica [A] time = 0.314244, size = 37, normalized size = 0.79

$$\frac{4\text{CosIntegral}\left(2\sin^{-1}(a+bx)\right)+\text{CosIntegral}\left(4\sin^{-1}(a+bx)\right)+3\log\left(\sin^{-1}(a+bx)\right)}{8b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)/ArcSin[a + b*x],x]
```

```
[Out] (4*CosIntegral[2*ArcSin[a + b*x]] + CosIntegral[4*ArcSin[a + b*x]] + 3*Log[
ArcSin[a + b*x]])/(8*b)
```

Maple [A] time = 0.052, size = 42, normalized size = 0.9

$$\frac{\operatorname{Ci}\left(2 \arcsin \left(bx+a\right)\right)}{2b}+\frac{\operatorname{Ci}\left(4 \arcsin \left(bx+a\right)\right)}{8b}+\frac{3 \ln \left(\arcsin \left(bx+a\right)\right)}{8b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a),x)
```

```
[Out] 1/2*Ci(2*arcsin(b*x+a))/b+1/8*Ci(4*arcsin(b*x+a))/b+3/8*ln(arcsin(b*x+a))/b
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(-b^{2}x^{2}-2\,abx-a^{2}+1\right)^{\frac{3}{2}}}{\arcsin \left(bx+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a),x, algorithm="maxima
")
```

```
[Out] integrate((-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)/arcsin(b*x + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\operatorname{integral}\left(\frac{\left(-b^{2}x^{2}-2\,abx-a^{2}+1\right)^{\frac{3}{2}}}{\arcsin \left(bx+a\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a),x, algorithm="fricas
")
```

```
[Out] integral((-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)/arcsin(b*x + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(-\left(a+bx-1\right)\left(a+bx+1\right)\right)^{\frac{3}{2}}}{\operatorname{asin}\left(a+bx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b**2*x**2-2*a*b*x-a**2+1)**(3/2)/asin(b*x+a),x)
```

```
[Out] Integral((-(a + b*x - 1)*(a + b*x + 1))**(3/2)/asin(a + b*x), x)
```

Giac [A] time = 1.2108, size = 55, normalized size = 1.17

$$\frac{\operatorname{Ci}\left(4\,\arcsin\left(bx+a\right)\right)}{8\,b}+\frac{\operatorname{Ci}\left(2\,\arcsin\left(bx+a\right)\right)}{2\,b}+\frac{3\,\log\left(\arcsin\left(bx+a\right)\right)}{8\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a),x, algorithm="giac")
```

```
[Out] 1/8*cos_integral(4*arcsin(b*x + a))/b + 1/2*cos_integral(2*arcsin(b*x + a))
/b + 3/8*log(arcsin(b*x + a))/b
```

3.324 $\int \frac{\left(1-a^2-2abx-b^2x^2\right)^{3/2}}{\sin^{-1}(a+bx)^2}\,dx$

Optimal. Leaf size=57

$$-\frac{\text{Si}\left(2\sin^{-1}(a+bx)\right)}{b}-\frac{\text{Si}\left(4\sin^{-1}(a+bx)\right)}{2b}-\frac{\left(1-(a+bx)^2\right)^2}{b\sin^{-1}(a+bx)}$$

```
[Out] -((1 - (a + b*x)^2)^2/(b*ArcSin[a + b*x])) - SinIntegral[2*ArcSin[a + b*x]]
/b - SinIntegral[4*ArcSin[a + b*x]]/(2*b)
```

Rubi [A] time = 0.152061, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {4807, 4659, 4723, 4406, 3299}

$$-\frac{\text{Si}\left(2\sin^{-1}(a+bx)\right)}{b}-\frac{\text{Si}\left(4\sin^{-1}(a+bx)\right)}{2b}-\frac{\left(1-(a+bx)^2\right)^2}{b\sin^{-1}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)/ArcSin[a + b*x]^2,x]
```


```
[Out] -((1 - (a + b*x)^2)^2/(b*ArcSin[a + b*x])) - SinIntegral[2*ArcSin[a + b*x]]
/b - SinIntegral[4*ArcSin[a + b*x]]/(2*b)
```


Rule 4807

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-(C/d^2) + (C*x^2)/d^
2)^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C
, n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 4659

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[(Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*(a + b*ArcSin[c*x])^(n + 1
))/(b*c*(n + 1)), x] + Dist[(c*(2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[
p])/(b*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a
 + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^
2*d + e, 0] && LtQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rubi steps

$$\int \frac{\left(1-a^2-2abx-b^2x^2\right)^{3/2}}{\sin^{-1}(a+bx)^2}\,dx = \frac{\text{Subst}\left(\int \frac{\left(1-x^2\right)^{3/2}}{\sin^{-1}(x)^2}\,dx,x,a+bx\right)}{b}$$

$$= -\frac{\left(1-(a+bx)^2\right)^2}{b\sin^{-1}(a+bx)} - \frac{4\,\text{Subst}\left(\int \frac{x\left(1-x^2\right)}{\sin^{-1}(x)}\,dx,x,a+bx\right)}{b}$$

$$= -\frac{\left(1-(a+bx)^2\right)^2}{b\sin^{-1}(a+bx)} - \frac{4\,\text{Subst}\left(\int \frac{\cos^3(x)\sin(x)}{x}\,dx,x,\sin^{-1}(a+bx)\right)}{b}$$

$$= -\frac{\left(1-(a+bx)^2\right)^2}{b\sin^{-1}(a+bx)} - \frac{4\,\text{Subst}\left(\int \left(\frac{\sin(2x)}{4x}+\frac{\sin(4x)}{8x}\right)dx,x,\sin^{-1}(a+bx)\right)}{b}$$

$$= -\frac{\left(1-(a+bx)^2\right)^2}{b\sin^{-1}(a+bx)} - \frac{\text{Subst}\left(\int \frac{\sin(4x)}{x}\,dx,x,\sin^{-1}(a+bx)\right)}{2b} - \frac{\text{Subst}\left(\int \frac{\sin(2x)}{x}\,dx,x,\text{si}\ldots\right.}{b}$$

$$= -\frac{\left(1-(a+bx)^2\right)^2}{b\sin^{-1}(a+bx)} - \frac{\textbf{Si}\left(2\sin^{-1}(a+bx)\right)}{b} - \frac{\textbf{Si}\left(4\sin^{-1}(a+bx)\right)}{2b}$$

Mathematica [A] time = 0.313519, size = 70, normalized size = 1.23

$$-\frac{2\left(a^2+2abx+b^2x^2-1\right)^2+2\sin^{-1}(a+bx)\text{Si}\left(2\sin^{-1}(a+bx)\right)+\sin^{-1}(a+bx)\text{Si}\left(4\sin^{-1}(a+bx)\right)}{2b\sin^{-1}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)/ArcSin[a + b*x]^2,x]
```

```
[Out] -(2*(-1 + a^2 + 2*a*b*x + b^2*x^2)^2 + 2*ArcSin[a + b*x]*SinIntegral[2*ArcS
in[a + b*x]] + ArcSin[a + b*x]*SinIntegral[4*ArcSin[a + b*x]])/(2*b*ArcSin[
a + b*x])
```

Maple [A] time = 0.051, size = 70, normalized size = 1.2

$$-\frac{8\,\text{Si}\left(2\arcsin\left(bx+a\right)\right)\arcsin\left(bx+a\right)+4\,\text{Si}\left(4\arcsin\left(bx+a\right)\right)\arcsin\left(bx+a\right)+4\cos\left(2\arcsin\left(bx+a\right)\right)+\cos\left(4\,\text{ar}\right.}{8\,b\arcsin\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^2,x)
```

```
[Out] -1/8/b*(8*Si(2*arcsin(b*x+a))*arcsin(b*x+a)+4*Si(4*arcsin(b*x+a))*arcsin(b*
x+a)+4*cos(2*arcsin(b*x+a))+cos(4*arcsin(b*x+a))+3)/arcsin(b*x+a)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{b^4x^4+4\,ab^3x^3+2\left(3\,a^2-1\right)b^2x^2+a^4+4\left(a^3-a\right)bx-4\,b\arctan\left(bx+a,\sqrt{bx+a+1}\sqrt{-bx-a+1}\right)\int\frac{b^3x^3+3\,ab^2x^2+a^3+}{\arctan\left(bx+a,\sqrt{bx+}\right.}}{b\arctan\left(bx+a,\sqrt{bx+a+1}\sqrt{-bx-a+1}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^2,x, algorithm="maxi
ma")
```

```
[Out] -(b^4*x^4 + 4*a*b^3*x^3 + 2*(3*a^2 - 1)*b^2*x^2 + a^4 + 4*(a^3 - a)*b*x - b
*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))*integrate(4*(b^3*x^
```

```
3 + 3*a*b^2*x^2 + a^3 + (3*a^2 - 1)*b*x - a)/arctan2(b*x + a, sqrt(b*x + a
+ 1)*sqrt(-b*x - a + 1)), x) - 2*a^2 + 1)/(b*arctan2(b*x + a, sqrt(b*x + a
+ 1)*sqrt(-b*x - a + 1)))
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(-b^2x^2 - 2\,abx - a^2 + 1\right)^{\frac{3}{2}}}{\arcsin\left(bx + a\right)^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^2,x, algorithm="fric
as")
```

```
[Out] integral((-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)/arcsin(b*x + a)^2, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(-\left(a + bx - 1\right)\left(a + bx + 1\right)\right)^{\frac{3}{2}}}{\operatorname{asin}^2\left(a + bx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b**2*x**2-2*a*b*x-a**2+1)**(3/2)/asin(b*x+a)**2,x)
```

```
[Out] Integral((-(a + b*x - 1)*(a + b*x + 1))**(3/2)/asin(a + b*x)**2, x)
```

Giac [A] time = 1.27461, size = 82, normalized size = 1.44

$$-\frac{\left(b^2x^2 + 2\,abx + a^2 - 1\right)^2}{b\arcsin\left(bx + a\right)} - \frac{\operatorname{Si}\left(4\,\arcsin\left(bx + a\right)\right)}{2\,b} - \frac{\operatorname{Si}\left(2\,\arcsin\left(bx + a\right)\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^2,x, algorithm="giac
")
```

```
[Out] -(b^2*x^2 + 2*a*b*x + a^2 - 1)^2/(b*arcsin(b*x + a)) - 1/2*sin_integral(4*a
rcsin(b*x + a))/b - sin_integral(2*arcsin(b*x + a))/b
```

3.325 $\int \frac{(1-a^2-2abx-b^2x^2)^{3/2}}{\sin^{-1}(a+bx)^3}\,dx$

Optimal. Leaf size=90

$$-\frac{\text{CosIntegral}\left(2\sin^{-1}(a+bx)\right)}{b}-\frac{\text{CosIntegral}\left(4\sin^{-1}(a+bx)\right)}{b}-\frac{\left(1-(a+bx)^2\right)^2}{2b\sin^{-1}(a+bx)^2}+\frac{2(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{b\sin^{-1}(a+bx)}$$

```
[Out] -(1 - (a + b*x)^2)^2/(2*b*ArcSin[a + b*x]^2) + (2*(a + b*x)*(1 - (a + b*x)^
2)^(3/2))/(b*ArcSin[a + b*x]) - CosIntegral[2*ArcSin[a + b*x]]/b - CosInteg
ral[4*ArcSin[a + b*x]]/b
```

Rubi [A] time = 0.283546, antiderivative size = 90, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.242, Rules used = {4807, 4659, 4721, 4661, 3312, 3302, 4723, 4406}

$$-\frac{\text{CosIntegral}\left(2\sin^{-1}(a+bx)\right)}{b}-\frac{\text{CosIntegral}\left(4\sin^{-1}(a+bx)\right)}{b}-\frac{\left(1-(a+bx)^2\right)^2}{2b\sin^{-1}(a+bx)^2}+\frac{2(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{b\sin^{-1}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)/ArcSin[a + b*x]^3,x]
```

```
[Out] -(1 - (a + b*x)^2)^2/(2*b*ArcSin[a + b*x]^2) + (2*(a + b*x)*(1 - (a + b*x)^
2)^(3/2))/(b*ArcSin[a + b*x]) - CosIntegral[2*ArcSin[a + b*x]]/b - CosInteg
ral[4*ArcSin[a + b*x]]/b
```

Rule 4807

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-(C/d^2) + (C*x^2)/d^
2)^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C
, n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 4659

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[(Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*(a + b*ArcSin[c*x])^(n + 1
))/(b*c*(n + 1)), x] + Dist[(c*(2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[
p])/(b*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a
```

```
 + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^
2*d + e, 0] && LtQ[n, -1]
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^m*Sqrt[1 - c^2*x^2]*(d + e*x^2)^p
*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (-Dist[(f*m*d^IntPart[p]*
(d + e*x^2)^FracPart[p])/(b*c*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1), x], x] + Dist
[(c*(m + 2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(b*f*(n + 1)*(1 - c
^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcS
in[c*x])^(n + 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e,
 0] && LtQ[n, -1] && IGtQ[m, -3] && IGtQ[2*p, 0]
```

Rule 4661

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[d^p/c, Subst[Int[(a + b*x)^n*Cos[x]^(2*p + 1), x], x, ArcS
in[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IGtQ[2
*p, 0] && (IntegerQ[p] || GtQ[d, 0])
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rubi steps

$$\int \frac{\left(1-a^2-2abx-b^2x^2\right)^{3/2}}{\sin^{-1}(a+bx)^3}\,dx = \frac{\text{Subst}\left(\int \frac{\left(1-x^2\right)^{3/2}}{\sin^{-1}(x)^3}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{\left(1-(a+bx)^2\right)^2}{2b\sin^{-1}(a+bx)^2} - \frac{2\,\text{Subst}\left(\int \frac{x\left(1-x^2\right)}{\sin^{-1}(x)^2}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{\left(1-(a+bx)^2\right)^2}{2b\sin^{-1}(a+bx)^2} + \frac{2(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{b\sin^{-1}(a+bx)} - \frac{2\,\text{Subst}\left(\int \frac{\sqrt{1-x^2}}{\sin^{-1}(x)}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{\left(1-(a+bx)^2\right)^2}{2b\sin^{-1}(a+bx)^2} + \frac{2(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{b\sin^{-1}(a+bx)} - \frac{2\,\text{Subst}\left(\int \frac{\cos^2(x)}{x}\,dx, x, \sin^{-1}(a\right.}{b}$$

$$= -\frac{\left(1-(a+bx)^2\right)^2}{2b\sin^{-1}(a+bx)^2} + \frac{2(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{b\sin^{-1}(a+bx)} - \frac{2\,\text{Subst}\left(\int \left(\frac{1}{2x}+\frac{\cos(2x)}{2x}\right)dx, x, \text{s}\right.}{b}$$

$$= -\frac{\left(1-(a+bx)^2\right)^2}{2b\sin^{-1}(a+bx)^2} + \frac{2(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{b\sin^{-1}(a+bx)} - \frac{\text{Subst}\left(\int \frac{\cos(2x)}{x}\,dx, x, \sin^{-1}(a+\right.}{b}$$

$$= -\frac{\left(1-(a+bx)^2\right)^2}{2b\sin^{-1}(a+bx)^2} + \frac{2(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{b\sin^{-1}(a+bx)} - \frac{\text{Ci}\left(2\sin^{-1}(a+bx)\right)}{b} - \frac{\text{Ci}\left(4\sin\right.}{}$$

Mathematica [A] time = 0.43503, size = 110, normalized size = 1.22

$$-\frac{\frac{\left(a^2+2abx+b^2x^2-1\right)\left(4(a+bx)\sqrt{-a^2-2abx-b^2x^2+1}\sin^{-1}(a+bx)+a^2+2abx+b^2x^2-1\right)}{\sin^{-1}(a+bx)^2}+2\text{CosIntegral}\left(2\sin^{-1}(a+bx)\right)+2\text{CosIntegral}\left(4\text{s}\right.}{2b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)/ArcSin[a + b*x]^3,x]
```

```
[Out] -(((-1 + a^2 + 2*a*b*x + b^2*x^2)*(-1 + a^2 + 2*a*b*x + b^2*x^2 + 4*(a + b*
x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x]))/ArcSin[a + b*x]^2 +
```

```
2*CosIntegral[2*ArcSin[a + b*x]] + 2*CosIntegral[4*ArcSin[a + b*x]])/(2*b)
```

Maple [A] time = 0.054, size = 108, normalized size = 1.2

$$-\frac{16\,\mathrm{Ci}\left(2\arcsin\left(bx+a\right)\right)\left(\arcsin\left(bx+a\right)\right)^{2}+16\,\mathrm{Ci}\left(4\arcsin\left(bx+a\right)\right)\left(\arcsin\left(bx+a\right)\right)^{2}-8\sin\left(2\arcsin\left(bx+a\right)\right)\mathrm{arc}}{16\,b\left(\arcsin\left(b\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^3,x)
```

```
[Out] -1/16/b*(16*Ci(2*arcsin(b*x+a))*arcsin(b*x+a)^2+16*Ci(4*arcsin(b*x+a))*arcs
in(b*x+a)^2-8*sin(2*arcsin(b*x+a))*arcsin(b*x+a)-4*sin(4*arcsin(b*x+a))*arc
sin(b*x+a)+4*cos(2*arcsin(b*x+a))+cos(4*arcsin(b*x+a))+3)/arcsin(b*x+a)^2
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^3,x, algorithm="maxi
ma")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\left(-b^{2}x^{2}-2\,abx-a^{2}+1\right)^{\frac{3}{2}}}{\arcsin\left(bx+a\right)^{3}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^3,x, algorithm="fric
as")
```

```
[Out] integral((-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)/arcsin(b*x + a)^3, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(-\left(a+bx-1\right)\left(a+bx+1\right)\right)^{\frac{3}{2}}}{\operatorname{asin}^{3}\left(a+bx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b**2*x**2-2*a*b*x-a**2+1)**(3/2)/asin(b*x+a)**3,x)
```

```
[Out] Integral((-(a + b*x - 1)*(a + b*x + 1))**(3/2)/asin(a + b*x)**3, x)
```

Giac [A] time = 1.30654, size = 136, normalized size = 1.51

$$\frac{2\left(-b^{2}x^{2}-2\,abx-a^{2}+1\right)^{\frac{3}{2}}\left(bx+a\right)}{b\arcsin\left(bx+a\right)}-\frac{\operatorname{Ci}\left(4\,\arcsin\left(bx+a\right)\right)}{b}-\frac{\operatorname{Ci}\left(2\,\arcsin\left(bx+a\right)\right)}{b}-\frac{\left(b^{2}x^{2}+2\,abx+a^{2}-1\right)^{2}}{2\,b\arcsin\left(bx+a\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^3,x, algorithm="giac
")
```

```
[Out] 2*(-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)*(b*x + a)/(b*arcsin(b*x + a)) - cos_
integral(4*arcsin(b*x + a))/b - cos_integral(2*arcsin(b*x + a))/b - 1/2*(b^
2*x^2 + 2*a*b*x + a^2 - 1)^2/(b*arcsin(b*x + a)^2)
```

3.326 $\int \frac{\left(1-a^2-2abx-b^2x^2\right)^{3/2}}{\sin^{-1}(a+bx)^4}\,dx$

Optimal. Leaf size=155

$$\frac{2\text{Si}\left(2\sin^{-1}(a+bx)\right)}{3b}+\frac{4\text{Si}\left(4\sin^{-1}(a+bx)\right)}{3b}-\frac{8\left(1-(a+bx)^2\right)(a+bx)^2}{3b\sin^{-1}(a+bx)}+\frac{2\left(1-(a+bx)^2\right)^{3/2}(a+bx)}{3b\sin^{-1}(a+bx)^2}+\frac{2\left(1-(a+b\right.}{3b\sin^{-1}(a+}$$

```
[Out] -(1 - (a + b*x)^2)^2/(3*b*ArcSin[a + b*x]^3) + (2*(a + b*x)*(1 - (a + b*x)^
2)^(3/2))/(3*b*ArcSin[a + b*x]^2) + (2*(1 - (a + b*x)^2))/(3*b*ArcSin[a + b
*x]) - (8*(a + b*x)^2*(1 - (a + b*x)^2))/(3*b*ArcSin[a + b*x]) + (2*SinInte
gral[2*ArcSin[a + b*x]])/(3*b) + (4*SinIntegral[4*ArcSin[a + b*x]])/(3*b)
```

Rubi [A] time = 0.34521, antiderivative size = 155, normalized size of antiderivative = 1., number of steps used = 18, number of rules used = 7, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.212, Rules used = {4807, 4659, 4721, 4635, 4406, 12, 3299}

$$\frac{2\text{Si}\left(2\sin^{-1}(a+bx)\right)}{3b}+\frac{4\text{Si}\left(4\sin^{-1}(a+bx)\right)}{3b}-\frac{8\left(1-(a+bx)^2\right)(a+bx)^2}{3b\sin^{-1}(a+bx)}+\frac{2\left(1-(a+bx)^2\right)^{3/2}(a+bx)}{3b\sin^{-1}(a+bx)^2}+\frac{2\left(1-(a+b\right.}{3b\sin^{-1}(a+}$$

Antiderivative was successfully verified.

```
[In] Int[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)/ArcSin[a + b*x]^4,x]
```


```
[Out] -(1 - (a + b*x)^2)^2/(3*b*ArcSin[a + b*x]^3) + (2*(a + b*x)*(1 - (a + b*x)^
2)^(3/2))/(3*b*ArcSin[a + b*x]^2) + (2*(1 - (a + b*x)^2))/(3*b*ArcSin[a + b
*x]) - (8*(a + b*x)^2*(1 - (a + b*x)^2))/(3*b*ArcSin[a + b*x]) + (2*SinInte
gral[2*ArcSin[a + b*x]])/(3*b) + (4*SinIntegral[4*ArcSin[a + b*x]])/(3*b)
```


Rule 4807

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-(C/d^2) + (C*x^2)/d^
2)^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C
, n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 4659

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[(Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*(a + b*ArcSin[c*x])^(n + 1
```

```
))/(b*c*(n + 1)), x] + Dist[(c*(2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[
p])/(b*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a
 + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^
2*d + e, 0] && LtQ[n, -1]
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^m*Sqrt[1 - c^2*x^2]*(d + e*x^2)^p
*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (-Dist[(f*m*d^IntPart[p]*
(d + e*x^2)^FracPart[p])/(b*c*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1), x], x] + Dist
[(c*(m + 2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(b*f*(n + 1)*(1 - c
^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcS
in[c*x])^(n + 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e,
 0] && LtQ[n, -1] && IGtQ[m, -3] && IGtQ[2*p, 0]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rubi steps

$$\int \frac{\left(1-a^2-2abx-b^2x^2\right)^{3/2}}{\sin^{-1}(a+bx)^4}\,dx = \frac{\text{Subst}\left(\int \frac{\left(1-x^2\right)^{3/2}}{\sin^{-1}(x)^4}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{\left(1-(a+bx)^2\right)^2}{3b\sin^{-1}(a+bx)^3} - \frac{4\,\text{Subst}\left(\int \frac{x\left(1-x^2\right)}{\sin^{-1}(x)^3}\,dx, x, a+bx\right)}{3b}$$

$$= -\frac{\left(1-(a+bx)^2\right)^2}{3b\sin^{-1}(a+bx)^3} + \frac{2(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{3b\sin^{-1}(a+bx)^2} - \frac{2\,\text{Subst}\left(\int \frac{\sqrt{1-x^2}}{\sin^{-1}(x)^2}\,dx, x, a+bx\right)}{3b}$$

$$= -\frac{\left(1-(a+bx)^2\right)^2}{3b\sin^{-1}(a+bx)^3} + \frac{2(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{3b\sin^{-1}(a+bx)^2} + \frac{2\left(1-(a+bx)^2\right)}{3b\sin^{-1}(a+bx)} - \frac{8(a+bx)^2\left(1-\right.}{3b\sin^{-1}(a}$$

$$= -\frac{\left(1-(a+bx)^2\right)^2}{3b\sin^{-1}(a+bx)^3} + \frac{2(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{3b\sin^{-1}(a+bx)^2} + \frac{2\left(1-(a+bx)^2\right)}{3b\sin^{-1}(a+bx)} - \frac{8(a+bx)^2\left(1-\right.}{3b\sin^{-1}(a}$$

$$= -\frac{\left(1-(a+bx)^2\right)^2}{3b\sin^{-1}(a+bx)^3} + \frac{2(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{3b\sin^{-1}(a+bx)^2} + \frac{2\left(1-(a+bx)^2\right)}{3b\sin^{-1}(a+bx)} - \frac{8(a+bx)^2\left(1-\right.}{3b\sin^{-1}(a}$$

$$= -\frac{\left(1-(a+bx)^2\right)^2}{3b\sin^{-1}(a+bx)^3} + \frac{2(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{3b\sin^{-1}(a+bx)^2} + \frac{2\left(1-(a+bx)^2\right)}{3b\sin^{-1}(a+bx)} - \frac{8(a+bx)^2\left(1-\right.}{3b\sin^{-1}(a}$$

$$= -\frac{\left(1-(a+bx)^2\right)^2}{3b\sin^{-1}(a+bx)^3} + \frac{2(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{3b\sin^{-1}(a+bx)^2} + \frac{2\left(1-(a+bx)^2\right)}{3b\sin^{-1}(a+bx)} - \frac{8(a+bx)^2\left(1-\right.}{3b\sin^{-1}(a}$$

Mathematica [A] time = 0.443484, size = 143, normalized size = 0.92

$$\frac{\frac{\left(a^2+2abx+b^2x^2-1\right)\left(2\left(4a^2+8abx+4b^2x^2-1\right)\sin^{-1}(a+bx)^2-2(a+bx)\sqrt{-a^2-2abx-b^2x^2+1}\sin^{-1}(a+bx)-a^2-2abx-b^2x^2+1\right)}{\sin^{-1}(a+bx)^3} + 2\text{Si}\left(2\sin^{-1}(a+bx)\right) + 4\text{Si}}{3b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)/ArcSin[a + b*x]^4,x]
```

```
[Out] (((-1 + a^2 + 2*a*b*x + b^2*x^2)*(1 - a^2 - 2*a*b*x - b^2*x^2 - 2*(a + b*x)
*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x] + 2*(-1 + 4*a^2 + 8*a*b*
x + 4*b^2*x^2)*ArcSin[a + b*x]^2))/ArcSin[a + b*x]^3 + 2*SinIntegral[2*ArcS
in[a + b*x]] + 4*SinIntegral[4*ArcSin[a + b*x]])/(3*b)
```

Maple [A] time = 0.056, size = 148, normalized size = 1.

$$\frac{16\,\mathrm{Si}\left(2\arcsin\left(bx+a\right)\right)\left(\arcsin\left(bx+a\right)\right)^{3}+32\,\mathrm{Si}\left(4\arcsin\left(bx+a\right)\right)\left(\arcsin\left(bx+a\right)\right)^{3}+8\cos\left(2\arcsin\left(bx+a\right)\right)(\mathrm{ar}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^4,x)
```

```
[Out] 1/24/b*(16*Si(2*arcsin(b*x+a))*arcsin(b*x+a)^3+32*Si(4*arcsin(b*x+a))*arcsi
n(b*x+a)^3+8*cos(2*arcsin(b*x+a))*arcsin(b*x+a)^2+8*cos(4*arcsin(b*x+a))*ar
csin(b*x+a)^2+4*sin(2*arcsin(b*x+a))*arcsin(b*x+a)+2*sin(4*arcsin(b*x+a))*a
rcsin(b*x+a)-4*cos(2*arcsin(b*x+a))-cos(4*arcsin(b*x+a))-3)/arcsin(b*x+a)^3
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^4,x, algorithm="maxi
ma")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\left(-b^{2}x^{2}-2\,abx-a^{2}+1\right)^{\frac{3}{2}}}{\arcsin\left(bx+a\right)^{4}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^4,x, algorithm="fric
as")
```

```
[Out] integral((-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)/arcsin(b*x + a)^4, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(-\left(a+bx-1\right)\left(a+bx+1\right)\right)^{\frac{3}{2}}}{\operatorname{asin}^{4}\left(a+bx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b**2*x**2-2*a*b*x-a**2+1)**(3/2)/asin(b*x+a)**4,x)
```

```
[Out] Integral((-(a + b*x - 1)*(a + b*x + 1))**(3/2)/asin(a + b*x)**4, x)
```

Giac [A] time = 1.33295, size = 220, normalized size = 1.42

$$\frac{8\left(b^{2}x^{2}+2\,abx+a^{2}-1\right)^{2}}{3\,b\arcsin\left(bx+a\right)}+\frac{4\,\operatorname{Si}\left(4\,\arcsin\left(bx+a\right)\right)}{3\,b}+\frac{2\,\operatorname{Si}\left(2\,\arcsin\left(bx+a\right)\right)}{3\,b}+\frac{2\left(-b^{2}x^{2}-2\,abx-a^{2}+1\right)^{\frac{3}{2}}\left(bx+a\right)}{3\,b\arcsin\left(bx+a\right)^{2}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^4,x, algorithm="giac
")
```

```
[Out] 8/3*(b^2*x^2 + 2*a*b*x + a^2 - 1)^2/(b*arcsin(b*x + a)) + 4/3*sin_integral(
4*arcsin(b*x + a))/b + 2/3*sin_integral(2*arcsin(b*x + a))/b + 2/3*(-b^2*x^
2 - 2*a*b*x - a^2 + 1)^(3/2)*(b*x + a)/(b*arcsin(b*x + a)^2) + 2*(b^2*x^2 +
 2*a*b*x + a^2 - 1)/(b*arcsin(b*x + a)) - 1/3*(b^2*x^2 + 2*a*b*x + a^2 - 1)
^2/(b*arcsin(b*x + a)^3)
```

3.327 $\int \frac{\sin^{-1}(a+bx)^n}{\sqrt{1-a^2-2abx-b^2x^2}}\,dx$

Optimal. Leaf size=19

$$\frac{\sin^{-1}(a+bx)^{n+1}}{b(n+1)}$$

```
[Out] ArcSin[a + b*x]^(1 + n)/(b*(1 + n))
```

Rubi [A] time = 0.0749411, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {4807, 4641}

$$\frac{\sin^{-1}(a+bx)^{n+1}}{b(n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^n/Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2],x]
```

```
[Out] ArcSin[a + b*x]^(1 + n)/(b*(1 + n))
```

Rule 4807

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-(C/d^2) + (C*x^2)/d^
2)^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C
, n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{\sin^{-1}(a+bx)^n}{\sqrt{1-a^2-2abx-b^2x^2}}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)^n}{\sqrt{1-x^2}}\,dx, x, a+bx\right)}{b}$$
$$= \frac{\sin^{-1}(a+bx)^{1+n}}{b(1+n)}$$

Mathematica [A] time = 0.0281393, size = 19, normalized size = 1.

$$\frac{\sin^{-1}(a+bx)^{n+1}}{b(n+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^n/Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2],x]
```

```
[Out] ArcSin[a + b*x]^(1 + n)/(b*(1 + n))
```

Maple [A] time = 0.06, size = 20, normalized size = 1.1

$$\frac{(\arcsin(bx+a))^{1+n}}{b(1+n)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)^n/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x)
```

```
[Out] arcsin(b*x+a)^(1+n)/b/(1+n)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^n/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="maxi
ma")
```

[Out] Exception raised: RuntimeError

Fricas [A] time = 3.09604, size = 61, normalized size = 3.21

$$\frac{\arcsin(bx+a)^n \arcsin(bx+a)}{bn+b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^n/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="fric
as")
```

```
[Out] arcsin(b*x + a)^n*arcsin(b*x + a)/(b*n + b)
```

Sympy [A] time = 1.47999, size = 60, normalized size = 3.16

$$\begin{cases} \frac{x}{\sqrt{1-a^2}\operatorname{asin}(a)} & \text{for } b=0 \wedge n=-1 \\ \frac{x\operatorname{asin}^n(a)}{\sqrt{1-a^2}} & \text{for } b=0 \\ \frac{\log(\operatorname{asin}(a+bx))}{b} & \text{for } n=-1 \\ \frac{\operatorname{asin}(a+bx)\operatorname{asin}^n(a+bx)}{bn+b} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**n/(-b**2*x**2-2*a*b*x-a**2+1)**(1/2),x)
```

```
[Out] Piecewise((x/(sqrt(1 - a**2)*asin(a)), Eq(b, 0) & Eq(n, -1)), (x*asin(a)**n
/sqrt(1 - a**2), Eq(b, 0)), (log(asin(a + b*x))/b, Eq(n, -1)), (asin(a + b*
x)*asin(a + b*x)**n/(b*n + b), True))
```

Giac [A] time = 1.32728, size = 26, normalized size = 1.37

$$\frac{\arcsin(bx+a)^{n+1}}{b(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^n/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="giac
")
```

```
[Out] arcsin(b*x + a)^(n + 1)/(b*(n + 1))
```

3.328 $\int \frac{\sin^{-1}(a+bx)^2}{\sqrt{1-a^2-2abx-b^2x^2}} dx$

Optimal. Leaf size=15

$$\frac{\sin^{-1}(a+bx)^3}{3b}$$

[Out] ArcSin[a + b*x]^3/(3*b)

Rubi [A] time = 0.0712881, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {4807, 4641}

$$\frac{\sin^{-1}(a+bx)^3}{3b}$$

Antiderivative was successfully verified.

[In] Int[ArcSin[a + b*x]^2/Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2],x]

[Out] ArcSin[a + b*x]^3/(3*b)

Rule 4807

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-(C/d^2) + (C*x^2)/d^
2)^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C
, n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{\sin^{-1}(a+bx)^2}{\sqrt{1-a^2-2abx-b^2x^2}}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)^2}{\sqrt{1-x^2}}\,dx, x, a+bx\right)}{b}$$
$$= \frac{\sin^{-1}(a+bx)^3}{3b}$$

Mathematica [A] time = 0.0199825, size = 15, normalized size = 1.

$$\frac{\sin^{-1}(a+bx)^3}{3b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^2/Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2],x]
```

```
[Out] ArcSin[a + b*x]^3/(3*b)
```

Maple [A] time = 0.046, size = 14, normalized size = 0.9

$$\frac{(\arcsin(bx+a))^3}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)^2/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x)
```

```
[Out] 1/3*arcsin(b*x+a)^3/b
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.43479, size = 34, normalized size = 2.27

$$\frac{\arcsin{(bx+a)}^3}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="fric
as")
```

```
[Out] 1/3*arcsin(b*x + a)^3/b
```

Sympy [A] time = 0.880897, size = 26, normalized size = 1.73

$$\begin{cases} \frac{\operatorname{asin}^{3}{\left(a+bx\right)}}{3b} & \text{for}\: b \neq 0 \\ \frac{x \operatorname{asin}^{2}{\left(a\right)}}{\sqrt{1-a^{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**2/(-b**2*x**2-2*a*b*x-a**2+1)**(1/2),x)
```

```
[Out] Piecewise((asin(a + b*x)**3/(3*b), Ne(b, 0)), (x*asin(a)**2/sqrt(1 - a**2),
 True))
```

Giac [A] time = 1.34337, size = 18, normalized size = 1.2

$$\frac{\arcsin{(bx+a)}^3}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="giac
")
```

```
[Out] 1/3*arcsin(b*x + a)^3/b
```

3.329 $\int \frac{\sin^{-1}(a+bx)}{\sqrt{1-a^2-2abx-b^2x^2}}\,dx$

Optimal. Leaf size=15

$$\frac{\sin^{-1}(a+bx)^2}{2b}$$

```
[Out] ArcSin[a + b*x]^2/(2*b)
```

Rubi [A] time = 0.0406008, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {4807, 4641}

$$\frac{\sin^{-1}(a+bx)^2}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]/Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2],x]
```

```
[Out] ArcSin[a + b*x]^2/(2*b)
```

Rule 4807

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-(C/d^2) + (C*x^2)/d^
2)^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C
, n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{\sin^{-1}(a+bx)}{\sqrt{1-a^2-2abx-b^2x^2}}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)}{\sqrt{1-x^2}}\,dx, x, a+bx\right)}{b} = \frac{\sin^{-1}(a+bx)^2}{2b}$$

Mathematica [A] time = 0.0181163, size = 15, normalized size = 1.

$$\frac{\sin^{-1}(a+bx)^2}{2b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]/Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2],x]
```

```
[Out] ArcSin[a + b*x]^2/(2*b)
```

Maple [A] time = 0.044, size = 14, normalized size = 0.9

$$\frac{(\arcsin(bx+a))^2}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x)
```

```
[Out] 1/2*arcsin(b*x+a)^2/b
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.61105, size = 34, normalized size = 2.27

$$\frac{\arcsin(bx+a)^2}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="fricas
")
```

```
[Out] 1/2*arcsin(b*x + a)^2/b
```

Sympy [A] time = 0.760548, size = 24, normalized size = 1.6

$$\begin{cases} \frac{\operatorname{asin}^2(a+bx)}{2b} & \text{for } b \neq 0 \\ \frac{x\operatorname{asin}(a)}{\sqrt{1-a^2}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)/(-b**2*x**2-2*a*b*x-a**2+1)**(1/2),x)
```

```
[Out] Piecewise((asin(a + b*x)**2/(2*b), Ne(b, 0)), (x*asin(a)/sqrt(1 - a**2), Tr
ue))
```

Giac [A] time = 1.24, size = 18, normalized size = 1.2

$$\frac{\arcsin(bx+a)^2}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*arcsin(b*x + a)^2/b
```

3.330 $\int \frac{1}{\sqrt{1-a^2-2abx-b^2x^2}\sin^{-1}(a+bx)}\,dx$

Optimal. Leaf size=11

$$\frac{\log\left(\sin^{-1}(a+bx)\right)}{b}$$

```
[Out] Log[ArcSin[a + b*x]]/b
```

Rubi [A] time = 0.0761958, antiderivative size = 11, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {4807, 4639}

$$\frac{\log\left(\sin^{-1}(a+bx)\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x]),x]
```

```
[Out] Log[ArcSin[a + b*x]]/b
```

Rule 4807

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-(C/d^2) + (C*x^2)/d^
2)^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C
, n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 4639

```
Int[1/(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*Sqrt[(d_) + (e_.)*(x_)^2]), x_Sym
bol] :> Simp[Log[a + b*ArcSin[c*x]]/(b*c*Sqrt[d]), x] /; FreeQ[{a, b, c, d,
 e}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0]
```

Rubi steps

$$\int \frac{1}{\sqrt{1-a^2-2abx-b^2x^2}\sin^{-1}(a+bx)}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\sqrt{1-x^2}\sin^{-1}(x)}\,dx, x, a+bx\right)}{b}$$
$$= \frac{\log\left(\sin^{-1}(a+bx)\right)}{b}$$

Mathematica [A] time = 0.033133, size = 11, normalized size = 1.

$$\frac{\log\left(\sin^{-1}(a+bx)\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x]),x]
```

```
[Out] Log[ArcSin[a + b*x]]/b
```

Maple [A] time = 0.046, size = 12, normalized size = 1.1

$$\frac{\ln(\arcsin(bx+a))}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/arcsin(b*x+a)/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x)
```

```
[Out] ln(arcsin(b*x+a))/b
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{-b^2x^2-2\,abx-a^2+1}\arcsin(bx+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="maxi
ma")
```

```
[Out] integrate(1/(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*arcsin(b*x + a)), x)
```

Fricas [A] time = 2.23768, size = 34, normalized size = 3.09

$$\frac{\log\left(-\arcsin\left(bx+a\right)\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="fric
as")
```

```
[Out] log(-arcsin(b*x + a))/b
```

Sympy [A] time = 1.04593, size = 22, normalized size = 2.

$$\begin{cases} \frac{\log\left(\operatorname{asin}\left(a+bx\right)\right)}{b} & \text{for}\ b \neq 0 \\ \frac{x}{\sqrt{1-a^2}\operatorname{asin}\left(a\right)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/asin(b*x+a)/(-b**2*x**2-2*a*b*x-a**2+1)**(1/2),x)
```

```
[Out] Piecewise((log(asin(a + b*x))/b, Ne(b, 0)), (x/(sqrt(1 - a**2)*asin(a)), Tr
ue))
```

Giac [A] time = 1.25405, size = 16, normalized size = 1.45

$$\frac{\log\left(\left|\arcsin\left(bx+a\right)\right|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="giac
")
```

```
[Out] log(abs(arcsin(b*x + a)))/b
```

3.331 $\int \frac{1}{\sqrt{1-a^2-2abx-b^2x^2}\sin^{-1}(a+bx)^2}\,dx$

Optimal. Leaf size=13

$$-\frac{1}{b\sin^{-1}(a+bx)}$$

```
[Out] -(1/(b*ArcSin[a + b*x]))
```

Rubi [A] time = 0.0752961, antiderivative size = 13, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {4807, 4641}

$$-\frac{1}{b\sin^{-1}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x]^2),x]
```

```
[Out] -(1/(b*ArcSin[a + b*x]))
```

Rule 4807

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-(C/d^2) + (C*x^2)/d^
2)^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C
, n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{1}{\sqrt{1-a^2-2abx-b^2x^2}\sin^{-1}(a+bx)^2}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\sqrt{1-x^2}\sin^{-1}(x)^2}\,dx, x, a+bx\right)}{b}$$
$$= -\frac{1}{b\sin^{-1}(a+bx)}$$

Mathematica [A] time = 0.0143502, size = 13, normalized size = 1.

$$-\frac{1}{b\sin^{-1}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x]^2),x]
```

```
[Out] -(1/(b*ArcSin[a + b*x]))
```

Maple [A] time = 0.046, size = 14, normalized size = 1.1

$$-\frac{1}{b\arcsin(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/arcsin(b*x+a)^2/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x)
```

```
[Out] -1/b/arcsin(b*x+a)
```

Maxima [B] time = 2.68438, size = 45, normalized size = 3.46

$$-\frac{1}{b\arctan\left(bx+a, \sqrt{bx+a+1}\sqrt{-bx-a+1}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)^2/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="ma
xima")
```

```
[Out] -1/(b*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)))
```

Fricas [A] time = 2.14064, size = 32, normalized size = 2.46

$$-\frac{1}{b \arcsin(bx + a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)^2/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="fr
icas")
```

```
[Out] -1/(b*arcsin(b*x + a))
```

Sympy [A] time = 1.58624, size = 26, normalized size = 2.

$$\begin{cases} -\frac{1}{b \operatorname{asin}(a+bx)} & \text{for}\: b \neq 0 \\ \frac{x}{\sqrt{1-a^2} \operatorname{asin}^2(a)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/asin(b*x+a)**2/(-b**2*x**2-2*a*b*x-a**2+1)**(1/2),x)
```

```
[Out] Piecewise((-1/(b*asin(a + b*x)), Ne(b, 0)), (x/(sqrt(1 - a**2)*asin(a)**2),
 True))
```

Giac [A] time = 1.24989, size = 18, normalized size = 1.38

$$-\frac{1}{b \arcsin(bx + a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)^2/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="gi
ac")
```

```
[Out] -1/(b*arcsin(b*x + a))
```

3.332 $\int \frac{1}{\sqrt{1-a^2-2abx-b^2x^2}\sin^{-1}(a+bx)^3}\,dx$

Optimal. Leaf size=15

$$-\frac{1}{2b\sin^{-1}(a+bx)^2}$$

```
[Out] -1/(2*b*ArcSin[a + b*x]^2)
```

Rubi [A] time = 0.0703002, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {4807, 4641}

$$-\frac{1}{2b\sin^{-1}(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x]^3),x]
```

```
[Out] -1/(2*b*ArcSin[a + b*x]^2)
```

Rule 4807

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-(C/d^2) + (C*x^2)/d^
2)^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C
, n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{1}{\sqrt{1-a^2-2abx-b^2x^2}\sin^{-1}(a+bx)^3}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\sqrt{1-x^2}\sin^{-1}(x)^3}\,dx, x, a+bx\right)}{b}$$
$$= -\frac{1}{2b\sin^{-1}(a+bx)^2}$$

Mathematica [A] time = 0.0145088, size = 15, normalized size = 1.

$$-\frac{1}{2b\sin^{-1}(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x]^3),x]
```

```
[Out] -1/(2*b*ArcSin[a + b*x]^2)
```

Maple [A] time = 0.044, size = 14, normalized size = 0.9

$$-\frac{1}{2\,b\,(\arcsin(bx+a))^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/arcsin(b*x+a)^3/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x)
```

```
[Out] -1/2/b/arcsin(b*x+a)^2
```

Maxima [B] time = 82.6449, size = 45, normalized size = 3.

$$-\frac{1}{2\,b\arctan\left(bx+a, \sqrt{bx+a+1}\sqrt{-bx-a+1}\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)^3/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="ma
xima")
```

```
[Out] -1/2/(b*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))^2)
```

Fricas [A] time = 2.06257, size = 38, normalized size = 2.53

$$-\frac{1}{2\,b\arcsin\left(bx+a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)^3/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="fr
icas")
```

```
[Out] -1/2/(b*arcsin(b*x + a)^2)
```

Sympy [A] time = 2.26528, size = 29, normalized size = 1.93

$$\begin{cases} -\frac{1}{2b\operatorname{asin}^2\left(a+bx\right)} & \text{for } b\neq 0 \\ \frac{x}{\sqrt{1-a^2}\operatorname{asin}^3\left(a\right)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/asin(b*x+a)**3/(-b**2*x**2-2*a*b*x-a**2+1)**(1/2),x)
```

```
[Out] Piecewise((-1/(2*b*asin(a + b*x)**2), Ne(b, 0)), (x/(sqrt(1 - a**2)*asin(a)
**3), True))
```

Giac [A] time = 1.29891, size = 18, normalized size = 1.2

$$-\frac{1}{2\,b\arcsin\left(bx+a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)^3/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="gi
ac")
```

```
[Out] -1/2/(b*arcsin(b*x + a)^2)
```

3.333 $\int \frac{\sin^{-1}(a+bx)^3}{\left(1-a^2-2abx-b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=128

$$-\frac{3i\sin^{-1}(a+bx)\text{PolyLog}\left(2,-e^{2i\sin^{-1}(a+bx)}\right)}{b}+\frac{3\text{PolyLog}\left(3,-e^{2i\sin^{-1}(a+bx)}\right)}{2b}+\frac{(a+bx)\sin^{-1}(a+bx)^3}{b\sqrt{1-(a+bx)^2}}-\frac{i\sin^{-1}(a+bx)}{b}$$

```
[Out] ((-I)*ArcSin[a + b*x]^3)/b + ((a + b*x)*ArcSin[a + b*x]^3)/(b*Sqrt[1 - (a +
 b*x)^2]) + (3*ArcSin[a + b*x]^2*Log[1 + E^((2*I)*ArcSin[a + b*x])])/b - ((
3*I)*ArcSin[a + b*x]*PolyLog[2, -E^((2*I)*ArcSin[a + b*x])])/b + (3*PolyLog
[3, -E^((2*I)*ArcSin[a + b*x])])/(2*b)
```

Rubi [A] time = 0.206506, antiderivative size = 128, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.242, Rules used = {4807, 4651, 4675, 3719, 2190, 2531, 2282, 6589}

$$-\frac{3i\sin^{-1}(a+bx)\text{PolyLog}\left(2,-e^{2i\sin^{-1}(a+bx)}\right)}{b}+\frac{3\text{PolyLog}\left(3,-e^{2i\sin^{-1}(a+bx)}\right)}{2b}+\frac{(a+bx)\sin^{-1}(a+bx)^3}{b\sqrt{1-(a+bx)^2}}-\frac{i\sin^{-1}(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^3/(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2),x]
```



```
[Out] ((-I)*ArcSin[a + b*x]^3)/b + ((a + b*x)*ArcSin[a + b*x]^3)/(b*Sqrt[1 - (a +
 b*x)^2]) + (3*ArcSin[a + b*x]^2*Log[1 + E^((2*I)*ArcSin[a + b*x])])/b - ((
3*I)*ArcSin[a + b*x]*PolyLog[2, -E^((2*I)*ArcSin[a + b*x])])/b + (3*PolyLog
[3, -E^((2*I)*ArcSin[a + b*x])])/(2*b)
```


Rule 4807

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-(C/d^2) + (C*x^2)/d^
2)^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C
, n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
```

```
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
```

```
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\sin^{-1}(a+bx)^3}{\left(1-a^2-2abx-b^2x^2\right)^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)^3}{\left(1-x^2\right)^{3/2}}\,dx, x, a+bx\right)}{b}$$

$$= \frac{(a+bx)\sin^{-1}(a+bx)^3}{b\sqrt{1-(a+bx)^2}} - \frac{3\,\text{Subst}\left(\int \frac{x\sin^{-1}(x)^2}{1-x^2}\,dx, x, a+bx\right)}{b}$$

$$= \frac{(a+bx)\sin^{-1}(a+bx)^3}{b\sqrt{1-(a+bx)^2}} - \frac{3\,\text{Subst}\left(\int x^2\tan(x)\,dx, x, \sin^{-1}(a+bx)\right)}{b}$$

$$= -\frac{i\sin^{-1}(a+bx)^3}{b} + \frac{(a+bx)\sin^{-1}(a+bx)^3}{b\sqrt{1-(a+bx)^2}} + \frac{(6i)\,\text{Subst}\left(\int \frac{e^{2ix}x^2}{1+e^{2ix}}\,dx, x, \sin^{-1}(a+bx)\right)}{b}$$

$$= -\frac{i\sin^{-1}(a+bx)^3}{b} + \frac{(a+bx)\sin^{-1}(a+bx)^3}{b\sqrt{1-(a+bx)^2}} + \frac{3\sin^{-1}(a+bx)^2\log\left(1+e^{2i\sin^{-1}(a+bx)}\right)}{b} -$$

$$= -\frac{i\sin^{-1}(a+bx)^3}{b} + \frac{(a+bx)\sin^{-1}(a+bx)^3}{b\sqrt{1-(a+bx)^2}} + \frac{3\sin^{-1}(a+bx)^2\log\left(1+e^{2i\sin^{-1}(a+bx)}\right)}{b} -$$

$$= -\frac{i\sin^{-1}(a+bx)^3}{b} + \frac{(a+bx)\sin^{-1}(a+bx)^3}{b\sqrt{1-(a+bx)^2}} + \frac{3\sin^{-1}(a+bx)^2\log\left(1+e^{2i\sin^{-1}(a+bx)}\right)}{b} -$$

$$= -\frac{i\sin^{-1}(a+bx)^3}{b} + \frac{(a+bx)\sin^{-1}(a+bx)^3}{b\sqrt{1-(a+bx)^2}} + \frac{3\sin^{-1}(a+bx)^2\log\left(1+e^{2i\sin^{-1}(a+bx)}\right)}{b} -$$

Mathematica [A] time = 0.572127, size = 144, normalized size = 1.12

$$\frac{-6i\sin^{-1}(a+bx)\text{PolyLog}\left(2,-e^{2i\sin^{-1}(a+bx)}\right)+3\text{PolyLog}\left(3,-e^{2i\sin^{-1}(a+bx)}\right)+2\sin^{-1}(a+bx)^2\left(\frac{\left(-i\sqrt{-a^2-2abx-b^2x^2+1}+a+bx\right)}{\sqrt{-a^2-2abx-b^2x^2+}}\right.}{2b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^3/(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2),x]
```

```
[Out] (2*ArcSin[a + b*x]^2*(((a + b*x - I*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2])*ArcS
in[a + b*x])/Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2] + 3*Log[1 + E^((2*I)*ArcSin[
```

```
a + b*x])]) - (6*I)*ArcSin[a + b*x]*PolyLog[2, -E^((2*I)*ArcSin[a + b*x])]
+ 3*PolyLog[3, -E^((2*I)*ArcSin[a + b*x])])/(2*b)
```

Maple [A] time = 0.122, size = 235, normalized size = 1.8

$$\frac{(\arcsin(bx+a))^3}{b(b^2x^2+2xab+a^2-1)}\left(-\sqrt{-b^2x^2-2xab-a^2+1}xb+ix^2b^2-\sqrt{-b^2x^2-2xab-a^2+1}a+2ixab+ia^2-i\right)-\frac{2i(\mathrm{arc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)^3/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2),x)
```

```
[Out] (-(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*x*b+I*x^2*b^2-(-b^2*x^2-2*a*b*x-a^2+1)^(1/
2)*a+2*I*x*a*b+I*a^2-I)/b/(b^2*x^2+2*a*b*x+a^2-1)*arcsin(b*x+a)^3-2*I/b*arc
sin(b*x+a)^3+3*arcsin(b*x+a)^2*ln(1+(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))^2)/b-3*
I*arcsin(b*x+a)*polylog(2,-(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))^2)/b+3/2*polylog
(3,-(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))^2)/b
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^3/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2),x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\sqrt{-b^2x^2-2abx-a^2+1}\arcsin(bx+a)^3}{b^4x^4+4ab^3x^3+2(3a^2-1)b^2x^2+a^4+4(a^3-a)bx-2a^2+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^3/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2),x, algorithm="fric
as")
```

```
[Out] integral(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*arcsin(b*x + a)^3/(b^4*x^4 + 4*
a*b^3*x^3 + 2*(3*a^2 - 1)*b^2*x^2 + a^4 + 4*(a^3 - a)*b*x - 2*a^2 + 1), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\operatorname{asin}^3(a+bx)}{\left(-(a+bx-1)(a+bx+1)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**3/(-b**2*x**2-2*a*b*x-a**2+1)**(3/2),x)
```

```
[Out] Integral(asin(a + b*x)**3/(-(a + b*x - 1)*(a + b*x + 1))**(3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\arcsin(bx+a)^3}{\left(-b^2x^2-2\,abx-a^2+1\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^3/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2),x, algorithm="giac
")
```

```
[Out] integrate(arcsin(b*x + a)^3/(-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2), x)
```

3.334 $\int \frac{\sin^{-1}(a+bx)^2}{\left(1-a^2-2abx-b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=97

$$-\frac{i\text{PolyLog}\left(2,-e^{2i\sin^{-1}(a+bx)}\right)}{b}+\frac{(a+bx)\sin^{-1}(a+bx)^2}{b\sqrt{1-(a+bx)^2}}-\frac{i\sin^{-1}(a+bx)^2}{b}+\frac{2\sin^{-1}(a+bx)\log\left(1+e^{2i\sin^{-1}(a+bx)}\right)}{b}$$

```
[Out] ((-I)*ArcSin[a + b*x]^2)/b + ((a + b*x)*ArcSin[a + b*x]^2)/(b*Sqrt[1 - (a +
 b*x)^2]) + (2*ArcSin[a + b*x]*Log[1 + E^((2*I)*ArcSin[a + b*x])])/b - (I*P
olyLog[2, -E^((2*I)*ArcSin[a + b*x])])/b
```

Rubi [A] time = 0.163431, antiderivative size = 97, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.212, Rules used = {4807, 4651, 4675, 3719, 2190, 2279, 2391}

$$-\frac{i\text{PolyLog}\left(2,-e^{2i\sin^{-1}(a+bx)}\right)}{b}+\frac{(a+bx)\sin^{-1}(a+bx)^2}{b\sqrt{1-(a+bx)^2}}-\frac{i\sin^{-1}(a+bx)^2}{b}+\frac{2\sin^{-1}(a+bx)\log\left(1+e^{2i\sin^{-1}(a+bx)}\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^2/(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2),x]
```

```
[Out] ((-I)*ArcSin[a + b*x]^2)/b + ((a + b*x)*ArcSin[a + b*x]^2)/(b*Sqrt[1 - (a +
 b*x)^2]) + (2*ArcSin[a + b*x]*Log[1 + E^((2*I)*ArcSin[a + b*x])])/b - (I*P
olyLog[2, -E^((2*I)*ArcSin[a + b*x])])/b
```

Rule 4807

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-(C/d^2) + (C*x^2)/d^
2)^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C
, n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
```

```
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\sin^{-1}(a+bx)^2}{\left(1-a^2-2abx-b^2x^2\right)^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)^2}{\left(1-x^2\right)^{3/2}}\,dx, x, a+bx\right)}{b}$$

$$= \frac{(a+bx)\sin^{-1}(a+bx)^2}{b\sqrt{1-(a+bx)^2}} - \frac{2\,\text{Subst}\left(\int \frac{x\sin^{-1}(x)}{1-x^2}\,dx, x, a+bx\right)}{b}$$

$$= \frac{(a+bx)\sin^{-1}(a+bx)^2}{b\sqrt{1-(a+bx)^2}} - \frac{2\,\text{Subst}\left(\int x\tan(x)\,dx, x, \sin^{-1}(a+bx)\right)}{b}$$

$$= -\frac{i\sin^{-1}(a+bx)^2}{b} + \frac{(a+bx)\sin^{-1}(a+bx)^2}{b\sqrt{1-(a+bx)^2}} + \frac{(4i)\,\text{Subst}\left(\int \frac{e^{2ix}x}{1+e^{2ix}}\,dx, x, \sin^{-1}(a+bx\right.}{b}$$

$$= -\frac{i\sin^{-1}(a+bx)^2}{b} + \frac{(a+bx)\sin^{-1}(a+bx)^2}{b\sqrt{1-(a+bx)^2}} + \frac{2\sin^{-1}(a+bx)\log\left(1+e^{2i\sin^{-1}(a+bx)}\right)}{b}$$

$$= -\frac{i\sin^{-1}(a+bx)^2}{b} + \frac{(a+bx)\sin^{-1}(a+bx)^2}{b\sqrt{1-(a+bx)^2}} + \frac{2\sin^{-1}(a+bx)\log\left(1+e^{2i\sin^{-1}(a+bx)}\right)}{b}$$

$$= -\frac{i\sin^{-1}(a+bx)^2}{b} + \frac{(a+bx)\sin^{-1}(a+bx)^2}{b\sqrt{1-(a+bx)^2}} + \frac{2\sin^{-1}(a+bx)\log\left(1+e^{2i\sin^{-1}(a+bx)}\right)}{b}$$

<u>Mathematica</u> [A] time = 0.354796, size = 114, normalized size = 1.18

$$\frac{\sin^{-1}(a+bx)\left(\frac{\left(-i\sqrt{-a^2-2abx-b^2x^2+1}+a+bx\right)\sin^{-1}(a+bx)}{\sqrt{-a^2-2abx-b^2x^2+1}} + 2\log\left(1+e^{2i\sin^{-1}(a+bx)}\right)\right) - i\text{PolyLog}\left(2,-e^{2i\sin^{-1}(a+bx)}\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^2/(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2),x]
```

```
[Out] (ArcSin[a + b*x]*(((a + b*x - I*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2])*ArcSin[a
 + b*x])/Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2] + 2*Log[1 + E^((2*I)*ArcSin[a +
b*x])]) - I*PolyLog[2, -E^((2*I)*ArcSin[a + b*x])])/b
```

Maple [A] time = 0.106, size = 194, normalized size = 2.

$$\frac{(\arcsin(bx+a))^2}{(b^2x^2+2xab+a^2-1)b}\left(-\sqrt{-b^2x^2-2xab-a^2+1}xb+ix^2b^2-\sqrt{-b^2x^2-2xab-a^2+1}a+2ixab+ia^2-i\right)+2\,\frac{\text{arcsin}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)^2/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2),x)
```

```
[Out] (-(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*x*b+I*x^2*b^2-(-b^2*x^2-2*a*b*x-a^2+1)^(1/
2)*a+2*I*x*a*b+I*a^2-I)/(b^2*x^2+2*a*b*x+a^2-1)/b*arcsin(b*x+a)^2+2*arcsin(
b*x+a)*ln(1+(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))^2)/b-2*I/b*arcsin(b*x+a)^2-I*po
lylog(2,-(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))^2)/b
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2),x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{-b^2x^2-2\,abx-a^2+1}\,\arcsin(bx+a)^2}{b^4x^4+4\,ab^3x^3+2\left(3\,a^2-1\right)b^2x^2+a^4+4\left(a^3-a\right)bx-2\,a^2+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2),x, algorithm="fric
as")
```

```
[Out] integral(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*arcsin(b*x + a)^2/(b^4*x^4 + 4*
a*b^3*x^3 + 2*(3*a^2 - 1)*b^2*x^2 + a^4 + 4*(a^3 - a)*b*x - 2*a^2 + 1), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\operatorname{asin}^2(a+bx)}{(-(a+bx-1)(a+bx+1))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**2/(-b**2*x**2-2*a*b*x-a**2+1)**(3/2),x)
```

```
[Out] Integral(asin(a + b*x)**2/(-(a + b*x - 1)*(a + b*x + 1))**(3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\arcsin(bx+a)^2}{\left(-b^2x^2-2\,abx-a^2+1\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2),x, algorithm="giac
")
```

```
[Out] integrate(arcsin(b*x + a)^2/(-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2), x)
```

3.335 $\int \frac{\sin^{-1}(a+bx)}{(1-a^2-2abx-b^2x^2)^{3/2}}\,dx$

Optimal. Leaf size=50

$$\frac{\log\left(1-(a+bx)^2\right)}{2b}+\frac{(a+bx)\sin^{-1}(a+bx)}{b\sqrt{1-(a+bx)^2}}$$

```
[Out] ((a + b*x)*ArcSin[a + b*x])/(b*Sqrt[1 - (a + b*x)^2]) + Log[1 - (a + b*x)^2
]/(2*b)
```

Rubi [A] time = 0.0597169, antiderivative size = 50, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.097, Rules used = {4807, 4651, 260}

$$\frac{\log\left(1-(a+bx)^2\right)}{2b}+\frac{(a+bx)\sin^{-1}(a+bx)}{b\sqrt{1-(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]/(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2),x]
```

```
[Out] ((a + b*x)*ArcSin[a + b*x])/(b*Sqrt[1 - (a + b*x)^2]) + Log[1 - (a + b*x)^2
]/(2*b)
```

Rule 4807

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-(C/d^2) + (C*x^2)/d^
2)^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C
, n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rubi steps

$$\int \frac{\sin^{-1}(a+bx)}{\left(1-a^2-2abx-b^2x^2\right)^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)}{\left(1-x^2\right)^{3/2}}\,dx, x, a+bx\right)}{b}$$

$$= \frac{(a+bx)\sin^{-1}(a+bx)}{b\sqrt{1-(a+bx)^2}} - \frac{\text{Subst}\left(\int \frac{x}{1-x^2}\,dx, x, a+bx\right)}{b}$$

$$= \frac{(a+bx)\sin^{-1}(a+bx)}{b\sqrt{1-(a+bx)^2}} + \frac{\log\left(1-(a+bx)^2\right)}{2b}$$

Mathematica [A] time = 0.0963208, size = 66, normalized size = 1.32

$$\frac{\log\left(-a^2-2abx-b^2x^2+1\right)+\frac{2(a+bx)\sin^{-1}(a+bx)}{\sqrt{-a^2-2abx-b^2x^2+1}}}{2b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]/(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2),x]
```

```
[Out] ((2*(a + b*x)*ArcSin[a + b*x])/Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2] + Log[1 -
a^2 - 2*a*b*x - b^2*x^2])/(2*b)
```

Maple [B] time = 0.056, size = 155, normalized size = 3.1

$$-\frac{1}{2\,b\left(b^2x^2+2\,xab+a^2-1\right)}\left(-\ln\left(1-(bx+a)^2\right)x^2b^2+2\,\arcsin(bx+a)\sqrt{-b^2x^2-2\,xab-a^2+1}xb-2\,\ln\left(1-(bx+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2),x)
```

```
[Out] -1/2/b*(-ln(1-(b*x+a)^2)*x^2*b^2+2*arcsin(b*x+a)*(-b^2*x^2-2*a*b*x-a^2+1)^(
1/2)*x*b-2*ln(1-(b*x+a)^2)*x*a*b+2*arcsin(b*x+a)*(-b^2*x^2-2*a*b*x-a^2+1)^(
```

```
1/2)*a-ln(1-(b*x+a)^2)*a^2+ln(1-(b*x+a)^2))/(b^2*x^2+2*a*b*x+a^2-1)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.37571, size = 232, normalized size = 4.64

$$-\frac{2\sqrt{-b^2x^2 - 2\,abx - a^2 + 1}(bx + a)\arcsin(bx + a) - \left(b^2x^2 + 2\,abx + a^2 - 1\right)\log\left(b^2x^2 + 2\,abx + a^2 - 1\right)}{2\left(b^3x^2 + 2\,ab^2x + \left(a^2 - 1\right)b\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2),x, algorithm="fricas
")
```

```
[Out] -1/2*(2*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*x + a)*arcsin(b*x + a) - (b^2
*x^2 + 2*a*b*x + a^2 - 1)*log(b^2*x^2 + 2*a*b*x + a^2 - 1))/(b^3*x^2 + 2*a*
b^2*x + (a^2 - 1)*b)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\operatorname{asin}(a + bx)}{\left(-\left(a + bx - 1\right)\left(a + bx + 1\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)/(-b**2*x**2-2*a*b*x-a**2+1)**(3/2),x)
```

```
[Out] Integral(asin(a + b*x)/(-(a + b*x - 1)*(a + b*x + 1))**(3/2), x)
```

Giac [A] time = 1.28173, size = 112, normalized size = 2.24

$$-\frac{\sqrt{-b^2x^2 - 2\,abx - a^2 + 1}\left(x + \frac{a}{b}\right)\arcsin\left(bx + a\right)}{b^2x^2 + 2\,abx + a^2 - 1} + \frac{\log\left(|bx + a + 1|\right)}{2\,b} + \frac{\log\left(|bx + a - 1|\right)}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2),x, algorithm="giac")
```

```
[Out] -sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(x + a/b)*arcsin(b*x + a)/(b^2*x^2 + 2*
a*b*x + a^2 - 1) + 1/2*log(abs(b*x + a + 1))/b + 1/2*log(abs(b*x + a - 1))/
b
```

3.336 $\int \frac{1}{\left(1-a^2-2abx-b^2x^2\right)^{3/2}\sin^{-1}(a+bx)}\,dx$

Optimal. Leaf size=26

$$\text{Unintegrable}\left(\frac{1}{\left(1-(a+bx)^2\right)^{3/2}\sin^{-1}(a+bx)},x\right)$$

```
[Out] Unintegrable[1/((1 - (a + b*x)^2)^(3/2)*ArcSin[a + b*x]), x]
```

Rubi [A] time = 0.0815288, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{\left(1-a^2-2abx-b^2x^2\right)^{3/2}\sin^{-1}(a+bx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)*ArcSin[a + b*x]),x]

[Out] Defer[Subst][Defer[Int][1/((1 - x^2)^(3/2)*ArcSin[x]), x], x, a + b*x]/b
```

Rubi steps

$$\int \frac{1}{\left(1-a^2-2abx-b^2x^2\right)^{3/2}\sin^{-1}(a+bx)}\,dx=\frac{\text{Subst}\left(\int \frac{1}{\left(1-x^2\right)^{3/2}\sin^{-1}(x)}\,dx,x,a+bx\right)}{b}$$

Mathematica [A] time = 0.742955, size = 0, normalized size = 0.

$$\int \frac{1}{\left(1-a^2-2abx-b^2x^2\right)^{3/2}\sin^{-1}(a+bx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)*ArcSin[a + b*x]),x]
```

```
[Out] Integrate[1/((1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)*ArcSin[a + b*x]), x]
```

Maple [A] time = 0.176, size = 0, normalized size = 0.

$$\int \frac{1}{\arcsin (bx+a)} \left(-b^2x^2 - 2\,xab - a^2 + 1\right)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a),x)
```

```
[Out] int(1/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(-b^2x^2 - 2\,abx - a^2 + 1\right)^{\frac{3}{2}} \arcsin (bx+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a),x, algorithm="maxi
ma")
```

```
[Out] integrate(1/((-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)*arcsin(b*x + a)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{-b^2x^2 - 2\,abx - a^2 + 1}}{\left(b^4x^4 + 4\,ab^3x^3 + 2\left(3\,a^2 - 1\right)b^2x^2 + a^4 + 4\left(a^3 - a\right)bx - 2\,a^2 + 1\right)\arcsin (bx+a)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a),x, algorithm="fric
as")
```

```
[Out] integral(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)/((b^4*x^4 + 4*a*b^3*x^3 + 2*(3*
a^2 - 1)*b^2*x^2 + a^4 + 4*(a^3 - a)*b*x - 2*a^2 + 1)*arcsin(b*x + a)), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(-\left(a+bx-1\right)\left(a+bx+1\right)\right)^{\frac{3}{2}}\operatorname{asin}\left(a+bx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-b**2*x**2-2*a*b*x-a**2+1)**(3/2)/asin(b*x+a),x)
```

```
[Out] Integral(1/((-(a + b*x - 1)*(a + b*x + 1))**(3/2)*asin(a + b*x)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(-b^2x^2-2\,abx-a^2+1\right)^{\frac{3}{2}}\arcsin\left(bx+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a),x, algorithm="giac
")
```

```
[Out] integrate(1/((-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)*arcsin(b*x + a)), x)
```

3.337 $\int \frac{1}{(1-a^2-2abx-b^2x^2)^{3/2}\sin^{-1}(a+bx)^2}\,dx$

Optimal. Leaf size=58

$$2\text{Unintegrable}\left(\frac{a+bx}{\left(1-(a+bx)^2\right)^2\sin^{-1}(a+bx)},x\right)-\frac{1}{b\left(1-(a+bx)^2\right)\sin^{-1}(a+bx)}$$

```
[Out] -(1/(b*(1 - (a + b*x)^2)*ArcSin[a + b*x])) + 2*Unintegrable[(a + b*x)/((1 -
 (a + b*x)^2)^2*ArcSin[a + b*x]), x]
```

Rubi [A] time = 0.124873, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$, Rules used = {}

$$\int \frac{1}{\left(1-a^2-2abx-b^2x^2\right)^{3/2}\sin^{-1}(a+bx)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)*ArcSin[a + b*x]^2),x]
```

```
[Out] -(1/(b*(1 - (a + b*x)^2)*ArcSin[a + b*x])) + (2*Defer[Subst][Defer[Int][x/(
(1 - x^2)^2*ArcSin[x]), x], x, a + b*x])/b
```

Rubi steps

$$\int \frac{1}{\left(1-a^2-2abx-b^2x^2\right)^{3/2}\sin^{-1}(a+bx)^2}\,dx=\frac{\text{Subst}\left(\int \frac{1}{\left(1-x^2\right)^{3/2}\sin^{-1}(x)^2}\,dx,x,a+bx\right)}{b}$$

$$=-\frac{1}{b\left(1-(a+bx)^2\right)\sin^{-1}(a+bx)}+\frac{2\,\text{Subst}\left(\int \frac{x}{\left(1-x^2\right)^2\sin^{-1}(x)}\,dx,x,a+\right.}{b}$$

Mathematica [A] time = 10.9414, size = 0, normalized size = 0.

$$\int \frac{1}{\left(1-a^2-2abx-b^2x^2\right)^{3/2}\sin^{-1}(a+bx)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)*ArcSin[a + b*x]^2),x]
```

```
[Out] Integrate[1/((1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)*ArcSin[a + b*x]^2), x]
```

Maple [A] time = 0.148, size = 0, normalized size = 0.

$$\int \frac{1}{(\arcsin(bx+a))^2}\left(-b^2x^2-2xab-a^2+1\right)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^2,x)
```

```
[Out] int(1/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\frac{2\left(b^3x^2+2\,ab^2x+\left(a^2-1\right)b\right)\arctan\left(bx+a,\sqrt{bx+a+1}\sqrt{-bx-a+1}\right)\int \frac{bx+a}{\left(b^4x^4+4\,ab^3x^3+2\left(3\,a^2-1\right)b^2x^2+a^4+4\left(a^3-a\right)bx-2\,a^2+1\right)\operatorname{arct}}}{\left(b^3x^2+2\,ab^2x+\left(a^2-1\right)b\right)\arctan\left(bx+a,\sqrt{bx+a+1}\sqrt{-bx-a+1}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^2,x, algorithm="ma
xima")
```

```
[Out] ((b^3*x^2 + 2*a*b^2*x + (a^2 - 1)*b)*arctan2(b*x + a, sqrt(b*x + a + 1)*sqr
t(-b*x - a + 1))*integrate(2*(b*x + a)/((b^4*x^4 + 4*a*b^3*x^3 + 2*(3*a^2 -
 1)*b^2*x^2 + a^4 + 4*(a^3 - a)*b*x - 2*a^2 + 1)*arctan2(b*x + a, sqrt(b*x
+ a + 1)*sqrt(-b*x - a + 1))), x) + 1)/((b^3*x^2 + 2*a*b^2*x + (a^2 - 1)*b)
*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)))
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\operatorname{integral}\left(\frac{\sqrt{-b^2x^2-2\,abx-a^2+1}}{\left(b^4x^4+4\,ab^3x^3+2\left(3\,a^2-1\right)b^2x^2+a^4+4\left(a^3-a\right)bx-2\,a^2+1\right)\arcsin(bx+a)^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^2,x, algorithm="fr
icas")
```

```
[Out] integral(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)/((b^4*x^4 + 4*a*b^3*x^3 + 2*(3*
a^2 - 1)*b^2*x^2 + a^4 + 4*(a^3 - a)*b*x - 2*a^2 + 1)*arcsin(b*x + a)^2), x
)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(-\left(a+bx-1\right)\left(a+bx+1\right)\right)^{\frac{3}{2}}\operatorname{asin}^{2}\left(a+bx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-b**2*x**2-2*a*b*x-a**2+1)**(3/2)/asin(b*x+a)**2,x)
```

```
[Out] Integral(1/((-(a + b*x - 1)*(a + b*x + 1))**(3/2)*asin(a + b*x)**2), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(-b^{2}x^{2}-2\,abx-a^{2}+1\right)^{\frac{3}{2}}\arcsin\left(bx+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^2,x, algorithm="gi
ac")
```

```
[Out] integrate(1/((-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)*arcsin(b*x + a)^2), x)
```

3.338 $\int \frac{\sin^{-1}(a+bx)}{\sqrt{c-c(a+bx)^2}}\,dx$

Optimal. Leaf size=46

$$\frac{\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)^2}{2b\sqrt{c-c(a+bx)^2}}$$

```
[Out] (Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^2)/(2*b*Sqrt[c - c*(a + b*x)^2])
```

Rubi [A] time = 0.158231, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {247, 217, 203, 4643, 4641}

$$\frac{\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)^2}{2b\sqrt{c-c(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]/Sqrt[c - c*(a + b*x)^2],x]
```

```
[Out] (Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^2)/(2*b*Sqrt[c - c*(a + b*x)^2])
```

Rule 247

```
Int[((a_.) + (b_.)*(v_)^(n_))^(p_), x_Symbol] :> Dist[1/Coefficient[v, x, 1
], Subst[Int[(a + b*x^n)^p, x], x, v], x] /; FreeQ[{a, b, n, p}, x] && Line
arQ[v, x] && NeQ[v, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 4643

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcSin[c*x])^n
/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e
, 0] &&  !GtQ[d, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{\sin^{-1}(a+bx)}{\sqrt{c-c(a+bx)^2}}\,dx &= \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)}{\sqrt{c-cx^2}}\,dx, x, a+bx\right)}{b}\\ &= \frac{\sqrt{1-(a+bx)^2}\,\text{Subst}\left(\int \frac{\sin^{-1}(x)}{\sqrt{1-x^2}}\,dx, x, a+bx\right)}{b\sqrt{c-c(a+bx)^2}}\\ &= \frac{\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)^2}{2b\sqrt{c-c(a+bx)^2}}\end{aligned}$$

Mathematica [A] time = 0.100684, size = 46, normalized size = 1.

$$\frac{\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)^2}{2b\sqrt{-c\left((a+bx)^2-1\right)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]/Sqrt[c - c*(a + b*x)^2],x]
```

```
[Out] (Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^2)/(2*b*Sqrt[-(c*(-1 + (a + b*x)^2))
])
```

Maple [A] time = 0.052, size = 80, normalized size = 1.7

$$-\frac{(\arcsin(bx+a))^2}{2\,b\left(b^2x^2+2\,xab+a^2-1\right)c}\sqrt{-c\left(b^2x^2+2\,xab+a^2-1\right)}\sqrt{-b^2x^2-2\,xab-a^2+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)/(c-c*(b*x+a)^2)^(1/2),x)
```

```
[Out] -1/2*(-c*(b^2*x^2+2*a*b*x+a^2-1))^(1/2)*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/b/(b
^2*x^2+2*a*b*x+a^2-1)/c*arcsin(b*x+a)^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/(c-c*(b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\sqrt{-b^2cx^2 - 2\,abcx - \left(a^2 - 1\right)c}\arcsin\left(bx + a\right)}{b^2cx^2 + 2\,abcx + \left(a^2 - 1\right)c}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/(c-c*(b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-b^2*c*x^2 - 2*a*b*c*x - (a^2 - 1)*c)*arcsin(b*x + a)/(b^2*c
*x^2 + 2*a*b*c*x + (a^2 - 1)*c), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\operatorname{asin}\left(a + bx\right)}{\sqrt{-c\left(a + bx - 1\right)\left(a + bx + 1\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)/(c-c*(b*x+a)**2)**(1/2),x)
```

```
[Out] Integral(asin(a + b*x)/sqrt(-c*(a + b*x - 1)*(a + b*x + 1)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\arcsin(bx+a)}{\sqrt{-(bx+a)^2c+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/(c-c*(b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(arcsin(b*x + a)/sqrt(-(b*x + a)^2*c + c), x)
```

3.339 $\int \frac{\sin^{-1}(a+bx)}{\sqrt{(1-a^2)c-2abcx-b^2cx^2}}\,dx$

Optimal. Leaf size=46

$$\frac{\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)^2}{2b\sqrt{c-c(a+bx)^2}}$$

```
[Out] (Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^2)/(2*b*Sqrt[c - c*(a + b*x)^2])
```

Rubi [A] time = 0.0843548, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {4807, 4643, 4641}

$$\frac{\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)^2}{2b\sqrt{c-c(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]/Sqrt[(1 - a^2)*c - 2*a*b*c*x - b^2*c*x^2],x]
```

```
[Out] (Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^2)/(2*b*Sqrt[c - c*(a + b*x)^2])
```

Rule 4807

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-(C/d^2) + (C*x^2)/d^
2)^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C
, n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 4643

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcSin[c*x])^n
/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e
, 0] &&  !GtQ[d, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
```

```
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{\sin^{-1}(a+bx)}{\sqrt{(1-a^2)\,c-2abcx-b^2cx^2}}\,dx &= \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)}{\sqrt{c-cx^2}}\,dx,x,a+bx\right)}{b}\\ &= \frac{\sqrt{1-(a+bx)^2}\,\text{Subst}\left(\int \frac{\sin^{-1}(x)}{\sqrt{1-x^2}}\,dx,x,a+bx\right)}{b\sqrt{c-c(a+bx)^2}}\\ &= \frac{\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)^2}{2b\sqrt{c-c(a+bx)^2}}\end{aligned}$$

Mathematica [A] time = 0.0414277, size = 54, normalized size = 1.17

$$\frac{\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)^2}{2b\sqrt{-c\left(a^2+2abx+b^2x^2-1\right)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]/Sqrt[(1 - a^2)*c - 2*a*b*c*x - b^2*c*x^2],x]
```

```
[Out] (Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^2)/(2*b*Sqrt[-(c*(-1 + a^2 + 2*a*b*x
 + b^2*x^2))])
```

Maple [A] time = 0.035, size = 80, normalized size = 1.7

$$-\frac{(\arcsin(bx+a))^2}{2\,b\left(b^2x^2+2\,xab+a^2-1\right)c}\sqrt{-c\left(b^2x^2+2\,xab+a^2-1\right)}\sqrt{-b^2x^2-2\,xab-a^2+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)/((-a^2+1)*c-2*a*b*c*x-b^2*c*x^2)^(1/2),x)
```

```
[Out] -1/2*(-c*(b^2*x^2+2*a*b*x+a^2-1))^(1/2)*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/b/(b
^2*x^2+2*a*b*x+a^2-1)/c*arcsin(b*x+a)^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/((-a^2+1)*c-2*a*b*c*x-c*x^2*b^2)^(1/2),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\sqrt{-b^2cx^2 - 2\,abcx - \left(a^2-1\right)c}\arcsin\left(bx+a\right)}{b^2cx^2 + 2\,abcx + \left(a^2-1\right)c}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/((-a^2+1)*c-2*a*b*c*x-c*x^2*b^2)^(1/2),x, algorithm
="fricas")
```

```
[Out] integral(-sqrt(-b^2*c*x^2 - 2*a*b*c*x - (a^2 - 1)*c)*arcsin(b*x + a)/(b^2*c
*x^2 + 2*a*b*c*x + (a^2 - 1)*c), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\operatorname{asin}\left(a+bx\right)}{\sqrt{-c\left(a+bx-1\right)\left(a+bx+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)/((-a**2+1)*c-2*a*b*c*x-c*x**2*b**2)**(1/2),x)
```

```
[Out] Integral(asin(a + b*x)/sqrt(-c*(a + b*x - 1)*(a + b*x + 1)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\arcsin(bx+a)}{\sqrt{-b^2cx^2-2\,abcx-(a^2-1)c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/((-a^2+1)*c-2*a*b*c*x-c*x^2*b^2)^(1/2),x, algorithm
="giac")
```

```
[Out] integrate(arcsin(b*x + a)/sqrt(-b^2*c*x^2 - 2*a*b*c*x - (a^2 - 1)*c), x)
```

3.340 $\int x^9 \left(a+b\sin^{-1}\left(cx^2\right)\right)\,dx$

Optimal. Leaf size=84

$$\frac{1}{10}x^{10}\left(a+b\sin^{-1}\left(cx^2\right)\right)+\frac{b\left(1-c^2x^4\right)^{5/2}}{50c^5}-\frac{b\left(1-c^2x^4\right)^{3/2}}{15c^5}+\frac{b\sqrt{1-c^2x^4}}{10c^5}$$

```
[Out] (b*Sqrt[1 - c^2*x^4])/(10*c^5) - (b*(1 - c^2*x^4)^(3/2))/(15*c^5) + (b*(1 -
 c^2*x^4)^(5/2))/(50*c^5) + (x^10*(a + b*ArcSin[c*x^2]))/10
```

Rubi [A] time = 0.064852, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4842, 12, 266, 43}

$$\frac{1}{10}x^{10}\left(a+b\sin^{-1}\left(cx^2\right)\right)+\frac{b\left(1-c^2x^4\right)^{5/2}}{50c^5}-\frac{b\left(1-c^2x^4\right)^{3/2}}{15c^5}+\frac{b\sqrt{1-c^2x^4}}{10c^5}$$

Antiderivative was successfully verified.

```
[In] Int[x^9*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (b*Sqrt[1 - c^2*x^4])/(10*c^5) - (b*(1 - c^2*x^4)^(3/2))/(15*c^5) + (b*(1 -
 c^2*x^4)^(5/2))/(50*c^5) + (x^10*(a + b*ArcSin[c*x^2]))/10
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
```

```
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int x^9 \left(a+b\sin^{-1}\left(cx^2\right)\right) dx &= \frac{1}{10}x^{10}\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{10}b\int \frac{2cx^{11}}{\sqrt{1-c^2x^4}}\,dx \\
&= \frac{1}{10}x^{10}\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{5}(bc)\int \frac{x^{11}}{\sqrt{1-c^2x^4}}\,dx \\
&= \frac{1}{10}x^{10}\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{20}(bc)\,\text{Subst}\left(\int \frac{x^2}{\sqrt{1-c^2x}}\,dx, x, x^4\right) \\
&= \frac{1}{10}x^{10}\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{20}(bc)\,\text{Subst}\left(\int \left(\frac{1}{c^4\sqrt{1-c^2x}}-\frac{2\sqrt{1-c^2x}}{c^4}+\frac{\left(1-c^2x\right)^{3/2}}{c^4}\right) d\right. \\
&= \frac{b\sqrt{1-c^2x^4}}{10c^5}-\frac{b\left(1-c^2x^4\right)^{3/2}}{15c^5}+\frac{b\left(1-c^2x^4\right)^{5/2}}{50c^5}+\frac{1}{10}x^{10}\left(a+b\sin^{-1}\left(cx^2\right)\right)
\end{aligned}$$

Mathematica [A] time = 0.0550731, size = 60, normalized size = 0.71

$$\frac{1}{150}\left(15ax^{10}+\frac{b\sqrt{1-c^2x^4}\left(3c^4x^8+4c^2x^4+8\right)}{c^5}+15bx^{10}\sin^{-1}\left(cx^2\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^9*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (15*a*x^10 + (b*Sqrt[1 - c^2*x^4]*(8 + 4*c^2*x^4 + 3*c^4*x^8))/c^5 + 15*b*x
^10*ArcSin[c*x^2])/150
```

Maple [A] time = 0.025, size = 71, normalized size = 0.9

$$\frac{x^{10}a}{10}+b\left(\frac{x^{10}\arcsin\left(cx^2\right)}{10}-\frac{\left(cx^2-1\right)\left(cx^2+1\right)\left(3\,c^4x^8+4\,c^2x^4+8\right)}{150\,c^5}\frac{1}{\sqrt{-c^2x^4+1}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^9*(a+b*arcsin(c*x^2)),x)
```

```
[Out] 1/10*x^10*a+b*(1/10*x^10*arcsin(c*x^2)-1/150/c^5*(c*x^2-1)*(c*x^2+1)*(3*c^4
*x^8+4*c^2*x^4+8)/(-c^2*x^4+1)^(1/2))
```

Maxima [A] time = 1.60451, size = 103, normalized size = 1.23

$$\frac{1}{10}\,ax^{10}+\frac{1}{150}\left(15\,x^{10}\arcsin\left(cx^2\right)+c\left(\frac{3\left(-c^2x^4+1\right)^{\frac{5}{2}}}{c^6}-\frac{10\left(-c^2x^4+1\right)^{\frac{3}{2}}}{c^6}+\frac{15\sqrt{-c^2x^4+1}}{c^6}\right)\right)b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^9*(a+b*arcsin(c*x^2)),x, algorithm="maxima")
```

```
[Out] 1/10*a*x^10 + 1/150*(15*x^10*arcsin(c*x^2) + c*(3*(-c^2*x^4 + 1)^(5/2)/c^6
- 10*(-c^2*x^4 + 1)^(3/2)/c^6 + 15*sqrt(-c^2*x^4 + 1)/c^6))*b
```

Fricas [A] time = 2.33201, size = 151, normalized size = 1.8

$$\frac{15\,bc^5x^{10}\arcsin\left(cx^2\right)+15\,ac^5x^{10}+\left(3\,bc^4x^8+4\,bc^2x^4+8\,b\right)\sqrt{-c^2x^4+1}}{150\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^9*(a+b*arcsin(c*x^2)),x, algorithm="fricas")
```

```
[Out] 1/150*(15*b*c^5*x^10*arcsin(c*x^2) + 15*a*c^5*x^10 + (3*b*c^4*x^8 + 4*b*c^2
*x^4 + 8*b)*sqrt(-c^2*x^4 + 1))/c^5
```

Sympy [A] time = 31.1882, size = 90, normalized size = 1.07

$$\begin{cases} \frac{ax^{10}}{10} + \frac{bx^{10}\operatorname{asin}(cx^2)}{10} + \frac{bx^8\sqrt{-c^2x^4+1}}{50c} + \frac{2bx^4\sqrt{-c^2x^4+1}}{75c^3} + \frac{4b\sqrt{-c^2x^4+1}}{75c^5} & \text{for } c \neq 0 \\ \frac{ax^{10}}{10} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**9*(a+b*asin(c*x**2)),x)
```

```
[Out] Piecewise((a*x**10/10 + b*x**10*asin(c*x**2)/10 + b*x**8*sqrt(-c**2*x**4 +
1)/(50*c) + 2*b*x**4*sqrt(-c**2*x**4 + 1)/(75*c**3) + 4*b*sqrt(-c**2*x**4 +
 1)/(75*c**5), Ne(c, 0)), (a*x**10/10, True))
```

Giac [A] time = 1.22419, size = 189, normalized size = 2.25

$$\frac{15\,acx^{10} + \left(\frac{15\left(c^2x^4-1\right)^2x^2\arcsin\left(cx^2\right)}{c^3} + \frac{30\left(c^2x^4-1\right)x^2\arcsin\left(cx^2\right)}{c^3} + \frac{15\,x^2\arcsin\left(cx^2\right)}{c^3} + \frac{3\left(c^2x^4-1\right)^2\sqrt{-c^2x^4+1}}{c^4} - \frac{10\left(-c^2x^4+1\right)^{\frac{3}{2}}}{c^4} + \frac{15\sqrt{-c^2x^4}}{c^4}}{150\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^9*(a+b*arcsin(c*x^2)),x, algorithm="giac")
```

```
[Out] 1/150*(15*a*c*x^10 + (15*(c^2*x^4 - 1)^2*x^2*arcsin(c*x^2)/c^3 + 30*(c^2*x^
4 - 1)*x^2*arcsin(c*x^2)/c^3 + 15*x^2*arcsin(c*x^2)/c^3 + 3*(c^2*x^4 - 1)^2
*sqrt(-c^2*x^4 + 1)/c^4 - 10*(-c^2*x^4 + 1)^(3/2)/c^4 + 15*sqrt(-c^2*x^4 +
1)/c^4)*b)/c
```

3.341 $\int x^7 \left(a+b\sin^{-1}\left(cx^2\right)\right) dx$

Optimal. Leaf size=82

$$\frac{1}{8}x^8\left(a+b\sin^{-1}\left(cx^2\right)\right)+\frac{bx^6\sqrt{1-c^2x^4}}{32c}+\frac{3bx^2\sqrt{1-c^2x^4}}{64c^3}-\frac{3b\sin^{-1}\left(cx^2\right)}{64c^4}$$

```
[Out] (3*b*x^2*Sqrt[1 - c^2*x^4])/(64*c^3) + (b*x^6*Sqrt[1 - c^2*x^4])/(32*c) - (
3*b*ArcSin[c*x^2])/(64*c^4) + (x^8*(a + b*ArcSin[c*x^2]))/8
```

Rubi [A] time = 0.0609173, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357, Rules used = {4842, 12, 275, 321, 216}

$$\frac{1}{8}x^8\left(a+b\sin^{-1}\left(cx^2\right)\right)+\frac{bx^6\sqrt{1-c^2x^4}}{32c}+\frac{3bx^2\sqrt{1-c^2x^4}}{64c^3}-\frac{3b\sin^{-1}\left(cx^2\right)}{64c^4}$$

Antiderivative was successfully verified.

```
[In] Int[x^7*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (3*b*x^2*Sqrt[1 - c^2*x^4])/(64*c^3) + (b*x^6*Sqrt[1 - c^2*x^4])/(32*c) - (
3*b*ArcSin[c*x^2])/(64*c^4) + (x^8*(a + b*ArcSin[c*x^2]))/8
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 275

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k = GCD[m
+ 1, n]}, Dist[1/k, Subst[Int[x^((m + 1)/k - 1)*(a + b*x^(n/k))^p, x], x, x
```

```
^k], x] /; k != 1] /; FreeQ[{a, b, p}, x] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rubi steps

$$\begin{aligned}
\int x^7\left(a+b\sin^{-1}\left(cx^2\right)\right)dx &= \frac{1}{8}x^8\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{8}b\int\frac{2cx^9}{\sqrt{1-c^2x^4}}\,dx\\
&= \frac{1}{8}x^8\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{4}(bc)\int\frac{x^9}{\sqrt{1-c^2x^4}}\,dx\\
&= \frac{1}{8}x^8\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{8}(bc)\,\mathrm{Subst}\left(\int\frac{x^4}{\sqrt{1-c^2x^2}}\,dx,x,x^2\right)\\
&= \frac{bx^6\sqrt{1-c^2x^4}}{32c}+\frac{1}{8}x^8\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{(3b)\,\mathrm{Subst}\left(\int\frac{x^2}{\sqrt{1-c^2x^2}}\,dx,x,x^2\right)}{32c}\\
&= \frac{3bx^2\sqrt{1-c^2x^4}}{64c^3}+\frac{bx^6\sqrt{1-c^2x^4}}{32c}+\frac{1}{8}x^8\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{(3b)\,\mathrm{Subst}\left(\int\frac{1}{\sqrt{1-c^2x^2}}\,dx,x,x^2\right)}{64c^3}\\
&= \frac{3bx^2\sqrt{1-c^2x^4}}{64c^3}+\frac{bx^6\sqrt{1-c^2x^4}}{32c}-\frac{3b\sin^{-1}\left(cx^2\right)}{64c^4}+\frac{1}{8}x^8\left(a+b\sin^{-1}\left(cx^2\right)\right)
\end{aligned}$$

Mathematica [A] time = 0.0323159, size = 87, normalized size = 1.06

$$\frac{ax^8}{8}+\frac{bx^6\sqrt{1-c^2x^4}}{32c}+\frac{3bx^2\sqrt{1-c^2x^4}}{64c^3}-\frac{3b\sin^{-1}\left(cx^2\right)}{64c^4}+\frac{1}{8}bx^8\sin^{-1}\left(cx^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^7*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (a*x^8)/8 + (3*b*x^2*Sqrt[1 - c^2*x^4])/(64*c^3) + (b*x^6*Sqrt[1 - c^2*x^4]
)/(32*c) - (3*b*ArcSin[c*x^2])/(64*c^4) + (b*x^8*ArcSin[c*x^2])/8
```

Maple [A] time = 0.024, size = 95, normalized size = 1.2

$$\frac{x^8a}{8}+\frac{bx^8\arcsin\left(cx^2\right)}{8}+\frac{bx^6}{32\,c}\sqrt{-c^2x^4+1}+\frac{3\,bx^2}{64\,c^3}\sqrt{-c^2x^4+1}-\frac{3\,b}{64\,c^3}\arctan\left(x^2\sqrt{c^2}\frac{1}{\sqrt{-c^2x^4+1}}\right)\frac{1}{\sqrt{c^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^7*(a+b*arcsin(c*x^2)),x)
```

```
[Out] 1/8*x^8*a+1/8*b*x^8*arcsin(c*x^2)+1/32*b*x^6*(-c^2*x^4+1)^(1/2)/c+3/64*b*x^
2*(-c^2*x^4+1)^(1/2)/c^3-3/64*b/c^3/(c^2)^(1/2)*arctan((c^2)^(1/2)*x^2/(-c^
2*x^4+1)^(1/2))
```

Maxima [A] time = 1.43572, size = 176, normalized size = 2.15

$$\frac{1}{8}\,ax^8+\frac{1}{64}\left(8\,x^8\arcsin\left(cx^2\right)+c\left(\frac{\frac{5\,\sqrt{-c^2x^4+1}c^2}{x^2}+\frac{3\left(-c^2x^4+1\right)^{\frac{3}{2}}}{x^6}}{c^8-\frac{2\left(c^2x^4-1\right)c^6}{x^4}+\frac{\left(c^2x^4-1\right)^2c^4}{x^8}}+\frac{3\,\arctan\left(\frac{\sqrt{-c^2x^4+1}}{cx^2}\right)}{c^5}\right)\right)b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*(a+b*arcsin(c*x^2)),x, algorithm="maxima")
```

```
[Out] 1/8*a*x^8 + 1/64*(8*x^8*arcsin(c*x^2) + c*((5*sqrt(-c^2*x^4 + 1)*c^2/x^2 +
3*(-c^2*x^4 + 1)^(3/2)/x^6)/(c^8 - 2*(c^2*x^4 - 1)*c^6/x^4 + (c^2*x^4 - 1)^
2*c^4/x^8) + 3*arctan(sqrt(-c^2*x^4 + 1)/(c*x^2))/c^5))*b
```

Fricas [A] time = 2.28233, size = 144, normalized size = 1.76

$$\frac{8\,ac^4x^8+\left(8\,bc^4x^8-3\,b\right)\arcsin\left(cx^2\right)+\left(2\,bc^3x^6+3\,bcx^2\right)\sqrt{-c^2x^4+1}}{64\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*(a+b*arcsin(c*x^2)),x, algorithm="fricas")
```

```
[Out] 1/64*(8*a*c^4*x^8 + (8*b*c^4*x^8 - 3*b)*arcsin(c*x^2) + (2*b*c^3*x^6 + 3*b*
c*x^2)*sqrt(-c^2*x^4 + 1))/c^4
```

Sympy [A] time = 12.8467, size = 85, normalized size = 1.04

$$\begin{cases} \frac{ax^8}{8} + \frac{bx^8 \operatorname{asin}\left(cx^2\right)}{8} + \frac{bx^6\sqrt{-c^2x^4+1}}{32c} + \frac{3bx^2\sqrt{-c^2x^4+1}}{64c^3} - \frac{3b\operatorname{asin}\left(cx^2\right)}{64c^4} & \text{for}\: c \neq 0 \\ \frac{ax^8}{8} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**7*(a+b*asin(c*x**2)),x)
```

```
[Out] Piecewise((a*x**8/8 + b*x**8*asin(c*x**2)/8 + b*x**6*sqrt(-c**2*x**4 + 1)/(
32*c) + 3*b*x**2*sqrt(-c**2*x**4 + 1)/(64*c**3) - 3*b*asin(c*x**2)/(64*c**4
), Ne(c, 0)), (a*x**8/8, True))
```

Giac [A] time = 1.13194, size = 149, normalized size = 1.82

$$\frac{8\,acx^8 - \left(\frac{2\left(-c^2x^4+1\right)^{\frac{3}{2}}x^2}{c^2} - \frac{5\sqrt{-c^2x^4+1}x^2}{c^2} - \frac{8\left(c^2x^4-1\right)^2\arcsin\left(cx^2\right)}{c^3} - \frac{16\left(c^2x^4-1\right)\arcsin\left(cx^2\right)}{c^3} - \frac{5\arcsin\left(cx^2\right)}{c^3}\right)b}{64\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*(a+b*arcsin(c*x^2)),x, algorithm="giac")
```

```
[Out] 1/64*(8*a*c*x^8 - (2*(-c^2*x^4 + 1)^(3/2)*x^2/c^2 - 5*sqrt(-c^2*x^4 + 1)*x^
2/c^2 - 8*(c^2*x^4 - 1)^2*arcsin(c*x^2)/c^3 - 16*(c^2*x^4 - 1)*arcsin(c*x^2
)/c^3 - 5*arcsin(c*x^2)/c^3)*b)/c
```

3.342 $\int x^5 \left(a+b\sin^{-1}\left(cx^2\right)\right) dx$

Optimal. Leaf size=62

$$\frac{1}{6}x^6\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{b\left(1-c^2x^4\right)^{3/2}}{18c^3}+\frac{b\sqrt{1-c^2x^4}}{6c^3}$$

```
[Out] (b*Sqrt[1 - c^2*x^4])/(6*c^3) - (b*(1 - c^2*x^4)^(3/2))/(18*c^3) + (x^6*(a
+ b*ArcSin[c*x^2]))/6
```

Rubi [A] time = 0.0479316, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4842, 12, 266, 43}

$$\frac{1}{6}x^6\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{b\left(1-c^2x^4\right)^{3/2}}{18c^3}+\frac{b\sqrt{1-c^2x^4}}{6c^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^5*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (b*Sqrt[1 - c^2*x^4])/(6*c^3) - (b*(1 - c^2*x^4)^(3/2))/(18*c^3) + (x^6*(a
+ b*ArcSin[c*x^2]))/6
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
```

```
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int x^5\left(a+b\sin^{-1}\left(cx^2\right)\right)dx&=\frac{1}{6}x^6\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{6}b\int\frac{2cx^7}{\sqrt{1-c^2x^4}}\,dx\\&=\frac{1}{6}x^6\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{3}(bc)\int\frac{x^7}{\sqrt{1-c^2x^4}}\,dx\\&=\frac{1}{6}x^6\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{12}(bc)\,\text{Subst}\left(\int\frac{x}{\sqrt{1-c^2x}}\,dx,x,x^4\right)\\&=\frac{1}{6}x^6\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{12}(bc)\,\text{Subst}\left(\int\left(\frac{1}{c^2\sqrt{1-c^2x}}-\frac{\sqrt{1-c^2x}}{c^2}\right)dx,x,x^4\right)\\&=\frac{b\sqrt{1-c^2x^4}}{6c^3}-\frac{b\left(1-c^2x^4\right)^{3/2}}{18c^3}+\frac{1}{6}x^6\left(a+b\sin^{-1}\left(cx^2\right)\right)\end{aligned}$$

Mathematica [A] time = 0.039535, size = 70, normalized size = 1.13

$$\frac{ax^6}{6}+\frac{bx^4\sqrt{1-c^2x^4}}{18c}+\frac{b\sqrt{1-c^2x^4}}{9c^3}+\frac{1}{6}bx^6\sin^{-1}\left(cx^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^5*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (a*x^6)/6 + (b*Sqrt[1 - c^2*x^4])/(9*c^3) + (b*x^4*Sqrt[1 - c^2*x^4])/(18*c
) + (b*x^6*ArcSin[c*x^2])/6
```

Maple [A] time = 0.012, size = 62, normalized size = 1.

$$\frac{x^6a}{6}+b\left(\frac{x^6\arcsin\left(cx^2\right)}{6}-\frac{\left(cx^2-1\right)\left(cx^2+1\right)\left(c^2x^4+2\right)}{18\,c^3}\frac{1}{\sqrt{-c^2x^4+1}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(a+b*arcsin(c*x^2)),x)
```

```
[Out] 1/6*x^6*a+b*(1/6*x^6*arcsin(c*x^2)-1/18/c^3*(c*x^2-1)*(c*x^2+1)*(c^2*x^4+2)
/(-c^2*x^4+1)^(1/2))
```

Maxima [A] time = 1.4572, size = 80, normalized size = 1.29

$$\frac{1}{6}ax^6 + \frac{1}{18}\left(3x^6\arcsin\left(cx^2\right) - c\left(\frac{\left(-c^2x^4+1\right)^{\frac{3}{2}}}{c^4} - \frac{3\sqrt{-c^2x^4+1}}{c^4}\right)\right)b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x^2)),x, algorithm="maxima")
```

```
[Out] 1/6*a*x^6 + 1/18*(3*x^6*arcsin(c*x^2) - c*((-c^2*x^4 + 1)^(3/2)/c^4 - 3*sqr
t(-c^2*x^4 + 1)/c^4))*b
```

Fricas [A] time = 2.39229, size = 123, normalized size = 1.98

$$\frac{3bc^3x^6\arcsin\left(cx^2\right) + 3ac^3x^6 + \left(bc^2x^4 + 2b\right)\sqrt{-c^2x^4+1}}{18c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x^2)),x, algorithm="fricas")
```

```
[Out] 1/18*(3*b*c^3*x^6*arcsin(c*x^2) + 3*a*c^3*x^6 + (b*c^2*x^4 + 2*b)*sqrt(-c^2
*x^4 + 1))/c^3
```

Sympy [A] time = 4.02234, size = 65, normalized size = 1.05

$$\begin{cases} \frac{ax^6}{6} + \frac{bx^6\operatorname{asin}\left(cx^2\right)}{6} + \frac{bx^4\sqrt{-c^2x^4+1}}{18c} + \frac{b\sqrt{-c^2x^4+1}}{9c^3} & \text{for } c \neq 0 \\ \frac{ax^6}{6} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(a+b*asin(c*x**2)),x)
```

```
[Out] Piecewise((a*x**6/6 + b*x**6*asin(c*x**2)/6 + b*x**4*sqrt(-c**2*x**4 + 1)/(
18*c) + b*sqrt(-c**2*x**4 + 1)/(9*c**3), Ne(c, 0)), (a*x**6/6, True))
```

Giac [A] time = 1.15378, size = 117, normalized size = 1.89

$$\frac{3\,acx^{6} + \left(\frac{3\left(c^{2}x^{4}-1\right)x^{2}\arcsin\left(cx^{2}\right)}{c} + \frac{3\,x^{2}\arcsin\left(cx^{2}\right)}{c} - \frac{\left(-c^{2}x^{4}+1\right)^{\frac{3}{2}}}{c^{2}} + \frac{3\,\sqrt{-c^{2}x^{4}+1}}{c^{2}}\right)b}{18\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x^2)),x, algorithm="giac")
```

```
[Out] 1/18*(3*a*c*x^6 + (3*(c^2*x^4 - 1)*x^2*arcsin(c*x^2)/c + 3*x^2*arcsin(c*x^2
)/c - (-c^2*x^4 + 1)^(3/2)/c^2 + 3*sqrt(-c^2*x^4 + 1)/c^2)*b)/c
```

3.343 $\int x^3 \left(a+b\sin^{-1}\left(cx^2\right)\right)\,dx$

Optimal. Leaf size=57

$$\frac{1}{4}x^4\left(a+b\sin^{-1}\left(cx^2\right)\right)+\frac{bx^2\sqrt{1-c^2x^4}}{8c}-\frac{b\sin^{-1}\left(cx^2\right)}{8c^2}$$

```
[Out] (b*x^2*Sqrt[1 - c^2*x^4])/(8*c) - (b*ArcSin[c*x^2])/(8*c^2) + (x^4*(a + b*A
rcSin[c*x^2]))/4
```

Rubi [A] time = 0.0435031, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357, Rules used = {4842, 12, 275, 321, 216}

$$\frac{1}{4}x^4\left(a+b\sin^{-1}\left(cx^2\right)\right)+\frac{bx^2\sqrt{1-c^2x^4}}{8c}-\frac{b\sin^{-1}\left(cx^2\right)}{8c^2}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (b*x^2*Sqrt[1 - c^2*x^4])/(8*c) - (b*ArcSin[c*x^2])/(8*c^2) + (x^4*(a + b*A
rcSin[c*x^2]))/4
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 275

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k = GCD[m
+ 1, n]}, Dist[1/k, Subst[Int[x^((m + 1)/k - 1)*(a + b*x^(n/k))^p, x], x, x
```

```
^k], x] /; k != 1] /; FreeQ[{a, b, p}, x] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rubi steps

$$\begin{aligned}\int x^3\left(a+b\sin^{-1}\left(cx^2\right)\right)dx &= \frac{1}{4}x^4\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{4}b\int\frac{2cx^5}{\sqrt{1-c^2x^4}}\,dx\\ &= \frac{1}{4}x^4\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{2}(bc)\int\frac{x^5}{\sqrt{1-c^2x^4}}\,dx\\ &= \frac{1}{4}x^4\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{4}(bc)\,\text{Subst}\left(\int\frac{x^2}{\sqrt{1-c^2x^2}}\,dx,x,x^2\right)\\ &= \frac{bx^2\sqrt{1-c^2x^4}}{8c}+\frac{1}{4}x^4\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{b\,\text{Subst}\left(\int\frac{1}{\sqrt{1-c^2x^2}}\,dx,x,x^2\right)}{8c}\\ &= \frac{bx^2\sqrt{1-c^2x^4}}{8c}-\frac{b\sin^{-1}\left(cx^2\right)}{8c^2}+\frac{1}{4}x^4\left(a+b\sin^{-1}\left(cx^2\right)\right)\end{aligned}$$

Mathematica [A] time = 0.0232808, size = 62, normalized size = 1.09

$$\frac{ax^4}{4}+\frac{bx^2\sqrt{1-c^2x^4}}{8c}-\frac{b\sin^{-1}\left(cx^2\right)}{8c^2}+\frac{1}{4}bx^4\sin^{-1}\left(cx^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (a*x^4)/4 + (b*x^2*Sqrt[1 - c^2*x^4])/(8*c) - (b*ArcSin[c*x^2])/(8*c^2) + (
b*x^4*ArcSin[c*x^2])/4
```

Maple [A] time = 0.013, size = 74, normalized size = 1.3

$$\frac{x^4 a}{4}+\frac{b x^4 \arcsin \left(c x^2\right)}{4}+\frac{b x^2}{8 c} \sqrt{-c^2 x^4+1}-\frac{b}{8 c} \arctan \left(x^2 \sqrt{c^2} \frac{1}{\sqrt{-c^2 x^4+1}}\right) \frac{1}{\sqrt{c^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*arcsin(c*x^2)),x)
```

```
[Out] 1/4*x^4*a+1/4*b*x^4*arcsin(c*x^2)+1/8*b*x^2*(-c^2*x^4+1)^(1/2)/c-1/8*b/c/(c
^2)^(1/2)*arctan((c^2)^(1/2)*x^2/(-c^2*x^4+1)^(1/2))
```

Maxima [A] time = 1.42222, size = 119, normalized size = 2.09

$$\frac{1}{4} a x^4+\frac{1}{8}\left(2 x^4 \arcsin \left(c x^2\right)+c\left(\frac{\arctan \left(\frac{\sqrt{-c^2 x^4+1}}{c x^2}\right)}{c^3}+\frac{\sqrt{-c^2 x^4+1}}{\left(c^4-\frac{\left(c^2 x^4-1\right) c^2}{x^4}\right) x^2}\right)\right) b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x^2)),x, algorithm="maxima")
```

```
[Out] 1/4*a*x^4 + 1/8*(2*x^4*arcsin(c*x^2) + c*(arctan(sqrt(-c^2*x^4 + 1)/(c*x^2)
)/c^3 + sqrt(-c^2*x^4 + 1)/((c^4 - (c^2*x^4 - 1)*c^2/x^4)*x^2)))*b
```

Fricas [A] time = 2.52245, size = 116, normalized size = 2.04

$$\frac{2 a c^2 x^4+\sqrt{-c^2 x^4+1} b c x^2+\left(2 b c^2 x^4-b\right) \arcsin \left(c x^2\right)}{8 c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x^2)),x, algorithm="fricas")
```

```
[Out] 1/8*(2*a*c^2*x^4 + sqrt(-c^2*x^4 + 1)*b*c*x^2 + (2*b*c^2*x^4 - b)*arcsin(c*
x^2))/c^2
```

Sympy [A] time = 1.15005, size = 60, normalized size = 1.05

$$\begin{cases} \frac{ax^4}{4} + \frac{bx^4 \operatorname{asin}\left(cx^2\right)}{4} + \frac{bx^2\sqrt{-c^2x^4+1}}{8c} - \frac{b \operatorname{asin}\left(cx^2\right)}{8c^2} & \text{for } c \neq 0 \\ \frac{ax^4}{4} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*asin(c*x**2)),x)
```

```
[Out] Piecewise((a*x**4/4 + b*x**4*asin(c*x**2)/4 + b*x**2*sqrt(-c**2*x**4 + 1)/(
8*c) - b*asin(c*x**2)/(8*c**2), Ne(c, 0)), (a*x**4/4, True))
```

Giac [A] time = 1.16703, size = 80, normalized size = 1.4

$$\frac{2\,acx^4 + \frac{\left(\sqrt{-c^2x^4+1}cx^2 + 2\left(c^2x^4-1\right)\arcsin\left(cx^2\right) + \arcsin\left(cx^2\right)\right)b}{c}}{8\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x^2)),x, algorithm="giac")
```

```
[Out] 1/8*(2*a*c*x^4 + (sqrt(-c^2*x^4 + 1)*c*x^2 + 2*(c^2*x^4 - 1)*arcsin(c*x^2)
+ arcsin(c*x^2))*b/c)/c
```

3.344 $\int x\left(a+b\sin^{-1}\left(cx^2\right)\right)\,dx$

Optimal. Leaf size=45

$$\frac{ax^2}{2}+\frac{b\sqrt{1-c^2x^4}}{2c}+\frac{1}{2}bx^2\sin^{-1}\left(cx^2\right)$$

```
[Out] (a*x^2)/2 + (b*Sqrt[1 - c^2*x^4])/(2*c) + (b*x^2*ArcSin[c*x^2])/2
```

Rubi [A] time = 0.0388268, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {6715, 4619, 261}

$$\frac{ax^2}{2}+\frac{b\sqrt{1-c^2x^4}}{2c}+\frac{1}{2}bx^2\sin^{-1}\left(cx^2\right)$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (a*x^2)/2 + (b*Sqrt[1 - c^2*x^4])/(2*c) + (b*x^2*ArcSin[c*x^2])/2
```

Rule 6715

```
Int[(u_)*(x_)^(m_.), x_Symbol] :> Dist[1/(m + 1), Subst[Int[SubstFor[x^(m +
 1), u, x], x], x, x^(m + 1)], x] /; FreeQ[m, x] && NeQ[m, -1] && FunctionO
fQ[x^(m + 1), u, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int x\left(a+b\sin^{-1}\left(cx^2\right)\right)dx&=\frac{1}{2}\,\text{Subst}\left(\int\left(a+b\sin^{-1}(cx)\right)dx,x,x^2\right)\\&=\frac{ax^2}{2}+\frac{1}{2}b\,\text{Subst}\left(\int\sin^{-1}(cx)\,dx,x,x^2\right)\\&=\frac{ax^2}{2}+\frac{1}{2}bx^2\sin^{-1}\left(cx^2\right)-\frac{1}{2}(bc)\,\text{Subst}\left(\int\frac{x}{\sqrt{1-c^2x^2}}\,dx,x,x^2\right)\\&=\frac{ax^2}{2}+\frac{b\sqrt{1-c^2x^4}}{2c}+\frac{1}{2}bx^2\sin^{-1}\left(cx^2\right)\end{aligned}$$

Mathematica [A] time = 0.0084366, size = 43, normalized size = 0.96

$$\frac{ax^2}{2}+\frac{1}{2}b\left(\frac{\sqrt{1-c^2x^4}}{c}+x^2\sin^{-1}\left(cx^2\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (a*x^2)/2 + (b*(Sqrt[1 - c^2*x^4]/c + x^2*ArcSin[c*x^2]))/2
```

Maple [A] time = 0.002, size = 39, normalized size = 0.9

$$\frac{1}{2c}\left(ax^2c+b\left(x^2c\arcsin\left(cx^2\right)+\sqrt{-c^2x^4+1}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(c*x^2)),x)
```

```
[Out] 1/2/c*(a*x^2*c+b*(x^2*c*arcsin(c*x^2)+(-c^2*x^4+1)^(1/2)))
```

Maxima [A] time = 1.47575, size = 50, normalized size = 1.11

$$\frac{1}{2}\,ax^2+\frac{\left(cx^2\arcsin\left(cx^2\right)+\sqrt{-c^2x^4+1}\right)b}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x^2)),x, algorithm="maxima")
```

```
[Out] 1/2*a*x^2 + 1/2*(c*x^2*arcsin(c*x^2) + sqrt(-c^2*x^4 + 1))*b/c
```

Fricas [A] time = 2.51839, size = 86, normalized size = 1.91

$$\frac{bcx^2 \arcsin\left(cx^2\right) + acx^2 + \sqrt{-c^2x^4 + 1}b}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x^2)),x, algorithm="fricas")
```

```
[Out] 1/2*(b*c*x^2*arcsin(c*x^2) + a*c*x^2 + sqrt(-c^2*x^4 + 1)*b)/c
```

Sympy [A] time = 0.248994, size = 42, normalized size = 0.93

$$\begin{cases} \frac{ax^2}{2} + \frac{bx^2 \operatorname{asin}\left(cx^2\right)}{2} + \frac{b\sqrt{-c^2x^4+1}}{2c} & \text{for } c \neq 0 \\ \frac{ax^2}{2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(c*x**2)),x)
```

```
[Out] Piecewise((a*x**2/2 + b*x**2*asin(c*x**2)/2 + b*sqrt(-c**2*x**4 + 1)/(2*c),
 Ne(c, 0)), (a*x**2/2, True))
```

Giac [A] time = 1.15716, size = 51, normalized size = 1.13

$$\frac{acx^2 + \left(cx^2 \arcsin\left(cx^2\right) + \sqrt{-c^2x^4 + 1}\right)b}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x^2)),x, algorithm="giac")
```

```
[Out] 1/2*(a*c*x^2 + (c*x^2*arcsin(c*x^2) + sqrt(-c^2*x^4 + 1))*b)/c
```

3.345 $\int \frac{a+b\sin^{-1}(cx^2)}{x}\,dx$

Optimal. Leaf size=69

$$-\frac{1}{4}ib\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx^2)}\right)+a\log(x)-\frac{1}{4}ib\sin^{-1}\left(cx^2\right)^2+\frac{1}{2}b\sin^{-1}\left(cx^2\right)\log\left(1-e^{2i\sin^{-1}(cx^2)}\right)$$

```
[Out] (-I/4)*b*ArcSin[c*x^2]^2 + (b*ArcSin[c*x^2]*Log[1 - E^((2*I)*ArcSin[c*x^2])
])/2 + a*Log[x] - (I/4)*b*PolyLog[2, E^((2*I)*ArcSin[c*x^2])]
```

Rubi [A] time = 0.0979946, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {6742, 4830, 3717, 2190, 2279, 2391}

$$-\frac{1}{4}ib\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx^2)}\right)+a\log(x)-\frac{1}{4}ib\sin^{-1}\left(cx^2\right)^2+\frac{1}{2}b\sin^{-1}\left(cx^2\right)\log\left(1-e^{2i\sin^{-1}(cx^2)}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^2])/x,x]
```

```
[Out] (-I/4)*b*ArcSin[c*x^2]^2 + (b*ArcSin[c*x^2]*Log[1 - E^((2*I)*ArcSin[c*x^2])
])/2 + a*Log[x] - (I/4)*b*PolyLog[2, E^((2*I)*ArcSin[c*x^2])]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 4830

```
Int[ArcSin[(a_.)*(x_)^(p_)]^(n_.)/(x_), x_Symbol] :> Dist[1/p, Subst[Int[x^
n*Cot[x], x], x, ArcSin[a*x^p]], x] /; FreeQ[{a, p}, x] && IGtQ[n, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$
\begin{aligned}
\int \frac{a+b\sin^{-1}\left(cx^2\right)}{x}\,dx &= \int \left(\frac{a}{x}+\frac{b\sin^{-1}\left(cx^2\right)}{x}\right)dx \\
&= a\log(x)+b\int \frac{\sin^{-1}\left(cx^2\right)}{x}\,dx \\
&= a\log(x)+\frac{1}{2}b\,\text{Subst}\left(\int x\cot(x)\,dx,x,\sin^{-1}\left(cx^2\right)\right) \\
&= -\frac{1}{4}ib\sin^{-1}\left(cx^2\right)^2+a\log(x)-(ib)\,\text{Subst}\left(\int \frac{e^{2ix}x}{1-e^{2ix}}\,dx,x,\sin^{-1}\left(cx^2\right)\right) \\
&= -\frac{1}{4}ib\sin^{-1}\left(cx^2\right)^2+\frac{1}{2}b\sin^{-1}\left(cx^2\right)\log\left(1-e^{2i\sin^{-1}\left(cx^2\right)}\right)+a\log(x)-\frac{1}{2}b\,\text{Subst}\left(\int \log\left(1-e^{2
\right.\right. \\
&= -\frac{1}{4}ib\sin^{-1}\left(cx^2\right)^2+\frac{1}{2}b\sin^{-1}\left(cx^2\right)\log\left(1-e^{2i\sin^{-1}\left(cx^2\right)}\right)+a\log(x)+\frac{1}{4}(ib)\,\text{Subst}\left(\int \frac{\log(1-}{x}\right. \\
&= -\frac{1}{4}ib\sin^{-1}\left(cx^2\right)^2+\frac{1}{2}b\sin^{-1}\left(cx^2\right)\log\left(1-e^{2i\sin^{-1}\left(cx^2\right)}\right)+a\log(x)-\frac{1}{4}ib\text{Li}_2\left(e^{2i\sin^{-1}\left(cx^2\right)}\right)
\end{aligned}
$$

Mathematica [A] time = 0.0342929, size = 64, normalized size = 0.93

$$
a\log(x)+\frac{1}{2}b\left(\sin^{-1}\left(cx^2\right)\log\left(1-e^{2i\sin^{-1}\left(cx^2\right)}\right)-\frac{1}{2}i\left(\sin^{-1}\left(cx^2\right)^2+\text{PolyLog}\left(2,e^{2i\sin^{-1}\left(cx^2\right)}\right)\right)\right)
$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^2])/x,x]
```

```
[Out] a*Log[x] + (b*(ArcSin[c*x^2]*Log[1 - E^((2*I)*ArcSin[c*x^2])] - (I/2)*(ArcS
in[c*x^2]^2 + PolyLog[2, E^((2*I)*ArcSin[c*x^2])])))/2
```

Maple [F] time = 0.076, size = 0, normalized size = 0.

$$\int \frac{a + b \arcsin\left(c x^2\right)}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^2))/x,x)
```

```
[Out] int((a+b*arcsin(c*x^2))/x,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$b \int \frac{\arctan\left(c x^2, \sqrt{c x^2 + 1}\sqrt{-c x^2 + 1}\right)}{x}\, dx + a \log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x,x, algorithm="maxima")
```

```
[Out] b*integrate(arctan2(c*x^2, sqrt(c*x^2 + 1)*sqrt(-c*x^2 + 1))/x, x) + a*log(
x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b \arcsin\left(c x^2\right) + a}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(c*x^2) + a)/x, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a + b\operatorname{asin}\left(cx^2\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**2))/x,x)
```

```
[Out] Integral((a + b*asin(c*x**2))/x, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\arcsin\left(cx^2\right) + a}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x^2) + a)/x, x)
```

3.346 $\int \frac{a+b\sin^{-1}(cx^2)}{x^3}\,dx$

Optimal. Leaf size=39

$$-\frac{a+b\sin^{-1}\left(cx^2\right)}{2x^2}-\frac{1}{2}bc\tanh^{-1}\left(\sqrt{1-c^2x^4}\right)$$

```
[Out] -(a + b*ArcSin[c*x^2])/(2*x^2) - (b*c*ArcTanh[Sqrt[1 - c^2*x^4]])/2
```

Rubi [A] time = 0.0331595, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357, Rules used = {4842, 12, 266, 63, 208}

$$-\frac{a+b\sin^{-1}\left(cx^2\right)}{2x^2}-\frac{1}{2}bc\tanh^{-1}\left(\sqrt{1-c^2x^4}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^2])/x^3,x]
```

```
[Out] -(a + b*ArcSin[c*x^2])/(2*x^2) - (b*c*ArcTanh[Sqrt[1 - c^2*x^4]])/2
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
```

```
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}\left(cx^2\right)}{x^3}\,dx &= -\frac{a+b\sin^{-1}\left(cx^2\right)}{2x^2}+\frac{1}{2}b\int \frac{2c}{x\sqrt{1-c^2x^4}}\,dx\\
&= -\frac{a+b\sin^{-1}\left(cx^2\right)}{2x^2}+(bc)\int \frac{1}{x\sqrt{1-c^2x^4}}\,dx\\
&= -\frac{a+b\sin^{-1}\left(cx^2\right)}{2x^2}+\frac{1}{4}(bc)\,\mathrm{Subst}\left(\int \frac{1}{x\sqrt{1-c^2x}}\,dx,x,x^4\right)\\
&= -\frac{a+b\sin^{-1}\left(cx^2\right)}{2x^2}-\frac{b\,\mathrm{Subst}\left(\int \frac{1}{\frac{1}{c^2}-\frac{x^2}{c^2}}\,dx,x,\sqrt{1-c^2x^4}\right)}{2c}\\
&= -\frac{a+b\sin^{-1}\left(cx^2\right)}{2x^2}-\frac{1}{2}bc\tanh^{-1}\left(\sqrt{1-c^2x^4}\right)
\end{aligned}$$

Mathematica [A] time = 0.0063874, size = 44, normalized size = 1.13

$$-\frac{a}{2x^2}-\frac{1}{2}bc\tanh^{-1}\left(\sqrt{1-c^2x^4}\right)-\frac{b\sin^{-1}\left(cx^2\right)}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^2])/x^3,x]
```

```
[Out] -a/(2*x^2) - (b*ArcSin[c*x^2])/(2*x^2) - (b*c*ArcTanh[Sqrt[1 - c^2*x^4]])/2
```

Maple [A] time = 0.01, size = 38, normalized size = 1.

$$-\frac{a}{2x^2}+b\left(-\frac{\arcsin\left(cx^2\right)}{2x^2}-\frac{c}{2}\operatorname{Artanh}\left(\frac{1}{\sqrt{-c^2x^4+1}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^2))/x^3,x)
```

```
[Out] -1/2*a/x^2+b*(-1/2/x^2*arcsin(c*x^2)-1/2*c*arctanh(1/(-c^2*x^4+1)^(1/2)))
```

Maxima [A] time = 1.43334, size = 77, normalized size = 1.97

$$-\frac{1}{4}\left(c\left(\log\left(\sqrt{-c^2x^4+1}+1\right)-\log\left(\sqrt{-c^2x^4+1}-1\right)\right)+\frac{2\arcsin\left(cx^2\right)}{x^2}\right)b-\frac{a}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^3,x, algorithm="maxima")
```

```
[Out] -1/4*(c*(log(sqrt(-c^2*x^4 + 1) + 1) - log(sqrt(-c^2*x^4 + 1) - 1)) + 2*arc
sin(c*x^2)/x^2)*b - 1/2*a/x^2
```

Fricas [A] time = 2.47718, size = 151, normalized size = 3.87

$$-\frac{bcx^2\log\left(\sqrt{-c^2x^4+1}+1\right)-bcx^2\log\left(\sqrt{-c^2x^4+1}-1\right)+2\,b\arcsin\left(cx^2\right)+2\,a}{4\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^3,x, algorithm="fricas")
```

```
[Out] -1/4*(b*c*x^2*log(sqrt(-c^2*x^4 + 1) + 1) - b*c*x^2*log(sqrt(-c^2*x^4 + 1)
- 1) + 2*b*arcsin(c*x^2) + 2*a)/x^2
```

Sympy [A] time = 2.01823, size = 54, normalized size = 1.38

$$-\frac{a}{2x^2} + bc\left(\begin{cases} -\frac{\operatorname{acosh}\left(\frac{1}{cx^2}\right)}{2} & \text{for } \frac{1}{|c^2x^4|} > 1 \\ \frac{i\operatorname{asin}\left(\frac{1}{cx^2}\right)}{2} & \text{otherwise} \end{cases}\right) - \frac{b\operatorname{asin}\left(cx^2\right)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**2))/x**3,x)
```

```
[Out] -a/(2*x**2) + b*c*Piecewise((-acosh(1/(c*x**2))/2, 1/Abs(c**2*x**4) > 1), (
I*asin(1/(c*x**2))/2, True)) - b*asin(c*x**2)/(2*x**2)
```

Giac [B] time = 1.37022, size = 478, normalized size = 12.26

$$-\frac{\frac{\sqrt{-c^2x^4+1}bc^3x^2\arcsin\left(cx^2\right)}{\left(\sqrt{-c^2x^4+1}+1\right)^2} + \frac{bc^3x^2\arcsin\left(cx^2\right)}{\left(\sqrt{-c^2x^4+1}+1\right)^2} + \frac{\sqrt{-c^2x^4+1}ac^3x^2}{\left(\sqrt{-c^2x^4+1}+1\right)^2} + \frac{ac^3x^2}{\left(\sqrt{-c^2x^4+1}+1\right)^2} - \frac{2\sqrt{-c^2x^4+1}bc^2\log\left(x^2|c|\right)}{\sqrt{-c^2x^4+1}+1} + \frac{2\sqrt{-c^2x^4+1}bc^2\log\left(\sqrt{-c^2x^4+\cdots}\right.}{\sqrt{-c^2x^4+1}+1}}{4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^3,x, algorithm="giac")
```

```
[Out] -1/4*(sqrt(-c^2*x^4 + 1)*b*c^3*x^2*arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1)^2
 + b*c^3*x^2*arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1)^2 + sqrt(-c^2*x^4 + 1)*
a*c^3*x^2/(sqrt(-c^2*x^4 + 1) + 1)^2 + a*c^3*x^2/(sqrt(-c^2*x^4 + 1) + 1)^2
 - 2*sqrt(-c^2*x^4 + 1)*b*c^2*log(x^2*abs(c))/(sqrt(-c^2*x^4 + 1) + 1) + 2*
sqrt(-c^2*x^4 + 1)*b*c^2*log(sqrt(-c^2*x^4 + 1) + 1)/(sqrt(-c^2*x^4 + 1) +
1) - 2*b*c^2*log(x^2*abs(c))/(sqrt(-c^2*x^4 + 1) + 1) + 2*b*c^2*log(sqrt(-c
^2*x^4 + 1) + 1)/(sqrt(-c^2*x^4 + 1) + 1) + sqrt(-c^2*x^4 + 1)*b*c*arcsin(c
*x^2)/x^2 + b*c*arcsin(c*x^2)/x^2 + sqrt(-c^2*x^4 + 1)*a*c/x^2 + a*c/x^2)/c
```

3.347 $\int \frac{a+b\sin^{-1}(cx^2)}{x^5}\,dx$

Optimal. Leaf size=41

$$-\frac{a+b\sin^{-1}\left(cx^2\right)}{4x^4}-\frac{bc\sqrt{1-c^2x^4}}{4x^2}$$

```
[Out] -(b*c*Sqrt[1 - c^2*x^4])/(4*x^2) - (a + b*ArcSin[c*x^2])/(4*x^4)
```

Rubi [A] time = 0.026372, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {4842, 12, 264}

$$-\frac{a+b\sin^{-1}\left(cx^2\right)}{4x^4}-\frac{bc\sqrt{1-c^2x^4}}{4x^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^2])/x^5,x]
```

```
[Out] -(b*c*Sqrt[1 - c^2*x^4])/(4*x^2) - (a + b*ArcSin[c*x^2])/(4*x^4)
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 264

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c
*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] /; FreeQ[{a, b, c, m, n,
```

```
p}, x] && EqQ[(m + 1)/n + p + 1, 0] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\sin^{-1}\left(cx^2\right)}{x^5}\,dx &= -\frac{a+b\sin^{-1}\left(cx^2\right)}{4x^4}+\frac{1}{4}b\int \frac{2c}{x^3\sqrt{1-c^2x^4}}\,dx\\ &= -\frac{a+b\sin^{-1}\left(cx^2\right)}{4x^4}+\frac{1}{2}(bc)\int \frac{1}{x^3\sqrt{1-c^2x^4}}\,dx\\ &= -\frac{bc\sqrt{1-c^2x^4}}{4x^2}-\frac{a+b\sin^{-1}\left(cx^2\right)}{4x^4}\end{aligned}$$

Mathematica [A] time = 0.0163505, size = 46, normalized size = 1.12

$$-\frac{a}{4x^4}-\frac{bc\sqrt{1-c^2x^4}}{4x^2}-\frac{b\sin^{-1}\left(cx^2\right)}{4x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^2])/x^5,x]
```

```
[Out] -a/(4*x^4) - (b*c*Sqrt[1 - c^2*x^4])/(4*x^2) - (b*ArcSin[c*x^2])/(4*x^4)
```

Maple [A] time = 0.013, size = 54, normalized size = 1.3

$$-\frac{a}{4\,x^4}+b\left(-\frac{\arcsin\left(cx^2\right)}{4\,x^4}+\frac{c\left(cx^2-1\right)\left(cx^2+1\right)}{4\,x^2}\frac{1}{\sqrt{-c^2x^4+1}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^2))/x^5,x)
```

```
[Out] -1/4*a/x^4+b*(-1/4/x^4*arcsin(c*x^2)+1/4*c/x^2*(c*x^2-1)*(c*x^2+1)/(-c^2*x^
4+1)^(1/2))
```

Maxima [A] time = 1.41391, size = 51, normalized size = 1.24

$$-\frac{1}{4}\,b\left(\frac{\sqrt{-c^2x^4+1}c}{x^2}+\frac{\arcsin\left(cx^2\right)}{x^4}\right)-\frac{a}{4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^5,x, algorithm="maxima")
```

```
[Out] -1/4*b*(sqrt(-c^2*x^4 + 1)*c/x^2 + arcsin(c*x^2)/x^4) - 1/4*a/x^4
```

Fricas [A] time = 2.50562, size = 92, normalized size = 2.24

$$\frac{ax^4-\sqrt{-c^2x^4+1}bcx^2-b\arcsin\left(cx^2\right)-a}{4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^5,x, algorithm="fricas")
```

```
[Out] 1/4*(a*x^4 - sqrt(-c^2*x^4 + 1)*b*c*x^2 - b*arcsin(c*x^2) - a)/x^4
```

Sympy [A] time = 2.38465, size = 70, normalized size = 1.71

$$-\frac{a}{4x^4}+\frac{bc\left(\begin{cases}-\frac{i\sqrt{c^2x^4-1}}{2x^2} & \text{for}\ \left|c^2x^4\right|>1\\ -\frac{\sqrt{-c^2x^4+1}}{2x^2} & \text{otherwise}\end{cases}\right)}{2}-\frac{b\,\mathrm{asin}\left(cx^2\right)}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**2))/x**5,x)
```

```
[Out] -a/(4*x**4) + b*c*Piecewise((-I*sqrt(c**2*x**4 - 1)/(2*x**2), Abs(c**2*x**4
) > 1), (-sqrt(-c**2*x**4 + 1)/(2*x**2), True))/2 - b*asin(c*x**2)/(4*x**4)
```

Giac [B] time = 1.23014, size = 238, normalized size = 5.8

$$-\frac{\frac{bc^5x^4\arcsin\left(cx^2\right)}{\left(\sqrt{-c^2x^4+1}+1\right)^2}+\frac{ac^5x^4}{\left(\sqrt{-c^2x^4+1}+1\right)^2}-\frac{2\,bc^4x^2}{\sqrt{-c^2x^4+1}+1}+2\,bc^3\arcsin\left(cx^2\right)+2\,ac^3+\frac{2\,bc^2\left(\sqrt{-c^2x^4+1}+1\right)}{x^2}+\frac{bc\left(\sqrt{-c^2x^4+1}+1\right)^2\arcsin\left(cx^2\right)}{x^4}+\cdots}{16\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^5,x, algorithm="giac")
```

```
[Out] -1/16*(b*c^5*x^4*arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1)^2 + a*c^5*x^4/(sqrt
(-c^2*x^4 + 1) + 1)^2 - 2*b*c^4*x^2/(sqrt(-c^2*x^4 + 1) + 1) + 2*b*c^3*arcs
in(c*x^2) + 2*a*c^3 + 2*b*c^2*(sqrt(-c^2*x^4 + 1) + 1)/x^2 + b*c*(sqrt(-c^2
*x^4 + 1) + 1)^2*arcsin(c*x^2)/x^4 + a*c*(sqrt(-c^2*x^4 + 1) + 1)^2/x^4)/c
```

3.348 $\int \frac{a+b\sin^{-1}(cx^2)}{x^7}\,dx$

Optimal. Leaf size=64

$$-\frac{a+b\sin^{-1}\left(cx^2\right)}{6x^6}-\frac{bc\sqrt{1-c^2x^4}}{12x^4}-\frac{1}{12}bc^3\tanh^{-1}\left(\sqrt{1-c^2x^4}\right)$$

```
[Out] -(b*c*Sqrt[1 - c^2*x^4])/(12*x^4) - (a + b*ArcSin[c*x^2])/(6*x^6) - (b*c^3*
ArcTanh[Sqrt[1 - c^2*x^4]])/12
```

Rubi [A] time = 0.0473027, antiderivative size = 64, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {4842, 12, 266, 51, 63, 208}

$$-\frac{a+b\sin^{-1}\left(cx^2\right)}{6x^6}-\frac{bc\sqrt{1-c^2x^4}}{12x^4}-\frac{1}{12}bc^3\tanh^{-1}\left(\sqrt{1-c^2x^4}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^2])/x^7,x]
```

```
[Out] -(b*c*Sqrt[1 - c^2*x^4])/(12*x^4) - (a + b*ArcSin[c*x^2])/(6*x^6) - (b*c^3*
ArcTanh[Sqrt[1 - c^2*x^4]])/12
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx^2)}{x^7}\,dx = -\frac{a+b\sin^{-1}(cx^2)}{6x^6}+\frac{1}{6}b\int \frac{2c}{x^5\sqrt{1-c^2x^4}}\,dx$$
$$= -\frac{a+b\sin^{-1}(cx^2)}{6x^6}+\frac{1}{3}(bc)\int \frac{1}{x^5\sqrt{1-c^2x^4}}\,dx$$
$$= -\frac{a+b\sin^{-1}(cx^2)}{6x^6}+\frac{1}{12}(bc)\,\text{Subst}\left(\int \frac{1}{x^2\sqrt{1-c^2x}}\,dx,x,x^4\right)$$
$$= -\frac{bc\sqrt{1-c^2x^4}}{12x^4}-\frac{a+b\sin^{-1}(cx^2)}{6x^6}+\frac{1}{24}\left(bc^3\right)\text{Subst}\left(\int \frac{1}{x\sqrt{1-c^2x}}\,dx,x,x^4\right)$$
$$= -\frac{bc\sqrt{1-c^2x^4}}{12x^4}-\frac{a+b\sin^{-1}(cx^2)}{6x^6}-\frac{1}{12}(bc)\,\text{Subst}\left(\int \frac{1}{\frac{1}{c^2}-\frac{x^2}{c^2}}\,dx,x,\sqrt{1-c^2x^4}\right)$$
$$= -\frac{bc\sqrt{1-c^2x^4}}{12x^4}-\frac{a+b\sin^{-1}(cx^2)}{6x^6}-\frac{1}{12}bc^3\tanh^{-1}\left(\sqrt{1-c^2x^4}\right)$$

Mathematica [A] time = 0.0213924, size = 69, normalized size = 1.08

$$-\frac{a}{6x^6}-\frac{bc\sqrt{1-c^2x^4}}{12x^4}-\frac{1}{12}bc^3\tanh^{-1}\left(\sqrt{1-c^2x^4}\right)-\frac{b\sin^{-1}(cx^2)}{6x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^2])/x^7,x]
```

```
[Out] -a/(6*x^6) - (b*c*Sqrt[1 - c^2*x^4])/(12*x^4) - (b*ArcSin[c*x^2])/(6*x^6) -
 (b*c^3*ArcTanh[Sqrt[1 - c^2*x^4]])/12
```

Maple [A] time = 0.011, size = 61, normalized size = 1.

$$-\frac{a}{6\,x^6}+b\left(-\frac{\arcsin(cx^2)}{6\,x^6}+\frac{c}{3}\left(-\frac{1}{4\,x^4}\sqrt{-c^2x^4+1}-\frac{c^2}{4}\text{Artanh}\left(\frac{1}{\sqrt{-c^2x^4+1}}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^2))/x^7,x)
```

```
[Out] -1/6*a/x^6+b*(-1/6/x^6*arcsin(c*x^2)+1/3*c*(-1/4/x^4*(-c^2*x^4+1)^(1/2)-1/4
*c^2*arctanh(1/(-c^2*x^4+1)^(1/2))))
```

Maxima [A] time = 1.43263, size = 109, normalized size = 1.7

$$-\frac{1}{24}\left(\left(c^2\log\left(\sqrt{-c^2x^4+1}+1\right)-c^2\log\left(\sqrt{-c^2x^4+1}-1\right)+\frac{2\sqrt{-c^2x^4+1}}{x^4}\right)c+\frac{4\arcsin\left(cx^2\right)}{x^6}\right)b-\frac{a}{6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^7,x, algorithm="maxima")
```

```
[Out] -1/24*((c^2*log(sqrt(-c^2*x^4 + 1) + 1) - c^2*log(sqrt(-c^2*x^4 + 1) - 1) +
 2*sqrt(-c^2*x^4 + 1)/x^4)*c + 4*arcsin(c*x^2)/x^6)*b - 1/6*a/x^6
```

Fricas [A] time = 2.8355, size = 200, normalized size = 3.12

$$-\frac{bc^3x^6\log\left(\sqrt{-c^2x^4+1}+1\right)-bc^3x^6\log\left(\sqrt{-c^2x^4+1}-1\right)+2\sqrt{-c^2x^4+1}bcx^2+4b\arcsin\left(cx^2\right)+4a}{24x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^7,x, algorithm="fricas")
```

```
[Out] -1/24*(b*c^3*x^6*log(sqrt(-c^2*x^4 + 1) + 1) - b*c^3*x^6*log(sqrt(-c^2*x^4
+ 1) - 1) + 2*sqrt(-c^2*x^4 + 1)*b*c*x^2 + 4*b*arcsin(c*x^2) + 4*a)/x^6
```

Sympy [A] time = 6.34772, size = 128, normalized size = 2.

$$-\frac{a}{6x^6}+\frac{bc\left(\begin{cases}-\frac{c^2\operatorname{acosh}\left(\frac{1}{cx^2}\right)}{4}-\frac{c\sqrt{-1+\frac{1}{c^2x^4}}}{4x^2} & \text{for}\ \frac{1}{|c^2x^4|}>1\\ \frac{ic^2\operatorname{asin}\left(\frac{1}{cx^2}\right)}{4}-\frac{ic}{4x^2\sqrt{1-\frac{1}{c^2x^4}}}+\frac{i}{4cx^6\sqrt{1-\frac{1}{c^2x^4}}} & \text{otherwise}\end{cases}\right)}{3}-\frac{b\operatorname{asin}\left(cx^2\right)}{6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**2))/x**7,x)
```

```
[Out] -a/(6*x**6) + b*c*Piecewise((-c**2*acosh(1/(c*x**2))/4 - c*sqrt(-1 + 1/(c**
2*x**4))/(4*x**2), 1/Abs(c**2*x**4) > 1), (I*c**2*asin(1/(c*x**2))/4 - I*c/
(4*x**2*sqrt(1 - 1/(c**2*x**4))) + I/(4*c*x**6*sqrt(1 - 1/(c**2*x**4))), Tr
ue))/3 - b*asin(c*x**2)/(6*x**6)
```

Giac [B] time = 2.00271, size = 406, normalized size = 6.34

$$-\frac{\frac{bc^7x^6\arcsin\left(cx^2\right)}{\left(\sqrt{-c^2x^4+1}+1\right)^3}+\frac{ac^7x^6}{\left(\sqrt{-c^2x^4+1}+1\right)^3}-\frac{bc^6x^4}{\left(\sqrt{-c^2x^4+1}+1\right)^2}+\frac{3\,bc^5x^2\arcsin\left(cx^2\right)}{\sqrt{-c^2x^4+1}+1}+\frac{3\,ac^5x^2}{\sqrt{-c^2x^4+1}+1}-4\,bc^4\log\left(x^2|c|\right)+4\,bc^4\log\left(\sqrt{-c^2x^4+1}\right.}{48\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^7,x, algorithm="giac")
```

```
[Out] -1/48*(b*c^7*x^6*arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1)^3 + a*c^7*x^6/(sqrt
(-c^2*x^4 + 1) + 1)^3 - b*c^6*x^4/(sqrt(-c^2*x^4 + 1) + 1)^2 + 3*b*c^5*x^2*
arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1) + 3*a*c^5*x^2/(sqrt(-c^2*x^4 + 1) +
1) - 4*b*c^4*log(x^2*abs(c)) + 4*b*c^4*log(sqrt(-c^2*x^4 + 1) + 1) + 3*b*c^
3*(sqrt(-c^2*x^4 + 1) + 1)*arcsin(c*x^2)/x^2 + 3*a*c^3*(sqrt(-c^2*x^4 + 1)
+ 1)/x^2 + b*c^2*(sqrt(-c^2*x^4 + 1) + 1)^2/x^4 + b*c*(sqrt(-c^2*x^4 + 1) +
 1)^3*arcsin(c*x^2)/x^6 + a*c*(sqrt(-c^2*x^4 + 1) + 1)^3/x^6)/c
```

3.349 $\int \frac{a+b\sin^{-1}(cx^2)}{x^9}\,dx$

Optimal. Leaf size=66

$$-\frac{a+b\sin^{-1}\left(cx^2\right)}{8x^8}-\frac{bc^3\sqrt{1-c^2x^4}}{12x^2}-\frac{bc\sqrt{1-c^2x^4}}{24x^6}$$

```
[Out] -(b*c*Sqrt[1 - c^2*x^4])/(24*x^6) - (b*c^3*Sqrt[1 - c^2*x^4])/(12*x^2) - (a
 + b*ArcSin[c*x^2])/(8*x^8)
```

Rubi [A] time = 0.0372158, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4842, 12, 271, 264}

$$-\frac{a+b\sin^{-1}\left(cx^2\right)}{8x^8}-\frac{bc^3\sqrt{1-c^2x^4}}{12x^2}-\frac{bc\sqrt{1-c^2x^4}}{24x^6}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^2])/x^9,x]
```

```
[Out] -(b*c*Sqrt[1 - c^2*x^4])/(24*x^6) - (b*c^3*Sqrt[1 - c^2*x^4])/(12*x^2) - (a
 + b*ArcSin[c*x^2])/(8*x^8)
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 271

```
Int[(x_)^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x^(m + 1)*(
a + b*x^n)^(p + 1))/(a*(m + 1)), x] - Dist[(b*(m + n*(p + 1) + 1))/(a*(m +
1)), Int[x^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, m, n, p}, x] && IL
tQ[Simplify[(m + 1)/n + p + 1], 0] && NeQ[m, -1]
```

Rule 264

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c
*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] /; FreeQ[{a, b, c, m, n,
 p}, x] && EqQ[(m + 1)/n + p + 1, 0] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\sin^{-1}\left(cx^2\right)}{x^9}\,dx &= -\frac{a+b\sin^{-1}\left(cx^2\right)}{8x^8}+\frac{1}{8}b\int \frac{2c}{x^7\sqrt{1-c^2x^4}}\,dx\\ &= -\frac{a+b\sin^{-1}\left(cx^2\right)}{8x^8}+\frac{1}{4}(bc)\int \frac{1}{x^7\sqrt{1-c^2x^4}}\,dx\\ &= -\frac{bc\sqrt{1-c^2x^4}}{24x^6}-\frac{a+b\sin^{-1}\left(cx^2\right)}{8x^8}+\frac{1}{6}\left(bc^3\right)\int \frac{1}{x^3\sqrt{1-c^2x^4}}\,dx\\ &= -\frac{bc\sqrt{1-c^2x^4}}{24x^6}-\frac{bc^3\sqrt{1-c^2x^4}}{12x^2}-\frac{a+b\sin^{-1}\left(cx^2\right)}{8x^8}\end{aligned}$$

Mathematica [A] time = 0.0350782, size = 60, normalized size = 0.91

$$\frac{1}{2}b\left(-\frac{c\sqrt{1-c^2x^4}\left(2c^2x^4+1\right)}{12x^6}-\frac{\sin^{-1}\left(cx^2\right)}{4x^8}\right)-\frac{a}{8x^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^2])/x^9,x]
```

```
[Out] -a/(8*x^8) + (b*(-(c*Sqrt[1 - c^2*x^4]*(1 + 2*c^2*x^4))/(12*x^6) - ArcSin[c
*x^2]/(4*x^8)))/2
```

Maple [A] time = 0.011, size = 64, normalized size = 1.

$$-\frac{a}{8\,x^8}+b\left(-\frac{\arcsin\left(cx^2\right)}{8\,x^8}+\frac{c\left(cx^2-1\right)\left(cx^2+1\right)\left(2\,c^2x^4+1\right)}{24\,x^6}\frac{1}{\sqrt{-c^2x^4+1}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^2))/x^9,x)
```

```
[Out] -1/8*a/x^8+b*(-1/8/x^8*arcsin(c*x^2)+1/24*c*(c*x^2-1)*(c*x^2+1)*(2*c^2*x^4+
1)/x^6/(-c^2*x^4+1)^(1/2))
```

Maxima [A] time = 1.43331, size = 82, normalized size = 1.24

$$-\frac{1}{24}\left(c\left(\frac{3\sqrt{-c^2x^4+1}c^2}{x^2}+\frac{\left(-c^2x^4+1\right)^{\frac{3}{2}}}{x^6}\right)+\frac{3\arcsin\left(cx^2\right)}{x^8}\right)b-\frac{a}{8\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^9,x, algorithm="maxima")
```

```
[Out] -1/24*(c*(3*sqrt(-c^2*x^4 + 1)*c^2/x^2 + (-c^2*x^4 + 1)^(3/2)/x^6) + 3*arcs
in(c*x^2)/x^8)*b - 1/8*a/x^8
```

Fricas [A] time = 3.07533, size = 123, normalized size = 1.86

$$\frac{3\,ax^8-3\,b\arcsin\left(cx^2\right)-\left(2\,bc^3x^6+bcx^2\right)\sqrt{-c^2x^4+1}-3\,a}{24\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^9,x, algorithm="fricas")
```

```
[Out] 1/24*(3*a*x^8 - 3*b*arcsin(c*x^2) - (2*b*c^3*x^6 + b*c*x^2)*sqrt(-c^2*x^4 +
 1) - 3*a)/x^8
```

Sympy [A] time = 11.542, size = 112, normalized size = 1.7

$$-\frac{a}{8x^8}+\frac{bc\left(\begin{cases}-\frac{ic^2\sqrt{c^2x^4-1}}{3x^2}-\frac{i\sqrt{c^2x^4-1}}{6x^6} & \text{for}\ \left|c^2x^4\right|>1\\ -\frac{c^2\sqrt{-c^2x^4+1}}{3x^2}-\frac{\sqrt{-c^2x^4+1}}{6x^6} & \text{otherwise}\end{cases}\right)}{4}-\frac{b\operatorname{asin}\left(cx^2\right)}{8x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**2))/x**9,x)
```

```
[Out] -a/(8*x**8) + b*c*Piecewise((-I*c**2*sqrt(c**2*x**4 - 1)/(3*x**2) - I*sqrt(
c**2*x**4 - 1)/(6*x**6), Abs(c**2*x**4) > 1), (-c**2*sqrt(-c**2*x**4 + 1)/(
3*x**2) - sqrt(-c**2*x**4 + 1)/(6*x**6), True))/4 - b*asin(c*x**2)/(8*x**8)
```

Giac [B] time = 1.2306, size = 462, normalized size = 7.

$$-\frac{\frac{3\,bc^9x^8\arcsin\left(cx^2\right)}{\left(\sqrt{-c^2x^4+1}+1\right)^4}+\frac{3\,ac^9x^8}{\left(\sqrt{-c^2x^4+1}+1\right)^4}-\frac{2\,bc^8x^6}{\left(\sqrt{-c^2x^4+1}+1\right)^3}+\frac{12\,bc^7x^4\arcsin\left(cx^2\right)}{\left(\sqrt{-c^2x^4+1}+1\right)^2}+\frac{12\,ac^7x^4}{\left(\sqrt{-c^2x^4+1}+1\right)^2}-\frac{18\,bc^6x^2}{\sqrt{-c^2x^4+1}+1}+18\,bc^5\arcsin\left(cx^2\right)+\cdots}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^9,x, algorithm="giac")
```

```
[Out] -1/384*(3*b*c^9*x^8*arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1)^4 + 3*a*c^9*x^8/
(sqrt(-c^2*x^4 + 1) + 1)^4 - 2*b*c^8*x^6/(sqrt(-c^2*x^4 + 1) + 1)^3 + 12*b*
c^7*x^4*arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1)^2 + 12*a*c^7*x^4/(sqrt(-c^2*
x^4 + 1) + 1)^2 - 18*b*c^6*x^2/(sqrt(-c^2*x^4 + 1) + 1) + 18*b*c^5*arcsin(c
*x^2) + 18*a*c^5 + 18*b*c^4*(sqrt(-c^2*x^4 + 1) + 1)/x^2 + 12*b*c^3*(sqrt(-
c^2*x^4 + 1) + 1)^2*arcsin(c*x^2)/x^4 + 12*a*c^3*(sqrt(-c^2*x^4 + 1) + 1)^2
/x^4 + 2*b*c^2*(sqrt(-c^2*x^4 + 1) + 1)^3/x^6 + 3*b*c*(sqrt(-c^2*x^4 + 1) +
 1)^4*arcsin(c*x^2)/x^8 + 3*a*c*(sqrt(-c^2*x^4 + 1) + 1)^4/x^8)/c
```

3.350 $\int \frac{a+b\sin^{-1}(cx^2)}{x^{11}}\,dx$

Optimal. Leaf size=89

$$-\frac{a+b\sin^{-1}\left(cx^2\right)}{10x^{10}}-\frac{3bc^3\sqrt{1-c^2x^4}}{80x^4}-\frac{bc\sqrt{1-c^2x^4}}{40x^8}-\frac{3}{80}bc^5\tanh^{-1}\left(\sqrt{1-c^2x^4}\right)$$

```
[Out] -(b*c*Sqrt[1 - c^2*x^4])/(40*x^8) - (3*b*c^3*Sqrt[1 - c^2*x^4])/(80*x^4) -
(a + b*ArcSin[c*x^2])/(10*x^10) - (3*b*c^5*ArcTanh[Sqrt[1 - c^2*x^4]])/80
```

Rubi [A] time = 0.0632384, antiderivative size = 89, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {4842, 12, 266, 51, 63, 208}

$$-\frac{a+b\sin^{-1}\left(cx^2\right)}{10x^{10}}-\frac{3bc^3\sqrt{1-c^2x^4}}{80x^4}-\frac{bc\sqrt{1-c^2x^4}}{40x^8}-\frac{3}{80}bc^5\tanh^{-1}\left(\sqrt{1-c^2x^4}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^2])/x^11,x]
```

```
[Out] -(b*c*Sqrt[1 - c^2*x^4])/(40*x^8) - (3*b*c^3*Sqrt[1 - c^2*x^4])/(80*x^4) -
(a + b*ArcSin[c*x^2])/(10*x^10) - (3*b*c^5*ArcTanh[Sqrt[1 - c^2*x^4]])/80
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx^2)}{x^{11}}\,dx = -\frac{a+b\sin^{-1}(cx^2)}{10x^{10}} + \frac{1}{10}b\int \frac{2c}{x^9\sqrt{1-c^2x^4}}\,dx$$
$$= -\frac{a+b\sin^{-1}(cx^2)}{10x^{10}} + \frac{1}{5}(bc)\int \frac{1}{x^9\sqrt{1-c^2x^4}}\,dx$$
$$= -\frac{a+b\sin^{-1}(cx^2)}{10x^{10}} + \frac{1}{20}(bc)\,\text{Subst}\left(\int \frac{1}{x^3\sqrt{1-c^2x}}\,dx, x, x^4\right)$$
$$= -\frac{bc\sqrt{1-c^2x^4}}{40x^8} - \frac{a+b\sin^{-1}(cx^2)}{10x^{10}} + \frac{1}{80}\left(3bc^3\right)\text{Subst}\left(\int \frac{1}{x^2\sqrt{1-c^2x}}\,dx, x, x^4\right)$$
$$= -\frac{bc\sqrt{1-c^2x^4}}{40x^8} - \frac{3bc^3\sqrt{1-c^2x^4}}{80x^4} - \frac{a+b\sin^{-1}(cx^2)}{10x^{10}} + \frac{1}{160}\left(3bc^5\right)\text{Subst}\left(\int \frac{1}{x\sqrt{1-c^2x}}\,dx, x,$$
$$= -\frac{bc\sqrt{1-c^2x^4}}{40x^8} - \frac{3bc^3\sqrt{1-c^2x^4}}{80x^4} - \frac{a+b\sin^{-1}(cx^2)}{10x^{10}} - \frac{1}{80}\left(3bc^3\right)\text{Subst}\left(\int \frac{1}{\frac{1}{c^2}-\frac{x^2}{c^2}}\,dx, x, \sqrt{1-\right.$$
$$= -\frac{bc\sqrt{1-c^2x^4}}{40x^8} - \frac{3bc^3\sqrt{1-c^2x^4}}{80x^4} - \frac{a+b\sin^{-1}(cx^2)}{10x^{10}} - \frac{3}{80}bc^5\tanh^{-1}\left(\sqrt{1-c^2x^4}\right)$$

Mathematica [C] time = 0.0196502, size = 63, normalized size = 0.71

$$-\frac{1}{10}bc^5\sqrt{1-c^2x^4}\,\text{Hypergeometric2F1}\left(\frac{1}{2},3,\frac{3}{2},1-c^2x^4\right) - \frac{a}{10x^{10}} - \frac{b\sin^{-1}(cx^2)}{10x^{10}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^2])/x^11,x]
```

```
[Out] -a/(10*x^10) - (b*ArcSin[c*x^2])/(10*x^10) - (b*c^5*Sqrt[1 - c^2*x^4]*Hyper
geometric2F1[1/2, 3, 3/2, 1 - c^2*x^4])/10
```

Maple [A] time = 0.014, size = 84, normalized size = 0.9

$$-\frac{a}{10\,x^{10}} + b\left(-\frac{\arcsin(cx^2)}{10\,x^{10}} + \frac{c}{5}\left(-\frac{1}{8\,x^8}\sqrt{-c^2x^4+1} + \frac{3\,c^2}{8}\left(-\frac{1}{2\,x^4}\sqrt{-c^2x^4+1} - \frac{c^2}{2}\text{Artanh}\left(\frac{1}{\sqrt{-c^2x^4+1}}\right)\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^2))/x^11,x)
```

```
[Out] -1/10*a/x^10+b*(-1/10/x^10*arcsin(c*x^2)+1/5*c*(-1/8/x^8*(-c^2*x^4+1)^(1/2)
+3/8*c^2*(-1/2/x^4*(-c^2*x^4+1)^(1/2)-1/2*c^2*arctanh(1/(-c^2*x^4+1)^(1/2))
)))
```

Maxima [A] time = 1.43481, size = 169, normalized size = 1.9

$$-\frac{1}{160}\left(\left(\left(3\,c^4\log\left(\sqrt{-c^2x^4+1}+1\right)-3\,c^4\log\left(\sqrt{-c^2x^4+1}-1\right)-\frac{2\left(3\left(-c^2x^4+1\right)^{\frac{3}{2}}c^4-5\sqrt{-c^2x^4+1}c^4\right)}{2\,c^2x^4+\left(c^2x^4-1\right)^2-1}\right)c+\frac{16\,\arcsin\left(c\right.}{x^{10}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^11,x, algorithm="maxima")
```

```
[Out] -1/160*((3*c^4*log(sqrt(-c^2*x^4 + 1) + 1) - 3*c^4*log(sqrt(-c^2*x^4 + 1) -
 1) - 2*(3*(-c^2*x^4 + 1)^(3/2)*c^4 - 5*sqrt(-c^2*x^4 + 1)*c^4)/(2*c^2*x^4
+ (c^2*x^4 - 1)^2 - 1))*c + 16*arcsin(c*x^2)/x^10)*b - 1/10*a/x^10
```

Fricas [A] time = 3.49535, size = 238, normalized size = 2.67

$$-\frac{3\,bc^5x^{10}\log\left(\sqrt{-c^2x^4+1}+1\right)-3\,bc^5x^{10}\log\left(\sqrt{-c^2x^4+1}-1\right)+16\,b\arcsin\left(cx^2\right)+2\left(3\,bc^3x^6+2\,bcx^2\right)\sqrt{-c^2x^4+1}+1}{160\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^11,x, algorithm="fricas")
```

```
[Out] -1/160*(3*b*c^5*x^10*log(sqrt(-c^2*x^4 + 1) + 1) - 3*b*c^5*x^10*log(sqrt(-c
^2*x^4 + 1) - 1) + 16*b*arcsin(c*x^2) + 2*(3*b*c^3*x^6 + 2*b*c*x^2)*sqrt(-c
^2*x^4 + 1) + 16*a)/x^10
```

Sympy [A] time = 29.2096, size = 201, normalized size = 2.26

$$-\frac{a}{10x^{10}}+\frac{bc\left(\begin{cases}-\frac{3c^4\operatorname{acosh}\left(\frac{1}{cx^2}\right)}{16}+\frac{3c^3}{16x^2\sqrt{-1+\frac{1}{c^2x^4}}}-\frac{c}{16x^6\sqrt{-1+\frac{1}{c^2x^4}}}-\frac{1}{8cx^{10}\sqrt{-1+\frac{1}{c^2x^4}}} & \text{for } \frac{1}{|c^2x^4|}>1\\ \frac{3ic^4\operatorname{asin}\left(\frac{1}{cx^2}\right)}{16}-\frac{3ic^3}{16x^2\sqrt{1-\frac{1}{c^2x^4}}}+\frac{ic}{16x^6\sqrt{1-\frac{1}{c^2x^4}}}+\frac{i}{8cx^{10}\sqrt{1-\frac{1}{c^2x^4}}} & \text{otherwise}\end{cases}\right)}{5}-\frac{b\operatorname{asin}\left(cx^2\right)}{10x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**2))/x**11,x)
```

```
[Out] -a/(10*x**10) + b*c*Piecewise((-3*c**4*acosh(1/(c*x**2))/16 + 3*c**3/(16*x*
*2*sqrt(-1 + 1/(c**2*x**4))) - c/(16*x**6*sqrt(-1 + 1/(c**2*x**4))) - 1/(8*
c*x**10*sqrt(-1 + 1/(c**2*x**4))), 1/Abs(c**2*x**4) > 1), (3*I*c**4*asin(1/
(c*x**2))/16 - 3*I*c**3/(16*x**2*sqrt(1 - 1/(c**2*x**4))) + I*c/(16*x**6*sq
rt(1 - 1/(c**2*x**4))) + I/(8*c*x**10*sqrt(1 - 1/(c**2*x**4))), True))/5 -
b*asin(c*x**2)/(10*x**10)
```

Giac [B] time = 4.11999, size = 630, normalized size = 7.08

$$-\frac{\frac{2\,bc^{11}x^{10}\arcsin\left(cx^2\right)}{\left(\sqrt{-c^2x^4+1}+1\right)^5}+\frac{2\,ac^{11}x^{10}}{\left(\sqrt{-c^2x^4+1}+1\right)^5}-\frac{bc^{10}x^8}{\left(\sqrt{-c^2x^4+1}+1\right)^4}+\frac{10\,bc^9x^6\arcsin\left(cx^2\right)}{\left(\sqrt{-c^2x^4+1}+1\right)^3}+\frac{10\,ac^9x^6}{\left(\sqrt{-c^2x^4+1}+1\right)^3}-\frac{8\,bc^8x^4}{\left(\sqrt{-c^2x^4+1}+1\right)^2}+\frac{20\,bc^7x^2\arcsin\left(cx^2\right)}{\sqrt{-c^2x^4+1}+1}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^11,x, algorithm="giac")
```

```
[Out] -1/640*(2*b*c^11*x^10*arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1)^5 + 2*a*c^11*x
^10/(sqrt(-c^2*x^4 + 1) + 1)^5 - b*c^10*x^8/(sqrt(-c^2*x^4 + 1) + 1)^4 + 10
*b*c^9*x^6*arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1)^3 + 10*a*c^9*x^6/(sqrt(-c
^2*x^4 + 1) + 1)^3 - 8*b*c^8*x^4/(sqrt(-c^2*x^4 + 1) + 1)^2 + 20*b*c^7*x^2*
arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1) + 20*a*c^7*x^2/(sqrt(-c^2*x^4 + 1) +
 1) - 24*b*c^6*log(x^2*abs(c)) + 24*b*c^6*log(sqrt(-c^2*x^4 + 1) + 1) + 20*
b*c^5*(sqrt(-c^2*x^4 + 1) + 1)*arcsin(c*x^2)/x^2 + 20*a*c^5*(sqrt(-c^2*x^4
+ 1) + 1)/x^2 + 8*b*c^4*(sqrt(-c^2*x^4 + 1) + 1)^2/x^4 + 10*b*c^3*(sqrt(-c^
2*x^4 + 1) + 1)^3*arcsin(c*x^2)/x^6 + 10*a*c^3*(sqrt(-c^2*x^4 + 1) + 1)^3/x
^6 + b*c^2*(sqrt(-c^2*x^4 + 1) + 1)^4/x^8 + 2*b*c*(sqrt(-c^2*x^4 + 1) + 1)^
5*arcsin(c*x^2)/x^10 + 2*a*c*(sqrt(-c^2*x^4 + 1) + 1)^5/x^10)/c
```

3.351 $\int \frac{a+b\sin^{-1}(cx^2)}{x^{13}}\,dx$

Optimal. Leaf size=91

$$-\frac{a+b\sin^{-1}(cx^2)}{12x^{12}}-\frac{2bc^5\sqrt{1-c^2x^4}}{45x^2}-\frac{bc^3\sqrt{1-c^2x^4}}{45x^6}-\frac{bc\sqrt{1-c^2x^4}}{60x^{10}}$$

```
[Out] -(b*c*Sqrt[1 - c^2*x^4])/(60*x^10) - (b*c^3*Sqrt[1 - c^2*x^4])/(45*x^6) - (
2*b*c^5*Sqrt[1 - c^2*x^4])/(45*x^2) - (a + b*ArcSin[c*x^2])/(12*x^12)
```

Rubi [A] time = 0.0464586, antiderivative size = 91, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4842, 12, 271, 264}

$$-\frac{a+b\sin^{-1}(cx^2)}{12x^{12}}-\frac{2bc^5\sqrt{1-c^2x^4}}{45x^2}-\frac{bc^3\sqrt{1-c^2x^4}}{45x^6}-\frac{bc\sqrt{1-c^2x^4}}{60x^{10}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^2])/x^13,x]
```

```
[Out] -(b*c*Sqrt[1 - c^2*x^4])/(60*x^10) - (b*c^3*Sqrt[1 - c^2*x^4])/(45*x^6) - (
2*b*c^5*Sqrt[1 - c^2*x^4])/(45*x^2) - (a + b*ArcSin[c*x^2])/(12*x^12)
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 271

```
Int[(x_)^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x^(m + 1)*(
a + b*x^n)^(p + 1))/(a*(m + 1)), x] - Dist[(b*(m + n*(p + 1) + 1))/(a*(m +
1)), Int[x^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, m, n, p}, x] && IL
tQ[Simplify[(m + 1)/n + p + 1], 0] && NeQ[m, -1]
```

Rule 264

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c
*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] /; FreeQ[{a, b, c, m, n,
 p}, x] && EqQ[(m + 1)/n + p + 1, 0] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}\left(cx^2\right)}{x^{13}}\,dx &= -\frac{a+b\sin^{-1}\left(cx^2\right)}{12x^{12}}+\frac{1}{12}b\int \frac{2c}{x^{11}\sqrt{1-c^2x^4}}\,dx\\
&= -\frac{a+b\sin^{-1}\left(cx^2\right)}{12x^{12}}+\frac{1}{6}(bc)\int \frac{1}{x^{11}\sqrt{1-c^2x^4}}\,dx\\
&= -\frac{bc\sqrt{1-c^2x^4}}{60x^{10}}-\frac{a+b\sin^{-1}\left(cx^2\right)}{12x^{12}}+\frac{1}{15}\left(2bc^3\right)\int \frac{1}{x^7\sqrt{1-c^2x^4}}\,dx\\
&= -\frac{bc\sqrt{1-c^2x^4}}{60x^{10}}-\frac{bc^3\sqrt{1-c^2x^4}}{45x^6}-\frac{a+b\sin^{-1}\left(cx^2\right)}{12x^{12}}+\frac{1}{45}\left(4bc^5\right)\int \frac{1}{x^3\sqrt{1-c^2x^4}}\,dx\\
&= -\frac{bc\sqrt{1-c^2x^4}}{60x^{10}}-\frac{bc^3\sqrt{1-c^2x^4}}{45x^6}-\frac{2bc^5\sqrt{1-c^2x^4}}{45x^2}-\frac{a+b\sin^{-1}\left(cx^2\right)}{12x^{12}}
\end{aligned}$$

Mathematica [A] time = 0.0468917, size = 68, normalized size = 0.75

$$\frac{1}{2}b\left(-\frac{c\sqrt{1-c^2x^4}\left(8c^4x^8+4c^2x^4+3\right)}{90x^{10}}-\frac{\sin^{-1}\left(cx^2\right)}{6x^{12}}\right)-\frac{a}{12x^{12}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^2])/x^13,x]
```

```
[Out] -a/(12*x^12) + (b*(-(c*Sqrt[1 - c^2*x^4]*(3 + 4*c^2*x^4 + 8*c^4*x^8))/(90*x
^10) - ArcSin[c*x^2]/(6*x^12)))/2
```

Maple [A] time = 0.012, size = 72, normalized size = 0.8

$$-\frac{a}{12\,x^{12}}+b\left(-\frac{\arcsin\left(cx^{2}\right)}{12\,x^{12}}+\frac{c\left(cx^{2}-1\right)\left(cx^{2}+1\right)\left(8\,c^{4}x^{8}+4\,c^{2}x^{4}+3\right)}{180\,x^{10}}\frac{1}{\sqrt{-c^{2}x^{4}+1}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^2))/x^13,x)
```

```
[Out] -1/12*a/x^12+b*(-1/12/x^12*arcsin(c*x^2)+1/180*c*(c*x^2-1)*(c*x^2+1)*(8*c^4
*x^8+4*c^2*x^4+3)/x^10/(-c^2*x^4+1)^(1/2))
```

Maxima [A] time = 1.42715, size = 111, normalized size = 1.22

$$-\frac{1}{180}\left(\left(\frac{15\sqrt{-c^{2}x^{4}+1}c^{4}}{x^{2}}+\frac{10\left(-c^{2}x^{4}+1\right)^{\frac{3}{2}}c^{2}}{x^{6}}+\frac{3\left(-c^{2}x^{4}+1\right)^{\frac{5}{2}}}{x^{10}}\right)c+\frac{15\arcsin\left(cx^{2}\right)}{x^{12}}\right)b-\frac{a}{12\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^13,x, algorithm="maxima")
```

```
[Out] -1/180*((15*sqrt(-c^2*x^4 + 1)*c^4/x^2 + 10*(-c^2*x^4 + 1)^(3/2)*c^2/x^6 +
3*(-c^2*x^4 + 1)^(5/2)/x^10)*c + 15*arcsin(c*x^2)/x^12)*b - 1/12*a/x^12
```

Fricas [A] time = 3.69557, size = 154, normalized size = 1.69

$$\frac{15\,ax^{12}-15\,b\arcsin\left(cx^{2}\right)-\left(8\,bc^{5}x^{10}+4\,bc^{3}x^{6}+3\,bcx^{2}\right)\sqrt{-c^{2}x^{4}+1}-15\,a}{180\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^13,x, algorithm="fricas")
```

```
[Out] 1/180*(15*a*x^12 - 15*b*arcsin(c*x^2) - (8*b*c^5*x^10 + 4*b*c^3*x^6 + 3*b*c
*x^2)*sqrt(-c^2*x^4 + 1) - 15*a)/x^12
```

Sympy [A] time = 56.1371, size = 170, normalized size = 1.87

$$-\frac{a}{12x^{12}}+\frac{bc\left(\begin{cases}-\frac{4c^5\sqrt{-1+\frac{1}{c^2x^4}}}{15}-\frac{2c^3\sqrt{-1+\frac{1}{c^2x^4}}}{15x^4}-\frac{c\sqrt{-1+\frac{1}{c^2x^4}}}{10x^8} & \text{for } \frac{1}{|c^2x^4|}>1\\ -\frac{4ic^5\sqrt{1-\frac{1}{c^2x^4}}}{15}-\frac{2ic^3\sqrt{1-\frac{1}{c^2x^4}}}{15x^4}-\frac{ic\sqrt{1-\frac{1}{c^2x^4}}}{10x^8} & \text{otherwise}\end{cases}\right)}{6}-\frac{b\,\mathrm{asin}\left(cx^2\right)}{12x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**2))/x**13,x)
```

```
[Out] -a/(12*x**12) + b*c*Piecewise((-4*c**5*sqrt(-1 + 1/(c**2*x**4))/15 - 2*c**3
*sqrt(-1 + 1/(c**2*x**4))/(15*x**4) - c*sqrt(-1 + 1/(c**2*x**4))/(10*x**8),
 1/Abs(c**2*x**4) > 1), (-4*I*c**5*sqrt(1 - 1/(c**2*x**4))/15 - 2*I*c**3*sq
rt(1 - 1/(c**2*x**4))/(15*x**4) - I*c*sqrt(1 - 1/(c**2*x**4))/(10*x**8), Tr
ue))/6 - b*asin(c*x**2)/(12*x**12)
```

Giac [B] time = 1.25528, size = 680, normalized size = 7.47

$$-\frac{\frac{15\,bc^{13}x^{12}\arcsin\left(cx^2\right)}{\left(\sqrt{-c^2x^4+1}+1\right)^6}+\frac{15\,ac^{13}x^{12}}{\left(\sqrt{-c^2x^4+1}+1\right)^6}-\frac{6\,bc^{12}x^{10}}{\left(\sqrt{-c^2x^4+1}+1\right)^5}+\frac{90\,bc^{11}x^8\arcsin\left(cx^2\right)}{\left(\sqrt{-c^2x^4+1}+1\right)^4}+\frac{90\,ac^{11}x^8}{\left(\sqrt{-c^2x^4+1}+1\right)^4}-\frac{50\,bc^{10}x^6}{\left(\sqrt{-c^2x^4+1}+1\right)^3}+\frac{225\,bc^9x^4\arcsin\left(c\cdots\right.}{\left(\sqrt{-c^2x^4+1}+1\right)^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^13,x, algorithm="giac")
```

```
[Out] -1/11520*(15*b*c^13*x^12*arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1)^6 + 15*a*c^
13*x^12/(sqrt(-c^2*x^4 + 1) + 1)^6 - 6*b*c^12*x^10/(sqrt(-c^2*x^4 + 1) + 1)
^5 + 90*b*c^11*x^8*arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1)^4 + 90*a*c^11*x^8
/(sqrt(-c^2*x^4 + 1) + 1)^4 - 50*b*c^10*x^6/(sqrt(-c^2*x^4 + 1) + 1)^3 + 22
5*b*c^9*x^4*arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1)^2 + 225*a*c^9*x^4/(sqrt(
-c^2*x^4 + 1) + 1)^2 - 300*b*c^8*x^2/(sqrt(-c^2*x^4 + 1) + 1) + 300*b*c^7*a
rcsin(c*x^2) + 300*a*c^7 + 300*b*c^6*(sqrt(-c^2*x^4 + 1) + 1)/x^2 + 225*b*c
^5*(sqrt(-c^2*x^4 + 1) + 1)^2*arcsin(c*x^2)/x^4 + 225*a*c^5*(sqrt(-c^2*x^4
+ 1) + 1)^2/x^4 + 50*b*c^4*(sqrt(-c^2*x^4 + 1) + 1)^3/x^6 + 90*b*c^3*(sqrt(
-c^2*x^4 + 1) + 1)^4*arcsin(c*x^2)/x^8 + 90*a*c^3*(sqrt(-c^2*x^4 + 1) + 1)^
4/x^8 + 6*b*c^2*(sqrt(-c^2*x^4 + 1) + 1)^5/x^10 + 15*b*c*(sqrt(-c^2*x^4 + 1
) + 1)^6*arcsin(c*x^2)/x^12 + 15*a*c*(sqrt(-c^2*x^4 + 1) + 1)^6/x^12)/c
```

3.352 $\int x^6 \left(a+b\sin^{-1}\left(cx^2\right)\right)\,dx$

Optimal. Leaf size=86

$$-\frac{10b\text{EllipticF}\left(\sin^{-1}\left(\sqrt{c}x\right),-1\right)}{147c^{7/2}}+\frac{1}{7}x^7\left(a+b\sin^{-1}\left(cx^2\right)\right)+\frac{2bx^5\sqrt{1-c^2x^4}}{49c}+\frac{10bx\sqrt{1-c^2x^4}}{147c^3}$$

```
[Out] (10*b*x*Sqrt[1 - c^2*x^4])/(147*c^3) + (2*b*x^5*Sqrt[1 - c^2*x^4])/(49*c) +
 (x^7*(a + b*ArcSin[c*x^2]))/7 - (10*b*EllipticF[ArcSin[Sqrt[c]*x], -1])/(1
47*c^(7/2))
```

Rubi [A] time = 0.0496963, antiderivative size = 86, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4842, 12, 321, 221}

$$\frac{1}{7}x^7\left(a+b\sin^{-1}\left(cx^2\right)\right)+\frac{2bx^5\sqrt{1-c^2x^4}}{49c}+\frac{10bx\sqrt{1-c^2x^4}}{147c^3}-\frac{10bF\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)}{147c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[x^6*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (10*b*x*Sqrt[1 - c^2*x^4])/(147*c^3) + (2*b*x^5*Sqrt[1 - c^2*x^4])/(49*c) +
 (x^7*(a + b*ArcSin[c*x^2]))/7 - (10*b*EllipticF[ArcSin[Sqrt[c]*x], -1])/(1
47*c^(7/2))
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 221

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[(Rt[-b,
 4]*x)/Rt[a, 4]], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
b/a] && GtQ[a, 0]
```

Rubi steps

$$\begin{aligned}
\int x^6\left(a+b\sin^{-1}\left(cx^2\right)\right)dx &= \frac{1}{7}x^7\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{7}b\int\frac{2cx^8}{\sqrt{1-c^2x^4}}\,dx\\
&= \frac{1}{7}x^7\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{7}(2bc)\int\frac{x^8}{\sqrt{1-c^2x^4}}\,dx\\
&= \frac{2bx^5\sqrt{1-c^2x^4}}{49c}+\frac{1}{7}x^7\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{(10b)\int\frac{x^4}{\sqrt{1-c^2x^4}}\,dx}{49c}\\
&= \frac{10bx\sqrt{1-c^2x^4}}{147c^3}+\frac{2bx^5\sqrt{1-c^2x^4}}{49c}+\frac{1}{7}x^7\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{(10b)\int\frac{1}{\sqrt{1-c^2x^4}}\,dx}{147c^3}\\
&= \frac{10bx\sqrt{1-c^2x^4}}{147c^3}+\frac{2bx^5\sqrt{1-c^2x^4}}{49c}+\frac{1}{7}x^7\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{10bF\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)}{147c^{7/2}}
\end{aligned}$$

Mathematica [C] time = 0.200106, size = 82, normalized size = 0.95

$$\frac{1}{147}\left(-\frac{10ib\text{EllipticF}\left(i\sinh^{-1}\left(\sqrt{-c}x\right),-1\right)}{(-c)^{7/2}}+21ax^7+\frac{2bx\sqrt{1-c^2x^4}\left(3c^2x^4+5\right)}{c^3}+21bx^7\sin^{-1}\left(cx^2\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^6*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (21*a*x^7 + (2*b*x*Sqrt[1 - c^2*x^4]*(5 + 3*c^2*x^4))/c^3 + 21*b*x^7*ArcSin
[c*x^2] - ((10*I)*b*EllipticF[I*ArcSinh[Sqrt[-c]*x], -1])/(-c)^(7/2))/147
```

Maple [A] time = 0.009, size = 108, normalized size = 1.3

$$\frac{x^7 a}{7} + b\left(\frac{x^7 \arcsin\left(c x^2\right)}{7} - \frac{2c}{7}\left(-\frac{x^5}{7c^2}\sqrt{-c^2x^4+1} - \frac{5x}{21c^4}\sqrt{-c^2x^4+1} + \frac{5}{21}\sqrt{-cx^2+1}\sqrt{cx^2+1}\,\mathrm{EllipticF}\left(x\sqrt{c}, i\right) c^{-\frac{9}{2}} \frac{}{\sqrt{-c}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^6*(a+b*arcsin(c*x^2)),x)
```

```
[Out] 1/7*x^7*a+b*(1/7*x^7*arcsin(c*x^2)-2/7*c*(-1/7/c^2*x^5*(-c^2*x^4+1)^(1/2)-5
/21/c^4*x*(-c^2*x^4+1)^(1/2)+5/21/c^(9/2)*(-c*x^2+1)^(1/2)*(c*x^2+1)^(1/2)/
(-c^2*x^4+1)^(1/2)*EllipticF(x*c^(1/2),I)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(a+b*arcsin(c*x^2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(bx^6 \arcsin\left(cx^2\right) + ax^6, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(a+b*arcsin(c*x^2)),x, algorithm="fricas")
```

```
[Out] integral(b*x^6*arcsin(c*x^2) + a*x^6, x)
```

Sympy [A] time = 4.85858, size = 58, normalized size = 0.67

$$\frac{ax^7}{7} - \frac{bcx^9\Gamma\left(\frac{9}{4}\right){}_2F_1\left(\left.\begin{matrix}\frac{1}{2}, \frac{9}{4} \\ \frac{13}{4}\end{matrix}\right| c^2x^4e^{2i\pi}\right)}{14\Gamma\left(\frac{13}{4}\right)} + \frac{bx^7 \operatorname{asin}\left(cx^2\right)}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**6*(a+b*asin(c*x**2)),x)
```

```
[Out] a*x**7/7 - b*c*x**9*gamma(9/4)*hyper((1/2, 9/4), (13/4,), c**2*x**4*exp_pol
ar(2*I*pi))/(14*gamma(13/4)) + b*x**7*asin(c*x**2)/7
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b \arcsin\left(cx^2\right) + a\right)x^6 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(a+b*arcsin(c*x^2)),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x^2) + a)*x^6, x)
```

3.353 $\int x^4 \left(a + b \sin^{-1}\left(cx^2\right)\right) dx$

Optimal. Leaf size=83

$$\frac{6b\text{EllipticF}\left(\sin^{-1}\left(\sqrt{c}x\right),-1\right)}{25c^{5/2}}+\frac{1}{5}x^5\left(a+b\sin^{-1}\left(cx^2\right)\right)+\frac{2bx^3\sqrt{1-c^2x^4}}{25c}-\frac{6bE\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)}{25c^{5/2}}$$

```
[Out] (2*b*x^3*Sqrt[1 - c^2*x^4])/(25*c) + (x^5*(a + b*ArcSin[c*x^2]))/5 - (6*b*E
llipticE[ArcSin[Sqrt[c]*x], -1])/(25*c^(5/2)) + (6*b*EllipticF[ArcSin[Sqrt[
c]*x], -1])/(25*c^(5/2))
```

Rubi [A] time = 0.0609729, antiderivative size = 83, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {4842, 12, 321, 307, 221, 1199, 424}

$$\frac{1}{5}x^5\left(a+b\sin^{-1}\left(cx^2\right)\right)+\frac{2bx^3\sqrt{1-c^2x^4}}{25c}+\frac{6bF\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)}{25c^{5/2}}-\frac{6bE\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)}{25c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(a + b*ArcSin[c*x^2]),x]
```


```
[Out] (2*b*x^3*Sqrt[1 - c^2*x^4])/(25*c) + (x^5*(a + b*ArcSin[c*x^2]))/5 - (6*b*E
llipticE[ArcSin[Sqrt[c]*x], -1])/(25*c^(5/2)) + (6*b*EllipticF[ArcSin[Sqrt[
c]*x], -1])/(25*c^(5/2))
```


Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 307

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[-(b/a), 2]}
, -Dist[q^(-1), Int[1/Sqrt[a + b*x^4], x], x] + Dist[1/q, Int[(1 + q*x^2)/S
qrt[a + b*x^4], x], x]] /; FreeQ[{a, b}, x] && NegQ[b/a]
```

Rule 221

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[(Rt[-b,
 4]*x)/Rt[a, 4]], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
b/a] && GtQ[a, 0]
```

Rule 1199

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> Dist[d/Sq
rt[a], Int[Sqrt[1 + (e*x^2)/d]/Sqrt[1 - (e*x^2)/d], x], x] /; FreeQ[{a, c,
d, e}, x] && NegQ[c/a] && EqQ[c*d^2 + a*e^2, 0] && GtQ[a, 0]
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rubi steps

$$\int x^4\left(a+b\sin^{-1}\left(cx^2\right)\right)dx=\frac{1}{5}x^5\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{5}b\int\frac{2cx^6}{\sqrt{1-c^2x^4}}dx$$
$$=\frac{1}{5}x^5\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{5}(2bc)\int\frac{x^6}{\sqrt{1-c^2x^4}}dx$$
$$=\frac{2bx^3\sqrt{1-c^2x^4}}{25c}+\frac{1}{5}x^5\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{(6b)\int\frac{x^2}{\sqrt{1-c^2x^4}}dx}{25c}$$
$$=\frac{2bx^3\sqrt{1-c^2x^4}}{25c}+\frac{1}{5}x^5\left(a+b\sin^{-1}\left(cx^2\right)\right)+\frac{(6b)\int\frac{1}{\sqrt{1-c^2x^4}}dx}{25c^2}-\frac{(6b)\int\frac{1+cx^2}{\sqrt{1-c^2x^4}}dx}{25c^2}$$
$$=\frac{2bx^3\sqrt{1-c^2x^4}}{25c}+\frac{1}{5}x^5\left(a+b\sin^{-1}\left(cx^2\right)\right)+\frac{6bF\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)}{25c^{5/2}}-\frac{(6b)\int\frac{\sqrt{1+cx^2}}{\sqrt{1-cx^2}}dx}{25c^2}$$
$$=\frac{2bx^3\sqrt{1-c^2x^4}}{25c}+\frac{1}{5}x^5\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{6bE\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)}{25c^{5/2}}+\frac{6bF\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-\right.}{25c^{5/2}}$$

Mathematica [C] time = 0.232384, size = 93, normalized size = 1.12

$$\frac{1}{25}\left(\frac{6ib\left(E\left(i\sinh^{-1}\left(\sqrt{-c}x\right)\middle|-1\right)-\text{EllipticF}\left(i\sinh^{-1}\left(\sqrt{-c}x\right),-1\right)\right)}{(-c)^{5/2}}+5ax^5+\frac{2bx^3\sqrt{1-c^2x^4}}{c}+5bx^5\sin^{-1}\left(cx^2\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (5*a*x^5 + (2*b*x^3*Sqrt[1 - c^2*x^4])/c + 5*b*x^5*ArcSin[c*x^2] + ((6*I)*b
*(EllipticE[I*ArcSinh[Sqrt[-c]*x], -1] - EllipticF[I*ArcSinh[Sqrt[-c]*x], -
1]))/(-c)^(5/2))/25
```

Maple [A] time = 0.007, size = 101, normalized size = 1.2

$$\frac{ax^5}{5}+b\left(\frac{x^5\arcsin\left(cx^2\right)}{5}-\frac{2c}{5}\left(-\frac{x^3}{5c^2}\sqrt{-c^2x^4+1}-\frac{3}{5}\sqrt{-cx^2+1}\sqrt{cx^2+1}\left(\text{EllipticF}\left(x\sqrt{c},i\right)-\text{EllipticE}\left(x\sqrt{c},i\right)\right)c^{-\frac{7}{2}}-\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*arcsin(c*x^2)),x)
```

```
[Out] 1/5*a*x^5+b*(1/5*x^5*arcsin(c*x^2)-2/5*c*(-1/5/c^2*x^3*(-c^2*x^4+1)^(1/2)-3
/5/c^(7/2)*(-c*x^2+1)^(1/2)*(c*x^2+1)^(1/2)/(-c^2*x^4+1)^(1/2)*(EllipticF(x
*c^(1/2),I)-EllipticE(x*c^(1/2),I))))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x^2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(bx^4 \arcsin\left(cx^2\right) + ax^4, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x^2)),x, algorithm="fricas")
```

```
[Out] integral(b*x^4*arcsin(c*x^2) + a*x^4, x)
```

Sympy [A] time = 2.56983, size = 58, normalized size = 0.7

$$\frac{ax^5}{5} - \frac{bcx^7\Gamma\left(\frac{7}{4}\right) {}_2F_1\left(\begin{matrix} \frac{1}{2}, \frac{7}{4} \\ \frac{11}{4} \end{matrix}\middle| c^2x^4e^{2i\pi}\right)}{10\Gamma\left(\frac{11}{4}\right)} + \frac{bx^5 \operatorname{asin}\left(cx^2\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*asin(c*x**2)),x)
```

```
[Out] a*x**5/5 - b*c*x**7*gamma(7/4)*hyper((1/2, 7/4), (11/4,), c**2*x**4*exp_pol
ar(2*I*pi))/(10*gamma(11/4)) + b*x**5*asin(c*x**2)/5
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b \arcsin \left(c x^2\right) + a\right) x^4 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x^2)),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x^2) + a)*x^4, x)
```

3.354 $\int x^2 \left(a + b\sin^{-1}\left(cx^2\right)\right) dx$

Optimal. Leaf size=61

$$-\frac{2b\text{EllipticF}\left(\sin^{-1}\left(\sqrt{c}x\right),-1\right)}{9c^{3/2}}+\frac{1}{3}x^3\left(a+b\sin^{-1}\left(cx^2\right)\right)+\frac{2bx\sqrt{1-c^2x^4}}{9c}$$

```
[Out] (2*b*x*Sqrt[1 - c^2*x^4])/(9*c) + (x^3*(a + b*ArcSin[c*x^2]))/3 - (2*b*Elli
pticF[ArcSin[Sqrt[c]*x], -1])/(9*c^(3/2))
```

Rubi [A] time = 0.0345188, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4842, 12, 321, 221}

$$\frac{1}{3}x^3\left(a+b\sin^{-1}\left(cx^2\right)\right)+\frac{2bx\sqrt{1-c^2x^4}}{9c}-\frac{2bF\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)}{9c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (2*b*x*Sqrt[1 - c^2*x^4])/(9*c) + (x^3*(a + b*ArcSin[c*x^2]))/3 - (2*b*Elli
pticF[ArcSin[Sqrt[c]*x], -1])/(9*c^(3/2))
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
```

```
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 221

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[(Rt[-b,
 4]*x)/Rt[a, 4]], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
b/a] && GtQ[a, 0]
```

Rubi steps

$$\begin{aligned}\int x^2\left(a+b\sin^{-1}\left(cx^2\right)\right)dx&=\frac{1}{3}x^3\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{3}b\int\frac{2cx^4}{\sqrt{1-c^2x^4}}\,dx\\&=\frac{1}{3}x^3\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{3}(2bc)\int\frac{x^4}{\sqrt{1-c^2x^4}}\,dx\\&=\frac{2bx\sqrt{1-c^2x^4}}{9c}+\frac{1}{3}x^3\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{(2b)\int\frac{1}{\sqrt{1-c^2x^4}}\,dx}{9c}\\&=\frac{2bx\sqrt{1-c^2x^4}}{9c}+\frac{1}{3}x^3\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{2bF\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)}{9c^{3/2}}\end{aligned}$$

Mathematica [C] time = 0.144431, size = 72, normalized size = 1.18

$$\frac{1}{9}\left(-\frac{2ib\text{EllipticF}\left(i\sinh^{-1}\left(\sqrt{-c}x\right),-1\right)}{(-c)^{3/2}}+3ax^3+\frac{2bx\sqrt{1-c^2x^4}}{c}+3bx^3\sin^{-1}\left(cx^2\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (3*a*x^3 + (2*b*x*Sqrt[1 - c^2*x^4])/c + 3*b*x^3*ArcSin[c*x^2] - ((2*I)*b*E
llipticF[I*ArcSinh[Sqrt[-c]*x], -1])/(-c)^(3/2))/9
```

Maple [A] time = 0.008, size = 88, normalized size = 1.4

$$\frac{x^3a}{3}+b\left(\frac{x^3\arcsin\left(cx^2\right)}{3}-\frac{2c}{3}\left(-\frac{x}{3c^2}\sqrt{-c^2x^4+1}+\frac{1}{3}\sqrt{-cx^2+1}\sqrt{cx^2+1}\text{EllipticF}\left(x\sqrt{c},i\right)c^{-\frac{5}{2}}\frac{1}{\sqrt{-c^2x^4+1}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(c*x^2)),x)
```

```
[Out] 1/3*x^3*a+b*(1/3*x^3*arcsin(c*x^2)-2/3*c*(-1/3/c^2*x*(-c^2*x^4+1)^(1/2)+1/3
/c^(5/2)*(-c*x^2+1)^(1/2)*(c*x^2+1)^(1/2)/(-c^2*x^4+1)^(1/2)*EllipticF(x*c^
(1/2),I)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x^2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(bx^2 \arcsin\left(cx^2\right) + ax^2, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x^2)),x, algorithm="fricas")
```

```
[Out] integral(b*x^2*arcsin(c*x^2) + a*x^2, x)
```

Sympy [A] time = 1.91266, size = 58, normalized size = 0.95

$$\frac{ax^3}{3} - \frac{bcx^5\Gamma\left(\frac{5}{4}\right) {}_2F_1\left(\begin{matrix} \frac{1}{2}, \frac{5}{4} \\ \frac{9}{4} \end{matrix}\middle| c^2x^4e^{2i\pi}\right)}{6\Gamma\left(\frac{9}{4}\right)} + \frac{bx^3 \operatorname{asin}\left(cx^2\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(c*x**2)),x)
```

```
[Out] a*x**3/3 - b*c*x**5*gamma(5/4)*hyper((1/2, 5/4), (9/4,), c**2*x**4*exp_pola
r(2*I*pi))/(6*gamma(9/4)) + b*x**3*asin(c*x**2)/3
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b \arcsin \left(cx^2\right) + a\right)x^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x^2)),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x^2) + a)*x^2, x)
```

3.355 $\int \left(a+b\sin^{-1}\left(cx^2\right)\right)\,dx$

Optimal. Leaf size=49

$$\frac{2b\text{EllipticF}\left(\sin^{-1}\left(\sqrt{c}x\right),-1\right)}{\sqrt{c}}+ax+bx\sin^{-1}\left(cx^2\right)-\frac{2bE\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)}{\sqrt{c}}$$

```
[Out] a*x + b*x*ArcSin[c*x^2] - (2*b*EllipticE[ArcSin[Sqrt[c]*x], -1])/Sqrt[c] +
(2*b*EllipticF[ArcSin[Sqrt[c]*x], -1])/Sqrt[c]
```

Rubi [A] time = 0.0426012, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.6, Rules used = {4840, 12, 307, 221, 1199, 424}

$$ax+bx\sin^{-1}\left(cx^2\right)+\frac{2bF\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)}{\sqrt{c}}-\frac{2bE\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)}{\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In] Int[a + b*ArcSin[c*x^2],x]
```

```
[Out] a*x + b*x*ArcSin[c*x^2] - (2*b*EllipticE[ArcSin[Sqrt[c]*x], -1])/Sqrt[c] +
(2*b*EllipticF[ArcSin[Sqrt[c]*x], -1])/Sqrt[c]
```

Rule 4840

```
Int[ArcSin[u_], x_Symbol] :> Simp[x*ArcSin[u], x] - Int[SimplifyIntegrand[(
x*D[u, x])/Sqrt[1 - u^2], x], x] /; InverseFunctionFreeQ[u, x] &&  !Functio
nOfExponentialQ[u, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 307

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[-(b/a), 2]}
, -Dist[q^(-1), Int[1/Sqrt[a + b*x^4], x], x] + Dist[1/q, Int[(1 + q*x^2)/S
qrt[a + b*x^4], x], x]] /; FreeQ[{a, b}, x] && NegQ[b/a]
```

Rule 221

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[(Rt[-b,
 4]*x)/Rt[a, 4]], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
b/a] && GtQ[a, 0]
```

Rule 1199

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> Dist[d/Sq
rt[a], Int[Sqrt[1 + (e*x^2)/d]/Sqrt[1 - (e*x^2)/d], x], x] /; FreeQ[{a, c,
d, e}, x] && NegQ[c/a] && EqQ[c*d^2 + a*e^2, 0] && GtQ[a, 0]
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rubi steps

$$\begin{aligned}
\int \left(a+b\sin^{-1}\left(cx^2\right)\right)dx &= ax+b\int \sin^{-1}\left(cx^2\right)dx\\
&= ax+bx\sin^{-1}\left(cx^2\right)-b\int \frac{2cx^2}{\sqrt{1-c^2x^4}}\,dx\\
&= ax+bx\sin^{-1}\left(cx^2\right)-(2bc)\int \frac{x^2}{\sqrt{1-c^2x^4}}\,dx\\
&= ax+bx\sin^{-1}\left(cx^2\right)+(2b)\int \frac{1}{\sqrt{1-c^2x^4}}\,dx-(2b)\int \frac{1+cx^2}{\sqrt{1-c^2x^4}}\,dx\\
&= ax+bx\sin^{-1}\left(cx^2\right)+\frac{2bF\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)}{\sqrt{c}}-(2b)\int \frac{\sqrt{1+cx^2}}{\sqrt{1-cx^2}}\,dx\\
&= ax+bx\sin^{-1}\left(cx^2\right)-\frac{2bE\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)}{\sqrt{c}}+\frac{2bF\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)}{\sqrt{c}}
\end{aligned}$$

Mathematica [C] time = 0.0051358, size = 39, normalized size = 0.8

$$-\frac{2}{3}bcx^3\text{Hypergeometric2F1}\left(\frac{1}{2},\frac{3}{4},\frac{7}{4},c^2x^4\right)+ax+bx\sin^{-1}\left(cx^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*ArcSin[c*x^2],x]
```

```
[Out] a*x + b*x*ArcSin[c*x^2] - (2*b*c*x^3*Hypergeometric2F1[1/2, 3/4, 7/4, c^2*x
^4])/3
```

Maple [A] time = 0.006, size = 71, normalized size = 1.5

$$ax+b\left(x\arcsin\left(cx^{2}\right)+2\,\frac{\sqrt{-cx^{2}+1}\sqrt{cx^{2}+1}\left(\mathrm{EllipticF}\left(x\sqrt{c},i\right)-\mathrm{EllipticE}\left(x\sqrt{c},i\right)\right)}{\sqrt{c}\sqrt{-c^{2}x^{4}+1}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a+b*arcsin(c*x^2),x)
```

```
[Out] a*x+b*(x*arcsin(c*x^2)+2/c^(1/2)*(-c*x^2+1)^(1/2)*(c*x^2+1)^(1/2)/(-c^2*x^4
+1)^(1/2)*(EllipticF(x*c^(1/2),I)-EllipticE(x*c^(1/2),I)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(c*x^2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(b\arcsin\left(cx^{2}\right)+a,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(c*x^2),x, algorithm="fricas")
```

```
[Out] integral(b*arcsin(c*x^2) + a, x)
```

Sympy [A] time = 1.13843, size = 49, normalized size = 1.

$$ax + b\left(-\frac{cx^3\Gamma\left(\frac{3}{4}\right){}_2F_1\left(\begin{matrix}\frac{1}{2},\frac{3}{4}\\ \frac{7}{4}\end{matrix}\middle| c^2x^4e^{2i\pi}\right)}{2\Gamma\left(\frac{7}{4}\right)} + x\,\mathrm{asin}\left(cx^2\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*asin(c*x**2),x)
```

```
[Out] a*x + b*(-c*x**3*gamma(3/4)*hyper((1/2, 3/4), (7/4,), c**2*x**4*exp_polar(2
*I*pi))/(2*gamma(7/4)) + x*asin(c*x**2))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int b\arcsin\left(cx^2\right) + a\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(c*x^2),x, algorithm="giac")
```

```
[Out] integrate(b*arcsin(c*x^2) + a, x)
```

3.356 $\int \frac{a+b\sin^{-1}(cx^2)}{x^2}\,dx$

Optimal. Leaf size=34

$$2b\sqrt{c}\,\text{EllipticF}\left(\sin^{-1}\left(\sqrt{c}x\right),-1\right)-\frac{a+b\sin^{-1}\left(cx^2\right)}{x}$$

```
[Out] -((a + b*ArcSin[c*x^2])/x) + 2*b*Sqrt[c]*EllipticF[ArcSin[Sqrt[c]*x], -1]
```

Rubi [A] time = 0.0224676, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {4842, 12, 221}

$$2b\sqrt{c}F\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)-\frac{a+b\sin^{-1}\left(cx^2\right)}{x}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^2])/x^2,x]
```

```
[Out] -((a + b*ArcSin[c*x^2])/x) + 2*b*Sqrt[c]*EllipticF[ArcSin[Sqrt[c]*x], -1]
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 221

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[(Rt[-b,
 4]*x)/Rt[a, 4]], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
```

```
b/a] && GtQ[a, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\sin^{-1}\left(cx^2\right)}{x^2}\,dx &= -\frac{a+b\sin^{-1}\left(cx^2\right)}{x}+b\int \frac{2c}{\sqrt{1-c^2x^4}}\,dx\\ &= -\frac{a+b\sin^{-1}\left(cx^2\right)}{x}+(2bc)\int \frac{1}{\sqrt{1-c^2x^4}}\,dx\\ &= -\frac{a+b\sin^{-1}\left(cx^2\right)}{x}+2b\sqrt{c}F\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)\end{aligned}$$

Mathematica [C] time = 0.0521546, size = 44, normalized size = 1.29

$$-\frac{-2ib\sqrt{-c}x\text{EllipticF}\left(i\sinh^{-1}\left(\sqrt{-c}x\right),-1\right)+a+b\sin^{-1}\left(cx^2\right)}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^2])/x^2,x]
```

```
[Out] -((a + b*ArcSin[c*x^2] - (2*I)*b*Sqrt[-c]*x*EllipticF[I*ArcSinh[Sqrt[-c]*x]
, -1])/x)
```

Maple [B] time = 0.007, size = 66, normalized size = 1.9

$$-\frac{a}{x}+b\left(-\frac{\arcsin\left(cx^2\right)}{x}+2\,\frac{\sqrt{c}\sqrt{-cx^2+1}\sqrt{cx^2+1}\text{EllipticF}\left(x\sqrt{c},i\right)}{\sqrt{-c^2x^4+1}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^2))/x^2,x)
```

```
[Out] -a/x+b*(-1/x*arcsin(c*x^2)+2*c^(1/2)*(-c*x^2+1)^(1/2)*(c*x^2+1)^(1/2)/(-c^2
*x^4+1)^(1/2)*EllipticF(x*c^(1/2),I))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\arcsin\left(cx^2\right)+a}{x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^2,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(c*x^2) + a)/x^2, x)
```

Sympy [A] time = 1.39979, size = 49, normalized size = 1.44

$$-\frac{a}{x}+\frac{bcx\Gamma\left(\frac{1}{4}\right){}_2F_1\left(\left.\begin{matrix}\frac{1}{4},\frac{1}{2}\\ \frac{5}{4}\end{matrix}\right|c^2x^4e^{2i\pi}\right)}{2\Gamma\left(\frac{5}{4}\right)}-\frac{b\,\text{asin}\left(cx^2\right)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**2))/x**2,x)
```

```
[Out] -a/x + b*c*x*gamma(1/4)*hyper((1/4, 1/2), (5/4,), c**2*x**4*exp_polar(2*I*p
i))/(2*gamma(5/4)) - b*asin(c*x**2)/x
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \arcsin (cx^2) + a}{x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x^2) + a)/x^2, x)
```

3.357 $\int \frac{a+b\sin^{-1}(cx^2)}{x^4}\,dx$

Optimal. Leaf size=81

$$\frac{2}{3}bc^{3/2}\text{EllipticF}\left(\sin^{-1}\left(\sqrt{c}x\right),-1\right)-\frac{a+b\sin^{-1}\left(cx^2\right)}{3x^3}-\frac{2bc\sqrt{1-c^2x^4}}{3x}-\frac{2}{3}bc^{3/2}E\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)$$

```
[Out] (-2*b*c*Sqrt[1 - c^2*x^4])/(3*x) - (a + b*ArcSin[c*x^2])/(3*x^3) - (2*b*c^(
3/2)*EllipticE[ArcSin[Sqrt[c]*x], -1])/3 + (2*b*c^(3/2)*EllipticF[ArcSin[Sq
rt[c]*x], -1])/3
```

Rubi [A] time = 0.0575011, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {4842, 12, 325, 307, 221, 1199, 424}

$$-\frac{a+b\sin^{-1}\left(cx^2\right)}{3x^3}-\frac{2bc\sqrt{1-c^2x^4}}{3x}+\frac{2}{3}bc^{3/2}F\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)-\frac{2}{3}bc^{3/2}E\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^2])/x^4,x]
```

```
[Out] (-2*b*c*Sqrt[1 - c^2*x^4])/(3*x) - (a + b*ArcSin[c*x^2])/(3*x^3) - (2*b*c^(
3/2)*EllipticE[ArcSin[Sqrt[c]*x], -1])/3 + (2*b*c^(3/2)*EllipticF[ArcSin[Sq
rt[c]*x], -1])/3
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 325

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c*
x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] - Dist[(b*(m + n*(p + 1)
+ 1))/(a*c^n*(m + 1)), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 307

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[-(b/a), 2]}
, -Dist[q^(-1), Int[1/Sqrt[a + b*x^4], x], x] + Dist[1/q, Int[(1 + q*x^2)/S
qrt[a + b*x^4], x], x]] /; FreeQ[{a, b}, x] && NegQ[b/a]
```

Rule 221

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[(Rt[-b,
 4]*x)/Rt[a, 4]], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
b/a] && GtQ[a, 0]
```

Rule 1199

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> Dist[d/Sq
rt[a], Int[Sqrt[1 + (e*x^2)/d]/Sqrt[1 - (e*x^2)/d], x], x] /; FreeQ[{a, c,
d, e}, x] && NegQ[c/a] && EqQ[c*d^2 + a*e^2, 0] && GtQ[a, 0]
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{a+b\sin^{-1}(cx^2)}{x^4}\,dx &= -\frac{a+b\sin^{-1}(cx^2)}{3x^3}+\frac{1}{3}b\int \frac{2c}{x^2\sqrt{1-c^2x^4}}\,dx\\
&= -\frac{a+b\sin^{-1}(cx^2)}{3x^3}+\frac{1}{3}(2bc)\int \frac{1}{x^2\sqrt{1-c^2x^4}}\,dx\\
&= -\frac{2bc\sqrt{1-c^2x^4}}{3x}-\frac{a+b\sin^{-1}(cx^2)}{3x^3}-\frac{1}{3}\left(2bc^3\right)\int \frac{x^2}{\sqrt{1-c^2x^4}}\,dx\\
&= -\frac{2bc\sqrt{1-c^2x^4}}{3x}-\frac{a+b\sin^{-1}(cx^2)}{3x^3}+\frac{1}{3}\left(2bc^2\right)\int \frac{1}{\sqrt{1-c^2x^4}}\,dx-\frac{1}{3}\left(2bc^2\right)\int \frac{1+cx^2}{\sqrt{1-c^2x^4}}\,dx\\
&= -\frac{2bc\sqrt{1-c^2x^4}}{3x}-\frac{a+b\sin^{-1}(cx^2)}{3x^3}+\frac{2}{3}bc^{3/2}F\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)-\frac{1}{3}\left(2bc^2\right)\int \frac{\sqrt{1+cx^2}}{\sqrt{1-cx^2}}\,dx\\
&= -\frac{2bc\sqrt{1-c^2x^4}}{3x}-\frac{a+b\sin^{-1}(cx^2)}{3x^3}-\frac{2}{3}bc^{3/2}E\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)+\frac{2}{3}bc^{3/2}F\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)
\end{aligned}
$$

Mathematica [C] time = 0.180652, size = 89, normalized size = 1.1

$$
-\frac{2ib\sqrt{-c}cx^3\left(E\left(i\sinh^{-1}\left(\sqrt{-c}x\right)\middle|-1\right)-\text{EllipticF}\left(i\sinh^{-1}\left(\sqrt{-c}x\right),-1\right)\right)+a+2bcx^2\sqrt{1-c^2x^4}+b\sin^{-1}\left(cx^2\right)}{3x^3}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^2])/x^4,x]
```

```
[Out] -(a + 2*b*c*x^2*Sqrt[1 - c^2*x^4] + b*ArcSin[c*x^2] + (2*I)*b*Sqrt[-c]*c*x^
3*(EllipticE[I*ArcSinh[Sqrt[-c]*x], -1] - EllipticF[I*ArcSinh[Sqrt[-c]*x],
-1]))/(3*x^3)
```

Maple [A] time = 0.012, size = 97, normalized size = 1.2

$$
-\frac{a}{3x^3}+b\left(-\frac{\arcsin\left(cx^2\right)}{3x^3}+\frac{2c}{3}\left(-\frac{1}{x}\sqrt{-c^2x^4+1}+\sqrt{c}\sqrt{-cx^2+1}\sqrt{cx^2+1}\left(\text{EllipticF}\left(x\sqrt{c},i\right)-\text{EllipticE}\left(x\sqrt{c},i\right)\right)\frac{}{\sqrt{-}}\right.\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^2))/x^4,x)
```

```
[Out] -1/3*a/x^3+b*(-1/3/x^3*arcsin(c*x^2)+2/3*c*(-(-c^2*x^4+1)^(1/2)/x+c^(1/2)*(
-c*x^2+1)^(1/2)*(c*x^2+1)^(1/2)/(-c^2*x^4+1)^(1/2)*(EllipticF(x*c^(1/2),I)-
EllipticE(x*c^(1/2),I))))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\arcsin\left(cx^2\right)+a}{x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^4,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(c*x^2) + a)/x^4, x)
```

Sympy [A] time = 2.01972, size = 60, normalized size = 0.74

$$-\frac{a}{3x^3}+\frac{bc\Gamma\left(-\frac{1}{4}\right){}_2F_1\left(\begin{matrix}-\frac{1}{4},\frac{1}{2}\\ \frac{3}{4}\end{matrix}\middle|c^2x^4e^{2i\pi}\right)}{6x\Gamma\left(\frac{3}{4}\right)}-\frac{b\operatorname{asin}\left(cx^2\right)}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**2))/x**4,x)
```

```
[Out] -a/(3*x**3) + b*c*gamma(-1/4)*hyper((-1/4, 1/2), (3/4,), c**2*x**4*exp_pola
r(2*I*pi))/(6*x*gamma(3/4)) - b*asin(c*x**2)/(3*x**3)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \arcsin\left(cx^2\right) + a}{x^4}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^4,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x^2) + a)/x^4, x)
```

3.358 $\int \frac{a+b\sin^{-1}(cx^2)}{x^6}\,dx$

Optimal. Leaf size=61

$$\frac{2}{15}bc^{5/2}\text{EllipticF}\left(\sin^{-1}\left(\sqrt{c}x\right),-1\right)-\frac{a+b\sin^{-1}\left(cx^2\right)}{5x^5}-\frac{2bc\sqrt{1-c^2x^4}}{15x^3}$$

```
[Out] (-2*b*c*Sqrt[1 - c^2*x^4])/(15*x^3) - (a + b*ArcSin[c*x^2])/(5*x^5) + (2*b*
c^(5/2)*EllipticF[ArcSin[Sqrt[c]*x], -1])/15
```

Rubi [A] time = 0.0338484, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4842, 12, 325, 221}

$$-\frac{a+b\sin^{-1}\left(cx^2\right)}{5x^5}-\frac{2bc\sqrt{1-c^2x^4}}{15x^3}+\frac{2}{15}bc^{5/2}F\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^2])/x^6,x]
```

```
[Out] (-2*b*c*Sqrt[1 - c^2*x^4])/(15*x^3) - (a + b*ArcSin[c*x^2])/(5*x^5) + (2*b*
c^(5/2)*EllipticF[ArcSin[Sqrt[c]*x], -1])/15
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 325

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c*
x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] - Dist[(b*(m + n*(p + 1)
+ 1))/(a*c^n*(m + 1)), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 221

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[(Rt[-b,
 4]*x)/Rt[a, 4]], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
b/a] && GtQ[a, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\sin^{-1}\left(cx^2\right)}{x^6}\,dx &= -\frac{a+b\sin^{-1}\left(cx^2\right)}{5x^5}+\frac{1}{5}b\int \frac{2c}{x^4\sqrt{1-c^2x^4}}\,dx\\ &= -\frac{a+b\sin^{-1}\left(cx^2\right)}{5x^5}+\frac{1}{5}(2bc)\int \frac{1}{x^4\sqrt{1-c^2x^4}}\,dx\\ &= -\frac{2bc\sqrt{1-c^2x^4}}{15x^3}-\frac{a+b\sin^{-1}\left(cx^2\right)}{5x^5}+\frac{1}{15}\left(2bc^3\right)\int \frac{1}{\sqrt{1-c^2x^4}}\,dx\\ &= -\frac{2bc\sqrt{1-c^2x^4}}{15x^3}-\frac{a+b\sin^{-1}\left(cx^2\right)}{5x^5}+\frac{2}{15}bc^{5/2}F\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)\end{aligned}$$

Mathematica [C] time = 0.133281, size = 72, normalized size = 1.18

$$-\frac{-2ib(-c)^{5/2}x^5\,\text{EllipticF}\left(i\sinh^{-1}\left(\sqrt{-c}x\right),-1\right)+3a+2bcx^2\sqrt{1-c^2x^4}+3b\sin^{-1}\left(cx^2\right)}{15x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^2])/x^6,x]
```

```
[Out] -(3*a + 2*b*c*x^2*Sqrt[1 - c^2*x^4] + 3*b*ArcSin[c*x^2] - (2*I)*b*(-c)^(5/2
)*x^5*EllipticF[I*ArcSinh[Sqrt[-c]*x], -1])/(15*x^5)
```

Maple [A] time = 0.01, size = 87, normalized size = 1.4

$$-\frac{a}{5\,x^5}+b\left(-\frac{\arcsin\left(cx^2\right)}{5\,x^5}+\frac{2\,c}{5}\left(-\frac{1}{3\,x^3}\sqrt{-c^2x^4+1}+\frac{1}{3}c^{\frac{3}{2}}\sqrt{-cx^2+1}\sqrt{cx^2+1}\,\text{EllipticF}\left(x\sqrt{c},i\right)\frac{1}{\sqrt{-c^2x^4+1}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^2))/x^6,x)
```

```
[Out] -1/5*a/x^5+b*(-1/5/x^5*arcsin(c*x^2)+2/5*c*(-1/3*(-c^2*x^4+1)^(1/2)/x^3+1/3
*c^(3/2)*(-c*x^2+1)^(1/2)*(c*x^2+1)^(1/2)/(-c^2*x^4+1)^(1/2)*EllipticF(x*c^
(1/2),I)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^6,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b \arcsin\left(cx^2\right) + a}{x^6}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^6,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(c*x^2) + a)/x^6, x)
```

Sympy [A] time = 3.44533, size = 61, normalized size = 1.

$$-\frac{a}{5x^5} + \frac{bc\Gamma\left(-\frac{3}{4}\right) {}_2F_1\left(\begin{matrix} -\frac{3}{4}, \frac{1}{2} \\ \frac{1}{4} \end{matrix}\middle| c^2x^4e^{2i\pi}\right)}{10x^3\Gamma\left(\frac{1}{4}\right)} - \frac{b \operatorname{asin}\left(cx^2\right)}{5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**2))/x**6,x)
```

```
[Out] -a/(5*x**5) + b*c*gamma(-3/4)*hyper((-3/4, 1/2), (1/4,), c**2*x**4*exp_pola
r(2*I*pi))/(10*x**3*gamma(1/4)) - b*asin(c*x**2)/(5*x**5)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \arcsin\left(cx^2\right) + a}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^6,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x^2) + a)/x^6, x)
```

3.359 $\int \frac{a+b\sin^{-1}(cx^2)}{x^8}\,dx$

Optimal. Leaf size=106

$$\frac{6}{35}bc^{7/2}\text{EllipticF}\left(\sin^{-1}\left(\sqrt{c}x\right),-1\right)-\frac{a+b\sin^{-1}\left(cx^2\right)}{7x^7}-\frac{6bc^3\sqrt{1-c^2x^4}}{35x}-\frac{2bc\sqrt{1-c^2x^4}}{35x^5}-\frac{6}{35}bc^{7/2}E\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)$$

```
[Out] (-2*b*c*Sqrt[1 - c^2*x^4])/(35*x^5) - (6*b*c^3*Sqrt[1 - c^2*x^4])/(35*x) -
(a + b*ArcSin[c*x^2])/(7*x^7) - (6*b*c^(7/2)*EllipticE[ArcSin[Sqrt[c]*x], -
1])/35 + (6*b*c^(7/2)*EllipticF[ArcSin[Sqrt[c]*x], -1])/35
```

Rubi [A] time = 0.0742363, antiderivative size = 106, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {4842, 12, 325, 307, 221, 1199, 424}

$$-\frac{a+b\sin^{-1}\left(cx^2\right)}{7x^7}-\frac{6bc^3\sqrt{1-c^2x^4}}{35x}-\frac{2bc\sqrt{1-c^2x^4}}{35x^5}+\frac{6}{35}bc^{7/2}F\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)-\frac{6}{35}bc^{7/2}E\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right)$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^2])/x^8,x]
```

```
[Out] (-2*b*c*Sqrt[1 - c^2*x^4])/(35*x^5) - (6*b*c^3*Sqrt[1 - c^2*x^4])/(35*x) -
(a + b*ArcSin[c*x^2])/(7*x^7) - (6*b*c^(7/2)*EllipticE[ArcSin[Sqrt[c]*x], -
1])/35 + (6*b*c^(7/2)*EllipticF[ArcSin[Sqrt[c]*x], -1])/35
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 325

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c*
x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] - Dist[(b*(m + n*(p + 1)
+ 1))/(a*c^n*(m + 1)), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 307

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[-(b/a), 2]}
, -Dist[q^(-1), Int[1/Sqrt[a + b*x^4], x], x] + Dist[1/q, Int[(1 + q*x^2)/S
qrt[a + b*x^4], x], x]] /; FreeQ[{a, b}, x] && NegQ[b/a]
```

Rule 221

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[(Rt[-b,
 4]*x)/Rt[a, 4]], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
b/a] && GtQ[a, 0]
```

Rule 1199

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> Dist[d/Sq
rt[a], Int[Sqrt[1 + (e*x^2)/d]/Sqrt[1 - (e*x^2)/d], x], x] /; FreeQ[{a, c,
d, e}, x] && NegQ[c/a] && EqQ[c*d^2 + a*e^2, 0] && GtQ[a, 0]
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx^2)}{x^8}\,dx = -\frac{a+b\sin^{-1}(cx^2)}{7x^7} + \frac{1}{7}b\int \frac{2c}{x^6\sqrt{1-c^2x^4}}\,dx$$
$$= -\frac{a+b\sin^{-1}(cx^2)}{7x^7} + \frac{1}{7}(2bc)\int \frac{1}{x^6\sqrt{1-c^2x^4}}\,dx$$
$$= -\frac{2bc\sqrt{1-c^2x^4}}{35x^5} - \frac{a+b\sin^{-1}(cx^2)}{7x^7} + \frac{1}{35}\left(6bc^3\right)\int \frac{1}{x^2\sqrt{1-c^2x^4}}\,dx$$
$$= -\frac{2bc\sqrt{1-c^2x^4}}{35x^5} - \frac{6bc^3\sqrt{1-c^2x^4}}{35x} - \frac{a+b\sin^{-1}(cx^2)}{7x^7} - \frac{1}{35}\left(6bc^5\right)\int \frac{x^2}{\sqrt{1-c^2x^4}}\,dx$$
$$= -\frac{2bc\sqrt{1-c^2x^4}}{35x^5} - \frac{6bc^3\sqrt{1-c^2x^4}}{35x} - \frac{a+b\sin^{-1}(cx^2)}{7x^7} + \frac{1}{35}\left(6bc^4\right)\int \frac{1}{\sqrt{1-c^2x^4}}\,dx - \frac{1}{35}\left(6bc^4\right)$$
$$= -\frac{2bc\sqrt{1-c^2x^4}}{35x^5} - \frac{6bc^3\sqrt{1-c^2x^4}}{35x} - \frac{a+b\sin^{-1}(cx^2)}{7x^7} + \frac{6}{35}bc^{7/2}F\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right) - \frac{1}{35}\left(6bc^4\right.$$
$$= -\frac{2bc\sqrt{1-c^2x^4}}{35x^5} - \frac{6bc^3\sqrt{1-c^2x^4}}{35x} - \frac{a+b\sin^{-1}(cx^2)}{7x^7} - \frac{6}{35}bc^{7/2}E\left(\sin^{-1}\left(\sqrt{c}x\right)\middle|-1\right) + \frac{6}{35}bc^{7/2}F$$

Mathematica [C] time = 0.239822, size = 100, normalized size = 0.94

$$-\frac{-6ib(-c)^{7/2}x^7\left(E\left(i\sinh^{-1}\left(\sqrt{-c}x\right)\middle|-1\right) - \text{EllipticF}\left(i\sinh^{-1}\left(\sqrt{-c}x\right),-1\right)\right) + 5a + 2bx^2\sqrt{1-c^2x^4}\left(3c^3x^4+c\right) + 5b\sin^{-}}{35x^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^2])/x^8,x]
```

```
[Out] -(5*a + 2*b*x^2*Sqrt[1 - c^2*x^4]*(c + 3*c^3*x^4) + 5*b*ArcSin[c*x^2] - (6*
I)*b*(-c)^(7/2)*x^7*(EllipticE[I*ArcSinh[Sqrt[-c]*x], -1] - EllipticF[I*Arc
Sinh[Sqrt[-c]*x], -1]))/(35*x^7)
```

Maple [A] time = 0.013, size = 118, normalized size = 1.1

$$-\frac{a}{7x^7} + b\left(-\frac{\arcsin\left(cx^2\right)}{7x^7} + \frac{2c}{7}\left(-\frac{1}{5x^5}\sqrt{-c^2x^4+1} - \frac{3c^2}{5x}\sqrt{-c^2x^4+1} + \frac{3}{5}c^{\frac{5}{2}}\sqrt{-cx^2+1}\sqrt{cx^2+1}\left(\text{EllipticF}\left(x\sqrt{c},i\right) - \text{El}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^2))/x^8,x)
```

```
[Out] -1/7*a/x^7+b*(-1/7/x^7*arcsin(c*x^2)+2/7*c*(-1/5*(-c^2*x^4+1)^(1/2)/x^5-3/5
*c^2*(-c^2*x^4+1)^(1/2)/x+3/5*c^(5/2)*(-c*x^2+1)^(1/2)*(c*x^2+1)^(1/2)/(-c^
2*x^4+1)^(1/2)*(EllipticF(x*c^(1/2),I)-EllipticE(x*c^(1/2),I))))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^8,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\arcsin\left(cx^2\right)+a}{x^8},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^8,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(c*x^2) + a)/x^8, x)
```

Sympy [A] time = 7.61101, size = 65, normalized size = 0.61

$$-\frac{a}{7x^7}+\frac{bc\Gamma\left(-\frac{5}{4}\right){}_2F_1\left(\left.\begin{matrix}-\frac{5}{4},\frac{1}{2}\\-\frac{1}{4}\end{matrix}\right|c^2x^4e^{2i\pi}\right)}{14x^5\Gamma\left(-\frac{1}{4}\right)}-\frac{b\,\text{asin}\left(cx^2\right)}{7x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**2))/x**8,x)
```

```
[Out] -a/(7*x**7) + b*c*gamma(-5/4)*hyper((-5/4, 1/2), (-1/4,), c**2*x**4*exp_pol
ar(2*I*pi))/(14*x**5*gamma(-1/4)) - b*asin(c*x**2)/(7*x**7)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \arcsin(cx^2) + a}{x^8} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^8,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x^2) + a)/x^8, x)
```

3.360 $\int \frac{\sin^{-1}(ax^5)}{x} dx$

Optimal. Leaf size=62

$$-\frac{1}{10}i\text{PolyLog}\left(2,e^{2i\sin^{-1}(ax^5)}\right)-\frac{1}{10}i\sin^{-1}\left(ax^5\right)^2+\frac{1}{5}\sin^{-1}\left(ax^5\right)\log\left(1-e^{2i\sin^{-1}(ax^5)}\right)$$

```
[Out] (-I/10)*ArcSin[a*x^5]^2 + (ArcSin[a*x^5]*Log[1 - E^((2*I)*ArcSin[a*x^5])])/
5 - (I/10)*PolyLog[2, E^((2*I)*ArcSin[a*x^5])]
```

Rubi [A] time = 0.0633814, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {4830, 3717, 2190, 2279, 2391}

$$-\frac{1}{10}i\text{PolyLog}\left(2,e^{2i\sin^{-1}(ax^5)}\right)-\frac{1}{10}i\sin^{-1}\left(ax^5\right)^2+\frac{1}{5}\sin^{-1}\left(ax^5\right)\log\left(1-e^{2i\sin^{-1}(ax^5)}\right)$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a*x^5]/x,x]
```

```
[Out] (-I/10)*ArcSin[a*x^5]^2 + (ArcSin[a*x^5]*Log[1 - E^((2*I)*ArcSin[a*x^5])])/
5 - (I/10)*PolyLog[2, E^((2*I)*ArcSin[a*x^5])]
```

Rule 4830

```
Int[ArcSin[(a_.)*(x_)^(p_)]^(n_.)/(x_), x_Symbol] :> Dist[1/p, Subst[Int[x^
n*Cot[x], x], x, ArcSin[a*x^p]], x] /; FreeQ[{a, p}, x] && IGtQ[n, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
```

```
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\begin{aligned}\int \frac{\sin^{-1}\left(ax^5\right)}{x}\,dx &= \frac{1}{5}\operatorname{Subst}\left(\int x\cot(x)\,dx, x, \sin^{-1}\left(ax^5\right)\right)\\ &= -\frac{1}{10}i\sin^{-1}\left(ax^5\right)^2 - \frac{2}{5}i\operatorname{Subst}\left(\int \frac{e^{2ix}x}{1-e^{2ix}}\,dx, x, \sin^{-1}\left(ax^5\right)\right)\\ &= -\frac{1}{10}i\sin^{-1}\left(ax^5\right)^2 + \frac{1}{5}\sin^{-1}\left(ax^5\right)\log\left(1-e^{2i\sin^{-1}\left(ax^5\right)}\right) - \frac{1}{5}\operatorname{Subst}\left(\int \log\left(1-e^{2ix}\right)\,dx, x, \sin^{-1}\left(ax^5\right.\right.\\ &= -\frac{1}{10}i\sin^{-1}\left(ax^5\right)^2 + \frac{1}{5}\sin^{-1}\left(ax^5\right)\log\left(1-e^{2i\sin^{-1}\left(ax^5\right)}\right) + \frac{1}{10}i\operatorname{Subst}\left(\int \frac{\log(1-x)}{x}\,dx, x, e^{2i\sin^{-1}\left(ax^5\right)}\right.\\ &= -\frac{1}{10}i\sin^{-1}\left(ax^5\right)^2 + \frac{1}{5}\sin^{-1}\left(ax^5\right)\log\left(1-e^{2i\sin^{-1}\left(ax^5\right)}\right) - \frac{1}{10}i\operatorname{Li}_2\left(e^{2i\sin^{-1}\left(ax^5\right)}\right)\end{aligned}$$

Mathematica [A] time = 0.0361207, size = 58, normalized size = 0.94

$$\frac{1}{5}\left(\sin^{-1}\left(ax^5\right)\log\left(1-e^{2i\sin^{-1}\left(ax^5\right)}\right) - \frac{1}{2}i\left(\sin^{-1}\left(ax^5\right)^2 + \operatorname{PolyLog}\left(2, e^{2i\sin^{-1}\left(ax^5\right)}\right)\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a*x^5]/x,x]
```

```
[Out] (ArcSin[a*x^5]*Log[1 - E^((2*I)*ArcSin[a*x^5])] - (I/2)*(ArcSin[a*x^5]^2 +
PolyLog[2, E^((2*I)*ArcSin[a*x^5])]))/5
```

Maple [F] time = 0.051, size = 0, normalized size = 0.

$$\int \frac{\arcsin\left(a x^5\right)}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x^5)/x,x)
```

```
[Out] int(arcsin(a*x^5)/x,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\arcsin\left(a x^5\right)}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x^5)/x,x, algorithm="maxima")
```

```
[Out] integrate(arcsin(a*x^5)/x, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\arcsin\left(a x^5\right)}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x^5)/x,x, algorithm="fricas")
```

```
[Out] integral(arcsin(a*x^5)/x, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\operatorname{asin}\left(a x^5\right)}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x**5)/x,x)
```

```
[Out] Integral(asin(a*x**5)/x, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\arcsin\left(ax^5\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x^5)/x,x, algorithm="giac")
```

```
[Out] integrate(arcsin(a*x^5)/x, x)
```

3.361 $\int x^2 \sin^{-1}\left(\sqrt{x}\right) dx$

Optimal. Leaf size=78

$$\frac{1}{18}\sqrt{1-x}x^{5/2}+\frac{5}{72}\sqrt{1-x}x^{3/2}+\frac{1}{3}x^3\sin^{-1}\left(\sqrt{x}\right)+\frac{5}{48}\sqrt{1-x}\sqrt{x}+\frac{5}{96}\sin^{-1}(1-2x)$$

```
[Out] (5*Sqrt[1 - x]*Sqrt[x])/48 + (5*Sqrt[1 - x]*x^(3/2))/72 + (Sqrt[1 - x]*x^(5
/2))/18 + (5*ArcSin[1 - 2*x])/96 + (x^3*ArcSin[Sqrt[x]])/3
```

Rubi [A] time = 0.0302778, antiderivative size = 78, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.6, Rules used = {4842, 12, 50, 53, 619, 216}

$$\frac{1}{18}\sqrt{1-x}x^{5/2}+\frac{5}{72}\sqrt{1-x}x^{3/2}+\frac{1}{3}x^3\sin^{-1}\left(\sqrt{x}\right)+\frac{5}{48}\sqrt{1-x}\sqrt{x}+\frac{5}{96}\sin^{-1}(1-2x)$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcSin[Sqrt[x]],x]
```

```
[Out] (5*Sqrt[1 - x]*Sqrt[x])/48 + (5*Sqrt[1 - x]*x^(3/2))/72 + (Sqrt[1 - x]*x^(5
/2))/18 + (5*ArcSin[1 - 2*x])/96 + (x^3*ArcSin[Sqrt[x]])/3
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
```

```
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 53

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)]*Sqrt[(c_.) + (d_.)*(x_)]), x_Symbol] :> Int[
1/Sqrt[a*c - b*(a - c)*x - b^2*x^2], x] /; FreeQ[{a, b, c, d}, x] && EqQ[b
+ d, 0] && GtQ[a + c, 0]
```

Rule 619

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[1/(2*c*((-4
*c)/(b^2 - 4*a*c))^p), Subst[Int[Simp[1 - x^2/(b^2 - 4*a*c), x]^p, x], x, b
 + 2*c*x], x] /; FreeQ[{a, b, c, p}, x] && GtQ[4*a - b^2/c, 0]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rubi steps

$$\begin{aligned}
\int x^2 \sin^{-1}\left(\sqrt{x}\right) dx &= \frac{1}{3}x^3 \sin^{-1}\left(\sqrt{x}\right) - \frac{1}{3}\int \frac{x^{5/2}}{2\sqrt{1-x}}\, dx \\
&= \frac{1}{3}x^3 \sin^{-1}\left(\sqrt{x}\right) - \frac{1}{6}\int \frac{x^{5/2}}{\sqrt{1-x}}\, dx \\
&= \frac{1}{18}\sqrt{1-x}x^{5/2} + \frac{1}{3}x^3 \sin^{-1}\left(\sqrt{x}\right) - \frac{5}{36}\int \frac{x^{3/2}}{\sqrt{1-x}}\, dx \\
&= \frac{5}{72}\sqrt{1-x}x^{3/2} + \frac{1}{18}\sqrt{1-x}x^{5/2} + \frac{1}{3}x^3 \sin^{-1}\left(\sqrt{x}\right) - \frac{5}{48}\int \frac{\sqrt{x}}{\sqrt{1-x}}\, dx \\
&= \frac{5}{48}\sqrt{1-x}\sqrt{x} + \frac{5}{72}\sqrt{1-x}x^{3/2} + \frac{1}{18}\sqrt{1-x}x^{5/2} + \frac{1}{3}x^3 \sin^{-1}\left(\sqrt{x}\right) - \frac{5}{96}\int \frac{1}{\sqrt{1-x}\sqrt{x}}\, dx \\
&= \frac{5}{48}\sqrt{1-x}\sqrt{x} + \frac{5}{72}\sqrt{1-x}x^{3/2} + \frac{1}{18}\sqrt{1-x}x^{5/2} + \frac{1}{3}x^3 \sin^{-1}\left(\sqrt{x}\right) - \frac{5}{96}\int \frac{1}{\sqrt{x-x^2}}\, dx \\
&= \frac{5}{48}\sqrt{1-x}\sqrt{x} + \frac{5}{72}\sqrt{1-x}x^{3/2} + \frac{1}{18}\sqrt{1-x}x^{5/2} + \frac{1}{3}x^3 \sin^{-1}\left(\sqrt{x}\right) + \frac{5}{96}\operatorname{Subst}\left(\int \frac{1}{\sqrt{1-x^2}}\, dx, x, 1 -\right. \\
&= \frac{5}{48}\sqrt{1-x}\sqrt{x} + \frac{5}{72}\sqrt{1-x}x^{3/2} + \frac{1}{18}\sqrt{1-x}x^{5/2} + \frac{5}{96}\sin^{-1}(1-2x) + \frac{1}{3}x^3 \sin^{-1}\left(\sqrt{x}\right)
\end{aligned}$$

Mathematica [A] time = 0.0351987, size = 64, normalized size = 0.82

$$\frac{1}{144}\left(8\sqrt{1-x}x^{5/2}+10\sqrt{1-x}x^{3/2}+3\left(16x^3-5\right)\sin^{-1}\left(\sqrt{x}\right)+15\sqrt{-(x-1)x}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcSin[Sqrt[x]],x]
```

```
[Out] (10*Sqrt[1 - x]*x^(3/2) + 8*Sqrt[1 - x]*x^(5/2) + 15*Sqrt[-((-1 + x)*x)] +
3*(-5 + 16*x^3)*ArcSin[Sqrt[x]])/144
```

Maple [A] time = 0.011, size = 53, normalized size = 0.7

$$\frac{x^3}{3}\arcsin\left(\sqrt{x}\right)+\frac{1}{18}x^{\frac{5}{2}}\sqrt{1-x}+\frac{5}{72}x^{\frac{3}{2}}\sqrt{1-x}+\frac{5}{48}\sqrt{1-x}\sqrt{x}-\frac{5}{48}\arcsin\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arcsin(x^(1/2)),x)
```

```
[Out] 1/3*x^3*arcsin(x^(1/2))+1/18*x^(5/2)*(1-x)^(1/2)+5/72*x^(3/2)*(1-x)^(1/2)+5
/48*(1-x)^(1/2)*x^(1/2)-5/48*arcsin(x^(1/2))
```

Maxima [A] time = 1.42676, size = 70, normalized size = 0.9

$$\frac{1}{3}\,x^3\arcsin\left(\sqrt{x}\right)+\frac{1}{18}\,x^{\frac{5}{2}}\sqrt{-x+1}+\frac{5}{72}\,x^{\frac{3}{2}}\sqrt{-x+1}+\frac{5}{48}\,\sqrt{x}\sqrt{-x+1}-\frac{5}{48}\,\arcsin\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(x^(1/2)),x, algorithm="maxima")
```

```
[Out] 1/3*x^3*arcsin(sqrt(x)) + 1/18*x^(5/2)*sqrt(-x + 1) + 5/72*x^(3/2)*sqrt(-x
+ 1) + 5/48*sqrt(x)*sqrt(-x + 1) - 5/48*arcsin(sqrt(x))
```

Fricas [A] time = 2.36802, size = 113, normalized size = 1.45

$$\frac{1}{144}\left(8\,x^2+10\,x+15\right)\sqrt{x}\sqrt{-x+1}+\frac{1}{48}\left(16\,x^3-5\right)\arcsin\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(x^(1/2)),x, algorithm="fricas")
```

```
[Out] 1/144*(8*x^2 + 10*x + 15)*sqrt(x)*sqrt(-x + 1) + 1/48*(16*x^3 - 5)*arcsin(s
qrt(x))
```

Sympy [A] time = 10.5334, size = 73, normalized size = 0.94

$$\frac{x^3 \operatorname{asin}\left(\sqrt{x}\right)}{3} - \frac{\begin{cases} \frac{x^{\frac{3}{2}}(1-x)^{\frac{3}{2}}}{6} + \frac{3\sqrt{x}(1-2x)\sqrt{1-x}}{16} - \frac{\sqrt{x}\sqrt{1-x}}{2} + \frac{5\operatorname{asin}\left(\sqrt{x}\right)}{16} & \text{for}\ x \geq 0 \wedge x < 1 \end{cases}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*asin(x**(1/2)),x)
```

```
[Out] x**3*asin(sqrt(x))/3 - Piecewise((x**(3/2)*(1 - x)**(3/2)/6 + 3*sqrt(x)*(1
- 2*x)*sqrt(1 - x)/16 - sqrt(x)*sqrt(1 - x)/2 + 5*asin(sqrt(x))/16, (x >= 0
) & (x < 1)))/3
```

Giac [A] time = 1.17519, size = 104, normalized size = 1.33

$$\frac{1}{3}(x-1)^3 \arcsin\left(\sqrt{x}\right) + \frac{1}{18}(x-1)^2\sqrt{x}\sqrt{-x+1} + (x-1)^2 \arcsin\left(\sqrt{x}\right) - \frac{13}{72}\sqrt{x}(-x+1)^{\frac{3}{2}} + (x-1)\arcsin\left(\sqrt{x}\right) + \frac{11}{48}\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(x^(1/2)),x, algorithm="giac")
```

```
[Out] 1/3*(x - 1)^3*arcsin(sqrt(x)) + 1/18*(x - 1)^2*sqrt(x)*sqrt(-x + 1) + (x -
1)^2*arcsin(sqrt(x)) - 13/72*sqrt(x)*(-x + 1)^(3/2) + (x - 1)*arcsin(sqrt(x
)) + 11/48*sqrt(x)*sqrt(-x + 1) + 11/48*arcsin(sqrt(x))
```

3.362 $\int x \sin^{-1}\left(\sqrt{x}\right) dx$

Optimal. Leaf size=60

$$\frac{1}{8}\sqrt{1-x}x^{3/2}+\frac{1}{2}x^2\sin^{-1}\left(\sqrt{x}\right)+\frac{3}{16}\sqrt{1-x}\sqrt{x}+\frac{3}{32}\sin^{-1}(1-2x)$$

```
[Out] (3*Sqrt[1 - x]*Sqrt[x])/16 + (Sqrt[1 - x]*x^(3/2))/8 + (3*ArcSin[1 - 2*x])/
32 + (x^2*ArcSin[Sqrt[x]])/2
```

Rubi [A] time = 0.0208128, antiderivative size = 60, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.75, Rules used = {4842, 12, 50, 53, 619, 216}

$$\frac{1}{8}\sqrt{1-x}x^{3/2}+\frac{1}{2}x^2\sin^{-1}\left(\sqrt{x}\right)+\frac{3}{16}\sqrt{1-x}\sqrt{x}+\frac{3}{32}\sin^{-1}(1-2x)$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcSin[Sqrt[x]],x]
```

```
[Out] (3*Sqrt[1 - x]*Sqrt[x])/16 + (Sqrt[1 - x]*x^(3/2))/8 + (3*ArcSin[1 - 2*x])/
32 + (x^2*ArcSin[Sqrt[x]])/2
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
```

```
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 53

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)]*Sqrt[(c_.) + (d_.)*(x_)]), x_Symbol] :> Int[
1/Sqrt[a*c - b*(a - c)*x - b^2*x^2], x] /; FreeQ[{a, b, c, d}, x] && EqQ[b
+ d, 0] && GtQ[a + c, 0]
```

Rule 619

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[1/(2*c*((-4
*c)/(b^2 - 4*a*c))^p), Subst[Int[Simp[1 - x^2/(b^2 - 4*a*c), x]^p, x], x, b
 + 2*c*x], x] /; FreeQ[{a, b, c, p}, x] && GtQ[4*a - b^2/c, 0]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rubi steps

$$\begin{aligned}
\int x\sin^{-1}\left(\sqrt{x}\right)dx &= \frac{1}{2}x^2\sin^{-1}\left(\sqrt{x}\right)-\frac{1}{2}\int\frac{x^{3/2}}{2\sqrt{1-x}}\,dx\\
&= \frac{1}{2}x^2\sin^{-1}\left(\sqrt{x}\right)-\frac{1}{4}\int\frac{x^{3/2}}{\sqrt{1-x}}\,dx\\
&= \frac{1}{8}\sqrt{1-x}x^{3/2}+\frac{1}{2}x^2\sin^{-1}\left(\sqrt{x}\right)-\frac{3}{16}\int\frac{\sqrt{x}}{\sqrt{1-x}}\,dx\\
&= \frac{3}{16}\sqrt{1-x}\sqrt{x}+\frac{1}{8}\sqrt{1-x}x^{3/2}+\frac{1}{2}x^2\sin^{-1}\left(\sqrt{x}\right)-\frac{3}{32}\int\frac{1}{\sqrt{1-x}\sqrt{x}}\,dx\\
&= \frac{3}{16}\sqrt{1-x}\sqrt{x}+\frac{1}{8}\sqrt{1-x}x^{3/2}+\frac{1}{2}x^2\sin^{-1}\left(\sqrt{x}\right)-\frac{3}{32}\int\frac{1}{\sqrt{x-x^2}}\,dx\\
&= \frac{3}{16}\sqrt{1-x}\sqrt{x}+\frac{1}{8}\sqrt{1-x}x^{3/2}+\frac{1}{2}x^2\sin^{-1}\left(\sqrt{x}\right)+\frac{3}{32}\,\text{Subst}\left(\int\frac{1}{\sqrt{1-x^2}}\,dx,x,1-2x\right)\\
&= \frac{3}{16}\sqrt{1-x}\sqrt{x}+\frac{1}{8}\sqrt{1-x}x^{3/2}+\frac{3}{32}\sin^{-1}(1-2x)+\frac{1}{2}x^2\sin^{-1}\left(\sqrt{x}\right)
\end{aligned}$$

Mathematica [A] time = 0.024398, size = 47, normalized size = 0.78

$$\frac{1}{16}\left(2\sqrt{1-x}x^{3/2}+\left(8x^2-3\right)\sin^{-1}\left(\sqrt{x}\right)+3\sqrt{-(x-1)x}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcSin[Sqrt[x]],x]
```

```
[Out] (2*Sqrt[1 - x]*x^(3/2) + 3*Sqrt[-((-1 + x)*x)] + (-3 + 8*x^2)*ArcSin[Sqrt[x
]])/16
```

Maple [A] time = 0.003, size = 41, normalized size = 0.7

$$\frac{x^2}{2}\arcsin\left(\sqrt{x}\right)+\frac{1}{8}x^{\frac{3}{2}}\sqrt{1-x}+\frac{3}{16}\sqrt{1-x}\sqrt{x}-\frac{3}{16}\arcsin\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arcsin(x^(1/2)),x)
```

```
[Out] 1/2*x^2*arcsin(x^(1/2))+1/8*x^(3/2)*(1-x)^(1/2)+3/16*(1-x)^(1/2)*x^(1/2)-3/
16*arcsin(x^(1/2))
```

Maxima [A] time = 1.41846, size = 54, normalized size = 0.9

$$\frac{1}{2}x^2\arcsin\left(\sqrt{x}\right)+\frac{1}{8}x^{\frac{3}{2}}\sqrt{-x+1}+\frac{3}{16}\sqrt{x}\sqrt{-x+1}-\frac{3}{16}\arcsin\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(x^(1/2)),x, algorithm="maxima")
```

```
[Out] 1/2*x^2*arcsin(sqrt(x)) + 1/8*x^(3/2)*sqrt(-x + 1) + 3/16*sqrt(x)*sqrt(-x +
 1) - 3/16*arcsin(sqrt(x))
```

Fricas [A] time = 2.19271, size = 97, normalized size = 1.62

$$\frac{1}{16}\left(2x+3\right)\sqrt{x}\sqrt{-x+1}+\frac{1}{16}\left(8x^2-3\right)\arcsin\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(x^(1/2)),x, algorithm="fricas")
```

```
[Out] 1/16*(2*x + 3)*sqrt(x)*sqrt(-x + 1) + 1/16*(8*x^2 - 3)*arcsin(sqrt(x))
```

Sympy [A] time = 4.15098, size = 58, normalized size = 0.97

$$\frac{x^2\operatorname{asin}\left(\sqrt{x}\right)}{2}-\frac{\begin{cases}\frac{\sqrt{x}(1-2x)\sqrt{1-x}}{8}-\frac{\sqrt{x}\sqrt{1-x}}{2}+\frac{3\operatorname{asin}\left(\sqrt{x}\right)}{8} & \text{for } x\geq 0\wedge x<1\end{cases}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*asin(x**(1/2)),x)
```

```
[Out] x**2*asin(sqrt(x))/2 - Piecewise((sqrt(x)*(1 - 2*x)*sqrt(1 - x)/8 - sqrt(x)
*sqrt(1 - x)/2 + 3*asin(sqrt(x))/8, (x >= 0) & (x < 1)))/2
```

Giac [A] time = 1.12907, size = 68, normalized size = 1.13

$$\frac{1}{2}\,(x-1)^2\arcsin\left(\sqrt{x}\right)-\frac{1}{8}\,\sqrt{x}(-x+1)^{\frac{3}{2}}+(x-1)\arcsin\left(\sqrt{x}\right)+\frac{5}{16}\,\sqrt{x}\sqrt{-x+1}+\frac{5}{16}\,\arcsin\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(x^(1/2)),x, algorithm="giac")
```

```
[Out] 1/2*(x - 1)^2*arcsin(sqrt(x)) - 1/8*sqrt(x)*(-x + 1)^(3/2) + (x - 1)*arcsin
(sqrt(x)) + 5/16*sqrt(x)*sqrt(-x + 1) + 5/16*arcsin(sqrt(x))
```

3.363 $\int \sin^{-1}\left(\sqrt{x}\right)\,dx$

Optimal. Leaf size=37

$$\frac{1}{2}\sqrt{1-x}\sqrt{x}+\frac{1}{4}\sin^{-1}(1-2x)+x\sin^{-1}\left(\sqrt{x}\right)$$

```
[Out] (Sqrt[1 - x]*Sqrt[x])/2 + ArcSin[1 - 2*x]/4 + x*ArcSin[Sqrt[x]]
```

Rubi [A] time = 0.011631, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 6, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1., Rules used = {4840, 12, 50, 53, 619, 216}

$$\frac{1}{2}\sqrt{1-x}\sqrt{x}+\frac{1}{4}\sin^{-1}(1-2x)+x\sin^{-1}\left(\sqrt{x}\right)$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[Sqrt[x]],x]
```

```
[Out] (Sqrt[1 - x]*Sqrt[x])/2 + ArcSin[1 - 2*x]/4 + x*ArcSin[Sqrt[x]]
```

Rule 4840

```
Int[ArcSin[u_], x_Symbol] :> Simp[x*ArcSin[u], x] - Int[SimplifyIntegrand[(
x*D[u, x])/Sqrt[1 - u^2], x], x] /; InverseFunctionFreeQ[u, x] &&  !Functio
nOfExponentialQ[u, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 53

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)]*Sqrt[(c_.) + (d_.)*(x_)]), x_Symbol] :> Int[
1/Sqrt[a*c - b*(a - c)*x - b^2*x^2], x] /; FreeQ[{a, b, c, d}, x] && EqQ[b
+ d, 0] && GtQ[a + c, 0]
```

Rule 619

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[1/(2*c*((-4
*c)/(b^2 - 4*a*c))^p), Subst[Int[Simp[1 - x^2/(b^2 - 4*a*c), x]^p, x], x, b
 + 2*c*x], x] /; FreeQ[{a, b, c, p}, x] && GtQ[4*a - b^2/c, 0]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rubi steps

$$\begin{aligned}
\int \sin^{-1}\left(\sqrt{x}\right) dx &= x\sin^{-1}\left(\sqrt{x}\right) - \int \frac{\sqrt{x}}{2\sqrt{1-x}}\, dx \\
&= x\sin^{-1}\left(\sqrt{x}\right) - \frac{1}{2}\int \frac{\sqrt{x}}{\sqrt{1-x}}\, dx \\
&= \frac{1}{2}\sqrt{1-x}\sqrt{x} + x\sin^{-1}\left(\sqrt{x}\right) - \frac{1}{4}\int \frac{1}{\sqrt{1-x}\sqrt{x}}\, dx \\
&= \frac{1}{2}\sqrt{1-x}\sqrt{x} + x\sin^{-1}\left(\sqrt{x}\right) - \frac{1}{4}\int \frac{1}{\sqrt{x-x^2}}\, dx \\
&= \frac{1}{2}\sqrt{1-x}\sqrt{x} + x\sin^{-1}\left(\sqrt{x}\right) + \frac{1}{4}\operatorname{Subst}\left(\int \frac{1}{\sqrt{1-x^2}}\, dx, x, 1-2x\right) \\
&= \frac{1}{2}\sqrt{1-x}\sqrt{x} + \frac{1}{4}\sin^{-1}(1-2x) + x\sin^{-1}\left(\sqrt{x}\right)
\end{aligned}$$

Mathematica [A] time = 0.0126864, size = 34, normalized size = 0.92

$$\frac{1}{2}\left(\sqrt{-(x-1)x} + \sin^{-1}\left(\sqrt{1-x}\right)\right) + x\sin^{-1}\left(\sqrt{x}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[Sqrt[x]],x]
```

```
[Out] (Sqrt[-((-1 + x)*x)] + ArcSin[Sqrt[1 - x]])/2 + x*ArcSin[Sqrt[x]]
```

Maple [A] time = 0.004, size = 26, normalized size = 0.7

$$x\arcsin\left(\sqrt{x}\right)+\frac{1}{2}\sqrt{1-x}\,\sqrt{x}-\frac{1}{2}\arcsin\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(x^(1/2)),x)
```

```
[Out] x*arcsin(x^(1/2))+1/2*(1-x)^(1/2)*x^(1/2)-1/2*arcsin(x^(1/2))
```

Maxima [A] time = 1.43014, size = 34, normalized size = 0.92

$$x\arcsin\left(\sqrt{x}\right)+\frac{1}{2}\,\sqrt{x}\sqrt{-x+1}-\frac{1}{2}\,\arcsin\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2)),x, algorithm="maxima")
```

```
[Out] x*arcsin(sqrt(x)) + 1/2*sqrt(x)*sqrt(-x + 1) - 1/2*arcsin(sqrt(x))
```

Fricas [A] time = 2.21324, size = 78, normalized size = 2.11

$$\frac{1}{2}\,(2\,x-1)\arcsin\left(\sqrt{x}\right)+\frac{1}{2}\,\sqrt{x}\sqrt{-x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2)),x, algorithm="fricas")
```

```
[Out] 1/2*(2*x - 1)*arcsin(sqrt(x)) + 1/2*sqrt(x)*sqrt(-x + 1)
```

Sympy [A] time = 0.365178, size = 29, normalized size = 0.78

$$\frac{\sqrt{x}\sqrt{1-x}}{2}+x\operatorname{asin}\left(\sqrt{x}\right)-\frac{\operatorname{asin}\left(\sqrt{x}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(x**(1/2)),x)
```

```
[Out] sqrt(x)*sqrt(1 - x)/2 + x*asin(sqrt(x)) - asin(sqrt(x))/2
```

Giac [A] time = 1.1438, size = 36, normalized size = 0.97

$$(x-1)\arcsin\left(\sqrt{x}\right)+\frac{1}{2}\sqrt{x}\sqrt{-x+1}+\frac{1}{2}\arcsin\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2)),x, algorithm="giac")
```

```
[Out] (x - 1)*arcsin(sqrt(x)) + 1/2*sqrt(x)*sqrt(-x + 1) + 1/2*arcsin(sqrt(x))
```

3.364 $\int \frac{\sin^{-1}(\sqrt{x})}{x} dx$

Optimal. Leaf size=56

$$-i\text{PolyLog}\left(2,e^{2i\sin^{-1}(\sqrt{x})}\right)-i\sin^{-1}\left(\sqrt{x}\right)^2+2\sin^{-1}\left(\sqrt{x}\right)\log\left(1-e^{2i\sin^{-1}(\sqrt{x})}\right)$$

```
[Out] (-I)*ArcSin[Sqrt[x]]^2 + 2*ArcSin[Sqrt[x]]*Log[1 - E^((2*I)*ArcSin[Sqrt[x]]
)] - I*PolyLog[2, E^((2*I)*ArcSin[Sqrt[x]])]
```

Rubi [A] time = 0.0610309, antiderivative size = 56, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {4830, 3717, 2190, 2279, 2391}

$$-i\text{PolyLog}\left(2,e^{2i\sin^{-1}(\sqrt{x})}\right)-i\sin^{-1}\left(\sqrt{x}\right)^2+2\sin^{-1}\left(\sqrt{x}\right)\log\left(1-e^{2i\sin^{-1}(\sqrt{x})}\right)$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[Sqrt[x]]/x,x]
```

```
[Out] (-I)*ArcSin[Sqrt[x]]^2 + 2*ArcSin[Sqrt[x]]*Log[1 - E^((2*I)*ArcSin[Sqrt[x]]
)] - I*PolyLog[2, E^((2*I)*ArcSin[Sqrt[x]])]
```

Rule 4830

```
Int[ArcSin[(a_.)*(x_)^(p_)]^(n_.)/(x_), x_Symbol] :> Dist[1/p, Subst[Int[x^
n*Cot[x], x], x, ArcSin[a*x^p]], x] /; FreeQ[{a, p}, x] && IGtQ[n, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
```

```
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sin^{-1}\left(\sqrt{x}\right)}{x}\,dx &= 2\,\text{Subst}\left(\int x\cot(x)\,dx, x, \sin^{-1}\left(\sqrt{x}\right)\right)\\
&= -i\sin^{-1}\left(\sqrt{x}\right)^2 - 4i\,\text{Subst}\left(\int \frac{e^{2ix}x}{1-e^{2ix}}\,dx, x, \sin^{-1}\left(\sqrt{x}\right)\right)\\
&= -i\sin^{-1}\left(\sqrt{x}\right)^2 + 2\sin^{-1}\left(\sqrt{x}\right)\log\left(1-e^{2i\sin^{-1}\left(\sqrt{x}\right)}\right) - 2\,\text{Subst}\left(\int \log\left(1-e^{2ix}\right)\,dx, x, \sin^{-1}\left(\sqrt{x}\right)\right)\\
&= -i\sin^{-1}\left(\sqrt{x}\right)^2 + 2\sin^{-1}\left(\sqrt{x}\right)\log\left(1-e^{2i\sin^{-1}\left(\sqrt{x}\right)}\right) + i\,\text{Subst}\left(\int \frac{\log(1-x)}{x}\,dx, x, e^{2i\sin^{-1}\left(\sqrt{x}\right)}\right)\\
&= -i\sin^{-1}\left(\sqrt{x}\right)^2 + 2\sin^{-1}\left(\sqrt{x}\right)\log\left(1-e^{2i\sin^{-1}\left(\sqrt{x}\right)}\right) - i\text{Li}_2\left(e^{2i\sin^{-1}\left(\sqrt{x}\right)}\right)
\end{aligned}$$

Mathematica [A] time = 0.0306429, size = 53, normalized size = 0.95

$$2\sin^{-1}\left(\sqrt{x}\right)\log\left(1-e^{2i\sin^{-1}\left(\sqrt{x}\right)}\right) - i\left(\sin^{-1}\left(\sqrt{x}\right)^2 + \text{PolyLog}\left(2, e^{2i\sin^{-1}\left(\sqrt{x}\right)}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[Sqrt[x]]/x,x]
```

```
[Out] 2*ArcSin[Sqrt[x]]*Log[1 - E^((2*I)*ArcSin[Sqrt[x]])] - I*(ArcSin[Sqrt[x]]^2
 + PolyLog[2, E^((2*I)*ArcSin[Sqrt[x]])])
```

Maple [A] time = 0.038, size = 97, normalized size = 1.7

$$-i\left(\arcsin\left(\sqrt{x}\right)\right)^{2}+2\arcsin\left(\sqrt{x}\right)\ln\left(1+i\sqrt{x}+\sqrt{1-x}\right)+2\arcsin\left(\sqrt{x}\right)\ln\left(1-i\sqrt{x}-\sqrt{1-x}\right)-2i\,\mathrm{polylog}\left(2,-i\sqrt{x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(x^(1/2))/x,x)
```

```
[Out] -I*arcsin(x^(1/2))^2+2*arcsin(x^(1/2))*ln(1+I*x^(1/2)+(1-x)^(1/2))+2*arcsin
(x^(1/2))*ln(1-I*x^(1/2)-(1-x)^(1/2))-2*I*polylog(2,-I*x^(1/2)-(1-x)^(1/2))
-2*I*polylog(2,I*x^(1/2)+(1-x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\arcsin\left(\sqrt{x}\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x,x, algorithm="maxima")
```

```
[Out] integrate(arcsin(sqrt(x))/x, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\arcsin\left(\sqrt{x}\right)}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x,x, algorithm="fricas")
```

```
[Out] integral(arcsin(sqrt(x))/x, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\operatorname{asin}\left(\sqrt{x}\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(x**(1/2))/x,x)
```

```
[Out] Integral(asin(sqrt(x))/x, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\arcsin\left(\sqrt{x}\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x,x, algorithm="giac")
```

```
[Out] integrate(arcsin(sqrt(x))/x, x)
```

3.365 $\int \frac{\sin^{-1}(\sqrt{x})}{x^2} dx$

Optimal. Leaf size=28

$$-\frac{\sqrt{1-x}}{\sqrt{x}}-\frac{\sin^{-1}\left(\sqrt{x}\right)}{x}$$

```
[Out] -(Sqrt[1 - x]/Sqrt[x]) - ArcSin[Sqrt[x]]/x
```

Rubi [A] time = 0.0132777, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.3, Rules used = {4842, 12, 37}

$$-\frac{\sqrt{1-x}}{\sqrt{x}}-\frac{\sin^{-1}\left(\sqrt{x}\right)}{x}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[Sqrt[x]]/x^2,x]
```

```
[Out] -(Sqrt[1 - x]/Sqrt[x]) - ArcSin[Sqrt[x]]/x
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
```

```
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\begin{aligned}\int \frac{\sin^{-1}\left(\sqrt{x}\right)}{x^2}\,dx &= -\frac{\sin^{-1}\left(\sqrt{x}\right)}{x}+\int \frac{1}{2\sqrt{1-x}x^{3/2}}\,dx\\ &= -\frac{\sin^{-1}\left(\sqrt{x}\right)}{x}+\frac{1}{2}\int \frac{1}{\sqrt{1-x}x^{3/2}}\,dx\\ &= -\frac{\sqrt{1-x}}{\sqrt{x}}-\frac{\sin^{-1}\left(\sqrt{x}\right)}{x}\end{aligned}$$

Mathematica [A] time = 0.0129373, size = 23, normalized size = 0.82

$$-\frac{\sqrt{x-x^2}+\sin^{-1}\left(\sqrt{x}\right)}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[Sqrt[x]]/x^2,x]
```

```
[Out] -((Sqrt[x - x^2] + ArcSin[Sqrt[x]])/x)
```

Maple [A] time = 0.003, size = 23, normalized size = 0.8

$$-\frac{1}{x}\arcsin\left(\sqrt{x}\right)-\sqrt{1-x}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(x^(1/2))/x^2,x)
```

```
[Out] -arcsin(x^(1/2))/x-(1-x)^(1/2)/x^(1/2)
```

Maxima [A] time = 1.41121, size = 30, normalized size = 1.07

$$-\frac{\sqrt{-x+1}}{\sqrt{x}}-\frac{\arcsin\left(\sqrt{x}\right)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x^2,x, algorithm="maxima")
```

```
[Out] -sqrt(-x + 1)/sqrt(x) - arcsin(sqrt(x))/x
```

Fricas [A] time = 2.3704, size = 61, normalized size = 2.18

$$-\frac{\sqrt{x}\sqrt{-x+1}+\arcsin\left(\sqrt{x}\right)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x^2,x, algorithm="fricas")
```

```
[Out] -(sqrt(x)*sqrt(-x + 1) + arcsin(sqrt(x)))/x
```

Sympy [C] time = 4.39882, size = 42, normalized size = 1.5

$$\frac{\begin{cases}-\frac{2i\sqrt{x-1}}{\sqrt{x}} & \text{for}\: |x|>1\\-\frac{2\sqrt{1-x}}{\sqrt{x}} & \text{otherwise}\end{cases}}{2}-\frac{\operatorname{asin}\left(\sqrt{x}\right)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(x**(1/2))/x**2,x)
```

```
[Out] Piecewise((-2*I*sqrt(x - 1)/sqrt(x), Abs(x) > 1), (-2*sqrt(1 - x)/sqrt(x),
True))/2 - asin(sqrt(x))/x
```

Giac [A] time = 1.20766, size = 54, normalized size = 1.93

$$-\frac{\sqrt{-x+1}-1}{2\sqrt{x}}-\frac{\arcsin\left(\sqrt{x}\right)}{x}+\frac{\sqrt{x}}{2\left(\sqrt{-x+1}-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x^2,x, algorithm="giac")
```

```
[Out] -1/2*(sqrt(-x + 1) - 1)/sqrt(x) - arcsin(sqrt(x))/x + 1/2*sqrt(x)/(sqrt(-x
+ 1) - 1)
```

3.366 $\int \frac{\sin^{-1}(\sqrt{x})}{x^3} dx$

Optimal. Leaf size=50

$$-\frac{\sqrt{1-x}}{6x^{3/2}}-\frac{\sin^{-1}\left(\sqrt{x}\right)}{2x^2}-\frac{\sqrt{1-x}}{3\sqrt{x}}$$

```
[Out] -Sqrt[1 - x]/(6*x^(3/2)) - Sqrt[1 - x]/(3*Sqrt[x]) - ArcSin[Sqrt[x]]/(2*x^2
)
```

Rubi [A] time = 0.017673, antiderivative size = 50, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.4, Rules used = {4842, 12, 45, 37}

$$-\frac{\sqrt{1-x}}{6x^{3/2}}-\frac{\sin^{-1}\left(\sqrt{x}\right)}{2x^2}-\frac{\sqrt{1-x}}{3\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[Sqrt[x]]/x^3,x]
```

```
[Out] -Sqrt[1 - x]/(6*x^(3/2)) - Sqrt[1 - x]/(3*Sqrt[x]) - ArcSin[Sqrt[x]]/(2*x^2
)
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sin^{-1}\left(\sqrt{x}\right)}{x^3}\,dx &= -\frac{\sin^{-1}\left(\sqrt{x}\right)}{2x^2}+\frac{1}{2}\int \frac{1}{2\sqrt{1-x}x^{5/2}}\,dx \\
&= -\frac{\sin^{-1}\left(\sqrt{x}\right)}{2x^2}+\frac{1}{4}\int \frac{1}{\sqrt{1-x}x^{5/2}}\,dx \\
&= -\frac{\sqrt{1-x}}{6x^{3/2}}-\frac{\sin^{-1}\left(\sqrt{x}\right)}{2x^2}+\frac{1}{6}\int \frac{1}{\sqrt{1-x}x^{3/2}}\,dx \\
&= -\frac{\sqrt{1-x}}{6x^{3/2}}-\frac{\sqrt{1-x}}{3\sqrt{x}}-\frac{\sin^{-1}\left(\sqrt{x}\right)}{2x^2}
\end{aligned}$$

Mathematica [A] time = 0.0289701, size = 32, normalized size = 0.64

$$-\frac{\sqrt{-(x-1)x}(2x+1)+3\sin^{-1}\left(\sqrt{x}\right)}{6x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[Sqrt[x]]/x^3,x]
```

```
[Out] -(Sqrt[-((-1 + x)*x)]*(1 + 2*x) + 3*ArcSin[Sqrt[x]])/(6*x^2)
```

Maple [A] time = 0.003, size = 35, normalized size = 0.7

$$-\frac{1}{2x^{2}}\arcsin\left(\sqrt{x}\right)-\frac{1}{6}\sqrt{1-x}x^{-\frac{3}{2}}-\frac{1}{3}\sqrt{1-x}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(x^(1/2))/x^3,x)
```

```
[Out] -1/2*arcsin(x^(1/2))/x^2-1/6*(1-x)^(1/2)/x^(3/2)-1/3*(1-x)^(1/2)/x^(1/2)
```

Maxima [A] time = 1.41861, size = 46, normalized size = 0.92

$$-\frac{\sqrt{-x+1}}{3\sqrt{x}}-\frac{\sqrt{-x+1}}{6x^{\frac{3}{2}}}-\frac{\arcsin\left(\sqrt{x}\right)}{2x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x^3,x, algorithm="maxima")
```

```
[Out] -1/3*sqrt(-x + 1)/sqrt(x) - 1/6*sqrt(-x + 1)/x^(3/2) - 1/2*arcsin(sqrt(x))/
x^2
```

Fricas [A] time = 2.29218, size = 85, normalized size = 1.7

$$-\frac{(2x+1)\sqrt{x}\sqrt{-x+1}+3\arcsin\left(\sqrt{x}\right)}{6x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x^3,x, algorithm="fricas")
```

```
[Out] -1/6*((2*x + 1)*sqrt(x)*sqrt(-x + 1) + 3*arcsin(sqrt(x)))/x^2
```

Sympy [A] time = 28.9816, size = 42, normalized size = 0.84

$$\frac{\begin{cases}-\frac{\sqrt{1-x}}{\sqrt{x}}-\frac{(1-x)^{\frac{3}{2}}}{3x^{\frac{3}{2}}} & \text{for } x\geq 0\wedge x<1\end{cases}}{2}-\frac{\operatorname{asin}\left(\sqrt{x}\right)}{2x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(x**(1/2))/x**3,x)
```

```
[Out] Piecewise((-sqrt(1 - x)/sqrt(x) - (1 - x)**(3/2)/(3*x**(3/2)), (x >= 0) & (
x < 1)))/2 - asin(sqrt(x))/(2*x**2)
```

Giac [B] time = 1.14515, size = 100, normalized size = 2.

$$-\frac{\left(\sqrt{-x+1}-1\right)^{3}}{48\,x^{\frac{3}{2}}}-\frac{3\left(\sqrt{-x+1}-1\right)}{16\,\sqrt{x}}+\frac{x^{\frac{3}{2}}\left(\frac{9\left(\sqrt{-x+1}-1\right)^{2}}{x}+1\right)}{48\left(\sqrt{-x+1}-1\right)^{3}}-\frac{\arcsin\left(\sqrt{x}\right)}{2\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x^3,x, algorithm="giac")
```

```
[Out] -1/48*(sqrt(-x + 1) - 1)^3/x^(3/2) - 3/16*(sqrt(-x + 1) - 1)/sqrt(x) + 1/48
*x^(3/2)*(9*(sqrt(-x + 1) - 1)^2/x + 1)/(sqrt(-x + 1) - 1)^3 - 1/2*arcsin(s
qrt(x))/x^2
```

3.367 $\int \frac{\sin^{-1}(\sqrt{x})}{x^4} dx$

Optimal. Leaf size=68

$$-\frac{4\sqrt{1-x}}{45x^{3/2}}-\frac{\sqrt{1-x}}{15x^{5/2}}-\frac{\sin^{-1}(\sqrt{x})}{3x^3}-\frac{8\sqrt{1-x}}{45\sqrt{x}}$$

```
[Out] -Sqrt[1 - x]/(15*x^(5/2)) - (4*Sqrt[1 - x])/(45*x^(3/2)) - (8*Sqrt[1 - x])/
(45*Sqrt[x]) - ArcSin[Sqrt[x]]/(3*x^3)
```

Rubi [A] time = 0.0223059, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.4, Rules used = {4842, 12, 45, 37}

$$-\frac{4\sqrt{1-x}}{45x^{3/2}}-\frac{\sqrt{1-x}}{15x^{5/2}}-\frac{\sin^{-1}(\sqrt{x})}{3x^3}-\frac{8\sqrt{1-x}}{45\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[Sqrt[x]]/x^4,x]
```

```
[Out] -Sqrt[1 - x]/(15*x^(5/2)) - (4*Sqrt[1 - x])/(45*x^(3/2)) - (8*Sqrt[1 - x])/
(45*Sqrt[x]) - ArcSin[Sqrt[x]]/(3*x^3)
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sin^{-1}\left(\sqrt{x}\right)}{x^4}\,dx &= -\frac{\sin^{-1}\left(\sqrt{x}\right)}{3x^3}+\frac{1}{3}\int \frac{1}{2\sqrt{1-x}x^{7/2}}\,dx\\
&= -\frac{\sin^{-1}\left(\sqrt{x}\right)}{3x^3}+\frac{1}{6}\int \frac{1}{\sqrt{1-x}x^{7/2}}\,dx\\
&= -\frac{\sqrt{1-x}}{15x^{5/2}}-\frac{\sin^{-1}\left(\sqrt{x}\right)}{3x^3}+\frac{2}{15}\int \frac{1}{\sqrt{1-x}x^{5/2}}\,dx\\
&= -\frac{\sqrt{1-x}}{15x^{5/2}}-\frac{4\sqrt{1-x}}{45x^{3/2}}-\frac{\sin^{-1}\left(\sqrt{x}\right)}{3x^3}+\frac{4}{45}\int \frac{1}{\sqrt{1-x}x^{3/2}}\,dx\\
&= -\frac{\sqrt{1-x}}{15x^{5/2}}-\frac{4\sqrt{1-x}}{45x^{3/2}}-\frac{8\sqrt{1-x}}{45\sqrt{x}}-\frac{\sin^{-1}\left(\sqrt{x}\right)}{3x^3}
\end{aligned}$$

Mathematica [A] time = 0.0254635, size = 44, normalized size = 0.65

$$2\left(-\frac{\sqrt{1-x}\left(8x^2+4x+3\right)}{90x^{5/2}}-\frac{\sin^{-1}\left(\sqrt{x}\right)}{6x^3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[Sqrt[x]]/x^4,x]
```

```
[Out] 2*(-(Sqrt[1 - x]*(3 + 4*x + 8*x^2))/(90*x^(5/2)) - ArcSin[Sqrt[x]]/(6*x^3))
```

Maple [A] time = 0.004, size = 47, normalized size = 0.7

$$-\frac{1}{3x^3}\arcsin\left(\sqrt{x}\right)-\frac{1}{15}\sqrt{1-x}x^{-\frac{5}{2}}-\frac{4}{45}\sqrt{1-x}x^{-\frac{3}{2}}-\frac{8}{45}\sqrt{1-x}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(x^(1/2))/x^4,x)
```

```
[Out] -1/3*arcsin(x^(1/2))/x^3-1/15*(1-x)^(1/2)/x^(5/2)-4/45*(1-x)^(1/2)/x^(3/2)-
8/45*(1-x)^(1/2)/x^(1/2)
```

Maxima [A] time = 1.41558, size = 62, normalized size = 0.91

$$-\frac{8\sqrt{-x+1}}{45\sqrt{x}}-\frac{4\sqrt{-x+1}}{45x^{\frac{3}{2}}}-\frac{\sqrt{-x+1}}{15x^{\frac{5}{2}}}-\frac{\arcsin\left(\sqrt{x}\right)}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x^4,x, algorithm="maxima")
```

```
[Out] -8/45*sqrt(-x + 1)/sqrt(x) - 4/45*sqrt(-x + 1)/x^(3/2) - 1/15*sqrt(-x + 1)/
x^(5/2) - 1/3*arcsin(sqrt(x))/x^3
```

Fricas [A] time = 2.2572, size = 99, normalized size = 1.46

$$-\frac{\left(8x^2+4x+3\right)\sqrt{x}\sqrt{-x+1}+15\arcsin\left(\sqrt{x}\right)}{45x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x^4,x, algorithm="fricas")
```

```
[Out] -1/45*((8*x^2 + 4*x + 3)*sqrt(x)*sqrt(-x + 1) + 15*arcsin(sqrt(x)))/x^3
```

Sympy [A] time = 97.7187, size = 58, normalized size = 0.85

$$\frac{\begin{cases} -\frac{\sqrt{1-x}}{\sqrt{x}} - \frac{2(1-x)^{\frac{3}{2}}}{3x^{\frac{3}{2}}} - \frac{(1-x)^{\frac{5}{2}}}{5x^{\frac{5}{2}}} & \text{for } x \geq 0 \wedge x < 1 \end{cases}}{3} - \frac{\operatorname{asin}\left(\sqrt{x}\right)}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(x**(1/2))/x**4,x)
```

```
[Out] Piecewise((-sqrt(1 - x)/sqrt(x) - 2*(1 - x)**(3/2)/(3*x**(3/2)) - (1 - x)**
(5/2)/(5*x**(5/2)), (x >= 0) & (x < 1)))/3 - asin(sqrt(x))/(3*x**3)
```

Giac [B] time = 1.22546, size = 143, normalized size = 2.1

$$-\frac{\left(\sqrt{-x+1}-1\right)^5}{480\,x^{\frac{5}{2}}} - \frac{5\left(\sqrt{-x+1}-1\right)^3}{288\,x^{\frac{3}{2}}} - \frac{5\left(\sqrt{-x+1}-1\right)}{48\,\sqrt{x}} + \frac{\left(\frac{150\left(\sqrt{-x+1}-1\right)^4}{x^2} + \frac{25\left(\sqrt{-x+1}-1\right)^2}{x} + 3\right)x^{\frac{5}{2}}}{1440\left(\sqrt{-x+1}-1\right)^5} - \frac{\arcsin\left(\sqrt{x}\right)}{3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x^4,x, algorithm="giac")
```

```
[Out] -1/480*(sqrt(-x + 1) - 1)^5/x^(5/2) - 5/288*(sqrt(-x + 1) - 1)^3/x^(3/2) -
5/48*(sqrt(-x + 1) - 1)/sqrt(x) + 1/1440*(150*(sqrt(-x + 1) - 1)^4/x^2 + 25
*(sqrt(-x + 1) - 1)^2/x + 3)*x^(5/2)/(sqrt(-x + 1) - 1)^5 - 1/3*arcsin(sqrt
(x))/x^3
```

3.368 $\int \frac{\sin^{-1}(\sqrt{x})}{x^5}\,dx$

Optimal. Leaf size=86

$$-\frac{2\sqrt{1-x}}{35x^{3/2}}-\frac{3\sqrt{1-x}}{70x^{5/2}}-\frac{\sqrt{1-x}}{28x^{7/2}}-\frac{\sin^{-1}\left(\sqrt{x}\right)}{4x^4}-\frac{4\sqrt{1-x}}{35\sqrt{x}}$$

```
[Out] -Sqrt[1 - x]/(28*x^(7/2)) - (3*Sqrt[1 - x])/(70*x^(5/2)) - (2*Sqrt[1 - x])/
(35*x^(3/2)) - (4*Sqrt[1 - x])/(35*Sqrt[x]) - ArcSin[Sqrt[x]]/(4*x^4)
```

Rubi [A] time = 0.0290164, antiderivative size = 86, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.4, Rules used = {4842, 12, 45, 37}

$$-\frac{2\sqrt{1-x}}{35x^{3/2}}-\frac{3\sqrt{1-x}}{70x^{5/2}}-\frac{\sqrt{1-x}}{28x^{7/2}}-\frac{\sin^{-1}\left(\sqrt{x}\right)}{4x^4}-\frac{4\sqrt{1-x}}{35\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[Sqrt[x]]/x^5,x]
```

```
[Out] -Sqrt[1 - x]/(28*x^(7/2)) - (3*Sqrt[1 - x])/(70*x^(5/2)) - (2*Sqrt[1 - x])/
(35*x^(3/2)) - (4*Sqrt[1 - x])/(35*Sqrt[x]) - ArcSin[Sqrt[x]]/(4*x^4)
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sin^{-1}\left(\sqrt{x}\right)}{x^5}\,dx &= -\frac{\sin^{-1}\left(\sqrt{x}\right)}{4x^4}+\frac{1}{4}\int \frac{1}{2\sqrt{1-x}x^{9/2}}\,dx\\
&= -\frac{\sin^{-1}\left(\sqrt{x}\right)}{4x^4}+\frac{1}{8}\int \frac{1}{\sqrt{1-x}x^{9/2}}\,dx\\
&= -\frac{\sqrt{1-x}}{28x^{7/2}}-\frac{\sin^{-1}\left(\sqrt{x}\right)}{4x^4}+\frac{3}{28}\int \frac{1}{\sqrt{1-x}x^{7/2}}\,dx\\
&= -\frac{\sqrt{1-x}}{28x^{7/2}}-\frac{3\sqrt{1-x}}{70x^{5/2}}-\frac{\sin^{-1}\left(\sqrt{x}\right)}{4x^4}+\frac{3}{35}\int \frac{1}{\sqrt{1-x}x^{5/2}}\,dx\\
&= -\frac{\sqrt{1-x}}{28x^{7/2}}-\frac{3\sqrt{1-x}}{70x^{5/2}}-\frac{2\sqrt{1-x}}{35x^{3/2}}-\frac{\sin^{-1}\left(\sqrt{x}\right)}{4x^4}+\frac{2}{35}\int \frac{1}{\sqrt{1-x}x^{3/2}}\,dx\\
&= -\frac{\sqrt{1-x}}{28x^{7/2}}-\frac{3\sqrt{1-x}}{70x^{5/2}}-\frac{2\sqrt{1-x}}{35x^{3/2}}-\frac{4\sqrt{1-x}}{35\sqrt{x}}-\frac{\sin^{-1}\left(\sqrt{x}\right)}{4x^4}
\end{aligned}
$$

Mathematica [A] time = 0.0284445, size = 49, normalized size = 0.57

$$2\left(-\frac{\sqrt{1-x}\left(16x^3+8x^2+6x+5\right)}{280x^{7/2}}-\frac{\sin^{-1}\left(\sqrt{x}\right)}{8x^4}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[Sqrt[x]]/x^5,x]
```

```
[Out] 2*(-(Sqrt[1 - x]*(5 + 6*x + 8*x^2 + 16*x^3))/(280*x^(7/2)) - ArcSin[Sqrt[x]
]/(8*x^4))
```

Maple [A] time = 0.005, size = 59, normalized size = 0.7

$$-\frac{1}{4x^4}\arcsin\left(\sqrt{x}\right)-\frac{1}{28}\sqrt{1-x}x^{-\frac{7}{2}}-\frac{3}{70}\sqrt{1-x}x^{-\frac{5}{2}}-\frac{2}{35}\sqrt{1-x}x^{-\frac{3}{2}}-\frac{4}{35}\sqrt{1-x}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(x^(1/2))/x^5,x)
```

```
[Out] -1/4*arcsin(x^(1/2))/x^4-1/28*(1-x)^(1/2)/x^(7/2)-3/70*(1-x)^(1/2)/x^(5/2)-
2/35*(1-x)^(1/2)/x^(3/2)-4/35*(1-x)^(1/2)/x^(1/2)
```

Maxima [A] time = 1.4238, size = 78, normalized size = 0.91

$$-\frac{4\sqrt{-x+1}}{35\sqrt{x}}-\frac{2\sqrt{-x+1}}{35x^{\frac{3}{2}}}-\frac{3\sqrt{-x+1}}{70x^{\frac{5}{2}}}-\frac{\sqrt{-x+1}}{28x^{\frac{7}{2}}}-\frac{\arcsin\left(\sqrt{x}\right)}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x^5,x, algorithm="maxima")
```

```
[Out] -4/35*sqrt(-x + 1)/sqrt(x) - 2/35*sqrt(-x + 1)/x^(3/2) - 3/70*sqrt(-x + 1)/
x^(5/2) - 1/28*sqrt(-x + 1)/x^(7/2) - 1/4*arcsin(sqrt(x))/x^4
```

Fricas [A] time = 2.29405, size = 112, normalized size = 1.3

$$-\frac{\left(16x^3+8x^2+6x+5\right)\sqrt{x}\sqrt{-x+1}+35\arcsin\left(\sqrt{x}\right)}{140x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x^5,x, algorithm="fricas")
```

```
[Out] -1/140*((16*x^3 + 8*x^2 + 6*x + 5)*sqrt(x)*sqrt(-x + 1) + 35*arcsin(sqrt(x)
))/x^4
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(x**(1/2))/x**5,x)
```

```
[Out] Timed out
```

Giac [B] time = 1.13864, size = 186, normalized size = 2.16

$$-\frac{\left(\sqrt{-x+1}-1\right)^{7}}{3584\,x^{\frac{7}{2}}}-\frac{7\left(\sqrt{-x+1}-1\right)^{5}}{2560\,x^{\frac{5}{2}}}-\frac{7\left(\sqrt{-x+1}-1\right)^{3}}{512\,x^{\frac{3}{2}}}-\frac{35\left(\sqrt{-x+1}-1\right)}{512\,\sqrt{x}}+\frac{\left(\frac{1225\left(\sqrt{-x+1}-1\right)^{6}}{x^{3}}+\frac{245\left(\sqrt{-x+1}-1\right)^{4}}{x^{2}}+\frac{49\left(\sqrt{-\right.}\right.}{}}{17920\left(\sqrt{-x+1}-1\right)^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x^5,x, algorithm="giac")
```

```
[Out] -1/3584*(sqrt(-x + 1) - 1)^7/x^(7/2) - 7/2560*(sqrt(-x + 1) - 1)^5/x^(5/2)
- 7/512*(sqrt(-x + 1) - 1)^3/x^(3/2) - 35/512*(sqrt(-x + 1) - 1)/sqrt(x) +
1/17920*(1225*(sqrt(-x + 1) - 1)^6/x^3 + 245*(sqrt(-x + 1) - 1)^4/x^2 + 49*
(sqrt(-x + 1) - 1)^2/x + 5)*x^(7/2)/(sqrt(-x + 1) - 1)^7 - 1/4*arcsin(sqrt(
x))/x^4
```

3.369 $\int x^4 \left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)\,dx$

Optimal. Leaf size=89

$$\frac{1}{5}x^5\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{3}{40}bc^3x^2\sqrt{1-\frac{c^2}{x^2}}+\frac{1}{20}bcx^4\sqrt{1-\frac{c^2}{x^2}}+\frac{3}{40}bc^5\tanh^{-1}\left(\sqrt{1-\frac{c^2}{x^2}}\right)$$

```
[Out] (3*b*c^3*Sqrt[1 - c^2/x^2]*x^2)/40 + (b*c*Sqrt[1 - c^2/x^2]*x^4)/20 + (x^5*
(a + b*ArcSin[c/x]))/5 + (3*b*c^5*ArcTanh[Sqrt[1 - c^2/x^2]])/40
```

Rubi [A] time = 0.0587458, antiderivative size = 89, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {4842, 12, 266, 51, 63, 208}

$$\frac{1}{5}x^5\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{3}{40}bc^3x^2\sqrt{1-\frac{c^2}{x^2}}+\frac{1}{20}bcx^4\sqrt{1-\frac{c^2}{x^2}}+\frac{3}{40}bc^5\tanh^{-1}\left(\sqrt{1-\frac{c^2}{x^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(a + b*ArcSin[c/x]),x]
```

```
[Out] (3*b*c^3*Sqrt[1 - c^2/x^2]*x^2)/40 + (b*c*Sqrt[1 - c^2/x^2]*x^4)/20 + (x^5*
(a + b*ArcSin[c/x]))/5 + (3*b*c^5*ArcTanh[Sqrt[1 - c^2/x^2]])/40
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int x^4\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)dx=\frac{1}{5}x^5\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{5}b\int\frac{cx^3}{\sqrt{1-\frac{c^2}{x^2}}}dx$$
$$=\frac{1}{5}x^5\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{5}(bc)\int\frac{x^3}{\sqrt{1-\frac{c^2}{x^2}}}dx$$
$$=\frac{1}{5}x^5\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)-\frac{1}{10}(bc)\operatorname{Subst}\left(\int\frac{1}{x^3\sqrt{1-c^2x}}dx,x,\frac{1}{x^2}\right)$$
$$=\frac{1}{20}bc\sqrt{1-\frac{c^2}{x^2}}x^4+\frac{1}{5}x^5\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)-\frac{1}{40}\left(3bc^3\right)\operatorname{Subst}\left(\int\frac{1}{x^2\sqrt{1-c^2x}}dx,x,\frac{1}{x^2}\right)$$
$$=\frac{3}{40}bc^3\sqrt{1-\frac{c^2}{x^2}}x^2+\frac{1}{20}bc\sqrt{1-\frac{c^2}{x^2}}x^4+\frac{1}{5}x^5\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)-\frac{1}{80}\left(3bc^5\right)\operatorname{Subst}\left(\int\frac{1}{x\sqrt{1}}\right.$$
$$=\frac{3}{40}bc^3\sqrt{1-\frac{c^2}{x^2}}x^2+\frac{1}{20}bc\sqrt{1-\frac{c^2}{x^2}}x^4+\frac{1}{5}x^5\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{40}\left(3bc^3\right)\operatorname{Subst}\left(\int\frac{1}{\frac{1}{c^2}-}\right.$$
$$=\frac{3}{40}bc^3\sqrt{1-\frac{c^2}{x^2}}x^2+\frac{1}{20}bc\sqrt{1-\frac{c^2}{x^2}}x^4+\frac{1}{5}x^5\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{3}{40}bc^5\tanh^{-1}\left(\sqrt{1-\frac{c^2}{x^2}}\right)$$

Mathematica [A] time = 0.0711722, size = 91, normalized size = 1.02

$$\frac{ax^5}{5}+b\sqrt{\frac{x^2-c^2}{x^2}}\left(\frac{3c^3x^2}{40}+\frac{cx^4}{20}\right)+\frac{3}{40}bc^5\log\left(x\left(\sqrt{\frac{x^2-c^2}{x^2}}+1\right)\right)+\frac{1}{5}bx^5\sin^{-1}\left(\frac{c}{x}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(a + b*ArcSin[c/x]),x]
```

```
[Out] (a*x^5)/5 + b*Sqrt[(-c^2 + x^2)/x^2]*((3*c^3*x^2)/40 + (c*x^4)/20) + (b*x^5
*ArcSin[c/x])/5 + (3*b*c^5*Log[x*(1 + Sqrt[(-c^2 + x^2)/x^2])])/40
```

Maple [A] time = 0.018, size = 88, normalized size = 1.

$$-c^5\left(-\frac{ax^5}{5c^5}+b\left(-\frac{x^5}{5c^5}\arcsin\left(\frac{c}{x}\right)-\frac{x^4}{20c^4}\sqrt{1-\frac{c^2}{x^2}}-\frac{3x^2}{40c^2}\sqrt{1-\frac{c^2}{x^2}}-\frac{3}{40}\operatorname{Artanh}\left(\frac{1}{\sqrt{1-\frac{c^2}{x^2}}}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*arcsin(c/x)),x)
```

```
[Out] -c^5*(-1/5*a/c^5*x^5+b*(-1/5*arcsin(c/x)/c^5*x^5-1/20/c^4*x^4*(1-c^2/x^2)^(
1/2)-3/40/c^2*x^2*(1-c^2/x^2)^(1/2)-3/40*arctanh(1/(1-c^2/x^2)^(1/2))))
```

Maxima [A] time = 1.43042, size = 169, normalized size = 1.9

$$\frac{1}{5}ax^5 + \frac{1}{80}\left(16x^5\arcsin\left(\frac{c}{x}\right) + \left(3c^4\log\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right) - 3c^4\log\left(\sqrt{-\frac{c^2}{x^2}+1}-1\right) - \frac{2\left(3c^4\left(-\frac{c^2}{x^2}+1\right)^{\frac{3}{2}} - 5c^4\sqrt{-\frac{c^2}{x^2}+1}\right.}{\left(\frac{c^2}{x^2}-1\right)^2 + \frac{2c^2}{x^2} - 1}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c/x)),x, algorithm="maxima")
```

```
[Out] 1/5*a*x^5 + 1/80*(16*x^5*arcsin(c/x) + (3*c^4*log(sqrt(-c^2/x^2 + 1) + 1) -
 3*c^4*log(sqrt(-c^2/x^2 + 1) - 1) - 2*(3*c^4*(-c^2/x^2 + 1)^(3/2) - 5*c^4*
sqrt(-c^2/x^2 + 1))/((c^2/x^2 - 1)^2 + 2*c^2/x^2 - 1))*c)*b
```

Fricas [A] time = 2.59502, size = 262, normalized size = 2.94

$$-\frac{3}{40}bc^5\log\left(x\sqrt{-\frac{c^2-x^2}{x^2}}-x\right) + \frac{1}{5}ax^5 + \frac{1}{5}\left(bx^5-b\right)\arcsin\left(\frac{c}{x}\right) - \frac{2}{5}b\arctan\left(\frac{x\sqrt{-\frac{c^2-x^2}{x^2}}-x}{c}\right) + \frac{1}{40}\left(3bc^3x^2+2bcx^4\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c/x)),x, algorithm="fricas")
```

```
[Out] -3/40*b*c^5*log(x*sqrt(-(c^2 - x^2)/x^2) - x) + 1/5*a*x^5 + 1/5*(b*x^5 - b)
*arcsin(c/x) - 2/5*b*arctan((x*sqrt(-(c^2 - x^2)/x^2) - x)/c) + 1/40*(3*b*c
^3*x^2 + 2*b*c*x^4)*sqrt(-(c^2 - x^2)/x^2)
```

Sympy [A] time = 10.2723, size = 177, normalized size = 1.99

$$\frac{ax^5}{5}+\frac{bc\left(\begin{cases}\frac{3c^4\operatorname{acosh}\left(\frac{x}{c}\right)}{8}-\frac{3c^3x}{8\sqrt{-1+\frac{x^2}{c^2}}}+\frac{cx^3}{8\sqrt{-1+\frac{x^2}{c^2}}}+\frac{x^5}{4c\sqrt{-1+\frac{x^2}{c^2}}} & \text{for } \frac{|x^2|}{|c^2|}>1\\ -\frac{3ic^4\operatorname{asin}\left(\frac{x}{c}\right)}{8}+\frac{3ic^3x}{8\sqrt{1-\frac{x^2}{c^2}}}-\frac{icx^3}{8\sqrt{1-\frac{x^2}{c^2}}}-\frac{ix^5}{4c\sqrt{1-\frac{x^2}{c^2}}} & \text{otherwise}\end{cases}\right)}{5}+\frac{bx^5\operatorname{asin}\left(\frac{c}{x}\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*asin(c/x)),x)
```

```
[Out] a*x**5/5 + b*c*Piecewise((3*c**4*acosh(x/c)/8 - 3*c**3*x/(8*sqrt(-1 + x**2/
c**2)) + c*x**3/(8*sqrt(-1 + x**2/c**2)) + x**5/(4*c*sqrt(-1 + x**2/c**2)),
 Abs(x**2)/Abs(c**2) > 1), (-3*I*c**4*asin(x/c)/8 + 3*I*c**3*x/(8*sqrt(1 -
x**2/c**2)) - I*c*x**3/(8*sqrt(1 - x**2/c**2)) - I*x**5/(4*c*sqrt(1 - x**2/
c**2)), True))/5 + b*x**5*asin(c/x)/5
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\left(b\arcsin\left(\frac{c}{x}\right)+a\right)x^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c/x)),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c/x) + a)*x^4, x)
```

3.370 $\int x^3 \left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)\,dx$

Optimal. Leaf size=64

$$\frac{1}{4}x^4\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{12}bcx^3\sqrt{1-\frac{c^2}{x^2}}+\frac{1}{6}bc^3x\sqrt{1-\frac{c^2}{x^2}}$$

```
[Out] (b*c^3*Sqrt[1 - c^2/x^2]*x)/6 + (b*c*Sqrt[1 - c^2/x^2]*x^3)/12 + (x^4*(a +
b*ArcSin[c/x]))/4
```

Rubi [A] time = 0.0380079, antiderivative size = 64, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4842, 12, 271, 191}

$$\frac{1}{4}x^4\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{12}bcx^3\sqrt{1-\frac{c^2}{x^2}}+\frac{1}{6}bc^3x\sqrt{1-\frac{c^2}{x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(a + b*ArcSin[c/x]),x]
```

```
[Out] (b*c^3*Sqrt[1 - c^2/x^2]*x)/6 + (b*c*Sqrt[1 - c^2/x^2]*x^3)/12 + (x^4*(a +
b*ArcSin[c/x]))/4
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 271

```
Int[(x_)^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x^(m + 1)*(
a + b*x^n)^(p + 1))/(a*(m + 1)), x] - Dist[(b*(m + n*(p + 1) + 1))/(a*(m +
```

```
1)), Int[x^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, m, n, p}, x] && IL
tQ[Simplify[(m + 1)/n + p + 1], 0] && NeQ[m, -1]
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rubi steps

$$\begin{aligned}
\int x^3\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)dx &= \frac{1}{4}x^4\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{4}b\int\frac{cx^2}{\sqrt{1-\frac{c^2}{x^2}}}\,dx\\
&= \frac{1}{4}x^4\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{4}(bc)\int\frac{x^2}{\sqrt{1-\frac{c^2}{x^2}}}\,dx\\
&= \frac{1}{12}bc\sqrt{1-\frac{c^2}{x^2}}x^3+\frac{1}{4}x^4\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{6}\left(bc^3\right)\int\frac{1}{\sqrt{1-\frac{c^2}{x^2}}}\,dx\\
&= \frac{1}{6}bc^3\sqrt{1-\frac{c^2}{x^2}}x+\frac{1}{12}bc\sqrt{1-\frac{c^2}{x^2}}x^3+\frac{1}{4}x^4\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)
\end{aligned}$$

Mathematica [A] time = 0.0411473, size = 59, normalized size = 0.92

$$\frac{ax^4}{4}+b\sqrt{\frac{x^2-c^2}{x^2}}\left(\frac{c^3x}{6}+\frac{cx^3}{12}\right)+\frac{1}{4}bx^4\sin^{-1}\left(\frac{c}{x}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(a + b*ArcSin[c/x]),x]
```

```
[Out] (a*x^4)/4 + b*Sqrt[(-c^2 + x^2)/x^2]*((c^3*x)/6 + (c*x^3)/12) + (b*x^4*ArcS
in[c/x])/4
```

Maple [A] time = 0.006, size = 71, normalized size = 1.1

$$-c^4\left(-\frac{x^4a}{4\,c^4}+b\left(-\frac{x^4}{4\,c^4}\arcsin\left(\frac{c}{x}\right)-\frac{x^3}{12\,c^3}\sqrt{1-\frac{c^2}{x^2}}-\frac{x}{6\,c}\sqrt{1-\frac{c^2}{x^2}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*arcsin(c/x)),x)
```

```
[Out] -c^4*(-1/4*a/c^4*x^4+b*(-1/4/c^4*x^4*arcsin(c/x)-1/12/c^3*x^3*(1-c^2/x^2)^(
1/2)-1/6/c*x*(1-c^2/x^2)^(1/2)))
```

Maxima [A] time = 1.41902, size = 80, normalized size = 1.25

$$\frac{1}{4}\,ax^4 + \frac{1}{12}\left(3\,x^4 \arcsin\left(\frac{c}{x}\right) + \left(x^3\left(-\frac{c^2}{x^2} + 1\right)^{\frac{3}{2}} + 3\,c^2x\sqrt{-\frac{c^2}{x^2} + 1}\right)c\right)b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c/x)),x, algorithm="maxima")
```

```
[Out] 1/4*a*x^4 + 1/12*(3*x^4*arcsin(c/x) + (x^3*(-c^2/x^2 + 1)^(3/2) + 3*c^2*x*s
qrt(-c^2/x^2 + 1))*c)*b
```

Fricas [A] time = 2.44223, size = 117, normalized size = 1.83

$$\frac{1}{4}\,bx^4 \arcsin\left(\frac{c}{x}\right) + \frac{1}{4}\,ax^4 + \frac{1}{12}\left(2\,bc^3x + bcx^3\right)\sqrt{-\frac{c^2 - x^2}{x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c/x)),x, algorithm="fricas")
```

```
[Out] 1/4*b*x^4*arcsin(c/x) + 1/4*a*x^4 + 1/12*(2*b*c^3*x + b*c*x^3)*sqrt(-(c^2 -
 x^2)/x^2)
```

Sympy [A] time = 5.07008, size = 109, normalized size = 1.7

$$\frac{ax^4}{4} + \frac{bc\left(\begin{cases} \frac{2c^3\sqrt{-1+\frac{x^2}{c^2}}}{3} + \frac{cx^2\sqrt{-1+\frac{x^2}{c^2}}}{3} & \text{for } \frac{|x^2|}{|c^2|} > 1 \\ \frac{2ic^3\sqrt{1-\frac{x^2}{c^2}}}{3} + \frac{icx^2\sqrt{1-\frac{x^2}{c^2}}}{3} & \text{otherwise} \end{cases}\right)}{4} + \frac{bx^4 \operatorname{asin}\left(\frac{c}{x}\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*asin(c/x)),x)
```

```
[Out] a*x**4/4 + b*c*Piecewise((2*c**3*sqrt(-1 + x**2/c**2)/3 + c*x**2*sqrt(-1 +
x**2/c**2)/3, Abs(x**2)/Abs(c**2) > 1), (2*I*c**3*sqrt(1 - x**2/c**2)/3 + I
*c*x**2*sqrt(1 - x**2/c**2)/3, True))/4 + b*x**4*asin(c/x)/4
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b \arcsin\left(\frac{c}{x}\right) + a\right)x^3\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c/x)),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c/x) + a)*x^3, x)
```

3.371 $\int x^2 \left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)\,dx$

Optimal. Leaf size=64

$$\frac{1}{3}x^3\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{6}bcx^2\sqrt{1-\frac{c^2}{x^2}}+\frac{1}{6}bc^3\tanh^{-1}\left(\sqrt{1-\frac{c^2}{x^2}}\right)$$

```
[Out] (b*c*Sqrt[1 - c^2/x^2]*x^2)/6 + (x^3*(a + b*ArcSin[c/x]))/3 + (b*c^3*ArcTan
h[Sqrt[1 - c^2/x^2]])/6
```

Rubi [A] time = 0.0426628, antiderivative size = 64, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {4842, 12, 266, 51, 63, 208}

$$\frac{1}{3}x^3\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{6}bcx^2\sqrt{1-\frac{c^2}{x^2}}+\frac{1}{6}bc^3\tanh^{-1}\left(\sqrt{1-\frac{c^2}{x^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(a + b*ArcSin[c/x]),x]
```


```
[Out] (b*c*Sqrt[1 - c^2/x^2]*x^2)/6 + (x^3*(a + b*ArcSin[c/x]))/3 + (b*c^3*ArcTan
h[Sqrt[1 - c^2/x^2]])/6
```


Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int x^2\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)dx=\frac{1}{3}x^3\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{3}b\int\frac{cx}{\sqrt{1-\frac{c^2}{x^2}}}dx$$
$$=\frac{1}{3}x^3\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{3}(bc)\int\frac{x}{\sqrt{1-\frac{c^2}{x^2}}}dx$$
$$=\frac{1}{3}x^3\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)-\frac{1}{6}(bc)\operatorname{Subst}\left(\int\frac{1}{x^2\sqrt{1-c^2x}}dx,x,\frac{1}{x^2}\right)$$
$$=\frac{1}{6}bc\sqrt{1-\frac{c^2}{x^2}}x^2+\frac{1}{3}x^3\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)-\frac{1}{12}\left(bc^3\right)\operatorname{Subst}\left(\int\frac{1}{x\sqrt{1-c^2x}}dx,x,\frac{1}{x^2}\right)$$
$$=\frac{1}{6}bc\sqrt{1-\frac{c^2}{x^2}}x^2+\frac{1}{3}x^3\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{6}(bc)\operatorname{Subst}\left(\int\frac{1}{\frac{1}{c^2}-\frac{x^2}{c^2}}dx,x,\sqrt{1-\frac{c^2}{x^2}}\right)$$
$$=\frac{1}{6}bc\sqrt{1-\frac{c^2}{x^2}}x^2+\frac{1}{3}x^3\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{6}bc^3\tanh^{-1}\left(\sqrt{1-\frac{c^2}{x^2}}\right)$$

Mathematica [A] time = 0.0335098, size = 79, normalized size = 1.23

$$\frac{ax^3}{3}+\frac{1}{6}bcx^2\sqrt{\frac{x^2-c^2}{x^2}}+\frac{1}{6}bc^3\log\left(x\left(\sqrt{\frac{x^2-c^2}{x^2}}+1\right)\right)+\frac{1}{3}bx^3\sin^{-1}\left(\frac{c}{x}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(a + b*ArcSin[c/x]),x]
```

```
[Out] (a*x^3)/3 + (b*c*x^2*Sqrt[(-c^2 + x^2)/x^2])/6 + (b*x^3*ArcSin[c/x])/3 + (b
*c^3*Log[x*(1 + Sqrt[(-c^2 + x^2)/x^2])])/6
```

Maple [A] time = 0.005, size = 68, normalized size = 1.1

$$-c^3\left(-\frac{x^3a}{3\,c^3}+b\left(-\frac{x^3}{3\,c^3}\arcsin\left(\frac{c}{x}\right)-\frac{x^2}{6\,c^2}\sqrt{1-\frac{c^2}{x^2}}-\frac{1}{6}\operatorname{Artanh}\left(\frac{1}{\sqrt{1-\frac{c^2}{x^2}}}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(c/x)),x)
```

```
[Out] -c^3*(-1/3*a/c^3*x^3+b*(-1/3/c^3*x^3*arcsin(c/x)-1/6/c^2*x^2*(1-c^2/x^2)^(1
/2)-1/6*arctanh(1/(1-c^2/x^2)^(1/2))))
```

Maxima [A] time = 1.43071, size = 109, normalized size = 1.7

$$\frac{1}{3}ax^3 + \frac{1}{12}\left(4x^3\arcsin\left(\frac{c}{x}\right) + \left(c^2\log\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right) - c^2\log\left(\sqrt{-\frac{c^2}{x^2}+1}-1\right) + 2x^2\sqrt{-\frac{c^2}{x^2}+1}\right)c\right)b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c/x)),x, algorithm="maxima")
```

```
[Out] 1/3*a*x^3 + 1/12*(4*x^3*arcsin(c/x) + (c^2*log(sqrt(-c^2/x^2 + 1) + 1) - c^
2*log(sqrt(-c^2/x^2 + 1) - 1) + 2*x^2*sqrt(-c^2/x^2 + 1))*c)*b
```

Fricas [A] time = 2.50002, size = 235, normalized size = 3.67

$$-\frac{1}{6}bc^3\log\left(x\sqrt{-\frac{c^2-x^2}{x^2}} - x\right) + \frac{1}{6}bcx^2\sqrt{-\frac{c^2-x^2}{x^2}} + \frac{1}{3}ax^3 + \frac{1}{3}\left(bx^3-b\right)\arcsin\left(\frac{c}{x}\right) - \frac{2}{3}b\arctan\left(\frac{x\sqrt{-\frac{c^2-x^2}{x^2}} - x}{c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c/x)),x, algorithm="fricas")
```

```
[Out] -1/6*b*c^3*log(x*sqrt(-(c^2 - x^2)/x^2) - x) + 1/6*b*c*x^2*sqrt(-(c^2 - x^2
)/x^2) + 1/3*a*x^3 + 1/3*(b*x^3 - b)*arcsin(c/x) - 2/3*b*arctan((x*sqrt(-(c
^2 - x^2)/x^2) - x)/c)
```

Sympy [A] time = 4.79475, size = 109, normalized size = 1.7

$$\frac{ax^3}{3} + \frac{bc\left(\begin{cases} \frac{c^2\operatorname{acosh}\left(\frac{x}{c}\right)}{2} + \frac{cx\sqrt{-1+\frac{x^2}{c^2}}}{2} & \text{for}\ \frac{|x^2|}{|c^2|} > 1 \\ -\frac{ic^2\operatorname{asin}\left(\frac{x}{c}\right)}{2} + \frac{icx}{2\sqrt{1-\frac{x^2}{c^2}}} - \frac{ix^3}{2c\sqrt{1-\frac{x^2}{c^2}}} & \text{otherwise} \end{cases}\right)}{3} + \frac{bx^3\operatorname{asin}\left(\frac{c}{x}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(c/x)),x)
```

```
[Out] a*x**3/3 + b*c*Piecewise((c**2*acosh(x/c)/2 + c*x*sqrt(-1 + x**2/c**2)/2, A
bs(x**2)/Abs(c**2) > 1), (-I*c**2*asin(x/c)/2 + I*c*x/(2*sqrt(1 - x**2/c**2
)) - I*x**3/(2*c*sqrt(1 - x**2/c**2)), True))/3 + b*x**3*asin(c/x)/3
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b \arcsin\left(\frac{c}{x}\right) + a\right)x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c/x)),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c/x) + a)*x^2, x)
```

3.372 $\int x \left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right) dx$

Optimal. Leaf size=39

$$\frac{1}{2}x^2\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{2}bcx\sqrt{1-\frac{c^2}{x^2}}$$

```
[Out] (b*c*Sqrt[1 - c^2/x^2]*x)/2 + (x^2*(a + b*ArcSin[c/x]))/2
```

Rubi [A] time = 0.0174758, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {4842, 12, 191}

$$\frac{1}{2}x^2\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{2}bcx\sqrt{1-\frac{c^2}{x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*ArcSin[c/x]),x]
```

```
[Out] (b*c*Sqrt[1 - c^2/x^2]*x)/2 + (x^2*(a + b*ArcSin[c/x]))/2
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int x\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)dx &= \frac{1}{2}x^2\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{2}b\int\frac{c}{\sqrt{1-\frac{c^2}{x^2}}}\,dx\\ &= \frac{1}{2}x^2\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{2}(bc)\int\frac{1}{\sqrt{1-\frac{c^2}{x^2}}}\,dx\\ &= \frac{1}{2}bc\sqrt{1-\frac{c^2}{x^2}}x+\frac{1}{2}x^2\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)\end{aligned}$$

Mathematica [A] time = 0.0278053, size = 47, normalized size = 1.21

$$\frac{ax^2}{2}+\frac{1}{2}bcx\sqrt{\frac{x^2-c^2}{x^2}}+\frac{1}{2}bx^2\sin^{-1}\left(\frac{c}{x}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*ArcSin[c/x]),x]
```

```
[Out] (a*x^2)/2 + (b*c*x*Sqrt[(-c^2 + x^2)/x^2])/2 + (b*x^2*ArcSin[c/x])/2
```

Maple [A] time = 0.006, size = 51, normalized size = 1.3

$$-c^2\left(-\frac{ax^2}{2\,c^2}+b\left(-\frac{x^2}{2\,c^2}\arcsin\left(\frac{c}{x}\right)-\frac{x}{2\,c}\sqrt{1-\frac{c^2}{x^2}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(c/x)),x)
```

```
[Out] -c^2*(-1/2*a/c^2*x^2+b*(-1/2/c^2*x^2*arcsin(c/x)-1/2/c*x*(1-c^2/x^2)^(1/2))
)
```

Maxima [A] time = 1.42014, size = 49, normalized size = 1.26

$$\frac{1}{2}\,ax^2+\frac{1}{2}\left(x^2\arcsin\left(\frac{c}{x}\right)+cx\sqrt{-\frac{c^2}{x^2}+1}\right)b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c/x)),x, algorithm="maxima")
```

```
[Out] 1/2*a*x^2 + 1/2*(x^2*arcsin(c/x) + c*x*sqrt(-c^2/x^2 + 1))*b
```

Fricas [A] time = 2.36696, size = 95, normalized size = 2.44

$$\frac{1}{2}\,bx^2\arcsin\left(\frac{c}{x}\right)+\frac{1}{2}\,bcx\sqrt{-\frac{c^2-x^2}{x^2}}+\frac{1}{2}\,ax^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c/x)),x, algorithm="fricas")
```

```
[Out] 1/2*b*x^2*arcsin(c/x) + 1/2*b*c*x*sqrt(-(c^2 - x^2)/x^2) + 1/2*a*x^2
```

Sympy [A] time = 2.66627, size = 60, normalized size = 1.54

$$\frac{ax^2}{2}+\frac{bc\left(\begin{cases} c\sqrt{-1+\frac{x^2}{c^2}} & \text{for}\ \frac{|x^2|}{|c^2|}>1\\ ic\sqrt{1-\frac{x^2}{c^2}} & \text{otherwise}\end{cases}\right)}{2}+\frac{bx^2\operatorname{asin}\left(\frac{c}{x}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(c/x)),x)
```

```
[Out] a*x**2/2 + b*c*Piecewise((c*sqrt(-1 + x**2/c**2), Abs(x**2)/Abs(c**2) > 1),
 (I*c*sqrt(1 - x**2/c**2), True))/2 + b*x**2*asin(c/x)/2
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\left(b\arcsin\left(\frac{c}{x}\right)+a\right)x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c/x)),x, algorithm="giac")

[Out] integrate((b*arcsin(c/x) + a)*x, x)
```

3.373 $\int \left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right) dx$

Optimal. Leaf size=31

$$ax+bc\tanh^{-1}\left(\sqrt{1-\frac{c^2}{x^2}}\right)+bx\csc^{-1}\left(\frac{x}{c}\right)$$

```
[Out] a*x + b*x*ArcCsc[x/c] + b*c*ArcTanh[Sqrt[1 - c^2/x^2]]
```

Rubi [A] time = 0.0218781, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {4832, 5215, 266, 63, 208}

$$ax+bc\tanh^{-1}\left(\sqrt{1-\frac{c^2}{x^2}}\right)+bx\csc^{-1}\left(\frac{x}{c}\right)$$

Antiderivative was successfully verified.

```
[In] Int[a + b*ArcSin[c/x],x]
```

```
[Out] a*x + b*x*ArcCsc[x/c] + b*c*ArcTanh[Sqrt[1 - c^2/x^2]]
```

Rule 4832

```
Int[ArcSin[(c_.)/((a_.) + (b_.)*(x_)^(n_.))]^(m_.)*(u_.), x_Symbol] :> Int[
u*ArcCsc[a/c + (b*x^n)/c]^m, x] /; FreeQ[{a, b, c, n, m}, x]
```

Rule 5215

```
Int[ArcCsc[(c_.)*(x_)], x_Symbol] :> Simp[x*ArcCsc[c*x], x] + Dist[1/c, Int
[1/(x*Sqrt[1 - 1/(c^2*x^2)]), x], x] /; FreeQ[c, x]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\begin{aligned}
\int \left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)dx &= ax+b\int \sin^{-1}\left(\frac{c}{x}\right)dx\\
&= ax+b\int \csc^{-1}\left(\frac{x}{c}\right)dx\\
&= ax+bx\csc^{-1}\left(\frac{x}{c}\right)+(bc)\int \frac{1}{\sqrt{1-\frac{c^2}{x^2}}\,x}\,dx\\
&= ax+bx\csc^{-1}\left(\frac{x}{c}\right)-\frac{1}{2}(bc)\,\mathrm{Subst}\left(\int \frac{1}{x\sqrt{1-c^2x}}\,dx,x,\frac{1}{x^2}\right)\\
&= ax+bx\csc^{-1}\left(\frac{x}{c}\right)+\frac{b\,\mathrm{Subst}\left(\int \frac{1}{\frac{1}{c^2}-\frac{x^2}{c^2}}\,dx,x,\sqrt{1-\frac{c^2}{x^2}}\right)}{c}\\
&= ax+bx\csc^{-1}\left(\frac{x}{c}\right)+bc\tanh^{-1}\left(\sqrt{1-\frac{c^2}{x^2}}\right)
\end{aligned}$$

Mathematica [B] time = 0.089225, size = 89, normalized size = 2.87

$$ax+\frac{bc\sqrt{x^2-c^2}\left(\log\left(\frac{x}{\sqrt{x^2-c^2}}+1\right)-\log\left(1-\frac{x}{\sqrt{x^2-c^2}}\right)\right)}{2x\sqrt{1-\frac{c^2}{x^2}}}+bx\sin^{-1}\left(\frac{c}{x}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*ArcSin[c/x],x]
```

```
[Out] a*x + b*x*ArcSin[c/x] + (b*c*Sqrt[-c^2 + x^2]*(-Log[1 - x/Sqrt[-c^2 + x^2]]
 + Log[1 + x/Sqrt[-c^2 + x^2]]))/(2*Sqrt[1 - c^2/x^2]*x)
```

Maple [A] time = 0.005, size = 37, normalized size = 1.2

$$ax - bc\left(-\frac{x}{c}\arcsin\left(\frac{c}{x}\right) - \operatorname{Artanh}\left(\frac{1}{\sqrt{1-\frac{c^2}{x^2}}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a+b*arcsin(c/x),x)
```

```
[Out] a*x-b*c*(-1/c*x*arcsin(c/x)-arctanh(1/(1-c^2/x^2)^(1/2)))
```

Maxima [A] time = 1.41117, size = 70, normalized size = 2.26

$$\frac{1}{2}\left(c\left(\log\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right) - \log\left(\sqrt{-\frac{c^2}{x^2}+1}-1\right)\right) + 2\,x\arcsin\left(\frac{c}{x}\right)\right)b + ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(c/x),x, algorithm="maxima")
```

```
[Out] 1/2*(c*(log(sqrt(-c^2/x^2 + 1) + 1) - log(sqrt(-c^2/x^2 + 1) - 1)) + 2*x*ar
csin(c/x))*b + a*x
```

Fricas [B] time = 2.48798, size = 158, normalized size = 5.1

$$-bc\log\left(x\sqrt{-\frac{c^2-x^2}{x^2}} - x\right) + ax + (bx-b)\arcsin\left(\frac{c}{x}\right) - 2\,b\arctan\left(\frac{x\sqrt{-\frac{c^2-x^2}{x^2}} - x}{c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(c/x),x, algorithm="fricas")
```

```
[Out] -b*c*log(x*sqrt(-(c^2 - x^2)/x^2) - x) + a*x + (b*x - b)*arcsin(c/x) - 2*b*
arctan((x*sqrt(-(c^2 - x^2)/x^2) - x)/c)
```

Sympy [A] time = 2.50845, size = 34, normalized size = 1.1

$$ax + b\left(c\left(\begin{cases}\operatorname{acosh}\left(\frac{x}{c}\right) & \text{for}\ \frac{|x^2|}{|c^2|} > 1\\ -i\operatorname{asin}\left(\frac{x}{c}\right) & \text{otherwise}\end{cases}\right) + x\operatorname{asin}\left(\frac{c}{x}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*asin(c/x),x)
```

```
[Out] a*x + b*(c*Piecewise((acosh(x/c), Abs(x**2)/Abs(c**2) > 1), (-I*asin(x/c),
True)) + x*asin(c/x))
```

Giac [A] time = 1.17106, size = 68, normalized size = 2.19

$$\frac{1}{2}\left(\left(\log\left(c^2\right)\operatorname{sgn}(x) - \frac{2\log\left(\left|-x + \sqrt{-c^2 + x^2}\right|\right)}{\operatorname{sgn}(x)}\right)c + 2x\arcsin\left(\frac{c}{x}\right)\right)b + ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(c/x),x, algorithm="giac")
```

```
[Out] 1/2*((log(c^2)*sgn(x) - 2*log(abs(-x + sqrt(-c^2 + x^2)))/sgn(x))*c + 2*x*a
rcsin(c/x))*b + a*x
```

3.374 $\int \frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{x} dx$

Optimal. Leaf size=67

$$\frac{1}{2}ib\text{PolyLog}\left(2, e^{2i\sin^{-1}\left(\frac{c}{x}\right)}\right) + a\log(x) + \frac{1}{2}ib\sin^{-1}\left(\frac{c}{x}\right)^2 - b\sin^{-1}\left(\frac{c}{x}\right)\log\left(1 - e^{2i\sin^{-1}\left(\frac{c}{x}\right)}\right)$$

```
[Out] (I/2)*b*ArcSin[c/x]^2 - b*ArcSin[c/x]*Log[1 - E^((2*I)*ArcSin[c/x])] + a*Lo
g[x] + (I/2)*b*PolyLog[2, E^((2*I)*ArcSin[c/x])]
```

Rubi [A] time = 0.0923537, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {6742, 4830, 3717, 2190, 2279, 2391}

$$\frac{1}{2}ib\text{PolyLog}\left(2, e^{2i\sin^{-1}\left(\frac{c}{x}\right)}\right) + a\log(x) + \frac{1}{2}ib\sin^{-1}\left(\frac{c}{x}\right)^2 - b\sin^{-1}\left(\frac{c}{x}\right)\log\left(1 - e^{2i\sin^{-1}\left(\frac{c}{x}\right)}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c/x])/x,x]
```

```
[Out] (I/2)*b*ArcSin[c/x]^2 - b*ArcSin[c/x]*Log[1 - E^((2*I)*ArcSin[c/x])] + a*Lo
g[x] + (I/2)*b*PolyLog[2, E^((2*I)*ArcSin[c/x])]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 4830

```
Int[ArcSin[(a_.)*(x_)^(p_)]^(n_.)/(x_), x_Symbol] :> Dist[1/p, Subst[Int[x^
n*Cot[x], x], x, ArcSin[a*x^p]], x] /; FreeQ[{a, p}, x] && IGtQ[n, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{x}\,dx &= \int \left(\frac{a}{x}+\frac{b\sin^{-1}\left(\frac{c}{x}\right)}{x}\right)dx\\
&= a\log(x)+b\int \frac{\sin^{-1}\left(\frac{c}{x}\right)}{x}\,dx\\
&= a\log(x)-b\,\text{Subst}\left(\int x\cot(x)\,dx,x,\sin^{-1}\left(\frac{c}{x}\right)\right)\\
&= \frac{1}{2}ib\sin^{-1}\left(\frac{c}{x}\right)^2+a\log(x)+(2ib)\,\text{Subst}\left(\int \frac{e^{2ix}x}{1-e^{2ix}}\,dx,x,\sin^{-1}\left(\frac{c}{x}\right)\right)\\
&= \frac{1}{2}ib\sin^{-1}\left(\frac{c}{x}\right)^2-b\sin^{-1}\left(\frac{c}{x}\right)\log\left(1-e^{2i\sin^{-1}\left(\frac{c}{x}\right)}\right)+a\log(x)+b\,\text{Subst}\left(\int \log\left(1-e^{2ix}\right)dx,x,\sin\right.\\
&= \frac{1}{2}ib\sin^{-1}\left(\frac{c}{x}\right)^2-b\sin^{-1}\left(\frac{c}{x}\right)\log\left(1-e^{2i\sin^{-1}\left(\frac{c}{x}\right)}\right)+a\log(x)-\frac{1}{2}(ib)\,\text{Subst}\left(\int \frac{\log(1-x)}{x}\,dx,x,e^2\right.\\
&= \frac{1}{2}ib\sin^{-1}\left(\frac{c}{x}\right)^2-b\sin^{-1}\left(\frac{c}{x}\right)\log\left(1-e^{2i\sin^{-1}\left(\frac{c}{x}\right)}\right)+a\log(x)+\frac{1}{2}ib\text{Li}_2\left(e^{2i\sin^{-1}\left(\frac{c}{x}\right)}\right)
\end{aligned}$$

Mathematica [A] time = 0.0336728, size = 61, normalized size = 0.91

$$\frac{1}{2}ib\left(\sin^{-1}\left(\frac{c}{x}\right)^2+\text{PolyLog}\left(2,e^{2i\sin^{-1}\left(\frac{c}{x}\right)}\right)\right)+a\log(x)-b\sin^{-1}\left(\frac{c}{x}\right)\log\left(1-e^{2i\sin^{-1}\left(\frac{c}{x}\right)}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c/x])/x,x]
```

```
[Out] -(b*ArcSin[c/x]*Log[1 - E^((2*I)*ArcSin[c/x])]) + a*Log[x] + (I/2)*b*(ArcSi
n[c/x]^2 + PolyLog[2, E^((2*I)*ArcSin[c/x])])
```

Maple [A] time = 0.004, size = 141, normalized size = 2.1

$$-a\ln\left(\frac{c}{x}\right)+\frac{i}{2}b\left(\arcsin\left(\frac{c}{x}\right)\right)^2-b\arcsin\left(\frac{c}{x}\right)\ln\left(1+\frac{ic}{x}+\sqrt{1-\frac{c^2}{x^2}}\right)-b\arcsin\left(\frac{c}{x}\right)\ln\left(1-\frac{ic}{x}-\sqrt{1-\frac{c^2}{x^2}}\right)+ib\text{polylog}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c/x))/x,x)
```

```
[Out] -a*ln(c/x)+1/2*I*b*arcsin(c/x)^2-b*arcsin(c/x)*ln(1+I*c/x+(1-c^2/x^2)^(1/2)
)-b*arcsin(c/x)*ln(1-I*c/x-(1-c^2/x^2)^(1/2))+I*b*polylog(2,-I*c/x-(1-c^2/x
^2)^(1/2))+I*b*polylog(2,I*c/x+(1-c^2/x^2)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\left(c\int-\frac{\sqrt{c+x}\sqrt{-c+x}\log(x)}{c^2x-x^3}\,dx+\arctan\left(c,\sqrt{c+x}\sqrt{-c+x}\right)\log(x)\right)b+a\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x,x, algorithm="maxima")
```

```
[Out] (c*integrate(-sqrt(c + x)*sqrt(-c + x)*log(x)/(c^2*x - x^3), x) + arctan2(c
, sqrt(c + x)*sqrt(-c + x))*log(x))*b + a*log(x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\arcsin\left(\frac{c}{x}\right)+a}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(c/x) + a)/x, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a + b \operatorname{asin}\left(\frac{c}{x}\right)}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c/x))/x,x)
```

```
[Out] Integral((a + b*asin(c/x))/x, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \arcsin\left(\frac{c}{x}\right) + a}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c/x) + a)/x, x)
```

3.375 $\int \frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{x^2}\,dx$

Optimal. Leaf size=39

$$-\frac{a}{x}-\frac{b\sqrt{1-\frac{c^2}{x^2}}}{c}-\frac{b\csc^{-1}\left(\frac{x}{c}\right)}{x}$$

```
[Out] -((b*Sqrt[1 - c^2/x^2])/c) - a/x - (b*ArcCsc[x/c])/x
```

Rubi [A] time = 0.0359881, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {6715, 4619, 261}

$$-\frac{a}{x}-\frac{b\sqrt{1-\frac{c^2}{x^2}}}{c}-\frac{b\csc^{-1}\left(\frac{x}{c}\right)}{x}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c/x])/x^2,x]
```

```
[Out] -((b*Sqrt[1 - c^2/x^2])/c) - a/x - (b*ArcCsc[x/c])/x
```

Rule 6715

```
Int[(u_)*(x_)^(m_.), x_Symbol] :> Dist[1/(m + 1), Subst[Int[SubstFor[x^(m +
 1), u, x], x], x, x^(m + 1)], x] /; FreeQ[m, x] && NeQ[m, -1] && FunctionO
fQ[x^(m + 1), u, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{x^2}\,dx &= -\text{Subst}\left(\int \left(a+b\sin^{-1}(cx)\right)\,dx, x, \frac{1}{x}\right)\\
&= -\frac{a}{x} - b\,\text{Subst}\left(\int \sin^{-1}(cx)\,dx, x, \frac{1}{x}\right)\\
&= -\frac{a}{x} - \frac{b\csc^{-1}\left(\frac{x}{c}\right)}{x} + (bc)\,\text{Subst}\left(\int \frac{x}{\sqrt{1-c^2x^2}}\,dx, x, \frac{1}{x}\right)\\
&= -\frac{b\sqrt{1-\frac{c^2}{x^2}}}{c} - \frac{a}{x} - \frac{b\csc^{-1}\left(\frac{x}{c}\right)}{x}
\end{aligned}$$

Mathematica [A] time = 0.0233979, size = 39, normalized size = 1.

$$-\frac{a}{x} - \frac{b\sqrt{1-\frac{c^2}{x^2}}}{c} - \frac{b\sin^{-1}\left(\frac{c}{x}\right)}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c/x])/x^2,x]
```

```
[Out] -((b*Sqrt[1 - c^2/x^2])/c) - a/x - (b*ArcSin[c/x])/x
```

Maple [A] time = 0.003, size = 39, normalized size = 1.

$$-\frac{1}{c}\left(\frac{ac}{x} + b\left(\frac{c}{x}\arcsin\left(\frac{c}{x}\right) + \sqrt{1-\frac{c^2}{x^2}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c/x))/x^2,x)
```

```
[Out] -1/c*(a*c/x+b*(c/x*arcsin(c/x)+(1-c^2/x^2)^(1/2)))
```

Maxima [A] time = 1.40248, size = 50, normalized size = 1.28

$$-\frac{b\left(\frac{c\arcsin\left(\frac{c}{x}\right)}{x}+\sqrt{-\frac{c^2}{x^2}+1}\right)}{c}-\frac{a}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x^2,x, algorithm="maxima")
```

```
[Out] -b*(c*arcsin(c/x)/x + sqrt(-c^2/x^2 + 1))/c - a/x
```

Fricas [A] time = 2.1986, size = 82, normalized size = 2.1

$$-\frac{bc\arcsin\left(\frac{c}{x}\right)+bx\sqrt{-\frac{c^2-x^2}{x^2}}+ac}{cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x^2,x, algorithm="fricas")
```

```
[Out] -(b*c*arcsin(c/x) + b*x*sqrt(-(c^2 - x^2)/x^2) + a*c)/(c*x)
```

Sympy [A] time = 2.59582, size = 32, normalized size = 0.82

$$\begin{cases} -\frac{a}{x}-\frac{b\operatorname{asin}\left(\frac{c}{x}\right)}{x}-\frac{b\sqrt{-\frac{c^2}{x^2}+1}}{c} & \text{for}\ c\neq 0\\ -\frac{a}{x} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c/x))/x**2,x)
```

```
[Out] Piecewise((-a/x - b*asin(c/x)/x - b*sqrt(-c**2/x**2 + 1)/c, Ne(c, 0)), (-a/
x, True))
```

Giac [A] time = 1.16384, size = 51, normalized size = 1.31

$$-\frac{b\left(\frac{c\arcsin\left(\frac{c}{x}\right)}{x}+\sqrt{-\frac{c^2}{x^2}+1}\right)+\frac{ac}{x}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x^2,x, algorithm="giac")
```

```
[Out] -(b*(c*arcsin(c/x)/x + sqrt(-c^2/x^2 + 1)) + a*c/x)/c
```

3.376 $\int \frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{x^3}\,dx$

Optimal. Leaf size=57

$$-\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{2x^2}-\frac{b\sqrt{1-\frac{c^2}{x^2}}}{4cx}+\frac{b\csc^{-1}\left(\frac{x}{c}\right)}{4c^2}$$

```
[Out] -(b*Sqrt[1 - c^2/x^2])/(4*c*x) + (b*ArcCsc[x/c])/(4*c^2) - (a + b*ArcSin[c/
x])/(2*x^2)
```

Rubi [A] time = 0.0425392, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357, Rules used = {4842, 12, 335, 321, 216}

$$-\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{2x^2}-\frac{b\sqrt{1-\frac{c^2}{x^2}}}{4cx}+\frac{b\csc^{-1}\left(\frac{x}{c}\right)}{4c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c/x])/x^3,x]
```

```
[Out] -(b*Sqrt[1 - c^2/x^2])/(4*c*x) + (b*ArcCsc[x/c])/(4*c^2) - (a + b*ArcSin[c/
x])/(2*x^2)
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 335

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Subst[Int[(a +
b/x^n)^p/x^(m + 2), x], x, 1/x] /; FreeQ[{a, b, p}, x] && ILtQ[n, 0] && Int
egerQ[m]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{x^3}\,dx &= -\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{2x^2}-\frac{1}{2}b\int \frac{c}{\sqrt{1-\frac{c^2}{x^2}}x^4}\,dx\\
&= -\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{2x^2}-\frac{1}{2}(bc)\int \frac{1}{\sqrt{1-\frac{c^2}{x^2}}x^4}\,dx\\
&= -\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{2x^2}+\frac{1}{2}(bc)\,\text{Subst}\left(\int \frac{x^2}{\sqrt{1-c^2x^2}}\,dx,x,\frac{1}{x}\right)\\
&= -\frac{b\sqrt{1-\frac{c^2}{x^2}}}{4cx}-\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{2x^2}+\frac{b\,\text{Subst}\left(\int \frac{1}{\sqrt{1-c^2x^2}}\,dx,x,\frac{1}{x}\right)}{4c}\\
&= -\frac{b\sqrt{1-\frac{c^2}{x^2}}}{4cx}+\frac{b\csc^{-1}\left(\frac{x}{c}\right)}{4c^2}-\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{2x^2}
\end{aligned}$$

Mathematica [A] time = 0.030646, size = 65, normalized size = 1.14

$$-\frac{a}{2x^2}-\frac{b\sqrt{\frac{x^2-c^2}{x^2}}}{4cx}+\frac{b\sin^{-1}\left(\frac{c}{x}\right)}{4c^2}-\frac{b\sin^{-1}\left(\frac{c}{x}\right)}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c/x])/x^3,x]
```

```
[Out] -a/(2*x^2) - (b*Sqrt[(-c^2 + x^2)/x^2])/(4*c*x) + (b*ArcSin[c/x])/(4*c^2) -
 (b*ArcSin[c/x])/(2*x^2)
```

Maple [A] time = 0.005, size = 59, normalized size = 1.

$$-\frac{1}{c^2}\left(\frac{c^2 a}{2\,x^2}+b\left(\frac{c^2}{2\,x^2}\arcsin\left(\frac{c}{x}\right)+\frac{c}{4\,x}\sqrt{1-\frac{c^2}{x^2}}-\frac{1}{4}\arcsin\left(\frac{c}{x}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c/x))/x^3,x)
```

```
[Out] -1/c^2*(1/2*c^2/x^2*a+b*(1/2*arcsin(c/x)*c^2/x^2+1/4*c/x*(1-c^2/x^2)^(1/2)-
1/4*arcsin(c/x)))
```

Maxima [A] time = 1.41956, size = 116, normalized size = 2.04

$$\frac{1}{4}\left(c\left(\frac{x\sqrt{-\frac{c^2}{x^2}+1}}{c^2x^2\left(\frac{c^2}{x^2}-1\right)-c^4}-\frac{\arctan\left(\frac{x\sqrt{-\frac{c^2}{x^2}+1}}{c}\right)}{c^3}\right)-\frac{2\arcsin\left(\frac{c}{x}\right)}{x^2}\right)b-\frac{a}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x^3,x, algorithm="maxima")
```

```
[Out] 1/4*(c*(x*sqrt(-c^2/x^2 + 1)/(c^2*x^2*(c^2/x^2 - 1) - c^4) - arctan(x*sqrt(
-c^2/x^2 + 1)/c)/c^3) - 2*arcsin(c/x)/x^2)*b - 1/2*a/x^2
```

Fricas [A] time = 2.25862, size = 120, normalized size = 2.11

$$-\frac{bcx\sqrt{-\frac{c^2-x^2}{x^2}}+2\,ac^2+\left(2\,bc^2-bx^2\right)\arcsin\left(\frac{c}{x}\right)}{4\,c^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x^3,x, algorithm="fricas")
```

```
[Out] -1/4*(b*c*x*sqrt(-(c^2 - x^2)/x^2) + 2*a*c^2 + (2*b*c^2 - b*x^2)*arcsin(c/x
))/(c^2*x^2)
```

Sympy [A] time = 4.7383, size = 114, normalized size = 2.

$$-\frac{a}{2x^2} - \frac{bc\left(\begin{cases} \frac{i\sqrt{\frac{c^2}{x^2}-1}}{2c^2x} + \frac{i\operatorname{acosh}\left(\frac{c}{x}\right)}{2c^3} & \text{for } \frac{|c^2|}{|x^2|} > 1 \\ -\frac{1}{2x^3\sqrt{-\frac{c^2}{x^2}+1}} + \frac{1}{2c^2x\sqrt{-\frac{c^2}{x^2}+1}} - \frac{\operatorname{asin}\left(\frac{c}{x}\right)}{2c^3} & \text{otherwise} \end{cases}\right)}{2} - \frac{b\operatorname{asin}\left(\frac{c}{x}\right)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c/x))/x**3,x)
```

```
[Out] -a/(2*x**2) - b*c*Piecewise((I*sqrt(c**2/x**2 - 1)/(2*c**2*x) + I*acosh(c/x
)/(2*c**3), Abs(c**2)/Abs(x**2) > 1), (-1/(2*x**3*sqrt(-c**2/x**2 + 1)) + 1
/(2*c**2*x*sqrt(-c**2/x**2 + 1)) - asin(c/x)/(2*c**3), True))/2 - b*asin(c/
x)/(2*x**2)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\arcsin\left(\frac{c}{x}\right) + a}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x^3,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c/x) + a)/x^3, x)
```

3.377 $\int \frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{x^4}\,dx$

Optimal. Leaf size=62

$$-\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{3x^3}+\frac{b\left(1-\frac{c^2}{x^2}\right)^{3/2}}{9c^3}-\frac{b\sqrt{1-\frac{c^2}{x^2}}}{3c^3}$$

```
[Out] -(b*Sqrt[1 - c^2/x^2])/(3*c^3) + (b*(1 - c^2/x^2)^(3/2))/(9*c^3) - (a + b*A
rcSin[c/x])/(3*x^3)
```

Rubi [A] time = 0.0474299, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4842, 12, 266, 43}

$$-\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{3x^3}+\frac{b\left(1-\frac{c^2}{x^2}\right)^{3/2}}{9c^3}-\frac{b\sqrt{1-\frac{c^2}{x^2}}}{3c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c/x])/x^4,x]
```

```
[Out] -(b*Sqrt[1 - c^2/x^2])/(3*c^3) + (b*(1 - c^2/x^2)^(3/2))/(9*c^3) - (a + b*A
rcSin[c/x])/(3*x^3)
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{x^4}\,dx &= -\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{3x^3}-\frac{1}{3}b\int \frac{c}{\sqrt{1-\frac{c^2}{x^2}}x^5}\,dx\\
&= -\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{3x^3}-\frac{1}{3}(bc)\int \frac{1}{\sqrt{1-\frac{c^2}{x^2}}x^5}\,dx\\
&= -\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{3x^3}+\frac{1}{6}(bc)\,\mathrm{Subst}\left(\int \frac{x}{\sqrt{1-c^2x}}\,dx,x,\frac{1}{x^2}\right)\\
&= -\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{3x^3}+\frac{1}{6}(bc)\,\mathrm{Subst}\left(\int \left(\frac{1}{c^2\sqrt{1-c^2x}}-\frac{\sqrt{1-c^2x}}{c^2}\right)dx,x,\frac{1}{x^2}\right)\\
&= -\frac{b\sqrt{1-\frac{c^2}{x^2}}}{3c^3}+\frac{b\left(1-\frac{c^2}{x^2}\right)^{3/2}}{9c^3}-\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{3x^3}
\end{aligned}$$

Mathematica [A] time = 0.0553837, size = 60, normalized size = 0.97

$$-\frac{a}{3x^3}+b\left(-\frac{2}{9c^3}-\frac{1}{9cx^2}\right)\sqrt{\frac{x^2-c^2}{x^2}}-\frac{b\sin^{-1}\left(\frac{c}{x}\right)}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c/x])/x^4,x]
```

```
[Out] -a/(3*x^3) + b*(-2/(9*c^3) - 1/(9*c*x^2))*Sqrt[(-c^2 + x^2)/x^2] - (b*ArcSi
n[c/x])/(3*x^3)
```

Maple [A] time = 0.006, size = 67, normalized size = 1.1

$$-\frac{1}{c^3}\left(\frac{ac^3}{3\,x^3}+b\left(\frac{c^3}{3\,x^3}\arcsin\left(\frac{c}{x}\right)+\frac{c^2}{9\,x^2}\sqrt{1-\frac{c^2}{x^2}}+\frac{2}{9}\sqrt{1-\frac{c^2}{x^2}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c/x))/x^4,x)
```

```
[Out] -1/c^3*(1/3*c^3/x^3*a+b*(1/3*arcsin(c/x)*c^3/x^3+1/9*c^2/x^2*(1-c^2/x^2)^(1
/2)+2/9*(1-c^2/x^2)^(1/2)))
```

Maxima [A] time = 1.43452, size = 78, normalized size = 1.26

$$\frac{1}{9}\left(c\left(\frac{\left(-\frac{c^2}{x^2}+1\right)^{\frac{3}{2}}}{c^4}-\frac{3\sqrt{-\frac{c^2}{x^2}+1}}{c^4}\right)-\frac{3\arcsin\left(\frac{c}{x}\right)}{x^3}\right)b-\frac{a}{3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x^4,x, algorithm="maxima")
```

```
[Out] 1/9*(c*((-c^2/x^2 + 1)^(3/2)/c^4 - 3*sqrt(-c^2/x^2 + 1)/c^4) - 3*arcsin(c/x
)/x^3)*b - 1/3*a/x^3
```

Fricas [A] time = 2.26782, size = 126, normalized size = 2.03

$$-\frac{3\,bc^3\arcsin\left(\frac{c}{x}\right)+3\,ac^3+\left(bc^2x+2\,bx^3\right)\sqrt{-\frac{c^2-x^2}{x^2}}}{9\,c^3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x^4,x, algorithm="fricas")
```

```
[Out] -1/9*(3*b*c^3*arcsin(c/x) + 3*a*c^3 + (b*c^2*x + 2*b*x^3)*sqrt(-(c^2 - x^2)
/x^2))/(c^3*x^3)
```

Sympy [A] time = 5.5698, size = 114, normalized size = 1.84

$$-\frac{a}{3x^3}-\frac{bc\left(\begin{cases}\frac{\sqrt{-1+\frac{x^2}{c^2}}}{3cx^3}+\frac{2\sqrt{-1+\frac{x^2}{c^2}}}{3c^3x} & \text{for } \frac{|x^2|}{|c^2|}>1\\ \frac{i\sqrt{1-\frac{x^2}{c^2}}}{3cx^3}+\frac{2i\sqrt{1-\frac{x^2}{c^2}}}{3c^3x} & \text{otherwise}\end{cases}\right)}{3}-\frac{b\operatorname{asin}\left(\frac{c}{x}\right)}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c/x))/x**4,x)
```

```
[Out] -a/(3*x**3) - b*c*Piecewise((sqrt(-1 + x**2/c**2)/(3*c*x**3) + 2*sqrt(-1 +
x**2/c**2)/(3*c**3*x), Abs(x**2)/Abs(c**2) > 1), (I*sqrt(1 - x**2/c**2)/(3*
c*x**3) + 2*I*sqrt(1 - x**2/c**2)/(3*c**3*x), True))/3 - b*asin(c/x)/(3*x**
3)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\arcsin\left(\frac{c}{x}\right)+a}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x^4,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c/x) + a)/x^4, x)
```

3.378 $\int \frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{x^5}\,dx$

Optimal. Leaf size=82

$$-\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{4x^4}-\frac{3b\sqrt{1-\frac{c^2}{x^2}}}{32c^3x}-\frac{b\sqrt{1-\frac{c^2}{x^2}}}{16cx^3}+\frac{3b\csc^{-1}\left(\frac{x}{c}\right)}{32c^4}$$

```
[Out] -(b*Sqrt[1 - c^2/x^2])/(16*c*x^3) - (3*b*Sqrt[1 - c^2/x^2])/(32*c^3*x) + (3
*b*ArcCsc[x/c])/(32*c^4) - (a + b*ArcSin[c/x])/(4*x^4)
```

Rubi [A] time = 0.0546526, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357, Rules used = {4842, 12, 335, 321, 216}

$$-\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{4x^4}-\frac{3b\sqrt{1-\frac{c^2}{x^2}}}{32c^3x}-\frac{b\sqrt{1-\frac{c^2}{x^2}}}{16cx^3}+\frac{3b\csc^{-1}\left(\frac{x}{c}\right)}{32c^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c/x])/x^5,x]
```


```
[Out] -(b*Sqrt[1 - c^2/x^2])/(16*c*x^3) - (3*b*Sqrt[1 - c^2/x^2])/(32*c^3*x) + (3
*b*ArcCsc[x/c])/(32*c^4) - (a + b*ArcSin[c/x])/(4*x^4)
```


Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 335

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Subst[Int[(a +
b/x^n)^p/x^(m + 2), x], x, 1/x] /; FreeQ[{a, b, p}, x] && ILtQ[n, 0] && Int
egerQ[m]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{x^5}\,dx &= -\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{4x^4}-\frac{1}{4}b\int \frac{c}{\sqrt{1-\frac{c^2}{x^2}}x^6}\,dx\\
&= -\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{4x^4}-\frac{1}{4}(bc)\int \frac{1}{\sqrt{1-\frac{c^2}{x^2}}x^6}\,dx\\
&= -\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{4x^4}+\frac{1}{4}(bc)\,\text{Subst}\left(\int \frac{x^4}{\sqrt{1-c^2x^2}}\,dx,x,\frac{1}{x}\right)\\
&= -\frac{b\sqrt{1-\frac{c^2}{x^2}}}{16cx^3}-\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{4x^4}+\frac{(3b)\,\text{Subst}\left(\int \frac{x^2}{\sqrt{1-c^2x^2}}\,dx,x,\frac{1}{x}\right)}{16c}\\
&= -\frac{b\sqrt{1-\frac{c^2}{x^2}}}{16cx^3}-\frac{3b\sqrt{1-\frac{c^2}{x^2}}}{32c^3x}-\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{4x^4}+\frac{(3b)\,\text{Subst}\left(\int \frac{1}{\sqrt{1-c^2x^2}}\,dx,x,\frac{1}{x}\right)}{32c^3}\\
&= -\frac{b\sqrt{1-\frac{c^2}{x^2}}}{16cx^3}-\frac{3b\sqrt{1-\frac{c^2}{x^2}}}{32c^3x}+\frac{3b\csc^{-1}\left(\frac{x}{c}\right)}{32c^4}-\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{4x^4}
\end{aligned}$$

Mathematica [A] time = 0.0497939, size = 77, normalized size = 0.94

$$-\frac{a}{4x^4}+b\left(-\frac{3}{32c^3x}-\frac{1}{16cx^3}\right)\sqrt{\frac{x^2-c^2}{x^2}}+\frac{3b\sin^{-1}\left(\frac{c}{x}\right)}{32c^4}-\frac{b\sin^{-1}\left(\frac{c}{x}\right)}{4x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c/x])/x^5,x]
```

```
[Out] -a/(4*x^4) + b*(-1/(16*c*x^3) - 3/(32*c^3*x))*Sqrt[(-c^2 + x^2)/x^2] + (3*b
*ArcSin[c/x])/(32*c^4) - (b*ArcSin[c/x])/(4*x^4)
```

Maple [A] time = 0.004, size = 79, normalized size = 1.

$$-\frac{1}{c^4}\left(\frac{ac^4}{4x^4}+b\left(\frac{c^4}{4x^4}\arcsin\left(\frac{c}{x}\right)+\frac{c^3}{16x^3}\sqrt{1-\frac{c^2}{x^2}}+\frac{3c}{32x}\sqrt{1-\frac{c^2}{x^2}}-\frac{3}{32}\arcsin\left(\frac{c}{x}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c/x))/x^5,x)
```

```
[Out] -1/c^4*(1/4*c^4/x^4*a+b*(1/4*c^4/x^4*arcsin(c/x)+1/16*c^3/x^3*(1-c^2/x^2)^(
1/2)+3/32*c/x*(1-c^2/x^2)^(1/2)-3/32*arcsin(c/x)))
```

Maxima [A] time = 1.43078, size = 170, normalized size = 2.07

$$-\frac{1}{32}\left(\left(c\left(\frac{3x^3\left(-\frac{c^2}{x^2}+1\right)^{\frac{3}{2}}+5c^2x\sqrt{-\frac{c^2}{x^2}+1}}{c^4x^4\left(\frac{c^2}{x^2}-1\right)^2-2c^6x^2\left(\frac{c^2}{x^2}-1\right)+c^8}+\frac{3\arctan\left(\frac{x\sqrt{-\frac{c^2}{x^2}+1}}{c}\right)}{c^5}\right)+\frac{8\arcsin\left(\frac{c}{x}\right)}{x^4}\right)b-\frac{a}{4x^4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x^5,x, algorithm="maxima")
```

```
[Out] -1/32*(c*((3*x^3*(-c^2/x^2 + 1)^(3/2) + 5*c^2*x*sqrt(-c^2/x^2 + 1))/(c^4*x^
4*(c^2/x^2 - 1)^2 - 2*c^6*x^2*(c^2/x^2 - 1) + c^8) + 3*arctan(x*sqrt(-c^2/x
^2 + 1)/c)/c^5) + 8*arcsin(c/x)/x^4)*b - 1/4*a/x^4
```

Fricas [A] time = 2.23321, size = 149, normalized size = 1.82

$$-\frac{8\,ac^4 + \left(8\,bc^4 - 3\,bx^4\right)\arcsin\left(\frac{c}{x}\right) + \left(2\,bc^3x + 3\,bcx^3\right)\sqrt{-\frac{c^2-x^2}{x^2}}}{32\,c^4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x^5,x, algorithm="fricas")
```

```
[Out] -1/32*(8*a*c^4 + (8*b*c^4 - 3*b*x^4)*arcsin(c/x) + (2*b*c^3*x + 3*b*c*x^3)*
sqrt(-(c^2 - x^2)/x^2))/(c^4*x^4)
```

Sympy [A] time = 10.4751, size = 182, normalized size = 2.22

$$-\frac{a}{4x^4} - \frac{bc\left(\begin{cases} \frac{i}{4x^5\sqrt{\frac{c^2}{x^2}-1}} + \frac{i}{8c^2x^3\sqrt{\frac{c^2}{x^2}-1}} - \frac{3i}{8c^4x\sqrt{\frac{c^2}{x^2}-1}} + \frac{3i\,\mathrm{acosh}\left(\frac{c}{x}\right)}{8c^5} & \text{for}\ \frac{|c^2|}{|x^2|} > 1 \\ -\frac{1}{4x^5\sqrt{-\frac{c^2}{x^2}+1}} - \frac{1}{8c^2x^3\sqrt{-\frac{c^2}{x^2}+1}} + \frac{3}{8c^4x\sqrt{-\frac{c^2}{x^2}+1}} - \frac{3\,\mathrm{asin}\left(\frac{c}{x}\right)}{8c^5} & \text{otherwise} \end{cases}\right)}{4} - \frac{b\,\mathrm{asin}\left(\frac{c}{x}\right)}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c/x))/x**5,x)
```

```
[Out] -a/(4*x**4) - b*c*Piecewise((I/(4*x**5*sqrt(c**2/x**2 - 1)) + I/(8*c**2*x**
3*sqrt(c**2/x**2 - 1)) - 3*I/(8*c**4*x*sqrt(c**2/x**2 - 1)) + 3*I*acosh(c/x
)/(8*c**5), Abs(c**2)/Abs(x**2) > 1), (-1/(4*x**5*sqrt(-c**2/x**2 + 1)) - 1
/(8*c**2*x**3*sqrt(-c**2/x**2 + 1)) + 3/(8*c**4*x*sqrt(-c**2/x**2 + 1)) - 3
*asin(c/x)/(8*c**5), True))/4 - b*asin(c/x)/(4*x**4)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\arcsin\left(\frac{c}{x}\right) + a}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x^5,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c/x) + a)/x^5, x)
```

3.379 $\int x^m \left(a+b\sin^{-1}\left(cx^n\right)\right)\,dx$

Optimal. Leaf size=81

$$\frac{x^{m+1}\left(a+b\sin^{-1}\left(cx^n\right)\right)}{m+1}-\frac{bcnx^{m+n+1}\text{Hypergeometric2F1}\left(\frac{1}{2},\frac{m+n+1}{2n},\frac{m+3n+1}{2n},c^2x^{2n}\right)}{(m+1)(m+n+1)}$$

```
[Out] (x^(1 + m)*(a + b*ArcSin[c*x^n]))/(1 + m) - (b*c*n*x^(1 + m + n)*Hypergeome
tric2F1[1/2, (1 + m + n)/(2*n), (1 + m + 3*n)/(2*n), c^2*x^(2*n)])/((1 + m)
*(1 + m + n))
```

Rubi [A] time = 0.0513925, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {4842, 12, 364}

$$\frac{x^{m+1}\left(a+b\sin^{-1}\left(cx^n\right)\right)}{m+1}-\frac{bcnx^{m+n+1}\,{}_2F_1\left(\frac{1}{2},\frac{m+n+1}{2n};\frac{m+3n+1}{2n};c^2x^{2n}\right)}{(m+1)(m+n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(a + b*ArcSin[c*x^n]),x]
```

```
[Out] (x^(1 + m)*(a + b*ArcSin[c*x^n]))/(1 + m) - (b*c*n*x^(1 + m + n)*Hypergeome
tric2F1[1/2, (1 + m + n)/(2*n), (1 + m + 3*n)/(2*n), c^2*x^(2*n)])/((1 + m)
*(1 + m + n))
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rubi steps

$$\begin{aligned}\int x^m\left(a+b\sin^{-1}(cx^n)\right)dx &= \frac{x^{1+m}\left(a+b\sin^{-1}(cx^n)\right)}{1+m}-\frac{b\int\frac{cnx^{m+n}}{\sqrt{1-c^2x^{2n}}}\,dx}{1+m}\\ &= \frac{x^{1+m}\left(a+b\sin^{-1}(cx^n)\right)}{1+m}-\frac{(bcn)\int\frac{x^{m+n}}{\sqrt{1-c^2x^{2n}}}\,dx}{1+m}\\ &= \frac{x^{1+m}\left(a+b\sin^{-1}(cx^n)\right)}{1+m}-\frac{bcnx^{1+m+n}\,{}_2F_1\left(\frac{1}{2},\frac{1+m+n}{2n};\frac{1+m+3n}{2n};c^2x^{2n}\right)}{(1+m)(1+m+n)}\end{aligned}$$

Mathematica [A] time = 0.110121, size = 78, normalized size = 0.96

$$\frac{x^{m+1}\left((m+n+1)\left(a+b\sin^{-1}(cx^n)\right)-bcnx^n\text{Hypergeometric2F1}\left(\frac{1}{2},\frac{m+n+1}{2n},\frac{m+3n+1}{2n},c^2x^{2n}\right)\right)}{(m+1)(m+n+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*(a + b*ArcSin[c*x^n]),x]
```

```
[Out] (x^(1 + m)*((1 + m + n)*(a + b*ArcSin[c*x^n]) - b*c*n*x^n*Hypergeometric2F1
[1/2, (1 + m + n)/(2*n), (1 + m + 3*n)/(2*n), c^2*x^(2*n)]))/((1 + m)*(1 +
m + n))
```

Maple [F] time = 0.087, size = 0, normalized size = 0.

$$\int x^m\left(a+b\arcsin(cx^n)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a+b*arcsin(c*x^n)),x)
```

```
[Out] int(x^m*(a+b*arcsin(c*x^n)),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x^n)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x^n)),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x^{m}\left(a+b\operatorname{asin}\left(cx^{n}\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(a+b*asin(c*x**n)),x)
```

```
[Out] Integral(x**m*(a + b*asin(c*x**n)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (b\arcsin\left(cx^{n}\right)+a)x^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x^n)),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x^n) + a)*x^m, x)
```

3.380 $\int x^2 \left(a+b\sin^{-1}\left(cx^n\right)\right)\,dx$

Optimal. Leaf size=68

$$\frac{1}{3}x^3\left(a+b\sin^{-1}\left(cx^n\right)\right)-\frac{bcnx^{n+3}\text{Hypergeometric2F1}\left(\frac{1}{2},\frac{n+3}{2n},\frac{3(n+1)}{2n},c^2x^{2n}\right)}{3(n+3)}$$

```
[Out] (x^3*(a + b*ArcSin[c*x^n]))/3 - (b*c*n*x^(3 + n)*Hypergeometric2F1[1/2, (3
+ n)/(2*n), (3*(1 + n))/(2*n), c^2*x^(2*n)])/(3*(3 + n))
```

Rubi [A] time = 0.0409463, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {4842, 12, 364}

$$\frac{1}{3}x^3\left(a+b\sin^{-1}\left(cx^n\right)\right)-\frac{bcnx^{n+3}\,{}_2F_1\left(\frac{1}{2},\frac{n+3}{2n};\frac{3(n+1)}{2n};c^2x^{2n}\right)}{3(n+3)}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(a + b*ArcSin[c*x^n]),x]
```


```
[Out] (x^3*(a + b*ArcSin[c*x^n]))/3 - (b*c*n*x^(3 + n)*Hypergeometric2F1[1/2, (3
+ n)/(2*n), (3*(1 + n))/(2*n), c^2*x^(2*n)])/(3*(3 + n))
```


Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rubi steps

$$\begin{aligned}\int x^2\left(a+b\sin^{-1}(cx^n)\right)dx &= \frac{1}{3}x^3\left(a+b\sin^{-1}(cx^n)\right)-\frac{1}{3}b\int\frac{cnx^{2+n}}{\sqrt{1-c^2x^{2n}}}\,dx\\ &= \frac{1}{3}x^3\left(a+b\sin^{-1}(cx^n)\right)-\frac{1}{3}(bcn)\int\frac{x^{2+n}}{\sqrt{1-c^2x^{2n}}}\,dx\\ &= \frac{1}{3}x^3\left(a+b\sin^{-1}(cx^n)\right)-\frac{bcnx^{3+n}\,{}_2F_1\left(\frac{1}{2},\frac{3+n}{2n};\frac{3(1+n)}{2n};c^2x^{2n}\right)}{3(3+n)}\end{aligned}$$

Mathematica [A] time = 0.0576328, size = 75, normalized size = 1.1

$$-\frac{bcnx^{n+3}\text{Hypergeometric2F1}\left(\frac{1}{2},\frac{n+3}{2n},\frac{n+3}{2n}+1,c^2x^{2n}\right)}{3(n+3)}+\frac{ax^3}{3}+\frac{1}{3}bx^3\sin^{-1}(cx^n)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(a + b*ArcSin[c*x^n]),x]
```

```
[Out] (a*x^3)/3 + (b*x^3*ArcSin[c*x^n])/3 - (b*c*n*x^(3 + n)*Hypergeometric2F1[1/
2, (3 + n)/(2*n), 1 + (3 + n)/(2*n), c^2*x^(2*n)])/(3*(3 + n))
```

Maple [F] time = 0.029, size = 0, normalized size = 0.

$$\int x^2\left(a+b\arcsin(cx^n)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(c*x^n)),x)
```

```
[Out] int(x^2*(a+b*arcsin(c*x^n)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{3}\,ax^3+\frac{1}{3}\left(x^3\arctan\left(cx^n,\sqrt{cx^n+1}\sqrt{-cx^n+1}\right)+3\,cn\int\frac{\sqrt{cx^n+1}\sqrt{-cx^n+1}x^2x^n}{3\left(c^2x^{2\,n}-1\right)}\,dx\right)b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x^n)),x, algorithm="maxima")
```

```
[Out] 1/3*a*x^3 + 1/3*(x^3*arctan2(c*x^n, sqrt(c*x^n + 1)*sqrt(-c*x^n + 1)) + 3*c
*n*integrate(1/3*sqrt(c*x^n + 1)*sqrt(-c*x^n + 1)*x^2*x^n/(c^2*x^(2*n) - 1)
, x))*b
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x^n)),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [C] time = 19.5958, size = 66, normalized size = 0.97

$$\frac{ax^3}{3}+\frac{bx^3\operatorname{asin}\left(cx^n\right)}{3}+\frac{ibx^3\Gamma\left(\frac{3}{2n}\right){}_2F_1\left(\begin{matrix}\frac{1}{2},-\frac{3}{2n}\\1-\frac{3}{2n}\end{matrix}\middle|\frac{x^{-2n}}{c^2}\right)}{6\Gamma\left(1+\frac{3}{2n}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(c*x**n)),x)
```

```
[Out] a*x**3/3 + b*x**3*asin(c*x**n)/3 + I*b*x**3*gamma(3/(2*n))*hyper((1/2, -3/(
2*n)), (1 - 3/(2*n),), x**(-2*n)/c**2)/(6*gamma(1 + 3/(2*n)))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (b \arcsin (cx^n) + a)x^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x^n)),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x^n) + a)*x^2, x)
```

3.381 $\int x \left(a+b\sin^{-1}\left(cx^n\right)\right) dx$

Optimal. Leaf size=69

$$\frac{1}{2}x^2\left(a+b\sin^{-1}\left(cx^n\right)\right)-\frac{bcnx^{n+2}\text{Hypergeometric2F1}\left(\frac{1}{2},\frac{n+2}{2n},\frac{1}{2}\left(\frac{2}{n}+3\right),c^2x^{2n}\right)}{2(n+2)}$$

```
[Out] (x^2*(a + b*ArcSin[c*x^n]))/2 - (b*c*n*x^(2 + n)*Hypergeometric2F1[1/2, (2
+ n)/(2*n), (3 + 2/n)/2, c^2*x^(2*n)])/(2*(2 + n))
```

Rubi [A] time = 0.0333579, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {4842, 12, 364}

$$\frac{1}{2}x^2\left(a+b\sin^{-1}\left(cx^n\right)\right)-\frac{bcnx^{n+2}\,{}_2F_1\left(\frac{1}{2},\frac{n+2}{2n};\frac{1}{2}\left(3+\frac{2}{n}\right);c^2x^{2n}\right)}{2(n+2)}$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*ArcSin[c*x^n]),x]
```

```
[Out] (x^2*(a + b*ArcSin[c*x^n]))/2 - (b*c*n*x^(2 + n)*Hypergeometric2F1[1/2, (2
+ n)/(2*n), (3 + 2/n)/2, c^2*x^(2*n)])/(2*(2 + n))
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rubi steps

$$\begin{aligned}\int x\left(a+b\sin^{-1}(cx^n)\right)dx &= \frac{1}{2}x^2\left(a+b\sin^{-1}(cx^n)\right)-\frac{1}{2}b\int\frac{cnx^{1+n}}{\sqrt{1-c^2x^{2n}}}\,dx\\ &= \frac{1}{2}x^2\left(a+b\sin^{-1}(cx^n)\right)-\frac{1}{2}(bcn)\int\frac{x^{1+n}}{\sqrt{1-c^2x^{2n}}}\,dx\\ &= \frac{1}{2}x^2\left(a+b\sin^{-1}(cx^n)\right)-\frac{bcnx^{2+n}\,{}_2F_1\left(\frac{1}{2},\frac{2+n}{2n};\frac{1}{2}\left(3+\frac{2}{n}\right);c^2x^{2n}\right)}{2(2+n)}\end{aligned}$$

Mathematica [A] time = 0.0560275, size = 75, normalized size = 1.09

$$-\frac{bcnx^{n+2}\text{Hypergeometric2F1}\left(\frac{1}{2},\frac{n+2}{2n},\frac{n+2}{2n}+1,c^2x^{2n}\right)}{2(n+2)}+\frac{ax^2}{2}+\frac{1}{2}bx^2\sin^{-1}(cx^n)$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*ArcSin[c*x^n]),x]
```

```
[Out] (a*x^2)/2 + (b*x^2*ArcSin[c*x^n])/2 - (b*c*n*x^(2 + n)*Hypergeometric2F1[1/
2, (2 + n)/(2*n), 1 + (2 + n)/(2*n), c^2*x^(2*n)])/(2*(2 + n))
```

Maple [F] time = 0.015, size = 0, normalized size = 0.

$$\int x\left(a+b\arcsin(cx^n)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(c*x^n)),x)
```

```
[Out] int(x*(a+b*arcsin(c*x^n)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}ax^2 + \frac{1}{2}\left(x^2 \arctan\left(cx^n, \sqrt{cx^n+1}\sqrt{-cx^n+1}\right) + 2\,cn\int \frac{\sqrt{cx^n+1}\sqrt{-cx^n+1}xx^n}{2\left(c^2x^{2\,n}-1\right)}\,dx\right)b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x^n)),x, algorithm="maxima")
```

```
[Out] 1/2*a*x^2 + 1/2*(x^2*arctan2(c*x^n, sqrt(c*x^n + 1)*sqrt(-c*x^n + 1)) + 2*c
*n*integrate(1/2*sqrt(c*x^n + 1)*sqrt(-c*x^n + 1)*x*x^n/(c^2*x^(2*n) - 1),
x))*b
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x^n)),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [C] time = 7.21011, size = 60, normalized size = 0.87

$$\frac{ax^2}{2} + \frac{bx^2 \operatorname{asin}\left(cx^n\right)}{2} + \frac{ibx^2\Gamma\left(\frac{1}{n}\right) {}_2F_1\left(\begin{matrix} \frac{1}{2}, -\frac{1}{n} \\ 1-\frac{1}{n} \end{matrix}\middle| \frac{x^{-2n}}{c^2}\right)}{4\Gamma\left(1+\frac{1}{n}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(c*x**n)),x)
```

```
[Out] a*x**2/2 + b*x**2*asin(c*x**n)/2 + I*b*x**2*gamma(1/n)*hyper((1/2, -1/n), (
1 - 1/n,), x**(-2*n)/c**2)/(4*gamma(1 + 1/n))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (b \arcsin (cx^n) + a)x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x^n)),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x^n) + a)*x, x)
```

3.382 $\int \left(a+b\sin^{-1}\left(cx^n\right)\right)\,dx$

Optimal. Leaf size=60

$$-\frac{bcnx^{n+1}\text{Hypergeometric2F1}\left(\frac{1}{2},\frac{n+1}{2n},\frac{1}{2}\left(\frac{1}{n}+3\right),c^2x^{2n}\right)}{n+1}+ax+bx\sin^{-1}\left(cx^n\right)$$

```
[Out] a*x + b*x*ArcSin[c*x^n] - (b*c*n*x^(1 + n)*Hypergeometric2F1[1/2, (1 + n)/(
2*n), (3 + n^(-1))/2, c^2*x^(2*n)])/(1 + n)
```

Rubi [A] time = 0.0349295, antiderivative size = 60, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.3, Rules used = {4840, 12, 364}

$$ax-\frac{bcnx^{n+1}\,{}_2F_1\left(\frac{1}{2},\frac{n+1}{2n};\frac{1}{2}\left(3+\frac{1}{n}\right);c^2x^{2n}\right)}{n+1}+bx\sin^{-1}\left(cx^n\right)$$

Antiderivative was successfully verified.

```
[In] Int[a + b*ArcSin[c*x^n],x]
```



```
[Out] a*x + b*x*ArcSin[c*x^n] - (b*c*n*x^(1 + n)*Hypergeometric2F1[1/2, (1 + n)/(
2*n), (3 + n^(-1))/2, c^2*x^(2*n)])/(1 + n)
```


Rule 4840

```
Int[ArcSin[u_], x_Symbol] :> Simp[x*ArcSin[u], x] - Int[SimplifyIntegrand[(
x*D[u, x])/Sqrt[1 - u^2], x], x] /; InverseFunctionFreeQ[u, x] &&  !Functio
nOfExponentialQ[u, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
```

```
Q[p, 0] || GtQ[a, 0])
```

Rubi steps

$$
\begin{aligned}
\int \left(a+b\sin^{-1}\left(cx^n\right)\right)\,dx &= ax+b\int \sin^{-1}\left(cx^n\right)\,dx\\
&= ax+bx\sin^{-1}\left(cx^n\right)-b\int \frac{cnx^n}{\sqrt{1-c^2x^{2n}}}\,dx\\
&= ax+bx\sin^{-1}\left(cx^n\right)-(bcn)\int \frac{x^n}{\sqrt{1-c^2x^{2n}}}\,dx\\
&= ax+bx\sin^{-1}\left(cx^n\right)-\frac{bcnx^{1+n}\,{}_2F_1\left(\frac{1}{2},\frac{1+n}{2n};\frac{1}{2}\left(3+\frac{1}{n}\right);c^2x^{2n}\right)}{1+n}
\end{aligned}
$$

Mathematica [A] time = 0.0328912, size = 60, normalized size = 1.

$$-\frac{bcnx^{n+1}\text{Hypergeometric2F1}\left(\frac{1}{2},\frac{n+1}{2n},\frac{1}{2}\left(\frac{1}{n}+3\right),c^2x^{2n}\right)}{n+1}+ax+bx\sin^{-1}\left(cx^n\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*ArcSin[c*x^n],x]
```

```
[Out] a*x + b*x*ArcSin[c*x^n] - (b*c*n*x^(1 + n)*Hypergeometric2F1[1/2, (1 + n)/(
2*n), (3 + n^(-1))/2, c^2*x^(2*n)])/(1 + n)
```

Maple [F] time = 0.019, size = 0, normalized size = 0.

$$\int a+b\arcsin\left(cx^n\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a+b*arcsin(c*x^n),x)
```

```
[Out] int(a+b*arcsin(c*x^n),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\left(cn\int \frac{\sqrt{cx^n+1}\sqrt{-cx^n+1}x^n}{c^2x^{2n}-1}\,dx + x\arctan\left(cx^n, \sqrt{cx^n+1}\sqrt{-cx^n+1}\right)\right)b + ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(c*x^n),x, algorithm="maxima")
```

```
[Out] (c*n*integrate(sqrt(c*x^n + 1)*sqrt(-c*x^n + 1)*x^n/(c^2*x^(2*n) - 1), x) +
 x*arctan2(c*x^n, sqrt(c*x^n + 1)*sqrt(-c*x^n + 1)))*b + a*x
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(c*x^n),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [C] time = 3.22628, size = 56, normalized size = 0.93

$$ax + b\left(x\operatorname{asin}(cx^n) + \frac{ix\Gamma\left(\frac{1}{2n}\right){}_2F_1\left(\begin{matrix}\frac{1}{2}, -\frac{1}{2n}\\ 1-\frac{1}{2n}\end{matrix}\middle|\frac{x^{-2n}}{c^2}\right)}{2\Gamma\left(1+\frac{1}{2n}\right)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*asin(c*x**n),x)
```

```
[Out] a*x + b*(x*asin(c*x**n) + I*x*gamma(1/(2*n))*hyper((1/2, -1/(2*n)), (1 - 1/
(2*n),), x**(-2*n)/c**2)/(2*gamma(1 + 1/(2*n))))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int b \arcsin(cx^n) + a\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(c*x^n),x, algorithm="giac")
```

```
[Out] integrate(b*arcsin(c*x^n) + a, x)
```

3.383 $\int \frac{a+b\sin^{-1}(cx^n)}{x}\,dx$

Optimal. Leaf size=75

$$-\frac{ib\mathrm{PolyLog}\left(2,e^{2i\sin^{-1}(cx^n)}\right)}{2n}+a\log(x)-\frac{ib\sin^{-1}(cx^n)^2}{2n}+\frac{b\sin^{-1}(cx^n)\log\left(1-e^{2i\sin^{-1}(cx^n)}\right)}{n}$$

```
[Out] ((-I/2)*b*ArcSin[c*x^n]^2)/n + (b*ArcSin[c*x^n]*Log[1 - E^((2*I)*ArcSin[c*x
^n])])/n + a*Log[x] - ((I/2)*b*PolyLog[2, E^((2*I)*ArcSin[c*x^n])])/n
```

Rubi [A] time = 0.104086, antiderivative size = 75, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {6742, 4830, 3717, 2190, 2279, 2391}

$$-\frac{ib\mathrm{PolyLog}\left(2,e^{2i\sin^{-1}(cx^n)}\right)}{2n}+a\log(x)-\frac{ib\sin^{-1}(cx^n)^2}{2n}+\frac{b\sin^{-1}(cx^n)\log\left(1-e^{2i\sin^{-1}(cx^n)}\right)}{n}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^n])/x,x]
```

```
[Out] ((-I/2)*b*ArcSin[c*x^n]^2)/n + (b*ArcSin[c*x^n]*Log[1 - E^((2*I)*ArcSin[c*x
^n])])/n + a*Log[x] - ((I/2)*b*PolyLog[2, E^((2*I)*ArcSin[c*x^n])])/n
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 4830

```
Int[ArcSin[(a_.)*(x_)^(p_)]^(n_.)/(x_), x_Symbol] :> Dist[1/p, Subst[Int[x^
n*Cot[x], x], x, ArcSin[a*x^p]], x] /; FreeQ[{a, p}, x] && IGtQ[n, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx^n)}{x}\,dx = \int \left(\frac{a}{x}+\frac{b\sin^{-1}(cx^n)}{x}\right)dx$$

$$= a\log(x) + b\int \frac{\sin^{-1}(cx^n)}{x}\,dx$$

$$= a\log(x) + \frac{b\,\text{Subst}\left(\int x\cot(x)\,dx, x, \sin^{-1}(cx^n)\right)}{n}$$

$$= -\frac{ib\sin^{-1}(cx^n)^2}{2n} + a\log(x) - \frac{(2ib)\,\text{Subst}\left(\int \frac{e^{2ix}x}{1-e^{2ix}}\,dx, x, \sin^{-1}(cx^n)\right)}{n}$$

$$= -\frac{ib\sin^{-1}(cx^n)^2}{2n} + \frac{b\sin^{-1}(cx^n)\log\left(1-e^{2i\sin^{-1}(cx^n)}\right)}{n} + a\log(x) - \frac{b\,\text{Subst}\left(\int \log\left(1-e^{2ix}\right)\,dx \right.}{n}$$

$$= -\frac{ib\sin^{-1}(cx^n)^2}{2n} + \frac{b\sin^{-1}(cx^n)\log\left(1-e^{2i\sin^{-1}(cx^n)}\right)}{n} + a\log(x) + \frac{(ib)\,\text{Subst}\left(\int \frac{\log(1-x)}{x}\,dx, x, \right.}{2n}$$

$$= -\frac{ib\sin^{-1}(cx^n)^2}{2n} + \frac{b\sin^{-1}(cx^n)\log\left(1-e^{2i\sin^{-1}(cx^n)}\right)}{n} + a\log(x) - \frac{ib\,\text{Li}_2\left(e^{2i\sin^{-1}(cx^n)}\right)}{2n}$$

Mathematica [B] time = 0.17181, size = 157, normalized size = 2.09

$$-\frac{bc\left(\log(x)\log\left(\sqrt{-c^2}x^n+\sqrt{1-c^2x^{2n}}\right)+\frac{i\left(i\sinh^{-1}\left(\sqrt{-c^2}x^n\right)\log\left(1-e^{-2\sinh^{-1}\left(\sqrt{-c^2}x^n\right)}\right)-\frac{1}{2}i\left(\text{PolyLog}\left(2,e^{-2\sinh^{-1}\left(\sqrt{-c^2}x^n\right)}\right)-\sinh^{-1}\left(\sqrt{-c^2}x^n\right)^2\right)\right)}{n}\right)}{\sqrt{-c^2}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x^n])/x,x]
```

```
[Out] a*Log[x] + b*ArcSin[c*x^n]*Log[x] - (b*c*(Log[x]*Log[Sqrt[-c^2]*x^n + Sqrt[
1 - c^2*x^(2*n)]] + (I*(I*ArcSinh[Sqrt[-c^2]*x^n]*Log[1 - E^(-2*ArcSinh[Sqr
t[-c^2]*x^n])] - (I/2)*(-ArcSinh[Sqrt[-c^2]*x^n]^2 + PolyLog[2, E^(-2*ArcSi
nh[Sqrt[-c^2]*x^n])])))/n))/Sqrt[-c^2]
```

Maple [A] time = 0.004, size = 164, normalized size = 2.2

$$\frac{a\ln(cx^n)}{n}-\frac{\frac{i}{2}b\left(\arcsin(cx^n)\right)^2}{n}+\frac{b\arcsin(cx^n)}{n}\ln\left(1+icx^n+\sqrt{1-c^2\left(x^n\right)^2}\right)+\frac{b\arcsin(cx^n)}{n}\ln\left(1-icx^n-\sqrt{1-c^2\left(x^n\right)^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^n))/x,x)
```

```
[Out] 1/n*a*ln(c*x^n)-1/2*I*b*arcsin(c*x^n)^2/n+1/n*b*arcsin(c*x^n)*ln(1+I*c*x^n+
(1-c^2*(x^n)^2)^(1/2))+1/n*b*arcsin(c*x^n)*ln(1-I*c*x^n-(1-c^2*(x^n)^2)^(1/
2))-I/n*b*polylog(2,-I*c*x^n-(1-c^2*(x^n)^2)^(1/2))-I/n*b*polylog(2,I*c*x^n
+(1-c^2*(x^n)^2)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\left(cn\int\frac{\sqrt{cx^n+1}\sqrt{-cx^n+1}x^n\log(x)}{c^2xx^{2n}-x}\,dx+\arctan\left(cx^n,\sqrt{cx^n+1}\sqrt{-cx^n+1}\right)\log(x)\right)b+a\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^n))/x,x, algorithm="maxima")
```

```
[Out] (c*n*integrate(sqrt(c*x^n + 1)*sqrt(-c*x^n + 1)*x^n*log(x)/(c^2*x*x^(2*n) -
 x), x) + arctan2(c*x^n, sqrt(c*x^n + 1)*sqrt(-c*x^n + 1))*log(x))*b + a*lo
g(x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^n))/x,x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a + b \operatorname{asin}{\left(cx^{n} \right)}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**n))/x,x)
```

```
[Out] Integral((a + b*asin(c*x**n))/x, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \arcsin\left(cx^{n}\right) + a}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^n))/x,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x^n) + a)/x, x)
```

3.384 $\int \frac{a+b\sin^{-1}(cx^n)}{x^2}\,dx$

Optimal. Leaf size=69

$$-\frac{bcnx^{n-1}\text{Hypergeometric2F1}\left(\frac{1}{2},-\frac{1-n}{2n},\frac{1}{2}\left(3-\frac{1}{n}\right),c^2x^{2n}\right)}{1-n}-\frac{a+b\sin^{-1}(cx^n)}{x}$$

```
[Out] -((a + b*ArcSin[c*x^n])/x) - (b*c*n*x^(-1 + n)*Hypergeometric2F1[1/2, -(1 -
 n)/(2*n), (3 - n^(-1))/2, c^2*x^(2*n)])/(1 - n)
```

Rubi [A] time = 0.0431259, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {4842, 12, 364}

$$-\frac{a+b\sin^{-1}(cx^n)}{x}-\frac{bcnx^{n-1}\,{}_2F_1\left(\frac{1}{2},-\frac{1-n}{2n};\frac{1}{2}\left(3-\frac{1}{n}\right);c^2x^{2n}\right)}{1-n}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^n])/x^2,x]
```

```
[Out] -((a + b*ArcSin[c*x^n])/x) - (b*c*n*x^(-1 + n)*Hypergeometric2F1[1/2, -(1 -
 n)/(2*n), (3 - n^(-1))/2, c^2*x^(2*n)])/(1 - n)
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\sin^{-1}(cx^n)}{x^2}\,dx &= -\frac{a+b\sin^{-1}(cx^n)}{x}+b\int \frac{cnx^{-2+n}}{\sqrt{1-c^2x^{2n}}}\,dx\\ &= -\frac{a+b\sin^{-1}(cx^n)}{x}+(bcn)\int \frac{x^{-2+n}}{\sqrt{1-c^2x^{2n}}}\,dx\\ &= -\frac{a+b\sin^{-1}(cx^n)}{x}-\frac{bcnx^{-1+n}\,{}_2F_1\left(\frac{1}{2},-\frac{1-n}{2n};\frac{1}{2}\left(3-\frac{1}{n}\right);c^2x^{2n}\right)}{1-n}\end{aligned}$$

Mathematica [A] time = 0.0717266, size = 68, normalized size = 0.99

$$\frac{bcnx^{n-1}\text{Hypergeometric2F1}\left(\frac{1}{2},\frac{n-1}{2n},\frac{n-1}{2n}+1,c^2x^{2n}\right)}{n-1}-\frac{a}{x}-\frac{b\sin^{-1}(cx^n)}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^n])/x^2,x]
```

```
[Out] -(a/x) - (b*ArcSin[c*x^n])/x + (b*c*n*x^(-1 + n)*Hypergeometric2F1[1/2, (-1
 + n)/(2*n), 1 + (-1 + n)/(2*n), c^2*x^(2*n)])/(-1 + n)
```

Maple [F] time = 0.016, size = 0, normalized size = 0.

$$\int \frac{a+b\arcsin(cx^n)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^n))/x^2,x)
```

```
[Out] int((a+b*arcsin(c*x^n))/x^2,x)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^n))/x^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^n))/x^2,x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [C] time = 8.22533, size = 60, normalized size = 0.87

$$-\frac{a}{x}-\frac{b\operatorname{asin}(cx^n)}{x}-\frac{ib\Gamma\left(-\frac{1}{2n}\right){}_2F_1\left(\begin{matrix}\frac{1}{2},\frac{1}{2n}\\1+\frac{1}{2n}\end{matrix}\middle|\frac{x^{-2n}}{c^2}\right)}{2x\Gamma\left(1-\frac{1}{2n}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**n))/x**2,x)
```

```
[Out] -a/x - b*asin(c*x**n)/x - I*b*gamma(-1/(2*n))*hyper((1/2, 1/(2*n)), (1 + 1/
(2*n),), x**(-2*n)/c**2)/(2*x*gamma(1 - 1/(2*n)))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \arcsin (cx^n) + a}{x^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^n))/x^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x^n) + a)/x^2, x)
```

3.385 $\int \frac{a+b\sin^{-1}(cx^n)}{x^3}\,dx$

Optimal. Leaf size=72

$$-\frac{bcnx^{n-2}\text{Hypergeometric2F1}\left(\frac{1}{2},\frac{1}{2}\left(1-\frac{2}{n}\right),\frac{1}{2}\left(3-\frac{2}{n}\right),c^2x^{2n}\right)}{2(2-n)}-\frac{a+b\sin^{-1}(cx^n)}{2x^2}$$

```
[Out] -(a + b*ArcSin[c*x^n])/(2*x^2) - (b*c*n*x^(-2 + n)*Hypergeometric2F1[1/2, (
1 - 2/n)/2, (3 - 2/n)/2, c^2*x^(2*n)])/(2*(2 - n))
```

Rubi [A] time = 0.0453786, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {4842, 12, 364}

$$-\frac{a+b\sin^{-1}(cx^n)}{2x^2}-\frac{bcnx^{n-2}\,{}_2F_1\left(\frac{1}{2},\frac{1}{2}\left(1-\frac{2}{n}\right);\frac{1}{2}\left(3-\frac{2}{n}\right);c^2x^{2n}\right)}{2(2-n)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^n])/x^3,x]
```

```
[Out] -(a + b*ArcSin[c*x^n])/(2*x^2) - (b*c*n*x^(-2 + n)*Hypergeometric2F1[1/2, (
1 - 2/n)/2, (3 - 2/n)/2, c^2*x^(2*n)])/(2*(2 - n))
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\sin^{-1}(cx^n)}{x^3}\,dx &= -\frac{a+b\sin^{-1}(cx^n)}{2x^2}+\frac{1}{2}b\int \frac{cnx^{-3+n}}{\sqrt{1-c^2x^{2n}}}\,dx\\ &= -\frac{a+b\sin^{-1}(cx^n)}{2x^2}+\frac{1}{2}(bcn)\int \frac{x^{-3+n}}{\sqrt{1-c^2x^{2n}}}\,dx\\ &= -\frac{a+b\sin^{-1}(cx^n)}{2x^2}-\frac{bcnx^{-2+n}\,{}_2F_1\left(\frac{1}{2},\frac{1}{2}\left(1-\frac{2}{n}\right);\frac{1}{2}\left(3-\frac{2}{n}\right);c^2x^{2n}\right)}{2(2-n)}\end{aligned}$$

Mathematica [A] time = 0.0526302, size = 75, normalized size = 1.04

$$\frac{bcnx^{n-2}\text{Hypergeometric2F1}\left(\frac{1}{2},\frac{n-2}{2n},\frac{n-2}{2n}+1,c^2x^{2n}\right)}{2(n-2)}-\frac{a}{2x^2}-\frac{b\sin^{-1}(cx^n)}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^n])/x^3,x]
```

```
[Out] -a/(2*x^2) - (b*ArcSin[c*x^n])/(2*x^2) + (b*c*n*x^(-2 + n)*Hypergeometric2F
1[1/2, (-2 + n)/(2*n), 1 + (-2 + n)/(2*n), c^2*x^(2*n)])/(2*(-2 + n))
```

Maple [F] time = 0.017, size = 0, normalized size = 0.

$$\int \frac{a+b\arcsin(cx^n)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^n))/x^3,x)
```

```
[Out] int((a+b*arcsin(c*x^n))/x^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{\left(cnx^2\int\frac{\sqrt{cx^n+1}\sqrt{-cx^n+1}x^n}{c^2x^{2n+3}-x^3}\,dx+\arctan\left(cx^n,\sqrt{cx^n+1}\sqrt{-cx^n+1}\right)\right)b}{2\,x^2}-\frac{a}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^n))/x^3,x, algorithm="maxima")
```

```
[Out] -1/2*(2*c*n*x^2*integrate(1/2*sqrt(c*x^n + 1)*sqrt(-c*x^n + 1)*x^n/(c^2*x^3
*x^(2*n) - x^3), x) + arctan2(c*x^n, sqrt(c*x^n + 1)*sqrt(-c*x^n + 1)))*b/x
^2 - 1/2*a/x^2
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^n))/x^3,x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [C] time = 23.8386, size = 61, normalized size = 0.85

$$-\frac{a}{2x^2}-\frac{b\operatorname{asin}\left(cx^n\right)}{2x^2}-\frac{ib\Gamma\left(-\frac{1}{n}\right){}_2F_1\left(\begin{matrix}\frac{1}{2},\frac{1}{n}\\1+\frac{1}{n}\end{matrix}\middle|\frac{x^{-2n}}{c^2}\right)}{4x^2\Gamma\left(1-\frac{1}{n}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**n))/x**3,x)
```

```
[Out] -a/(2*x**2) - b*asin(c*x**n)/(2*x**2) - I*b*gamma(-1/n)*hyper((1/2, 1/n), (
1 + 1/n,), x**(-2*n)/c**2)/(4*x**2*gamma(1 - 1/n))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \arcsin\left(cx^n\right) + a}{x^3} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^n))/x^3,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x^n) + a)/x^3, x)
```

3.386 $\int x^5 \left(a + b \sin^{-1}\left(c + dx^2\right)\right) dx$

Optimal. Leaf size=129

$$\frac{1}{6}x^6\left(a + b\sin^{-1}\left(c + dx^2\right)\right) + \frac{bx^4\sqrt{-c^2 - 2cdx^2 - d^2x^4 + 1}}{18d} + \frac{b\left(11c^2 - 5cdx^2 + 4\right)\sqrt{-c^2 - 2cdx^2 - d^2x^4 + 1}}{36d^3} + \frac{bc\left(2c^2 + 3\right.}{}$$

```
[Out] (b*x^4*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(18*d) + (b*(4 + 11*c^2 - 5*c*d
*x^2)*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(36*d^3) + (b*c*(3 + 2*c^2)*ArcS
in[c + d*x^2])/(12*d^3) + (x^6*(a + b*ArcSin[c + d*x^2]))/6
```

Rubi [A] time = 0.155358, antiderivative size = 129, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.438, Rules used = {4842, 12, 1114, 742, 779, 619, 216}

$$\frac{1}{6}x^6\left(a + b\sin^{-1}\left(c + dx^2\right)\right) + \frac{bx^4\sqrt{-c^2 - 2cdx^2 - d^2x^4 + 1}}{18d} + \frac{b\left(11c^2 - 5cdx^2 + 4\right)\sqrt{-c^2 - 2cdx^2 - d^2x^4 + 1}}{36d^3} + \frac{bc\left(2c^2 + 3\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^5*(a + b*ArcSin[c + d*x^2]),x]
```

```
[Out] (b*x^4*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(18*d) + (b*(4 + 11*c^2 - 5*c*d
*x^2)*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(36*d^3) + (b*c*(3 + 2*c^2)*ArcS
in[c + d*x^2])/(12*d^3) + (x^6*(a + b*ArcSin[c + d*x^2]))/6
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1114

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.), x_Symbol] :> Dis
t[1/2, Subst[Int[x^((m - 1)/2)*(a + b*x + c*x^2)^p, x], x, x^2], x] /; Free
Q[{a, b, c, p}, x] && IntegerQ[(m - 1)/2]
```

Rule 742

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[1/(c*(m + 2*p + 1)), Int[(d + e*x)^(m - 2)*Simp[c*d^2*(m +
 2*p + 1) - e*(a*e*(m - 1) + b*d*(p + 1)) + e*(2*c*d - b*e)*(m + p)*x, x]*(
a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && If[Rat
ionalQ[m], GtQ[m, 1], SumSimplerQ[m, -2]] && NeQ[m + 2*p + 1, 0] && IntQuad
raticQ[a, b, c, d, e, m, p, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 619

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[1/(2*c*((-4
*c)/(b^2 - 4*a*c))^p), Subst[Int[Simp[1 - x^2/(b^2 - 4*a*c), x]^p, x], x, b
 + 2*c*x], x] /; FreeQ[{a, b, c, p}, x] && GtQ[4*a - b^2/c, 0]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rubi steps

$$\int x^5 \left(a+b\sin^{-1}\left(c+dx^2\right)\right) dx = \frac{1}{6}x^6 \left(a+b\sin^{-1}\left(c+dx^2\right)\right) - \frac{1}{6}b\int \frac{2dx^7}{\sqrt{1-c^2-2cdx^2-d^2x^4}} dx$$
$$= \frac{1}{6}x^6 \left(a+b\sin^{-1}\left(c+dx^2\right)\right) - \frac{1}{3}(bd)\int \frac{x^7}{\sqrt{1-c^2-2cdx^2-d^2x^4}} dx$$
$$= \frac{1}{6}x^6 \left(a+b\sin^{-1}\left(c+dx^2\right)\right) - \frac{1}{6}(bd)\,\mathrm{Subst}\left(\int \frac{x^3}{\sqrt{1-c^2-2cdx-d^2x^2}} dx, x, x^2\right)$$
$$= \frac{bx^4\sqrt{1-c^2-2cdx^2-d^2x^4}}{18d} + \frac{1}{6}x^6 \left(a+b\sin^{-1}\left(c+dx^2\right)\right) + \frac{b\,\mathrm{Subst}\left(\int \frac{x\left(-2\left(1-c^2\right)+5cdx\right)}{\sqrt{1-c^2-2cdx-d^2x^2}}\right.}{18d}$$
$$= \frac{bx^4\sqrt{1-c^2-2cdx^2-d^2x^4}}{18d} + \frac{b\left(4+11c^2-5cdx^2\right)\sqrt{1-c^2-2cdx^2-d^2x^4}}{36d^3} + \frac{1}{6}x^6\left(a+\right.$$

$$= \frac{bx^4\sqrt{1-c^2-2cdx^2-d^2x^4}}{18d} + \frac{b\left(4+11c^2-5cdx^2\right)\sqrt{1-c^2-2cdx^2-d^2x^4}}{36d^3} + \frac{1}{6}x^6\left(a+\right.$$
$$= \frac{bx^4\sqrt{1-c^2-2cdx^2-d^2x^4}}{18d} + \frac{b\left(4+11c^2-5cdx^2\right)\sqrt{1-c^2-2cdx^2-d^2x^4}}{36d^3} + \frac{bc\left(3+2\right.}{}$$

Mathematica [A] time = 0.111501, size = 116, normalized size = 0.9

$$\frac{ax^6}{6} + \frac{1}{2}b\left(\frac{11c^2+4}{18d^3} - \frac{5cx^2}{18d^2} + \frac{x^4}{9d}\right)\sqrt{-c^2-2cdx^2-d^2x^4+1} + \frac{bc\left(2c^2+3\right)\sin^{-1}\left(c+dx^2\right)}{12d^3} + \frac{1}{6}bx^6\sin^{-1}\left(c+dx^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^5*(a + b*ArcSin[c + d*x^2]),x]
```

```
[Out] (a*x^6)/6 + (b*((4 + 11*c^2)/(18*d^3) - (5*c*x^2)/(18*d^2) + x^4/(9*d))*Sqr
t[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/2 + (b*c*(3 + 2*c^2)*ArcSin[c + d*x^2])/(
12*d^3) + (b*x^6*ArcSin[c + d*x^2])/6
```

Maple [B] time = 0.054, size = 258, normalized size = 2.

$$\frac{x^6a}{6} + \frac{bx^6\arcsin\left(dx^2+c\right)}{6} + \frac{bx^4}{18\,d}\sqrt{-d^2x^4-2\,cdx^2-c^2+1} - \frac{5\,bcx^2}{36\,d^2}\sqrt{-d^2x^4-2\,cdx^2-c^2+1} + \frac{11\,bc^2}{36\,d^3}\sqrt{-d^2x^4-2\,cdx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(a+b*arcsin(d*x^2+c)),x)
```

```
[Out] 1/6*x^6*a+1/6*b*x^6*arcsin(d*x^2+c)+1/18*b*x^4*(-d^2*x^4-2*c*d*x^2-c^2+1)^(
1/2)/d-5/36*b*c/d^2*x^2*(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)+11/36*b*c^2/d^3*(-
d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)+1/6*b*c^3/d^2/(d^2)^(1/2)*arctan((d^2)^(1/2)
*(x^2+c/d)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2))+1/4*b*c/d^2/(d^2)^(1/2)*arctan
((d^2)^(1/2)*(x^2+c/d)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2))+1/9*b/d^3*(-d^2*x^
4-2*c*d*x^2-c^2+1)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(d*x^2+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.29689, size = 219, normalized size = 1.7

$$\frac{6\,ad^3x^6 + 3\left(2\,bd^3x^6 + 2\,bc^3 + 3\,bc\right)\arcsin\left(dx^2 + c\right) + \left(2\,bd^2x^4 - 5\,bcdx^2 + 11\,bc^2 + 4\,b\right)\sqrt{-d^2x^4 - 2\,cdx^2 - c^2 + 1}}{36\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(d*x^2+c)),x, algorithm="fricas")
```

```
[Out] 1/36*(6*a*d^3*x^6 + 3*(2*b*d^3*x^6 + 2*b*c^3 + 3*b*c)*arcsin(d*x^2 + c) + (
2*b*d^2*x^4 - 5*b*c*d*x^2 + 11*b*c^2 + 4*b)*sqrt(-d^2*x^4 - 2*c*d*x^2 - c^2
 + 1))/d^3
```

Sympy [A] time = 4.71836, size = 204, normalized size = 1.58

$$\begin{cases} \frac{ax^6}{6} + \frac{bc^3\operatorname{asin}\left(c+dx^2\right)}{6d^3} + \frac{11bc^2\sqrt{-c^2-2cdx^2-d^2x^4+1}}{36d^3} - \frac{5bcx^2\sqrt{-c^2-2cdx^2-d^2x^4+1}}{36d^2} + \frac{bc\operatorname{asin}\left(c+dx^2\right)}{4d^3} + \frac{bx^6\operatorname{asin}\left(c+dx^2\right)}{6} + \frac{bx^4\sqrt{-c^2-2cdx^2-d^2x^4+}}{18d} \\ \frac{x^6(a+b\operatorname{asin}(c))}{6} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(a+b*asin(d*x**2+c)),x)
```

```
[Out] Piecewise((a*x**6/6 + b*c**3*asin(c + d*x**2)/(6*d**3) + 11*b*c**2*sqrt(-c*
*2 - 2*c*d*x**2 - d**2*x**4 + 1)/(36*d**3) - 5*b*c*x**2*sqrt(-c**2 - 2*c*d*
x**2 - d**2*x**4 + 1)/(36*d**2) + b*c*asin(c + d*x**2)/(4*d**3) + b*x**6*as
in(c + d*x**2)/6 + b*x**4*sqrt(-c**2 - 2*c*d*x**2 - d**2*x**4 + 1)/(18*d) +
 b*sqrt(-c**2 - 2*c*d*x**2 - d**2*x**4 + 1)/(9*d**3), Ne(d, 0)), (x**6*(a +
 b*asin(c))/6, True))
```

Giac [A] time = 1.16537, size = 297, normalized size = 2.3

$$\frac{6\,adx^6+\left(\frac{18\left(dx^2+c\right)c^2\arcsin\left(dx^2+c\right)}{d^2}+\frac{6\left(dx^2+c\right)\left(\left(dx^2+c\right)^2-1\right)\arcsin\left(dx^2+c\right)}{d^2}-\frac{18\left(\left(dx^2+c\right)^2-1\right)c\arcsin\left(dx^2+c\right)}{d^2}-\frac{9\left(dx^2+c\right)\sqrt{-\left(dx^2+c\right)^2+1}c}{d^2}+\frac{18}{}\right.}{36\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(d*x^2+c)),x, algorithm="giac")
```

```
[Out] 1/36*(6*a*d*x^6 + (18*(d*x^2 + c)*c^2*arcsin(d*x^2 + c)/d^2 + 6*(d*x^2 + c)
*((d*x^2 + c)^2 - 1)*arcsin(d*x^2 + c)/d^2 - 18*((d*x^2 + c)^2 - 1)*c*arcsi
n(d*x^2 + c)/d^2 - 9*(d*x^2 + c)*sqrt(-(d*x^2 + c)^2 + 1)*c/d^2 + 18*sqrt(-
(d*x^2 + c)^2 + 1)*c^2/d^2 + 6*(d*x^2 + c)*arcsin(d*x^2 + c)/d^2 - 9*c*arcs
in(d*x^2 + c)/d^2 - 2*(-(d*x^2 + c)^2 + 1)^(3/2)/d^2 + 6*sqrt(-(d*x^2 + c)^
2 + 1)/d^2)*b)/d
```

3.387 $\int x^3 \left(a+b\sin^{-1}\left(c+dx^2\right)\right)\,dx$

Optimal. Leaf size=115

$$\frac{1}{4}x^4\left(a+b\sin^{-1}\left(c+dx^2\right)\right)+\frac{bx^2\sqrt{-c^2-2cdx^2-d^2x^4+1}}{8d}-\frac{3bc\sqrt{-c^2-2cdx^2-d^2x^4+1}}{8d^2}-\frac{b\left(2c^2+1\right)\sin^{-1}\left(c+dx^2\right)}{8d^2}$$

```
[Out] (-3*b*c*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(8*d^2) + (b*x^2*Sqrt[1 - c^2
- 2*c*d*x^2 - d^2*x^4])/(8*d) - (b*(1 + 2*c^2)*ArcSin[c + d*x^2])/(8*d^2) +
 (x^4*(a + b*ArcSin[c + d*x^2]))/4
```

Rubi [A] time = 0.13019, antiderivative size = 115, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.438, Rules used = {4842, 12, 1114, 742, 640, 619, 216}

$$\frac{1}{4}x^4\left(a+b\sin^{-1}\left(c+dx^2\right)\right)+\frac{bx^2\sqrt{-c^2-2cdx^2-d^2x^4+1}}{8d}-\frac{3bc\sqrt{-c^2-2cdx^2-d^2x^4+1}}{8d^2}-\frac{b\left(2c^2+1\right)\sin^{-1}\left(c+dx^2\right)}{8d^2}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(a + b*ArcSin[c + d*x^2]),x]
```

```
[Out] (-3*b*c*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(8*d^2) + (b*x^2*Sqrt[1 - c^2
- 2*c*d*x^2 - d^2*x^4])/(8*d) - (b*(1 + 2*c^2)*ArcSin[c + d*x^2])/(8*d^2) +
 (x^4*(a + b*ArcSin[c + d*x^2]))/4
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1114

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.), x_Symbol] :> Dis
t[1/2, Subst[Int[x^((m - 1)/2)*(a + b*x + c*x^2)^p, x], x, x^2], x] /; Free
Q[{a, b, c, p}, x] && IntegerQ[(m - 1)/2]
```

Rule 742

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[1/(c*(m + 2*p + 1)), Int[(d + e*x)^(m - 2)*Simp[c*d^2*(m +
 2*p + 1) - e*(a*e*(m - 1) + b*d*(p + 1)) + e*(2*c*d - b*e)*(m + p)*x, x]*(
a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && If[Rat
ionalQ[m], GtQ[m, 1], SumSimplerQ[m, -2]] && NeQ[m + 2*p + 1, 0] && IntQuad
raticQ[a, b, c, d, e, m, p, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 619

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[1/(2*c*((-4
*c)/(b^2 - 4*a*c))^p), Subst[Int[Simp[1 - x^2/(b^2 - 4*a*c), x]^p, x], x, b
 + 2*c*x], x] /; FreeQ[{a, b, c, p}, x] && GtQ[4*a - b^2/c, 0]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rubi steps

$$\int x^3 \left(a+b\sin^{-1}\left(c+dx^2\right)\right) dx = \frac{1}{4}x^4\left(a+b\sin^{-1}\left(c+dx^2\right)\right) - \frac{1}{4}b\int \frac{2dx^5}{\sqrt{1-c^2-2cdx^2-d^2x^4}} dx$$
$$= \frac{1}{4}x^4\left(a+b\sin^{-1}\left(c+dx^2\right)\right) - \frac{1}{2}(bd)\int \frac{x^5}{\sqrt{1-c^2-2cdx^2-d^2x^4}} dx$$
$$= \frac{1}{4}x^4\left(a+b\sin^{-1}\left(c+dx^2\right)\right) - \frac{1}{4}(bd)\,\text{Subst}\left(\int \frac{x^2}{\sqrt{1-c^2-2cdx-d^2x^2}} dx, x, x^2\right)$$
$$= \frac{bx^2\sqrt{1-c^2-2cdx^2-d^2x^4}}{8d} + \frac{1}{4}x^4\left(a+b\sin^{-1}\left(c+dx^2\right)\right) + \frac{b\,\text{Subst}\left(\int \frac{-1+c^2+3cdx}{\sqrt{1-c^2-2cdx-d^2x}}\right.}{8d}$$
$$= -\frac{3bc\sqrt{1-c^2-2cdx^2-d^2x^4}}{8d^2} + \frac{bx^2\sqrt{1-c^2-2cdx^2-d^2x^4}}{8d} + \frac{1}{4}x^4\left(a+b\sin^{-1}\left(c+dx\right.\right.$$

$$= -\frac{3bc\sqrt{1-c^2-2cdx^2-d^2x^4}}{8d^2} + \frac{bx^2\sqrt{1-c^2-2cdx^2-d^2x^4}}{8d} + \frac{1}{4}x^4\left(a+b\sin^{-1}\left(c+dx\right.\right.$$
$$= -\frac{3bc\sqrt{1-c^2-2cdx^2-d^2x^4}}{8d^2} + \frac{bx^2\sqrt{1-c^2-2cdx^2-d^2x^4}}{8d} - \frac{b\left(1+2c^2\right)\sin^{-1}\left(c+d\right.}{8d^2}$$

Mathematica [A] time = 0.0785011, size = 98, normalized size = 0.85

$$\frac{ax^4}{4} + \frac{1}{2}b\left(\frac{x^2}{4d} - \frac{3c}{4d^2}\right)\sqrt{-c^2-2cdx^2-d^2x^4+1} - \frac{b\left(2c^2+1\right)\sin^{-1}\left(c+dx^2\right)}{8d^2} + \frac{1}{4}bx^4\sin^{-1}\left(c+dx^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(a + b*ArcSin[c + d*x^2]),x]
```

```
[Out] (a*x^4)/4 + (b*((-3*c)/(4*d^2) + x^2/(4*d))*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*
x^4])/2 - (b*(1 + 2*c^2)*ArcSin[c + d*x^2])/(8*d^2) + (b*x^4*ArcSin[c + d*x
^2])/4
```

Maple [A] time = 0.016, size = 191, normalized size = 1.7

$$\frac{x^4a}{4} + \frac{bx^4\arcsin\left(dx^2+c\right)}{4} + \frac{bx^2}{8d}\sqrt{-d^2x^4-2cdx^2-c^2+1} - \frac{3bc}{8d^2}\sqrt{-d^2x^4-2cdx^2-c^2+1} - \frac{bc^2}{4d}\arctan\left(\sqrt{d^2}\left(x^2+\frac{c}{d}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*arcsin(d*x^2+c)),x)
```

```
[Out] 1/4*x^4*a+1/4*b*x^4*arcsin(d*x^2+c)+1/8*b*x^2*(-d^2*x^4-2*c*d*x^2-c^2+1)^(1
/2)/d-3/8*b*c*(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)/d^2-1/4*b*c^2/d/(d^2)^(1/2)*
arctan((d^2)^(1/2)*(x^2+c/d)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2))-1/8*b/d/(d^2
)^(1/2)*arctan((d^2)^(1/2)*(x^2+c/d)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(d*x^2+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.34112, size = 173, normalized size = 1.5

$$\frac{2\,ad^2x^4 + \left(2\,bd^2x^4 - 2\,bc^2 - b\right)\arcsin\left(dx^2 + c\right) + \sqrt{-d^2x^4 - 2\,cdx^2 - c^2 + 1}\left(bdx^2 - 3\,bc\right)}{8\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(d*x^2+c)),x, algorithm="fricas")
```

```
[Out] 1/8*(2*a*d^2*x^4 + (2*b*d^2*x^4 - 2*b*c^2 - b)*arcsin(d*x^2 + c) + sqrt(-d^
2*x^4 - 2*c*d*x^2 - c^2 + 1)*(b*d*x^2 - 3*b*c))/d^2
```

Sympy [A] time = 1.36988, size = 133, normalized size = 1.16

$$\begin{cases} \frac{ax^4}{4} - \frac{bc^2 \operatorname{asin}\left(c+dx^2\right)}{4d^2} - \frac{3bc\sqrt{-c^2-2cdx^2-d^2x^4+1}}{8d^2} + \frac{bx^4 \operatorname{asin}\left(c+dx^2\right)}{4} + \frac{bx^2\sqrt{-c^2-2cdx^2-d^2x^4+1}}{8d} - \frac{b \operatorname{asin}\left(c+dx^2\right)}{8d^2} & \text{for}\ d \neq 0 \\ \frac{x^4(a+b\operatorname{asin}(c))}{4} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*asin(d*x**2+c)),x)
```

```
[Out] Piecewise((a*x**4/4 - b*c**2*asin(c + d*x**2)/(4*d**2) - 3*b*c*sqrt(-c**2 -
 2*c*d*x**2 - d**2*x**4 + 1)/(8*d**2) + b*x**4*asin(c + d*x**2)/4 + b*x**2*
sqrt(-c**2 - 2*c*d*x**2 - d**2*x**4 + 1)/(8*d) - b*asin(c + d*x**2)/(8*d**2
), Ne(d, 0)), (x**4*(a + b*asin(c))/4, True))
```

Giac [A] time = 1.13422, size = 176, normalized size = 1.53

$$\frac{\frac{2\left(\left(dx^2+c\right)^2-2\left(dx^2+c\right)c\right)a}{d}-\frac{\left(4\left(dx^2+c\right)c\arcsin\left(dx^2+c\right)-2\left(\left(dx^2+c\right)^2-1\right)\arcsin\left(dx^2+c\right)-\left(dx^2+c\right)\sqrt{-\left(dx^2+c\right)^2+1}+4\sqrt{-\left(dx^2+c\right)^2+1}c-\arcsin\left(dx^2+c\right)\right)b}{d}}{8d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(d*x^2+c)),x, algorithm="giac")
```

```
[Out] 1/8*(2*((d*x^2 + c)^2 - 2*(d*x^2 + c)*c)*a/d - (4*(d*x^2 + c)*c*arcsin(d*x^
2 + c) - 2*((d*x^2 + c)^2 - 1)*arcsin(d*x^2 + c) - (d*x^2 + c)*sqrt(-(d*x^2
 + c)^2 + 1) + 4*sqrt(-(d*x^2 + c)^2 + 1)*c - arcsin(d*x^2 + c))*b/d)/d
```

3.388 $\int x \left(a+b\sin^{-1}\left(c+dx^2\right)\right) dx$

Optimal. Leaf size=57

$$\frac{ax^2}{2}+\frac{b\sqrt{1-\left(c+dx^2\right)^2}}{2d}+\frac{b\left(c+dx^2\right)\sin^{-1}\left(c+dx^2\right)}{2d}$$

```
[Out] (a*x^2)/2 + (b*Sqrt[1 - (c + d*x^2)^2])/(2*d) + (b*(c + d*x^2)*ArcSin[c + d
*x^2])/(2*d)
```

Rubi [A] time = 0.0609813, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {6715, 4803, 4619, 261}

$$\frac{ax^2}{2}+\frac{b\sqrt{1-\left(c+dx^2\right)^2}}{2d}+\frac{b\left(c+dx^2\right)\sin^{-1}\left(c+dx^2\right)}{2d}$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*ArcSin[c + d*x^2]),x]
```



```
[Out] (a*x^2)/2 + (b*Sqrt[1 - (c + d*x^2)^2])/(2*d) + (b*(c + d*x^2)*ArcSin[c + d
*x^2])/(2*d)
```


Rule 6715

```
Int[(u_)*(x_)^(m_.), x_Symbol] :> Dist[1/(m + 1), Subst[Int[SubstFor[x^(m +
 1), u, x], x], x, x^(m + 1)], x] /; FreeQ[m, x] && NeQ[m, -1] && FunctionO
fQ[x^(m + 1), u, x]
```

Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
```

```
c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int x\left(a+b\sin^{-1}\left(c+dx^2\right)\right)dx &= \frac{1}{2}\operatorname{Subst}\left(\int\left(a+b\sin^{-1}(c+dx)\right)dx,x,x^2\right)\\ &= \frac{ax^2}{2}+\frac{1}{2}b\operatorname{Subst}\left(\int\sin^{-1}(c+dx)\,dx,x,x^2\right)\\ &= \frac{ax^2}{2}+\frac{b\operatorname{Subst}\left(\int\sin^{-1}(x)\,dx,x,c+dx^2\right)}{2d}\\ &= \frac{ax^2}{2}+\frac{b\left(c+dx^2\right)\sin^{-1}\left(c+dx^2\right)}{2d}-\frac{b\operatorname{Subst}\left(\int\frac{x}{\sqrt{1-x^2}}\,dx,x,c+dx^2\right)}{2d}\\ &= \frac{ax^2}{2}+\frac{b\sqrt{1-\left(c+dx^2\right)^2}}{2d}+\frac{b\left(c+dx^2\right)\sin^{-1}\left(c+dx^2\right)}{2d}\end{aligned}$$

Mathematica [A] time = 0.0489667, size = 70, normalized size = 1.23

$$\frac{ax^2}{2}+\frac{b\left(\sqrt{-c^2-2cdx^2-d^2x^4+1}+c\sin^{-1}\left(c+dx^2\right)\right)}{2d}+\frac{1}{2}bx^2\sin^{-1}\left(c+dx^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*ArcSin[c + d*x^2]),x]
```

```
[Out] (a*x^2)/2 + (b*x^2*ArcSin[c + d*x^2])/2 + (b*(Sqrt[1 - c^2 - 2*c*d*x^2 - d^
2*x^4] + c*ArcSin[c + d*x^2]))/(2*d)
```

Maple [A] time = 0.003, size = 50, normalized size = 0.9

$$\frac{1}{2d}\left(a\left(dx^2+c\right)+b\left(\left(dx^2+c\right)\arcsin\left(dx^2+c\right)+\sqrt{1-\left(dx^2+c\right)^2}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(d*x^2+c)),x)
```

```
[Out] 1/2/d*(a*(d*x^2+c)+b*((d*x^2+c)*arcsin(d*x^2+c)+(1-(d*x^2+c)^2)^(1/2)))
```

Maxima [A] time = 1.53746, size = 61, normalized size = 1.07

$$\frac{1}{2}\,ax^2 + \frac{\left(\left(dx^2+c\right)\arcsin\left(dx^2+c\right) + \sqrt{-\left(dx^2+c\right)^2+1}\right)b}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x^2+c)),x, algorithm="maxima")
```

```
[Out] 1/2*a*x^2 + 1/2*((d*x^2 + c)*arcsin(d*x^2 + c) + sqrt(-(d*x^2 + c)^2 + 1))*
b/d
```

Fricas [A] time = 2.31953, size = 127, normalized size = 2.23

$$\frac{adx^2 + \left(bdx^2+bc\right)\arcsin\left(dx^2+c\right) + \sqrt{-d^2x^4-2\,cdx^2-c^2+1}b}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x^2+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(a*d*x^2 + (b*d*x^2 + b*c)*arcsin(d*x^2 + c) + sqrt(-d^2*x^4 - 2*c*d*x^
2 - c^2 + 1)*b)/d
```

Sympy [A] time = 0.284933, size = 76, normalized size = 1.33

$$\begin{cases} \frac{ax^2}{2} + \frac{bc\operatorname{asin}\left(c+dx^2\right)}{2d} + \frac{bx^2\operatorname{asin}\left(c+dx^2\right)}{2} + \frac{b\sqrt{-c^2-2cdx^2-d^2x^4+1}}{2d} & \text{for}\ d \neq 0 \\ \frac{x^2(a+b\operatorname{asin}(c))}{2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(d*x**2+c)),x)
```

```
[Out] Piecewise((a*x**2/2 + b*c*asin(c + d*x**2)/(2*d) + b*x**2*asin(c + d*x**2)/
2 + b*sqrt(-c**2 - 2*c*d*x**2 - d**2*x**4 + 1)/(2*d), Ne(d, 0)), (x**2*(a +
 b*asin(c))/2, True))
```

Giac [A] time = 1.14363, size = 66, normalized size = 1.16

$$\frac{(dx^2+c)a + \left((dx^2+c)\arcsin\left(dx^2+c\right) + \sqrt{-(dx^2+c)^2+1}\right)b}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x^2+c)),x, algorithm="giac")
```

```
[Out] 1/2*((d*x^2 + c)*a + ((d*x^2 + c)*arcsin(d*x^2 + c) + sqrt(-(d*x^2 + c)^2 +
 1))*b)/d
```

3.389 $\int \frac{a+b\sin^{-1}\left(c+dx^2\right)}{x}\,dx$

Optimal. Leaf size=214

$$-\frac{1}{2}ib\text{PolyLog}\left(2,\frac{e^{i\sin^{-1}\left(c+dx^2\right)}}{-\sqrt{1-c^2}+ic}\right)-\frac{1}{2}ib\text{PolyLog}\left(2,\frac{e^{i\sin^{-1}\left(c+dx^2\right)}}{\sqrt{1-c^2}+ic}\right)+a\log(x)+\frac{1}{2}b\sin^{-1}\left(c+dx^2\right)\log\left(1-\frac{e^{i\sin^{-1}\left(c+dx^2\right)}}{-\sqrt{1-c^2}+ic}\right.$$

```
[Out] (-I/4)*b*ArcSin[c + d*x^2]^2 + (b*ArcSin[c + d*x^2]*Log[1 - E^(I*ArcSin[c +
 d*x^2])/(I*c - Sqrt[1 - c^2])])/2 + (b*ArcSin[c + d*x^2]*Log[1 - E^(I*ArcS
in[c + d*x^2])/(I*c + Sqrt[1 - c^2])])/2 + a*Log[x] - (I/2)*b*PolyLog[2, E^
(I*ArcSin[c + d*x^2])/(I*c - Sqrt[1 - c^2])] - (I/2)*b*PolyLog[2, E^(I*ArcS
in[c + d*x^2])/(I*c + Sqrt[1 - c^2])]
```

Rubi [A] time = 0.375603, antiderivative size = 214, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.438, Rules used = {6742, 4805, 4741, 4521, 2190, 2279, 2391}

$$-\frac{1}{2}ib\text{PolyLog}\left(2,\frac{e^{i\sin^{-1}\left(c+dx^2\right)}}{-\sqrt{1-c^2}+ic}\right)-\frac{1}{2}ib\text{PolyLog}\left(2,\frac{e^{i\sin^{-1}\left(c+dx^2\right)}}{\sqrt{1-c^2}+ic}\right)+a\log(x)+\frac{1}{2}b\sin^{-1}\left(c+dx^2\right)\log\left(1-\frac{e^{i\sin^{-1}\left(c+dx^2\right)}}{-\sqrt{1-c^2}+ic}\right.$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x^2])/x,x]
```


```
[Out] (-I/4)*b*ArcSin[c + d*x^2]^2 + (b*ArcSin[c + d*x^2]*Log[1 - E^(I*ArcSin[c +
 d*x^2])/(I*c - Sqrt[1 - c^2])])/2 + (b*ArcSin[c + d*x^2]*Log[1 - E^(I*ArcS
in[c + d*x^2])/(I*c + Sqrt[1 - c^2])])/2 + a*Log[x] - (I/2)*b*PolyLog[2, E^
(I*ArcSin[c + d*x^2])/(I*c - Sqrt[1 - c^2])] - (I/2)*b*PolyLog[2, E^(I*ArcS
in[c + d*x^2])/(I*c + Sqrt[1 - c^2])]
```


Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 4805

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
```

```
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}\left(c+dx^2\right)}{x}\,dx = \int \left(\frac{a}{x}+\frac{b\sin^{-1}\left(c+dx^2\right)}{x}\right)dx$$

$$= a\log(x) + b\int \frac{\sin^{-1}\left(c+dx^2\right)}{x}\,dx$$

$$= a\log(x) + \frac{1}{2}b\,\mathrm{Subst}\left(\int \frac{\sin^{-1}(c+dx)}{x}\,dx, x, x^2\right)$$

$$= a\log(x) + \frac{b\,\mathrm{Subst}\left(\int \frac{\sin^{-1}(x)}{-\frac{c}{d}+\frac{x}{d}}\,dx, x, c+dx^2\right)}{2d}$$

$$= a\log(x) + \frac{b\,\mathrm{Subst}\left(\int \frac{x\cos(x)}{-\frac{c}{d}+\frac{\sin(x)}{d}}\,dx, x, \sin^{-1}\left(c+dx^2\right)\right)}{2d}$$

$$= -\frac{1}{4}ib\sin^{-1}\left(c+dx^2\right)^2 + a\log(x) + \frac{(ib)\,\mathrm{Subst}\left(\int \frac{e^{ix}x}{-\frac{ic}{d}-\frac{\sqrt{1-c^2}}{d}+\frac{e^{ix}}{d}}\,dx, x, \sin^{-1}\left(c+dx^2\right)\right)}{2d} + \frac{(ib)}{}$$

$$= -\frac{1}{4}ib\sin^{-1}\left(c+dx^2\right)^2 + \frac{1}{2}b\sin^{-1}\left(c+dx^2\right)\log\left(1-\frac{e^{i\sin^{-1}\left(c+dx^2\right)}}{ic-\sqrt{1-c^2}}\right) + \frac{1}{2}b\sin^{-1}\left(c+dx^2\right)\log$$

$$= -\frac{1}{4}ib\sin^{-1}\left(c+dx^2\right)^2 + \frac{1}{2}b\sin^{-1}\left(c+dx^2\right)\log\left(1-\frac{e^{i\sin^{-1}\left(c+dx^2\right)}}{ic-\sqrt{1-c^2}}\right) + \frac{1}{2}b\sin^{-1}\left(c+dx^2\right)\log$$

$$= -\frac{1}{4}ib\sin^{-1}\left(c+dx^2\right)^2 + \frac{1}{2}b\sin^{-1}\left(c+dx^2\right)\log\left(1-\frac{e^{i\sin^{-1}\left(c+dx^2\right)}}{ic-\sqrt{1-c^2}}\right) + \frac{1}{2}b\sin^{-1}\left(c+dx^2\right)\log$$

Mathematica [A] time = 0.0203567, size = 230, normalized size = 1.07

$$-\frac{1}{2}ib\mathrm{PolyLog}\left(2,-\frac{e^{i\sin^{-1}\left(c+dx^2\right)}}{\sqrt{1-c^2}-ic}\right)-\frac{1}{2}ib\mathrm{PolyLog}\left(2,\frac{e^{i\sin^{-1}\left(c+dx^2\right)}}{\sqrt{1-c^2}+ic}\right)+a\log(x)+\frac{1}{2}b\sin^{-1}\left(c+dx^2\right)\log\left(1+\frac{e^{i\sin^{-1}\left(c+dx^2\right)}}{d\left(-\frac{\sqrt{1-c^2}}{d}-\frac{i}{}\right.}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x^2])/x,x]
```

```
[Out] (-I/4)*b*ArcSin[c + d*x^2]^2 + (b*ArcSin[c + d*x^2]*Log[1 + E^(I*ArcSin[c +
 d*x^2])/((((-I)*c)/d - Sqrt[1 - c^2]/d)*d)])/2 + (b*ArcSin[c + d*x^2]*Log[
1 + E^(I*ArcSin[c + d*x^2])/((((-I)*c)/d + Sqrt[1 - c^2]/d)*d)])/2 + a*Log[
x] - (I/2)*b*PolyLog[2, -(E^(I*ArcSin[c + d*x^2])/((-I)*c + Sqrt[1 - c^2]))
] - (I/2)*b*PolyLog[2, E^(I*ArcSin[c + d*x^2])/(I*c + Sqrt[1 - c^2])]
```

Maple [F] time = 0.135, size = 0, normalized size = 0.

$$\int \frac{a + b \arcsin\left(dx^2 + c\right)}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+c))/x,x)
```

```
[Out] int((a+b*arcsin(d*x^2+c))/x,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b \arcsin\left(dx^2 + c\right) + a}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(d*x^2 + c) + a)/x, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a + b \operatorname{asin}\left(c + dx^2\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+c))/x,x)
```

```
[Out] Integral((a + b*asin(c + d*x**2))/x, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \arcsin\left(dx^2 + c\right) + a}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + c) + a)/x, x)
```

3.390 $\int \frac{a+b\sin^{-1}(c+dx^2)}{x^3}\,dx$

Optimal. Leaf size=90

$$-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{2x^2}-\frac{bd\tanh^{-1}\left(\frac{-c^2-cdx^2+1}{\sqrt{1-c^2}\sqrt{-c^2-2cdx^2-d^2x^4+1}}\right)}{2\sqrt{1-c^2}}$$

```
[Out] -(a + b*ArcSin[c + d*x^2])/(2*x^2) - (b*d*ArcTanh[(1 - c^2 - c*d*x^2)/(Sqrt
[1 - c^2]*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])])/(2*Sqrt[1 - c^2])
```

Rubi [A] time = 0.0924383, antiderivative size = 90, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312, Rules used = {4842, 12, 1114, 724, 206}

$$-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{2x^2}-\frac{bd\tanh^{-1}\left(\frac{-c^2-cdx^2+1}{\sqrt{1-c^2}\sqrt{-c^2-2cdx^2-d^2x^4+1}}\right)}{2\sqrt{1-c^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x^2])/x^3,x]
```

```
[Out] -(a + b*ArcSin[c + d*x^2])/(2*x^2) - (b*d*ArcTanh[(1 - c^2 - c*d*x^2)/(Sqrt
[1 - c^2]*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])])/(2*Sqrt[1 - c^2])
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1114

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.), x_Symbol] :> Dis
t[1/2, Subst[Int[x^((m - 1)/2)*(a + b*x + c*x^2)^p, x], x, x^2], x] /; Free
Q[{a, b, c, p}, x] && IntegerQ[(m - 1)/2]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}\left(c+dx^2\right)}{x^3}\,dx &= -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{2x^2}+\frac{1}{2}b\int \frac{2d}{x\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx\\
&= -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{2x^2}+(bd)\int \frac{1}{x\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx\\
&= -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{2x^2}+\frac{1}{2}(bd)\,\text{Subst}\left(\int \frac{1}{x\sqrt{1-c^2-2cdx-d^2x^2}}\,dx,x,x^2\right)\\
&= -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{2x^2}-(bd)\,\text{Subst}\left(\int \frac{1}{4\left(1-c^2\right)-x^2}\,dx,x,\frac{2\left(1-c^2-cdx^2\right)}{\sqrt{1-c^2-2cdx^2-d^2x^4}}\right)\\
&= -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{2x^2}-\frac{bd\tanh^{-1}\left(\frac{1-c^2-cdx^2}{\sqrt{1-c^2}\sqrt{1-c^2-2cdx^2-d^2x^4}}\right)}{2\sqrt{1-c^2}}
\end{aligned}$$

Mathematica [A] time = 0.0773173, size = 81, normalized size = 0.9

$$\frac{1}{2}\left(-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{x^2}-\frac{bd\tanh^{-1}\left(\frac{-c^2-cdx^2+1}{\sqrt{1-c^2}\sqrt{1-\left(c+dx^2\right)^2}}\right)}{\sqrt{1-c^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x^2])/x^3,x]
```

```
[Out] (-((a + b*ArcSin[c + d*x^2])/x^2) - (b*d*ArcTanh[(1 - c^2 - c*d*x^2)/(Sqrt[
1 - c^2]*Sqrt[1 - (c + d*x^2)^2])])/Sqrt[1 - c^2])/2
```

Maple [A] time = 0.013, size = 89, normalized size = 1.

$$-\frac{a}{2\,x^{2}}-\frac{b\arcsin\left(d x^{2}+c\right)}{2\,x^{2}}-\frac{bd}{2}\ln\left(\frac{1}{x^{2}}\left(-2\,c^{2}+2-2\,cd x^{2}+2\,\sqrt{-c^{2}+1}\sqrt{-d^{2}x^{4}-2\,cd x^{2}-c^{2}+1}\right)\right)\frac{1}{\sqrt{-c^{2}+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+c))/x^3,x)
```

```
[Out] -1/2*a/x^2-1/2*b/x^2*arcsin(d*x^2+c)-1/2*b*d/(-c^2+1)^(1/2)*ln((-2*c^2+2-2*
c*d*x^2+2*(-c^2+1)^(1/2)*(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2))/x^2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 3.03477, size = 640, normalized size = 7.11

$$\left[-\frac{\sqrt{-c^{2}+1}bd x^{2}\log\left(\frac{\left(2\,c^{2}-1\right)d^{2}x^{4}+2\,c^{4}+4\,\left(c^{3}-c\right)d x^{2}+2\,\sqrt{-d^{2}x^{4}-2\,cd x^{2}-c^{2}+1}\left(cd x^{2}+c^{2}-1\right)\sqrt{-c^{2}+1}-4\,c^{2}+2}{x^{4}}\right)+2\,ac^{2}+2\,\left(bc^{2}-b\right)\arcsin\left(d\right.}{4\,\left(c^{2}-1\right)x^{2}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^3,x, algorithm="fricas")
```

```
[Out] [-1/4*(sqrt(-c^2 + 1)*b*d*x^2*log(((2*c^2 - 1)*d^2*x^4 + 2*c^4 + 4*(c^3 - c
)*d*x^2 + 2*sqrt(-d^2*x^4 - 2*c*d*x^2 - c^2 + 1)*(c*d*x^2 + c^2 - 1)*sqrt(-
c^2 + 1) - 4*c^2 + 2)/x^4) + 2*a*c^2 + 2*(b*c^2 - b)*arcsin(d*x^2 + c) - 2*
a)/((c^2 - 1)*x^2), 1/2*(sqrt(c^2 - 1)*b*d*x^2*arctan(sqrt(-d^2*x^4 - 2*c*d
*x^2 - c^2 + 1)*(c*d*x^2 + c^2 - 1)*sqrt(c^2 - 1)/((c^2 - 1)*d^2*x^4 + c^4
+ 2*(c^3 - c)*d*x^2 - 2*c^2 + 1)) - a*c^2 - (b*c^2 - b)*arcsin(d*x^2 + c) +
 a)/((c^2 - 1)*x^2)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a + b \operatorname{asin}\left(c + dx^2\right)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+c))/x**3,x)
```

```
[Out] Integral((a + b*asin(c + d*x**2))/x**3, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \arcsin\left(dx^2 + c\right) + a}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^3,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + c) + a)/x^3, x)
```

3.391 $\int \frac{a+b\sin^{-1}(c+dx^2)}{x^5}\,dx$

Optimal. Leaf size=137

$$-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{4x^4}-\frac{bd\sqrt{-c^2-2cdx^2-d^2x^4+1}}{4\left(1-c^2\right)x^2}-\frac{bcd^2\tanh^{-1}\left(\frac{-c^2-cdx^2+1}{\sqrt{1-c^2}\sqrt{-c^2-2cdx^2-d^2x^4+1}}\right)}{4\left(1-c^2\right)^{3/2}}$$

```
[Out] -(b*d*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(4*(1 - c^2)*x^2) - (a + b*ArcSi
n[c + d*x^2])/(4*x^4) - (b*c*d^2*ArcTanh[(1 - c^2 - c*d*x^2)/(Sqrt[1 - c^2]
*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])])/(4*(1 - c^2)^(3/2))
```

Rubi [A] time = 0.134773, antiderivative size = 137, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {4842, 12, 1114, 730, 724, 206}

$$-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{4x^4}-\frac{bd\sqrt{-c^2-2cdx^2-d^2x^4+1}}{4\left(1-c^2\right)x^2}-\frac{bcd^2\tanh^{-1}\left(\frac{-c^2-cdx^2+1}{\sqrt{1-c^2}\sqrt{-c^2-2cdx^2-d^2x^4+1}}\right)}{4\left(1-c^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x^2])/x^5,x]
```


```
[Out] -(b*d*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(4*(1 - c^2)*x^2) - (a + b*ArcSi
n[c + d*x^2])/(4*x^4) - (b*c*d^2*ArcTanh[(1 - c^2 - c*d*x^2)/(Sqrt[1 - c^2]
*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])])/(4*(1 - c^2)^(3/2))
```


Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1114

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.), x_Symbol] :> Dis
t[1/2, Subst[Int[x^((m - 1)/2)*(a + b*x + c*x^2)^p, x], x, x^2], x] /; Free
Q[{a, b, c, p}, x] && IntegerQ[(m - 1)/2]
```

Rule 730

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m + 1)*(a + b*x + c*x^2)^(p + 1))/((m + 1)*(c*
d^2 - b*d*e + a*e^2)), x] + Dist[(2*c*d - b*e)/(2*(c*d^2 - b*d*e + a*e^2)),
 Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e,
 m, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2
*c*d - b*e, 0] && EqQ[m + 2*p + 3, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{a+b\sin^{-1}\left(c+dx^2\right)}{x^5}\,dx = -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{4x^4}+\frac{1}{4}b\int \frac{2d}{x^3\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$

$$= -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{4x^4}+\frac{1}{2}(bd)\int \frac{1}{x^3\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$

$$= -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{4x^4}+\frac{1}{4}(bd)\,\text{Subst}\left(\int \frac{1}{x^2\sqrt{1-c^2-2cdx-d^2x^2}}\,dx,x,x^2\right)$$

$$= -\frac{bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{4\left(1-c^2\right)x^2}-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{4x^4}+\frac{\left(bcd^2\right)\text{Subst}\left(\int \frac{1}{x\sqrt{1-c^2-2cdx-d^2x^2}}\,dx\right.}{4\left(1-c^2\right)}$$

$$= -\frac{bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{4\left(1-c^2\right)x^2}-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{4x^4}-\frac{\left(bcd^2\right)\text{Subst}\left(\int \frac{1}{4\left(1-c^2\right)-x^2}\,dx,x,\right.}{2\left(1-c^2\right)}$$

$$= -\frac{bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{4\left(1-c^2\right)x^2}-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{4x^4}-\frac{bcd^2\tanh^{-1}\left(\frac{1-c^2-cdx^2}{\sqrt{1-c^2}\sqrt{1-c^2-2cdx^2-d^2x^4}}\right)}{4\left(1-c^2\right)^{3/2}}$$

Mathematica [A] time = 0.289083, size = 150, normalized size = 1.09

$$-\frac{a}{4x^4}+\frac{bd\sqrt{-c^2-2cdx^2-d^2x^4+1}}{4\left(c^2-1\right)x^2}+\frac{bcd^2\tanh^{-1}\left(\frac{-c^2-cdx^2+1}{\sqrt{1-c^2}\sqrt{-c^2-2cdx^2-d^2x^4+1}}\right)}{4(c-1)(c+1)\sqrt{1-c^2}}-\frac{b\sin^{-1}\left(c+dx^2\right)}{4x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x^2])/x^5,x]
```

```
[Out] -a/(4*x^4) + (b*d*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(4*(-1 + c^2)*x^2) -
 (b*ArcSin[c + d*x^2])/(4*x^4) + (b*c*d^2*ArcTanh[(1 - c^2 - c*d*x^2)/(Sqrt
[1 - c^2]*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])])/(4*(-1 + c)*(1 + c)*Sqrt[1
 - c^2])
```

Maple [A] time = 0.015, size = 132, normalized size = 1.

$$-\frac{a}{4\,x^4}-\frac{b\arcsin\left(dx^2+c\right)}{4\,x^4}-\frac{bd}{\left(-4\,c^2+4\right)x^2}\sqrt{-d^2x^4-2\,cdx^2-c^2+1}-\frac{bd^2c}{4}\ln\left(\frac{1}{x^2}\left(-2\,c^2+2-2\,cdx^2+2\,\sqrt{-c^2+1}\sqrt{\ldots}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+c))/x^5,x)
```

```
[Out] -1/4*a/x^4-1/4*b/x^4*arcsin(d*x^2+c)-1/4*b*d*(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/
2)/(-c^2+1)/x^2-1/4*b*d^2*c/(-c^2+1)^(3/2)*ln((-2*c^2+2-2*c*d*x^2+2*(-c^2+1
)^(1/2)*(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2))/x^2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 3.51549, size = 884, normalized size = 6.45

$$\left[-\frac{\sqrt{-c^2+1}bcd^2x^4\log\left(\frac{(2c^2-1)d^2x^4+2c^4+4(c^3-c)dx^2-2\sqrt{-d^2x^4-2cdx^2-c^2+1}(cdx^2+c^2-1)\sqrt{-c^2+1}-4c^2+2}{x^4}\right)+2ac^4-2\sqrt{-d^2x^4-2cdx^2-}}{8(c^4-2c^2+1)x^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^5,x, algorithm="fricas")
```

```
[Out] [-1/8*(sqrt(-c^2 + 1)*b*c*d^2*x^4*log(((2*c^2 - 1)*d^2*x^4 + 2*c^4 + 4*(c^3
 - c)*d*x^2 - 2*sqrt(-d^2*x^4 - 2*c*d*x^2 - c^2 + 1)*(c*d*x^2 + c^2 - 1)*sq
rt(-c^2 + 1) - 4*c^2 + 2)/x^4) + 2*a*c^4 - 2*sqrt(-d^2*x^4 - 2*c*d*x^2 - c^
2 + 1)*(b*c^2 - b)*d*x^2 - 4*a*c^2 + 2*(b*c^4 - 2*b*c^2 + b)*arcsin(d*x^2 +
 c) + 2*a)/((c^4 - 2*c^2 + 1)*x^4), -1/4*(sqrt(c^2 - 1)*b*c*d^2*x^4*arctan(
sqrt(-d^2*x^4 - 2*c*d*x^2 - c^2 + 1)*(c*d*x^2 + c^2 - 1)*sqrt(c^2 - 1)/((c^
2 - 1)*d^2*x^4 + c^4 + 2*(c^3 - c)*d*x^2 - 2*c^2 + 1)) + a*c^4 - sqrt(-d^2*
x^4 - 2*c*d*x^2 - c^2 + 1)*(b*c^2 - b)*d*x^2 - 2*a*c^2 + (b*c^4 - 2*b*c^2 +
 b)*arcsin(d*x^2 + c) + a)/((c^4 - 2*c^2 + 1)*x^4)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a + b\operatorname{asin}\left(c + dx^2\right)}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+c))/x**5,x)
```

```
[Out] Integral((a + b*asin(c + d*x**2))/x**5, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\arcsin\left(dx^2 + c\right) + a}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^5,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + c) + a)/x^5, x)
```

3.392 $\int \frac{a+b\sin^{-1}(c+dx^2)}{x^7}\,dx$

Optimal. Leaf size=190

$$-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{6x^6}-\frac{bcd^2\sqrt{-c^2-2cdx^2-d^2x^4+1}}{4\left(1-c^2\right)^2x^2}-\frac{bd\sqrt{-c^2-2cdx^2-d^2x^4+1}}{12\left(1-c^2\right)x^4}-\frac{b\left(2c^2+1\right)d^3\tanh^{-1}\left(\frac{-c^2-}{\sqrt{1-c^2}\sqrt{-c^2-}}\right.}{12\left(1-c^2\right)^{5/2}}$$

```
[Out] -(b*d*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(12*(1 - c^2)*x^4) - (b*c*d^2*Sq
rt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(4*(1 - c^2)^2*x^2) - (a + b*ArcSin[c +
d*x^2])/(6*x^6) - (b*(1 + 2*c^2)*d^3*ArcTanh[(1 - c^2 - c*d*x^2)/(Sqrt[1 -
c^2]*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])])/(12*(1 - c^2)^(5/2))
```

Rubi [A] time = 0.22495, antiderivative size = 190, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.438, Rules used = {4842, 12, 1114, 744, 806, 724, 206}

$$-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{6x^6}-\frac{bcd^2\sqrt{-c^2-2cdx^2-d^2x^4+1}}{4\left(1-c^2\right)^2x^2}-\frac{bd\sqrt{-c^2-2cdx^2-d^2x^4+1}}{12\left(1-c^2\right)x^4}-\frac{b\left(2c^2+1\right)d^3\tanh^{-1}\left(\frac{-c^2-}{\sqrt{1-c^2}\sqrt{-c^2-}}\right.}{12\left(1-c^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x^2])/x^7,x]
```

```
[Out] -(b*d*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(12*(1 - c^2)*x^4) - (b*c*d^2*Sq
rt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(4*(1 - c^2)^2*x^2) - (a + b*ArcSin[c +
d*x^2])/(6*x^6) - (b*(1 + 2*c^2)*d^3*ArcTanh[(1 - c^2 - c*d*x^2)/(Sqrt[1 -
c^2]*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])])/(12*(1 - c^2)^(5/2))
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1114

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.), x_Symbol] :> Dis
t[1/2, Subst[Int[x^((m - 1)/2)*(a + b*x + c*x^2)^p, x], x, x^2], x] /; Free
Q[{a, b, c, p}, x] && IntegerQ[(m - 1)/2]
```

Rule 744

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m + 1)*(a + b*x + c*x^2)^(p + 1))/((m + 1)*(c*
d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(
d + e*x)^(m + 1)*Simp[c*d*(m + 1) - b*e*(m + p + 2) - c*e*(m + 2*p + 3)*x,
x]*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^
2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && Ne
Q[m, -1] && ((LtQ[m, -1] && IntQuadraticQ[a, b, c, d, e, m, p, x]) || (SumS
implerQ[m, 1] && IntegerQ[p]) || ILtQ[Simplify[m + 2*p + 3], 0])
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{a+b\sin^{-1}\left(c+dx^2\right)}{x^7}\,dx = -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{6x^6}+\frac{1}{6}b\int \frac{2d}{x^5\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$

$$= -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{6x^6}+\frac{1}{3}(bd)\int \frac{1}{x^5\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$

$$= -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{6x^6}+\frac{1}{6}(bd)\,\text{Subst}\left(\int \frac{1}{x^3\sqrt{1-c^2-2cdx-d^2x^2}}\,dx,x,x^2\right)$$

$$= -\frac{bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{12\left(1-c^2\right)x^4}-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{6x^6}-\frac{(bd)\,\text{Subst}\left(\int \frac{-3cd-d^2x}{x^2\sqrt{1-c^2-2cdx-d^2x^2}}\,dx,x,\right.}{12\left(1-c^2\right)}$$

$$= -\frac{bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{12\left(1-c^2\right)x^4}-\frac{bcd^2\sqrt{1-c^2-2cdx^2-d^2x^4}}{4\left(1-c^2\right)^2x^2}-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{6x^6}+\frac{\left(b\left(1-\right.\right.}{}$$

$$= -\frac{bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{12\left(1-c^2\right)x^4}-\frac{bcd^2\sqrt{1-c^2-2cdx^2-d^2x^4}}{4\left(1-c^2\right)^2x^2}-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{6x^6}-\frac{\left(b\left(1-\right.\right.}{}$$

$$= -\frac{bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{12\left(1-c^2\right)x^4}-\frac{bcd^2\sqrt{1-c^2-2cdx^2-d^2x^4}}{4\left(1-c^2\right)^2x^2}-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{6x^6}-\frac{b\left(1+\right.}{}$$

Mathematica [A] time = 0.252371, size = 176, normalized size = 0.93

$$-\frac{a}{6x^6}+b\left(\frac{d}{12\left(c^2-1\right)x^4}-\frac{cd^2}{4\left(c^2-1\right)^2x^2}\right)\sqrt{-c^2-2cdx^2-d^2x^4+1}-\frac{b\left(2c^2+1\right)d^3\tanh^{-1}\left(\frac{-c^2-cdx^2+1}{\sqrt{1-c^2}\sqrt{-c^2-2cdx^2-d^2x^4+1}}\right)}{12(c-1)^2(c+1)^2\sqrt{1-c^2}}-\frac{b\,\text{s}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x^2])/x^7,x]
```

```
[Out] -a/(6*x^6) + b*(d/(12*(-1 + c^2)*x^4) - (c*d^2)/(4*(-1 + c^2)^2*x^2))*Sqrt[
1 - c^2 - 2*c*d*x^2 - d^2*x^4] - (b*ArcSin[c + d*x^2])/(6*x^6) - (b*(1 + 2*
c^2)*d^3*ArcTanh[(1 - c^2 - c*d*x^2)/(Sqrt[1 - c^2]*Sqrt[1 - c^2 - 2*c*d*x^
2 - d^2*x^4])])/(12*(-1 + c)^2*(1 + c)^2*Sqrt[1 - c^2])
```

Maple [A] time = 0.016, size = 246, normalized size = 1.3

$$-\frac{a}{6\,x^{6}}-\frac{b\arcsin\left(dx^{2}+c\right)}{6\,x^{6}}-\frac{bd}{\left(-12\,c^{2}+12\right)x^{4}}\sqrt{-d^{2}x^{4}-2\,cdx^{2}-c^{2}+1}-\frac{bcd^{2}}{4\,\left(-c^{2}+1\right)^{2}x^{2}}\sqrt{-d^{2}x^{4}-2\,cdx^{2}-c^{2}+1}-\frac{b}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+c))/x^7,x)
```

```
[Out] -1/6*a/x^6-1/6*b/x^6*arcsin(d*x^2+c)-1/12*b*d*(-d^2*x^4-2*c*d*x^2-c^2+1)^(1
/2)/(-c^2+1)/x^4-1/4*b*c*d^2*(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)/(-c^2+1)^2/x^
2-1/4*b*d^3*c^2/(-c^2+1)^(5/2)*ln((-2*c^2+2-2*c*d*x^2+2*(-c^2+1)^(1/2)*(-d^
2*x^4-2*c*d*x^2-c^2+1)^(1/2))/x^2)-1/12*b*d^3/(-c^2+1)^(3/2)*ln((-2*c^2+2-2
*c*d*x^2+2*(-c^2+1)^(1/2)*(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2))/x^2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^7,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 4.9115, size = 1102, normalized size = 5.8

$$\left[-\frac{\left(2\,bc^{2}+b\right)\sqrt{-c^{2}+1}d^{3}x^{6}\log\left(\frac{\left(2\,c^{2}-1\right)d^{2}x^{4}+2\,c^{4}+4\,\left(c^{3}-c\right)dx^{2}+2\,\sqrt{-d^{2}x^{4}-2\,cdx^{2}-c^{2}+1}\left(cdx^{2}+c^{2}-1\right)\sqrt{-c^{2}+1}-4\,c^{2}+2}{x^{4}}\right)+4\,ac^{6}-12\,ac^{4}+12}{24\,\left(c^{6}-\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^7,x, algorithm="fricas")
```

```
[Out] [-1/24*((2*b*c^2 + b)*sqrt(-c^2 + 1)*d^3*x^6*log(((2*c^2 - 1)*d^2*x^4 + 2*c
^4 + 4*(c^3 - c)*d*x^2 + 2*sqrt(-d^2*x^4 - 2*c*d*x^2 - c^2 + 1)*(c*d*x^2 +
```

```
c^2 - 1)*sqrt(-c^2 + 1) - 4*c^2 + 2)/x^4) + 4*a*c^6 - 12*a*c^4 + 12*a*c^2 +
 4*(b*c^6 - 3*b*c^4 + 3*b*c^2 - b)*arcsin(d*x^2 + c) + 2*(3*(b*c^3 - b*c)*d
^2*x^4 - (b*c^4 - 2*b*c^2 + b)*d*x^2)*sqrt(-d^2*x^4 - 2*c*d*x^2 - c^2 + 1)
- 4*a)/((c^6 - 3*c^4 + 3*c^2 - 1)*x^6), 1/12*((2*b*c^2 + b)*sqrt(c^2 - 1)*d
^3*x^6*arctan(sqrt(-d^2*x^4 - 2*c*d*x^2 - c^2 + 1)*(c*d*x^2 + c^2 - 1)*sqrt
(c^2 - 1)/((c^2 - 1)*d^2*x^4 + c^4 + 2*(c^3 - c)*d*x^2 - 2*c^2 + 1)) - 2*a*
c^6 + 6*a*c^4 - 6*a*c^2 - 2*(b*c^6 - 3*b*c^4 + 3*b*c^2 - b)*arcsin(d*x^2 +
c) - (3*(b*c^3 - b*c)*d^2*x^4 - (b*c^4 - 2*b*c^2 + b)*d*x^2)*sqrt(-d^2*x^4
- 2*c*d*x^2 - c^2 + 1) + 2*a)/((c^6 - 3*c^4 + 3*c^2 - 1)*x^6)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a + b \operatorname{asin}\left(c + dx^2\right)}{x^7}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+c))/x**7,x)
```

```
[Out] Integral((a + b*asin(c + d*x**2))/x**7, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \arcsin\left(dx^2 + c\right) + a}{x^7}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^7,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + c) + a)/x^7, x)
```

3.393 $\int x^4 \left(a+b\sin^{-1}\left(c+dx^2\right)\right) dx$

Optimal. Leaf size=336

$$\frac{2b\sqrt{1-c}(c+1)\left(15c^2+8c+9\right)\sqrt{1-\frac{dx^2}{1-c}}\sqrt{\frac{dx^2}{c+1}+1}\text{EllipticF}\left(\sin^{-1}\left(\frac{\sqrt{d}x}{\sqrt{1-c}}\right),-\frac{1-c}{c+1}\right)}{75d^{5/2}\sqrt{-c^2-2cdx^2-d^2x^4+1}}+\frac{1}{5}x^5\left(a+b\sin^{-1}\left(c+dx^2\right)\right)+\frac{2bx^3}{}$$

```
[Out] (-16*b*c*x*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(75*d^2) + (2*b*x^3*Sqrt[1
- c^2 - 2*c*d*x^2 - d^2*x^4])/(25*d) + (x^5*(a + b*ArcSin[c + d*x^2]))/5 -
(2*b*Sqrt[1 - c]*(1 + c)*(9 + 23*c^2)*Sqrt[1 - (d*x^2)/(1 - c)]*Sqrt[1 + (d
*x^2)/(1 + c)]*EllipticE[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]], -((1 - c)/(1 + c)
)])/(75*d^(5/2)*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4]) + (2*b*Sqrt[1 - c]*(1
+ c)*(9 + 8*c + 15*c^2)*Sqrt[1 - (d*x^2)/(1 - c)]*Sqrt[1 + (d*x^2)/(1 + c)]
*EllipticF[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]], -((1 - c)/(1 + c))])/(75*d^(5/2
)*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])
```

Rubi [A] time = 0.417522, antiderivative size = 336, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {4842, 12, 1122, 1279, 1202, 524, 424, 419}

$$\frac{1}{5}x^5\left(a+b\sin^{-1}\left(c+dx^2\right)\right)+\frac{2bx^3\sqrt{-c^2-2cdx^2-d^2x^4+1}}{25d}-\frac{16bcx\sqrt{-c^2-2cdx^2-d^2x^4+1}}{75d^2}+\frac{2b\sqrt{1-c}(c+1)\left(15c^2\right.}{7}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(a + b*ArcSin[c + d*x^2]),x]
```


```
[Out] (-16*b*c*x*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(75*d^2) + (2*b*x^3*Sqrt[1
- c^2 - 2*c*d*x^2 - d^2*x^4])/(25*d) + (x^5*(a + b*ArcSin[c + d*x^2]))/5 -
(2*b*Sqrt[1 - c]*(1 + c)*(9 + 23*c^2)*Sqrt[1 - (d*x^2)/(1 - c)]*Sqrt[1 + (d
*x^2)/(1 + c)]*EllipticE[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]], -((1 - c)/(1 + c)
)])/(75*d^(5/2)*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4]) + (2*b*Sqrt[1 - c]*(1
+ c)*(9 + 8*c + 15*c^2)*Sqrt[1 - (d*x^2)/(1 - c)]*Sqrt[1 + (d*x^2)/(1 + c)]
*EllipticF[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]], -((1 - c)/(1 + c))])/(75*d^(5/2
)*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])
```


Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
```

```
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1122

```
Int[((d_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_), x_Symbol]
 :> Simp[(d^3*(d*x)^(m - 3)*(a + b*x^2 + c*x^4)^(p + 1))/(c*(m + 4*p + 1)),
 x] - Dist[d^4/(c*(m + 4*p + 1)), Int[(d*x)^(m - 4)*Simp[a*(m - 3) + b*(m +
 2*p - 1)*x^2, x]*(a + b*x^2 + c*x^4)^p, x], x] /; FreeQ[{a, b, c, d, p}, x
] && NeQ[b^2 - 4*a*c, 0] && GtQ[m, 3] && NeQ[m + 4*p + 1, 0] && IntegerQ[2*
p] && (IntegerQ[p] || IntegerQ[m])
```

Rule 1279

```
Int[((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_)^2)*((a_) + (b_.)*(x_)^2 + (c_.)*(
x_)^4)^(p_), x_Symbol] :> Simp[(e*f*(f*x)^(m - 1)*(a + b*x^2 + c*x^4)^(p +
1))/(c*(m + 4*p + 3)), x] - Dist[f^2/(c*(m + 4*p + 3)), Int[(f*x)^(m - 2)*(
a + b*x^2 + c*x^4)^p*Simp[a*e*(m - 1) + (b*e*(m + 2*p + 1) - c*d*(m + 4*p +
 3))*x^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, p}, x] && NeQ[b^2 - 4*a*c,
 0] && GtQ[m, 1] && NeQ[m + 4*p + 3, 0] && IntegerQ[2*p] && (IntegerQ[p] ||
 IntegerQ[m])
```

Rule 1202

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(Sqrt[1 + (2*c*x^2)/(b - q)]*Sqrt
[1 + (2*c*x^2)/(b + q)])/Sqrt[a + b*x^2 + c*x^4], Int[(d + e*x^2)/(Sqrt[1 +
 (2*c*x^2)/(b - q)]*Sqrt[1 + (2*c*x^2)/(b + q)]), x], x]] /; FreeQ[{a, b, c
, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NegQ[c/a]
```

Rule 524

```
Int[((e_) + (f_.)*(x_)^(n_))/(Sqrt[(a_) + (b_.)*(x_)^(n_)]*Sqrt[(c_) + (d_.
)*(x_)^(n_)]), x_Symbol] :> Dist[f/b, Int[Sqrt[a + b*x^n]/Sqrt[c + d*x^n],
x], x] + Dist[(b*e - a*f)/b, Int[1/(Sqrt[a + b*x^n]*Sqrt[c + d*x^n]), x], x
] /; FreeQ[{a, b, c, d, e, f, n}, x] &&  !(EqQ[n, 2] && ((PosQ[b/a] && PosQ
[d/c]) || (NegQ[b/a] && (PosQ[d/c] || (GtQ[a, 0] && ( !GtQ[c, 0] || Simpler
```

```
SqrtQ[-(b/a), -(d/c)]))))))
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rubi steps

$$\int x^4 \left(a+b\sin^{-1}\left(c+dx^2\right)\right) dx = \frac{1}{5}x^5\left(a+b\sin^{-1}\left(c+dx^2\right)\right)-\frac{1}{5}b\int \frac{2dx^6}{\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$

$$= \frac{1}{5}x^5\left(a+b\sin^{-1}\left(c+dx^2\right)\right)-\frac{1}{5}(2bd)\int \frac{x^6}{\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$

$$= \frac{2bx^3\sqrt{1-c^2-2cdx^2-d^2x^4}}{25d}+\frac{1}{5}x^5\left(a+b\sin^{-1}\left(c+dx^2\right)\right)-\frac{(2b)\int \frac{x^2\left(3\left(1-c^2\right)-8cdx^2\right)}{\sqrt{1-c^2-2cdx^2-d^2x^4}}\,d}{25d}$$

$$= -\frac{16bcx\sqrt{1-c^2-2cdx^2-d^2x^4}}{75d^2}+\frac{2bx^3\sqrt{1-c^2-2cdx^2-d^2x^4}}{25d}+\frac{1}{5}x^5\left(a+b\sin^{-1}\left(c\right.\right.$$

$$= -\frac{16bcx\sqrt{1-c^2-2cdx^2-d^2x^4}}{75d^2}+\frac{2bx^3\sqrt{1-c^2-2cdx^2-d^2x^4}}{25d}+\frac{1}{5}x^5\left(a+b\sin^{-1}\left(c\right.\right.$$

$$= -\frac{16bcx\sqrt{1-c^2-2cdx^2-d^2x^4}}{75d^2}+\frac{2bx^3\sqrt{1-c^2-2cdx^2-d^2x^4}}{25d}+\frac{1}{5}x^5\left(a+b\sin^{-1}\left(c\right.\right.$$

$$= -\frac{16bcx\sqrt{1-c^2-2cdx^2-d^2x^4}}{75d^2}+\frac{2bx^3\sqrt{1-c^2-2cdx^2-d^2x^4}}{25d}+\frac{1}{5}x^5\left(a+b\sin^{-1}\left(c\right.\right.$$

Mathematica [F] time = 0.753176, size = 0, normalized size = 0.

$$\int x^4 \left(a + b\sin^{-1}\left(c + dx^2\right)\right) dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x^4*(a + b*ArcSin[c + d*x^2]),x]
```

```
[Out] Integrate[x^4*(a + b*ArcSin[c + d*x^2]), x]
```

Maple [A] time = 0.022, size = 346, normalized size = 1.

$$\frac{ax^5}{5} + b\left(\frac{x^5 \arcsin\left(dx^2 + c\right)}{5} - \frac{2d}{5}\left(-\frac{x^3}{5d^2}\sqrt{-d^2x^4 - 2cdx^2 - c^2 + 1} + \frac{8cx}{15d^3}\sqrt{-d^2x^4 - 2cdx^2 - c^2 + 1} - \frac{8c\left(-c^2 + 1\right)}{15d^3}\sqrt{1$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*arcsin(d*x^2+c)),x)
```

```
[Out] 1/5*a*x^5+b*(1/5*x^5*arcsin(d*x^2+c)-2/5*d*(-1/5/d^2*x^3*(-d^2*x^4-2*c*d*x^
2-c^2+1)^(1/2)+8/15*c/d^3*x*(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)-8/15*c/d^3*(-c
^2+1)/(-d/(-1+c))^(1/2)*(1+d/(-1+c)*x^2)^(1/2)*(1+d*x^2/(1+c))^(1/2)/(-d^2*
x^4-2*c*d*x^2-c^2+1)^(1/2)*EllipticF(x*(-d/(-1+c))^(1/2),(-1+2*c/(1+c))^(1/
2))-2*(1/5/d^2*(-3*c^2+3)+32/15*c^2/d^2)*(-c^2+1)/(-d/(-1+c))^(1/2)*(1+d/(-
1+c)*x^2)^(1/2)*(1+d*x^2/(1+c))^(1/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)/(-2*
c*d+2*d)*(EllipticF(x*(-d/(-1+c))^(1/2),(-1+2*c/(1+c))^(1/2))-EllipticE(x*(
-d/(-1+c))^(1/2),(-1+2*c/(1+c))^(1/2)))))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(d*x^2+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(bx^4 \arcsin\left(dx^2 + c\right) + ax^4, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(d*x^2+c)),x, algorithm="fricas")
```

```
[Out] integral(b*x^4*arcsin(d*x^2 + c) + a*x^4, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x^4 \left(a + b \,\text{asin}\left(c + dx^2\right)\right) \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*asin(d*x**2+c)),x)
```

```
[Out] Integral(x**4*(a + b*asin(c + d*x**2)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b \arcsin\left(dx^2 + c\right) + a\right)x^4 \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(d*x^2+c)),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + c) + a)*x^4, x)
```

3.394 $\int x^2 \left(a+b\sin^{-1}\left(c+dx^2\right)\right) dx$

Optimal. Leaf size=287

$$-\frac{2b\sqrt{1-c}(c+1)(3c+1)\sqrt{1-\frac{dx^2}{1-c}}\sqrt{\frac{dx^2}{c+1}+1}\,\text{EllipticF}\left(\sin^{-1}\left(\frac{\sqrt{d}x}{\sqrt{1-c}}\right),-\frac{1-c}{c+1}\right)}{9d^{3/2}\sqrt{-c^2-2cdx^2-d^2x^4+1}}+\frac{1}{3}x^3\left(a+b\sin^{-1}\left(c+dx^2\right)\right)+\frac{2bx\sqrt{-c^2-2\cdots}}{\cdots}$$

```
[Out] (2*b*x*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(9*d) + (x^3*(a + b*ArcSin[c +
d*x^2]))/3 + (8*b*Sqrt[1 - c]*c*(1 + c)*Sqrt[1 - (d*x^2)/(1 - c)]*Sqrt[1 +
(d*x^2)/(1 + c)]*EllipticE[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]], -((1 - c)/(1 +
c))])/(9*d^(3/2)*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4]) - (2*b*Sqrt[1 - c]*(1
 + c)*(1 + 3*c)*Sqrt[1 - (d*x^2)/(1 - c)]*Sqrt[1 + (d*x^2)/(1 + c)]*Ellipti
cF[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]], -((1 - c)/(1 + c))])/(9*d^(3/2)*Sqrt[1
- c^2 - 2*c*d*x^2 - d^2*x^4])
```

Rubi [A] time = 0.288101, antiderivative size = 287, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.438, Rules used = {4842, 12, 1122, 1202, 524, 424, 419}

$$\frac{1}{3}x^3\left(a+b\sin^{-1}\left(c+dx^2\right)\right)+\frac{2bx\sqrt{-c^2-2cdx^2-d^2x^4+1}}{9d}-\frac{2b\sqrt{1-c}(c+1)(3c+1)\sqrt{1-\frac{dx^2}{1-c}}\sqrt{\frac{dx^2}{c+1}+1}\,F\left(\sin^{-1}\left(\frac{\sqrt{d}x}{\sqrt{1-c}}\right)\middle|\cdots\right)}{9d^{3/2}\sqrt{-c^2-2cdx^2-d^2x^4+1}}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(a + b*ArcSin[c + d*x^2]),x]
```


```
[Out] (2*b*x*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(9*d) + (x^3*(a + b*ArcSin[c +
d*x^2]))/3 + (8*b*Sqrt[1 - c]*c*(1 + c)*Sqrt[1 - (d*x^2)/(1 - c)]*Sqrt[1 +
(d*x^2)/(1 + c)]*EllipticE[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]], -((1 - c)/(1 +
c))])/(9*d^(3/2)*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4]) - (2*b*Sqrt[1 - c]*(1
 + c)*(1 + 3*c)*Sqrt[1 - (d*x^2)/(1 - c)]*Sqrt[1 + (d*x^2)/(1 + c)]*Ellipti
cF[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]], -((1 - c)/(1 + c))])/(9*d^(3/2)*Sqrt[1
- c^2 - 2*c*d*x^2 - d^2*x^4])
```


Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
```

```
] && !FunctionOfQ[(c + d*x)^(m + 1), u, x] && !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1122

```
Int[((d_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_), x_Symbol]
 :> Simp[(d^3*(d*x)^(m - 3)*(a + b*x^2 + c*x^4)^(p + 1))/(c*(m + 4*p + 1)),
 x] - Dist[d^4/(c*(m + 4*p + 1)), Int[(d*x)^(m - 4)*Simp[a*(m - 3) + b*(m +
 2*p - 1)*x^2, x]*(a + b*x^2 + c*x^4)^p, x], x] /; FreeQ[{a, b, c, d, p}, x
] && NeQ[b^2 - 4*a*c, 0] && GtQ[m, 3] && NeQ[m + 4*p + 1, 0] && IntegerQ[2*
p] && (IntegerQ[p] || IntegerQ[m])
```

Rule 1202

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(Sqrt[1 + (2*c*x^2)/(b - q)]*Sqrt
[1 + (2*c*x^2)/(b + q)])/Sqrt[a + b*x^2 + c*x^4], Int[(d + e*x^2)/(Sqrt[1 +
 (2*c*x^2)/(b - q)]*Sqrt[1 + (2*c*x^2)/(b + q)]), x], x]] /; FreeQ[{a, b, c
, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NegQ[c/a]
```

Rule 524

```
Int[((e_) + (f_.)*(x_)^(n_))/(Sqrt[(a_) + (b_.)*(x_)^(n_)]*Sqrt[(c_) + (d_.
)*(x_)^(n_)]), x_Symbol] :> Dist[f/b, Int[Sqrt[a + b*x^n]/Sqrt[c + d*x^n],
x], x] + Dist[(b*e - a*f)/b, Int[1/(Sqrt[a + b*x^n]*Sqrt[c + d*x^n]), x], x
] /; FreeQ[{a, b, c, d, e, f, n}, x] && !(EqQ[n, 2] && ((PosQ[b/a] && PosQ
[d/c]) || (NegQ[b/a] && (PosQ[d/c] || (GtQ[a, 0] && ( !GtQ[c, 0] || Simpler
SqrtQ[-(b/a), -(d/c)]))))))
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
```

```
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rubi steps

$$\int x^2 \left(a+b\sin^{-1}\left(c+dx^2\right)\right) dx = \frac{1}{3}x^3\left(a+b\sin^{-1}\left(c+dx^2\right)\right)-\frac{1}{3}b\int \frac{2dx^4}{\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$

$$= \frac{1}{3}x^3\left(a+b\sin^{-1}\left(c+dx^2\right)\right)-\frac{1}{3}(2bd)\int \frac{x^4}{\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$

$$= \frac{2bx\sqrt{1-c^2-2cdx^2-d^2x^4}}{9d}+\frac{1}{3}x^3\left(a+b\sin^{-1}\left(c+dx^2\right)\right)-\frac{(2b)\int \frac{1-c^2-4cdx^2}{\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx}{9d}$$

$$= \frac{2bx\sqrt{1-c^2-2cdx^2-d^2x^4}}{9d}+\frac{1}{3}x^3\left(a+b\sin^{-1}\left(c+dx^2\right)\right)-\frac{\left(2b\sqrt{1-\frac{2d^2x^2}{-2d-2cd}}\sqrt{1-\frac{2d^2x^2}{2d-2\cdots}}\cdots\right.}{9d\sqrt{1-c^2-\cdots}}$$

$$= \frac{2bx\sqrt{1-c^2-2cdx^2-d^2x^4}}{9d}+\frac{1}{3}x^3\left(a+b\sin^{-1}\left(c+dx^2\right)\right)+\frac{\left(8bc(1+c)\sqrt{1-\frac{2d^2x^2}{-2d-2cd}}\sqrt{\cdots}\right.}{9d\sqrt{1-c^2-\cdots}}$$

$$= \frac{2bx\sqrt{1-c^2-2cdx^2-d^2x^4}}{9d}+\frac{1}{3}x^3\left(a+b\sin^{-1}\left(c+dx^2\right)\right)+\frac{8b\sqrt{1-c}c(1+c)\sqrt{1-\frac{dx^2}{1-c}}\cdots}{9d^{3/2}\sqrt{1-\cdots}}$$

Mathematica [F] time = 0.573444, size = 0, normalized size = 0.

$$\int x^2\left(a+b\sin^{-1}\left(c+dx^2\right)\right) dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x^2*(a + b*ArcSin[c + d*x^2]),x]
```

```
[Out] Integrate[x^2*(a + b*ArcSin[c + d*x^2]), x]
```

Maple [A] time = 0.01, size = 295, normalized size = 1.

$$\frac{x^3a}{3}+b\left(\frac{x^3\arcsin\left(dx^2+c\right)}{3}-\frac{2d}{3}\left(-\frac{x}{3d^2}\sqrt{-d^2x^4-2cdx^2-c^2+1}+\frac{-c^2+1}{3d^2}\sqrt{1+\frac{dx^2}{-1+c}}\sqrt{1+\frac{dx^2}{1+c}}\mathrm{EllipticF}\left(x\sqrt{-\cdots}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(d*x^2+c)),x)
```

```
[Out] 1/3*x^3*a+b*(1/3*x^3*arcsin(d*x^2+c)-2/3*d*(-1/3/d^2*x*(-d^2*x^4-2*c*d*x^2-
c^2+1)^(1/2)+1/3/d^2*(-c^2+1)/(-d/(-1+c))^(1/2)*(1+d/(-1+c)*x^2)^(1/2)*(1+d
*x^2/(1+c))^(1/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)*EllipticF(x*(-d/(-1+c))^
(1/2),(-1+2*c/(1+c))^(1/2))+8/3*c/d*(-c^2+1)/(-d/(-1+c))^(1/2)*(1+d/(-1+c)*
x^2)^(1/2)*(1+d*x^2/(1+c))^(1/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)/(-2*c*d+2
*d)*(EllipticF(x*(-d/(-1+c))^(1/2),(-1+2*c/(1+c))^(1/2))-EllipticE(x*(-d/(-
1+c))^(1/2),(-1+2*c/(1+c))^(1/2)))))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(d*x^2+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(bx^2\arcsin\left(dx^2+c\right)+ax^2,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(d*x^2+c)),x, algorithm="fricas")
```

```
[Out] integral(b*x^2*arcsin(d*x^2 + c) + a*x^2, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x^2\left(a+b\operatorname{asin}\left(c+dx^2\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(d*x**2+c)),x)
```

```
[Out] Integral(x**2*(a + b*asin(c + d*x**2)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b \arcsin \left(dx^2 + c\right) + a\right)x^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(d*x^2+c)),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + c) + a)*x^2, x)
```

3.395 $\int \left(a+b\sin^{-1}\left(c+dx^2\right)\right)\,dx$

Optimal. Leaf size=237

$$\frac{2b\sqrt{1-c}(c+1)\sqrt{1-\frac{dx^2}{1-c}}\sqrt{\frac{dx^2}{c+1}+1}\text{EllipticF}\left(\sin^{-1}\left(\frac{\sqrt{d}x}{\sqrt{1-c}}\right),-\frac{1-c}{c+1}\right)}{\sqrt{d}\sqrt{-c^2-2cdx^2-d^2x^4+1}}+ax-\frac{2b\sqrt{1-c}(c+1)\sqrt{1-\frac{dx^2}{1-c}}\sqrt{\frac{dx^2}{c+1}+1}E\left(\sin^{-1}\left(\right.\right.}{\sqrt{d}\sqrt{-c^2-2cdx^2-d^2x^4+1}}$$

```
[Out] a*x + b*x*ArcSin[c + d*x^2] - (2*b*Sqrt[1 - c]*(1 + c)*Sqrt[1 - (d*x^2)/(1
- c)]*Sqrt[1 + (d*x^2)/(1 + c)]*EllipticE[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]],
-((1 - c)/(1 + c))])/(Sqrt[d]*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4]) + (2*b*S
qrt[1 - c]*(1 + c)*Sqrt[1 - (d*x^2)/(1 - c)]*Sqrt[1 + (d*x^2)/(1 + c)]*Elli
pticF[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]], -((1 - c)/(1 + c))])/(Sqrt[d]*Sqrt[1
 - c^2 - 2*c*d*x^2 - d^2*x^4])
```

Rubi [A] time = 0.223165, antiderivative size = 237, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {4840, 12, 1140, 493, 424, 419}

$$ax+\frac{2b\sqrt{1-c}(c+1)\sqrt{1-\frac{dx^2}{1-c}}\sqrt{\frac{dx^2}{c+1}+1}F\left(\sin^{-1}\left(\frac{\sqrt{d}x}{\sqrt{1-c}}\right)|-\frac{1-c}{c+1}\right)}{\sqrt{d}\sqrt{-c^2-2cdx^2-d^2x^4+1}}-\frac{2b\sqrt{1-c}(c+1)\sqrt{1-\frac{dx^2}{1-c}}\sqrt{\frac{dx^2}{c+1}+1}E\left(\sin^{-1}\left(\frac{\sqrt{d}x}{\sqrt{1-c}}\right)|-\right.}{\sqrt{d}\sqrt{-c^2-2cdx^2-d^2x^4+1}}$$

Antiderivative was successfully verified.

```
[In] Int[a + b*ArcSin[c + d*x^2],x]
```

```
[Out] a*x + b*x*ArcSin[c + d*x^2] - (2*b*Sqrt[1 - c]*(1 + c)*Sqrt[1 - (d*x^2)/(1
- c)]*Sqrt[1 + (d*x^2)/(1 + c)]*EllipticE[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]],
-((1 - c)/(1 + c))])/(Sqrt[d]*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4]) + (2*b*S
qrt[1 - c]*(1 + c)*Sqrt[1 - (d*x^2)/(1 - c)]*Sqrt[1 + (d*x^2)/(1 + c)]*Elli
pticF[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]], -((1 - c)/(1 + c))])/(Sqrt[d]*Sqrt[1
 - c^2 - 2*c*d*x^2 - d^2*x^4])
```

Rule 4840

```
Int[ArcSin[u_], x_Symbol] :> Simp[x*ArcSin[u], x] - Int[SimplifyIntegrand[(
x*D[u, x])/Sqrt[1 - u^2], x], x] /; InverseFunctionFreeQ[u, x] && !Functio
nOfExponentialQ[u, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1140

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Dist[(Sqrt[1 + (2*c*x^2)/(b - q)]*Sqrt[1 + (2*c*x^2)/
(b + q)])/Sqrt[a + b*x^2 + c*x^4], Int[x^2/(Sqrt[1 + (2*c*x^2)/(b - q)]*Sqr
t[1 + (2*c*x^2)/(b + q)]), x], x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2 - 4*a*
c, 0] && NegQ[c/a]
```

Rule 493

```
Int[(x_)^(n_)/(Sqrt[(a_) + (b_.)*(x_)^(n_)]*Sqrt[(c_) + (d_.)*(x_)^(n_)]),
x_Symbol] :> Dist[1/b, Int[Sqrt[a + b*x^n]/Sqrt[c + d*x^n], x], x] - Dist[a
/b, Int[1/(Sqrt[a + b*x^n]*Sqrt[c + d*x^n]), x], x] /; FreeQ[{a, b, c, d},
x] && NeQ[b*c - a*d, 0] && (EqQ[n, 2] || EqQ[n, 4]) &&  !(EqQ[n, 2] && Simp
lerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rubi steps

$$\int \left(a+b\sin^{-1}\left(c+dx^2\right)\right)dx = ax+b\int \sin^{-1}\left(c+dx^2\right)dx$$
$$= ax+bx\sin^{-1}\left(c+dx^2\right)-b\int \frac{2dx^2}{\sqrt{1-c^2-2cdx^2-d^2x^4}}dx$$
$$= ax+bx\sin^{-1}\left(c+dx^2\right)-(2bd)\int \frac{x^2}{\sqrt{1-c^2-2cdx^2-d^2x^4}}dx$$
$$= ax+bx\sin^{-1}\left(c+dx^2\right)-\frac{\left(2bd\sqrt{1-\frac{2d^2x^2}{-2d-2cd}}\sqrt{1-\frac{2d^2x^2}{2d-2cd}}\right)\int \frac{x^2}{\sqrt{1-\frac{2d^2x^2}{-2d-2cd}}\sqrt{1-\frac{2d^2x^2}{2d-2cd}}}dx}{\sqrt{1-c^2-2cdx^2-d^2x^4}}$$
$$= ax+bx\sin^{-1}\left(c+dx^2\right)+\frac{\left(2b(1+c)\sqrt{1-\frac{2d^2x^2}{-2d-2cd}}\sqrt{1-\frac{2d^2x^2}{2d-2cd}}\right)\int \frac{1}{\sqrt{1-\frac{2d^2x^2}{-2d-2cd}}\sqrt{1-\frac{2d^2x^2}{2d-2cd}}}dx}{\sqrt{1-c^2-2cdx^2-d^2x^4}}$$
$$= ax+bx\sin^{-1}\left(c+dx^2\right)-\frac{2b\sqrt{1-c}(1+c)\sqrt{1-\frac{dx^2}{1-c}}\sqrt{1+\frac{dx^2}{1+c}}E\left(\sin^{-1}\left(\frac{\sqrt{d}x}{\sqrt{1-c}}\right)|-\frac{1-c}{1+c}\right)}{\sqrt{d}\sqrt{1-c^2-2cdx^2-d^2x^4}}+\cdots$$

Mathematica [C] time = 0.141284, size = 155, normalized size = 0.65

$$\frac{2ib(c-1)\sqrt{\frac{c+dx^2-1}{c-1}}\sqrt{\frac{c+dx^2+1}{c+1}}\left(E\left(i\sinh^{-1}\left(\sqrt{\frac{d}{c+1}}x\right)|\frac{c+1}{c-1}\right)-\text{EllipticF}\left(i\sinh^{-1}\left(x\sqrt{\frac{d}{c+1}}\right),\frac{c+1}{c-1}\right)\right)}{\sqrt{\frac{d}{c+1}}\sqrt{-c^2-2cdx^2-d^2x^4+1}}+ax+bx\sin^{-1}\left(c+dx^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*ArcSin[c + d*x^2],x]
```

```
[Out] a*x + b*x*ArcSin[c + d*x^2] + ((2*I)*b*(-1 + c)*Sqrt[(-1 + c + d*x^2)/(-1 +
 c)]*Sqrt[(1 + c + d*x^2)/(1 + c)]*(EllipticE[I*ArcSinh[Sqrt[d/(1 + c)]*x],
 (1 + c)/(-1 + c)] - EllipticF[I*ArcSinh[Sqrt[d/(1 + c)]*x], (1 + c)/(-1 +
c)]))/(Sqrt[d/(1 + c)]*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])
```

Maple [A] time = 0.009, size = 153, normalized size = 0.7

$$ax+b\left(x\arcsin\left(dx^2+c\right)+4\frac{d\left(-c^2+1\right)}{\sqrt{-d^2x^4-2\,cdx^2-c^2+1}\,(-2\,dc+2\,d)}\sqrt{1+\frac{dx^2}{-1+c}}\sqrt{1+\frac{dx^2}{1+c}}\left(\text{EllipticF}\left(x\sqrt{-\frac{d}{-1+c}}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a+b*arcsin(d*x^2+c),x)
```

```
[Out] a*x+b*(x*arcsin(d*x^2+c)+4*d*(-c^2+1)/(-d/(-1+c))^(1/2)*(1+d/(-1+c)*x^2)^(1
/2)*(1+d*x^2/(1+c))^(1/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)/(-2*c*d+2*d)*(El
lipticF(x*(-d/(-1+c))^(1/2),(-1+2*c/(1+c))^(1/2))-EllipticE(x*(-d/(-1+c))^(
1/2),(-1+2*c/(1+c))^(1/2))))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(d*x^2+c),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(b\arcsin\left(dx^2+c\right)+a,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(d*x^2+c),x, algorithm="fricas")
```

```
[Out] integral(b*arcsin(d*x^2 + c) + a, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\left(a+b\,\mathrm{asin}\left(c+dx^2\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*asin(d*x**2+c),x)
```

```
[Out] Integral(a + b*asin(c + d*x**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int b \arcsin\left(dx^2 + c\right) + a\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(d*x^2+c),x, algorithm="giac")
```

```
[Out] integrate(b*arcsin(d*x^2 + c) + a, x)
```

3.396 $\int \frac{a+b\sin^{-1}(c+dx^2)}{x^2}\,dx$

Optimal. Leaf size=126

$$\frac{2b\sqrt{1-c}\sqrt{d}\sqrt{1-\frac{dx^2}{1-c}}\sqrt{\frac{dx^2}{c+1}+1}\text{EllipticF}\left(\sin^{-1}\left(\frac{\sqrt{d}x}{\sqrt{1-c}}\right),-\frac{1-c}{c+1}\right)}{\sqrt{-c^2-2cdx^2-d^2x^4+1}}-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{x}$$

```
[Out] -((a + b*ArcSin[c + d*x^2])/x) + (2*b*Sqrt[1 - c]*Sqrt[d]*Sqrt[1 - (d*x^2)/
(1 - c)]*Sqrt[1 + (d*x^2)/(1 + c)]*EllipticF[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]
], -((1 - c)/(1 + c))])/Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4]
```

Rubi [A] time = 0.0764169, antiderivative size = 126, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {4842, 12, 1104, 419}

$$\frac{2b\sqrt{1-c}\sqrt{d}\sqrt{1-\frac{dx^2}{1-c}}\sqrt{\frac{dx^2}{c+1}+1}F\left(\sin^{-1}\left(\frac{\sqrt{d}x}{\sqrt{1-c}}\right)|-\frac{1-c}{c+1}\right)}{\sqrt{-c^2-2cdx^2-d^2x^4+1}}-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{x}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x^2])/x^2,x]
```

```
[Out] -((a + b*ArcSin[c + d*x^2])/x) + (2*b*Sqrt[1 - c]*Sqrt[d]*Sqrt[1 - (d*x^2)/
(1 - c)]*Sqrt[1 + (d*x^2)/(1 + c)]*EllipticF[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]
], -((1 - c)/(1 + c))])/Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4]
```

Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1104

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Dist[(Sqrt[1 + (2*c*x^2)/(b - q)]*Sqrt[1 + (2*c*x^2)/(b +
q)])/Sqrt[a + b*x^2 + c*x^4], Int[1/(Sqrt[1 + (2*c*x^2)/(b - q)]*Sqrt[1 + (
2*c*x^2)/(b + q)]), x], x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] &
& NegQ[c/a]
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}\left(c+dx^2\right)}{x^2}\,dx &= -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{x}+b\int \frac{2d}{\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx\\
&= -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{x}+(2bd)\int \frac{1}{\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx\\
&= -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{x}+\frac{\left(2bd\sqrt{1-\frac{2d^2x^2}{-2d-2cd}}\sqrt{1-\frac{2d^2x^2}{2d-2cd}}\right)\int \frac{1}{\sqrt{1-\frac{2d^2x^2}{-2d-2cd}}\sqrt{1-\frac{2d^2x^2}{2d-2cd}}}\,dx}{\sqrt{1-c^2-2cdx^2-d^2x^4}}\\
&= -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{x}+\frac{2b\sqrt{1-c}\sqrt{d}\sqrt{1-\frac{dx^2}{1-c}}\sqrt{1+\frac{dx^2}{1+c}}F\left(\sin^{-1}\left(\frac{\sqrt{d}x}{\sqrt{1-c}}\right)\middle|-\frac{1-c}{1+c}\right)}{\sqrt{1-c^2-2cdx^2-d^2x^4}}
\end{aligned}$$

Mathematica [C] time = 0.230253, size = 140, normalized size = 1.11

$$-\frac{2ibd\sqrt{1-\frac{dx^2}{-c-1}}\sqrt{1-\frac{dx^2}{1-c}}\text{EllipticF}\left(i\sinh^{-1}\left(x\sqrt{-\frac{d}{-c-1}}\right),\frac{-c-1}{1-c}\right)}{\sqrt{-\frac{d}{-c-1}}\sqrt{-c^2-2cdx^2-d^2x^4+1}}-\frac{a}{x}-\frac{b\sin^{-1}\left(c+dx^2\right)}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x^2])/x^2,x]
```

```
[Out] -(a/x) - (b*ArcSin[c + d*x^2])/x - ((2*I)*b*d*Sqrt[1 - (d*x^2)/(-1 - c)]*Sq
rt[1 - (d*x^2)/(1 - c)]*EllipticF[I*ArcSinh[Sqrt[-(d/(-1 - c))]*x], (-1 - c
```

```
)/(1 - c)])/(Sqrt[-(d/(-1 - c))]*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])
```

Maple [A] time = 0.01, size = 114, normalized size = 0.9

$$-\frac{a}{x}+b\left(-\frac{\arcsin\left(dx^2+c\right)}{x}+2\frac{d}{\sqrt{-d^2x^4-2\,cdx^2-c^2+1}}\sqrt{1+\frac{dx^2}{-1+c}}\sqrt{1+\frac{dx^2}{1+c}}\mathrm{EllipticF}\left(x\sqrt{-\frac{d}{-1+c}},\sqrt{-1+2\frac{c}{1+}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+c))/x^2,x)
```

```
[Out] -a/x+b*(-1/x*arcsin(d*x^2+c)+2*d/(-d/(-1+c))^(1/2)*(1+d/(-1+c)*x^2)^(1/2)*(
1+d*x^2/(1+c))^(1/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)*EllipticF(x*(-d/(-1+c
))^(1/2),(-1+2*c/(1+c))^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b\arcsin\left(dx^2+c\right)+a}{x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^2,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(d*x^2 + c) + a)/x^2, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a + b \operatorname{asin}\left(c + dx^2\right)}{x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+c))/x**2,x)
```

```
[Out] Integral((a + b*asin(c + d*x**2))/x**2, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \arcsin\left(dx^2 + c\right) + a}{x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + c) + a)/x^2, x)
```

3.397 $\int \frac{a+b\sin^{-1}(c+dx^2)}{x^4}\,dx$

Optimal. Leaf size=284

$$\frac{2bd^{3/2}\sqrt{1-\frac{dx^2}{1-c}}\sqrt{\frac{dx^2}{c+1}+1}\text{EllipticF}\left(\sin^{-1}\left(\frac{\sqrt{d}x}{\sqrt{1-c}}\right),-\frac{1-c}{c+1}\right)}{3\sqrt{1-c}\sqrt{-c^2-2cdx^2-d^2x^4+1}}-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{3x^3}-\frac{2bd\sqrt{-c^2-2cdx^2-d^2x^4+1}}{3\left(1-c^2\right)x}-\frac{2bd^{3/2}$$

```
[Out] (-2*b*d*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(3*(1 - c^2)*x) - (a + b*ArcSi
n[c + d*x^2])/(3*x^3) - (2*b*d^(3/2)*Sqrt[1 - (d*x^2)/(1 - c)]*Sqrt[1 + (d*
x^2)/(1 + c)]*EllipticE[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]], -((1 - c)/(1 + c))
])/(3*Sqrt[1 - c]*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4]) + (2*b*d^(3/2)*Sqrt[
1 - (d*x^2)/(1 - c)]*Sqrt[1 + (d*x^2)/(1 + c)]*EllipticF[ArcSin[(Sqrt[d]*x)
/Sqrt[1 - c]], -((1 - c)/(1 + c))])/(3*Sqrt[1 - c]*Sqrt[1 - c^2 - 2*c*d*x^2
 - d^2*x^4])
```

Rubi [A] time = 0.253468, antiderivative size = 284, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.438, Rules used = {4842, 12, 1123, 1140, 493, 424, 419}

$$-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{3x^3}-\frac{2bd\sqrt{-c^2-2cdx^2-d^2x^4+1}}{3\left(1-c^2\right)x}+\frac{2bd^{3/2}\sqrt{1-\frac{dx^2}{1-c}}\sqrt{\frac{dx^2}{c+1}+1}F\left(\sin^{-1}\left(\frac{\sqrt{d}x}{\sqrt{1-c}}\right)|-\frac{1-c}{c+1}\right)}{3\sqrt{1-c}\sqrt{-c^2-2cdx^2-d^2x^4+1}}-\frac{2bd^{3/2}\sqrt{1-}{3\sqrt{1}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x^2])/x^4,x]
```


```
[Out] (-2*b*d*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(3*(1 - c^2)*x) - (a + b*ArcSi
n[c + d*x^2])/(3*x^3) - (2*b*d^(3/2)*Sqrt[1 - (d*x^2)/(1 - c)]*Sqrt[1 + (d*
x^2)/(1 + c)]*EllipticE[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]], -((1 - c)/(1 + c))
])/(3*Sqrt[1 - c]*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4]) + (2*b*d^(3/2)*Sqrt[
1 - (d*x^2)/(1 - c)]*Sqrt[1 + (d*x^2)/(1 + c)]*EllipticF[ArcSin[(Sqrt[d]*x)
/Sqrt[1 - c]], -((1 - c)/(1 + c))])/(3*Sqrt[1 - c]*Sqrt[1 - c^2 - 2*c*d*x^2
 - d^2*x^4])
```


Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
```

```
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1123

```
Int[((d_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*x^2 + c*x^4)^(p + 1))/(a*d*(m + 1)), x] - Dis
t[1/(a*d^2*(m + 1)), Int[(d*x)^(m + 2)*(b*(m + 2*p + 3) + c*(m + 4*p + 5)*x
^2)*(a + b*x^2 + c*x^4)^p, x], x] /; FreeQ[{a, b, c, d, p}, x] && NeQ[b^2 -
 4*a*c, 0] && LtQ[m, -1] && IntegerQ[2*p] && (IntegerQ[p] || IntegerQ[m])
```

Rule 1140

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Dist[(Sqrt[1 + (2*c*x^2)/(b - q)]*Sqrt[1 + (2*c*x^2)/
(b + q)])/Sqrt[a + b*x^2 + c*x^4], Int[x^2/(Sqrt[1 + (2*c*x^2)/(b - q)]*Sqr
t[1 + (2*c*x^2)/(b + q)]), x], x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2 - 4*a*
c, 0] && NegQ[c/a]
```

Rule 493

```
Int[(x_)^(n_)/(Sqrt[(a_) + (b_.)*(x_)^(n_)]*Sqrt[(c_) + (d_.)*(x_)^(n_)]),
x_Symbol] :> Dist[1/b, Int[Sqrt[a + b*x^n]/Sqrt[c + d*x^n], x], x] - Dist[a
/b, Int[1/(Sqrt[a + b*x^n]*Sqrt[c + d*x^n]), x], x] /; FreeQ[{a, b, c, d},
x] && NeQ[b*c - a*d, 0] && (EqQ[n, 2] || EqQ[n, 4]) &&  !(EqQ[n, 2] && Simp
lerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
```

```
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rubi steps

$$\int \frac{a+b\sin^{-1}\left(c+dx^2\right)}{x^4}\,dx = -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{3x^3}+\frac{1}{3}b\int \frac{2d}{x^2\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$
$$= -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{3x^3}+\frac{1}{3}(2bd)\int \frac{1}{x^2\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$
$$= -\frac{2bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{3\left(1-c^2\right)x}-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{3x^3}-\frac{(2bd)\int \frac{d^2x^2}{\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx}{3\left(1-c^2\right)}$$
$$= -\frac{2bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{3\left(1-c^2\right)x}-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{3x^3}-\frac{\left(2bd^3\right)\int \frac{x^2}{\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx}{3\left(1-c^2\right)}$$
$$= -\frac{2bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{3\left(1-c^2\right)x}-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{3x^3}-\frac{\left(2bd^3\sqrt{1-\frac{2d^2x^2}{-2d-2cd}}\sqrt{1-\frac{2d^2x^2}{2d-2cd}}\right)\int -}{3\left(1-c^2\right)\sqrt{1-c^2-2cd}}$$
$$= -\frac{2bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{3\left(1-c^2\right)x}-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{3x^3}+\frac{\left(2b(1+c)d^2\sqrt{1-\frac{2d^2x^2}{-2d-2cd}}\sqrt{1-\frac{2d^2x}{2d-2}}\right.}{3\left(1-c^2\right)\sqrt{1-c^2-}}$$
$$= -\frac{2bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{3\left(1-c^2\right)x}-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{3x^3}-\frac{2bd^{3/2}\sqrt{1-\frac{dx^2}{1-c}}\sqrt{1+\frac{dx^2}{1+c}}E\left(\sin^{-1}\left(\right.\right.}{3\sqrt{1-c}\sqrt{1-c^2-2cdx^2-}}$$

Mathematica [C] time = 0.396864, size = 243, normalized size = 0.86

$$\frac{2ib(1-c)d^2\sqrt{1-\frac{dx^2}{-c-1}}\sqrt{1-\frac{dx^2}{1-c}}\left(E\left(i\sinh^{-1}\left(\sqrt{-\frac{d}{-c-1}}x\right)|\frac{-c-1}{1-c}\right)-\text{EllipticF}\left(i\sinh^{-1}\left(x\sqrt{-\frac{d}{-c-1}}\right),\frac{-c-1}{1-c}\right)\right)}{3(c-1)(c+1)\sqrt{-\frac{d}{-c-1}}\sqrt{-c^2-2cdx^2-d^2x^4+1}}-\frac{a}{3x^3}+\frac{2bd\sqrt{-}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x^2])/x^4,x]
```

```
[Out] -a/(3*x^3) + (2*b*d*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(3*(-1 + c^2)*x) -
 (b*ArcSin[c + d*x^2])/(3*x^3) + (((2*I)/3)*b*(1 - c)*d^2*Sqrt[1 - (d*x^2)/
```

```
(-1 - c)]*Sqrt[1 - (d*x^2)/(1 - c)]*(EllipticE[I*ArcSinh[Sqrt[-(d/(-1 - c))
]*x], (-1 - c)/(1 - c)] - EllipticF[I*ArcSinh[Sqrt[-(d/(-1 - c))]*x], (-1 -
 c)/(1 - c)]))/((-1 + c)*(1 + c)*Sqrt[-(d/(-1 - c))]*Sqrt[1 - c^2 - 2*c*d*x
^2 - d^2*x^4])
```

Maple [A] time = 0.013, size = 207, normalized size = 0.7

$$-\frac{a}{3x^3}+b\left(-\frac{\arcsin\left(dx^2+c\right)}{3x^3}+\frac{2d}{3}\left(\frac{1}{\left(c^2-1\right)x}\sqrt{-d^2x^4-2cdx^2-c^2+1}-2\frac{d^2\left(-c^2+1\right)}{\left(c^2-1\right)\sqrt{-d^2x^4-2cdx^2-c^2+1}\left(-2dc+\right.}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+c))/x^4,x)
```

```
[Out] -1/3*a/x^3+b*(-1/3/x^3*arcsin(d*x^2+c)+2/3*d*(1/(c^2-1)*(-d^2*x^4-2*c*d*x^2
-c^2+1)^(1/2)/x-2*d^2/(c^2-1)*(-c^2+1)/(-d/(-1+c))^(1/2)*(1+d/(-1+c)*x^2)^(
1/2)*(1+d*x^2/(1+c))^(1/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)/(-2*c*d+2*d)*(E
llipticF(x*(-d/(-1+c))^(1/2),(-1+2*c/(1+c))^(1/2))-EllipticE(x*(-d/(-1+c))^
(1/2),(-1+2*c/(1+c))^(1/2)))))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\arcsin\left(dx^2+c\right)+a}{x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^4,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(d*x^2 + c) + a)/x^4, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a + b \operatorname{asin}\left(c + dx^2\right)}{x^4}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+c))/x**4,x)
```

```
[Out] Integral((a + b*asin(c + d*x**2))/x**4, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \arcsin\left(dx^2 + c\right) + a}{x^4}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^4,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + c) + a)/x^4, x)
```

3.398 $\int \frac{a+b\sin^{-1}\left(c+dx^2\right)}{x^6}\,dx$

Optimal. Leaf size=355

$$\frac{2b(3c+1)d^{5/2}\sqrt{1-\frac{dx^2}{1-c}}\sqrt{\frac{dx^2}{c+1}+1}\,\text{EllipticF}\left(\sin^{-1}\left(\frac{\sqrt{d}x}{\sqrt{1-c}}\right),-\frac{1-c}{c+1}\right)}{15\sqrt{1-c}\left(1-c^2\right)\sqrt{-c^2-2cdx^2-d^2x^4+1}}-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{5x^5}-\frac{8bcd^2\sqrt{-c^2-2cdx^2-d^2x^4+}}{15\left(1-c^2\right)^2x}$$

```
[Out] (-2*b*d*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(15*(1 - c^2)*x^3) - (8*b*c*d^
2*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(15*(1 - c^2)^2*x) - (a + b*ArcSin[c
 + d*x^2])/(5*x^5) - (8*b*c*d^(5/2)*Sqrt[1 - (d*x^2)/(1 - c)]*Sqrt[1 + (d*x
^2)/(1 + c)]*EllipticE[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]], -((1 - c)/(1 + c))]
)/(15*Sqrt[1 - c]*(1 - c^2)*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4]) + (2*b*(1
+ 3*c)*d^(5/2)*Sqrt[1 - (d*x^2)/(1 - c)]*Sqrt[1 + (d*x^2)/(1 + c)]*Elliptic
F[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]], -((1 - c)/(1 + c))])/(15*Sqrt[1 - c]*(1
- c^2)*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])
```

Rubi [A] time = 0.356087, antiderivative size = 355, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {4842, 12, 1123, 1281, 1202, 524, 424, 419}

$$-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{5x^5}-\frac{8bcd^2\sqrt{-c^2-2cdx^2-d^2x^4+1}}{15\left(1-c^2\right)^2x}-\frac{2bd\sqrt{-c^2-2cdx^2-d^2x^4+1}}{15\left(1-c^2\right)x^3}+\frac{2b(3c+1)d^{5/2}\sqrt{1-\frac{dx^2}{1-c}}\sqrt{\frac{dx^2}{c+1}}}{15\sqrt{1-c}\left(1-c^2\right)\sqrt{-c}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x^2])/x^6,x]
```


```
[Out] (-2*b*d*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(15*(1 - c^2)*x^3) - (8*b*c*d^
2*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(15*(1 - c^2)^2*x) - (a + b*ArcSin[c
 + d*x^2])/(5*x^5) - (8*b*c*d^(5/2)*Sqrt[1 - (d*x^2)/(1 - c)]*Sqrt[1 + (d*x
^2)/(1 + c)]*EllipticE[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]], -((1 - c)/(1 + c))]
)/(15*Sqrt[1 - c]*(1 - c^2)*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4]) + (2*b*(1
+ 3*c)*d^(5/2)*Sqrt[1 - (d*x^2)/(1 - c)]*Sqrt[1 + (d*x^2)/(1 + c)]*Elliptic
F[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]], -((1 - c)/(1 + c))])/(15*Sqrt[1 - c]*(1
- c^2)*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])
```


Rule 4842

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcSin[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/Sqrt[1 - u^2], x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1123

```
Int[((d_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*x^2 + c*x^4)^(p + 1))/(a*d*(m + 1)), x] - Dis
t[1/(a*d^2*(m + 1)), Int[(d*x)^(m + 2)*(b*(m + 2*p + 3) + c*(m + 4*p + 5)*x
^2)*(a + b*x^2 + c*x^4)^p, x], x] /; FreeQ[{a, b, c, d, p}, x] && NeQ[b^2 -
 4*a*c, 0] && LtQ[m, -1] && IntegerQ[2*p] && (IntegerQ[p] || IntegerQ[m])
```

Rule 1281

```
Int[((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_)^2)*((a_) + (b_.)*(x_)^2 + (c_.)*(
x_)^4)^(p_), x_Symbol] :> Simp[(d*(f*x)^(m + 1)*(a + b*x^2 + c*x^4)^(p + 1)
)/(a*f*(m + 1)), x] + Dist[1/(a*f^2*(m + 1)), Int[(f*x)^(m + 2)*(a + b*x^2
+ c*x^4)^p*Simp[a*e*(m + 1) - b*d*(m + 2*p + 3) - c*d*(m + 4*p + 5)*x^2, x]
, x], x] /; FreeQ[{a, b, c, d, e, f, p}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[m
, -1] && IntegerQ[2*p] && (IntegerQ[p] || IntegerQ[m])
```

Rule 1202

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(Sqrt[1 + (2*c*x^2)/(b - q)]*Sqrt
[1 + (2*c*x^2)/(b + q)])/Sqrt[a + b*x^2 + c*x^4], Int[(d + e*x^2)/(Sqrt[1 +
 (2*c*x^2)/(b - q)]*Sqrt[1 + (2*c*x^2)/(b + q)]), x], x]] /; FreeQ[{a, b, c
, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NegQ[c/a]
```

Rule 524

```
Int[((e_) + (f_.)*(x_)^(n_))/(Sqrt[(a_) + (b_.)*(x_)^(n_)]*Sqrt[(c_) + (d_.
)*(x_)^(n_)]), x_Symbol] :> Dist[f/b, Int[Sqrt[a + b*x^n]/Sqrt[c + d*x^n],
x], x] + Dist[(b*e - a*f)/b, Int[1/(Sqrt[a + b*x^n]*Sqrt[c + d*x^n]), x], x
] /; FreeQ[{a, b, c, d, e, f, n}, x] &&  !(EqQ[n, 2] && ((PosQ[b/a] && PosQ
[d/c]) || (NegQ[b/a] && (PosQ[d/c] || (GtQ[a, 0] && ( !GtQ[c, 0] || Simpler
```

```
SqrtQ[-(b/a), -(d/c)]))))))
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rubi steps

$$\int \frac{a+b\sin^{-1}\left(c+dx^2\right)}{x^6}\,dx = -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{5x^5}+\frac{1}{5}b\int \frac{2d}{x^4\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$

$$= -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{5x^5}+\frac{1}{5}(2bd)\int \frac{1}{x^4\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$

$$= -\frac{2bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{15\left(1-c^2\right)x^3}-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{5x^5}+\frac{(2bd)\int \frac{4cd+d^2x^2}{x^2\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx}{15\left(1-c^2\right)}$$

$$= -\frac{2bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{15\left(1-c^2\right)x^3}-\frac{8bcd^2\sqrt{1-c^2-2cdx^2-d^2x^4}}{15\left(1-c^2\right)^2x}-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{5x^5}-\frac{(2\cdots}{\cdots}$$

$$= -\frac{2bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{15\left(1-c^2\right)x^3}-\frac{8bcd^2\sqrt{1-c^2-2cdx^2-d^2x^4}}{15\left(1-c^2\right)^2x}-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{5x^5}-\frac{\left(2\cdots\right.}{\cdots}$$

$$= -\frac{2bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{15\left(1-c^2\right)x^3}-\frac{8bcd^2\sqrt{1-c^2-2cdx^2-d^2x^4}}{15\left(1-c^2\right)^2x}-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{5x^5}-\frac{\left(8\cdots\right.}{\cdots}$$

$$= -\frac{2bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{15\left(1-c^2\right)x^3}-\frac{8bcd^2\sqrt{1-c^2-2cdx^2-d^2x^4}}{15\left(1-c^2\right)^2x}-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{5x^5}-\frac{8b\cdots}{\cdots}$$

Mathematica [F] time = 0.798054, size = 0, normalized size = 0.

$$\int \frac{a + b\sin^{-1}\left(c + dx^2\right)}{x^6}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c + d*x^2])/x^6,x]
```

```
[Out] Integrate[(a + b*ArcSin[c + d*x^2])/x^6, x]
```

Maple [A] time = 0.016, size = 346, normalized size = 1.

$$-\frac{a}{5\,x^5}+b\left(-\frac{\arcsin\left(dx^2+c\right)}{5\,x^5}+\frac{2\,d}{5}\left(\frac{1}{\left(3\,c^2-3\right)x^3}\sqrt{-d^2x^4-2\,cdx^2-c^2+1}-\frac{4\,dc}{3\,\left(c^2-1\right)^2x}\sqrt{-d^2x^4-2\,cdx^2-c^2+1}-\frac{}{3}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+c))/x^6,x)
```

```
[Out] -1/5*a/x^5+b*(-1/5/x^5*arcsin(d*x^2+c)+2/5*d*(1/3/(c^2-1)*(-d^2*x^4-2*c*d*x
^2-c^2+1)^(1/2)/x^3-4/3*c*d/(c^2-1)^2*(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)/x-1/
3*d^2/(c^2-1)/(-d/(-1+c))^(1/2)*(1+d/(-1+c)*x^2)^(1/2)*(1+d*x^2/(1+c))^(1/2
)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)*EllipticF(x*(-d/(-1+c))^(1/2),(-1+2*c/(1
+c))^(1/2))+8/3*c*d^3/(c^2-1)^2*(-c^2+1)/(-d/(-1+c))^(1/2)*(1+d/(-1+c)*x^2)
^(1/2)*(1+d*x^2/(1+c))^(1/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)/(-2*c*d+2*d)*
(EllipticF(x*(-d/(-1+c))^(1/2),(-1+2*c/(1+c))^(1/2))-EllipticE(x*(-d/(-1+c)
)^(1/2),(-1+2*c/(1+c))^(1/2)))))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^6,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b \arcsin\left(dx^2+c\right)+a}{x^6}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^6,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(d*x^2 + c) + a)/x^6, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a+b \operatorname{asin}\left(c+dx^2\right)}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+c))/x**6,x)
```

```
[Out] Integral((a + b*asin(c + d*x**2))/x**6, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \arcsin\left(dx^2+c\right)+a}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^6,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + c) + a)/x^6, x)
```

3.399 $\int x^3 \sin^{-1}\left(a+bx^4\right)\,dx$

Optimal. Leaf size=47

$$\frac{\sqrt{1-\left(a+bx^4\right)^2}}{4b}+\frac{\left(a+bx^4\right)\sin^{-1}\left(a+bx^4\right)}{4b}$$

```
[Out] Sqrt[1 - (a + b*x^4)^2]/(4*b) + ((a + b*x^4)*ArcSin[a + b*x^4])/(4*b)
```

Rubi [A] time = 0.0577193, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {6715, 4803, 4619, 261}

$$\frac{\sqrt{1-\left(a+bx^4\right)^2}}{4b}+\frac{\left(a+bx^4\right)\sin^{-1}\left(a+bx^4\right)}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*ArcSin[a + b*x^4],x]
```

```
[Out] Sqrt[1 - (a + b*x^4)^2]/(4*b) + ((a + b*x^4)*ArcSin[a + b*x^4])/(4*b)
```

Rule 6715

```
Int[(u_)*(x_)^(m_.), x_Symbol] :> Dist[1/(m + 1), Subst[Int[SubstFor[x^(m +
 1), u, x], x], x, x^(m + 1)], x] /; FreeQ[m, x] && NeQ[m, -1] && FunctionO
fQ[x^(m + 1), u, x]
```

Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int x^3 \sin^{-1}\left(a+bx^4\right) dx &= \frac{1}{4}\,\text{Subst}\left(\int \sin^{-1}(a+bx)\,dx, x, x^4\right) \\
&= \frac{\text{Subst}\left(\int \sin^{-1}(x)\,dx, x, a+bx^4\right)}{4b} \\
&= \frac{\left(a+bx^4\right)\sin^{-1}\left(a+bx^4\right)}{4b} - \frac{\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}}\,dx, x, a+bx^4\right)}{4b} \\
&= \frac{\sqrt{1-\left(a+bx^4\right)^2}}{4b} + \frac{\left(a+bx^4\right)\sin^{-1}\left(a+bx^4\right)}{4b}
\end{aligned}$$

Mathematica [A] time = 0.026981, size = 41, normalized size = 0.87

$$\frac{\sqrt{1-\left(a+bx^4\right)^2}+\left(a+bx^4\right)\sin^{-1}\left(a+bx^4\right)}{4b}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*ArcSin[a + b*x^4],x]
```

```
[Out] (Sqrt[1 - (a + b*x^4)^2] + (a + b*x^4)*ArcSin[a + b*x^4])/(4*b)
```

Maple [A] time = 0.003, size = 38, normalized size = 0.8

$$\frac{1}{4\,b}\left(\left(bx^4+a\right)\arcsin\left(bx^4+a\right)+\sqrt{1-\left(bx^4+a\right)^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*arcsin(b*x^4+a),x)
```

```
[Out] 1/4/b*((b*x^4+a)*arcsin(b*x^4+a)+(1-(b*x^4+a)^2)^(1/2))
```

Maxima [A] time = 1.49918, size = 50, normalized size = 1.06

$$\frac{\left(bx^4+a\right)\arcsin\left(bx^4+a\right)+\sqrt{-\left(bx^4+a\right)^2+1}}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arcsin(b*x^4+a),x, algorithm="maxima")
```

```
[Out] 1/4*((b*x^4 + a)*arcsin(b*x^4 + a) + sqrt(-(b*x^4 + a)^2 + 1))/b
```

Fricas [A] time = 2.30457, size = 105, normalized size = 2.23

$$\frac{\left(bx^4+a\right)\arcsin\left(bx^4+a\right)+\sqrt{-b^2x^8-2\,abx^4-a^2+1}}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arcsin(b*x^4+a),x, algorithm="fricas")
```

```
[Out] 1/4*((b*x^4 + a)*arcsin(b*x^4 + a) + sqrt(-b^2*x^8 - 2*a*b*x^4 - a^2 + 1))/
b
```

Sympy [A] time = 1.04004, size = 61, normalized size = 1.3

$$\begin{cases}\frac{a\operatorname{asin}\left(a+bx^4\right)}{4b}+\frac{x^4\operatorname{asin}\left(a+bx^4\right)}{4}+\frac{\sqrt{-a^2-2abx^4-b^2x^8+1}}{4b} & \text{for } b\neq 0\\ \frac{x^4\operatorname{asin}(a)}{4} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*asin(b*x**4+a),x)
```

```
[Out] Piecewise((a*asin(a + b*x**4)/(4*b) + x**4*asin(a + b*x**4)/4 + sqrt(-a**2
- 2*a*b*x**4 - b**2*x**8 + 1)/(4*b), Ne(b, 0)), (x**4*asin(a)/4, True))
```

Giac [A] time = 1.16965, size = 50, normalized size = 1.06

$$\frac{\left(bx^4+a\right)\arcsin\left(bx^4+a\right)+\sqrt{-\left(bx^4+a\right)^2+1}}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arcsin(b*x^4+a),x, algorithm="giac")
```

```
[Out] 1/4*((b*x^4 + a)*arcsin(b*x^4 + a) + sqrt(-(b*x^4 + a)^2 + 1))/b
```

3.400 $\int x^{-1+n}\sin^{-1}(a+bx^n)\,dx$

Optimal. Leaf size=47

$$\frac{\sqrt{1-(a+bx^n)^2}}{bn}+\frac{(a+bx^n)\sin^{-1}(a+bx^n)}{bn}$$

```
[Out] Sqrt[1 - (a + b*x^n)^2]/(b*n) + ((a + b*x^n)*ArcSin[a + b*x^n])/(b*n)
```

Rubi [A] time = 0.0534496, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {6715, 4803, 4619, 261}

$$\frac{\sqrt{1-(a+bx^n)^2}}{bn}+\frac{(a+bx^n)\sin^{-1}(a+bx^n)}{bn}$$

Antiderivative was successfully verified.

```
[In] Int[x^(-1 + n)*ArcSin[a + b*x^n],x]
```

```
[Out] Sqrt[1 - (a + b*x^n)^2]/(b*n) + ((a + b*x^n)*ArcSin[a + b*x^n])/(b*n)
```

Rule 6715

```
Int[(u_)*(x_)^(m_.), x_Symbol] :> Dist[1/(m + 1), Subst[Int[SubstFor[x^(m +
 1), u, x], x], x, x^(m + 1)], x] /; FreeQ[m, x] && NeQ[m, -1] && FunctionO
fQ[x^(m + 1), u, x]
```

Rule 4803

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int x^{-1+n}\sin^{-1}(a+bx^n)\,dx &= \frac{\text{Subst}\left(\int \sin^{-1}(a+bx)\,dx,x,x^n\right)}{n}\\
&= \frac{\text{Subst}\left(\int \sin^{-1}(x)\,dx,x,a+bx^n\right)}{bn}\\
&= \frac{(a+bx^n)\sin^{-1}(a+bx^n)}{bn}-\frac{\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}}\,dx,x,a+bx^n\right)}{bn}\\
&= \frac{\sqrt{1-(a+bx^n)^2}}{bn}+\frac{(a+bx^n)\sin^{-1}(a+bx^n)}{bn}
\end{aligned}$$

Mathematica [A] time = 0.0348918, size = 47, normalized size = 1.

$$\frac{\sqrt{1-(a+bx^n)^2}}{bn}+\frac{(a+bx^n)\sin^{-1}(a+bx^n)}{bn}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(-1 + n)*ArcSin[a + b*x^n],x]
```

```
[Out] Sqrt[1 - (a + b*x^n)^2]/(b*n) + ((a + b*x^n)*ArcSin[a + b*x^n])/(b*n)
```

Maple [F] time = 0.066, size = 0, normalized size = 0.

$$\int x^{n-1}\arcsin(a+bx^n)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(n-1)*arcsin(a+b*x^n),x)
```

```
[Out] int(x^(n-1)*arcsin(a+b*x^n),x)
```

Maxima [A] time = 1.46805, size = 53, normalized size = 1.13

$$\frac{(bx^n + a)\arcsin(bx^n + a) + \sqrt{-(bx^n + a)^2 + 1}}{bn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-1+n)*arcsin(a+b*x^n),x, algorithm="maxima")
```

```
[Out] ((b*x^n + a)*arcsin(b*x^n + a) + sqrt(-(b*x^n + a)^2 + 1))/(b*n)
```

Fricas [A] time = 2.54383, size = 132, normalized size = 2.81

$$\frac{bx^n \arcsin(bx^n + a) + a \arcsin(bx^n + a) + \sqrt{-b^2x^{2n} - 2abx^n - a^2 + 1}}{bn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-1+n)*arcsin(a+b*x^n),x, algorithm="fricas")
```

```
[Out] (b*x^n*arcsin(b*x^n + a) + a*arcsin(b*x^n + a) + sqrt(-b^2*x^(2*n) - 2*a*b*
x^n - a^2 + 1))/(b*n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(-1+n)*asin(a+b*x**n),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.15034, size = 53, normalized size = 1.13

$$\frac{(bx^n + a)\arcsin(bx^n + a) + \sqrt{-(bx^n + a)^2 + 1}}{bn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-1+n)*arcsin(a+b*x^n),x, algorithm="giac")
```

```
[Out] ((b*x^n + a)*arcsin(b*x^n + a) + sqrt(-(b*x^n + a)^2 + 1))/(b*n)
```

3.401 $\int \left(a+b\sin^{-1}\left(1+dx^2\right)\right)^4 \, dx$

Optimal. Leaf size=127

$$-\frac{192b^3\sqrt{-d^2x^4-2dx^2}\left(a+b\sin^{-1}\left(dx^2+1\right)\right)}{dx}-48b^2x\left(a+b\sin^{-1}\left(dx^2+1\right)\right)^2+\frac{8b\sqrt{-d^2x^4-2dx^2}\left(a+b\sin^{-1}\left(dx^2+1\right.\right.}{dx}$$

```
[Out] 384*b^4*x - (192*b^3*Sqrt[-2*d*x^2 - d^2*x^4]*(a + b*ArcSin[1 + d*x^2]))/(d
*x) - 48*b^2*x*(a + b*ArcSin[1 + d*x^2])^2 + (8*b*Sqrt[-2*d*x^2 - d^2*x^4]*
(a + b*ArcSin[1 + d*x^2])^3)/(d*x) + x*(a + b*ArcSin[1 + d*x^2])^4
```

Rubi [A] time = 0.0311803, antiderivative size = 127, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {4814, 8}

$$-\frac{192b^3\sqrt{-d^2x^4-2dx^2}\left(a+b\sin^{-1}\left(dx^2+1\right)\right)}{dx}-48b^2x\left(a+b\sin^{-1}\left(dx^2+1\right)\right)^2+\frac{8b\sqrt{-d^2x^4-2dx^2}\left(a+b\sin^{-1}\left(dx^2+1\right.\right.}{dx}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[1 + d*x^2])^4,x]
```


```
[Out] 384*b^4*x - (192*b^3*Sqrt[-2*d*x^2 - d^2*x^4]*(a + b*ArcSin[1 + d*x^2]))/(d
*x) - 48*b^2*x*(a + b*ArcSin[1 + d*x^2])^2 + (8*b*Sqrt[-2*d*x^2 - d^2*x^4]*
(a + b*ArcSin[1 + d*x^2])^3)/(d*x) + x*(a + b*ArcSin[1 + d*x^2])^4
```


Rule 4814

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
a + b*ArcSin[c + d*x^2])^n, x] + (-Dist[4*b^2*n*(n - 1), Int[(a + b*ArcSin[
c + d*x^2])^(n - 2), x], x] + Simp[(2*b*n*Sqrt[-2*c*d*x^2 - d^2*x^4]*(a + b
*ArcSin[c + d*x^2])^(n - 1))/(d*x), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^
2, 1] && GtQ[n, 1]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\int \left(a+b\sin^{-1}\left(1+dx^2\right)\right)^4 dx = \frac{8b\sqrt{-2dx^2-d^2x^4}\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^3}{dx} + x\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^4 - \left(48b^2\right)\int \left(a\right.$$
$$= -\frac{192b^3\sqrt{-2dx^2-d^2x^4}\left(a+b\sin^{-1}\left(1+dx^2\right)\right)}{dx} - 48b^2x\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^2 + \frac{8b\sqrt{}}{}$$
$$= 384b^4x - \frac{192b^3\sqrt{-2dx^2-d^2x^4}\left(a+b\sin^{-1}\left(1+dx^2\right)\right)}{dx} - 48b^2x\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^2$$

Mathematica [A] time = 0.104476, size = 123, normalized size = 0.97

$$-48b^2\left(\frac{4b\sqrt{-dx^2\left(dx^2+2\right)}\left(a+b\sin^{-1}\left(dx^2+1\right)\right)}{dx} + x\left(a+b\sin^{-1}\left(dx^2+1\right)\right)^2 - 8b^2x\right) + x\left(a+b\sin^{-1}\left(dx^2+1\right)\right)^4 + \frac{8}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[1 + d*x^2])^4,x]
```

```
[Out] (8*b*Sqrt[-(d*x^2*(2 + d*x^2))]*(a + b*ArcSin[1 + d*x^2])^3)/(d*x) + x*(a +
 b*ArcSin[1 + d*x^2])^4 - 48*b^2*(-8*b^2*x + (4*b*Sqrt[-(d*x^2*(2 + d*x^2))
]*(a + b*ArcSin[1 + d*x^2]))/(d*x) + x*(a + b*ArcSin[1 + d*x^2])^2)
```

Maple [F] time = 0.126, size = 0, normalized size = 0.

$$\int \left(a+b\arcsin\left(dx^2+1\right)\right)^4 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+1))^4,x)
```

```
[Out] int((a+b*arcsin(d*x^2+1))^4,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.45261, size = 474, normalized size = 3.73

$$\frac{b^4dx^2\arcsin\left(dx^2+1\right)^4+4\,ab^3dx^2\arcsin\left(dx^2+1\right)^3+6\left(a^2b^2-8\,b^4\right)dx^2\arcsin\left(dx^2+1\right)^2+4\left(a^3b-24\,ab^3\right)dx^2\arcsin}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^4,x, algorithm="fricas")
```

```
[Out] (b^4*d*x^2*arcsin(d*x^2 + 1)^4 + 4*a*b^3*d*x^2*arcsin(d*x^2 + 1)^3 + 6*(a^2
*b^2 - 8*b^4)*d*x^2*arcsin(d*x^2 + 1)^2 + 4*(a^3*b - 24*a*b^3)*d*x^2*arcsin
(d*x^2 + 1) + (a^4 - 48*a^2*b^2 + 384*b^4)*d*x^2 + 8*(b^4*arcsin(d*x^2 + 1)
^3 + 3*a*b^3*arcsin(d*x^2 + 1)^2 + a^3*b - 24*a*b^3 + 3*(a^2*b^2 - 8*b^4)*a
rcsin(d*x^2 + 1))*sqrt(-d^2*x^4 - 2*d*x^2))/(d*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\left(a+b\operatorname{asin}\left(dx^2+1\right)\right)^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+1))**4,x)
```

```
[Out] Integral((a + b*asin(d*x**2 + 1))**4, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\left(b\arcsin\left(dx^2+1\right)+a\right)^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^4,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + 1) + a)^4, x)
```

3.402 $\int \left(a+b\sin^{-1}\left(1+dx^2\right)\right)^3\,dx$

Optimal. Leaf size=110

$$-24ab^2x+\frac{6b\sqrt{-d^2x^4-2dx^2}\left(a+b\sin^{-1}\left(dx^2+1\right)\right)^2}{dx}+x\left(a+b\sin^{-1}\left(dx^2+1\right)\right)^3-\frac{48b^3\sqrt{-d^2x^4-2dx^2}}{dx}-24b^3x\sin^{-1}\left(\right.$$

```
[Out] -24*a*b^2*x - (48*b^3*Sqrt[-2*d*x^2 - d^2*x^4])/(d*x) - 24*b^3*x*ArcSin[1 +
 d*x^2] + (6*b*Sqrt[-2*d*x^2 - d^2*x^4]*(a + b*ArcSin[1 + d*x^2])^2)/(d*x)
+ x*(a + b*ArcSin[1 + d*x^2])^3
```

Rubi [A] time = 0.0576415, antiderivative size = 110, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4814, 4840, 12, 1588}

$$-24ab^2x+\frac{6b\sqrt{-d^2x^4-2dx^2}\left(a+b\sin^{-1}\left(dx^2+1\right)\right)^2}{dx}+x\left(a+b\sin^{-1}\left(dx^2+1\right)\right)^3-\frac{48b^3\sqrt{-d^2x^4-2dx^2}}{dx}-24b^3x\sin^{-1}\left(\right.$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[1 + d*x^2])^3,x]
```

```
[Out] -24*a*b^2*x - (48*b^3*Sqrt[-2*d*x^2 - d^2*x^4])/(d*x) - 24*b^3*x*ArcSin[1 +
 d*x^2] + (6*b*Sqrt[-2*d*x^2 - d^2*x^4]*(a + b*ArcSin[1 + d*x^2])^2)/(d*x)
+ x*(a + b*ArcSin[1 + d*x^2])^3
```

Rule 4814

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
a + b*ArcSin[c + d*x^2])^n, x] + (-Dist[4*b^2*n*(n - 1), Int[(a + b*ArcSin[
c + d*x^2])^(n - 2), x], x] + Simp[(2*b*n*Sqrt[-2*c*d*x^2 - d^2*x^4]*(a + b
*ArcSin[c + d*x^2])^(n - 1))/(d*x), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^
2, 1] && GtQ[n, 1]
```

Rule 4840

```
Int[ArcSin[u_], x_Symbol] :> Simp[x*ArcSin[u], x] - Int[SimplifyIntegrand[(
x*D[u, x])/Sqrt[1 - u^2], x], x] /; InverseFunctionFreeQ[u, x] && !Functio
nOfExponentialQ[u, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1588

```
Int[(Pp_)*(Qq_)^(m_.), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x
]}, Simp[(Coeff[Pp, x, p]*x^(p - q + 1)*Qq^(m + 1))/((p + m*q + 1)*Coeff[Qq
, x, q]), x] /; NeQ[p + m*q + 1, 0] && EqQ[(p + m*q + 1)*Coeff[Qq, x, q]*Pp
, Coeff[Pp, x, p]*x^(p - q)*((p - q + 1)*Qq + (m + 1)*x*D[Qq, x])]] /; Free
Q[m, x] && PolyQ[Pp, x] && PolyQ[Qq, x] && NeQ[m, -1]
```

Rubi steps

$$\int \left(a+b\sin^{-1}\left(1+dx^2\right)\right)^3\,dx = \frac{6b\sqrt{-2dx^2-d^2x^4}\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^2}{dx}+x\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^3-\left(24b^2\right)\int \left(a\right.$$

$$= -24ab^2x+\frac{6b\sqrt{-2dx^2-d^2x^4}\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^2}{dx}+x\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^3-(2$$

$$= -24ab^2x-24b^3x\sin^{-1}\left(1+dx^2\right)+\frac{6b\sqrt{-2dx^2-d^2x^4}\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^2}{dx}+x\left(a+\right.$$

$$= -24ab^2x-24b^3x\sin^{-1}\left(1+dx^2\right)+\frac{6b\sqrt{-2dx^2-d^2x^4}\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^2}{dx}+x\left(a+\right.$$

$$= -24ab^2x-\frac{48b^3\sqrt{-2dx^2-d^2x^4}}{dx}-24b^3x\sin^{-1}\left(1+dx^2\right)+\frac{6b\sqrt{-2dx^2-d^2x^4}\left(a+b\sin\right.}{dx}$$

Mathematica [A] time = 0.115587, size = 162, normalized size = 1.47

$$\frac{adx^2\left(a^2-24b^2\right)+6b\left(a^2-8b^2\right)\sqrt{-dx^2\left(dx^2+2\right)}+3b\sin^{-1}\left(dx^2+1\right)\left(a^2dx^2+4ab\sqrt{-dx^2\left(dx^2+2\right)}-8b^2dx^2\right)+3b^2\,\mathrm{s}}{dx}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[1 + d*x^2])^3,x]
```

```
[Out] (a*(a^2 - 24*b^2)*d*x^2 + 6*b*(a^2 - 8*b^2)*Sqrt[-(d*x^2*(2 + d*x^2))] + 3*
b*(a^2*d*x^2 - 8*b^2*d*x^2 + 4*a*b*Sqrt[-(d*x^2*(2 + d*x^2))])*ArcSin[1 + d
*x^2] + 3*b^2*(a*d*x^2 + 2*b*Sqrt[-(d*x^2*(2 + d*x^2))])*ArcSin[1 + d*x^2]^
```

```
2 + b^3*d*x^2*ArcSin[1 + d*x^2]^3)/(d*x)
```

Maple [F] time = 0.102, size = 0, normalized size = 0.

$$\int \left(a + b \arcsin\left(dx^2 + 1\right)\right)^3 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+1))^3,x)
```

```
[Out] int((a+b*arcsin(d*x^2+1))^3,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.24778, size = 328, normalized size = 2.98

$$\frac{b^3dx^2 \arcsin\left(dx^2+1\right)^3 + 3\,ab^2dx^2 \arcsin\left(dx^2+1\right)^2 + 3\left(a^2b - 8\,b^3\right)dx^2 \arcsin\left(dx^2+1\right) + \left(a^3 - 24\,ab^2\right)dx^2 + 6\sqrt{-d^2x^4}}{dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^3,x, algorithm="fricas")
```

```
[Out] (b^3*d*x^2*arcsin(d*x^2 + 1)^3 + 3*a*b^2*d*x^2*arcsin(d*x^2 + 1)^2 + 3*(a^2
*b - 8*b^3)*d*x^2*arcsin(d*x^2 + 1) + (a^3 - 24*a*b^2)*d*x^2 + 6*sqrt(-d^2*
x^4 - 2*d*x^2)*(b^3*arcsin(d*x^2 + 1)^2 + 2*a*b^2*arcsin(d*x^2 + 1) + a^2*b
 - 8*b^3))/(d*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \left(a + b \operatorname{asin}\left(dx^2 + 1\right)\right)^3 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+1))**3,x)
```

```
[Out] Integral((a + b*asin(d*x**2 + 1))**3, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b \arcsin\left(dx^2 + 1\right) + a\right)^3 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^3,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + 1) + a)^3, x)
```

3.403 $\int \left(a+b\sin^{-1}\left(1+dx^2\right)\right)^2\,dx$

Optimal. Leaf size=63

$$\frac{4b\sqrt{-d^2x^4-2dx^2}\left(a+b\sin^{-1}\left(dx^2+1\right)\right)}{dx}+x\left(a+b\sin^{-1}\left(dx^2+1\right)\right)^2-8b^2x$$

```
[Out] -8*b^2*x + (4*b*Sqrt[-2*d*x^2 - d^2*x^4]*(a + b*ArcSin[1 + d*x^2]))/(d*x) +
 x*(a + b*ArcSin[1 + d*x^2])^2
```

Rubi [A] time = 0.0123104, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {4814, 8}

$$\frac{4b\sqrt{-d^2x^4-2dx^2}\left(a+b\sin^{-1}\left(dx^2+1\right)\right)}{dx}+x\left(a+b\sin^{-1}\left(dx^2+1\right)\right)^2-8b^2x$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[1 + d*x^2])^2,x]
```

```
[Out] -8*b^2*x + (4*b*Sqrt[-2*d*x^2 - d^2*x^4]*(a + b*ArcSin[1 + d*x^2]))/(d*x) +
 x*(a + b*ArcSin[1 + d*x^2])^2
```

Rule 4814

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
a + b*ArcSin[c + d*x^2])^n, x] + (-Dist[4*b^2*n*(n - 1), Int[(a + b*ArcSin[
c + d*x^2])^(n - 2), x], x] + Simp[(2*b*n*Sqrt[-2*c*d*x^2 - d^2*x^4]*(a + b
*ArcSin[c + d*x^2])^(n - 1))/(d*x), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^
2, 1] && GtQ[n, 1]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\int \left(a+b\sin^{-1}\left(1+dx^2\right)\right)^2\,dx = \frac{4b\sqrt{-2dx^2-d^2x^4}\left(a+b\sin^{-1}\left(1+dx^2\right)\right)}{dx} + x\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^2 - \left(8b^2\right)\int 1\,dx$$
$$= -8b^2x + \frac{4b\sqrt{-2dx^2-d^2x^4}\left(a+b\sin^{-1}\left(1+dx^2\right)\right)}{dx} + x\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^2$$

Mathematica [A] time = 0.0144872, size = 63, normalized size = 1.

$$\frac{4b\sqrt{-d^2x^4-2dx^2}\left(a+b\sin^{-1}\left(dx^2+1\right)\right)}{dx} + x\left(a+b\sin^{-1}\left(dx^2+1\right)\right)^2 - 8b^2x$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[1 + d*x^2])^2,x]
```

```
[Out] -8*b^2*x + (4*b*Sqrt[-2*d*x^2 - d^2*x^4]*(a + b*ArcSin[1 + d*x^2]))/(d*x) +
 x*(a + b*ArcSin[1 + d*x^2])^2
```

Maple [F] time = 0.102, size = 0, normalized size = 0.

$$\int \left(a+b\arcsin\left(dx^2+1\right)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+1))^2,x)
```

```
[Out] int((a+b*arcsin(d*x^2+1))^2,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.34818, size = 205, normalized size = 3.25

$$\frac{b^2dx^2\arcsin\left(dx^2+1\right)^2+2\,abdx^2\arcsin\left(dx^2+1\right)+\left(a^2-8\,b^2\right)dx^2+4\,\sqrt{-d^2x^4-2\,dx^2}\left(b^2\arcsin\left(dx^2+1\right)+ab\right)}{dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^2,x, algorithm="fricas")
```

```
[Out] (b^2*d*x^2*arcsin(d*x^2 + 1)^2 + 2*a*b*d*x^2*arcsin(d*x^2 + 1) + (a^2 - 8*b
^2)*d*x^2 + 4*sqrt(-d^2*x^4 - 2*d*x^2)*(b^2*arcsin(d*x^2 + 1) + a*b))/(d*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\left(a+b\operatorname{asin}\left(dx^2+1\right)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+1))**2,x)
```

```
[Out] Integral((a + b*asin(d*x**2 + 1))**2, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\left(b\arcsin\left(dx^2+1\right)+a\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + 1) + a)^2, x)
```

3.404 $\int \left(a+b\sin^{-1}\left(1+dx^2\right)\right) dx$

Optimal. Leaf size=43

$$ax+\frac{2b\sqrt{-d^2x^4-2dx^2}}{dx}+bx\sin^{-1}\left(dx^2+1\right)$$

```
[Out] a*x + (2*b*Sqrt[-2*d*x^2 - d^2*x^4])/(d*x) + b*x*ArcSin[1 + d*x^2]
```

Rubi [A] time = 0.0381969, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {4840, 12, 1588}

$$ax+\frac{2b\sqrt{-d^2x^4-2dx^2}}{dx}+bx\sin^{-1}\left(dx^2+1\right)$$

Antiderivative was successfully verified.

```
[In] Int[a + b*ArcSin[1 + d*x^2],x]
```

```
[Out] a*x + (2*b*Sqrt[-2*d*x^2 - d^2*x^4])/(d*x) + b*x*ArcSin[1 + d*x^2]
```

Rule 4840

```
Int[ArcSin[u_], x_Symbol] :> Simp[x*ArcSin[u], x] - Int[SimplifyIntegrand[(
x*D[u, x])/Sqrt[1 - u^2], x], x] /; InverseFunctionFreeQ[u, x] && !Functio
nOfExponentialQ[u, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1588

```
Int[(Pp_)*(Qq_)^(m_.), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x
]}, Simp[(Coeff[Pp, x, p]*x^(p - q + 1)*Qq^(m + 1))/((p + m*q + 1)*Coeff[Qq
, x, q]), x] /; NeQ[p + m*q + 1, 0] && EqQ[(p + m*q + 1)*Coeff[Qq, x, q]*Pp
, Coeff[Pp, x, p]*x^(p - q)*((p - q + 1)*Qq + (m + 1)*x*D[Qq, x])]] /; Free
Q[m, x] && PolyQ[Pp, x] && PolyQ[Qq, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int\left(a+b\sin^{-1}\left(1+dx^2\right)\right)dx&=ax+b\int\sin^{-1}\left(1+dx^2\right)dx\\&=ax+bx\sin^{-1}\left(1+dx^2\right)-b\int\frac{2dx^2}{\sqrt{-2dx^2-d^2x^4}}\,dx\\&=ax+bx\sin^{-1}\left(1+dx^2\right)-(2bd)\int\frac{x^2}{\sqrt{-2dx^2-d^2x^4}}\,dx\\&=ax+\frac{2b\sqrt{-2dx^2-d^2x^4}}{dx}+bx\sin^{-1}\left(1+dx^2\right)\end{aligned}$$

Mathematica [A] time = 0.0256849, size = 41, normalized size = 0.95

$$ax+\frac{2b\sqrt{-dx^2\left(dx^2+2\right)}}{dx}+bx\sin^{-1}\left(dx^2+1\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*ArcSin[1 + d*x^2],x]
```

```
[Out] a*x + (2*b*Sqrt[-(d*x^2*(2 + d*x^2))])/(d*x) + b*x*ArcSin[1 + d*x^2]
```

Maple [A] time = 0.008, size = 45, normalized size = 1.1

$$ax+b\left(x\arcsin\left(dx^2+1\right)-2\,\frac{x\left(dx^2+2\right)}{\sqrt{-d^2x^4-2\,dx^2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a+b*arcsin(d*x^2+1),x)
```

```
[Out] a*x+b*(x*arcsin(d*x^2+1)-2/(-d^2*x^4-2*d*x^2)^(1/2)*x*(d*x^2+2))
```

Maxima [A] time = 1.51233, size = 61, normalized size = 1.42

$$\left(x\arcsin\left(dx^2+1\right)-\frac{2\left(d^{\frac{3}{2}}x^2+2\sqrt{d}\right)}{\sqrt{-dx^2-2d}}\right)b+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(d*x^2+1),x, algorithm="maxima")
```

```
[Out] (x*arcsin(d*x^2 + 1) - 2*(d^(3/2)*x^2 + 2*sqrt(d))/(sqrt(-d*x^2 - 2)*d))*b
+ a*x
```

Fricas [A] time = 2.28855, size = 103, normalized size = 2.4

$$\frac{bdx^2\arcsin\left(dx^2+1\right)+adx^2+2\sqrt{-d^2x^4-2\,dx^2}b}{dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(d*x^2+1),x, algorithm="fricas")
```

```
[Out] (b*d*x^2*arcsin(d*x^2 + 1) + a*d*x^2 + 2*sqrt(-d^2*x^4 - 2*d*x^2)*b)/(d*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\left(a+b\,\mathrm{asin}\left(dx^2+1\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*asin(d*x**2+1),x)
```

```
[Out] Integral(a + b*asin(d*x**2 + 1), x)
```

Giac [A] time = 1.1397, size = 81, normalized size = 1.88

$$-\left(2\,d\left(\frac{\sqrt{2}\sqrt{-d}\mathrm{sgn}\left(x\right)}{d^2}-\frac{\sqrt{-d^2x^2-2\,d}}{d^2\mathrm{sgn}\left(x\right)}\right)-x\arcsin\left(dx^2+1\right)\right)b+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(d*x^2+1),x, algorithm="giac")
```

```
[Out] -(2*d*(sqrt(2)*sqrt(-d)*sgn(x)/d^2 - sqrt(-d^2*x^2 - 2*d)/(d^2*sgn(x))) - x
*arcsin(d*x^2 + 1))*b + a*x
```

3.405 $\int \frac{1}{a+b\sin^{-1}(1+dx^2)}\,dx$

Optimal. Leaf size=159

$$-\frac{x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(dx^2+1)}{2b}\right)}{2b\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)\right)}-\frac{x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{a+b\sin^{-1}(dx^2+1)}{2b}\right)}{2b\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)\right)}$$

```
[Out] -(x*CosIntegral[(a + b*ArcSin[1 + d*x^2])/(2*b)]*(Cos[a/(2*b)] - Sin[a/(2*b
)]))/(2*b*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])) - (x*(Cos[
a/(2*b)] + Sin[a/(2*b)])*SinIntegral[(a + b*ArcSin[1 + d*x^2])/(2*b)])/(2*b
*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]))
```

Rubi [A] time = 0.0416802, antiderivative size = 159, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.071, Rules used = {4816}

$$-\frac{x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(dx^2+1)}{2b}\right)}{2b\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)\right)}-\frac{x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{a+b\sin^{-1}(dx^2+1)}{2b}\right)}{2b\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[1 + d*x^2])^(-1),x]
```

```
[Out] -(x*CosIntegral[(a + b*ArcSin[1 + d*x^2])/(2*b)]*(Cos[a/(2*b)] - Sin[a/(2*b
)]))/(2*b*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])) - (x*(Cos[
a/(2*b)] + Sin[a/(2*b)])*SinIntegral[(a + b*ArcSin[1 + d*x^2])/(2*b)])/(2*b
*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]))
```

Rule 4816

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(-1), x_Symbol] :> -Simp[(x
*(c*Cos[a/(2*b)] - Sin[a/(2*b)])*CosIntegral[(c/(2*b))*(a + b*ArcSin[c + d*
x^2])])/(2*b*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2])), x] -
 Simp[(x*(c*Cos[a/(2*b)] + Sin[a/(2*b)])*SinIntegral[(c/(2*b))*(a + b*ArcSi
n[c + d*x^2])])/(2*b*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2]
)), x] /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \frac{1}{a+b\sin^{-1}\left(1+dx^2\right)}\,dx = -\frac{x\,\text{Ci}\left(\frac{a+b\sin^{-1}(1+dx^2)}{2b}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)}{2b\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1+dx^2\right)\right)\right)} - \frac{x\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)\text{Si}\left(\right.}{2b\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1+dx^2\right)\right)-\sin\right.}$$

Mathematica [A] time = 0.680278, size = 120, normalized size = 0.75

$$-\frac{x\left(\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{CosIntegral}\left(\frac{1}{2}\left(\frac{a}{b}+\sin^{-1}\left(dx^2+1\right)\right)\right)+\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{1}{2}\left(\frac{a}{b}+\sin^{-1}\left(dx^2+1\right)\right)\right)\right)}{2b\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[1 + d*x^2])^(-1),x]
```

```
[Out] -(x*(CosIntegral[(a/b + ArcSin[1 + d*x^2])/2]*(Cos[a/(2*b)] - Sin[a/(2*b)])
 + (Cos[a/(2*b)] + Sin[a/(2*b)])*SinIntegral[(a/b + ArcSin[1 + d*x^2])/2]))
/(2*b*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]))
```

Maple [F] time = 0.057, size = 0, normalized size = 0.

$$\int \left(a+b\arcsin\left(dx^2+1\right)\right)^{-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2+1)),x)
```

```
[Out] int(1/(a+b*arcsin(d*x^2+1)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{b\arcsin\left(dx^2+1\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1)),x, algorithm="maxima")
```

```
[Out] integrate(1/(b*arcsin(d*x^2 + 1) + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{b \arcsin\left(dx^2+1\right)+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1)),x, algorithm="fricas")
```

```
[Out] integral(1/(b*arcsin(d*x^2 + 1) + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{a+b \operatorname{asin}\left(dx^2+1\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2+1)),x)
```

```
[Out] Integral(1/(a + b*asin(d*x**2 + 1)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{b \arcsin\left(dx^2+1\right)+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1)),x, algorithm="giac")
```

```
[Out] integrate(1/(b*arcsin(d*x^2 + 1) + a), x)
```

3.406 $\int \frac{1}{\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^2}\,dx$

Optimal. Leaf size=205

$$-\frac{x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}\left(dx^2+1\right)}{2b}\right)}{4b^2\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)\right)}+\frac{x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{a+b\sin^{-1}\left(dx^2+1\right)}{2b}\right)}{4b^2\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)\right)}-\frac{\cdots}{2bd\cdots}$$

```
[Out] -Sqrt[-2*d*x^2 - d^2*x^4]/(2*b*d*x*(a + b*ArcSin[1 + d*x^2])) - (x*CosInteg
ral[(a + b*ArcSin[1 + d*x^2])/(2*b)]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(4*b^2*
(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])) + (x*(Cos[a/(2*b)] -
 Sin[a/(2*b)])*SinIntegral[(a + b*ArcSin[1 + d*x^2])/(2*b)])/(4*b^2*(Cos[Ar
cSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]))
```

Rubi [A] time = 0.0257812, antiderivative size = 205, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.071, Rules used = {4825}

$$-\frac{x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}\left(dx^2+1\right)}{2b}\right)}{4b^2\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)\right)}+\frac{x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{a+b\sin^{-1}\left(dx^2+1\right)}{2b}\right)}{4b^2\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)\right)}-\frac{\cdots}{2bd\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[1 + d*x^2])^(-2),x]
```

```
[Out] -Sqrt[-2*d*x^2 - d^2*x^4]/(2*b*d*x*(a + b*ArcSin[1 + d*x^2])) - (x*CosInteg
ral[(a + b*ArcSin[1 + d*x^2])/(2*b)]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(4*b^2*
(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])) + (x*(Cos[a/(2*b)] -
 Sin[a/(2*b)])*SinIntegral[(a + b*ArcSin[1 + d*x^2])/(2*b)])/(4*b^2*(Cos[Ar
cSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]))
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(-2), x_Symbol] :> -Simp[Sq
rt[-2*c*d*x^2 - d^2*x^4]/(2*b*d*x*(a + b*ArcSin[c + d*x^2])), x] + (-Simp[(
x*(Cos[a/(2*b)] + c*Sin[a/(2*b)])*CosIntegral[(c/(2*b))*(a + b*ArcSin[c + d
*x^2])])/(4*b^2*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2])), x
] + Simp[(x*(Cos[a/(2*b)] - c*Sin[a/(2*b)])*SinIntegral[(c/(2*b))*(a + b*Ar
```

```
cSin[c + d*x^2]])])/(4*b^2*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^
2]/2])), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^2}\,dx=-\frac{\sqrt{-2dx^2-d^2x^4}}{2bdx\left(a+b\sin^{-1}\left(1+dx^2\right)\right)}-\frac{x\text{Ci}\left(\frac{a+b\sin^{-1}\left(1+dx^2\right)}{2b}\right)\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)}{4b^2\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1+dx^2\right)\right)\right)}$$

Mathematica [A] time = 1.33235, size = 164, normalized size = 0.8

$$-\frac{\frac{x^2\left(\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{CosIntegral}\left(\frac{1}{2}\left(\frac{a}{b}+\sin^{-1}\left(dx^2+1\right)\right)\right)+\left(\sin\left(\frac{a}{2b}\right)-\cos\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{1}{2}\left(\frac{a}{b}+\sin^{-1}\left(dx^2+1\right)\right)\right)\right)}{\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)}+\frac{2b\sqrt{-dx^2\left(dx^2+2\right)}}{d\left(a+b\sin^{-1}\left(dx^2+1\right)\right)}}{4b^2x}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[1 + d*x^2])^(-2),x]
```

```
[Out] -((2*b*Sqrt[-(d*x^2*(2 + d*x^2))])/(d*(a + b*ArcSin[1 + d*x^2])) + (x^2*(Co
sIntegral[(a/b + ArcSin[1 + d*x^2])/2]*(Cos[a/(2*b)] + Sin[a/(2*b)]) + (-Co
s[a/(2*b)] + Sin[a/(2*b)])*SinIntegral[(a/b + ArcSin[1 + d*x^2])/2]))/(Cos[
ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]))/(4*b^2*x)
```

Maple [F] time = 0.058, size = 0, normalized size = 0.

$$\int\left(a+b\arcsin\left(dx^2+1\right)\right)^{-2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2+1))^2,x)
```

```
[Out] int(1/(a+b*arcsin(d*x^2+1))^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(b^2 d \arctan\left(dx^2+1, \sqrt{-dx^2-2}\sqrt{d}x\right)+abd\right)\sqrt{d}\int \frac{\sqrt{-dx^2-2}x}{abdx^2+2\,ab+\left(b^2dx^2+2\,b^2\right)\arctan\left(dx^2+1,\sqrt{-dx^2-2}\sqrt{d}x\right)}\,dx-\sqrt{-dx^2-2}\sqrt{d}}{2\left(b^2 d \arctan\left(dx^2+1, \sqrt{-dx^2-2}\sqrt{d}x\right)+abd\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^2,x, algorithm="maxima")
```

```
[Out] 1/2*(2*(b^2*d*arctan2(d*x^2 + 1, sqrt(-d*x^2 - 2)*sqrt(d)*x) + a*b*d)*sqrt(
d)*integrate(1/2*sqrt(-d*x^2 - 2)*x/(a*b*d*x^2 + 2*a*b + (b^2*d*x^2 + 2*b^2
)*arctan2(d*x^2 + 1, sqrt(-d*x^2 - 2)*sqrt(d)*x)), x) - sqrt(-d*x^2 - 2)*sq
rt(d))/(b^2*d*arctan2(d*x^2 + 1, sqrt(-d*x^2 - 2)*sqrt(d)*x) + a*b*d)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{b^2\arcsin\left(dx^2+1\right)^2+2\,ab\arcsin\left(dx^2+1\right)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(b^2*arcsin(d*x^2 + 1)^2 + 2*a*b*arcsin(d*x^2 + 1) + a^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+b\,\text{asin}\left(dx^2+1\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2+1))**2,x)
```

```
[Out] Integral((a + b*asin(d*x**2 + 1))**(-2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b\arcsin\left(dx^2+1\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + 1) + a)^(-2), x)
```

3.407 $\int \frac{1}{\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^3}\,dx$

Optimal. Leaf size=227

$$\frac{x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}\left(dx^2+1\right)}{2b}\right)}{16b^3\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)\right)}+\frac{x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{a+b\sin^{-1}\left(dx^2+1\right)}{2b}\right)}{16b^3\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)\right)}+ 8b^2$$

```
[Out] -Sqrt[-2*d*x^2 - d^2*x^4]/(4*b*d*x*(a + b*ArcSin[1 + d*x^2])^2) + x/(8*b^2*
(a + b*ArcSin[1 + d*x^2])) + (x*CosIntegral[(a + b*ArcSin[1 + d*x^2])/(2*b)
]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(16*b^3*(Cos[ArcSin[1 + d*x^2]/2] - Sin[Ar
cSin[1 + d*x^2]/2])) + (x*(Cos[a/(2*b)] + Sin[a/(2*b)])*SinIntegral[(a + b*
ArcSin[1 + d*x^2])/(2*b)])/(16*b^3*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1
 + d*x^2]/2]))
```

Rubi [A] time = 0.0483044, antiderivative size = 227, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {4828, 4816}

$$\frac{x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}\left(dx^2+1\right)}{2b}\right)}{16b^3\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)\right)}+\frac{x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{a+b\sin^{-1}\left(dx^2+1\right)}{2b}\right)}{16b^3\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)\right)}+ 8b^2$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[1 + d*x^2])^(-3),x]
```

```
[Out] -Sqrt[-2*d*x^2 - d^2*x^4]/(4*b*d*x*(a + b*ArcSin[1 + d*x^2])^2) + x/(8*b^2*
(a + b*ArcSin[1 + d*x^2])) + (x*CosIntegral[(a + b*ArcSin[1 + d*x^2])/(2*b)
]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(16*b^3*(Cos[ArcSin[1 + d*x^2]/2] - Sin[Ar
cSin[1 + d*x^2]/2])) + (x*(Cos[a/(2*b)] + Sin[a/(2*b)])*SinIntegral[(a + b*
ArcSin[1 + d*x^2])/(2*b)])/(16*b^3*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1
 + d*x^2]/2]))
```

Rule 4828

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[(x*
(a + b*ArcSin[c + d*x^2])^(n + 2))/(4*b^2*(n + 1)*(n + 2)), x] + (-Dist[1/(
4*b^2*(n + 1)*(n + 2)), Int[(a + b*ArcSin[c + d*x^2])^(n + 2), x], x] + Sim
```

```
p[(Sqrt[-2*c*d*x^2 - d^2*x^4]*(a + b*ArcSin[c + d*x^2])^(n + 1))/(2*b*d*(n
+ 1)*x), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1] && LtQ[n, -1] && NeQ[
n, -2]
```

Rule 4816

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(-1), x_Symbol] :> -Simp[(x
*(c*Cos[a/(2*b)] - Sin[a/(2*b)])*CosIntegral[(c/(2*b))*(a + b*ArcSin[c + d*
x^2])])/(2*b*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2])), x] -
 Simp[(x*(c*Cos[a/(2*b)] + Sin[a/(2*b)])*SinIntegral[(c/(2*b))*(a + b*ArcSi
n[c + d*x^2])])/(2*b*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2]
)), x] /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^3}\,dx = -\frac{\sqrt{-2dx^2-d^2x^4}}{4bdx\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^2}+\frac{x}{8b^2\left(a+b\sin^{-1}\left(1+dx^2\right)\right)}-\frac{\int \frac{1}{a+b\sin^{-1}\left(1+dx^2\right)}\,dx}{8b^2}$$

$$= -\frac{\sqrt{-2dx^2-d^2x^4}}{4bdx\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^2}+\frac{x}{8b^2\left(a+b\sin^{-1}\left(1+dx^2\right)\right)}+\frac{x\text{Ci}\left(\frac{a+b\sin^{-1}(1+}{2b}\right.}{16b^3\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1+\right.\right.\right.}$$

Mathematica [A] time = 0.536223, size = 187, normalized size = 0.82

$$\frac{x\left(\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{CosIntegral}\left(\frac{1}{2}\left(\frac{a}{b}+\sin^{-1}\left(dx^2+1\right)\right)\right)+\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{1}{2}\left(\frac{a}{b}+\sin^{-1}\left(dx^2+1\right)\right)\right)\right)}{16b^3\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)\right)}+$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[1 + d*x^2])^(-3),x]
```

```
[Out] -Sqrt[-(d*x^2*(2 + d*x^2))]/(4*b*d*x*(a + b*ArcSin[1 + d*x^2])^2) + x/(8*b^
2*(a + b*ArcSin[1 + d*x^2])) + (x*(CosIntegral[(a/b + ArcSin[1 + d*x^2])/2]
*(Cos[a/(2*b)] - Sin[a/(2*b)]) + (Cos[a/(2*b)] + Sin[a/(2*b)])*SinIntegral[
(a/b + ArcSin[1 + d*x^2])/2]))/(16*b^3*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcS
in[1 + d*x^2]/2]))
```

Maple [F] time = 0.057, size = 0, normalized size = 0.

$$\int \left(a+b\arcsin\left(dx^2+1\right)\right)^{-3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2+1))^3,x)
```

```
[Out] int(1/(a+b*arcsin(d*x^2+1))^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{bdx\arctan\left(dx^2+1,\sqrt{-dx^2-2}\sqrt{d}x\right)+adx-2\sqrt{-dx^2-2}b\sqrt{d}-\left(b^4d\arctan\left(dx^2+1,\sqrt{-dx^2-2}\sqrt{d}x\right)^2+2ab^3d\arcta\right.}{8\left(b^4d\arctan\left(dx^2+1,\sqrt{-dx^2-2}\sqrt{d}x\right)^2+2ab^3d\arctan\left(dx^2+1,\sqrt{-\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^3,x, algorithm="maxima")
```

```
[Out] 1/8*(b*d*x*arctan2(d*x^2 + 1, sqrt(-d*x^2 - 2)*sqrt(d)*x) + a*d*x - 2*sqrt(
-d*x^2 - 2)*b*sqrt(d) - 8*(b^4*d*arctan2(d*x^2 + 1, sqrt(-d*x^2 - 2)*sqrt(d
)*x)^2 + 2*a*b^3*d*arctan2(d*x^2 + 1, sqrt(-d*x^2 - 2)*sqrt(d)*x) + a^2*b^2
*d)*integrate(1/8/(b^3*arctan2(d*x^2 + 1, sqrt(-d*x^2 - 2)*sqrt(d)*x) + a*b
^2), x))/(b^4*d*arctan2(d*x^2 + 1, sqrt(-d*x^2 - 2)*sqrt(d)*x)^2 + 2*a*b^3*
d*arctan2(d*x^2 + 1, sqrt(-d*x^2 - 2)*sqrt(d)*x) + a^2*b^2*d)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{b^3\arcsin\left(dx^2+1\right)^3+3\,ab^2\arcsin\left(dx^2+1\right)^2+3\,a^2b\arcsin\left(dx^2+1\right)+a^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^3,x, algorithm="fricas")
```

```
[Out] integral(1/(b^3*arcsin(d*x^2 + 1)^3 + 3*a*b^2*arcsin(d*x^2 + 1)^2 + 3*a^2*b
*arcsin(d*x^2 + 1) + a^3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+b\,\mathrm{asin}\left(dx^2+1\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2+1))**3,x)
```

```
[Out] Integral((a + b*asin(d*x**2 + 1))**(-3), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b\arcsin\left(dx^2+1\right)+a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^3,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + 1) + a)^(-3), x)
```

3.408 $\int \left(a-b\sin^{-1}\left(1-dx^2\right)\right)^4\,dx$

Optimal. Leaf size=135

$$-\frac{192b^3\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)}{dx}-48b^2x\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2+\frac{8b\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^3}{dx}$$

```
[Out] 384*b^4*x - (192*b^3*Sqrt[2*d*x^2 - d^2*x^4]*(a - b*ArcSin[1 - d*x^2]))/(d*
x) - 48*b^2*x*(a - b*ArcSin[1 - d*x^2])^2 + (8*b*Sqrt[2*d*x^2 - d^2*x^4]*(a
 - b*ArcSin[1 - d*x^2])^3)/(d*x) + x*(a - b*ArcSin[1 - d*x^2])^4
```

Rubi [A] time = 0.0309465, antiderivative size = 135, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {4814, 8}

$$-\frac{192b^3\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)}{dx}-48b^2x\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2+\frac{8b\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^3}{dx}$$

Antiderivative was successfully verified.

```
[In] Int[(a - b*ArcSin[1 - d*x^2])^4,x]
```

```
[Out] 384*b^4*x - (192*b^3*Sqrt[2*d*x^2 - d^2*x^4]*(a - b*ArcSin[1 - d*x^2]))/(d*
x) - 48*b^2*x*(a - b*ArcSin[1 - d*x^2])^2 + (8*b*Sqrt[2*d*x^2 - d^2*x^4]*(a
 - b*ArcSin[1 - d*x^2])^3)/(d*x) + x*(a - b*ArcSin[1 - d*x^2])^4
```

Rule 4814

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
a + b*ArcSin[c + d*x^2])^n, x] + (-Dist[4*b^2*n*(n - 1), Int[(a + b*ArcSin[
c + d*x^2])^(n - 2), x], x] + Simp[(2*b*n*Sqrt[-2*c*d*x^2 - d^2*x^4]*(a + b
*ArcSin[c + d*x^2])^(n - 1))/(d*x), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^
2, 1] && GtQ[n, 1]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\int \left(a-b\sin^{-1}\left(1-dx^2\right)\right)^4 dx = \frac{8b\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^3}{dx} + x\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^4 - \left(48b^2\right)\int \left(a-b\right.$$
$$= -\frac{192b^3\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)}{dx} - 48b^2x\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2 + \frac{8b\sqrt{2d}}{}$$
$$= 384b^4x - \frac{192b^3\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)}{dx} - 48b^2x\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2 +$$

Mathematica [A] time = 0.111344, size = 131, normalized size = 0.97

$$-48b^2\left(\frac{4b\sqrt{-dx^2\left(dx^2-2\right)}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)}{dx} + x\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2 - 8b^2x\right) + x\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^4 + \frac{8b}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a - b*ArcSin[1 - d*x^2])^4,x]
```

```
[Out] (8*b*Sqrt[-(d*x^2*(-2 + d*x^2))]*(a - b*ArcSin[1 - d*x^2])^3)/(d*x) + x*(a
- b*ArcSin[1 - d*x^2])^4 - 48*b^2*(-8*b^2*x + (4*b*Sqrt[-(d*x^2*(-2 + d*x^2
))]*(a - b*ArcSin[1 - d*x^2]))/(d*x) + x*(a - b*ArcSin[1 - d*x^2])^2)
```

Maple [F] time = 0.105, size = 0, normalized size = 0.

$$\int \left(a+b\arcsin\left(dx^2-1\right)\right)^4 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2-1))^4,x)
```

```
[Out] int((a+b*arcsin(d*x^2-1))^4,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.33311, size = 474, normalized size = 3.51

$$\frac{b^4dx^2\arcsin\left(dx^2-1\right)^4+4\,ab^3dx^2\arcsin\left(dx^2-1\right)^3+6\left(a^2b^2-8\,b^4\right)dx^2\arcsin\left(dx^2-1\right)^2+4\left(a^3b-24\,ab^3\right)dx^2\arcsin}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^4,x, algorithm="fricas")
```

```
[Out] (b^4*d*x^2*arcsin(d*x^2 - 1)^4 + 4*a*b^3*d*x^2*arcsin(d*x^2 - 1)^3 + 6*(a^2
*b^2 - 8*b^4)*d*x^2*arcsin(d*x^2 - 1)^2 + 4*(a^3*b - 24*a*b^3)*d*x^2*arcsin
(d*x^2 - 1) + (a^4 - 48*a^2*b^2 + 384*b^4)*d*x^2 + 8*(b^4*arcsin(d*x^2 - 1)
^3 + 3*a*b^3*arcsin(d*x^2 - 1)^2 + a^3*b - 24*a*b^3 + 3*(a^2*b^2 - 8*b^4)*a
rcsin(d*x^2 - 1))*sqrt(-d^2*x^4 + 2*d*x^2))/(d*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\left(a+b\operatorname{asin}\left(dx^2-1\right)\right)^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2-1))**4,x)
```

```
[Out] Integral((a + b*asin(d*x**2 - 1))**4, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\left(b\arcsin\left(dx^2-1\right)+a\right)^4dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^4,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^4, x)
```

3.409 $\int \left(a-b\sin^{-1}\left(1-dx^2\right)\right)^3\,dx$

Optimal. Leaf size=115

$$-24ab^2x+\frac{6b\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2}{dx}+x\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^3-\frac{48b^3\sqrt{2dx^2-d^2x^4}}{dx}+24b^3x\sin^{-1}\left(1-\right.$$

```
[Out] -24*a*b^2*x - (48*b^3*Sqrt[2*d*x^2 - d^2*x^4])/(d*x) + 24*b^3*x*ArcSin[1 -
d*x^2] + (6*b*Sqrt[2*d*x^2 - d^2*x^4]*(a - b*ArcSin[1 - d*x^2])^2)/(d*x) +
x*(a - b*ArcSin[1 - d*x^2])^3
```

Rubi [A] time = 0.0607515, antiderivative size = 115, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {4814, 4840, 12, 1588}

$$-24ab^2x+\frac{6b\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2}{dx}+x\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^3-\frac{48b^3\sqrt{2dx^2-d^2x^4}}{dx}+24b^3x\sin^{-1}\left(1-\right.$$

Antiderivative was successfully verified.

```
[In] Int[(a - b*ArcSin[1 - d*x^2])^3,x]
```


```
[Out] -24*a*b^2*x - (48*b^3*Sqrt[2*d*x^2 - d^2*x^4])/(d*x) + 24*b^3*x*ArcSin[1 -
d*x^2] + (6*b*Sqrt[2*d*x^2 - d^2*x^4]*(a - b*ArcSin[1 - d*x^2])^2)/(d*x) +
x*(a - b*ArcSin[1 - d*x^2])^3
```


Rule 4814

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
a + b*ArcSin[c + d*x^2])^n, x] + (-Dist[4*b^2*n*(n - 1), Int[(a + b*ArcSin[
c + d*x^2])^(n - 2), x], x] + Simp[(2*b*n*Sqrt[-2*c*d*x^2 - d^2*x^4]*(a + b
*ArcSin[c + d*x^2])^(n - 1))/(d*x), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^
2, 1] && GtQ[n, 1]
```

Rule 4840

```
Int[ArcSin[u_], x_Symbol] :> Simp[x*ArcSin[u], x] - Int[SimplifyIntegrand[(
x*D[u, x])/Sqrt[1 - u^2], x], x] /; InverseFunctionFreeQ[u, x] &&  !Functio
nOfExponentialQ[u, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1588

```
Int[(Pp_)*(Qq_)^(m_.), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x
]}, Simp[(Coeff[Pp, x, p]*x^(p - q + 1)*Qq^(m + 1))/((p + m*q + 1)*Coeff[Qq
, x, q]), x] /; NeQ[p + m*q + 1, 0] && EqQ[(p + m*q + 1)*Coeff[Qq, x, q]*Pp
, Coeff[Pp, x, p]*x^(p - q)*((p - q + 1)*Qq + (m + 1)*x*D[Qq, x])]] /; Free
Q[m, x] && PolyQ[Pp, x] && PolyQ[Qq, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int \left(a-b\sin^{-1}\left(1-dx^2\right)\right)^3\,dx &= \frac{6b\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2}{dx}+x\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^3-\left(24b^2\right)\int\left(a-b\right.\\
&= -24ab^2x+\frac{6b\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2}{dx}+x\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^3+\left(24b\right.\\
&= -24ab^2x+24b^3x\sin^{-1}\left(1-dx^2\right)+\frac{6b\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2}{dx}+x\left(a-b\right.\\
&= -24ab^2x+24b^3x\sin^{-1}\left(1-dx^2\right)+\frac{6b\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2}{dx}+x\left(a-b\right.\\
&= -24ab^2x-\frac{48b^3\sqrt{2dx^2-d^2x^4}}{dx}+24b^3x\sin^{-1}\left(1-dx^2\right)+\frac{6b\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(\right.\right.}{dx}\end{aligned}$$

Mathematica [A] time = 0.116136, size = 166, normalized size = 1.44

$$\frac{adx^2\left(a^2-24b^2\right)+6b\left(a^2-8b^2\right)\sqrt{dx^2\left(2-dx^2\right)}-3b\sin^{-1}\left(1-dx^2\right)\left(a^2dx^2+4ab\sqrt{-dx^2\left(dx^2-2\right)}-8b^2dx^2\right)+3b^2\sin}{dx}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a - b*ArcSin[1 - d*x^2])^3,x]
```

```
[Out] (a*(a^2 - 24*b^2)*d*x^2 + 6*b*(a^2 - 8*b^2)*Sqrt[d*x^2*(2 - d*x^2)] - 3*b*(
a^2*d*x^2 - 8*b^2*d*x^2 + 4*a*b*Sqrt[-(d*x^2*(-2 + d*x^2))])*ArcSin[1 - d*x
^2] + 3*b^2*(a*d*x^2 + 2*b*Sqrt[-(d*x^2*(-2 + d*x^2))])*ArcSin[1 - d*x^2]^2
```

```
 - b^3*d*x^2*ArcSin[1 - d*x^2]^3)/(d*x)
```

Maple [F] time = 0.103, size = 0, normalized size = 0.

$$\int \left(a+b\arcsin\left(dx^2-1\right)\right)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2-1))^3,x)
```

```
[Out] int((a+b*arcsin(d*x^2-1))^3,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.28059, size = 328, normalized size = 2.85

$$\frac{b^3dx^2\arcsin\left(dx^2-1\right)^3+3\,ab^2dx^2\arcsin\left(dx^2-1\right)^2+3\left(a^2b-8\,b^3\right)dx^2\arcsin\left(dx^2-1\right)+\left(a^3-24\,ab^2\right)dx^2+6\sqrt{-d^2x^4}}{dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^3,x, algorithm="fricas")
```

```
[Out] (b^3*d*x^2*arcsin(d*x^2 - 1)^3 + 3*a*b^2*d*x^2*arcsin(d*x^2 - 1)^2 + 3*(a^2
*b - 8*b^3)*d*x^2*arcsin(d*x^2 - 1) + (a^3 - 24*a*b^2)*d*x^2 + 6*sqrt(-d^2*
x^4 + 2*d*x^2)*(b^3*arcsin(d*x^2 - 1)^2 + 2*a*b^2*arcsin(d*x^2 - 1) + a^2*b
 - 8*b^3))/(d*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \left(a+b\operatorname{asin}\left(dx^2-1\right)\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2-1))**3,x)
```

```
[Out] Integral((a + b*asin(d*x**2 - 1))**3, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b\arcsin\left(dx^2-1\right)+a\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^3,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^3, x)
```

3.410 $\int \left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2\,dx$

Optimal. Leaf size=67

$$\frac{4b\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)}{dx}+x\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2-8b^2x$$

```
[Out] -8*b^2*x + (4*b*Sqrt[2*d*x^2 - d^2*x^4]*(a - b*ArcSin[1 - d*x^2]))/(d*x) +
x*(a - b*ArcSin[1 - d*x^2])^2
```

Rubi [A] time = 0.0124719, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {4814, 8}

$$\frac{4b\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)}{dx}+x\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2-8b^2x$$

Antiderivative was successfully verified.

```
[In] Int[(a - b*ArcSin[1 - d*x^2])^2,x]
```

```
[Out] -8*b^2*x + (4*b*Sqrt[2*d*x^2 - d^2*x^4]*(a - b*ArcSin[1 - d*x^2]))/(d*x) +
x*(a - b*ArcSin[1 - d*x^2])^2
```

Rule 4814

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
a + b*ArcSin[c + d*x^2])^n, x] + (-Dist[4*b^2*n*(n - 1), Int[(a + b*ArcSin[
c + d*x^2])^(n - 2), x], x] + Simp[(2*b*n*Sqrt[-2*c*d*x^2 - d^2*x^4]*(a + b
*ArcSin[c + d*x^2])^(n - 1))/(d*x), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^
2, 1] && GtQ[n, 1]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\int \left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2 dx = \frac{4b\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)}{dx} + x\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2 - \left(8b^2\right)\int 1\,dx$$
$$= -8b^2x + \frac{4b\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)}{dx} + x\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2$$

Mathematica [A] time = 0.019798, size = 67, normalized size = 1.

$$\frac{4b\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)}{dx} + x\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2 - 8b^2x$$

Antiderivative was successfully verified.

```
[In] Integrate[(a - b*ArcSin[1 - d*x^2])^2,x]
```

```
[Out] -8*b^2*x + (4*b*Sqrt[2*d*x^2 - d^2*x^4]*(a - b*ArcSin[1 - d*x^2]))/(d*x) +
x*(a - b*ArcSin[1 - d*x^2])^2
```

Maple [F] time = 0.104, size = 0, normalized size = 0.

$$\int \left(a+b\arcsin\left(dx^2-1\right)\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2-1))^2,x)
```

```
[Out] int((a+b*arcsin(d*x^2-1))^2,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.27019, size = 205, normalized size = 3.06

$$\frac{b^2dx^2\arcsin\left(dx^2-1\right)^2+2\,abdx^2\arcsin\left(dx^2-1\right)+\left(a^2-8\,b^2\right)dx^2+4\,\sqrt{-d^2x^4+2\,dx^2}\left(b^2\arcsin\left(dx^2-1\right)+ab\right)}{dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^2,x, algorithm="fricas")
```

```
[Out] (b^2*d*x^2*arcsin(d*x^2 - 1)^2 + 2*a*b*d*x^2*arcsin(d*x^2 - 1) + (a^2 - 8*b
^2)*d*x^2 + 4*sqrt(-d^2*x^4 + 2*d*x^2)*(b^2*arcsin(d*x^2 - 1) + a*b))/(d*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\left(a+b\,\mathrm{asin}\left(dx^2-1\right)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2-1))**2,x)
```

```
[Out] Integral((a + b*asin(d*x**2 - 1))**2, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\left(b\arcsin\left(dx^2-1\right)+a\right)^2dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^2, x)
```

3.411 $\int \left(a-b\sin^{-1}\left(1-dx^2\right)\right)\,dx$

Optimal. Leaf size=45

$$ax+\frac{2b\sqrt{2dx^2-d^2x^4}}{dx}+b(-x)\sin^{-1}\left(1-dx^2\right)$$

```
[Out] a*x + (2*b*Sqrt[2*d*x^2 - d^2*x^4])/(d*x) - b*x*ArcSin[1 - d*x^2]
```

Rubi [A] time = 0.0392835, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {4840, 12, 1588}

$$ax+\frac{2b\sqrt{2dx^2-d^2x^4}}{dx}+b(-x)\sin^{-1}\left(1-dx^2\right)$$

Antiderivative was successfully verified.

```
[In] Int[a - b*ArcSin[1 - d*x^2],x]
```

```
[Out] a*x + (2*b*Sqrt[2*d*x^2 - d^2*x^4])/(d*x) - b*x*ArcSin[1 - d*x^2]
```

Rule 4840

```
Int[ArcSin[u_], x_Symbol] :> Simp[x*ArcSin[u], x] - Int[SimplifyIntegrand[(
x*D[u, x])/Sqrt[1 - u^2], x], x] /; InverseFunctionFreeQ[u, x] &&  !Functio
nOfExponentialQ[u, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1588

```
Int[(Pp_)*(Qq_)^(m_.), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x
]}, Simp[(Coeff[Pp, x, p]*x^(p - q + 1)*Qq^(m + 1))/((p + m*q + 1)*Coeff[Qq
, x, q]), x] /; NeQ[p + m*q + 1, 0] && EqQ[(p + m*q + 1)*Coeff[Qq, x, q]*Pp
, Coeff[Pp, x, p]*x^(p - q)*((p - q + 1)*Qq + (m + 1)*x*D[Qq, x])]] /; Free
Q[m, x] && PolyQ[Pp, x] && PolyQ[Qq, x] && NeQ[m, -1]
```

Rubi steps

$$\int \left(a-b\sin^{-1}\left(1-dx^2\right)\right)\,dx = ax-b\int \sin^{-1}\left(1-dx^2\right)\,dx$$
$$= ax-bx\sin^{-1}\left(1-dx^2\right)+b\int -\frac{2dx^2}{\sqrt{2dx^2-d^2x^4}}\,dx$$
$$= ax-bx\sin^{-1}\left(1-dx^2\right)-(2bd)\int \frac{x^2}{\sqrt{2dx^2-d^2x^4}}\,dx$$
$$= ax+\frac{2b\sqrt{2dx^2-d^2x^4}}{dx}-bx\sin^{-1}\left(1-dx^2\right)$$

Mathematica [A] time = 0.0268153, size = 43, normalized size = 0.96

$$ax+\frac{2b\sqrt{-dx^2\left(dx^2-2\right)}}{dx}+b(-x)\sin^{-1}\left(1-dx^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[a - b*ArcSin[1 - d*x^2],x]
```

```
[Out] a*x + (2*b*Sqrt[-(d*x^2*(-2 + d*x^2))])/(d*x) - b*x*ArcSin[1 - d*x^2]
```

Maple [A] time = 0.01, size = 45, normalized size = 1.

$$ax+b\left(x\arcsin\left(dx^2-1\right)-2\,\frac{x\left(dx^2-2\right)}{\sqrt{-d^2x^4+2\,dx^2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a+b*arcsin(d*x^2-1),x)
```

```
[Out] a*x+b*(x*arcsin(d*x^2-1)-2/(-d^2*x^4+2*d*x^2)^(1/2)*x*(d*x^2-2))
```

Maxima [A] time = 1.51336, size = 61, normalized size = 1.36

$$\left(x\arcsin\left(dx^2-1\right)-\frac{2\left(d^{\frac{3}{2}}x^2-2\,\sqrt{d}\right)}{\sqrt{-dx^2+2d}}\right)b+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(d*x^2-1),x, algorithm="maxima")
```

```
[Out] (x*arcsin(d*x^2 - 1) - 2*(d^(3/2)*x^2 - 2*sqrt(d))/(sqrt(-d*x^2 + 2)*d))*b
+ a*x
```

Fricas [A] time = 2.24798, size = 103, normalized size = 2.29

$$\frac{bdx^2 \arcsin\left(dx^2-1\right)+adx^2+2\sqrt{-d^2x^4+2\,dx^2}b}{dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(d*x^2-1),x, algorithm="fricas")
```

```
[Out] (b*d*x^2*arcsin(d*x^2 - 1) + a*d*x^2 + 2*sqrt(-d^2*x^4 + 2*d*x^2)*b)/(d*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \left(a+b\operatorname{asin}\left(dx^2-1\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*asin(d*x**2-1),x)
```

```
[Out] Integral(a + b*asin(d*x**2 - 1), x)
```

Giac [A] time = 1.1674, size = 74, normalized size = 1.64

$$-\left(2\,d\left(\frac{\sqrt{2}\operatorname{sgn}\left(x\right)}{d^{\frac{3}{2}}}-\frac{\sqrt{-d^2x^2+2\,d}}{d^2\operatorname{sgn}\left(x\right)}\right)-x\arcsin\left(dx^2-1\right)\right)b+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(d*x^2-1),x, algorithm="giac")
```

```
[Out] -(2*d*(sqrt(2)*sgn(x)/d^(3/2) - sqrt(-d^2*x^2 + 2*d)/(d^2*sgn(x))) - x*arcs
in(d*x^2 - 1))*b + a*x
```

3.412 $\int \frac{1}{a-b\sin^{-1}(1-dx^2)}\,dx$

Optimal. Leaf size=168

$$\frac{x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{CosIntegral}\left(-\frac{a-b\sin^{-1}(1-dx^2)}{2b}\right)}{2b\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}-\frac{x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{a}{2b}-\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)}{2b\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}$$

```
[Out] (x*CosIntegral[-(a - b*ArcSin[1 - d*x^2])/(2*b)]*(Cos[a/(2*b)] + Sin[a/(2*b
)]))/(2*b*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])) - (x*(Cos[
a/(2*b)] - Sin[a/(2*b)])*SinIntegral[a/(2*b) - ArcSin[1 - d*x^2]/2])/(2*b*(
Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2]))
```

Rubi [A] time = 0.0228204, antiderivative size = 168, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {4816}

$$\frac{x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{CosIntegral}\left(-\frac{a-b\sin^{-1}(1-dx^2)}{2b}\right)}{2b\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}-\frac{x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{a}{2b}-\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)}{2b\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a - b*ArcSin[1 - d*x^2])^(-1),x]
```


```
[Out] (x*CosIntegral[-(a - b*ArcSin[1 - d*x^2])/(2*b)]*(Cos[a/(2*b)] + Sin[a/(2*b
)]))/(2*b*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])) - (x*(Cos[
a/(2*b)] - Sin[a/(2*b)])*SinIntegral[a/(2*b) - ArcSin[1 - d*x^2]/2])/(2*b*(
Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2]))
```


Rule 4816

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(-1), x_Symbol] :> -Simp[(x
*(c*Cos[a/(2*b)] - Sin[a/(2*b)])*CosIntegral[(c/(2*b))*(a + b*ArcSin[c + d*
x^2])])/(2*b*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2])), x] -
 Simp[(x*(c*Cos[a/(2*b)] + Sin[a/(2*b)])*SinIntegral[(c/(2*b))*(a + b*ArcSi
n[c + d*x^2])])/(2*b*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2]
)), x] /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \frac{1}{a-b\sin^{-1}\left(1-dx^2\right)}\,dx = \frac{x\mathrm{Ci}\left(-\frac{a-b\sin^{-1}\left(1-dx^2\right)}{2b}\right)\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)}{2b\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)} - \frac{x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\mathrm{Si}\left(\frac{a}{2b}-\frac{1}{2}\right.}{2b\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\right.\right.}$$

Mathematica [A] time = 0.195105, size = 130, normalized size = 0.77

$$\frac{\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)\left(\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{CosIntegral}\left(\frac{1}{2}\left(\sin^{-1}\left(1-dx^2\right)-\frac{a}{b}\right)\right)+\left(\sin\left(\right.\right.\right.}{2bdx}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a - b*ArcSin[1 - d*x^2])^(-1),x]
```

```
[Out] ((Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])*(CosIntegral[(-(a/b)
 + ArcSin[1 - d*x^2])/2]*(Cos[a/(2*b)] + Sin[a/(2*b)]) + (-Cos[a/(2*b)] + S
in[a/(2*b)])*SinIntegral[(a - b*ArcSin[1 - d*x^2])/(2*b)]))/(2*b*d*x)
```

Maple [F] time = 0.059, size = 0, normalized size = 0.

$$\int \left(a+b\arcsin\left(dx^2-1\right)\right)^{-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2-1)),x)
```

```
[Out] int(1/(a+b*arcsin(d*x^2-1)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{b\arcsin\left(dx^2-1\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1)),x, algorithm="maxima")
```

```
[Out] integrate(1/(b*arcsin(d*x^2 - 1) + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{b\arcsin\left(dx^2-1\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1)),x, algorithm="fricas")
```

```
[Out] integral(1/(b*arcsin(d*x^2 - 1) + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{a+b\,\text{asin}\left(dx^2-1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2-1)),x)
```

```
[Out] Integral(1/(a + b*asin(d*x**2 - 1)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{b\arcsin\left(dx^2-1\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1)),x, algorithm="giac")
```

```
[Out] integrate(1/(b*arcsin(d*x^2 - 1) + a), x)
```

3.413 $\int \frac{1}{\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2}\,dx$

Optimal. Leaf size=216

$$-\frac{x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{CosIntegral}\left(-\frac{a-b\sin^{-1}\left(1-dx^2\right)}{2b}\right)}{4b^2\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}-\frac{x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{a}{2b}-\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)}{4b^2\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}-\frac{}{2bdx}$$

```
[Out] -Sqrt[2*d*x^2 - d^2*x^4]/(2*b*d*x*(a - b*ArcSin[1 - d*x^2])) - (x*CosIntegr
al[-(a - b*ArcSin[1 - d*x^2])/(2*b)]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(4*b^2*
(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])) - (x*(Cos[a/(2*b)] +
 Sin[a/(2*b)])*SinIntegral[a/(2*b) - ArcSin[1 - d*x^2]/2])/(4*b^2*(Cos[ArcS
in[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2]))
```

Rubi [A] time = 0.024594, antiderivative size = 216, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {4825}

$$-\frac{x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{CosIntegral}\left(-\frac{a-b\sin^{-1}\left(1-dx^2\right)}{2b}\right)}{4b^2\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}-\frac{x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{a}{2b}-\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)}{4b^2\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}-\frac{}{2bdx}$$

Antiderivative was successfully verified.

```
[In] Int[(a - b*ArcSin[1 - d*x^2])^(-2),x]
```

```
[Out] -Sqrt[2*d*x^2 - d^2*x^4]/(2*b*d*x*(a - b*ArcSin[1 - d*x^2])) - (x*CosIntegr
al[-(a - b*ArcSin[1 - d*x^2])/(2*b)]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(4*b^2*
(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])) - (x*(Cos[a/(2*b)] +
 Sin[a/(2*b)])*SinIntegral[a/(2*b) - ArcSin[1 - d*x^2]/2])/(4*b^2*(Cos[ArcS
in[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2]))
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(-2), x_Symbol] :> -Simp[Sq
rt[-2*c*d*x^2 - d^2*x^4]/(2*b*d*x*(a + b*ArcSin[c + d*x^2])), x] + (-Simp[(
x*(Cos[a/(2*b)] + c*Sin[a/(2*b)])*CosIntegral[(c/(2*b))*(a + b*ArcSin[c + d
*x^2])])/(4*b^2*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2])), x
] + Simp[(x*(Cos[a/(2*b)] - c*Sin[a/(2*b)])*SinIntegral[(c/(2*b))*(a + b*Ar
```

```
cSin[c + d*x^2])])/(4*b^2*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^
2]/2])), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \frac{1}{\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2}\,dx=-\frac{\sqrt{2dx^2-d^2x^4}}{2bdx\left(a-b\sin^{-1}\left(1-dx^2\right)\right)}-\frac{x\text{Ci}\left(-\frac{a-b\sin^{-1}(1-dx^2)}{2b}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)}{4b^2\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}$$

Mathematica [A] time = 0.359269, size = 183, normalized size = 0.85

$$\frac{\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)\left(a-b\sin^{-1}\left(1-dx^2\right)\right)\left(\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{CosIntegral}\left(\frac{1}{2}\left(\sin^{-1}\right.\right.\right.}{4b^2dx\left(b\sin^{-1}\left(1-dx^2\right)-a\right)}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a - b*ArcSin[1 - d*x^2])^(-2),x]
```

```
[Out] (2*b*Sqrt[d*x^2*(2 - d*x^2)] + (a - b*ArcSin[1 - d*x^2])*(Cos[ArcSin[1 - d*
x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])*(CosIntegral[(-(a/b) + ArcSin[1 - d*x^2
])/2]*(Cos[a/(2*b)] - Sin[a/(2*b)]) + (Cos[a/(2*b)] + Sin[a/(2*b)])*SinInte
gral[(a - b*ArcSin[1 - d*x^2])/(2*b)]))/(4*b^2*d*x*(-a + b*ArcSin[1 - d*x^2
]))
```

Maple [F] time = 0.057, size = 0, normalized size = 0.

$$\int \left(a+b\arcsin\left(dx^2-1\right)\right)^{-2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2-1))^2,x)
```

```
[Out] int(1/(a+b*arcsin(d*x^2-1))^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(b^2 d \arctan\left(dx^2-1, \sqrt{-dx^2+2}\sqrt{d}x\right)+abd\right)\sqrt{d}\int \frac{\sqrt{-dx^2+2}x}{abdx^2-2\,ab+\left(b^2dx^2-2\,b^2\right)\arctan\left(dx^2-1,\sqrt{-dx^2+2}\sqrt{d}x\right)}\,dx-\sqrt{-dx^2+2}\sqrt{d}}{2\left(b^2 d \arctan\left(dx^2-1, \sqrt{-dx^2+2}\sqrt{d}x\right)+abd\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^2,x, algorithm="maxima")
```

```
[Out] 1/2*(2*(b^2*d*arctan2(d*x^2 - 1, sqrt(-d*x^2 + 2)*sqrt(d)*x) + a*b*d)*sqrt(
d)*integrate(1/2*sqrt(-d*x^2 + 2)*x/(a*b*d*x^2 - 2*a*b + (b^2*d*x^2 - 2*b^2
)*arctan2(d*x^2 - 1, sqrt(-d*x^2 + 2)*sqrt(d)*x)), x) - sqrt(-d*x^2 + 2)*sq
rt(d))/(b^2*d*arctan2(d*x^2 - 1, sqrt(-d*x^2 + 2)*sqrt(d)*x) + a*b*d)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{b^2\arcsin\left(dx^2-1\right)^2+2\,ab\arcsin\left(dx^2-1\right)+a^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(b^2*arcsin(d*x^2 - 1)^2 + 2*a*b*arcsin(d*x^2 - 1) + a^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+b\operatorname{asin}\left(dx^2-1\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2-1))**2,x)
```

```
[Out] Integral((a + b*asin(d*x**2 - 1))**(-2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b \arcsin\left(dx^2 - 1\right) + a\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^(-2), x)
```

3.414 $\int \frac{1}{\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^3}\,dx$

Optimal. Leaf size=240

$$-\frac{x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{CosIntegral}\left(-\frac{a-b\sin^{-1}\left(1-dx^2\right)}{2b}\right)}{16b^3\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}+\frac{x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{a}{2b}-\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)}{16b^3\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}+\frac{\quad}{8b}$$

```
[Out] -Sqrt[2*d*x^2 - d^2*x^4]/(4*b*d*x*(a - b*ArcSin[1 - d*x^2])^2) + x/(8*b^2*(
a - b*ArcSin[1 - d*x^2])) - (x*CosIntegral[-(a - b*ArcSin[1 - d*x^2])/(2*b)
]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(16*b^3*(Cos[ArcSin[1 - d*x^2]/2] - Sin[Ar
cSin[1 - d*x^2]/2])) + (x*(Cos[a/(2*b)] - Sin[a/(2*b)])*SinIntegral[a/(2*b)
 - ArcSin[1 - d*x^2]/2])/(16*b^3*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 -
 d*x^2]/2]))
```

Rubi [A] time = 0.0470692, antiderivative size = 240, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {4828, 4816}

$$-\frac{x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{CosIntegral}\left(-\frac{a-b\sin^{-1}\left(1-dx^2\right)}{2b}\right)}{16b^3\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}+\frac{x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{a}{2b}-\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)}{16b^3\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}+\frac{\quad}{8b}$$

Antiderivative was successfully verified.

```
[In] Int[(a - b*ArcSin[1 - d*x^2])^(-3),x]
```

```
[Out] -Sqrt[2*d*x^2 - d^2*x^4]/(4*b*d*x*(a - b*ArcSin[1 - d*x^2])^2) + x/(8*b^2*(
a - b*ArcSin[1 - d*x^2])) - (x*CosIntegral[-(a - b*ArcSin[1 - d*x^2])/(2*b)
]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(16*b^3*(Cos[ArcSin[1 - d*x^2]/2] - Sin[Ar
cSin[1 - d*x^2]/2])) + (x*(Cos[a/(2*b)] - Sin[a/(2*b)])*SinIntegral[a/(2*b)
 - ArcSin[1 - d*x^2]/2])/(16*b^3*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 -
 d*x^2]/2]))
```

Rule 4828

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[(x*
(a + b*ArcSin[c + d*x^2])^(n + 2))/(4*b^2*(n + 1)*(n + 2)), x] + (-Dist[1/(
4*b^2*(n + 1)*(n + 2)), Int[(a + b*ArcSin[c + d*x^2])^(n + 2), x], x] + Sim
```

```
p[(Sqrt[-2*c*d*x^2 - d^2*x^4]*(a + b*ArcSin[c + d*x^2])^(n + 1))/(2*b*d*(n
+ 1)*x), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1] && LtQ[n, -1] && NeQ[
n, -2]
```

Rule 4816

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(-1), x_Symbol] :> -Simp[(x
*(c*Cos[a/(2*b)] - Sin[a/(2*b)])*CosIntegral[(c/(2*b))*(a + b*ArcSin[c + d*
x^2])])/(2*b*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2])), x] -
 Simp[(x*(c*Cos[a/(2*b)] + Sin[a/(2*b)])*SinIntegral[(c/(2*b))*(a + b*ArcSi
n[c + d*x^2])])/(2*b*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2]
)), x] /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \frac{1}{\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^3}\,dx = -\frac{\sqrt{2dx^2-d^2x^4}}{4bdx\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2}+\frac{x}{8b^2\left(a-b\sin^{-1}\left(1-dx^2\right)\right)}-\frac{\int \frac{1}{a-b\sin^{-1}(1-dx^2)}\,dx}{8b^2}$$

$$= -\frac{\sqrt{2dx^2-d^2x^4}}{4bdx\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2}+\frac{x}{8b^2\left(a-b\sin^{-1}\left(1-dx^2\right)\right)}-\frac{x\operatorname{Ci}\left(-\frac{a-b\sin^{-1}(1-\ldots}{2b}\ldots\right.}{16b^3\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-\ldots\right.\right.\right.}$$

Mathematica [A] time = 0.476581, size = 195, normalized size = 0.81

$$-\frac{\frac{4b^2\sqrt{-dx^2\left(dx^2-2\right)}}{d\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2}+\frac{\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)\left(\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{CosIntegral}\left(\frac{1}{2}\left(\sin^{-1}\left(1-dx^2\right)-\frac{a}{b}\right)\right)+\left(\sin\left(\frac{a}{2b}\right)-\cos\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{a-b\ldots}{\ldots}\right.}{d}}{16b^3x}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a - b*ArcSin[1 - d*x^2])^(-3),x]
```

```
[Out] -((4*b^2*Sqrt[-(d*x^2*(-2 + d*x^2))])/(d*(a - b*ArcSin[1 - d*x^2])^2) - (2*
b*x^2)/(a - b*ArcSin[1 - d*x^2]) + ((Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[
1 - d*x^2]/2])*(CosIntegral[(-(a/b) + ArcSin[1 - d*x^2])/2]*(Cos[a/(2*b)] +
 Sin[a/(2*b)]) + (-Cos[a/(2*b)] + Sin[a/(2*b)])*SinIntegral[(a - b*ArcSin[1
 - d*x^2])/(2*b)]))/d)/(16*b^3*x)
```

Maple [F] time = 0.059, size = 0, normalized size = 0.

$$\int \left(a + b \arcsin\left(dx^2 - 1\right)\right)^{-3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2-1))^3,x)
```

```
[Out] int(1/(a+b*arcsin(d*x^2-1))^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{bdx \arctan\left(dx^2 - 1, \sqrt{-dx^2 + 2}\sqrt{d}x\right) + adx - 2\sqrt{-dx^2 + 2}b\sqrt{d} - \left(b^4 d \arctan\left(dx^2 - 1, \sqrt{-dx^2 + 2}\sqrt{d}x\right)^2 + 2ab^3 d \arcta\right.}{8\left(b^4 d \arctan\left(dx^2 - 1, \sqrt{-dx^2 + 2}\sqrt{d}x\right)^2 + 2ab^3 d \arctan\left(dx^2 - 1, \sqrt{-\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^3,x, algorithm="maxima")
```

```
[Out] 1/8*(b*d*x*arctan2(d*x^2 - 1, sqrt(-d*x^2 + 2)*sqrt(d)*x) + a*d*x - 2*sqrt(
-d*x^2 + 2)*b*sqrt(d) - 8*(b^4*d*arctan2(d*x^2 - 1, sqrt(-d*x^2 + 2)*sqrt(d
)*x)^2 + 2*a*b^3*d*arctan2(d*x^2 - 1, sqrt(-d*x^2 + 2)*sqrt(d)*x) + a^2*b^2
*d)*integrate(1/8/(b^3*arctan2(d*x^2 - 1, sqrt(-d*x^2 + 2)*sqrt(d)*x) + a*b
^2), x))/(b^4*d*arctan2(d*x^2 - 1, sqrt(-d*x^2 + 2)*sqrt(d)*x)^2 + 2*a*b^3*
d*arctan2(d*x^2 - 1, sqrt(-d*x^2 + 2)*sqrt(d)*x) + a^2*b^2*d)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{b^3 \arcsin\left(dx^2 - 1\right)^3 + 3ab^2 \arcsin\left(dx^2 - 1\right)^2 + 3a^2 b \arcsin\left(dx^2 - 1\right) + a^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^3,x, algorithm="fricas")
```

```
[Out] integral(1/(b^3*arcsin(d*x^2 - 1)^3 + 3*a*b^2*arcsin(d*x^2 - 1)^2 + 3*a^2*b
*arcsin(d*x^2 - 1) + a^3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a + b \operatorname{asin}\left(dx^2 - 1\right)\right)^3} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2-1))**3,x)
```

```
[Out] Integral((a + b*asin(d*x**2 - 1))**(-3), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b \arcsin\left(dx^2 - 1\right) + a\right)^3} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^3,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^(-3), x)
```

3.415 $\int \sin^{-1}\left(1+x^2\right)^2 dx$

Optimal. Leaf size=40

$$x\sin^{-1}\left(x^2+1\right)^2+\frac{4\sqrt{-x^4-2x^2}\sin^{-1}\left(x^2+1\right)}{x}-8x$$

```
[Out] -8*x + (4*Sqrt[-2*x^2 - x^4]*ArcSin[1 + x^2])/x + x*ArcSin[1 + x^2]^2
```

Rubi [A] time = 0.0062437, antiderivative size = 40, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {4814, 8}

$$x\sin^{-1}\left(x^2+1\right)^2+\frac{4\sqrt{-x^4-2x^2}\sin^{-1}\left(x^2+1\right)}{x}-8x$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[1 + x^2]^2,x]
```

```
[Out] -8*x + (4*Sqrt[-2*x^2 - x^4]*ArcSin[1 + x^2])/x + x*ArcSin[1 + x^2]^2
```

Rule 4814

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
a + b*ArcSin[c + d*x^2])^n, x] + (-Dist[4*b^2*n*(n - 1), Int[(a + b*ArcSin[
c + d*x^2])^(n - 2), x], x] + Simp[(2*b*n*Sqrt[-2*c*d*x^2 - d^2*x^4]*(a + b
*ArcSin[c + d*x^2])^(n - 1))/(d*x), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^
2, 1] && GtQ[n, 1]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\int \sin^{-1}\left(1+x^2\right)^2 dx = \frac{4\sqrt{-2x^2-x^4}\sin^{-1}\left(1+x^2\right)}{x} + x\sin^{-1}\left(1+x^2\right)^2 - 8\int 1\,dx$$
$$= -8x + \frac{4\sqrt{-2x^2-x^4}\sin^{-1}\left(1+x^2\right)}{x} + x\sin^{-1}\left(1+x^2\right)^2$$

Mathematica [A] time = 0.0132387, size = 40, normalized size = 1.

$$x\sin^{-1}\left(x^2+1\right)^2 + \frac{4\sqrt{-x^4-2x^2}\sin^{-1}\left(x^2+1\right)}{x} - 8x$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[1 + x^2]^2,x]
```

```
[Out] -8*x + (4*Sqrt[-2*x^2 - x^4]*ArcSin[1 + x^2])/x + x*ArcSin[1 + x^2]^2
```

Maple [F] time = 0.052, size = 0, normalized size = 0.

$$\int \left(\arcsin\left(x^2+1\right)\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(x^2+1)^2,x)
```

```
[Out] int(arcsin(x^2+1)^2,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^2+1)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 2.26228, size = 84, normalized size = 2.1

$$x \arctan\left(\frac{\sqrt{-x^4 - 2x^2}(x^2 + 1)}{x^4 + 2x^2}\right)^2 - 8x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^2+1)^2,x, algorithm="fricas")
```

```
[Out] x*arctan(sqrt(-x^4 - 2*x^2)*(x^2 + 1)/(x^4 + 2*x^2))^2 - 8*x
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \operatorname{asin}^2\left(x^2 + 1\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(x**2+1)**2,x)
```

```
[Out] Integral(asin(x**2 + 1)**2, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \arcsin\left(x^2 + 1\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^2+1)^2,x, algorithm="giac")
```

```
[Out] integrate(arcsin(x^2 + 1)^2, x)
```

3.416 $\int \sin^{-1}\left(1-x^2\right)^2\,dx$

Optimal. Leaf size=44

$$x\sin^{-1}\left(1-x^2\right)^2-\frac{4\sqrt{2x^2-x^4}\,\sin^{-1}\left(1-x^2\right)}{x}-8x$$

```
[Out] -8*x - (4*Sqrt[2*x^2 - x^4]*ArcSin[1 - x^2])/x + x*ArcSin[1 - x^2]^2
```

Rubi [A] time = 0.0071933, antiderivative size = 44, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {4814, 8}

$$x\sin^{-1}\left(1-x^2\right)^2-\frac{4\sqrt{2x^2-x^4}\,\sin^{-1}\left(1-x^2\right)}{x}-8x$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[1 - x^2]^2,x]
```

```
[Out] -8*x - (4*Sqrt[2*x^2 - x^4]*ArcSin[1 - x^2])/x + x*ArcSin[1 - x^2]^2
```

Rule 4814

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
a + b*ArcSin[c + d*x^2])^n, x] + (-Dist[4*b^2*n*(n - 1), Int[(a + b*ArcSin[
c + d*x^2])^(n - 2), x], x] + Simp[(2*b*n*Sqrt[-2*c*d*x^2 - d^2*x^4]*(a + b
*ArcSin[c + d*x^2])^(n - 1))/(d*x), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^
2, 1] && GtQ[n, 1]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\int \sin^{-1}\left(1-x^2\right)^2 dx = -\frac{4\sqrt{2x^2-x^4}\sin^{-1}\left(1-x^2\right)}{x} + x\sin^{-1}\left(1-x^2\right)^2 - 8\int 1\,dx$$
$$= -8x - \frac{4\sqrt{2x^2-x^4}\sin^{-1}\left(1-x^2\right)}{x} + x\sin^{-1}\left(1-x^2\right)^2$$

Mathematica [A] time = 0.0147286, size = 44, normalized size = 1.

$$x\sin^{-1}\left(1-x^2\right)^2 - \frac{4\sqrt{2x^2-x^4}\sin^{-1}\left(1-x^2\right)}{x} - 8x$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[1 - x^2]^2,x]
```

```
[Out] -8*x - (4*Sqrt[2*x^2 - x^4]*ArcSin[1 - x^2])/x + x*ArcSin[1 - x^2]^2
```

Maple [F] time = 0.053, size = 0, normalized size = 0.

$$\int \left(\arcsin\left(x^2-1\right)\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(x^2-1)^2,x)
```

```
[Out] int(arcsin(x^2-1)^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$x\arctan\left(x^2-1,\sqrt{-x^2+2}x\right)^2 + 4\int \frac{\sqrt{-x^2+2}x\arctan\left(x^2-1,\sqrt{-x^2+2}x\right)}{x^2-2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^2-1)^2,x, algorithm="maxima")
```

```
[Out] x*arctan2(x^2 - 1, sqrt(-x^2 + 2)*x)^2 + 4*integrate(sqrt(-x^2 + 2)*x*arcta
n2(x^2 - 1, sqrt(-x^2 + 2)*x)/(x^2 - 2), x)
```

Fricas [A] time = 1.99209, size = 100, normalized size = 2.27

$$\frac{x^2 \arcsin\left(x^2-1\right)^2 - 8\,x^2 + 4\,\sqrt{-x^4+2\,x^2}\arcsin\left(x^2-1\right)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^2-1)^2,x, algorithm="fricas")
```

```
[Out] (x^2*arcsin(x^2 - 1)^2 - 8*x^2 + 4*sqrt(-x^4 + 2*x^2)*arcsin(x^2 - 1))/x
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \operatorname{asin}^2\left(x^2-1\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(x**2-1)**2,x)
```

```
[Out] Integral(asin(x**2 - 1)**2, x)
```

Giac [A] time = 1.21066, size = 77, normalized size = 1.75

$$x\arcsin\left(x^2-1\right)^2 + 2\left(\sqrt{2}\pi - 4\,\sqrt{2}\right)\operatorname{sgn}(x) + \frac{4\left(\sqrt{-x^2+2}\arcsin\left(x^2-1\right) - 2\,x + 2\,\sqrt{2}\right)}{\operatorname{sgn}(x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^2-1)^2,x, algorithm="giac")
```

```
[Out] x*arcsin(x^2 - 1)^2 + 2*(sqrt(2)*pi - 4*sqrt(2))*sgn(x) + 4*(sqrt(-x^2 + 2)
*arcsin(x^2 - 1) - 2*x + 2*sqrt(2))/sgn(x)
```

3.417 $\int \left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{5/2}\,dx$

Optimal. Leaf size=277

$$-15b^2x\sqrt{a+b\sin^{-1}\left(dx^2+1\right)}+\frac{5b\sqrt{-d^2x^4-2dx^2}\left(a+b\sin^{-1}\left(dx^2+1\right)\right)^{3/2}}{dx}+\frac{15\sqrt{\pi}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\ldots\right.}{\left(\frac{1}{b}\right)^{5/2}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\ldots\right.\right.}$$

```
[Out] -15*b^2*x*Sqrt[a + b*ArcSin[1 + d*x^2]] + (5*b*Sqrt[-2*d*x^2 - d^2*x^4]*(a
+ b*ArcSin[1 + d*x^2])^(3/2))/(d*x) + x*(a + b*ArcSin[1 + d*x^2])^(5/2) - (
15*Sqrt[Pi]*x*FresnelS[(Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi
]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/((b^(-1))^(5/2)*(Cos[ArcSin[1 + d*x^2]/2]
 - Sin[ArcSin[1 + d*x^2]/2])) + (15*Sqrt[Pi]*x*FresnelC[(Sqrt[b^(-1)]*Sqrt[
a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/((b^(-1)
)^(5/2)*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]))
```

Rubi [A] time = 0.104452, antiderivative size = 277, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {4814, 4811}

$$-15b^2x\sqrt{a+b\sin^{-1}\left(dx^2+1\right)}+\frac{5b\sqrt{-d^2x^4-2dx^2}\left(a+b\sin^{-1}\left(dx^2+1\right)\right)^{3/2}}{dx}+\frac{15\sqrt{\pi}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\ldots\right.}{\left(\frac{1}{b}\right)^{5/2}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\ldots\right.\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[1 + d*x^2])^(5/2),x]
```

```
[Out] -15*b^2*x*Sqrt[a + b*ArcSin[1 + d*x^2]] + (5*b*Sqrt[-2*d*x^2 - d^2*x^4]*(a
+ b*ArcSin[1 + d*x^2])^(3/2))/(d*x) + x*(a + b*ArcSin[1 + d*x^2])^(5/2) - (
15*Sqrt[Pi]*x*FresnelS[(Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi
]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/((b^(-1))^(5/2)*(Cos[ArcSin[1 + d*x^2]/2]
 - Sin[ArcSin[1 + d*x^2]/2])) + (15*Sqrt[Pi]*x*FresnelC[(Sqrt[b^(-1)]*Sqrt[
a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/((b^(-1)
)^(5/2)*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]))
```

Rule 4814

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
a + b*ArcSin[c + d*x^2])^n, x] + (-Dist[4*b^2*n*(n - 1), Int[(a + b*ArcSin[
c + d*x^2])^(n - 2), x], x] + Simp[(2*b*n*Sqrt[-2*c*d*x^2 - d^2*x^4]*(a + b
*ArcSin[c + d*x^2])^(n - 1))/(d*x), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^
2, 1] && GtQ[n, 1]
```

Rule 4811

```
Int[Sqrt[(a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.)], x_Symbol] :> Simp[x*Sq
rt[a + b*ArcSin[c + d*x^2]], x] + (-Simp[(Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[
a/(2*b)])*FresnelC[Sqrt[c/(Pi*b)]*Sqrt[a + b*ArcSin[c + d*x^2]]])/(Sqrt[c/b
]*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2])), x] + Simp[(Sqrt
[Pi]*x*(Cos[a/(2*b)] - c*Sin[a/(2*b)])*FresnelS[Sqrt[c/(Pi*b)]*Sqrt[a + b*A
rcSin[c + d*x^2]]])/(Sqrt[c/b]*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c +
 d*x^2]/2])), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{5/2}\,dx = \frac{5b\sqrt{-2dx^2-d^2x^4}\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{3/2}}{dx} + x\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{5/2} - \left(15b^2\right)\int$$

$$= -15b^2x\sqrt{a+b\sin^{-1}\left(1+dx^2\right)} + \frac{5b\sqrt{-2dx^2-d^2x^4}\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{3/2}}{dx} + x\left(a+\right.$$

Mathematica [A] time = 0.26077, size = 269, normalized size = 0.97

$$-\frac{15x\left(-\sqrt{\pi}\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}\left(dx^2+1\right)}}{\sqrt{\pi}}\right)+\sqrt{\pi}\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}\left(dx^2+1\right)}}{\sqrt{\pi}}\right)+\sqrt{}\right.}{\left(\frac{1}{b}\right)^{5/2}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx\right.\right.\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[1 + d*x^2])^(5/2),x]
```

```
[Out] (5*b*Sqrt[-(d*x^2*(2 + d*x^2))]*(a + b*ArcSin[1 + d*x^2])^(3/2))/(d*x) + x*
(a + b*ArcSin[1 + d*x^2])^(5/2) - (15*x*(Sqrt[Pi]*FresnelS[(Sqrt[b^(-1)]*Sq
rt[a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)]) - Sqrt
[Pi]*FresnelC[(Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a
```

```
/(2*b)] + Sin[a/(2*b)]) + Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[1 + d*x^2]]*(Cos[A
rcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])))/((b^(-1))^(5/2)*(Cos[ArcS
in[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]))
```

Maple [F] time = 0.069, size = 0, normalized size = 0.

$$\int \left(a + b \arcsin \left(d x^2 + 1\right)\right)^{\frac{5}{2}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+1))^(5/2),x)
```

```
[Out] int((a+b*arcsin(d*x^2+1))^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b \arcsin \left(d x^2 + 1\right) + a\right)^{\frac{5}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x^2 + 1) + a)^(5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+1))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b \arcsin\left(dx^2+1\right)+a\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + 1) + a)^(5/2), x)
```

3.418 $\int \left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{3/2}\,dx$

Optimal. Leaf size=247

$$\frac{3\sqrt{\pi}b^{3/2}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{a+b\sin^{-1}(dx^2+1)}}{\sqrt{\pi}\sqrt{b}}\right)}{\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)}+\frac{3\sqrt{\pi}b^{3/2}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{a+b\sin^{-1}(dx^2+1)}}{\sqrt{b}\sqrt{\pi}}\right)}{\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)}+\frac{3b\ldots}{}$$

```
[Out] (3*b*Sqrt[-2*d*x^2 - d^2*x^4]*Sqrt[a + b*ArcSin[1 + d*x^2]])/(d*x) + x*(a +
 b*ArcSin[1 + d*x^2])^(3/2) + (3*b^(3/2)*Sqrt[Pi]*x*FresnelC[Sqrt[a + b*Arc
Sin[1 + d*x^2]]/(Sqrt[b]*Sqrt[Pi])]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Cos[Arc
Sin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]) + (3*b^(3/2)*Sqrt[Pi]*x*Fresn
elS[Sqrt[a + b*ArcSin[1 + d*x^2]]/(Sqrt[b]*Sqrt[Pi])]*(Cos[a/(2*b)] + Sin[a
/(2*b)]))/(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])
```

Rubi [A] time = 0.0757509, antiderivative size = 247, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {4814, 4819}

$$\frac{3\sqrt{\pi}b^{3/2}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{a+b\sin^{-1}(dx^2+1)}}{\sqrt{\pi}\sqrt{b}}\right)}{\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)}+\frac{3\sqrt{\pi}b^{3/2}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{a+b\sin^{-1}(dx^2+1)}}{\sqrt{b}\sqrt{\pi}}\right)}{\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)}+\frac{3b\ldots}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[1 + d*x^2])^(3/2),x]
```

```
[Out] (3*b*Sqrt[-2*d*x^2 - d^2*x^4]*Sqrt[a + b*ArcSin[1 + d*x^2]])/(d*x) + x*(a +
 b*ArcSin[1 + d*x^2])^(3/2) + (3*b^(3/2)*Sqrt[Pi]*x*FresnelC[Sqrt[a + b*Arc
Sin[1 + d*x^2]]/(Sqrt[b]*Sqrt[Pi])]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Cos[Arc
Sin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]) + (3*b^(3/2)*Sqrt[Pi]*x*Fresn
elS[Sqrt[a + b*ArcSin[1 + d*x^2]]/(Sqrt[b]*Sqrt[Pi])]*(Cos[a/(2*b)] + Sin[a
/(2*b)]))/(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])
```

Rule 4814

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
a + b*ArcSin[c + d*x^2])^n, x] + (-Dist[4*b^2*n*(n - 1), Int[(a + b*ArcSin[
c + d*x^2])^(n - 2), x], x] + Simp[(2*b*n*Sqrt[-2*c*d*x^2 - d^2*x^4]*(a + b
```

```
*ArcSin[c + d*x^2])^(n - 1))/(d*x), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^
2, 1] && GtQ[n, 1]
```

Rule 4819

```
Int[1/Sqrt[(a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.)], x_Symbol] :> -Simp[(
Sqrt[Pi]*x*(Cos[a/(2*b)] - c*Sin[a/(2*b)])*FresnelC[(1*Sqrt[a + b*ArcSin[c
+ d*x^2]])/(Sqrt[b*c]*Sqrt[Pi])])/(Sqrt[b*c]*(Cos[ArcSin[c + d*x^2]/2] - c*
Sin[ArcSin[c + d*x^2]/2])), x] - Simp[(Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[a/(
2*b)])*FresnelS[(1/(Sqrt[b*c]*Sqrt[Pi]))*Sqrt[a + b*ArcSin[c + d*x^2]]])/(S
qrt[b*c]*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2])), x] /; Fr
eeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{3/2}\,dx=\frac{3b\sqrt{-2dx^2-d^2x^4}\sqrt{a+b\sin^{-1}\left(1+dx^2\right)}}{dx}+x\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{3/2}-\left(3b^2\right)\int \frac{}{\sqrt{a}}$$

$$=\frac{3b\sqrt{-2dx^2-d^2x^4}\sqrt{a+b\sin^{-1}\left(1+dx^2\right)}}{dx}+x\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{3/2}+\frac{3b^{3/2}\sqrt{\pi}xC}{\cos\left(\frac{1}{2}\sin\right.}$$

Mathematica [A] time = 0.360626, size = 249, normalized size = 1.01

$$\frac{3\sqrt{\pi}b^{3/2}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{a+b\sin^{-1}\left(dx^2+1\right)}}{\sqrt{\pi}\sqrt{b}}\right)}{\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)}+\frac{3\sqrt{\pi}b^{3/2}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{a+b\sin^{-1}\left(dx^2+1\right)}}{\sqrt{b}\sqrt{\pi}}\right)}{\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)}+\frac{\sqrt{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[1 + d*x^2])^(3/2),x]
```

```
[Out] (Sqrt[a + b*ArcSin[1 + d*x^2]]*(a*d*x^2 + 3*b*Sqrt[-(d*x^2*(2 + d*x^2))] +
b*d*x^2*ArcSin[1 + d*x^2]))/(d*x) + (3*b^(3/2)*Sqrt[Pi]*x*FresnelC[Sqrt[a +
 b*ArcSin[1 + d*x^2]]/(Sqrt[b]*Sqrt[Pi])]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(C
os[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]) + (3*b^(3/2)*Sqrt[Pi]*x
*FresnelS[Sqrt[a + b*ArcSin[1 + d*x^2]]/(Sqrt[b]*Sqrt[Pi])]*(Cos[a/(2*b)] +
 Sin[a/(2*b)]))/(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])
```

Maple [F] time = 0.059, size = 0, normalized size = 0.

$$\int \left(a+b\arcsin\left(dx^2+1\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+1))^(3/2),x)
```

```
[Out] int((a+b*arcsin(d*x^2+1))^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b\arcsin\left(dx^2+1\right)+a\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x^2 + 1) + a)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \left(a+b\operatorname{asin}\left(dx^2+1\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+1))**(3/2),x)
```

```
[Out] Integral((a + b*asin(d*x**2 + 1))**(3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b \arcsin \left(dx^2+1\right)+a\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + 1) + a)^(3/2), x)
```

3.419 $\int \sqrt{a+b\sin^{-1}(1+dx^2)}\,dx$

Optimal. Leaf size=210

$$-\frac{\sqrt{\pi}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}(dx^2+1)}}{\sqrt{\pi}}\right)}{\sqrt{\frac{1}{b}}\left(\cos\left(\frac{1}{2}\sin^{-1}(dx^2+1)\right)-\sin\left(\frac{1}{2}\sin^{-1}(dx^2+1)\right)\right)}+\frac{\sqrt{\pi}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}(dx^2+1)}}{\sqrt{\pi}}\right)}{\sqrt{\frac{1}{b}}\left(\cos\left(\frac{1}{2}\sin^{-1}(dx^2+1)\right)-\sin\left(\frac{1}{2}\sin^{-1}(dx^2+1)\right)\right)}+x$$

```
[Out] x*Sqrt[a + b*ArcSin[1 + d*x^2]] + (Sqrt[Pi]*x*FresnelS[(Sqrt[b^(-1)]*Sqrt[a
 + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Sqrt[b^(
-1)]*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])) - (Sqrt[Pi]*x*F
resnelC[(Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)
] + Sin[a/(2*b)]))/(Sqrt[b^(-1)]*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 +
 d*x^2]/2]))
```

Rubi [A] time = 0.0242479, antiderivative size = 210, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {4811}

$$-\frac{\sqrt{\pi}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}(dx^2+1)}}{\sqrt{\pi}}\right)}{\sqrt{\frac{1}{b}}\left(\cos\left(\frac{1}{2}\sin^{-1}(dx^2+1)\right)-\sin\left(\frac{1}{2}\sin^{-1}(dx^2+1)\right)\right)}+\frac{\sqrt{\pi}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}(dx^2+1)}}{\sqrt{\pi}}\right)}{\sqrt{\frac{1}{b}}\left(\cos\left(\frac{1}{2}\sin^{-1}(dx^2+1)\right)-\sin\left(\frac{1}{2}\sin^{-1}(dx^2+1)\right)\right)}+x$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*ArcSin[1 + d*x^2]],x]
```


```
[Out] x*Sqrt[a + b*ArcSin[1 + d*x^2]] + (Sqrt[Pi]*x*FresnelS[(Sqrt[b^(-1)]*Sqrt[a
 + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Sqrt[b^(
-1)]*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])) - (Sqrt[Pi]*x*F
resnelC[(Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)
] + Sin[a/(2*b)]))/(Sqrt[b^(-1)]*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 +
 d*x^2]/2]))
```


Rule 4811

```
Int[Sqrt[(a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.)], x_Symbol] :> Simp[x*Sq
rt[a + b*ArcSin[c + d*x^2]], x] + (-Simp[(Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[
a/(2*b)])*FresnelC[Sqrt[c/(Pi*b)]*Sqrt[a + b*ArcSin[c + d*x^2]]])/(Sqrt[c/b
```

```
]*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2])), x] + Simp[(Sqrt
[Pi]*x*(Cos[a/(2*b)] - c*Sin[a/(2*b)])*FresnelS[Sqrt[c/(Pi*b)]*Sqrt[a + b*A
rcSin[c + d*x^2]]])/(Sqrt[c/b]*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c +
 d*x^2]/2])), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \sqrt{a+b\sin^{-1}\left(1+dx^2\right)}\,dx = x\sqrt{a+b\sin^{-1}\left(1+dx^2\right)} + \frac{\sqrt{\pi}xS\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}(1+dx^2)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)}{\sqrt{\frac{1}{b}}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1+dx^2\right)\right)\right)} - \cdots$$

Mathematica [A] time = 0.0506593, size = 207, normalized size = 0.99

$$\frac{x\left(-\sqrt{\pi}\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}(dx^2+1)}}{\sqrt{\pi}}\right)+\sqrt{\pi}\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}(dx^2+1)}}{\sqrt{\pi}}\right)+\sqrt{\frac{1}{b}}\left(\cdots\right.}{\sqrt{\frac{1}{b}}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+\cdots\right.\right.\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + b*ArcSin[1 + d*x^2]],x]
```

```
[Out] (x*(Sqrt[Pi]*FresnelS[(Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]
]*(Cos[a/(2*b)] - Sin[a/(2*b)]) - Sqrt[Pi]*FresnelC[(Sqrt[b^(-1)]*Sqrt[a +
b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]) + Sqrt[b^(-1)
]*Sqrt[a + b*ArcSin[1 + d*x^2]]*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 +
d*x^2]/2])))/(Sqrt[b^(-1)]*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2
]/2]))
```

Maple [F] time = 0.06, size = 0, normalized size = 0.

$$\int \sqrt{a+b\arcsin\left(dx^2+1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+1))^(1/2),x)
```

```
[Out] int((a+b*arcsin(d*x^2+1))^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{b \arcsin \left(dx^2+1\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*arcsin(d*x^2 + 1) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{a+b \operatorname{asin}\left(dx^2+1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+1))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*asin(d*x**2 + 1)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{b \arcsin \left(dx^2+1\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*arcsin(d*x^2 + 1) + a), x)
```

3.420 $\int \frac{1}{\sqrt{a+b\sin^{-1}(1+dx^2)}}\,dx$

Optimal. Leaf size=185

$$-\frac{\sqrt{\pi}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{a+b\sin^{-1}(dx^2+1)}}{\sqrt{\pi}\sqrt{b}}\right)}{\sqrt{b}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)\right)}-\frac{\sqrt{\pi}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{a+b\sin^{-1}(dx^2+1)}}{\sqrt{b}\sqrt{\pi}}\right)}{\sqrt{b}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)\right)}$$

```
[Out] -((Sqrt[Pi]*x*FresnelC[Sqrt[a + b*ArcSin[1 + d*x^2]]/(Sqrt[b]*Sqrt[Pi])]*(C
os[a/(2*b)] - Sin[a/(2*b)]))/(Sqrt[b]*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSi
n[1 + d*x^2]/2]))) - (Sqrt[Pi]*x*FresnelS[Sqrt[a + b*ArcSin[1 + d*x^2]]/(Sq
rt[b]*Sqrt[Pi])]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(Sqrt[b]*(Cos[ArcSin[1 + d*
x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]))
```

Rubi [A] time = 0.0268245, antiderivative size = 185, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {4819}

$$-\frac{\sqrt{\pi}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{a+b\sin^{-1}(dx^2+1)}}{\sqrt{\pi}\sqrt{b}}\right)}{\sqrt{b}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)\right)}-\frac{\sqrt{\pi}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{a+b\sin^{-1}(dx^2+1)}}{\sqrt{b}\sqrt{\pi}}\right)}{\sqrt{b}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[a + b*ArcSin[1 + d*x^2]],x]
```

```
[Out] -((Sqrt[Pi]*x*FresnelC[Sqrt[a + b*ArcSin[1 + d*x^2]]/(Sqrt[b]*Sqrt[Pi])]*(C
os[a/(2*b)] - Sin[a/(2*b)]))/(Sqrt[b]*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSi
n[1 + d*x^2]/2]))) - (Sqrt[Pi]*x*FresnelS[Sqrt[a + b*ArcSin[1 + d*x^2]]/(Sq
rt[b]*Sqrt[Pi])]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(Sqrt[b]*(Cos[ArcSin[1 + d*
x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]))
```

Rule 4819

```
Int[1/Sqrt[(a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.)], x_Symbol] :> -Simp[(
Sqrt[Pi]*x*(Cos[a/(2*b)] - c*Sin[a/(2*b)])*FresnelC[(1*Sqrt[a + b*ArcSin[c
+ d*x^2]])/(Sqrt[b*c]*Sqrt[Pi])])/(Sqrt[b*c]*(Cos[ArcSin[c + d*x^2]/2] - c*
Sin[ArcSin[c + d*x^2]/2])), x] - Simp[(Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[a/(
```

```
2*b)])*FresnelS[(1/(Sqrt[b*c]*Sqrt[Pi]))*Sqrt[a + b*ArcSin[c + d*x^2]]])/(S
qrt[b*c]*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2])), x] /; Fr
eeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \frac{1}{\sqrt{a+b\sin^{-1}\left(1+dx^2\right)}}\,dx = -\frac{\sqrt{\pi}xC\left(\frac{\sqrt{a+b\sin^{-1}(1+dx^2)}}{\sqrt{b}\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)}{\sqrt{b}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1+dx^2\right)\right)\right)} - \frac{\sqrt{\pi}xS\left(\frac{\sqrt{a+b\sin^{-1}(1+dx^2)}}{\sqrt{b}\sqrt{\pi}}\right.}{\sqrt{b}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1+dx^2\right)\right)\right.}$$

Mathematica [A] time = 0.0356605, size = 143, normalized size = 0.77

$$-\frac{\sqrt{\pi}x\left(\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{a+b\sin^{-1}(dx^2+1)}}{\sqrt{\pi}\sqrt{b}}\right)+\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{a+b\sin^{-1}(dx^2+1)}}{\sqrt{b}\sqrt{\pi}}\right)\right)}{\sqrt{b}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[a + b*ArcSin[1 + d*x^2]],x]
```

```
[Out] -((Sqrt[Pi]*x*(FresnelC[Sqrt[a + b*ArcSin[1 + d*x^2]]/(Sqrt[b]*Sqrt[Pi])]*(
Cos[a/(2*b)] - Sin[a/(2*b)]) + FresnelS[Sqrt[a + b*ArcSin[1 + d*x^2]]/(Sqrt
[b]*Sqrt[Pi])]*(Cos[a/(2*b)] + Sin[a/(2*b)])))/(Sqrt[b]*(Cos[ArcSin[1 + d*x
^2]/2] - Sin[ArcSin[1 + d*x^2]/2])))
```

Maple [F] time = 0.059, size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+b\arcsin\left(dx^2+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2+1))^(1/2),x)
```

```
[Out] int(1/(a+b*arcsin(d*x^2+1))^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{b \arcsin\left(dx^2+1\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/sqrt(b*arcsin(d*x^2 + 1) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+b \operatorname{asin}\left(dx^2+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2+1))**(1/2),x)
```

```
[Out] Integral(1/sqrt(a + b*asin(d*x**2 + 1)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{b \arcsin\left(dx^2+1\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/sqrt(b*arcsin(d*x^2 + 1) + a), x)
```

3.421 $\int \frac{1}{\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{3/2}}\,dx$

Optimal. Leaf size=238

$$-\frac{\sqrt{-d^2x^4-2dx^2}}{bdx\sqrt{a+b\sin^{-1}\left(dx^2+1\right)}}-\frac{\sqrt{\pi}\left(\frac{1}{b}\right)^{3/2}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}\left(dx^2+1\right)}}{\sqrt{\pi}}\right)}{\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)}+\frac{\sqrt{\pi}\left(\frac{1}{b}\right)^{3/2}x\left(\cos\left(\frac{a}{2b}\right)\right.}{\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2\right.\right.}$$

```
[Out] -(Sqrt[-2*d*x^2 - d^2*x^4]/(b*d*x*Sqrt[a + b*ArcSin[1 + d*x^2]])) + ((b^(-1
))^(3/2)*Sqrt[Pi]*x*FresnelS[(Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[1 + d*x^2]])/S
qrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Cos[ArcSin[1 + d*x^2]/2] - Sin[Arc
Sin[1 + d*x^2]/2]) - ((b^(-1))^(3/2)*Sqrt[Pi]*x*FresnelC[(Sqrt[b^(-1)]*Sqrt
[a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(Cos[Ar
cSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])
```

Rubi [A] time = 0.0358891, antiderivative size = 238, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {4822}

$$-\frac{\sqrt{-d^2x^4-2dx^2}}{bdx\sqrt{a+b\sin^{-1}\left(dx^2+1\right)}}-\frac{\sqrt{\pi}\left(\frac{1}{b}\right)^{3/2}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}\left(dx^2+1\right)}}{\sqrt{\pi}}\right)}{\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)}+\frac{\sqrt{\pi}\left(\frac{1}{b}\right)^{3/2}x\left(\cos\left(\frac{a}{2b}\right)\right.}{\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2\right.\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[1 + d*x^2])^(-3/2),x]
```

```
[Out] -(Sqrt[-2*d*x^2 - d^2*x^4]/(b*d*x*Sqrt[a + b*ArcSin[1 + d*x^2]])) + ((b^(-1
))^(3/2)*Sqrt[Pi]*x*FresnelS[(Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[1 + d*x^2]])/S
qrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Cos[ArcSin[1 + d*x^2]/2] - Sin[Arc
Sin[1 + d*x^2]/2]) - ((b^(-1))^(3/2)*Sqrt[Pi]*x*FresnelC[(Sqrt[b^(-1)]*Sqrt
[a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(Cos[Ar
cSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])
```

Rule 4822

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(-3/2), x_Symbol] :> -Simp[
Sqrt[-2*c*d*x^2 - d^2*x^4]/(b*d*x*Sqrt[a + b*ArcSin[c + d*x^2]]), x] + (-Si
```

```
mp[((c/b)^(3/2)*Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[a/(2*b)])*FresnelC[Sqrt[c/
(Pi*b)]*Sqrt[a + b*ArcSin[c + d*x^2]]])/(Cos[(1/2)*ArcSin[c + d*x^2]] - c*S
in[ArcSin[c + d*x^2]/2]), x] + Simp[((c/b)^(3/2)*Sqrt[Pi]*x*(Cos[a/(2*b)] -
 c*Sin[a/(2*b)])*FresnelS[Sqrt[c/(Pi*b)]*Sqrt[a + b*ArcSin[c + d*x^2]]])/(C
os[(1/2)*ArcSin[c + d*x^2]] - c*Sin[ArcSin[c + d*x^2]/2]), x]) /; FreeQ[{a,
 b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{3/2}}\,dx = -\frac{\sqrt{-2dx^2-d^2x^4}}{bdx\sqrt{a+b\sin^{-1}\left(1+dx^2\right)}} + \frac{\left(\frac{1}{b}\right)^{3/2}\sqrt{\pi}xS\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}\left(1+dx^2\right)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right.\right.}{\cos\left(\frac{1}{2}\sin^{-1}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1+dx^2\right)\right)}$$

Mathematica [A] time = 0.583806, size = 238, normalized size = 1.

$$-\frac{\sqrt{-d^2x^4-2dx^2}}{bdx\sqrt{a+b\sin^{-1}\left(dx^2+1\right)}} - \frac{\sqrt{\pi}\left(\frac{1}{b}\right)^{3/2}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}\left(dx^2+1\right)}}{\sqrt{\pi}}\right)}{\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)} + \frac{\sqrt{\pi}\left(\frac{1}{b}\right)^{3/2}x\left(\cos\left(\frac{a}{2b}\right.\right.}{\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2\right.\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[1 + d*x^2])^(-3/2),x]
```

```
[Out] -(Sqrt[-2*d*x^2 - d^2*x^4]/(b*d*x*Sqrt[a + b*ArcSin[1 + d*x^2]])) + ((b^(-1
))^(3/2)*Sqrt[Pi]*x*FresnelS[(Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[1 + d*x^2]])/S
qrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Cos[ArcSin[1 + d*x^2]/2] - Sin[Arc
Sin[1 + d*x^2]/2]) - ((b^(-1))^(3/2)*Sqrt[Pi]*x*FresnelC[(Sqrt[b^(-1)]*Sqrt
[a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(Cos[Ar
cSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])
```

Maple [F] time = 0.056, size = 0, normalized size = 0.

$$\int \left(a+b\arcsin\left(dx^2+1\right)\right)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2+1))^(3/2),x)
```

```
[Out] int(1/(a+b*arcsin(d*x^2+1))^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b \arcsin\left(dx^2+1\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x^2 + 1) + a)^(-3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+b \operatorname{asin}\left(dx^2+1\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2+1))**(3/2),x)
```

```
[Out] Integral((a + b*asin(d*x**2 + 1))**(-3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b\arcsin\left(dx^2+1\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + 1) + a)^(-3/2), x)
```

3.422 $\int \frac{1}{\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{5/2}}\,dx$

Optimal. Leaf size=261

$$\frac{\sqrt{\pi}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{a+b\sin^{-1}(dx^2+1)}}{\sqrt{\pi}\sqrt{b}}\right)}{3b^{5/2}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)\right)}+\frac{\sqrt{\pi}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{a+b\sin^{-1}(dx^2+1)}}{\sqrt{b}\sqrt{\pi}}\right)}{3b^{5/2}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)\right)}+\frac{}{3b}$$

```
[Out] -Sqrt[-2*d*x^2 - d^2*x^4]/(3*b*d*x*(a + b*ArcSin[1 + d*x^2])^(3/2)) + x/(3*
b^2*Sqrt[a + b*ArcSin[1 + d*x^2]]) + (Sqrt[Pi]*x*FresnelC[Sqrt[a + b*ArcSin
[1 + d*x^2]]/(Sqrt[b]*Sqrt[Pi])]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(3*b^(5/2)*
(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])) + (Sqrt[Pi]*x*Fresne
lS[Sqrt[a + b*ArcSin[1 + d*x^2]]/(Sqrt[b]*Sqrt[Pi])]*(Cos[a/(2*b)] + Sin[a/
(2*b)]))/(3*b^(5/2)*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]))
```

Rubi [A] time = 0.0657306, antiderivative size = 261, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {4828, 4819}

$$\frac{\sqrt{\pi}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{a+b\sin^{-1}(dx^2+1)}}{\sqrt{\pi}\sqrt{b}}\right)}{3b^{5/2}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)\right)}+\frac{\sqrt{\pi}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{a+b\sin^{-1}(dx^2+1)}}{\sqrt{b}\sqrt{\pi}}\right)}{3b^{5/2}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)\right)}+\frac{}{3b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[1 + d*x^2])^(-5/2),x]
```

```
[Out] -Sqrt[-2*d*x^2 - d^2*x^4]/(3*b*d*x*(a + b*ArcSin[1 + d*x^2])^(3/2)) + x/(3*
b^2*Sqrt[a + b*ArcSin[1 + d*x^2]]) + (Sqrt[Pi]*x*FresnelC[Sqrt[a + b*ArcSin
[1 + d*x^2]]/(Sqrt[b]*Sqrt[Pi])]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(3*b^(5/2)*
(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])) + (Sqrt[Pi]*x*Fresne
lS[Sqrt[a + b*ArcSin[1 + d*x^2]]/(Sqrt[b]*Sqrt[Pi])]*(Cos[a/(2*b)] + Sin[a/
(2*b)]))/(3*b^(5/2)*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]))
```

Rule 4828

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[(x*
(a + b*ArcSin[c + d*x^2])^(n + 2))/(4*b^2*(n + 1)*(n + 2)), x] + (-Dist[1/(
```

```
4*b^2*(n + 1)*(n + 2)), Int[(a + b*ArcSin[c + d*x^2])^(n + 2), x], x] + Sim
p[(Sqrt[-2*c*d*x^2 - d^2*x^4]*(a + b*ArcSin[c + d*x^2])^(n + 1))/(2*b*d*(n
+ 1)*x), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1] && LtQ[n, -1] && NeQ[
n, -2]
```

Rule 4819

```
Int[1/Sqrt[(a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.)], x_Symbol] :> -Simp[(
Sqrt[Pi]*x*(Cos[a/(2*b)] - c*Sin[a/(2*b)])*FresnelC[(1*Sqrt[a + b*ArcSin[c
+ d*x^2]])/(Sqrt[b*c]*Sqrt[Pi])])/(Sqrt[b*c]*(Cos[ArcSin[c + d*x^2]/2] - c*
Sin[ArcSin[c + d*x^2]/2])), x] - Simp[(Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[a/(
2*b)])*FresnelS[(1/(Sqrt[b*c]*Sqrt[Pi]))*Sqrt[a + b*ArcSin[c + d*x^2]]])/(S
qrt[b*c]*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2])), x] /; Fr
eeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{5/2}}\,dx = -\frac{\sqrt{-2dx^2-d^2x^4}}{3bdx\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{3/2}}+\frac{x}{3b^2\sqrt{a+b\sin^{-1}\left(1+dx^2\right)}}-\frac{\int\frac{1}{\sqrt{a+b\sin^{-1}\left(1+dx^2\right)}}\,d\ldots}{3b^2}$$

$$= -\frac{\sqrt{-2dx^2-d^2x^4}}{3bdx\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{3/2}}+\frac{x}{3b^2\sqrt{a+b\sin^{-1}\left(1+dx^2\right)}}+\frac{\sqrt{\pi}xC\left(\frac{\sqrt{a+b\sin\ldots}}{\ldots}\right)}{3b^{5/2}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(\ldots\right.\right.\right.}$$

Mathematica [A] time = 0.495018, size = 247, normalized size = 0.95

$$\frac{x\left(\frac{\sqrt{\pi}\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{a+b\sin^{-1}\left(dx^2+1\right)}}{\sqrt{\pi}\sqrt{b}}\right)}{\sqrt{b}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)\right)}+\frac{\sqrt{\pi}\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{a+b\sin^{-1}\left(dx^2+1\right)}}{\sqrt{b}\sqrt{\pi}}\right)}{\sqrt{b}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)\right)}+\frac{b\left(dx^2+2\right)}{\sqrt{-dx^2\left(dx^2+2\right)}\left(a+b\sin^{-1}\left(dx^2+1\right)\right)^{3/2}}+\ldots\right)}{3b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[1 + d*x^2])^(-5/2),x]
```

```
[Out] (x*((b*(2 + d*x^2))/(Sqrt[-(d*x^2*(2 + d*x^2))]*(a + b*ArcSin[1 + d*x^2])^(
3/2)) + 1/Sqrt[a + b*ArcSin[1 + d*x^2]] + (Sqrt[Pi]*FresnelC[Sqrt[a + b*Arc
Sin[1 + d*x^2]]/(Sqrt[b]*Sqrt[Pi])]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Sqrt[b]
```

```
*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])) + (Sqrt[Pi]*Fresnel
S[Sqrt[a + b*ArcSin[1 + d*x^2]]/(Sqrt[b]*Sqrt[Pi])]*(Cos[a/(2*b)] + Sin[a/(
2*b)]))/(Sqrt[b]*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]))))/(
3*b^2)
```

Maple [F] time = 0.059, size = 0, normalized size = 0.

$$\int \left(a+b\arcsin\left(dx^{2}+1\right)\right)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2+1))^(5/2),x)
```

```
[Out] int(1/(a+b*arcsin(d*x^2+1))^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b\arcsin\left(dx^{2}+1\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x^2 + 1) + a)^(-5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a + b\,\text{asin}\left(dx^2 + 1\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2+1))**(5/2),x)
```

```
[Out] Integral((a + b*asin(d*x**2 + 1))**(-5/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b \arcsin\left(dx^2 + 1\right) + a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + 1) + a)^(-5/2), x)
```

3.423 $\int \frac{1}{\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{7/2}}\,dx$

Optimal. Leaf size=317

$$\frac{\sqrt{-d^2x^4-2dx^2}}{15b^3dx\sqrt{a+b\sin^{-1}\left(dx^2+1\right)}}+\frac{x}{15b^2\left(a+b\sin^{-1}\left(dx^2+1\right)\right)^{3/2}}-\frac{\sqrt{-d^2x^4-2dx^2}}{5bdx\left(a+b\sin^{-1}\left(dx^2+1\right)\right)^{5/2}}+\frac{\sqrt{\pi}\left(\frac{1}{b}\right)^{7/2}x\left(\sin\left(\frac{a}{2b}\right)\right.}{15\left(\cos\left(\frac{1}{2}\sin^{-}\right.\right.}$$

```
[Out] -Sqrt[-2*d*x^2 - d^2*x^4]/(5*b*d*x*(a + b*ArcSin[1 + d*x^2])^(5/2)) + x/(15
*b^2*(a + b*ArcSin[1 + d*x^2])^(3/2)) + Sqrt[-2*d*x^2 - d^2*x^4]/(15*b^3*d*
x*Sqrt[a + b*ArcSin[1 + d*x^2]]) - ((b^(-1))^(7/2)*Sqrt[Pi]*x*FresnelS[(Sqr
t[b^(-1)]*Sqrt[a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2
*b)]))/(15*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])) + ((b^(-1
))^(7/2)*Sqrt[Pi]*x*FresnelC[(Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[1 + d*x^2]])/S
qrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(15*(Cos[ArcSin[1 + d*x^2]/2] - Sin
[ArcSin[1 + d*x^2]/2]))
```

Rubi [A] time = 0.0648529, antiderivative size = 317, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {4828, 4822}

$$\frac{\sqrt{-d^2x^4-2dx^2}}{15b^3dx\sqrt{a+b\sin^{-1}\left(dx^2+1\right)}}+\frac{x}{15b^2\left(a+b\sin^{-1}\left(dx^2+1\right)\right)^{3/2}}-\frac{\sqrt{-d^2x^4-2dx^2}}{5bdx\left(a+b\sin^{-1}\left(dx^2+1\right)\right)^{5/2}}+\frac{\sqrt{\pi}\left(\frac{1}{b}\right)^{7/2}x\left(\sin\left(\frac{a}{2b}\right)\right.}{15\left(\cos\left(\frac{1}{2}\sin^{-}\right.\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[1 + d*x^2])^(-7/2),x]
```

```
[Out] -Sqrt[-2*d*x^2 - d^2*x^4]/(5*b*d*x*(a + b*ArcSin[1 + d*x^2])^(5/2)) + x/(15
*b^2*(a + b*ArcSin[1 + d*x^2])^(3/2)) + Sqrt[-2*d*x^2 - d^2*x^4]/(15*b^3*d*
x*Sqrt[a + b*ArcSin[1 + d*x^2]]) - ((b^(-1))^(7/2)*Sqrt[Pi]*x*FresnelS[(Sqr
t[b^(-1)]*Sqrt[a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2
*b)]))/(15*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])) + ((b^(-1
))^(7/2)*Sqrt[Pi]*x*FresnelC[(Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[1 + d*x^2]])/S
qrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(15*(Cos[ArcSin[1 + d*x^2]/2] - Sin
[ArcSin[1 + d*x^2]/2]))
```

Rule 4828

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[(x*
(a + b*ArcSin[c + d*x^2])^(n + 2))/(4*b^2*(n + 1)*(n + 2)), x] + (-Dist[1/(
4*b^2*(n + 1)*(n + 2)), Int[(a + b*ArcSin[c + d*x^2])^(n + 2), x], x] + Sim
p[(Sqrt[-2*c*d*x^2 - d^2*x^4]*(a + b*ArcSin[c + d*x^2])^(n + 1))/(2*b*d*(n
+ 1)*x), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1] && LtQ[n, -1] && NeQ[
n, -2]
```

Rule 4822

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(-3/2), x_Symbol] :> -Simp[
Sqrt[-2*c*d*x^2 - d^2*x^4]/(b*d*x*Sqrt[a + b*ArcSin[c + d*x^2]]), x] + (-Si
mp[((c/b)^(3/2)*Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[a/(2*b)])*FresnelC[Sqrt[c/
(Pi*b)]*Sqrt[a + b*ArcSin[c + d*x^2]]])/(Cos[(1/2)*ArcSin[c + d*x^2]] - c*S
in[ArcSin[c + d*x^2]/2]), x] + Simp[((c/b)^(3/2)*Sqrt[Pi]*x*(Cos[a/(2*b)] -
 c*Sin[a/(2*b)])*FresnelS[Sqrt[c/(Pi*b)]*Sqrt[a + b*ArcSin[c + d*x^2]]])/(C
os[(1/2)*ArcSin[c + d*x^2]] - c*Sin[ArcSin[c + d*x^2]/2]), x]) /; FreeQ[{a,
 b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{7/2}}\,dx = -\frac{\sqrt{-2dx^2-d^2x^4}}{5bdx\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{5/2}}+\frac{x}{15b^2\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{3/2}}-\frac{\int \frac{1}{\left(a+b\sin^{-1}\left(1+dx^2\right.\right.}}{15b^2}$$

$$= -\frac{\sqrt{-2dx^2-d^2x^4}}{5bdx\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{5/2}}+\frac{x}{15b^2\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{3/2}}+\frac{\sqrt{-2dx^2}}{15b^3dx\sqrt{a+b\,\mathrm{s}}}$$

Mathematica [A] time = 0.811437, size = 297, normalized size = 0.94

$$\frac{\frac{\sqrt{\pi}\left(\frac{1}{b}\right)^{3/2}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}\left(dx^2+1\right)}}{\sqrt{\pi}}\right)}{\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)}-\frac{\sqrt{\pi}\left(\frac{1}{b}\right)^{3/2}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}\left(dx^2+1\right)}}{\sqrt{\pi}}\right)}{\cos\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(dx^2+1\right)\right)}+\frac{x^2\left(a+b\sin^{-1}\left(dx^2+1\right)\right)+\frac{\sqrt{-dx}}{}}{x(a+}}{15b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[1 + d*x^2])^(-7/2),x]
```

```
[Out] (((-3*b*Sqrt[-(d*x^2*(2 + d*x^2))])/d + x^2*(a + b*ArcSin[1 + d*x^2]) + (Sq
rt[-(d*x^2*(2 + d*x^2))]*(a + b*ArcSin[1 + d*x^2])^2)/(b*d))/(x*(a + b*ArcS
in[1 + d*x^2])^(5/2)) - ((b^(-1))^(3/2)*Sqrt[Pi]*x*FresnelS[(Sqrt[b^(-1)]*S
qrt[a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Cos
[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]) + ((b^(-1))^(3/2)*Sqrt[Pi
]*x*FresnelC[(Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/
(2*b)] + Sin[a/(2*b)]))/(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2
]))/(15*b^2)
```

Maple [F] time = 0.057, size = 0, normalized size = 0.

$$\int \left(a + b \arcsin\left(d x^2 + 1\right)\right)^{-\frac{7}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2+1))^(7/2),x)
```

```
[Out] int(1/(a+b*arcsin(d*x^2+1))^(7/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b \arcsin\left(d x^2 + 1\right) + a\right)^{\frac{7}{2}}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x^2 + 1) + a)^(-7/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2+1))**(7/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b \arcsin \left(dx^2+1\right)+a\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^(7/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + 1) + a)^(-7/2), x)
```

3.424 $\int \left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{5/2}\,dx$

Optimal. Leaf size=299

$$-15b^2x\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}+\frac{5b\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}}{dx}+\frac{15\sqrt{\pi}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{-\dots}}{\dots}\right.}{\left(-\frac{1}{b}\right)^{5/2}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\,\text{s}\dots\right.\right.}$$

```
[Out] -15*b^2*x*Sqrt[a - b*ArcSin[1 - d*x^2]] + (5*b*Sqrt[2*d*x^2 - d^2*x^4]*(a -
 b*ArcSin[1 - d*x^2])^(3/2))/(d*x) + x*(a - b*ArcSin[1 - d*x^2])^(5/2) + (1
5*Sqrt[Pi]*x*FresnelC[(Sqrt[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi
]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/((-b^(-1))^(5/2)*(Cos[ArcSin[1 - d*x^2]/2
] - Sin[ArcSin[1 - d*x^2]/2])) - (15*Sqrt[Pi]*x*FresnelS[(Sqrt[-b^(-1)]*Sqr
t[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/((-b^(
-1))^(5/2)*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2]))
```

Rubi [A] time = 0.132352, antiderivative size = 299, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {4814, 4811}

$$-15b^2x\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}+\frac{5b\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}}{dx}+\frac{15\sqrt{\pi}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{-\dots}}{\dots}\right.}{\left(-\frac{1}{b}\right)^{5/2}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\,\text{s}\dots\right.\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(a - b*ArcSin[1 - d*x^2])^(5/2),x]
```

```
[Out] -15*b^2*x*Sqrt[a - b*ArcSin[1 - d*x^2]] + (5*b*Sqrt[2*d*x^2 - d^2*x^4]*(a -
 b*ArcSin[1 - d*x^2])^(3/2))/(d*x) + x*(a - b*ArcSin[1 - d*x^2])^(5/2) + (1
5*Sqrt[Pi]*x*FresnelC[(Sqrt[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi
]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/((-b^(-1))^(5/2)*(Cos[ArcSin[1 - d*x^2]/2
] - Sin[ArcSin[1 - d*x^2]/2])) - (15*Sqrt[Pi]*x*FresnelS[(Sqrt[-b^(-1)]*Sqr
t[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/((-b^(
-1))^(5/2)*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2]))
```

Rule 4814

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
a + b*ArcSin[c + d*x^2])^n, x] + (-Dist[4*b^2*n*(n - 1), Int[(a + b*ArcSin[
c + d*x^2])^(n - 2), x], x] + Simp[(2*b*n*Sqrt[-2*c*d*x^2 - d^2*x^4]*(a + b
*ArcSin[c + d*x^2])^(n - 1))/(d*x), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^
2, 1] && GtQ[n, 1]
```

Rule 4811

```
Int[Sqrt[(a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.)], x_Symbol] :> Simp[x*Sq
rt[a + b*ArcSin[c + d*x^2]], x] + (-Simp[(Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[
a/(2*b)])*FresnelC[Sqrt[c/(Pi*b)]*Sqrt[a + b*ArcSin[c + d*x^2]]])/(Sqrt[c/b
]*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2])), x] + Simp[(Sqrt
[Pi]*x*(Cos[a/(2*b)] - c*Sin[a/(2*b)])*FresnelS[Sqrt[c/(Pi*b)]*Sqrt[a + b*A
rcSin[c + d*x^2]]])/(Sqrt[c/b]*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c +
 d*x^2]/2])), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{5/2}\,dx=\frac{5b\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}}{dx}+x\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{5/2}-\left(15b^2\right)\int \sqrt{}$$

$$=-15b^2x\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}+\frac{5b\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}}{dx}+x\left(a-b\right.$$

Mathematica [A] time = 0.297619, size = 292, normalized size = 0.98

$$\frac{15bx\left(-\sqrt{\pi}\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)+\sqrt{\pi}\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)+}{\left(-\frac{1}{b}\right)^{3/2}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1\right.\right.\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a - b*ArcSin[1 - d*x^2])^(5/2),x]
```

```
[Out] (5*b*Sqrt[-(d*x^2*(-2 + d*x^2))]*(a - b*ArcSin[1 - d*x^2])^(3/2))/(d*x) + x
*(a - b*ArcSin[1 - d*x^2])^(5/2) + (15*b*x*(-(Sqrt[Pi]*FresnelC[(Sqrt[-b^(-
1)]*Sqrt[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))
 + Sqrt[Pi]*FresnelS[(Sqrt[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]
```

```
]*(Cos[a/(2*b)] + Sin[a/(2*b)]) + Sqrt[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2
]]*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])))/((-b^(-1))^(3/2)
*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2]))
```

Maple [F] time = 0.062, size = 0, normalized size = 0.

$$\int \left(a+b\arcsin\left(dx^2-1\right)\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2-1))^(5/2),x)
```

```
[Out] int((a+b*arcsin(d*x^2-1))^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b\arcsin\left(dx^2-1\right)+a\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^(5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2-1))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b \arcsin \left(dx^2 - 1\right) + a\right)^{\frac{5}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^(5/2), x)
```

3.425 $\int \left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}\,dx$

Optimal. Leaf size=267

$$\frac{3b\sqrt{2dx^2-d^2x^4}\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{dx}+\frac{3\sqrt{\pi}(-b)^{3/2}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{\sqrt{\pi}\sqrt{-b}}\right)}{\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)}+\frac{3\sqrt{\pi}(-b)^{3/2}x}{\cos\left(\frac{1}{2}\sin\right.}$$

```
[Out] (3*b*Sqrt[2*d*x^2 - d^2*x^4]*Sqrt[a - b*ArcSin[1 - d*x^2]])/(d*x) + x*(a -
b*ArcSin[1 - d*x^2])^(3/2) + (3*(-b)^(3/2)*Sqrt[Pi]*x*FresnelS[Sqrt[a - b*A
rcSin[1 - d*x^2]]/(Sqrt[-b]*Sqrt[Pi])]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Cos[
ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2]) + (3*(-b)^(3/2)*Sqrt[Pi]*x
*FresnelC[Sqrt[a - b*ArcSin[1 - d*x^2]]/(Sqrt[-b]*Sqrt[Pi])]*(Cos[a/(2*b)]
+ Sin[a/(2*b)]))/(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])
```

Rubi [A] time = 0.0976497, antiderivative size = 267, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {4814, 4819}

$$\frac{3b\sqrt{2dx^2-d^2x^4}\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{dx}+\frac{3\sqrt{\pi}(-b)^{3/2}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{\sqrt{\pi}\sqrt{-b}}\right)}{\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)}+\frac{3\sqrt{\pi}(-b)^{3/2}x}{\cos\left(\frac{1}{2}\sin\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(a - b*ArcSin[1 - d*x^2])^(3/2),x]
```


```
[Out] (3*b*Sqrt[2*d*x^2 - d^2*x^4]*Sqrt[a - b*ArcSin[1 - d*x^2]])/(d*x) + x*(a -
b*ArcSin[1 - d*x^2])^(3/2) + (3*(-b)^(3/2)*Sqrt[Pi]*x*FresnelS[Sqrt[a - b*A
rcSin[1 - d*x^2]]/(Sqrt[-b]*Sqrt[Pi])]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Cos[
ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2]) + (3*(-b)^(3/2)*Sqrt[Pi]*x
*FresnelC[Sqrt[a - b*ArcSin[1 - d*x^2]]/(Sqrt[-b]*Sqrt[Pi])]*(Cos[a/(2*b)]
+ Sin[a/(2*b)]))/(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])
```


Rule 4814

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
a + b*ArcSin[c + d*x^2])^n, x] + (-Dist[4*b^2*n*(n - 1), Int[(a + b*ArcSin[
c + d*x^2])^(n - 2), x], x] + Simp[(2*b*n*Sqrt[-2*c*d*x^2 - d^2*x^4]*(a + b
```

```
*ArcSin[c + d*x^2])^(n - 1))/(d*x), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^
2, 1] && GtQ[n, 1]
```

Rule 4819

```
Int[1/Sqrt[(a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.)], x_Symbol] :> -Simp[(
Sqrt[Pi]*x*(Cos[a/(2*b)] - c*Sin[a/(2*b)])*FresnelC[(1*Sqrt[a + b*ArcSin[c
+ d*x^2]])/(Sqrt[b*c]*Sqrt[Pi])])/(Sqrt[b*c]*(Cos[ArcSin[c + d*x^2]/2] - c*
Sin[ArcSin[c + d*x^2]/2])), x] - Simp[(Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[a/(
2*b)])*FresnelS[(1/(Sqrt[b*c]*Sqrt[Pi]))*Sqrt[a + b*ArcSin[c + d*x^2]]])/(S
qrt[b*c]*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2])), x] /; Fr
eeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}\,dx=\frac{3b\sqrt{2dx^2-d^2x^4}\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{dx}+x\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}-\left(3b^2\right)\int\frac{}{\sqrt{a-}}$$

$$=\frac{3b\sqrt{2dx^2-d^2x^4}\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{dx}+x\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}+\frac{3(-b)^{3/2}\sqrt{\pi}xS}{\cos\left(\frac{1}{2}\sin^{-}\right.}$$

Mathematica [A] time = 0.38666, size = 265, normalized size = 0.99

$$\frac{3\sqrt{\pi}(-b)^{3/2}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{\sqrt{\pi}\sqrt{-b}}\right)}{\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)}+\frac{3\sqrt{\pi}(-b)^{3/2}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{\sqrt{-b}\sqrt{\pi}}\right.}{\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a - b*ArcSin[1 - d*x^2])^(3/2),x]
```

```
[Out] (3*b*Sqrt[-(d*x^2*(-2 + d*x^2))]*Sqrt[a - b*ArcSin[1 - d*x^2]])/(d*x) + x*(
a - b*ArcSin[1 - d*x^2])^(3/2) + (3*(-b)^(3/2)*Sqrt[Pi]*x*FresnelS[Sqrt[a -
 b*ArcSin[1 - d*x^2]]/(Sqrt[-b]*Sqrt[Pi])]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(
Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2]) + (3*(-b)^(3/2)*Sqrt[P
i]*x*FresnelC[Sqrt[a - b*ArcSin[1 - d*x^2]]/(Sqrt[-b]*Sqrt[Pi])]*(Cos[a/(2*
b)] + Sin[a/(2*b)]))/(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])
```

Maple [F] time = 0.057, size = 0, normalized size = 0.

$$\int \left(a + b \arcsin\left(dx^2 - 1\right)\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2-1))^(3/2),x)
```

```
[Out] int((a+b*arcsin(d*x^2-1))^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b \arcsin\left(dx^2 - 1\right) + a\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \left(a + b \operatorname{asin}\left(dx^2 - 1\right)\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2-1))**(3/2),x)
```

```
[Out] Integral((a + b*asin(d*x**2 - 1))**(3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b \arcsin \left(dx^2-1\right)+a\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^(3/2), x)
```

3.426 $\int \sqrt{a-b\sin^{-1}\left(1-dx^2\right)}\,dx$

Optimal. Leaf size=228

$$-\frac{\sqrt{\pi}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)}{\sqrt{-\frac{1}{b}}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}+\frac{\sqrt{\pi}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)}{\sqrt{-\frac{1}{b}}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}+$$

```
[Out] x*Sqrt[a - b*ArcSin[1 - d*x^2]] - (Sqrt[Pi]*x*FresnelC[(Sqrt[-b^(-1)]*Sqrt[
a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Sqrt[-b
^(-1)]*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])) + (Sqrt[Pi]*x
*FresnelS[(Sqrt[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]]*(Cos[a/(2
*b)] + Sin[a/(2*b)]))/(Sqrt[-b^(-1)]*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin
[1 - d*x^2]/2]))
```

Rubi [A] time = 0.0371218, antiderivative size = 228, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {4811}

$$-\frac{\sqrt{\pi}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)}{\sqrt{-\frac{1}{b}}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}+\frac{\sqrt{\pi}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)}{\sqrt{-\frac{1}{b}}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}+$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a - b*ArcSin[1 - d*x^2]],x]
```

```
[Out] x*Sqrt[a - b*ArcSin[1 - d*x^2]] - (Sqrt[Pi]*x*FresnelC[(Sqrt[-b^(-1)]*Sqrt[
a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Sqrt[-b
^(-1)]*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])) + (Sqrt[Pi]*x
*FresnelS[(Sqrt[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]]*(Cos[a/(2
*b)] + Sin[a/(2*b)]))/(Sqrt[-b^(-1)]*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin
[1 - d*x^2]/2]))
```

Rule 4811

```
Int[Sqrt[(a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.)], x_Symbol] :> Simp[x*Sq
rt[a + b*ArcSin[c + d*x^2]], x] + (-Simp[(Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[
a/(2*b)])*FresnelC[Sqrt[c/(Pi*b)]*Sqrt[a + b*ArcSin[c + d*x^2]]])/(Sqrt[c/b
```

```
]*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2])), x] + Simp[(Sqrt
[Pi]*x*(Cos[a/(2*b)] - c*Sin[a/(2*b)])*FresnelS[Sqrt[c/(Pi*b)]*Sqrt[a + b*A
rcSin[c + d*x^2]]])/(Sqrt[c/b]*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c +
 d*x^2]/2])), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \sqrt{a-b\sin^{-1}\left(1-dx^2\right)}\,dx = x\sqrt{a-b\sin^{-1}\left(1-dx^2\right)} - \frac{\sqrt{\pi}xC\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\sin^{-1}(1-dx^2)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)}{\sqrt{-\frac{1}{b}}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)} + \frac{}{\sqrt{}}$$

Mathematica [A] time = 0.0511899, size = 225, normalized size = 0.99

$$\frac{x\left(-\sqrt{\pi}\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\sin^{-1}(1-dx^2)}}{\sqrt{\pi}}\right)+\sqrt{\pi}\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\sin^{-1}(1-dx^2)}}{\sqrt{\pi}}\right)+\sqrt{-}\right.}{\sqrt{-\frac{1}{b}}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-\right.\right.\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a - b*ArcSin[1 - d*x^2]],x]
```

```
[Out] (x*(-(Sqrt[Pi]*FresnelC[(Sqrt[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]])/Sqrt[
Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)])) + Sqrt[Pi]*FresnelS[(Sqrt[-b^(-1)]*Sqrt
[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]) + Sqrt[-
b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]]*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSi
n[1 - d*x^2]/2])))/(Sqrt[-b^(-1)]*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1
- d*x^2]/2]))
```

Maple [F] time = 0.059, size = 0, normalized size = 0.

$$\int \sqrt{a+b\arcsin\left(dx^2-1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2-1))^(1/2),x)
```

```
[Out] int((a+b*arcsin(d*x^2-1))^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{b \arcsin\left(dx^2 - 1\right) + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*arcsin(d*x^2 - 1) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{a + b \operatorname{asin}\left(dx^2 - 1\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2-1))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*asin(d*x**2 - 1)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{b \arcsin\left(dx^2 - 1\right) + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*arcsin(d*x^2 - 1) + a), x)
```

3.427 $\int \frac{1}{\sqrt{a-b\sin^{-1}(1-dx^2)}}\,dx$

Optimal. Leaf size=201

$$-\frac{\sqrt{\pi}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{a-b\sin^{-1}(1-dx^2)}}{\sqrt{\pi}\sqrt{-b}}\right)}{\sqrt{-b}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}-\frac{\sqrt{\pi}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{a-b\sin^{-1}(1-dx^2)}}{\sqrt{-b}\sqrt{\pi}}\right)}{\sqrt{-b}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}$$

```
[Out] -((Sqrt[Pi]*x*FresnelS[Sqrt[a - b*ArcSin[1 - d*x^2]]/(Sqrt[-b]*Sqrt[Pi])]*(
Cos[a/(2*b)] - Sin[a/(2*b)]))/(Sqrt[-b]*(Cos[ArcSin[1 - d*x^2]/2] - Sin[Arc
Sin[1 - d*x^2]/2]))) - (Sqrt[Pi]*x*FresnelC[Sqrt[a - b*ArcSin[1 - d*x^2]]/(
Sqrt[-b]*Sqrt[Pi])]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(Sqrt[-b]*(Cos[ArcSin[1
- d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2]))
```

Rubi [A] time = 0.0296038, antiderivative size = 201, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {4819}

$$-\frac{\sqrt{\pi}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{a-b\sin^{-1}(1-dx^2)}}{\sqrt{\pi}\sqrt{-b}}\right)}{\sqrt{-b}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}-\frac{\sqrt{\pi}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{a-b\sin^{-1}(1-dx^2)}}{\sqrt{-b}\sqrt{\pi}}\right)}{\sqrt{-b}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[a - b*ArcSin[1 - d*x^2]],x]
```

```
[Out] -((Sqrt[Pi]*x*FresnelS[Sqrt[a - b*ArcSin[1 - d*x^2]]/(Sqrt[-b]*Sqrt[Pi])]*(
Cos[a/(2*b)] - Sin[a/(2*b)]))/(Sqrt[-b]*(Cos[ArcSin[1 - d*x^2]/2] - Sin[Arc
Sin[1 - d*x^2]/2]))) - (Sqrt[Pi]*x*FresnelC[Sqrt[a - b*ArcSin[1 - d*x^2]]/(
Sqrt[-b]*Sqrt[Pi])]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(Sqrt[-b]*(Cos[ArcSin[1
- d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2]))
```

Rule 4819

```
Int[1/Sqrt[(a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.)], x_Symbol] :> -Simp[(
Sqrt[Pi]*x*(Cos[a/(2*b)] - c*Sin[a/(2*b)])*FresnelC[(1*Sqrt[a + b*ArcSin[c
+ d*x^2]])/(Sqrt[b*c]*Sqrt[Pi])])/(Sqrt[b*c]*(Cos[ArcSin[c + d*x^2]/2] - c*
Sin[ArcSin[c + d*x^2]/2])), x] - Simp[(Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[a/(
```

```
2*b)])*FresnelS[(1/(Sqrt[b*c]*Sqrt[Pi]))*Sqrt[a + b*ArcSin[c + d*x^2]]])/(S
qrt[b*c]*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2])), x] /; Fr
eeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \frac{1}{\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}\,dx = -\frac{\sqrt{\pi}xS\left(\frac{\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{\sqrt{-b}\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)}{\sqrt{-b}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)} - \frac{\sqrt{\pi}xC\left(\frac{\sqrt{a-b\sin^{-1}\left(1-dx^2\right.}}{\sqrt{-b}\sqrt{\pi}}\right.}{\sqrt{-b}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right.\right.\right.}$$

Mathematica [A] time = 0.0476851, size = 155, normalized size = 0.77

$$\frac{\sqrt{\pi}bx\left(\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{\sqrt{\pi}\sqrt{-b}}\right)+\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{\sqrt{-b}\sqrt{\pi}}\right)\right)}{(-b)^{3/2}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[a - b*ArcSin[1 - d*x^2]],x]
```

```
[Out] (b*Sqrt[Pi]*x*(FresnelS[Sqrt[a - b*ArcSin[1 - d*x^2]]/(Sqrt[-b]*Sqrt[Pi])]*
(Cos[a/(2*b)] - Sin[a/(2*b)]) + FresnelC[Sqrt[a - b*ArcSin[1 - d*x^2]]/(Sqr
t[-b]*Sqrt[Pi])]*(Cos[a/(2*b)] + Sin[a/(2*b)])))/((-b)^(3/2)*(Cos[ArcSin[1
- d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2]))
```

Maple [F] time = 0.059, size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+b\arcsin\left(dx^2-1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2-1))^(1/2),x)
```

```
[Out] int(1/(a+b*arcsin(d*x^2-1))^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{b \arcsin\left(dx^2 - 1\right) + a}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/sqrt(b*arcsin(d*x^2 - 1) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a + b \operatorname{asin}\left(dx^2 - 1\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2-1))**(1/2),x)
```

```
[Out] Integral(1/sqrt(a + b*asin(d*x**2 - 1)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{b \arcsin\left(dx^2 - 1\right) + a}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/sqrt(b*arcsin(d*x^2 - 1) + a), x)
```

3.428 $\int \frac{1}{\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}}\,dx$

Optimal. Leaf size=256

$$-\frac{\sqrt{2dx^2-d^2x^4}}{bdx\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}-\frac{\sqrt{\pi}\left(-\frac{1}{b}\right)^{3/2}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)}{\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)}+\frac{\sqrt{\pi}\left(-\frac{1}{b}\right)^{3/2}x\left(\sin\left(\cdots\right.\right.}{\cos\left(\frac{1}{2}\sin^{-1}\left(1\cdots\right.\right.}$$

```
[Out] -(Sqrt[2*d*x^2 - d^2*x^4]/(b*d*x*Sqrt[a - b*ArcSin[1 - d*x^2]])) - ((-b^(-1
))^(3/2)*Sqrt[Pi]*x*FresnelC[(Sqrt[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]])/
Sqrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Cos[ArcSin[1 - d*x^2]/2] - Sin[Ar
cSin[1 - d*x^2]/2]) + ((-b^(-1))^(3/2)*Sqrt[Pi]*x*FresnelS[(Sqrt[-b^(-1)]*S
qrt[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(Cos
[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])
```

Rubi [A] time = 0.05705, antiderivative size = 256, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {4822}

$$-\frac{\sqrt{2dx^2-d^2x^4}}{bdx\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}-\frac{\sqrt{\pi}\left(-\frac{1}{b}\right)^{3/2}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)}{\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)}+\frac{\sqrt{\pi}\left(-\frac{1}{b}\right)^{3/2}x\left(\sin\left(\cdots\right.\right.}{\cos\left(\frac{1}{2}\sin^{-1}\left(1\cdots\right.\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(a - b*ArcSin[1 - d*x^2])^(-3/2),x]
```

```
[Out] -(Sqrt[2*d*x^2 - d^2*x^4]/(b*d*x*Sqrt[a - b*ArcSin[1 - d*x^2]])) - ((-b^(-1
))^(3/2)*Sqrt[Pi]*x*FresnelC[(Sqrt[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]])/
Sqrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Cos[ArcSin[1 - d*x^2]/2] - Sin[Ar
cSin[1 - d*x^2]/2]) + ((-b^(-1))^(3/2)*Sqrt[Pi]*x*FresnelS[(Sqrt[-b^(-1)]*S
qrt[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(Cos
[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])
```

Rule 4822

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(-3/2), x_Symbol] :> -Simp[
Sqrt[-2*c*d*x^2 - d^2*x^4]/(b*d*x*Sqrt[a + b*ArcSin[c + d*x^2]]), x] + (-Si
```

```
mp[((c/b)^(3/2)*Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[a/(2*b)])*FresnelC[Sqrt[c/
(Pi*b)]*Sqrt[a + b*ArcSin[c + d*x^2]]])/(Cos[(1/2)*ArcSin[c + d*x^2]] - c*S
in[ArcSin[c + d*x^2]/2]), x] + Simp[((c/b)^(3/2)*Sqrt[Pi]*x*(Cos[a/(2*b)] -
 c*Sin[a/(2*b)])*FresnelS[Sqrt[c/(Pi*b)]*Sqrt[a + b*ArcSin[c + d*x^2]]])/(C
os[(1/2)*ArcSin[c + d*x^2]] - c*Sin[ArcSin[c + d*x^2]/2]), x]) /; FreeQ[{a,
 b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \frac{1}{\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}}\,dx = -\frac{\sqrt{2dx^2-d^2x^4}}{bdx\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}} - \frac{\left(-\frac{1}{b}\right)^{3/2}\sqrt{\pi}xC\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\right.\right.}{\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)}$$

Mathematica [A] time = 0.435859, size = 256, normalized size = 1.

$$-\frac{\sqrt{2dx^2-d^2x^4}}{bdx\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}} - \frac{\sqrt{\pi}\left(-\frac{1}{b}\right)^{3/2}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)}{\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)} + \frac{\sqrt{\pi}\left(-\frac{1}{b}\right)^{3/2}x\left(\sin\right.}{\cos\left(\frac{1}{2}\sin^{-1}\left(\right.\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a - b*ArcSin[1 - d*x^2])^(-3/2),x]
```

```
[Out] -(Sqrt[2*d*x^2 - d^2*x^4]/(b*d*x*Sqrt[a - b*ArcSin[1 - d*x^2]])) - ((-b^(-1
))^(3/2)*Sqrt[Pi]*x*FresnelC[(Sqrt[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]])/
Sqrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Cos[ArcSin[1 - d*x^2]/2] - Sin[Ar
cSin[1 - d*x^2]/2]) + ((-b^(-1))^(3/2)*Sqrt[Pi]*x*FresnelS[(Sqrt[-b^(-1)]*S
qrt[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(Cos
[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])
```

Maple [F] time = 0.057, size = 0, normalized size = 0.

$$\int \left(a+b\arcsin\left(dx^2-1\right)\right)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2-1))^(3/2),x)
```

```
[Out] int(1/(a+b*arcsin(d*x^2-1))^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b \arcsin \left(dx^2-1\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^(-3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+b \operatorname{asin}\left(dx^2-1\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2-1))**(3/2),x)
```

```
[Out] Integral((a + b*asin(d*x**2 - 1))**(-3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b \arcsin\left(dx^2-1\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^(-3/2), x)
```

3.429 $\int \frac{1}{\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{5/2}}\,dx$

Optimal. Leaf size=281

$$\frac{x}{3b^2\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}-\frac{\sqrt{2dx^2-d^2x^4}}{3bdx\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}}+\frac{\sqrt{\pi}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{\sqrt{\pi}\sqrt{-b}}\right)}{3(-b)^{5/2}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}$$

```
[Out] -Sqrt[2*d*x^2 - d^2*x^4]/(3*b*d*x*(a - b*ArcSin[1 - d*x^2])^(3/2)) + x/(3*b
^2*Sqrt[a - b*ArcSin[1 - d*x^2]]) + (Sqrt[Pi]*x*FresnelS[Sqrt[a - b*ArcSin[
1 - d*x^2]]/(Sqrt[-b]*Sqrt[Pi])]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(3*(-b)^(5/
2)*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])) + (Sqrt[Pi]*x*Fre
snelC[Sqrt[a - b*ArcSin[1 - d*x^2]]/(Sqrt[-b]*Sqrt[Pi])]*(Cos[a/(2*b)] + Si
n[a/(2*b)]))/(3*(-b)^(5/2)*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2
]/2]))
```

Rubi [A] time = 0.0750609, antiderivative size = 281, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {4828, 4819}

$$\frac{x}{3b^2\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}-\frac{\sqrt{2dx^2-d^2x^4}}{3bdx\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}}+\frac{\sqrt{\pi}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{\sqrt{\pi}\sqrt{-b}}\right)}{3(-b)^{5/2}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a - b*ArcSin[1 - d*x^2])^(-5/2),x]
```

```
[Out] -Sqrt[2*d*x^2 - d^2*x^4]/(3*b*d*x*(a - b*ArcSin[1 - d*x^2])^(3/2)) + x/(3*b
^2*Sqrt[a - b*ArcSin[1 - d*x^2]]) + (Sqrt[Pi]*x*FresnelS[Sqrt[a - b*ArcSin[
1 - d*x^2]]/(Sqrt[-b]*Sqrt[Pi])]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(3*(-b)^(5/
2)*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])) + (Sqrt[Pi]*x*Fre
snelC[Sqrt[a - b*ArcSin[1 - d*x^2]]/(Sqrt[-b]*Sqrt[Pi])]*(Cos[a/(2*b)] + Si
n[a/(2*b)]))/(3*(-b)^(5/2)*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2
]/2]))
```

Rule 4828

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[(x*
(a + b*ArcSin[c + d*x^2])^(n + 2))/(4*b^2*(n + 1)*(n + 2)), x] + (-Dist[1/(
4*b^2*(n + 1)*(n + 2)), Int[(a + b*ArcSin[c + d*x^2])^(n + 2), x], x] + Sim
p[(Sqrt[-2*c*d*x^2 - d^2*x^4]*(a + b*ArcSin[c + d*x^2])^(n + 1))/(2*b*d*(n
+ 1)*x), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1] && LtQ[n, -1] && NeQ[
n, -2]
```

Rule 4819

```
Int[1/Sqrt[(a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.)], x_Symbol] :> -Simp[(
Sqrt[Pi]*x*(Cos[a/(2*b)] - c*Sin[a/(2*b)])*FresnelC[(1*Sqrt[a + b*ArcSin[c
+ d*x^2]])/(Sqrt[b*c]*Sqrt[Pi])])/(Sqrt[b*c]*(Cos[ArcSin[c + d*x^2]/2] - c*
Sin[ArcSin[c + d*x^2]/2])), x] - Simp[(Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[a/(
2*b)])*FresnelS[(1/(Sqrt[b*c]*Sqrt[Pi]))*Sqrt[a + b*ArcSin[c + d*x^2]]])/(S
qrt[b*c]*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2])), x] /; Fr
eeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \frac{1}{\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{5/2}}\,dx = -\frac{\sqrt{2dx^2-d^2x^4}}{3bdx\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}}+\frac{x}{3b^2\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}-\frac{\int \frac{1}{\sqrt{a-b\sin^{-1}(1-dx^2)}}\,dx}{3b^2}$$

$$= -\frac{\sqrt{2dx^2-d^2x^4}}{3bdx\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}}+\frac{x}{3b^2\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}+\frac{\sqrt{\pi}xS\left(\frac{\sqrt{a-b\,\mathrm{si}}}{\sqrt{}}\right.}{3(-b)^{5/2}\left(\cos\left(\frac{1}{2}\sin^{-}\right.\right.}$$

Mathematica [A] time = 0.780592, size = 270, normalized size = 0.96

$$\frac{\frac{\sqrt{\pi}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{\sqrt{\pi}\sqrt{-b}}\right)}{\sqrt{-b}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}+\frac{\sqrt{\pi}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{\sqrt{-b}\sqrt{\pi}}\right)}{\sqrt{-b}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}+\frac{x^2\left(a-b\sin^{-1}\left(1-dx^2\right)\right)-\frac{b\sqrt{-dx^2\left(dx^2-2\right)}}{d}}{x\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}}}{3b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a - b*ArcSin[1 - d*x^2])^(-5/2),x]
```

```
[Out] ((-((b*Sqrt[-(d*x^2*(-2 + d*x^2))])/d) + x^2*(a - b*ArcSin[1 - d*x^2]))/(x*
(a - b*ArcSin[1 - d*x^2])^(3/2)) + (Sqrt[Pi]*x*FresnelS[Sqrt[a - b*ArcSin[1
```

```
 - d*x^2]]/(Sqrt[-b]*Sqrt[Pi])]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Sqrt[-b]*(C
os[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])) + (Sqrt[Pi]*x*FresnelC
[Sqrt[a - b*ArcSin[1 - d*x^2]]/(Sqrt[-b]*Sqrt[Pi])]*(Cos[a/(2*b)] + Sin[a/(
2*b)]))/(Sqrt[-b]*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])))/(
3*b^2)
```

Maple [F] time = 0.061, size = 0, normalized size = 0.

$$\int \left(a+b \arcsin \left(d x^{2}-1\right)\right)^{-\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2-1))^(5/2),x)
```

```
[Out] int(1/(a+b*arcsin(d*x^2-1))^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b \arcsin \left(d x^{2}-1\right)+a\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^(-5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+b\operatorname{asin}\left(dx^2-1\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2-1))**(5/2),x)
```

```
[Out] Integral((a + b*asin(d*x**2 - 1))**(-5/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b\arcsin\left(dx^2-1\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^(-5/2), x)
```

3.430 $\int \frac{1}{\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{7/2}}\,dx$

Optimal. Leaf size=339

$$\frac{\sqrt{2dx^2-d^2x^4}}{15b^3dx\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}+\frac{x}{15b^2\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}}-\frac{\sqrt{2dx^2-d^2x^4}}{5bdx\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{5/2}}+\frac{\sqrt{\pi}\left(-\frac{1}{b}\right)^{7/2}x\left(\cos\left(\frac{a}{2b}\right.\right.}{15\left(\cos\left(\frac{1}{2}\sin^{-}\right.\right.}$$

```
[Out] -Sqrt[2*d*x^2 - d^2*x^4]/(5*b*d*x*(a - b*ArcSin[1 - d*x^2])^(5/2)) + x/(15*
b^2*(a - b*ArcSin[1 - d*x^2])^(3/2)) + Sqrt[2*d*x^2 - d^2*x^4]/(15*b^3*d*x*
Sqrt[a - b*ArcSin[1 - d*x^2]]) + ((-b^(-1))^(7/2)*Sqrt[Pi]*x*FresnelC[(Sqrt
[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2
*b)]))/(15*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])) - ((-b^(-
1))^(7/2)*Sqrt[Pi]*x*FresnelS[(Sqrt[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]])
/Sqrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(15*(Cos[ArcSin[1 - d*x^2]/2] - S
in[ArcSin[1 - d*x^2]/2]))
```

Rubi [A] time = 0.0984169, antiderivative size = 339, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {4828, 4822}

$$\frac{\sqrt{2dx^2-d^2x^4}}{15b^3dx\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}+\frac{x}{15b^2\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}}-\frac{\sqrt{2dx^2-d^2x^4}}{5bdx\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{5/2}}+\frac{\sqrt{\pi}\left(-\frac{1}{b}\right)^{7/2}x\left(\cos\left(\frac{a}{2b}\right.\right.}{15\left(\cos\left(\frac{1}{2}\sin^{-}\right.\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(a - b*ArcSin[1 - d*x^2])^(-7/2),x]
```


```
[Out] -Sqrt[2*d*x^2 - d^2*x^4]/(5*b*d*x*(a - b*ArcSin[1 - d*x^2])^(5/2)) + x/(15*
b^2*(a - b*ArcSin[1 - d*x^2])^(3/2)) + Sqrt[2*d*x^2 - d^2*x^4]/(15*b^3*d*x*
Sqrt[a - b*ArcSin[1 - d*x^2]]) + ((-b^(-1))^(7/2)*Sqrt[Pi]*x*FresnelC[(Sqrt
[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2
*b)]))/(15*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])) - ((-b^(-
1))^(7/2)*Sqrt[Pi]*x*FresnelS[(Sqrt[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]])
/Sqrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(15*(Cos[ArcSin[1 - d*x^2]/2] - S
in[ArcSin[1 - d*x^2]/2]))
```

Rule 4828

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[(x*
(a + b*ArcSin[c + d*x^2])^(n + 2))/(4*b^2*(n + 1)*(n + 2)), x] + (-Dist[1/(
4*b^2*(n + 1)*(n + 2)), Int[(a + b*ArcSin[c + d*x^2])^(n + 2), x], x] + Sim
p[(Sqrt[-2*c*d*x^2 - d^2*x^4]*(a + b*ArcSin[c + d*x^2])^(n + 1))/(2*b*d*(n
+ 1)*x), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1] && LtQ[n, -1] && NeQ[
n, -2]
```

Rule 4822

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(-3/2), x_Symbol] :> -Simp[
Sqrt[-2*c*d*x^2 - d^2*x^4]/(b*d*x*Sqrt[a + b*ArcSin[c + d*x^2]]), x] + (-Si
mp[((c/b)^(3/2)*Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[a/(2*b)])*FresnelC[Sqrt[c/
(Pi*b)]*Sqrt[a + b*ArcSin[c + d*x^2]]])/(Cos[(1/2)*ArcSin[c + d*x^2]] - c*S
in[ArcSin[c + d*x^2]/2]), x] + Simp[((c/b)^(3/2)*Sqrt[Pi]*x*(Cos[a/(2*b)] -
 c*Sin[a/(2*b)])*FresnelS[Sqrt[c/(Pi*b)]*Sqrt[a + b*ArcSin[c + d*x^2]]])/(C
os[(1/2)*ArcSin[c + d*x^2]] - c*Sin[ArcSin[c + d*x^2]/2]), x]) /; FreeQ[{a,
 b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \frac{1}{\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{7/2}}\,dx = -\frac{\sqrt{2dx^2-d^2x^4}}{5bdx\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{5/2}}+\frac{x}{15b^2\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}}-\frac{\int \frac{1}{\left(a-b\sin^{-1}\left(1-dx^2\right)\right)}}{15b^2}$$

$$= -\frac{\sqrt{2dx^2-d^2x^4}}{5bdx\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{5/2}}+\frac{x}{15b^2\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}}+\frac{\sqrt{2dx^2-}}{15b^3dx\sqrt{a-b\sin}}$$

Mathematica [A] time = 0.904952, size = 319, normalized size = 0.94

$$\frac{\frac{\sqrt{\pi}\left(-\frac{1}{b}\right)^{3/2}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)}{\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)}+\frac{\sqrt{\pi}b\left(-\frac{1}{b}\right)^{5/2}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)}{\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)}+\frac{x^2\left(a-b\sin^{-1}\left(1-dx^2\right)\right)+}{}}{15b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a - b*ArcSin[1 - d*x^2])^(-7/2),x]
```

[Out] (((-3*b*Sqrt[d*x^2*(2 - d*x^2)])/d + x^2*(a - b*ArcSin[1 - d*x^2]) + (Sqrt[d*x^2*(2 - d*x^2)]*(a - b*ArcSin[1 - d*x^2])^2)/(b*d))/(x*(a - b*ArcSin[1 - d*x^2])^(5/2)) + ((-b^(-1))^(3/2)*Sqrt[Pi]*x*FresnelC[(Sqrt[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2]) + ((-b^(-1))^(5/2)*b*Sqrt[Pi]*x*FresnelS[(Sqrt[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2]))/(15*b^2)

Maple [F] time = 0.056, size = 0, normalized size = 0.

$$\int \left(a + b \arcsin\left(d x^2 - 1\right)\right)^{-\frac{7}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/(a+b*arcsin(d*x^2-1))^(7/2),x)

[Out] int(1/(a+b*arcsin(d*x^2-1))^(7/2),x)

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b \arcsin\left(d x^2 - 1\right) + a\right)^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(a+b*arcsin(d*x^2-1))^(7/2),x, algorithm="maxima")

[Out] integrate((b*arcsin(d*x^2 - 1) + a)^(-7/2), x)

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2-1))**(7/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b \arcsin \left(dx^2 - 1\right) + a\right)^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^(7/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^(-7/2), x)
```

3.431 $\int \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^n}{1-c^2x^2}\,dx$

Optimal. Leaf size=42

$$\text{Unintegrable}\left(\frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)^n}{1-c^2x^2},x\right)$$

```
[Out] Unintegrable[(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^n/(1 - c^2*x^2), x
]
```

Rubi [A] time = 0.0465118, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^n}{1-c^2x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^n/(1 - c^2*x^2),x]

[Out] Defer[Int][(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^n/(1 - c^2*x^2), x]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^n}{1-c^2x^2}\,dx=\int \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^n}{1-c^2x^2}\,dx$$

Mathematica [A] time = 0.0919682, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^n}{1-c^2x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^n/(1 - c^2*x^2),x]
```

```
[Out] Integrate[(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^n/(1 - c^2*x^2), x]
```

Maple [A] time = 0.703, size = 0, normalized size = 0.

$$\int \frac{1}{-c^2x^2+1}\left(a+b\arcsin\left(\sqrt{-cx+1}\,\frac{1}{\sqrt{cx+1}}\right)\right)^n dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^n/(-c^2*x^2+1),x)
```

```
[Out] int((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^n/(-c^2*x^2+1),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$-\int \frac{\left(b\arcsin\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)+a\right)^n}{c^2x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^n/(-c^2*x^2+1),x, algo
rithm="maxima")
```

```
[Out] -integrate((b*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)^n/(c^2*x^2 - 1), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\left(b\arcsin\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)+a\right)^n}{c^2x^2-1}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^n/(-c^2*x^2+1),x, algo
rithm="fricas")
```

```
[Out] integral(-(b*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)^n/(c^2*x^2 - 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin((-c*x+1)**(1/2)/(c*x+1)**(1/2)))**n/(-c**2*x**2+1),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int -\frac{\left(b \arcsin\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right) + a\right)^n}{c^2x^2 - 1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^n/(-c^2*x^2+1),x, algo
rithm="giac")
```

```
[Out] integrate(-(b*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)^n/(c^2*x^2 - 1), x)
```

3.432 $\int \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3}{1-c^2x^2}\,dx$

Optimal. Leaf size=275

$$-\frac{3b^2\text{PolyLog}\left(3,e^{2i\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)}\right)\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)}{2c}+\frac{3ib\text{PolyLog}\left(2,e^{2i\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)}\right)\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)^2}{2c}-\frac{3ib^3\text{P}}{}$$

```
[Out] ((I/4)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^4)/(b*c) - ((a + b*ArcSi
n[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^3*Log[1 - E^((2*I)*ArcSin[Sqrt[1 - c*x]/Sqr
t[1 + c*x]])])/c + (((3*I)/2)*b*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])
^2*PolyLog[2, E^((2*I)*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])])/c - (3*b^2*(a
 + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])*PolyLog[3, E^((2*I)*ArcSin[Sqrt[1
 - c*x]/Sqrt[1 + c*x]])])/(2*c) - (((3*I)/4)*b^3*PolyLog[4, E^((2*I)*ArcSin
[Sqrt[1 - c*x]/Sqrt[1 + c*x]])])/c
```

Rubi [A] time = 0.223743, antiderivative size = 275, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {6681, 4625, 3717, 2190, 2531, 6609, 2282, 6589}

$$-\frac{3b^2\text{PolyLog}\left(3,e^{2i\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)}\right)\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)}{2c}+\frac{3ib\text{PolyLog}\left(2,e^{2i\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)}\right)\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)^2}{2c}-\frac{3ib^3\text{P}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^3/(1 - c^2*x^2),x]
```


```
[Out] ((I/4)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^4)/(b*c) - ((a + b*ArcSi
n[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^3*Log[1 - E^((2*I)*ArcSin[Sqrt[1 - c*x]/Sqr
t[1 + c*x]])])/c + (((3*I)/2)*b*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])
^2*PolyLog[2, E^((2*I)*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])])/c - (3*b^2*(a
 + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])*PolyLog[3, E^((2*I)*ArcSin[Sqrt[1
 - c*x]/Sqrt[1 + c*x]])])/(2*c) - (((3*I)/4)*b^3*PolyLog[4, E^((2*I)*ArcSin
[Sqrt[1 - c*x]/Sqrt[1 + c*x]])])/c
```


Rule 6681

```
Int[((a_.) + (b_.)*(F_)[((c_.)*Sqrt[(d_.) + (e_.)*(x_)])/Sqrt[(f_.) + (g_.)
*(x_)]])^(n_.)/((A_.) + (C_.)*(x_)^2), x_Symbol] :> Dist[(2*e*g)/(C*(e*f -
d*g)), Subst[Int[(a + b*F[c*x])^n/x, x], x, Sqrt[d + e*x]/Sqrt[f + g*x]], x
] /; FreeQ[{a, b, c, d, e, f, g, A, C, F}, x] && EqQ[C*d*f - A*e*g, 0] && E
qQ[e*f + d*g, 0] && IGtQ[n, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3}{1-c^2x^2}\,dx = -\frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^3}{x}\,dx, x, \frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}{c}$$

$$= -\frac{\text{Subst}\left(\int (a+bx)^3\cot(x)\,dx, x, \sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)}{c}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^4}{4bc} + \frac{(2i)\,\text{Subst}\left(\int \frac{e^{2ix}(a+bx)^3}{1-e^{2ix}}\,dx, x, \sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)}{c}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^4}{4bc} - \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3\log\left(1-e^{2i\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}\right)}{c} + \frac{(3b)\,\text{Subst}\left(\right.}{}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^4}{4bc} - \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3\log\left(1-e^{2i\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}\right)}{c} + \frac{3ib\left(a+b\,\text{si}\right.}{}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^4}{4bc} - \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3\log\left(1-e^{2i\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}\right)}{c} + \frac{3ib\left(a+b\,\text{si}\right.}{}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^4}{4bc} - \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3\log\left(1-e^{2i\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}\right)}{c} + \frac{3ib\left(a+b\,\text{si}\right.}{}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^4}{4bc} - \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3\log\left(1-e^{2i\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}\right)}{c} + \frac{3ib\left(a+b\,\text{si}\right.}{}$$

Mathematica [F] time = 0.297938, size = 0, normalized size = 0.

$$\int \frac{\left(a + b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3}{1 - c^2x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^3/(1 - c^2*x^2),x]
```

```
[Out] Integrate[(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^3/(1 - c^2*x^2), x]
```

Maple [B] time = 0.799, size = 1232, normalized size = 4.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^3/(-c^2*x^2+1),x)
```

```
[Out] 1/2*a^3/c*ln(c*x+1)-1/2*a^3/c*ln(c*x-1)+1/4*I*b^3/c*arcsin((-c*x+1)^(1/2)/(
c*x+1)^(1/2))^4-b^3/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))^3*ln(1+I*(-c*x+1
)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(c*x+1))^(1/2))+3*I*b^3/c*arcsin((-c*x+1)
^(1/2)/(c*x+1)^(1/2))^2*polylog(2,I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1
)/(c*x+1))^(1/2))-6*b^3/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))*polylog(3,-I
*(-c*x+1)^(1/2)/(c*x+1)^(1/2)-(1-(-c*x+1)/(c*x+1))^(1/2))-6*I*b^3/c*polylog
(4,-I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)-(1-(-c*x+1)/(c*x+1))^(1/2))-b^3/c*arcsin
((-c*x+1)^(1/2)/(c*x+1)^(1/2))^3*ln(1-I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)-(1-(-c
*x+1)/(c*x+1))^(1/2))+3*I*a^2*b/c*polylog(2,I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+
(1-(-c*x+1)/(c*x+1))^(1/2))-6*b^3/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))*po
lylog(3,I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(c*x+1))^(1/2))+6*I*a*b^
2/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))*polylog(2,I*(-c*x+1)^(1/2)/(c*x+1)
^(1/2)+(1-(-c*x+1)/(c*x+1))^(1/2))+3*I*b^3/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^
(1/2))^2*polylog(2,-I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)-(1-(-c*x+1)/(c*x+1))^(1/
2))-3*a*b^2/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))^2*ln(1-I*(-c*x+1)^(1/2)/
(c*x+1)^(1/2)-(1-(-c*x+1)/(c*x+1))^(1/2))+6*I*a*b^2/c*arcsin((-c*x+1)^(1/2)
/(c*x+1)^(1/2))*polylog(2,-I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)-(1-(-c*x+1)/(c*x+
1))^(1/2))-6*a*b^2/c*polylog(3,I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(
c*x+1))^(1/2))-3*a*b^2/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))^2*ln(1+I*(-c*
x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(c*x+1))^(1/2))-6*I*b^3/c*polylog(4,I*
(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(c*x+1))^(1/2))-6*a*b^2/c*polylog(
3,-I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)-(1-(-c*x+1)/(c*x+1))^(1/2))+I*a*b^2/c*arc
```

```
sin((-c*x+1)^(1/2)/(c*x+1)^(1/2))^3-3*a^2*b/c*arcsin((-c*x+1)^(1/2)/(c*x+1)
^(1/2))*ln(1+I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(c*x+1))^(1/2))+3/2
*I*a^2*b/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))^2-3*a^2*b/c*arcsin((-c*x+1)
^(1/2)/(c*x+1)^(1/2))*ln(1-I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)-(1-(-c*x+1)/(c*x+
1))^(1/2))+3*I*a^2*b/c*polylog(2,-I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)-(1-(-c*x+1
)/(c*x+1))^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}a^3\left(\frac{\log(cx+1)}{c}-\frac{\log(cx-1)}{c}\right)-\int\frac{b^3\arctan\left(\sqrt{-cx+1},\sqrt{2}\sqrt{c}\sqrt{x}\right)^3+3\,ab^2\arctan\left(\sqrt{-cx+1},\sqrt{2}\sqrt{c}\sqrt{x}\right)^2+3\,a^2b\,\text{a}}{c^2x^2-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^3/(-c^2*x^2+1),x, algo
rithm="maxima")
```

```
[Out] 1/2*a^3*(log(c*x + 1)/c - log(c*x - 1)/c) - integrate((b^3*arctan2(sqrt(-c*
x + 1), sqrt(2)*sqrt(c)*sqrt(x))^3 + 3*a*b^2*arctan2(sqrt(-c*x + 1), sqrt(2
)*sqrt(c)*sqrt(x))^2 + 3*a^2*b*arctan2(sqrt(-c*x + 1), sqrt(2)*sqrt(c)*sqrt
(x)))/(c^2*x^2 - 1), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{b^3\arcsin\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)^3+3\,ab^2\arcsin\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)^2+3\,a^2b\arcsin\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)+a^3}{c^2x^2-1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^3/(-c^2*x^2+1),x, algo
rithm="fricas")
```

```
[Out] integral(-(b^3*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1))^3 + 3*a*b^2*arcsin(sqrt
(-c*x + 1)/sqrt(c*x + 1))^2 + 3*a^2*b*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1))
+ a^3)/(c^2*x^2 - 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin((-c*x+1)**(1/2)/(c*x+1)**(1/2)))**3/(-c**2*x**2+1),x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^3/(-c^2*x^2+1),x, algo
rithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.433 $\int \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}{1-c^2x^2}\,dx$

Optimal. Leaf size=205

$$\frac{ib\text{PolyLog}\left(2,e^{2i\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)}\right)\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)}{c}-\frac{b^2\text{PolyLog}\left(3,e^{2i\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)}\right)}{2c}+\frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)^3}{3bc}-\frac{\log\left(1\right.}{}$$

```
[Out] ((I/3)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^3)/(b*c) - ((a + b*ArcSi
n[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2*Log[1 - E^((2*I)*ArcSin[Sqrt[1 - c*x]/Sqr
t[1 + c*x]])])/c + (I*b*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])*PolyLog
[2, E^((2*I)*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])])/c - (b^2*PolyLog[3, E^(
(2*I)*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])])/(2*c)
```

Rubi [A] time = 0.181683, antiderivative size = 205, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.175, Rules used = {6681, 4625, 3717, 2190, 2531, 2282, 6589}

$$\frac{ib\text{PolyLog}\left(2,e^{2i\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)}\right)\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)}{c}-\frac{b^2\text{PolyLog}\left(3,e^{2i\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)}\right)}{2c}+\frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)^3}{3bc}-\frac{\log\left(1\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2/(1 - c^2*x^2),x]
```


```
[Out] ((I/3)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^3)/(b*c) - ((a + b*ArcSi
n[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2*Log[1 - E^((2*I)*ArcSin[Sqrt[1 - c*x]/Sqr
t[1 + c*x]])])/c + (I*b*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])*PolyLog
[2, E^((2*I)*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])])/c - (b^2*PolyLog[3, E^(
(2*I)*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])])/(2*c)
```


Rule 6681

```
Int[((a_.) + (b_.)*(F_)[((c_.)*Sqrt[(d_.) + (e_.)*(x_)])/Sqrt[(f_.) + (g_.)
*(x_)]])^(n_.)/((A_.) + (C_.)*(x_)^2), x_Symbol] :> Dist[(2*e*g)/(C*(e*f -
d*g)), Subst[Int[(a + b*F[c*x])^n/x, x], x, Sqrt[d + e*x]/Sqrt[f + g*x]], x
] /; FreeQ[{a, b, c, d, e, f, g, A, C, F}, x] && EqQ[C*d*f - A*e*g, 0] && E
```

```
qQ[e*f + d*g, 0] && IGtQ[n, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}{1-c^2x^2}\,dx = -\frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^2}{x}\,dx, x, \frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}{c}$$

$$= -\frac{\text{Subst}\left(\int (a+bx)^2\cot(x)\,dx, x, \sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)}{c}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3}{3bc} + \frac{(2i)\,\text{Subst}\left(\int \frac{e^{2ix}(a+bx)^2}{1-e^{2ix}}\,dx, x, \sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)}{c}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3}{3bc} - \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2\log\left(1-e^{2i\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}\right)}{c} + \frac{(2b)\,\text{Subst}\left(\right.}{}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3}{3bc} - \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2\log\left(1-e^{2i\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}\right)}{c} + \frac{ib\left(a+b\sin\right.}{}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3}{3bc} - \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2\log\left(1-e^{2i\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}\right)}{c} + \frac{ib\left(a+b\sin\right.}{}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3}{3bc} - \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2\log\left(1-e^{2i\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}\right)}{c} + \frac{ib\left(a+b\sin\right.}{}$$

Mathematica [F] time = 0.690831, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}{1-c^2x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2/(1 - c^2*x^2),x]
```

```
[Out] Integrate[(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2/(1 - c^2*x^2), x]
```

Maple [B] time = 0.008, size = 681, normalized size = 3.3

$$\frac{a^2\ln(cx+1)}{2c}-\frac{a^2\ln(cx-1)}{2c}+\frac{\frac{i}{3}b^2}{c}\left(\arcsin\left(\sqrt{-cx+1}\frac{1}{\sqrt{cx+1}}\right)\right)^3-\frac{b^2}{c}\left(\arcsin\left(\sqrt{-cx+1}\frac{1}{\sqrt{cx+1}}\right)\right)^2\ln\left(1-i\sqrt{-cx+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2/(-c^2*x^2+1),x)
```

```
[Out] 1/2*a^2/c*ln(c*x+1)-1/2*a^2/c*ln(c*x-1)+1/3*I*b^2/c*arcsin((-c*x+1)^(1/2)/(
c*x+1)^(1/2))^3-b^2/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))^2*ln(1-I*(-c*x+1
)^(1/2)/(c*x+1)^(1/2)-(1-(-c*x+1)/(c*x+1))^(1/2))+2*I*b^2/c*arcsin((-c*x+1)
^(1/2)/(c*x+1)^(1/2))*polylog(2,I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/
(c*x+1))^(1/2))-2*b^2/c*polylog(3,I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1
)/(c*x+1))^(1/2))-b^2/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))^2*ln(1+I*(-c*x
+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(c*x+1))^(1/2))+2*I*b^2/c*arcsin((-c*x+
1)^(1/2)/(c*x+1)^(1/2))*polylog(2,-I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)-(1-(-c*x+
1)/(c*x+1))^(1/2))-2*b^2/c*polylog(3,-I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)-(1-(-c
*x+1)/(c*x+1))^(1/2))+I*a*b/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))^2-2*a*b/
c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))*ln(1+I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+
(1-(-c*x+1)/(c*x+1))^(1/2))+2*I*a*b/c*polylog(2,-I*(-c*x+1)^(1/2)/(c*x+1)^(
1/2)-(1-(-c*x+1)/(c*x+1))^(1/2))-2*a*b/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2
))*ln(1-I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)-(1-(-c*x+1)/(c*x+1))^(1/2))+2*I*a*b/
c*polylog(2,I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(c*x+1))^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}a^2\left(\frac{\log(cx+1)}{c}-\frac{\log(cx-1)}{c}\right)-\int\frac{b^2\arctan\left(\sqrt{-cx+1},\sqrt{2}\sqrt{c}\sqrt{x}\right)^2+2ab\arctan\left(\sqrt{-cx+1},\sqrt{2}\sqrt{c}\sqrt{x}\right)}{c^2x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2/(-c^2*x^2+1),x, algo
rithm="maxima")
```

```
[Out] 1/2*a^2*(log(c*x + 1)/c - log(c*x - 1)/c) - integrate((b^2*arctan2(sqrt(-c*
x + 1), sqrt(2)*sqrt(c)*sqrt(x))^2 + 2*a*b*arctan2(sqrt(-c*x + 1), sqrt(2)*
sqrt(c)*sqrt(x)))/(c^2*x^2 - 1), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{b^2 \arcsin\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)^2 + 2\,ab \arcsin\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right) + a^2}{c^2x^2 - 1}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2/(-c^2*x^2+1),x, algo
rithm="fricas")
```

```
[Out] integral(-(b^2*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1))^2 + 2*a*b*arcsin(sqrt(-
c*x + 1)/sqrt(c*x + 1)) + a^2)/(c^2*x^2 - 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin((-c*x+1)**(1/2)/(c*x+1)**(1/2)))**2/(-c**2*x**2+1),x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2/(-c^2*x^2+1),x, algo
rithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.434 $\int \frac{a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}{1-c^2x^2}\,dx$

Optimal. Leaf size=141

$$\frac{ib\text{PolyLog}\left(2,e^{2i\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)}\right)}{2c}+\frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)^2}{2bc}-\frac{\log\left(1-e^{2i\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)}\right)\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)}{c}$$

```
[Out] ((I/2)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2)/(b*c) - ((a + b*ArcSi
n[Sqrt[1 - c*x]/Sqrt[1 + c*x]])*Log[1 - E^((2*I)*ArcSin[Sqrt[1 - c*x]/Sqrt[
1 + c*x]])])/c + ((I/2)*b*PolyLog[2, E^((2*I)*ArcSin[Sqrt[1 - c*x]/Sqrt[1 +
 c*x]])])/c
```

Rubi [A] time = 0.111446, antiderivative size = 141, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 7, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.184, Rules used = {206, 6681, 4625, 3717, 2190, 2279, 2391}

$$\frac{ib\text{PolyLog}\left(2,e^{2i\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)}\right)}{2c}+\frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)^2}{2bc}-\frac{\log\left(1-e^{2i\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)}\right)\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)}{c}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])/(1 - c^2*x^2),x]
```

```
[Out] ((I/2)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2)/(b*c) - ((a + b*ArcSi
n[Sqrt[1 - c*x]/Sqrt[1 + c*x]])*Log[1 - E^((2*I)*ArcSin[Sqrt[1 - c*x]/Sqrt[
1 + c*x]])])/c + ((I/2)*b*PolyLog[2, E^((2*I)*ArcSin[Sqrt[1 - c*x]/Sqrt[1 +
 c*x]])])/c
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 6681

```
Int[((a_.) + (b_.)*(F_)[((c_.)*Sqrt[(d_.) + (e_.)*(x_)])/Sqrt[(f_.) + (g_.)
*(x_)]])^(n_.)/((A_.) + (C_.)*(x_)^2), x_Symbol] :> Dist[(2*e*g)/(C*(e*f -
```

```
d*g)), Subst[Int[(a + b*F[c*x])^n/x, x], x, Sqrt[d + e*x]/Sqrt[f + g*x]], x
] /; FreeQ[{a, b, c, d, e, f, g, A, C, F}, x] && EqQ[C*d*f - A*e*g, 0] && E
qQ[e*f + d*g, 0] && IGtQ[n, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}{1-c^2x^2}\,dx = -\frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{x}\,dx, x, \frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}{c}$$

$$= -\frac{\text{Subst}\left(\int (a+bx)\cot(x)\,dx, x, \sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)}{c}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}{2bc} + \frac{(2i)\,\text{Subst}\left(\int \frac{e^{2ix}(a+bx)}{1-e^{2ix}}\,dx, x, \sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)}{c}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}{2bc} - \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)\log\left(1-e^{2i\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}\right)}{c} + \frac{b\,\text{Subst}\left(\int \log\left(1\right.\right.}{}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}{2bc} - \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)\log\left(1-e^{2i\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}\right)}{c} - \frac{(ib)\,\text{Subst}\left(\int \frac{\log(1}{x}\right.}{}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}{2bc} - \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)\log\left(1-e^{2i\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}\right)}{c} + \frac{ib\text{Li}_2\left(e^{2i\sin^{-1}\left(\frac{\sqrt{1-}}{\sqrt{1+}}\right.}\right.}{2c}$$

Mathematica [F] time = 1.07632, size = 0, normalized size = 0.

$$\int \frac{a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}{1-c^2x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])/(1 - c^2*x^2),x]
```

```
[Out] Integrate[(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])/(1 - c^2*x^2), x]
```

Maple [A] time = 0.006, size = 276, normalized size = 2.

$$\frac{a\ln(cx+1)}{2c} - \frac{a\ln(cx-1)}{2c} + \frac{\frac{i}{2}b}{c}\left(\arcsin\left(\sqrt{-cx+1}\frac{1}{\sqrt{cx+1}}\right)\right)^2 - \frac{b}{c}\arcsin\left(\sqrt{-cx+1}\frac{1}{\sqrt{cx+1}}\right)\ln\left(1+i\sqrt{-cx+1}\frac{1}{\sqrt{cx+}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))/(-c^2*x^2+1),x)
```

```
[Out] 1/2*a/c*ln(c*x+1)-1/2*a/c*ln(c*x-1)+1/2*I*b/c*arcsin((-c*x+1)^(1/2)/(c*x+1)
^(1/2))^2-b/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))*ln(1+I*(-c*x+1)^(1/2)/(c
*x+1)^(1/2)+(1-(-c*x+1)/(c*x+1))^(1/2))+I*b/c*polylog(2,-I*(-c*x+1)^(1/2)/(
c*x+1)^(1/2)-(1-(-c*x+1)/(c*x+1))^(1/2))-b/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^
(1/2))*ln(1-I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)-(1-(-c*x+1)/(c*x+1))^(1/2))+I*b/
c*polylog(2,I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(c*x+1))^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}a\left(\frac{\log(cx+1)}{c}-\frac{\log(cx-1)}{c}\right)-b\int\frac{\arctan\left(\sqrt{-cx+1},\sqrt{2}\sqrt{c}\sqrt{x}\right)}{c^2x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))/(-c^2*x^2+1),x, algori
thm="maxima")
```

```
[Out] 1/2*a*(log(c*x + 1)/c - log(c*x - 1)/c) - b*integrate(arctan2(sqrt(-c*x + 1
), sqrt(2)*sqrt(c)*sqrt(x))/(c^2*x^2 - 1), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{b\arcsin\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)+a}{c^2x^2-1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))/(-c^2*x^2+1),x, algori
thm="fricas")
```

```
[Out] integral(-(b*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)/(c^2*x^2 - 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin((-c*x+1)**(1/2)/(c*x+1)**(1/2)))/(-c**2*x**2+1),x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))/(-c^2*x^2+1),x, algori
thm="giac")
```

```
[Out] Exception raised: TypeError
```

3.435 $\int \frac{1}{(1-c^2x^2)\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)}\,dx$

Optimal. Leaf size=42

$$\text{Unintegrable}\left(\frac{1}{(1-c^2x^2)\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)},x\right)$$

```
[Out] Unintegrable[1/((1 - c^2*x^2)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])),
 x]
```

Rubi [A] time = 0.0427648, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(1-c^2x^2)\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((1 - c^2*x^2)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])),x]
```

```
[Out] Defer[Int][1/((1 - c^2*x^2)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])), x
]
```

Rubi steps

$$\int \frac{1}{(1-c^2x^2)\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)}\,dx = \int \frac{1}{(1-c^2x^2)\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)}\,dx$$

Mathematica [A] time = 0.0985962, size = 0, normalized size = 0.

$$\int \frac{1}{(1-c^2x^2)\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((1 - c^2*x^2)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])),x]
```

```
[Out] Integrate[1/((1 - c^2*x^2)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])), x]
```

Maple [A] time = 0.28, size = 0, normalized size = 0.

$$\int \frac{1}{-c^2x^2+1}\left(a+b\arcsin\left(\sqrt{-cx+1}\frac{1}{\sqrt{cx+1}}\right)\right)^{-1}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-c^2*x^2+1)/(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))),x)
```

```
[Out] int(1/(-c^2*x^2+1)/(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$-\int \frac{1}{\left(c^2x^2-1\right)\left(b\arcsin\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)/(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))),x, algo
rithm="maxima")
```

```
[Out] -integrate(1/((c^2*x^2 - 1)*(b*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)),
x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{1}{ac^2x^2+\left(bc^2x^2-b\right)\arcsin\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)-a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)/(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))),x, algo
rithm="fricas")
```

```
[Out] integral(-1/(a*c^2*x^2 + (b*c^2*x^2 - b)*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1
)) - a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c**2*x**2+1)/(a+b*asin((-c*x+1)**(1/2)/(c*x+1)**(1/2))),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int -\frac{1}{\left(c^2x^2-1\right)\left(b\arcsin\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)/(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))),x, algo
rithm="giac")
```

```
[Out] integrate(-1/((c^2*x^2 - 1)*(b*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)),
x)
```

3.436 $\int \frac{1}{\left(1-c^2x^2\right)\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}\,dx$

Optimal. Leaf size=42

$$\text{Unintegrable}\left(\frac{1}{\left(1-c^2x^2\right)\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)^2},x\right)$$

```
[Out] Unintegrable[1/((1 - c^2*x^2)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2
), x]
```

Rubi [A] time = 0.0431535, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{\left(1-c^2x^2\right)\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((1 - c^2*x^2)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2),x]
```

```
[Out] Defer[Int][1/((1 - c^2*x^2)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2),
 x]
```

Rubi steps

$$\int \frac{1}{\left(1-c^2x^2\right)\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}\,dx=\int \frac{1}{\left(1-c^2x^2\right)\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}\,dx$$

Mathematica [A] time = 1.68871, size = 0, normalized size = 0.

$$\int \frac{1}{\left(1-c^2x^2\right)\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((1 - c^2*x^2)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2),x
]
```

```
[Out] Integrate[1/((1 - c^2*x^2)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2),
x]
```

Maple [A] time = 0.277, size = 0, normalized size = 0.

$$\int \frac{1}{-c^2x^2+1}\left(a+b\arcsin\left(\sqrt{-cx+1}\frac{1}{\sqrt{cx+1}}\right)\right)^{-2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-c^2*x^2+1)/(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2,x)
```

```
[Out] int(1/(-c^2*x^2+1)/(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$-\frac{\frac{1}{2}\left(\sqrt{2}abc^2x-\sqrt{2}abc+\left(\sqrt{2}b^2c^2x-\sqrt{2}b^2c\right)\arctan\left(\sqrt{-cx+1},\sqrt{2}\sqrt{c}\sqrt{x}\right)\right)\sqrt{c}\int\frac{\sqrt{-cx+1}\sqrt{x}}{abc^3x^3-2\,abc^2x^2+abcx+\left(b^2c^3x^3-2\,b^2c^2x^2+b^2cx\right)a}}{abc^2x-abc+\left(b^2c^2x-b^2c\right)\arctan\left(\sqrt{-cx+1},\sqrt{2}\sqrt{c}\sqrt{x}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)/(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2,x, al
gorithm="maxima")
```

```
[Out] -((sqrt(2)*a*b*c^2*x - sqrt(2)*a*b*c + (sqrt(2)*b^2*c^2*x - sqrt(2)*b^2*c)*
arctan2(sqrt(-c*x + 1), sqrt(2)*sqrt(c)*sqrt(x)))*sqrt(c)*integrate(1/2*sqr
t(-c*x + 1)*sqrt(x)/(a*b*c^3*x^3 - 2*a*b*c^2*x^2 + a*b*c*x + (b^2*c^3*x^3 -
 2*b^2*c^2*x^2 + b^2*c*x)*arctan2(sqrt(-c*x + 1), sqrt(2)*sqrt(c)*sqrt(x)))
, x) + sqrt(2)*sqrt(-c*x + 1)*sqrt(c)*sqrt(x))/(a*b*c^2*x - a*b*c + (b^2*c^
2*x - b^2*c)*arctan2(sqrt(-c*x + 1), sqrt(2)*sqrt(c)*sqrt(x)))
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{1}{a^2c^2x^2+\left(b^2c^2x^2-b^2\right)\arcsin\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)^2-a^2+2\left(abc^2x^2-ab\right)\arcsin\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)/(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2,x, al
gorithm="fricas")
```

```
[Out] integral(-1/(a^2*c^2*x^2 + (b^2*c^2*x^2 - b^2)*arcsin(sqrt(-c*x + 1)/sqrt(c
*x + 1))^2 - a^2 + 2*(a*b*c^2*x^2 - a*b)*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1
))), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c**2*x**2+1)/(a+b*asin((-c*x+1)**(1/2)/(c*x+1)**(1/2)))**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int -\frac{1}{\left(c^2x^2-1\right)\left(b\arcsin\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)/(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2,x, al
gorithm="giac")
```

```
[Out] integrate(-1/((c^2*x^2 - 1)*(b*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)^2)
, x)
```

3.437 $\int e^x \sin^{-1}(e^x)\,dx$

Optimal. Leaf size=22

$$\sqrt{1-e^{2x}}+e^x \sin^{-1}(e^x)$$

```
[Out] Sqrt[1 - E^(2*x)] + E^x*ArcSin[E^x]
```

Rubi [A] time = 0.038355, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 4, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {2194, 4844, 2246, 32}

$$\sqrt{1-e^{2x}}+e^x \sin^{-1}(e^x)$$

Antiderivative was successfully verified.

```
[In] Int[E^x*ArcSin[E^x],x]
```

```
[Out] Sqrt[1 - E^(2*x)] + E^x*ArcSin[E^x]
```

Rule 2194

```
Int[((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.), x_Symbol] :> Simp[(F^(c*(a +
 b*x)))^n/(b*c*n*Log[F]), x] /; FreeQ[{F, a, b, c, n}, x]
```

Rule 4844

```
Int[((a_.) + ArcSin[u_]*(b_.))*(v_), x_Symbol] :> With[{w = IntHide[v, x]},
 Dist[a + b*ArcSin[u], w, x] - Dist[b, Int[SimplifyIntegrand[(w*D[u, x])/Sq
rt[1 - u^2], x], x], x] /; InverseFunctionFreeQ[w, x]] /; FreeQ[{a, b}, x]
&& InverseFunctionFreeQ[u, x] &&  !MatchQ[v, ((c_.) + (d_.)*x)^(m_.) /; Fre
eQ[{c, d, m}, x]]
```

Rule 2246

```
Int[((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)*((a_) + (b_.)*((F_)^((e_.)*((
c_.) + (d_.)*(x_))))^(n_.))^(p_.), x_Symbol] :> Dist[1/(d*e*n*Log[F]), Subs
t[Int[(a + b*x)^p, x], x, (F^(e*(c + d*x)))^n], x] /; FreeQ[{F, a, b, c, d,
 e, n, p}, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rubi steps

$$
\begin{aligned}
\int e^x \sin^{-1}(e^x)\, dx &= e^x \sin^{-1}(e^x) - \int \frac{e^{2x}}{\sqrt{1-e^{2x}}}\, dx \\
&= e^x \sin^{-1}(e^x) - \frac{1}{2}\operatorname{Subst}\left(\int \frac{1}{\sqrt{1-x}}\, dx, x, e^{2x}\right) \\
&= \sqrt{1-e^{2x}} + e^x \sin^{-1}(e^x)
\end{aligned}
$$

Mathematica [A] time = 0.0082238, size = 22, normalized size = 1.

$$\sqrt{1-e^{2x}} + e^x \sin^{-1}(e^x)$$

Antiderivative was successfully verified.

```
[In] Integrate[E^x*ArcSin[E^x],x]
```

```
[Out] Sqrt[1 - E^(2*x)] + E^x*ArcSin[E^x]
```

Maple [A] time = 0.009, size = 18, normalized size = 0.8

$$e^x \arcsin(e^x) + \sqrt{-(e^x)^2 + 1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(x)*arcsin(exp(x)),x)
```

```
[Out] exp(x)*arcsin(exp(x))+(-exp(x)^2+1)^(1/2)
```

Maxima [A] time = 1.4467, size = 23, normalized size = 1.05

$$\arcsin(e^x)\, e^x + \sqrt{-e^{(2\,x)} + 1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(x)*arcsin(exp(x)),x, algorithm="maxima")
```

```
[Out] arcsin(e^x)*e^x + sqrt(-e^(2*x) + 1)
```

Fricas [A] time = 2.00802, size = 51, normalized size = 2.32

$$\arcsin\left(e^{x}\right)e^{x}+\sqrt{-e^{(2\,x)}+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(x)*arcsin(exp(x)),x, algorithm="fricas")
```

```
[Out] arcsin(e^x)*e^x + sqrt(-e^(2*x) + 1)
```

Sympy [A] time = 0.829462, size = 17, normalized size = 0.77

$$\sqrt{1-e^{2x}}+e^{x}\operatorname{asin}\left(e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(x)*asin(exp(x)),x)
```

```
[Out] sqrt(1 - exp(2*x)) + exp(x)*asin(exp(x))
```

Giac [A] time = 1.15127, size = 23, normalized size = 1.05

$$\arcsin\left(e^{x}\right)e^{x}+\sqrt{-e^{(2\,x)}+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(x)*arcsin(exp(x)),x, algorithm="giac")
```

```
[Out] arcsin(e^x)*e^x + sqrt(-e^(2*x) + 1)
```

3.438 $\int \sin^{-1}\left(ce^{a+bx}\right)\,dx$

Optimal. Leaf size=84

$$-\frac{i\text{PolyLog}\left(2,e^{2i\sin^{-1}\left(ce^{a+bx}\right)}\right)}{2b}-\frac{i\sin^{-1}\left(ce^{a+bx}\right)^2}{2b}+\frac{\sin^{-1}\left(ce^{a+bx}\right)\log\left(1-e^{2i\sin^{-1}\left(ce^{a+bx}\right)}\right)}{b}$$

```
[Out] ((-I/2)*ArcSin[c*E^(a + b*x)]^2)/b + (ArcSin[c*E^(a + b*x)]*Log[1 - E^((2*I
)*ArcSin[c*E^(a + b*x)])])/b - ((I/2)*PolyLog[2, E^((2*I)*ArcSin[c*E^(a + b
*x)])])/b
```

Rubi [A] time = 0.0707198, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.6, Rules used = {2282, 4625, 3717, 2190, 2279, 2391}

$$-\frac{i\text{PolyLog}\left(2,e^{2i\sin^{-1}\left(ce^{a+bx}\right)}\right)}{2b}-\frac{i\sin^{-1}\left(ce^{a+bx}\right)^2}{2b}+\frac{\sin^{-1}\left(ce^{a+bx}\right)\log\left(1-e^{2i\sin^{-1}\left(ce^{a+bx}\right)}\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[c*E^(a + b*x)],x]
```

```
[Out] ((-I/2)*ArcSin[c*E^(a + b*x)]^2)/b + (ArcSin[c*E^(a + b*x)]*Log[1 - E^((2*I
)*ArcSin[c*E^(a + b*x)])])/b - ((I/2)*PolyLog[2, E^((2*I)*ArcSin[c*E^(a + b
*x)])])/b
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\begin{aligned}
\int \sin^{-1}\left(ce^{a+bx}\right)dx &= \frac{\text{Subst}\left(\int \frac{\sin^{-1}(cx)}{x}\,dx, x, e^{a+bx}\right)}{b}\\
&= \frac{\text{Subst}\left(\int x\cot(x)\,dx, x, \sin^{-1}\left(ce^{a+bx}\right)\right)}{b}\\
&= -\frac{i\sin^{-1}\left(ce^{a+bx}\right)^2}{2b} - \frac{(2i)\,\text{Subst}\left(\int \frac{e^{2ix}x}{1-e^{2ix}}\,dx, x, \sin^{-1}\left(ce^{a+bx}\right)\right)}{b}\\
&= -\frac{i\sin^{-1}\left(ce^{a+bx}\right)^2}{2b} + \frac{\sin^{-1}\left(ce^{a+bx}\right)\log\left(1-e^{2i\sin^{-1}\left(ce^{a+bx}\right)}\right)}{b} - \frac{\text{Subst}\left(\int \log\left(1-e^{2ix}\right)dx, x, \sin^{-1}\right.}{b}\\
&= -\frac{i\sin^{-1}\left(ce^{a+bx}\right)^2}{2b} + \frac{\sin^{-1}\left(ce^{a+bx}\right)\log\left(1-e^{2i\sin^{-1}\left(ce^{a+bx}\right)}\right)}{b} + \frac{i\,\text{Subst}\left(\int \frac{\log(1-x)}{x}\,dx, x, e^{2i\sin^{-1}\left(ce^{a+}\right.}\right.}{2b}\\
&= -\frac{i\sin^{-1}\left(ce^{a+bx}\right)^2}{2b} + \frac{\sin^{-1}\left(ce^{a+bx}\right)\log\left(1-e^{2i\sin^{-1}\left(ce^{a+bx}\right)}\right)}{b} - \frac{i\text{Li}_2\left(e^{2i\sin^{-1}\left(ce^{a+bx}\right)}\right)}{2b}
\end{aligned}$$

Mathematica [F] time = 0.972079, size = 0, normalized size = 0.

$$\int \sin^{-1}\left(ce^{a+bx}\right)\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[ArcSin[c*E^(a + b*x)],x]
```

```
[Out] Integrate[ArcSin[c*E^(a + b*x)], x]
```

Maple [A] time = 0.025, size = 181, normalized size = 2.2

$$\frac{-\frac{i}{2}\left(\arcsin\left(c\mathrm{e}^{bx+a}\right)\right)^2}{b}+\frac{\arcsin\left(c\mathrm{e}^{bx+a}\right)}{b}\ln\left(1+ic\mathrm{e}^{bx+a}+\sqrt{1-c^2\left(\mathrm{e}^{bx+a}\right)^2}\right)+\frac{\arcsin\left(c\mathrm{e}^{bx+a}\right)}{b}\ln\left(1-ic\mathrm{e}^{bx+a}-\sqrt{1-c^2\left(\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(c*exp(b*x+a)),x)
```

```
[Out] -1/2*I*arcsin(c*exp(b*x+a))^2/b+1/b*arcsin(c*exp(b*x+a))*ln(1+I*c*exp(b*x+a
)+(1-c^2*exp(b*x+a)^2)^(1/2))+1/b*arcsin(c*exp(b*x+a))*ln(1-I*c*exp(b*x+a)-
(1-c^2*exp(b*x+a)^2)^(1/2))-I/b*polylog(2,-I*c*exp(b*x+a)-(1-c^2*exp(b*x+a)
^2)^(1/2))-I/b*polylog(2,I*c*exp(b*x+a)+(1-c^2*exp(b*x+a)^2)^(1/2))
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(c*exp(b*x+a)),x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(c*exp(b*x+a)),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \operatorname{asin}\left(ce^{a+bx}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(c*exp(b*x+a)),x)
```

```
[Out] Integral(asin(c*exp(a + b*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \arcsin\left(ce^{(bx+a)}\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(c*exp(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(arcsin(c*e^(b*x + a)), x)
```

3.439 $\int e^{\sin^{-1}(ax)} x^3 \, dx$

Optimal. Leaf size=81

$$\frac{e^{\sin^{-1}(ax)}\sin\left(2\sin^{-1}(ax)\right)}{20a^4}-\frac{e^{\sin^{-1}(ax)}\sin\left(4\sin^{-1}(ax)\right)}{136a^4}-\frac{e^{\sin^{-1}(ax)}\cos\left(2\sin^{-1}(ax)\right)}{10a^4}+\frac{e^{\sin^{-1}(ax)}\cos\left(4\sin^{-1}(ax)\right)}{34a^4}$$

```
[Out] -(E^ArcSin[a*x]*Cos[2*ArcSin[a*x]])/(10*a^4) + (E^ArcSin[a*x]*Cos[4*ArcSin[
a*x]])/(34*a^4) + (E^ArcSin[a*x]*Sin[2*ArcSin[a*x]])/(20*a^4) - (E^ArcSin[a
*x]*Sin[4*ArcSin[a*x]])/(136*a^4)
```

Rubi [A] time = 0.0656336, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.4, Rules used = {4836, 12, 4469, 4432}

$$\frac{e^{\sin^{-1}(ax)}\sin\left(2\sin^{-1}(ax)\right)}{20a^4}-\frac{e^{\sin^{-1}(ax)}\sin\left(4\sin^{-1}(ax)\right)}{136a^4}-\frac{e^{\sin^{-1}(ax)}\cos\left(2\sin^{-1}(ax)\right)}{10a^4}+\frac{e^{\sin^{-1}(ax)}\cos\left(4\sin^{-1}(ax)\right)}{34a^4}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]*x^3,x]
```

```
[Out] -(E^ArcSin[a*x]*Cos[2*ArcSin[a*x]])/(10*a^4) + (E^ArcSin[a*x]*Cos[4*ArcSin[
a*x]])/(34*a^4) + (E^ArcSin[a*x]*Sin[2*ArcSin[a*x]])/(20*a^4) - (E^ArcSin[a
*x]*Sin[4*ArcSin[a*x]])/(136*a^4)
```

Rule 4836

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -(a/b) + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSi
n[a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4469

```
Int[Cos[(f_.) + (g_.)*(x_)]^(n_.)*(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sin[(d_
.) + (e_.)*(x_)]^(m_.), x_Symbol] :> Int[ExpandTrigReduce[F^(c*(a + b*x)),
```

```
Sin[d + e*x]^m*Cos[f + g*x]^n, x], x] /; FreeQ[{F, a, b, c, d, e, f, g}, x]
 && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 4432

```
Int[(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sin[(d_.) + (e_.)*(x_)], x_Symbol] :>
 Simp[(b*c*Log[F]*F^(c*(a + b*x))*Sin[d + e*x])/(e^2 + b^2*c^2*Log[F]^2), x
] - Simp[(e*F^(c*(a + b*x))*Cos[d + e*x])/(e^2 + b^2*c^2*Log[F]^2), x] /; F
reeQ[{F, a, b, c, d, e}, x] && NeQ[e^2 + b^2*c^2*Log[F]^2, 0]
```

Rubi steps

$$\begin{aligned}\int e^{\sin^{-1}(ax)}x^3\,dx &= \frac{\text{Subst}\left(\int \frac{e^x\cos(x)\sin^3(x)}{a^3}\,dx, x, \sin^{-1}(ax)\right)}{a}\\ &= \frac{\text{Subst}\left(\int e^x\cos(x)\sin^3(x)\,dx, x, \sin^{-1}(ax)\right)}{a^4}\\ &= \frac{\text{Subst}\left(\int \left(\frac{1}{4}e^x\sin(2x)-\frac{1}{8}e^x\sin(4x)\right)dx, x, \sin^{-1}(ax)\right)}{a^4}\\ &= -\frac{\text{Subst}\left(\int e^x\sin(4x)\,dx, x, \sin^{-1}(ax)\right)}{8a^4}+\frac{\text{Subst}\left(\int e^x\sin(2x)\,dx, x, \sin^{-1}(ax)\right)}{4a^4}\\ &= -\frac{e^{\sin^{-1}(ax)}\cos\left(2\sin^{-1}(ax)\right)}{10a^4}+\frac{e^{\sin^{-1}(ax)}\cos\left(4\sin^{-1}(ax)\right)}{34a^4}+\frac{e^{\sin^{-1}(ax)}\sin\left(2\sin^{-1}(ax)\right)}{20a^4}-\frac{e^{\sin^{-1}(ax)}\sin}{13}\end{aligned}$$

Mathematica [A] time = 0.121601, size = 50, normalized size = 0.62

$$\frac{e^{\sin^{-1}(ax)}\left(34\sin\left(2\sin^{-1}(ax)\right)-5\sin\left(4\sin^{-1}(ax)\right)-68\cos\left(2\sin^{-1}(ax)\right)+20\cos\left(4\sin^{-1}(ax)\right)\right)}{680a^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]*x^3,x]
```

```
[Out] (E^ArcSin[a*x]*(-68*Cos[2*ArcSin[a*x]] + 20*Cos[4*ArcSin[a*x]] + 34*Sin[2*A
rcSin[a*x]] - 5*Sin[4*ArcSin[a*x]]))/(680*a^4)
```

Maple [F] time = 0.016, size = 0, normalized size = 0.

$$\int e^{\arcsin(ax)}x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x))*x^3,x)
```

```
[Out] int(exp(arcsin(a*x))*x^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int x^3 e^{(\arcsin(ax))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*x^3,x, algorithm="maxima")
```

```
[Out] integrate(x^3*e^(arcsin(a*x)), x)
```

Fricas [A] time = 2.10234, size = 130, normalized size = 1.6

$$\frac{\left(20\,a^4x^4 - 3\,a^2x^2 + \left(5\,a^3x^3 + 6\,ax\right)\sqrt{-a^2x^2+1} - 6\right)e^{(\arcsin(ax))}}{85\,a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*x^3,x, algorithm="fricas")
```

```
[Out] 1/85*(20*a^4*x^4 - 3*a^2*x^2 + (5*a^3*x^3 + 6*a*x)*sqrt(-a^2*x^2 + 1) - 6)*
e^(arcsin(a*x))/a^4
```

Sympy [A] time = 5.03786, size = 100, normalized size = 1.23

$$\begin{cases} \frac{4x^4e^{\operatorname{asin}(ax)}}{17} + \frac{x^3\sqrt{-a^2x^2+1}e^{\operatorname{asin}(ax)}}{17a} - \frac{3x^2e^{\operatorname{asin}(ax)}}{85a^2} + \frac{6x\sqrt{-a^2x^2+1}e^{\operatorname{asin}(ax)}}{85a^3} - \frac{6e^{\operatorname{asin}(ax)}}{85a^4} & \text{for}\ a \neq 0 \\ \frac{x^4}{4} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x))*x**3,x)
```

```
[Out] Piecewise((4*x**4*exp(asin(a*x))/17 + x**3*sqrt(-a**2*x**2 + 1)*exp(asin(a*
x))/(17*a) - 3*x**2*exp(asin(a*x))/(85*a**2) + 6*x*sqrt(-a**2*x**2 + 1)*exp
(asin(a*x))/(85*a**3) - 6*exp(asin(a*x))/(85*a**4), Ne(a, 0)), (x**4/4, Tru
e))
```

Giac [A] time = 1.19654, size = 131, normalized size = 1.62

$$-\frac{\left(-a^2x^2+1\right)^{\frac{3}{2}}xe^{(\arcsin(ax))}}{17\,a^3}+\frac{11\,\sqrt{-a^2x^2+1}xe^{(\arcsin(ax))}}{85\,a^3}+\frac{4\left(a^2x^2-1\right)^2e^{(\arcsin(ax))}}{17\,a^4}+\frac{37\left(a^2x^2-1\right)e^{(\arcsin(ax))}}{85\,a^4}+\frac{11\,e^{(\arc}}{85}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*x^3,x, algorithm="giac")
```

```
[Out] -1/17*(-a^2*x^2 + 1)^(3/2)*x*e^(arcsin(a*x))/a^3 + 11/85*sqrt(-a^2*x^2 + 1)
*x*e^(arcsin(a*x))/a^3 + 4/17*(a^2*x^2 - 1)^2*e^(arcsin(a*x))/a^4 + 37/85*(
a^2*x^2 - 1)*e^(arcsin(a*x))/a^4 + 11/85*e^(arcsin(a*x))/a^4
```

3.440 $\int e^{\sin^{-1}(ax)}x^2\,dx$

Optimal. Leaf size=82

$$\frac{\sqrt{1-a^2x^2}e^{\sin^{-1}(ax)}}{8a^3}+\frac{xe^{\sin^{-1}(ax)}}{8a^2}-\frac{3e^{\sin^{-1}(ax)}\sin\left(3\sin^{-1}(ax)\right)}{40a^3}-\frac{e^{\sin^{-1}(ax)}\cos\left(3\sin^{-1}(ax)\right)}{40a^3}$$

```
[Out] (E^ArcSin[a*x]*x)/(8*a^2) + (E^ArcSin[a*x]*Sqrt[1 - a^2*x^2])/(8*a^3) - (E^
ArcSin[a*x]*Cos[3*ArcSin[a*x]])/(40*a^3) - (3*E^ArcSin[a*x]*Sin[3*ArcSin[a*
x]])/(40*a^3)
```

Rubi [A] time = 0.062202, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.4, Rules used = {4836, 12, 4469, 4433}

$$\frac{\sqrt{1-a^2x^2}e^{\sin^{-1}(ax)}}{8a^3}+\frac{xe^{\sin^{-1}(ax)}}{8a^2}-\frac{3e^{\sin^{-1}(ax)}\sin\left(3\sin^{-1}(ax)\right)}{40a^3}-\frac{e^{\sin^{-1}(ax)}\cos\left(3\sin^{-1}(ax)\right)}{40a^3}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]*x^2,x]
```

```
[Out] (E^ArcSin[a*x]*x)/(8*a^2) + (E^ArcSin[a*x]*Sqrt[1 - a^2*x^2])/(8*a^3) - (E^
ArcSin[a*x]*Cos[3*ArcSin[a*x]])/(40*a^3) - (3*E^ArcSin[a*x]*Sin[3*ArcSin[a*
x]])/(40*a^3)
```

Rule 4836

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -(a/b) + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSi
n[a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4469

```
Int[Cos[(f_.) + (g_.)*(x_)]^(n_.)*(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sin[(d_
.) + (e_.)*(x_)]^(m_.), x_Symbol] :> Int[ExpandTrigReduce[F^(c*(a + b*x)),
```

```
Sin[d + e*x]^m*Cos[f + g*x]^n, x], x] /; FreeQ[{F, a, b, c, d, e, f, g}, x]
 && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 4433

```
Int[Cos[(d_.) + (e_.)*(x_)]*(F_)^((c_.)*((a_.) + (b_.)*(x_))), x_Symbol] :>
 Simp[(b*c*Log[F]*F^(c*(a + b*x))*Cos[d + e*x])/(e^2 + b^2*c^2*Log[F]^2), x
] + Simp[(e*F^(c*(a + b*x))*Sin[d + e*x])/(e^2 + b^2*c^2*Log[F]^2), x] /; F
reeQ[{F, a, b, c, d, e}, x] && NeQ[e^2 + b^2*c^2*Log[F]^2, 0]
```

Rubi steps

$$\begin{aligned}
\int e^{\sin^{-1}(ax)}x^2\,dx &= \frac{\text{Subst}\left(\int \frac{e^x\cos(x)\sin^2(x)}{a^2}\,dx, x, \sin^{-1}(ax)\right)}{a}\\
&= \frac{\text{Subst}\left(\int e^x\cos(x)\sin^2(x)\,dx, x, \sin^{-1}(ax)\right)}{a^3}\\
&= \frac{\text{Subst}\left(\int \left(\frac{1}{4}e^x\cos(x)-\frac{1}{4}e^x\cos(3x)\right)dx, x, \sin^{-1}(ax)\right)}{a^3}\\
&= \frac{\text{Subst}\left(\int e^x\cos(x)\,dx, x, \sin^{-1}(ax)\right)}{4a^3}-\frac{\text{Subst}\left(\int e^x\cos(3x)\,dx, x, \sin^{-1}(ax)\right)}{4a^3}\\
&= \frac{e^{\sin^{-1}(ax)}x}{8a^2}+\frac{e^{\sin^{-1}(ax)}\sqrt{1-a^2x^2}}{8a^3}-\frac{e^{\sin^{-1}(ax)}\cos\left(3\sin^{-1}(ax)\right)}{40a^3}-\frac{3e^{\sin^{-1}(ax)}\sin\left(3\sin^{-1}(ax)\right)}{40a^3}
\end{aligned}$$

Mathematica [A] time = 0.113662, size = 50, normalized size = 0.61

$$-\frac{e^{\sin^{-1}(ax)}\left(-5\sqrt{1-a^2x^2}-5ax+3\sin\left(3\sin^{-1}(ax)\right)+\cos\left(3\sin^{-1}(ax)\right)\right)}{40a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]*x^2,x]
```

```
[Out] -(E^ArcSin[a*x]*(-5*a*x - 5*Sqrt[1 - a^2*x^2] + Cos[3*ArcSin[a*x]] + 3*Sin[
3*ArcSin[a*x]]))/(40*a^3)
```

Maple [F] time = 0.007, size = 0, normalized size = 0.

$$\int \mathrm{e}^{\arcsin(ax)} x^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x))*x^2,x)
```

```
[Out] int(exp(arcsin(a*x))*x^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int x^2 e^{(\arcsin(ax))} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*x^2,x, algorithm="maxima")
```

```
[Out] integrate(x^2*e^(arcsin(a*x)), x)
```

Fricas [A] time = 2.0602, size = 107, normalized size = 1.3

$$\frac{\left(3\,a^3x^3 - ax + \left(a^2x^2 + 1\right)\sqrt{-a^2x^2 + 1}\right)e^{(\arcsin(ax))}}{10\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*x^2,x, algorithm="fricas")
```

```
[Out] 1/10*(3*a^3*x^3 - a*x + (a^2*x^2 + 1)*sqrt(-a^2*x^2 + 1))*e^(arcsin(a*x))/a
^3
```

Sympy [A] time = 1.81857, size = 80, normalized size = 0.98

$$\begin{cases} \frac{3x^3e^{\operatorname{asin}(ax)}}{10} + \frac{x^2\sqrt{-a^2x^2+1}e^{\operatorname{asin}(ax)}}{10a} - \frac{xe^{\operatorname{asin}(ax)}}{10a^2} + \frac{\sqrt{-a^2x^2+1}e^{\operatorname{asin}(ax)}}{10a^3} & \text{for } a \neq 0 \\ \frac{x^3}{3} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x))*x**2,x)
```

```
[Out] Piecewise((3*x**3*exp(asin(a*x))/10 + x**2*sqrt(-a**2*x**2 + 1)*exp(asin(a*
x))/(10*a) - x*exp(asin(a*x))/(10*a**2) + sqrt(-a**2*x**2 + 1)*exp(asin(a*x
))/(10*a**3), Ne(a, 0)), (x**3/3, True))
```

Giac [A] time = 1.19897, size = 103, normalized size = 1.26

$$\frac{3\left(a^{2}x^{2}-1\right)xe^{(\arcsin(ax))}}{10\,a^{2}}+\frac{xe^{(\arcsin(ax))}}{5\,a^{2}}-\frac{\left(-a^{2}x^{2}+1\right)^{\frac{3}{2}}e^{(\arcsin(ax))}}{10\,a^{3}}+\frac{\sqrt{-a^{2}x^{2}+1}e^{(\arcsin(ax))}}{5\,a^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*x^2,x, algorithm="giac")
```

```
[Out] 3/10*(a^2*x^2 - 1)*x*e^(arcsin(a*x))/a^2 + 1/5*x*e^(arcsin(a*x))/a^2 - 1/10
*(-a^2*x^2 + 1)^(3/2)*e^(arcsin(a*x))/a^3 + 1/5*sqrt(-a^2*x^2 + 1)*e^(arcsi
n(a*x))/a^3
```

3.441 $\int e^{\sin^{-1}(ax)} x \, dx$

Optimal. Leaf size=41

$$\frac{e^{\sin^{-1}(ax)} \sin\left(2\sin^{-1}(ax)\right)}{10a^2} - \frac{e^{\sin^{-1}(ax)} \cos\left(2\sin^{-1}(ax)\right)}{5a^2}$$

```
[Out] -(E^ArcSin[a*x]*Cos[2*ArcSin[a*x]])/(5*a^2) + (E^ArcSin[a*x]*Sin[2*ArcSin[a
*x]])/(10*a^2)
```

Rubi [A] time = 0.0338236, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {4836, 12, 4469, 4432}

$$\frac{e^{\sin^{-1}(ax)} \sin\left(2\sin^{-1}(ax)\right)}{10a^2} - \frac{e^{\sin^{-1}(ax)} \cos\left(2\sin^{-1}(ax)\right)}{5a^2}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]*x,x]
```

```
[Out] -(E^ArcSin[a*x]*Cos[2*ArcSin[a*x]])/(5*a^2) + (E^ArcSin[a*x]*Sin[2*ArcSin[a
*x]])/(10*a^2)
```

Rule 4836

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -(a/b) + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSi
n[a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4469

```
Int[Cos[(f_.) + (g_.)*(x_)]^(n_.)*(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sin[(d_
.) + (e_.)*(x_)]^(m_.), x_Symbol] :> Int[ExpandTrigReduce[F^(c*(a + b*x)),
Sin[d + e*x]^m*Cos[f + g*x]^n, x], x] /; FreeQ[{F, a, b, c, d, e, f, g}, x]
 && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 4432

```
Int[(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sin[(d_.) + (e_.)*(x_)], x_Symbol] :>
 Simp[(b*c*Log[F]*F^(c*(a + b*x))*Sin[d + e*x])/(e^2 + b^2*c^2*Log[F]^2), x
] - Simp[(e*F^(c*(a + b*x))*Cos[d + e*x])/(e^2 + b^2*c^2*Log[F]^2), x] /; F
reeQ[{F, a, b, c, d, e}, x] && NeQ[e^2 + b^2*c^2*Log[F]^2, 0]
```

Rubi steps

$$\begin{aligned}\int e^{\sin^{-1}(ax)}x\,dx &= \frac{\text{Subst}\left(\int \frac{e^x\cos(x)\sin(x)}{a}\,dx, x, \sin^{-1}(ax)\right)}{a}\\ &= \frac{\text{Subst}\left(\int e^x\cos(x)\sin(x)\,dx, x, \sin^{-1}(ax)\right)}{a^2}\\ &= \frac{\text{Subst}\left(\int \frac{1}{2}e^x\sin(2x)\,dx, x, \sin^{-1}(ax)\right)}{a^2}\\ &= \frac{\text{Subst}\left(\int e^x\sin(2x)\,dx, x, \sin^{-1}(ax)\right)}{2a^2}\\ &= -\frac{e^{\sin^{-1}(ax)}\cos\left(2\sin^{-1}(ax)\right)}{5a^2}+\frac{e^{\sin^{-1}(ax)}\sin\left(2\sin^{-1}(ax)\right)}{10a^2}\end{aligned}$$

Mathematica [A] time = 0.0382223, size = 30, normalized size = 0.73

$$\frac{e^{\sin^{-1}(ax)}\left(\sin\left(2\sin^{-1}(ax)\right)-2\cos\left(2\sin^{-1}(ax)\right)\right)}{10a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]*x,x]

[Out] (E^ArcSin[a*x]*(-2*Cos[2*ArcSin[a*x]] + Sin[2*ArcSin[a*x]]))/(10*a^2)
```

Maple [F] time = 0.008, size = 0, normalized size = 0.

$$\int \mathrm{e}^{\arcsin(ax)}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x))*x,x)
```

```
[Out] int(exp(arcsin(a*x))*x,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int xe^{(\arcsin(ax))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*x,x, algorithm="maxima")
```

```
[Out] integrate(x*e^(arcsin(a*x)), x)
```

Fricas [A] time = 2.11044, size = 89, normalized size = 2.17

$$\frac{\left(2\,a^2x^2 + \sqrt{-a^2x^2 + 1}ax - 1\right)e^{(\arcsin(ax))}}{5\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*x,x, algorithm="fricas")
```

```
[Out] 1/5*(2*a^2*x^2 + sqrt(-a^2*x^2 + 1)*a*x - 1)*e^(arcsin(a*x))/a^2
```

Sympy [A] time = 0.606224, size = 53, normalized size = 1.29

$$\begin{cases} \frac{2x^2e^{\operatorname{asin}(ax)}}{5} + \frac{x\sqrt{-a^2x^2+1}e^{\operatorname{asin}(ax)}}{5a} - \frac{e^{\operatorname{asin}(ax)}}{5a^2} & \text{for } a \neq 0 \\ \frac{x^2}{2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x))*x,x)
```

```
[Out] Piecewise((2*x**2*exp(asin(a*x))/5 + x*sqrt(-a**2*x**2 + 1)*exp(asin(a*x))/
(5*a) - exp(asin(a*x))/(5*a**2), Ne(a, 0)), (x**2/2, True))
```

Giac [A] time = 1.19821, size = 72, normalized size = 1.76

$$\frac{\sqrt{-a^2x^2+1}\,xe^{(\arcsin(ax))}}{5\,a}+\frac{2\left(a^2x^2-1\right)e^{(\arcsin(ax))}}{5\,a^2}+\frac{e^{(\arcsin(ax))}}{5\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*x,x, algorithm="giac")
```

```
[Out] 1/5*sqrt(-a^2*x^2 + 1)*x*e^(arcsin(a*x))/a + 2/5*(a^2*x^2 - 1)*e^(arcsin(a*
x))/a^2 + 1/5*e^(arcsin(a*x))/a^2
```

3.442 $\int e^{\sin^{-1}(ax)}\,dx$

Optimal. Leaf size=39

$$\frac{\sqrt{1-a^2x^2}e^{\sin^{-1}(ax)}}{2a}+\frac{1}{2}xe^{\sin^{-1}(ax)}$$

```
[Out] (E^ArcSin[a*x]*x)/2 + (E^ArcSin[a*x]*Sqrt[1 - a^2*x^2])/(2*a)
```

Rubi [A] time = 0.0143872, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 6, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4836, 4433}

$$\frac{\sqrt{1-a^2x^2}e^{\sin^{-1}(ax)}}{2a}+\frac{1}{2}xe^{\sin^{-1}(ax)}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x],x]
```

```
[Out] (E^ArcSin[a*x]*x)/2 + (E^ArcSin[a*x]*Sqrt[1 - a^2*x^2])/(2*a)
```

Rule 4836

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -(a/b) + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSi
n[a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 4433

```
Int[Cos[(d_.) + (e_.)*(x_)]*(F_)^((c_.)*((a_.) + (b_.)*(x_))), x_Symbol] :>
 Simp[(b*c*Log[F]*F^(c*(a + b*x))*Cos[d + e*x])/(e^2 + b^2*c^2*Log[F]^2), x
] + Simp[(e*F^(c*(a + b*x))*Sin[d + e*x])/(e^2 + b^2*c^2*Log[F]^2), x] /; F
reeQ[{F, a, b, c, d, e}, x] && NeQ[e^2 + b^2*c^2*Log[F]^2, 0]
```

Rubi steps

$$\int e^{\sin^{-1}(ax)}\,dx = \frac{\text{Subst}\left(\int e^x\cos(x)\,dx, x, \sin^{-1}(ax)\right)}{a}$$
$$= \frac{1}{2}e^{\sin^{-1}(ax)}x + \frac{e^{\sin^{-1}(ax)}\sqrt{1-a^2x^2}}{2a}$$

Mathematica [A] time = 0.0225738, size = 31, normalized size = 0.79

$$\frac{\left(\sqrt{1-a^2x^2}+ax\right)e^{\sin^{-1}(ax)}}{2a}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x],x]
```

```
[Out] (E^ArcSin[a*x]*(a*x + Sqrt[1 - a^2*x^2]))/(2*a)
```

Maple [F] time = 0.007, size = 0, normalized size = 0.

$$\int e^{\arcsin(ax)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x)),x)
```

```
[Out] int(exp(arcsin(a*x)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int e^{(\arcsin(ax))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)),x, algorithm="maxima")
```

```
[Out] integrate(e^(arcsin(a*x)), x)
```

Fricas [A] time = 1.99291, size = 68, normalized size = 1.74

$$\frac{\left(ax + \sqrt{-a^2x^2 + 1}\right)e^{(\arcsin(ax))}}{2\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)),x, algorithm="fricas")
```

```
[Out] 1/2*(a*x + sqrt(-a^2*x^2 + 1))*e^(arcsin(a*x))/a
```

Sympy [A] time = 0.21421, size = 32, normalized size = 0.82

$$\begin{cases} \frac{xe^{\operatorname{asin}(ax)}}{2} + \frac{\sqrt{-a^2x^2+1}e^{\operatorname{asin}(ax)}}{2a} & \text{for } a \neq 0 \\ x & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x)),x)
```

```
[Out] Piecewise((x*exp(asin(a*x))/2 + sqrt(-a**2*x**2 + 1)*exp(asin(a*x))/(2*a),
Ne(a, 0)), (x, True))
```

Giac [A] time = 1.1984, size = 42, normalized size = 1.08

$$\frac{1}{2}\,xe^{(\arcsin(ax))} + \frac{\sqrt{-a^2x^2 + 1}e^{(\arcsin(ax))}}{2\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)),x, algorithm="giac")
```

```
[Out] 1/2*x*e^(arcsin(a*x)) + 1/2*sqrt(-a^2*x^2 + 1)*e^(arcsin(a*x))/a
```

3.443 $\int \frac{e^{\sin^{-1}(ax)}}{x}\,dx$

Optimal. Leaf size=43

$$ie^{\sin^{-1}(ax)} - 2ie^{\sin^{-1}(ax)}\text{Hypergeometric2F1}\left(-\frac{i}{2},1,1-\frac{i}{2},e^{2i\sin^{-1}(ax)}\right)$$

```
[Out] I*E^ArcSin[a*x] - (2*I)*E^ArcSin[a*x]*Hypergeometric2F1[-I/2, 1, 1 - I/2, E
^((2*I)*ArcSin[a*x])]
```

Rubi [A] time = 0.0569787, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {4836, 12, 4443, 2194, 2251}

$$ie^{\sin^{-1}(ax)} - 2ie^{\sin^{-1}(ax)}\,{}_2F_1\left(-\frac{i}{2},1;1-\frac{i}{2};e^{2i\sin^{-1}(ax)}\right)$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]/x,x]
```

```
[Out] I*E^ArcSin[a*x] - (2*I)*E^ArcSin[a*x]*Hypergeometric2F1[-I/2, 1, 1 - I/2, E
^((2*I)*ArcSin[a*x])]
```

Rule 4836

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -(a/b) + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSi
n[a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4443

```
Int[Cot[(d_.) + (e_.)*(x_)]^(n_.)*(F_)^((c_.)*((a_.) + (b_.)*(x_))), x_Symb
ol] :> Dist[(-I)^n, Int[ExpandIntegrand[(F^(c*(a + b*x))*(1 + E^(2*I*(d + e
*x)))^n)/(1 - E^(2*I*(d + e*x)))^n, x], x], x] /; FreeQ[{F, a, b, c, d, e},
```

```
x] && IntegerQ[n]
```

Rule 2194

```
Int[((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.), x_Symbol] :> Simp[(F^(c*(a +
 b*x)))^n/(b*c*n*Log[F]), x] /; FreeQ[{F, a, b, c, n}, x]
```

Rule 2251

```
Int[((a_) + (b_.)*(F_)^((e_.)*((c_.) + (d_.)*(x_))))^(p_)*(G_)^((h_.)*((f_.
) + (g_.)*(x_))), x_Symbol] :> Simp[(a^p*G^(h*(f + g*x))*Hypergeometric2F1[
-p, (g*h*Log[G])/(d*e*Log[F]), (g*h*Log[G])/(d*e*Log[F]) + 1, Simplify[-((b
*F^(e*(c + d*x)))/a)]])/(g*h*Log[G]), x] /; FreeQ[{F, G, a, b, c, d, e, f,
g, h, p}, x] && (ILtQ[p, 0] || GtQ[a, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{e^{\sin^{-1}(ax)}}{x}\,dx &= \frac{\text{Subst}\left(\int ae^x\cot(x)\,dx, x, \sin^{-1}(ax)\right)}{a}\\
&= \text{Subst}\left(\int e^x\cot(x)\,dx, x, \sin^{-1}(ax)\right)\\
&= -\left(i\,\text{Subst}\left(\int\left(-e^x-\frac{2e^x}{-1+e^{2ix}}\right)dx, x, \sin^{-1}(ax)\right)\right)\\
&= i\,\text{Subst}\left(\int e^x\,dx, x, \sin^{-1}(ax)\right)+2i\,\text{Subst}\left(\int\frac{e^x}{-1+e^{2ix}}\,dx, x, \sin^{-1}(ax)\right)\\
&= ie^{\sin^{-1}(ax)}-2ie^{\sin^{-1}(ax)}\,{}_2F_1\left(-\frac{i}{2},1;1-\frac{i}{2};e^{2i\sin^{-1}(ax)}\right)
\end{aligned}
$$

Mathematica [A] time = 0.0500069, size = 75, normalized size = 1.74

$$i\left(-e^{\sin^{-1}(ax)}\text{Hypergeometric2F1}\left(-\frac{i}{2},1,1-\frac{i}{2},e^{2i\sin^{-1}(ax)}\right)-\left(\frac{1}{5}-\frac{2i}{5}\right)e^{(1+2i)\sin^{-1}(ax)}\text{Hypergeometric2F1}\left(1,1-\frac{i}{2},2-\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[E^ArcSin[a*x]/x,x]
```

```
[Out] I*(-(E^ArcSin[a*x]*Hypergeometric2F1[-I/2, 1, 1 - I/2, E^((2*I)*ArcSin[a*x]
)]) - (1/5 - (2*I)/5)*E^((1 + 2*I)*ArcSin[a*x])*Hypergeometric2F1[1, 1 - I/
2, 2 - I/2, E^((2*I)*ArcSin[a*x])])
```

Maple [F] time = 0.008, size = 0, normalized size = 0.

$$\int \frac{\mathrm{e}^{\arcsin(ax)}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x))/x,x)
```

```
[Out] int(exp(arcsin(a*x))/x,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{(\arcsin(ax))}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/x,x, algorithm="maxima")
```

```
[Out] integrate(e^(arcsin(a*x))/x, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{e^{(\arcsin(ax))}}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/x,x, algorithm="fricas")
```

```
[Out] integral(e^(arcsin(a*x))/x, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\operatorname{asin}(ax)}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x))/x,x)
```

```
[Out] Integral(exp(asin(a*x))/x, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{(\arcsin(ax))}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/x,x, algorithm="giac")
```

```
[Out] integrate(e^(arcsin(a*x))/x, x)
```

3.444 $\int \frac{e^{\sin^{-1}(ax)}}{x^2} dx$

Optimal. Leaf size=83

$$(1-i)ae^{(1+i)\sin^{-1}(ax)}\text{Hypergeometric2F1}\left(\frac{1}{2}-\frac{i}{2},1,\frac{3}{2}-\frac{i}{2},e^{2i\sin^{-1}(ax)}\right)-(2-2i)ae^{(1+i)\sin^{-1}(ax)}\text{Hypergeometric2F1}\left(\right.$$

```
[Out] (1 - I)*a*E^((1 + I)*ArcSin[a*x])*Hypergeometric2F1[1/2 - I/2, 1, 3/2 - I/2
, E^((2*I)*ArcSin[a*x])] - (2 - 2*I)*a*E^((1 + I)*ArcSin[a*x])*Hypergeometr
ic2F1[1/2 - I/2, 2, 3/2 - I/2, E^((2*I)*ArcSin[a*x])]
```

Rubi [A] time = 0.106918, antiderivative size = 83, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.4, Rules used = {4836, 12, 4471, 2251}

$$(1-i)ae^{(1+i)\sin^{-1}(ax)}\,{}_2F_1\left(\frac{1}{2}-\frac{i}{2},1;\frac{3}{2}-\frac{i}{2};e^{2i\sin^{-1}(ax)}\right)-(2-2i)ae^{(1+i)\sin^{-1}(ax)}\,{}_2F_1\left(\frac{1}{2}-\frac{i}{2},2;\frac{3}{2}-\frac{i}{2};e^{2i\sin^{-1}(ax)}\right)$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]/x^2,x]
```

```
[Out] (1 - I)*a*E^((1 + I)*ArcSin[a*x])*Hypergeometric2F1[1/2 - I/2, 1, 3/2 - I/2
, E^((2*I)*ArcSin[a*x])] - (2 - 2*I)*a*E^((1 + I)*ArcSin[a*x])*Hypergeometr
ic2F1[1/2 - I/2, 2, 3/2 - I/2, E^((2*I)*ArcSin[a*x])]
```

Rule 4836

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -(a/b) + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSi
n[a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4471

```
Int[(F_)^((c_.)*((a_.) + (b_.)*(x_)))*(G_)[(d_.) + (e_.)*(x_)]^(m_.)*(H_)[(
d_.) + (e_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigToExp[F^(c*(a + b*x)),
```

```
 G[d + e*x]^m*H[d + e*x]^n, x], x] /; FreeQ[{F, a, b, c, d, e}, x] && IGtQ[
m, 0] && IGtQ[n, 0] && TrigQ[G] && TrigQ[H]
```

Rule 2251

```
Int[((a_) + (b_.)*(F_)^((e_.)*((c_.) + (d_.)*(x_))))^(p_)*(G_)^((h_.)*((f_.
) + (g_.)*(x_))), x_Symbol] :> Simp[(a^p*G^(h*(f + g*x))*Hypergeometric2F1[
-p, (g*h*Log[G])/(d*e*Log[F]), (g*h*Log[G])/(d*e*Log[F]) + 1, Simplify[-((b
*F^(e*(c + d*x)))/a)]])/(g*h*Log[G]), x] /; FreeQ[{F, G, a, b, c, d, e, f,
g, h, p}, x] && (ILtQ[p, 0] || GtQ[a, 0])
```

Rubi steps

$$\int \frac{e^{\sin^{-1}(ax)}}{x^2}\,dx = \frac{\text{Subst}\left(\int a^2e^x\cot(x)\csc(x)\,dx,x,\sin^{-1}(ax)\right)}{a}$$
$$= a\,\text{Subst}\left(\int e^x\cot(x)\csc(x)\,dx,x,\sin^{-1}(ax)\right)$$
$$= a\,\text{Subst}\left(\int\left(\frac{2e^{(1+i)x}}{1-e^{2ix}}-\frac{4e^{(1+i)x}}{\left(-1+e^{2ix}\right)^2}\right)dx,x,\sin^{-1}(ax)\right)$$
$$= (2a)\,\text{Subst}\left(\int\frac{e^{(1+i)x}}{1-e^{2ix}}\,dx,x,\sin^{-1}(ax)\right)-(4a)\,\text{Subst}\left(\int\frac{e^{(1+i)x}}{\left(-1+e^{2ix}\right)^2}\,dx,x,\sin^{-1}(ax)\right)$$
$$= (1-i)ae^{(1+i)\sin^{-1}(ax)}\,{}_2F_1\left(\frac{1}{2}-\frac{i}{2},1;\frac{3}{2}-\frac{i}{2};e^{2i\sin^{-1}(ax)}\right)-(2-2i)ae^{(1+i)\sin^{-1}(ax)}\,{}_2F_1\left(\frac{1}{2}-\frac{i}{2},2;\frac{3}{2}-\frac{i}{2};e^{2i\sin$$

Mathematica [A] time = 0.094195, size = 54, normalized size = 0.65

$$-\frac{e^{\sin^{-1}(ax)}+(1+i)axe^{(1+i)\sin^{-1}(ax)}\text{Hypergeometric2F1}\left(\frac{1}{2}-\frac{i}{2},1,\frac{3}{2}-\frac{i}{2},e^{2i\sin^{-1}(ax)}\right)}{x}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[E^ArcSin[a*x]/x^2,x]
```

```
[Out] -((E^ArcSin[a*x] + (1 + I)*a*E^((1 + I)*ArcSin[a*x])*x*Hypergeometric2F1[1/
2 - I/2, 1, 3/2 - I/2, E^((2*I)*ArcSin[a*x])])/x)
```

Maple [F] time = 0.01, size = 0, normalized size = 0.

$$\int \frac{\mathrm{e}^{\arcsin(ax)}}{x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x))/x^2,x)
```

```
[Out] int(exp(arcsin(a*x))/x^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{(\arcsin(ax))}}{x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/x^2,x, algorithm="maxima")
```

```
[Out] integrate(e^(arcsin(a*x))/x^2, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{e^{(\arcsin(ax))}}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/x^2,x, algorithm="fricas")
```

```
[Out] integral(e^(arcsin(a*x))/x^2, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\operatorname{asin}(ax)}}{x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x))/x**2,x)
```

```
[Out] Integral(exp(asin(a*x))/x**2, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{(\arcsin(ax))}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/x^2,x, algorithm="giac")
```

```
[Out] integrate(e^(arcsin(a*x))/x^2, x)
```

3.445 $\int e^{\sin^{-1}(ax)^2} x^3\,dx$

Optimal. Leaf size=101

$$\frac{e\sqrt{\pi}\operatorname{Erf}\left(1-i\sin^{-1}(ax)\right)}{16a^4}-\frac{e^4\sqrt{\pi}\operatorname{Erf}\left(2-i\sin^{-1}(ax)\right)}{32a^4}+\frac{e\sqrt{\pi}\operatorname{Erf}\left(1+i\sin^{-1}(ax)\right)}{16a^4}-\frac{e^4\sqrt{\pi}\operatorname{Erf}\left(2+i\sin^{-1}(ax)\right)}{32a^4}$$

```
[Out] (E*Sqrt[Pi]*Erf[1 - I*ArcSin[a*x]])/(16*a^4) - (E^4*Sqrt[Pi]*Erf[2 - I*ArcS
in[a*x]])/(32*a^4) + (E*Sqrt[Pi]*Erf[1 + I*ArcSin[a*x]])/(16*a^4) - (E^4*Sq
rt[Pi]*Erf[2 + I*ArcSin[a*x]])/(32*a^4)
```

Rubi [A] time = 0.123416, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.417, Rules used = {4836, 12, 4474, 2234, 2204}

$$\frac{e\sqrt{\pi}\operatorname{Erf}\left(1-i\sin^{-1}(ax)\right)}{16a^4}-\frac{e^4\sqrt{\pi}\operatorname{Erf}\left(2-i\sin^{-1}(ax)\right)}{32a^4}+\frac{e\sqrt{\pi}\operatorname{Erf}\left(1+i\sin^{-1}(ax)\right)}{16a^4}-\frac{e^4\sqrt{\pi}\operatorname{Erf}\left(2+i\sin^{-1}(ax)\right)}{32a^4}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]^2*x^3,x]
```

```
[Out] (E*Sqrt[Pi]*Erf[1 - I*ArcSin[a*x]])/(16*a^4) - (E^4*Sqrt[Pi]*Erf[2 - I*ArcS
in[a*x]])/(32*a^4) + (E*Sqrt[Pi]*Erf[1 + I*ArcSin[a*x]])/(16*a^4) - (E^4*Sq
rt[Pi]*Erf[2 + I*ArcSin[a*x]])/(32*a^4)
```

Rule 4836

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -(a/b) + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSi
n[a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4474

```
Int[Cos[v_]^(n_.)*(F_)^(u_)*Sin[v_]^(m_.), x_Symbol] :> Int[ExpandTrigToExp
[F^u, Sin[v]^m*Cos[v]^n, x], x] /; FreeQ[F, x] && (LinearQ[u, x] || PolyQ[u
```

```
, x, 2]) && (LinearQ[v, x] || PolyQ[v, x, 2]) && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 2234

```
Int[(F_)^((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> Dist[F^(a - b^2/
(4*c)), Int[F^((b + 2*c*x)^2/(4*c)), x], x] /; FreeQ[{F, a, b, c}, x]
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rubi steps

$$\int e^{\sin^{-1}(ax)^2}x^3\,dx = \frac{\text{Subst}\left(\int \frac{e^{x^2}\cos(x)\sin^3(x)}{a^3}\,dx, x, \sin^{-1}(ax)\right)}{a}$$
$$= \frac{\text{Subst}\left(\int e^{x^2}\cos(x)\sin^3(x)\,dx, x, \sin^{-1}(ax)\right)}{a^4}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{1}{8}ie^{-2ix+x^2}-\frac{1}{8}ie^{2ix+x^2}-\frac{1}{16}ie^{-4ix+x^2}+\frac{1}{16}ie^{4ix+x^2}\right)dx, x, \sin^{-1}(ax)\right)}{a^4}$$
$$= -\frac{i\,\text{Subst}\left(\int e^{-4ix+x^2}\,dx, x, \sin^{-1}(ax)\right)}{16a^4}+\frac{i\,\text{Subst}\left(\int e^{4ix+x^2}\,dx, x, \sin^{-1}(ax)\right)}{16a^4}+\frac{i\,\text{Subst}\left(\int e^{-2ix+x^2}\,dx, x\right.}{8a^4}$$
$$= \frac{(ie)\,\text{Subst}\left(\int e^{\frac{1}{4}(-2i+2x)^2}\,dx, x, \sin^{-1}(ax)\right)}{8a^4}-\frac{(ie)\,\text{Subst}\left(\int e^{\frac{1}{4}(2i+2x)^2}\,dx, x, \sin^{-1}(ax)\right)}{8a^4}-\frac{\left(ie^4\right)\text{Subst}\left(\int\right.}{}$$
$$= \frac{e\sqrt{\pi}\,\text{erf}\left(1-i\sin^{-1}(ax)\right)}{16a^4}-\frac{e^4\sqrt{\pi}\,\text{erf}\left(2-i\sin^{-1}(ax)\right)}{32a^4}+\frac{e\sqrt{\pi}\,\text{erf}\left(1+i\sin^{-1}(ax)\right)}{16a^4}-\frac{e^4\sqrt{\pi}\,\text{erf}\left(2+i\,\text{si}\right.}{32a^4}$$

Mathematica [A] time = 0.0779962, size = 67, normalized size = 0.66

$$\frac{e\sqrt{\pi}\left(2\left(\text{Erf}\left(1-i\sin^{-1}(ax)\right)+\text{Erf}\left(1+i\sin^{-1}(ax)\right)\right)-e^3\left(\text{Erf}\left(2-i\sin^{-1}(ax)\right)+\text{Erf}\left(2+i\sin^{-1}(ax)\right)\right)\right)}{32a^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]^2*x^3,x]
```

```
[Out] (E*Sqrt[Pi]*(2*(Erf[1 - I*ArcSin[a*x]] + Erf[1 + I*ArcSin[a*x]]) - E^3*(Erf
[2 - I*ArcSin[a*x]] + Erf[2 + I*ArcSin[a*x]])))/(32*a^4)
```

Maple [F] time = 0.01, size = 0, normalized size = 0.

$$\int \mathrm{e}^{(\arcsin(ax))^2} x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x)^2)*x^3,x)
```

```
[Out] int(exp(arcsin(a*x)^2)*x^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int x^3 e^{\left(\arcsin(ax)^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)*x^3,x, algorithm="maxima")
```

```
[Out] integrate(x^3*e^(arcsin(a*x)^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(x^3 e^{\left(\arcsin(ax)^2\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)*x^3,x, algorithm="fricas")
```

```
[Out] integral(x^3*e^(arcsin(a*x)^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x^3 e^{\operatorname{asin}^2(ax)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x)**2)*x**3,x)
```

```
[Out] Integral(x**3*exp(asin(a*x)**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int x^3 e^{\left(\arcsin(ax)^2\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)*x^3,x, algorithm="giac")
```

```
[Out] integrate(x^3*e^(arcsin(a*x)^2), x)
```

3.446 $\int e^{\sin^{-1}(ax)^2}x^2\,dx$

Optimal. Leaf size=129

$$\frac{\sqrt[4]{e}\sqrt{\pi}\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(ax)-i\right)\right)}{16a^3}+\frac{\sqrt[4]{e}\sqrt{\pi}\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(ax)+i\right)\right)}{16a^3}-\frac{e^{9/4}\sqrt{\pi}\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(ax)-3i\right)\right)}{16a^3}-\frac{e^{9/4}\sqrt{\pi}\text{Erfi}\left(\frac{1}{2}\right.}{}$$

```
[Out] (E^(1/4)*Sqrt[Pi]*Erfi[(-I + 2*ArcSin[a*x])/2])/(16*a^3) + (E^(1/4)*Sqrt[Pi
]*Erfi[(I + 2*ArcSin[a*x])/2])/(16*a^3) - (E^(9/4)*Sqrt[Pi]*Erfi[(-3*I + 2*
ArcSin[a*x])/2])/(16*a^3) - (E^(9/4)*Sqrt[Pi]*Erfi[(3*I + 2*ArcSin[a*x])/2]
)/(16*a^3)
```

Rubi [A] time = 0.129241, antiderivative size = 129, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.417, Rules used = {4836, 12, 4474, 2234, 2204}

$$\frac{\sqrt[4]{e}\sqrt{\pi}\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(ax)-i\right)\right)}{16a^3}+\frac{\sqrt[4]{e}\sqrt{\pi}\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(ax)+i\right)\right)}{16a^3}-\frac{e^{9/4}\sqrt{\pi}\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(ax)-3i\right)\right)}{16a^3}-\frac{e^{9/4}\sqrt{\pi}\text{Erfi}\left(\frac{1}{2}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]^2*x^2,x]
```


```
[Out] (E^(1/4)*Sqrt[Pi]*Erfi[(-I + 2*ArcSin[a*x])/2])/(16*a^3) + (E^(1/4)*Sqrt[Pi
]*Erfi[(I + 2*ArcSin[a*x])/2])/(16*a^3) - (E^(9/4)*Sqrt[Pi]*Erfi[(-3*I + 2*
ArcSin[a*x])/2])/(16*a^3) - (E^(9/4)*Sqrt[Pi]*Erfi[(3*I + 2*ArcSin[a*x])/2]
)/(16*a^3)
```


Rule 4836

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -(a/b) + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSi
n[a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4474

```
Int[Cos[v_]^(n_.)*(F_)^(u_)*Sin[v_]^(m_.), x_Symbol] :> Int[ExpandTrigToExp
[F^u, Sin[v]^m*Cos[v]^n, x], x] /; FreeQ[F, x] && (LinearQ[u, x] || PolyQ[u
, x, 2]) && (LinearQ[v, x] || PolyQ[v, x, 2]) && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 2234

```
Int[(F_)^((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> Dist[F^(a - b^2/
(4*c)), Int[F^((b + 2*c*x)^2/(4*c)), x], x] /; FreeQ[{F, a, b, c}, x]
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rubi steps

$$\begin{aligned}
\int e^{\sin^{-1}(ax)^2}x^2\,dx &= \frac{\text{Subst}\left(\int \frac{e^{x^2}\cos(x)\sin^2(x)}{a^2}\,dx, x, \sin^{-1}(ax)\right)}{a} \\
&= \frac{\text{Subst}\left(\int e^{x^2}\cos(x)\sin^2(x)\,dx, x, \sin^{-1}(ax)\right)}{a^3} \\
&= \frac{\text{Subst}\left(\int \left(\frac{1}{8}e^{-ix+x^2}+\frac{1}{8}e^{ix+x^2}-\frac{1}{8}e^{-3ix+x^2}-\frac{1}{8}e^{3ix+x^2}\right)dx, x, \sin^{-1}(ax)\right)}{a^3} \\
&= \frac{\text{Subst}\left(\int e^{-ix+x^2}\,dx, x, \sin^{-1}(ax)\right)}{8a^3}+\frac{\text{Subst}\left(\int e^{ix+x^2}\,dx, x, \sin^{-1}(ax)\right)}{8a^3}-\frac{\text{Subst}\left(\int e^{-3ix+x^2}\,dx, x, \sin^{-1}\right.}{8a^3} \\
&= \frac{\sqrt[4]{e}\,\text{Subst}\left(\int e^{\frac{1}{4}(-i+2x)^2}\,dx, x, \sin^{-1}(ax)\right)}{8a^3}+\frac{\sqrt[4]{e}\,\text{Subst}\left(\int e^{\frac{1}{4}(i+2x)^2}\,dx, x, \sin^{-1}(ax)\right)}{8a^3}-\frac{e^{9/4}\,\text{Subst}\left(\int e^{\frac{1}{4}(\right.}{} \\
&= \frac{\sqrt[4]{e}\sqrt{\pi}\,\text{erfi}\left(\frac{1}{2}\left(-i+2\sin^{-1}(ax)\right)\right)}{16a^3}+\frac{\sqrt[4]{e}\sqrt{\pi}\,\text{erfi}\left(\frac{1}{2}\left(i+2\sin^{-1}(ax)\right)\right)}{16a^3}-\frac{e^{9/4}\sqrt{\pi}\,\text{erfi}\left(\frac{1}{2}\left(-3i+2\sin^{-1}(a\right.\right.}{16a^3}
\end{aligned}$$

Mathematica [A] time = 0.085105, size = 84, normalized size = 0.65

$$\frac{\sqrt[4]{e}\sqrt{\pi}\left(\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(ax)-i\right)\right)+\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(ax)+i\right)\right)-e^2\left(\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(ax)-3i\right)\right)+\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(ax)+3i\right)\right.\right.\right.}{16a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]^2*x^2,x]
```

```
[Out] (E^(1/4)*Sqrt[Pi]*(Erfi[(-I + 2*ArcSin[a*x])/2] + Erfi[(I + 2*ArcSin[a*x])/
2] - E^2*(Erfi[(-3*I + 2*ArcSin[a*x])/2] + Erfi[(3*I + 2*ArcSin[a*x])/2])))
/(16*a^3)
```

Maple [F] time = 0.008, size = 0, normalized size = 0.

$$\int \mathrm{e}^{(\arcsin(ax))^2} x^2\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x)^2)*x^2,x)
```

```
[Out] int(exp(arcsin(a*x)^2)*x^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int x^2 e^{\left(\arcsin(ax)^2\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)*x^2,x, algorithm="maxima")
```

```
[Out] integrate(x^2*e^(arcsin(a*x)^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(x^2 e^{\left(\arcsin(ax)^2\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)*x^2,x, algorithm="fricas")
```

```
[Out] integral(x^2*e^(arcsin(a*x)^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x^2 e^{\operatorname{asin}^2(ax)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x)**2)*x**2,x)
```

```
[Out] Integral(x**2*exp(asin(a*x)**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int x^2 e^{\left(\arcsin(ax)^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)*x^2,x, algorithm="giac")
```

```
[Out] integrate(x^2*e^(arcsin(a*x)^2), x)
```

3.447 $\int e^{\sin^{-1}(ax)^2} x\,dx$

Optimal. Leaf size=49

$$\frac{e\sqrt{\pi}\operatorname{Erf}\left(1-i\sin^{-1}(ax)\right)}{8a^2}+\frac{e\sqrt{\pi}\operatorname{Erf}\left(1+i\sin^{-1}(ax)\right)}{8a^2}$$

```
[Out] (E*Sqrt[Pi]*Erf[1 - I*ArcSin[a*x]])/(8*a^2) + (E*Sqrt[Pi]*Erf[1 + I*ArcSin[
a*x]])/(8*a^2)
```

Rubi [A] time = 0.06189, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 5, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {4836, 12, 4474, 2234, 2204}

$$\frac{e\sqrt{\pi}\operatorname{Erf}\left(1-i\sin^{-1}(ax)\right)}{8a^2}+\frac{e\sqrt{\pi}\operatorname{Erf}\left(1+i\sin^{-1}(ax)\right)}{8a^2}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]^2*x,x]
```

```
[Out] (E*Sqrt[Pi]*Erf[1 - I*ArcSin[a*x]])/(8*a^2) + (E*Sqrt[Pi]*Erf[1 + I*ArcSin[
a*x]])/(8*a^2)
```

Rule 4836

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -(a/b) + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSi
n[a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4474

```
Int[Cos[v_]^(n_.)*(F_)^(u_)*Sin[v_]^(m_.), x_Symbol] :> Int[ExpandTrigToExp
[F^u, Sin[v]^m*Cos[v]^n, x], x] /; FreeQ[F, x] && (LinearQ[u, x] || PolyQ[u
, x, 2]) && (LinearQ[v, x] || PolyQ[v, x, 2]) && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 2234

```
Int[(F_)^((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> Dist[F^(a - b^2/
(4*c)), Int[F^((b + 2*c*x)^2/(4*c)), x], x] /; FreeQ[{F, a, b, c}, x]
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rubi steps

$$
\begin{aligned}
\int e^{\sin^{-1}(ax)^2} x\,dx &= \frac{\text{Subst}\left(\int \frac{e^{x^2}\cos(x)\sin(x)}{a}\,dx, x, \sin^{-1}(ax)\right)}{a}\\
&= \frac{\text{Subst}\left(\int e^{x^2}\cos(x)\sin(x)\,dx, x, \sin^{-1}(ax)\right)}{a^2}\\
&= \frac{\text{Subst}\left(\int \left(\frac{1}{4}ie^{-2ix+x^2}-\frac{1}{4}ie^{2ix+x^2}\right)dx, x, \sin^{-1}(ax)\right)}{a^2}\\
&= \frac{i\,\text{Subst}\left(\int e^{-2ix+x^2}\,dx, x, \sin^{-1}(ax)\right)}{4a^2}-\frac{i\,\text{Subst}\left(\int e^{2ix+x^2}\,dx, x, \sin^{-1}(ax)\right)}{4a^2}\\
&= \frac{(ie)\,\text{Subst}\left(\int e^{\frac{1}{4}(-2i+2x)^2}\,dx, x, \sin^{-1}(ax)\right)}{4a^2}-\frac{(ie)\,\text{Subst}\left(\int e^{\frac{1}{4}(2i+2x)^2}\,dx, x, \sin^{-1}(ax)\right)}{4a^2}\\
&= \frac{e\sqrt{\pi}\,\text{erf}\left(1-i\sin^{-1}(ax)\right)}{8a^2}+\frac{e\sqrt{\pi}\,\text{erf}\left(1+i\sin^{-1}(ax)\right)}{8a^2}
\end{aligned}
$$

Mathematica [A] time = 0.0264709, size = 36, normalized size = 0.73

$$
\frac{e\sqrt{\pi}\left(\text{Erf}\left(1-i\sin^{-1}(ax)\right)+\text{Erf}\left(1+i\sin^{-1}(ax)\right)\right)}{8a^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]^2*x,x]
```

```
[Out] (E*Sqrt[Pi]*(Erf[1 - I*ArcSin[a*x]] + Erf[1 + I*ArcSin[a*x]]))/(8*a^2)
```

Maple [F] time = 0.006, size = 0, normalized size = 0.

$$\int \mathrm{e}^{(\arcsin(ax))^2} x\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x)^2)*x,x)
```

```
[Out] int(exp(arcsin(a*x)^2)*x,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int xe^{\left(\arcsin(ax)^2\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)*x,x, algorithm="maxima")
```

```
[Out] integrate(x*e^(arcsin(a*x)^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(xe^{\left(\arcsin(ax)^2\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)*x,x, algorithm="fricas")
```

```
[Out] integral(x*e^(arcsin(a*x)^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int xe^{\operatorname{asin}^2(ax)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x)**2)*x,x)
```

```
[Out] Integral(x*exp(asin(a*x)**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int xe^{\left(\arcsin(ax)^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)*x,x, algorithm="giac")
```

```
[Out] integrate(x*e^(arcsin(a*x)^2), x)
```

3.448 $\int e^{\sin^{-1}(ax)^2}\,dx$

Optimal. Leaf size=65

$$\frac{\sqrt[4]{e}\sqrt{\pi}\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(ax)-i\right)\right)}{4a}+\frac{\sqrt[4]{e}\sqrt{\pi}\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(ax)+i\right)\right)}{4a}$$

```
[Out] (E^(1/4)*Sqrt[Pi]*Erfi[(-I + 2*ArcSin[a*x])/2])/(4*a) + (E^(1/4)*Sqrt[Pi]*E
rfi[(I + 2*ArcSin[a*x])/2])/(4*a)
```

Rubi [A] time = 0.0502309, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {4836, 4473, 2234, 2204}

$$\frac{\sqrt[4]{e}\sqrt{\pi}\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(ax)-i\right)\right)}{4a}+\frac{\sqrt[4]{e}\sqrt{\pi}\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(ax)+i\right)\right)}{4a}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]^2,x]
```

```
[Out] (E^(1/4)*Sqrt[Pi]*Erfi[(-I + 2*ArcSin[a*x])/2])/(4*a) + (E^(1/4)*Sqrt[Pi]*E
rfi[(I + 2*ArcSin[a*x])/2])/(4*a)
```

Rule 4836

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -(a/b) + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSi
n[a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 4473

```
Int[Cos[v_]^(n_.)*(F_)^(u_), x_Symbol] :> Int[ExpandTrigToExp[F^u, Cos[v]^n
, x], x] /; FreeQ[F, x] && (LinearQ[u, x] || PolyQ[u, x, 2]) && (LinearQ[v,
 x] || PolyQ[v, x, 2]) && IGtQ[n, 0]
```

Rule 2234

```
Int[(F_)^((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> Dist[F^(a - b^2/
(4*c)), Int[F^((b + 2*c*x)^2/(4*c)), x], x] /; FreeQ[{F, a, b, c}, x]
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rubi steps

$$
\begin{aligned}
\int e^{\sin^{-1}(ax)^2}\,dx &= \frac{\text{Subst}\left(\int e^{x^2}\cos(x)\,dx, x, \sin^{-1}(ax)\right)}{a}\\
&= \frac{\text{Subst}\left(\int \left(\frac{1}{2}e^{-ix+x^2}+\frac{1}{2}e^{ix+x^2}\right)dx, x, \sin^{-1}(ax)\right)}{a}\\
&= \frac{\text{Subst}\left(\int e^{-ix+x^2}\,dx, x, \sin^{-1}(ax)\right)}{2a}+\frac{\text{Subst}\left(\int e^{ix+x^2}\,dx, x, \sin^{-1}(ax)\right)}{2a}\\
&= \frac{\sqrt[4]{e}\,\text{Subst}\left(\int e^{\frac{1}{4}(-i+2x)^2}\,dx, x, \sin^{-1}(ax)\right)}{2a}+\frac{\sqrt[4]{e}\,\text{Subst}\left(\int e^{\frac{1}{4}(i+2x)^2}\,dx, x, \sin^{-1}(ax)\right)}{2a}\\
&= \frac{\sqrt[4]{e}\sqrt{\pi}\,\text{erfi}\left(\frac{1}{2}\left(-i+2\sin^{-1}(ax)\right)\right)}{4a}+\frac{\sqrt[4]{e}\sqrt{\pi}\,\text{erfi}\left(\frac{1}{2}\left(i+2\sin^{-1}(ax)\right)\right)}{4a}
\end{aligned}
$$

Mathematica [A] time = 0.0315391, size = 48, normalized size = 0.74

$$\frac{\sqrt[4]{e}\sqrt{\pi}\left(\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(ax)-i\right)\right)+\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(ax)+i\right)\right)\right)}{4a}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]^2,x]
```

```
[Out] (E^(1/4)*Sqrt[Pi]*(Erfi[(-I + 2*ArcSin[a*x])/2] + Erfi[(I + 2*ArcSin[a*x])/
2]))/(4*a)
```

Maple [F] time = 0.006, size = 0, normalized size = 0.

$$\int e^{(\arcsin(ax))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x)^2),x)
```

```
[Out] int(exp(arcsin(a*x)^2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int e^{\left(\arcsin(ax)^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2),x, algorithm="maxima")
```

```
[Out] integrate(e^(arcsin(a*x)^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(e^{\left(\arcsin(ax)^2\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2),x, algorithm="fricas")
```

```
[Out] integral(e^(arcsin(a*x)^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int e^{\operatorname{asin}^2(ax)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x)**2),x)
```

```
[Out] Integral(exp(asin(a*x)**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int e^{\left(\arcsin(ax)^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2),x, algorithm="giac")
```

```
[Out] integrate(e^(arcsin(a*x)^2), x)
```

3.449 $\int \frac{e^{\sin^{-1}(ax)^2}}{x} \, dx$

Optimal. Leaf size=19

$$a\text{CannotIntegrate}\left(\frac{e^{\sin^{-1}(ax)^2}}{ax},x\right)$$

```
[Out] a*CannotIntegrate[E^ArcSin[a*x]^2/(a*x), x]
```

Rubi [A] time = 0.0377262, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{e^{\sin^{-1}(ax)^2}}{x} \, dx$$

Verification is Not applicable to the result.

```
[In] Int[E^ArcSin[a*x]^2/x,x]
```

```
[Out] Defer[Subst][Defer[Int][E^x^2*Cot[x], x], x, ArcSin[a*x]]
```

Rubi steps

$$\begin{aligned}\int \frac{e^{\sin^{-1}(ax)^2}}{x} \, dx &= \frac{\text{Subst}\left(\int ae^{x^2}\cot(x)\,dx, x, \sin^{-1}(ax)\right)}{a}\\ &= \text{Subst}\left(\int e^{x^2}\cot(x)\,dx, x, \sin^{-1}(ax)\right)\end{aligned}$$

Mathematica [A] time = 0.187278, size = 0, normalized size = 0.

$$\int \frac{e^{\sin^{-1}(ax)^2}}{x} \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[E^ArcSin[a*x]^2/x,x]
```

```
[Out] Integrate[E^ArcSin[a*x]^2/x, x]
```

Maple [A] time = 0.009, size = 0, normalized size = 0.

$$\int \frac{\mathrm{e}^{(\arcsin(ax))^2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x)^2)/x,x)
```

```
[Out] int(exp(arcsin(a*x)^2)/x,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(\arcsin(ax)^2\right)}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)/x,x, algorithm="maxima")
```

```
[Out] integrate(e^(arcsin(a*x)^2)/x, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{e^{\left(\arcsin(ax)^2\right)}}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)/x,x, algorithm="fricas")
```

```
[Out] integral(e^(arcsin(a*x)^2)/x, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\operatorname{asin}^2(ax)}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x)**2)/x,x)
```

```
[Out] Integral(exp(asin(a*x)**2)/x, x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(\arcsin(ax)^2\right)}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)/x,x, algorithm="giac")
```

```
[Out] integrate(e^(arcsin(a*x)^2)/x, x)
```

3.450 $\int \frac{e^{\sin^{-1}(ax)^2}}{x^2} dx$

Optimal. Leaf size=21

$$a^2\text{CannotIntegrate}\left(\frac{e^{\sin^{-1}(ax)^2}}{a^2x^2},x\right)$$

```
[Out] a^2*CannotIntegrate[E^ArcSin[a*x]^2/(a^2*x^2), x]
```

Rubi [A] time = 0.07802, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{e^{\sin^{-1}(ax)^2}}{x^2} dx$$

Verification is Not applicable to the result.

```
[In] Int[E^ArcSin[a*x]^2/x^2,x]
```

```
[Out] a*Defer[Subst][Defer[Int][E^x^2*Cot[x]*Csc[x], x], x, ArcSin[a*x]]
```

Rubi steps

$$\begin{aligned}\int \frac{e^{\sin^{-1}(ax)^2}}{x^2} dx &= \frac{\text{Subst}\left(\int a^2e^{x^2}\cot(x)\csc(x)\,dx,x,\sin^{-1}(ax)\right)}{a}\\ &= a\,\text{Subst}\left(\int e^{x^2}\cot(x)\csc(x)\,dx,x,\sin^{-1}(ax)\right)\end{aligned}$$

Mathematica [A] time = 1.62852, size = 0, normalized size = 0.

$$\int \frac{e^{\sin^{-1}(ax)^2}}{x^2} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[E^ArcSin[a*x]^2/x^2,x]
```

```
[Out] Integrate[E^ArcSin[a*x]^2/x^2, x]
```

Maple [A] time = 0.007, size = 0, normalized size = 0.

$$\int \frac{\mathrm{e}^{(\arcsin(ax))^2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x)^2)/x^2,x)
```

```
[Out] int(exp(arcsin(a*x)^2)/x^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(\arcsin(ax)^2\right)}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)/x^2,x, algorithm="maxima")
```

```
[Out] integrate(e^(arcsin(a*x)^2)/x^2, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{e^{\left(\arcsin(ax)^2\right)}}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)/x^2,x, algorithm="fricas")
```

```
[Out] integral(e^(arcsin(a*x)^2)/x^2, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\operatorname{asin}^2(ax)}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x)**2)/x**2,x)
```

```
[Out] Integral(exp(asin(a*x)**2)/x**2, x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(\arcsin(ax)^2\right)}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)/x^2,x, algorithm="giac")
```

```
[Out] integrate(e^(arcsin(a*x)^2)/x^2, x)
```

3.451 $\int e^{\sin^{-1}(a+bx)}x^3\,dx$

Optimal. Leaf size=309

$$-\frac{a^3(a+bx)e^{\sin^{-1}(a+bx)}}{2b^4}-\frac{a^3\sqrt{1-(a+bx)^2}e^{\sin^{-1}(a+bx)}}{2b^4}+\frac{3a^2e^{\sin^{-1}(a+bx)}\sin\left(2\sin^{-1}(a+bx)\right)}{10b^4}-\frac{3a^2e^{\sin^{-1}(a+bx)}\cos\left(2\sin^{-1}\right.}{5b^4}$$

```
[Out] (-3*a*E^ArcSin[a + b*x]*(a + b*x))/(8*b^4) - (a^3*E^ArcSin[a + b*x]*(a + b*
x))/(2*b^4) - (3*a*E^ArcSin[a + b*x]*Sqrt[1 - (a + b*x)^2])/(8*b^4) - (a^3*
E^ArcSin[a + b*x]*Sqrt[1 - (a + b*x)^2])/(2*b^4) - (E^ArcSin[a + b*x]*Cos[2
*ArcSin[a + b*x]])/(10*b^4) - (3*a^2*E^ArcSin[a + b*x]*Cos[2*ArcSin[a + b*x
]])/(5*b^4) + (3*a*E^ArcSin[a + b*x]*Cos[3*ArcSin[a + b*x]])/(40*b^4) + (E^
ArcSin[a + b*x]*Cos[4*ArcSin[a + b*x]])/(34*b^4) + (E^ArcSin[a + b*x]*Sin[2
*ArcSin[a + b*x]])/(20*b^4) + (3*a^2*E^ArcSin[a + b*x]*Sin[2*ArcSin[a + b*x
]])/(10*b^4) + (9*a*E^ArcSin[a + b*x]*Sin[3*ArcSin[a + b*x]])/(40*b^4) - (E
^ArcSin[a + b*x]*Sin[4*ArcSin[a + b*x]])/(136*b^4)
```

Rubi [A] time = 0.527435, antiderivative size = 309, normalized size of antiderivative = 1., number of steps used = 17, number of rules used = 7, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.583, Rules used = {4836, 6741, 12, 6742, 4433, 4469, 4432}

$$-\frac{a^3(a+bx)e^{\sin^{-1}(a+bx)}}{2b^4}-\frac{a^3\sqrt{1-(a+bx)^2}e^{\sin^{-1}(a+bx)}}{2b^4}+\frac{3a^2e^{\sin^{-1}(a+bx)}\sin\left(2\sin^{-1}(a+bx)\right)}{10b^4}-\frac{3a^2e^{\sin^{-1}(a+bx)}\cos\left(2\sin^{-1}\right.}{5b^4}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a + b*x]*x^3,x]
```


```
[Out] (-3*a*E^ArcSin[a + b*x]*(a + b*x))/(8*b^4) - (a^3*E^ArcSin[a + b*x]*(a + b*
x))/(2*b^4) - (3*a*E^ArcSin[a + b*x]*Sqrt[1 - (a + b*x)^2])/(8*b^4) - (a^3*
E^ArcSin[a + b*x]*Sqrt[1 - (a + b*x)^2])/(2*b^4) - (E^ArcSin[a + b*x]*Cos[2
*ArcSin[a + b*x]])/(10*b^4) - (3*a^2*E^ArcSin[a + b*x]*Cos[2*ArcSin[a + b*x
]])/(5*b^4) + (3*a*E^ArcSin[a + b*x]*Cos[3*ArcSin[a + b*x]])/(40*b^4) + (E^
ArcSin[a + b*x]*Cos[4*ArcSin[a + b*x]])/(34*b^4) + (E^ArcSin[a + b*x]*Sin[2
*ArcSin[a + b*x]])/(20*b^4) + (3*a^2*E^ArcSin[a + b*x]*Sin[2*ArcSin[a + b*x
]])/(10*b^4) + (9*a*E^ArcSin[a + b*x]*Sin[3*ArcSin[a + b*x]])/(40*b^4) - (E
^ArcSin[a + b*x]*Sin[4*ArcSin[a + b*x]])/(136*b^4)
```


Rule 4836

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -(a/b) + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSi
```

```
n[a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 4433

```
Int[Cos[(d_.) + (e_.)*(x_)]*(F_)^((c_.)*((a_.) + (b_.)*(x_))), x_Symbol] :>
 Simp[(b*c*Log[F]*F^(c*(a + b*x))*Cos[d + e*x])/(e^2 + b^2*c^2*Log[F]^2), x
] + Simp[(e*F^(c*(a + b*x))*Sin[d + e*x])/(e^2 + b^2*c^2*Log[F]^2), x] /; F
reeQ[{F, a, b, c, d, e}, x] && NeQ[e^2 + b^2*c^2*Log[F]^2, 0]
```

Rule 4469

```
Int[Cos[(f_.) + (g_.)*(x_)]^(n_.)*(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sin[(d_
.) + (e_.)*(x_)]^(m_.), x_Symbol] :> Int[ExpandTrigReduce[F^(c*(a + b*x)),
Sin[d + e*x]^m*Cos[f + g*x]^n, x], x] /; FreeQ[{F, a, b, c, d, e, f, g}, x]
 && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 4432

```
Int[(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sin[(d_.) + (e_.)*(x_)], x_Symbol] :>
 Simp[(b*c*Log[F]*F^(c*(a + b*x))*Sin[d + e*x])/(e^2 + b^2*c^2*Log[F]^2), x
] - Simp[(e*F^(c*(a + b*x))*Cos[d + e*x])/(e^2 + b^2*c^2*Log[F]^2), x] /; F
reeQ[{F, a, b, c, d, e}, x] && NeQ[e^2 + b^2*c^2*Log[F]^2, 0]
```

Rubi steps

$$\int e^{\sin^{-1}(a+bx)}x^3\,dx = \frac{\text{Subst}\left(\int e^x\cos(x)\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)^3\,dx,x,\sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \frac{e^x\cos(x)(-a+\sin(x))^3}{b^3}\,dx,x,\sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int e^x\cos(x)(-a+\sin(x))^3\,dx,x,\sin^{-1}(a+bx)\right)}{b^4}$$
$$= \frac{\text{Subst}\left(\int\left(-a^3e^x\cos(x)+3a^2e^x\cos(x)\sin(x)-3ae^x\cos(x)\sin^2(x)+e^x\cos(x)\sin^3(x)\right)\,dx,x,\sin^{-}\right.}{b^4}$$
$$= \frac{\text{Subst}\left(\int e^x\cos(x)\sin^3(x)\,dx,x,\sin^{-1}(a+bx)\right)}{b^4} - \frac{(3a)\,\text{Subst}\left(\int e^x\cos(x)\sin^2(x)\,dx,x,\sin^{-1}(a+\right.}{b^4}$$
$$= -\frac{a^3e^{\sin^{-1}(a+bx)}(a+bx)}{2b^4} - \frac{a^3e^{\sin^{-1}(a+bx)}\sqrt{1-(a+bx)^2}}{2b^4} + \frac{\text{Subst}\left(\int\left(\frac{1}{4}e^x\sin(2x)-\frac{1}{8}e^x\sin(4x)\right)\,dx,\right.}{b^4}$$
$$= -\frac{a^3e^{\sin^{-1}(a+bx)}(a+bx)}{2b^4} - \frac{a^3e^{\sin^{-1}(a+bx)}\sqrt{1-(a+bx)^2}}{2b^4} - \frac{\text{Subst}\left(\int e^x\sin(4x)\,dx,x,\sin^{-1}(a+bx)\right)}{8b^4} +$$
$$= -\frac{3ae^{\sin^{-1}(a+bx)}(a+bx)}{8b^4} - \frac{a^3e^{\sin^{-1}(a+bx)}(a+bx)}{2b^4} - \frac{3ae^{\sin^{-1}(a+bx)}\sqrt{1-(a+bx)^2}}{8b^4} - \frac{a^3e^{\sin^{-1}(a+bx)}\sqrt{1-}}{2b^4}$$

Mathematica [A] time = 0.412054, size = 148, normalized size = 0.48

$$\frac{e^{\sin^{-1}(a+bx)}\left(-340a^3(a+bx)-85\left(4a^2+3\right)a\sqrt{1-(a+bx)^2}+204a^2\sin\left(2\sin^{-1}(a+bx)\right)-68\left(6a^2+1\right)\cos\left(2\sin^{-1}(a+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a + b*x]*x^3,x]
```

```
[Out] (E^ArcSin[a + b*x]*(-255*a*(a + b*x) - 340*a^3*(a + b*x) - 85*a*(3 + 4*a^2)
*Sqrt[1 - (a + b*x)^2] - 68*(1 + 6*a^2)*Cos[2*ArcSin[a + b*x]] + 51*a*Cos[3
*ArcSin[a + b*x]] + 20*Cos[4*ArcSin[a + b*x]] + 34*Sin[2*ArcSin[a + b*x]] +
 204*a^2*Sin[2*ArcSin[a + b*x]] + 153*a*Sin[3*ArcSin[a + b*x]] - 5*Sin[4*Ar
cSin[a + b*x]]))/(680*b^4)
```

Maple [F] time = 0.012, size = 0, normalized size = 0.

$$\int e^{\arcsin(bx+a)}x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(b*x+a))*x^3,x)
```

```
[Out] int(exp(arcsin(b*x+a))*x^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int x^3 e^{(\arcsin(bx+a))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))*x^3,x, algorithm="maxima")
```

```
[Out] integrate(x^3*e^(arcsin(b*x + a)), x)
```

Fricas [A] time = 2.23107, size = 308, normalized size = 1.

$$\frac{\left(40\,b^4x^4 + 7\,ab^3x^3 - 3\left(5\,a^2+2\right)b^2x^2 + 6\,a^4 + 3\left(8\,a^3+13\,a\right)bx - 57\,a^2 + \left(10\,b^3x^3 - 21\,ab^2x^2 - 24\,a^3 + 6\left(5\,a^2+2\right)bx - 3\right.}{170\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))*x^3,x, algorithm="fricas")
```

```
[Out] 1/170*(40*b^4*x^4 + 7*a*b^3*x^3 - 3*(5*a^2 + 2)*b^2*x^2 + 6*a^4 + 3*(8*a^3
+ 13*a)*b*x - 57*a^2 + (10*b^3*x^3 - 21*a*b^2*x^2 - 24*a^3 + 6*(5*a^2 + 2)*
b*x - 39*a)*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1) - 12)*e^(arcsin(b*x + a))/b^
4
```

Sympy [A] time = 6.1733, size = 416, normalized size = 1.35

$$\begin{cases} \frac{3a^4e^{\operatorname{asin}(a+bx)}}{85b^4} + \frac{12a^3xe^{\operatorname{asin}(a+bx)}}{85b^3} - \frac{12a^3\sqrt{-a^2-2abx-b^2x^2+1}e^{\operatorname{asin}(a+bx)}}{85b^4} - \frac{3a^2x^2e^{\operatorname{asin}(a+bx)}}{34b^2} + \frac{3a^2x\sqrt{-a^2-2abx-b^2x^2+1}e^{\operatorname{asin}(a+bx)}}{17b^3} - \frac{57a^2e^{\operatorname{asin}(a+bx)}}{170b^4} \\ \frac{x^4e^{\operatorname{asin}(a)}}{4} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(b*x+a))*x**3,x)
```

```
[Out] Piecewise((3*a**4*exp(asin(a + b*x))/(85*b**4) + 12*a**3*x*exp(asin(a + b*x
))/(85*b**3) - 12*a**3*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*exp(asin(a + b
*x))/(85*b**4) - 3*a**2*x**2*exp(asin(a + b*x))/(34*b**2) + 3*a**2*x*sqrt(-
a**2 - 2*a*b*x - b**2*x**2 + 1)*exp(asin(a + b*x))/(17*b**3) - 57*a**2*exp(
asin(a + b*x))/(170*b**4) + 7*a*x**3*exp(asin(a + b*x))/(170*b) - 21*a*x**2
*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*exp(asin(a + b*x))/(170*b**2) + 39*a
*x*exp(asin(a + b*x))/(170*b**3) - 39*a*sqrt(-a**2 - 2*a*b*x - b**2*x**2 +
1)*exp(asin(a + b*x))/(170*b**4) + 4*x**4*exp(asin(a + b*x))/17 + x**3*sqrt
(-a**2 - 2*a*b*x - b**2*x**2 + 1)*exp(asin(a + b*x))/(17*b) - 3*x**2*exp(as
in(a + b*x))/(85*b**2) + 6*x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*exp(asin
(a + b*x))/(85*b**3) - 6*exp(asin(a + b*x))/(85*b**4), Ne(b, 0)), (x**4*exp
(asin(a))/4, True))
```

Giac [A] time = 1.26267, size = 451, normalized size = 1.46

$$-\frac{(bx+a)a^3e^{(\arcsin(bx+a))}}{2\,b^4}+\frac{3\sqrt{-(bx+a)^2+1}(bx+a)a^2e^{(\arcsin(bx+a))}}{5\,b^4}-\frac{\sqrt{-(bx+a)^2+1}a^3e^{(\arcsin(bx+a))}}{2\,b^4}-\frac{9\left((bx+a)^2-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))*x^3,x, algorithm="giac")
```

```
[Out] -1/2*(b*x + a)*a^3*e^(arcsin(b*x + a))/b^4 + 3/5*sqrt(-(b*x + a)^2 + 1)*(b*
x + a)*a^2*e^(arcsin(b*x + a))/b^4 - 1/2*sqrt(-(b*x + a)^2 + 1)*a^3*e^(arcs
in(b*x + a))/b^4 - 9/10*((b*x + a)^2 - 1)*(b*x + a)*a*e^(arcsin(b*x + a))/b
^4 + 6/5*((b*x + a)^2 - 1)*a^2*e^(arcsin(b*x + a))/b^4 - 1/17*(-(b*x + a)^2
 + 1)^(3/2)*(b*x + a)*e^(arcsin(b*x + a))/b^4 + 3/10*(-(b*x + a)^2 + 1)^(3/
2)*a*e^(arcsin(b*x + a))/b^4 + 4/17*((b*x + a)^2 - 1)^2*e^(arcsin(b*x + a))
/b^4 - 3/5*(b*x + a)*a*e^(arcsin(b*x + a))/b^4 + 3/5*a^2*e^(arcsin(b*x + a)
)/b^4 + 11/85*sqrt(-(b*x + a)^2 + 1)*(b*x + a)*e^(arcsin(b*x + a))/b^4 - 3/
5*sqrt(-(b*x + a)^2 + 1)*a*e^(arcsin(b*x + a))/b^4 + 37/85*((b*x + a)^2 - 1
)*e^(arcsin(b*x + a))/b^4 + 11/85*e^(arcsin(b*x + a))/b^4
```

3.452 $\int e^{\sin^{-1}(a+bx)}x^2\,dx$

Optimal. Leaf size=205

$$\frac{a^2(a+bx)e^{\sin^{-1}(a+bx)}}{2b^3}+\frac{a^2\sqrt{1-(a+bx)^2}e^{\sin^{-1}(a+bx)}}{2b^3}-\frac{ae^{\sin^{-1}(a+bx)}\sin\left(2\sin^{-1}(a+bx)\right)}{5b^3}+\frac{(a+bx)e^{\sin^{-1}(a+bx)}}{8b^3}-\frac{3e^{\sin^{-1}(a+}}{}$$

```
[Out] (E^ArcSin[a + b*x]*(a + b*x))/(8*b^3) + (a^2*E^ArcSin[a + b*x]*(a + b*x))/(
2*b^3) + (E^ArcSin[a + b*x]*Sqrt[1 - (a + b*x)^2])/(8*b^3) + (a^2*E^ArcSin[
a + b*x]*Sqrt[1 - (a + b*x)^2])/(2*b^3) + (2*a*E^ArcSin[a + b*x]*Cos[2*ArcS
in[a + b*x]])/(5*b^3) - (E^ArcSin[a + b*x]*Cos[3*ArcSin[a + b*x]])/(40*b^3)
 - (a*E^ArcSin[a + b*x]*Sin[2*ArcSin[a + b*x]])/(5*b^3) - (3*E^ArcSin[a + b
*x]*Sin[3*ArcSin[a + b*x]])/(40*b^3)
```

Rubi [A] time = 0.364148, antiderivative size = 205, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 7, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.583, Rules used = {4836, 6741, 12, 6742, 4433, 4469, 4432}

$$\frac{a^2(a+bx)e^{\sin^{-1}(a+bx)}}{2b^3}+\frac{a^2\sqrt{1-(a+bx)^2}e^{\sin^{-1}(a+bx)}}{2b^3}-\frac{ae^{\sin^{-1}(a+bx)}\sin\left(2\sin^{-1}(a+bx)\right)}{5b^3}+\frac{(a+bx)e^{\sin^{-1}(a+bx)}}{8b^3}-\frac{3e^{\sin^{-1}(a+}}{}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a + b*x]*x^2,x]
```


```
[Out] (E^ArcSin[a + b*x]*(a + b*x))/(8*b^3) + (a^2*E^ArcSin[a + b*x]*(a + b*x))/(
2*b^3) + (E^ArcSin[a + b*x]*Sqrt[1 - (a + b*x)^2])/(8*b^3) + (a^2*E^ArcSin[
a + b*x]*Sqrt[1 - (a + b*x)^2])/(2*b^3) + (2*a*E^ArcSin[a + b*x]*Cos[2*ArcS
in[a + b*x]])/(5*b^3) - (E^ArcSin[a + b*x]*Cos[3*ArcSin[a + b*x]])/(40*b^3)
 - (a*E^ArcSin[a + b*x]*Sin[2*ArcSin[a + b*x]])/(5*b^3) - (3*E^ArcSin[a + b
*x]*Sin[3*ArcSin[a + b*x]])/(40*b^3)
```


Rule 4836

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -(a/b) + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSi
n[a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 4433

```
Int[Cos[(d_.) + (e_.)*(x_)]*(F_)^((c_.)*((a_.) + (b_.)*(x_))), x_Symbol] :>
 Simp[(b*c*Log[F]*F^(c*(a + b*x))*Cos[d + e*x])/(e^2 + b^2*c^2*Log[F]^2), x
] + Simp[(e*F^(c*(a + b*x))*Sin[d + e*x])/(e^2 + b^2*c^2*Log[F]^2), x] /; F
reeQ[{F, a, b, c, d, e}, x] && NeQ[e^2 + b^2*c^2*Log[F]^2, 0]
```

Rule 4469

```
Int[Cos[(f_.) + (g_.)*(x_)]^(n_.)*(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sin[(d_
.) + (e_.)*(x_)]^(m_.), x_Symbol] :> Int[ExpandTrigReduce[F^(c*(a + b*x)),
Sin[d + e*x]^m*Cos[f + g*x]^n, x], x] /; FreeQ[{F, a, b, c, d, e, f, g}, x]
 && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 4432

```
Int[(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sin[(d_.) + (e_.)*(x_)], x_Symbol] :>
 Simp[(b*c*Log[F]*F^(c*(a + b*x))*Sin[d + e*x])/(e^2 + b^2*c^2*Log[F]^2), x
] - Simp[(e*F^(c*(a + b*x))*Cos[d + e*x])/(e^2 + b^2*c^2*Log[F]^2), x] /; F
reeQ[{F, a, b, c, d, e}, x] && NeQ[e^2 + b^2*c^2*Log[F]^2, 0]
```

Rubi steps

$$\int e^{\sin^{-1}(a+bx)}x^2\,dx = \frac{\text{Subst}\left(\int e^x\cos(x)\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)^2dx, x, \sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \frac{e^x\cos(x)(a-\sin(x))^2}{b^2}dx, x, \sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int e^x\cos(x)(a-\sin(x))^2dx, x, \sin^{-1}(a+bx)\right)}{b^3}$$
$$= \frac{\text{Subst}\left(\int \left(a^2e^x\cos(x)-2ae^x\cos(x)\sin(x)+e^x\cos(x)\sin^2(x)\right)dx, x, \sin^{-1}(a+bx)\right)}{b^3}$$
$$= \frac{\text{Subst}\left(\int e^x\cos(x)\sin^2(x)\,dx, x, \sin^{-1}(a+bx)\right)}{b^3} - \frac{(2a)\,\text{Subst}\left(\int e^x\cos(x)\sin(x)\,dx, x, \sin^{-1}(a+bx\right.}{b^3}$$
$$= \frac{a^2e^{\sin^{-1}(a+bx)}(a+bx)}{2b^3} + \frac{a^2e^{\sin^{-1}(a+bx)}\sqrt{1-(a+bx)^2}}{2b^3} + \frac{\text{Subst}\left(\int\left(\frac{1}{4}e^x\cos(x)-\frac{1}{4}e^x\cos(3x)\right)dx, x, \text{si}\right.}{b^3}$$
$$= \frac{a^2e^{\sin^{-1}(a+bx)}(a+bx)}{2b^3} + \frac{a^2e^{\sin^{-1}(a+bx)}\sqrt{1-(a+bx)^2}}{2b^3} + \frac{\text{Subst}\left(\int e^x\cos(x)\,dx, x, \sin^{-1}(a+bx)\right)}{4b^3} - \text{Su}$$
$$= \frac{e^{\sin^{-1}(a+bx)}(a+bx)}{8b^3} + \frac{a^2e^{\sin^{-1}(a+bx)}(a+bx)}{2b^3} + \frac{e^{\sin^{-1}(a+bx)}\sqrt{1-(a+bx)^2}}{8b^3} + \frac{a^2e^{\sin^{-1}(a+bx)}\sqrt{1-(a+bx}}{2b^3}$$

Mathematica [A] time = 0.220149, size = 103, normalized size = 0.5

$$\frac{e^{\sin^{-1}(a+bx)}\left(20a^2(a+bx)+5\left(4a^2+1\right)\sqrt{1-(a+bx)^2}+5(a+bx)-8a\sin\left(2\sin^{-1}(a+bx)\right)-3\sin\left(3\sin^{-1}(a+bx)\right)+16\right.}{40b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a + b*x]*x^2,x]
```

```
[Out] (E^ArcSin[a + b*x]*(5*(a + b*x) + 20*a^2*(a + b*x) + 5*(1 + 4*a^2)*Sqrt[1 -
 (a + b*x)^2] + 16*a*Cos[2*ArcSin[a + b*x]] - Cos[3*ArcSin[a + b*x]] - 8*a*
Sin[2*ArcSin[a + b*x]] - 3*Sin[3*ArcSin[a + b*x]]))/(40*b^3)
```

Maple [F] time = 0.01, size = 0, normalized size = 0.

$$\int e^{\arcsin(bx+a)}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(b*x+a))*x^2,x)
```

```
[Out] int(exp(arcsin(b*x+a))*x^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int x^2 e^{(\arcsin(bx+a))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))*x^2,x, algorithm="maxima")
```

```
[Out] integrate(x^2*e^(arcsin(b*x + a)), x)
```

Fricas [A] time = 2.0188, size = 198, normalized size = 0.97

$$\frac{\left(3\,b^3x^3 + ab^2x^2 - \left(2\,a^2 + 1\right)bx + \left(b^2x^2 - 2\,abx + 2\,a^2 + 1\right)\sqrt{-b^2x^2 - 2\,abx - a^2 + 1} + 3\,a\right)e^{(\arcsin(bx+a))}}{10\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))*x^2,x, algorithm="fricas")
```

```
[Out] 1/10*(3*b^3*x^3 + a*b^2*x^2 - (2*a^2 + 1)*b*x + (b^2*x^2 - 2*a*b*x + 2*a^2
+ 1)*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1) + 3*a)*e^(arcsin(b*x + a))/b^3
```

Sympy [A] time = 2.33011, size = 243, normalized size = 1.19

$$\begin{cases} -\frac{a^2xe^{\operatorname{asin}(a+bx)}}{5b^2} + \frac{a^2\sqrt{-a^2-2abx-b^2x^2+1}e^{\operatorname{asin}(a+bx)}}{5b^3} + \frac{ax^2e^{\operatorname{asin}(a+bx)}}{10b} - \frac{ax\sqrt{-a^2-2abx-b^2x^2+1}e^{\operatorname{asin}(a+bx)}}{5b^2} + \frac{3ae^{\operatorname{asin}(a+bx)}}{10b^3} + \frac{3x^3e^{\operatorname{asin}(a+bx)}}{10} + \frac{x^2 \\ \frac{x^3e^{\operatorname{asin}(a)}}{3} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(b*x+a))*x**2,x)
```

```
[Out] Piecewise((-a**2*x*exp(asin(a + b*x))/(5*b**2) + a**2*sqrt(-a**2 - 2*a*b*x
- b**2*x**2 + 1)*exp(asin(a + b*x))/(5*b**3) + a*x**2*exp(asin(a + b*x))/(1
0*b) - a*x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*exp(asin(a + b*x))/(5*b**2
) + 3*a*exp(asin(a + b*x))/(10*b**3) + 3*x**3*exp(asin(a + b*x))/10 + x**2*
sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*exp(asin(a + b*x))/(10*b) - x*exp(asi
n(a + b*x))/(10*b**2) + sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*exp(asin(a +
b*x))/(10*b**3), Ne(b, 0)), (x**3*exp(asin(a))/3, True))
```

Giac [A] time = 1.19495, size = 281, normalized size = 1.37

$$\frac{(bx+a)a^2e^{(\arcsin(bx+a))}}{2\,b^3} - \frac{2\,\sqrt{-(bx+a)^2+1}(bx+a)ae^{(\arcsin(bx+a))}}{5\,b^3} + \frac{\sqrt{-(bx+a)^2+1}a^2e^{(\arcsin(bx+a))}}{2\,b^3} + \frac{3\left((bx+a)^2-1\right)(\cdots}{1\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))*x^2,x, algorithm="giac")
```

```
[Out] 1/2*(b*x + a)*a^2*e^(arcsin(b*x + a))/b^3 - 2/5*sqrt(-(b*x + a)^2 + 1)*(b*x
 + a)*a*e^(arcsin(b*x + a))/b^3 + 1/2*sqrt(-(b*x + a)^2 + 1)*a^2*e^(arcsin(
b*x + a))/b^3 + 3/10*((b*x + a)^2 - 1)*(b*x + a)*e^(arcsin(b*x + a))/b^3 -
4/5*((b*x + a)^2 - 1)*a*e^(arcsin(b*x + a))/b^3 - 1/10*(-(b*x + a)^2 + 1)^(
3/2)*e^(arcsin(b*x + a))/b^3 + 1/5*(b*x + a)*e^(arcsin(b*x + a))/b^3 - 2/5*
a*e^(arcsin(b*x + a))/b^3 + 1/5*sqrt(-(b*x + a)^2 + 1)*e^(arcsin(b*x + a))/
b^3
```

3.453 $\int e^{\sin^{-1}(a+bx)} x \, dx$

Optimal. Leaf size=101

$$-\frac{a(a+bx)e^{\sin^{-1}(a+bx)}}{2b^2}-\frac{a\sqrt{1-(a+bx)^2}e^{\sin^{-1}(a+bx)}}{2b^2}+\frac{e^{\sin^{-1}(a+bx)}\sin\left(2\sin^{-1}(a+bx)\right)}{10b^2}-\frac{e^{\sin^{-1}(a+bx)}\cos\left(2\sin^{-1}(a+bx)\right)}{5b^2}$$

```
[Out] -(a*E^ArcSin[a + b*x]*(a + b*x))/(2*b^2) - (a*E^ArcSin[a + b*x]*Sqrt[1 - (a
 + b*x)^2])/(2*b^2) - (E^ArcSin[a + b*x]*Cos[2*ArcSin[a + b*x]])/(5*b^2) +
(E^ArcSin[a + b*x]*Sin[2*ArcSin[a + b*x]])/(10*b^2)
```

Rubi [A] time = 0.183847, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.7, Rules used = {4836, 6741, 12, 6742, 4433, 4469, 4432}

$$-\frac{a(a+bx)e^{\sin^{-1}(a+bx)}}{2b^2}-\frac{a\sqrt{1-(a+bx)^2}e^{\sin^{-1}(a+bx)}}{2b^2}+\frac{e^{\sin^{-1}(a+bx)}\sin\left(2\sin^{-1}(a+bx)\right)}{10b^2}-\frac{e^{\sin^{-1}(a+bx)}\cos\left(2\sin^{-1}(a+bx)\right)}{5b^2}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a + b*x]*x,x]
```

```
[Out] -(a*E^ArcSin[a + b*x]*(a + b*x))/(2*b^2) - (a*E^ArcSin[a + b*x]*Sqrt[1 - (a
 + b*x)^2])/(2*b^2) - (E^ArcSin[a + b*x]*Cos[2*ArcSin[a + b*x]])/(5*b^2) +
(E^ArcSin[a + b*x]*Sin[2*ArcSin[a + b*x]])/(10*b^2)
```

Rule 4836

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -(a/b) + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSi
n[a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 4433

```
Int[Cos[(d_.) + (e_.)*(x_)]*(F_)^((c_.)*((a_.) + (b_.)*(x_))), x_Symbol] :>
 Simp[(b*c*Log[F]*F^(c*(a + b*x))*Cos[d + e*x])/(e^2 + b^2*c^2*Log[F]^2), x
] + Simp[(e*F^(c*(a + b*x))*Sin[d + e*x])/(e^2 + b^2*c^2*Log[F]^2), x] /; F
reeQ[{F, a, b, c, d, e}, x] && NeQ[e^2 + b^2*c^2*Log[F]^2, 0]
```

Rule 4469

```
Int[Cos[(f_.) + (g_.)*(x_)]^(n_.)*(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sin[(d_
.) + (e_.)*(x_)]^(m_.), x_Symbol] :> Int[ExpandTrigReduce[F^(c*(a + b*x)),
Sin[d + e*x]^m*Cos[f + g*x]^n, x], x] /; FreeQ[{F, a, b, c, d, e, f, g}, x]
 && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 4432

```
Int[(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sin[(d_.) + (e_.)*(x_)], x_Symbol] :>
 Simp[(b*c*Log[F]*F^(c*(a + b*x))*Sin[d + e*x])/(e^2 + b^2*c^2*Log[F]^2), x
] - Simp[(e*F^(c*(a + b*x))*Cos[d + e*x])/(e^2 + b^2*c^2*Log[F]^2), x] /; F
reeQ[{F, a, b, c, d, e}, x] && NeQ[e^2 + b^2*c^2*Log[F]^2, 0]
```

Rubi steps

$$\begin{aligned}
\int e^{\sin^{-1}(a+bx)}x\,dx &= \frac{\text{Subst}\left(\int e^x\cos(x)\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)\,dx,x,\sin^{-1}(a+bx)\right)}{b} \\
&= \frac{\text{Subst}\left(\int \frac{e^x\cos(x)(-a+\sin(x))}{b}\,dx,x,\sin^{-1}(a+bx)\right)}{b} \\
&= \frac{\text{Subst}\left(\int e^x\cos(x)(-a+\sin(x))\,dx,x,\sin^{-1}(a+bx)\right)}{b^2} \\
&= \frac{\text{Subst}\left(\int \left(-ae^x\cos(x)+e^x\cos(x)\sin(x)\right)\,dx,x,\sin^{-1}(a+bx)\right)}{b^2} \\
&= \frac{\text{Subst}\left(\int e^x\cos(x)\sin(x)\,dx,x,\sin^{-1}(a+bx)\right)}{b^2}-\frac{a\,\text{Subst}\left(\int e^x\cos(x)\,dx,x,\sin^{-1}(a+bx)\right)}{b^2} \\
&= -\frac{ae^{\sin^{-1}(a+bx)}(a+bx)}{2b^2}-\frac{ae^{\sin^{-1}(a+bx)}\sqrt{1-(a+bx)^2}}{2b^2}+\frac{\text{Subst}\left(\int \frac{1}{2}e^x\sin(2x)\,dx,x,\sin^{-1}(a+bx)\right)}{b^2} \\
&= -\frac{ae^{\sin^{-1}(a+bx)}(a+bx)}{2b^2}-\frac{ae^{\sin^{-1}(a+bx)}\sqrt{1-(a+bx)^2}}{2b^2}+\frac{\text{Subst}\left(\int e^x\sin(2x)\,dx,x,\sin^{-1}(a+bx)\right)}{2b^2} \\
&= -\frac{ae^{\sin^{-1}(a+bx)}(a+bx)}{2b^2}-\frac{ae^{\sin^{-1}(a+bx)}\sqrt{1-(a+bx)^2}}{2b^2}-\frac{e^{\sin^{-1}(a+bx)}\cos\left(2\sin^{-1}(a+bx)\right)}{5b^2}+\frac{e^{\sin^{-1}(a+bx)}}{}
\end{aligned}$$

Mathematica [A] time = 0.145904, size = 59, normalized size = 0.58

$$-\frac{e^{\sin^{-1}(a+bx)}\left(\sqrt{1-(a+bx)^2}(3a-2bx)+5a(a+bx)+2\cos\left(2\sin^{-1}(a+bx)\right)\right)}{10b^2}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[E^ArcSin[a + b*x]*x,x]
```

```
[Out] -(E^ArcSin[a + b*x]*(5*a*(a + b*x) + (3*a - 2*b*x)*Sqrt[1 - (a + b*x)^2] +
2*Cos[2*ArcSin[a + b*x]]))/(10*b^2)
```

Maple [F] time = 0.007, size = 0, normalized size = 0.

$$\int e^{\arcsin(bx+a)}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(b*x+a))*x,x)
```

```
[Out] int(exp(arcsin(b*x+a))*x,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int xe^{(\arcsin(bx+a))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))*x,x, algorithm="maxima")
```

```
[Out] integrate(x*e^(arcsin(b*x + a)), x)
```

Fricas [A] time = 2.05777, size = 153, normalized size = 1.51

$$\frac{\left(4\,b^2x^2 + 3\,abx - a^2 + \sqrt{-b^2x^2 - 2\,abx - a^2 + 1}(2\,bx - 3\,a) - 2\right)e^{(\arcsin(bx+a))}}{10\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))*x,x, algorithm="fricas")
```

```
[Out] 1/10*(4*b^2*x^2 + 3*a*b*x - a^2 + sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(2*b*x
 - 3*a) - 2)*e^(arcsin(b*x + a))/b^2
```

Sympy [A] time = 0.724474, size = 146, normalized size = 1.45

$$\begin{cases} -\frac{a^2e^{\operatorname{asin}(a+bx)}}{10b^2} + \frac{3axe^{\operatorname{asin}(a+bx)}}{10b} - \frac{3a\sqrt{-a^2-2abx-b^2x^2+1}e^{\operatorname{asin}(a+bx)}}{10b^2} + \frac{2x^2e^{\operatorname{asin}(a+bx)}}{5} + \frac{x\sqrt{-a^2-2abx-b^2x^2+1}e^{\operatorname{asin}(a+bx)}}{5b} - \frac{e^{\operatorname{asin}(a+bx)}}{5b^2} & \text{for } b \neq \\ \frac{x^2e^{\operatorname{asin}(a)}}{2} & \text{otherw} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(b*x+a))*x,x)
```

```
[Out] Piecewise((-a**2*exp(asin(a + b*x))/(10*b**2) + 3*a*x*exp(asin(a + b*x))/(1
0*b) - 3*a*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*exp(asin(a + b*x))/(10*b**
2) + 2*x**2*exp(asin(a + b*x))/5 + x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*
exp(asin(a + b*x))/(5*b) - exp(asin(a + b*x))/(5*b**2), Ne(b, 0)), (x**2*ex
p(asin(a))/2, True))
```

Giac [A] time = 1.26571, size = 146, normalized size = 1.45

$$-\frac{(bx+a)ae^{(\arcsin(bx+a))}}{2\,b^2}+\frac{\sqrt{-(bx+a)^2+1}(bx+a)e^{(\arcsin(bx+a))}}{5\,b^2}-\frac{\sqrt{-(bx+a)^2+1}ae^{(\arcsin(bx+a))}}{2\,b^2}+\frac{2\left((bx+a)^2-1\right)e^{(a}}{5\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))*x,x, algorithm="giac")
```

```
[Out] -1/2*(b*x + a)*a*e^(arcsin(b*x + a))/b^2 + 1/5*sqrt(-(b*x + a)^2 + 1)*(b*x
+ a)*e^(arcsin(b*x + a))/b^2 - 1/2*sqrt(-(b*x + a)^2 + 1)*a*e^(arcsin(b*x +
 a))/b^2 + 2/5*((b*x + a)^2 - 1)*e^(arcsin(b*x + a))/b^2 + 1/5*e^(arcsin(b*
x + a))/b^2
```

3.454 $\int e^{\sin^{-1}(a+bx)}\,dx$

Optimal. Leaf size=51

$$\frac{(a+bx)e^{\sin^{-1}(a+bx)}}{2b}+\frac{\sqrt{1-(a+bx)^2}e^{\sin^{-1}(a+bx)}}{2b}$$

```
[Out] (E^ArcSin[a + b*x]*(a + b*x))/(2*b) + (E^ArcSin[a + b*x]*Sqrt[1 - (a + b*x)
^2])/(2*b)
```

Rubi [A] time = 0.0195506, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {4836, 4433}

$$\frac{(a+bx)e^{\sin^{-1}(a+bx)}}{2b}+\frac{\sqrt{1-(a+bx)^2}e^{\sin^{-1}(a+bx)}}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a + b*x],x]
```

```
[Out] (E^ArcSin[a + b*x]*(a + b*x))/(2*b) + (E^ArcSin[a + b*x]*Sqrt[1 - (a + b*x)
^2])/(2*b)
```

Rule 4836

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -(a/b) + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSi
n[a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 4433

```
Int[Cos[(d_.) + (e_.)*(x_)]*(F_)^((c_.)*((a_.) + (b_.)*(x_))), x_Symbol] :>
 Simp[(b*c*Log[F]*F^(c*(a + b*x))*Cos[d + e*x])/(e^2 + b^2*c^2*Log[F]^2), x
] + Simp[(e*F^(c*(a + b*x))*Sin[d + e*x])/(e^2 + b^2*c^2*Log[F]^2), x] /; F
reeQ[{F, a, b, c, d, e}, x] && NeQ[e^2 + b^2*c^2*Log[F]^2, 0]
```

Rubi steps

$$\int e^{\sin^{-1}(a+bx)}\,dx = \frac{\text{Subst}\left(\int e^x\cos(x)\,dx, x, \sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{e^{\sin^{-1}(a+bx)}(a+bx)}{2b} + \frac{e^{\sin^{-1}(a+bx)}\sqrt{1-(a+bx)^2}}{2b}$$

Mathematica [A] time = 0.0161327, size = 35, normalized size = 0.69

$$\frac{\left(\sqrt{1-(a+bx)^2}+a+bx\right)e^{\sin^{-1}(a+bx)}}{2b}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a + b*x],x]
```

```
[Out] (E^ArcSin[a + b*x]*(a + b*x + Sqrt[1 - (a + b*x)^2]))/(2*b)
```

Maple [F] time = 0.007, size = 0, normalized size = 0.

$$\int e^{\arcsin(bx+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(b*x+a)),x)
```

```
[Out] int(exp(arcsin(b*x+a)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int e^{(\arcsin(bx+a))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)),x, algorithm="maxima")
```

```
[Out] integrate(e^(arcsin(b*x + a)), x)
```

Fricas [A] time = 2.10588, size = 100, normalized size = 1.96

$$\frac{\left(bx+a+\sqrt{-b^2x^2-2\,abx-a^2+1}\right)e^{(\arcsin(bx+a))}}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/2*(b*x + a + sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1))*e^(arcsin(b*x + a))/b
```

Sympy [A] time = 0.246779, size = 65, normalized size = 1.27

$$\begin{cases} \frac{ae^{\operatorname{asin}(a+bx)}}{2b}+\frac{xe^{\operatorname{asin}(a+bx)}}{2}+\frac{\sqrt{-a^2-2abx-b^2x^2+1}e^{\operatorname{asin}(a+bx)}}{2b} & \text{for}\ b\neq 0\\ xe^{\operatorname{asin}(a)} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(b*x+a)),x)
```

```
[Out] Piecewise(((a*exp(asin(a + b*x))/(2*b) + x*exp(asin(a + b*x))/2 + sqrt(-a**2
 - 2*a*b*x - b**2*x**2 + 1)*exp(asin(a + b*x))/(2*b), Ne(b, 0)), (x*exp(asi
n(a)), True))
```

Giac [A] time = 1.18878, size = 58, normalized size = 1.14

$$\frac{(bx+a)e^{(\arcsin(bx+a))}}{2\,b}+\frac{\sqrt{-(bx+a)^2+1}e^{(\arcsin(bx+a))}}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)),x, algorithm="giac")
```

```
[Out] 1/2*(b*x + a)*e^(arcsin(b*x + a))/b + 1/2*sqrt(-(b*x + a)^2 + 1)*e^(arcsin(
b*x + a))/b
```

3.455 $\int \frac{e^{\sin^{-1}(a+bx)}}{x}\,dx$

Optimal. Leaf size=19

$$b\text{CannotIntegrate}\left(\frac{e^{\sin^{-1}(a+bx)}}{bx},x\right)$$

```
[Out] b*CannotIntegrate[E^ArcSin[a + b*x]/(b*x), x]
```

Rubi [A] time = 0.199484, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{e^{\sin^{-1}(a+bx)}}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[E^ArcSin[a + b*x]/x,x]

[Out] Defer[Subst][Defer[Int][(E^x*Cos[x])/(-a + Sin[x]), x], x, ArcSin[a + b*x]]
```

Rubi steps

$$\begin{aligned}\int \frac{e^{\sin^{-1}(a+bx)}}{x}\,dx &= \frac{\text{Subst}\left(\int \frac{e^x\cos(x)}{-\frac{a}{b}+\frac{\sin(x)}{b}}\,dx,x,\sin^{-1}(a+bx)\right)}{b}\\ &= \frac{\text{Subst}\left(\int \frac{be^x\cos(x)}{-a+\sin(x)}\,dx,x,\sin^{-1}(a+bx)\right)}{b}\\ &= \text{Subst}\left(\int \frac{e^x\cos(x)}{-a+\sin(x)}\,dx,x,\sin^{-1}(a+bx)\right)\end{aligned}$$

Mathematica [A] time = 0.11501, size = 0, normalized size = 0.

$$\int \frac{e^{\sin^{-1}(a+bx)}}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[E^ArcSin[a + b*x]/x,x]
```

```
[Out] Integrate[E^ArcSin[a + b*x]/x, x]
```

Maple [A] time = 0.007, size = 0, normalized size = 0.

$$\int \frac{\mathrm{e}^{\arcsin(bx+a)}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(b*x+a))/x,x)
```

```
[Out] int(exp(arcsin(b*x+a))/x,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{(\arcsin(bx+a))}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))/x,x, algorithm="maxima")
```

```
[Out] integrate(e^(arcsin(b*x + a))/x, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{e^{(\arcsin(bx+a))}}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))/x,x, algorithm="fricas")
```

```
[Out] integral(e^(arcsin(b*x + a))/x, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\operatorname{asin}(a+bx)}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(b*x+a))/x,x)
```

```
[Out] Integral(exp(asin(a + b*x))/x, x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{(\arcsin(bx+a))}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))/x,x, algorithm="giac")
```

```
[Out] integrate(e^(arcsin(b*x + a))/x, x)
```

3.456 $\int \frac{e^{\sin^{-1}(a+bx)}}{x^2} dx$

Optimal. Leaf size=21

$$b^2 \text{CannotIntegrate}\left(\frac{e^{\sin^{-1}(a+bx)}}{b^2x^2}, x\right)$$

```
[Out] b^2*CannotIntegrate[E^ArcSin[a + b*x]/(b^2*x^2), x]
```

Rubi [A] time = 0.263681, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$, Rules used = {}

$$\int \frac{e^{\sin^{-1}(a+bx)}}{x^2} dx$$

Verification is Not applicable to the result.

```
[In] Int[E^ArcSin[a + b*x]/x^2,x]
```

```
[Out] b*Defer[Subst][Defer[Int][(E^x*Cos[x])/(a - Sin[x])^2, x], x, ArcSin[a + b*
x]]
```

Rubi steps

$$\begin{aligned}\int \frac{e^{\sin^{-1}(a+bx)}}{x^2} dx &= \frac{\text{Subst}\left(\int \frac{e^x \cos(x)}{\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)^2} dx, x, \sin^{-1}(a+bx)\right)}{b}\\ &= \frac{\text{Subst}\left(\int \frac{b^2 e^x \cos(x)}{(a-\sin(x))^2} dx, x, \sin^{-1}(a+bx)\right)}{b}\\ &= b\,\text{Subst}\left(\int \frac{e^x \cos(x)}{(a-\sin(x))^2} dx, x, \sin^{-1}(a+bx)\right)\end{aligned}$$

Mathematica [A] time = 0.244126, size = 0, normalized size = 0.

$$\int \frac{e^{\sin^{-1}(a+bx)}}{x^2} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[E^ArcSin[a + b*x]/x^2,x]
```

```
[Out] Integrate[E^ArcSin[a + b*x]/x^2, x]
```

Maple [A] time = 0.007, size = 0, normalized size = 0.

$$\int \frac{e^{\arcsin(bx+a)}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(b*x+a))/x^2,x)
```

```
[Out] int(exp(arcsin(b*x+a))/x^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{(\arcsin(bx+a))}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))/x^2,x, algorithm="maxima")
```

```
[Out] integrate(e^(arcsin(b*x + a))/x^2, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{e^{(\arcsin(bx+a))}}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))/x^2,x, algorithm="fricas")
```

```
[Out] integral(e^(arcsin(b*x + a))/x^2, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\operatorname{asin}(a+bx)}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(b*x+a))/x**2,x)
```

```
[Out] Integral(exp(asin(a + b*x))/x**2, x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{(\arcsin(bx+a))}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))/x^2,x, algorithm="giac")
```

```
[Out] integrate(e^(arcsin(b*x + a))/x^2, x)
```

3.457 $\int e^{\sin^{-1}(a+bx)^2} x^3\,dx$

Optimal. Leaf size=381

$$\frac{3e\sqrt{\pi}a^2\mathrm{Erf}\left(1-i\sin^{-1}(a+bx)\right)}{8b^4}+\frac{3e\sqrt{\pi}a^2\mathrm{Erf}\left(1+i\sin^{-1}(a+bx)\right)}{8b^4}-\frac{\sqrt[4]{e}\sqrt{\pi}a^3\mathrm{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(a+bx)-i\right)\right)}{4b^4}-\frac{\sqrt[4]{e}\sqrt{\pi}a}{}$$

```
[Out] (E*Sqrt[Pi]*Erf[1 - I*ArcSin[a + b*x]])/(16*b^4) + (3*a^2*E*Sqrt[Pi]*Erf[1
- I*ArcSin[a + b*x]])/(8*b^4) - (E^4*Sqrt[Pi]*Erf[2 - I*ArcSin[a + b*x]])/(
32*b^4) + (E*Sqrt[Pi]*Erf[1 + I*ArcSin[a + b*x]])/(16*b^4) + (3*a^2*E*Sqrt[
Pi]*Erf[1 + I*ArcSin[a + b*x]])/(8*b^4) - (E^4*Sqrt[Pi]*Erf[2 + I*ArcSin[a
+ b*x]])/(32*b^4) - (3*a*E^(1/4)*Sqrt[Pi]*Erfi[(-I + 2*ArcSin[a + b*x])/2])
/(16*b^4) - (a^3*E^(1/4)*Sqrt[Pi]*Erfi[(-I + 2*ArcSin[a + b*x])/2])/(4*b^4)
 - (3*a*E^(1/4)*Sqrt[Pi]*Erfi[(I + 2*ArcSin[a + b*x])/2])/(16*b^4) - (a^3*E
^(1/4)*Sqrt[Pi]*Erfi[(I + 2*ArcSin[a + b*x])/2])/(4*b^4) + (3*a*E^(9/4)*Sqr
t[Pi]*Erfi[(-3*I + 2*ArcSin[a + b*x])/2])/(16*b^4) + (3*a*E^(9/4)*Sqrt[Pi]*
Erfi[(3*I + 2*ArcSin[a + b*x])/2])/(16*b^4)
```

Rubi [A] time = 0.673329, antiderivative size = 381, normalized size of antiderivative = 1., number of steps used = 37, number of rules used = 8, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.571, Rules used = {4836, 6741, 12, 6742, 4473, 2234, 2204, 4474}

$$\frac{3e\sqrt{\pi}a^2\mathrm{Erf}\left(1-i\sin^{-1}(a+bx)\right)}{8b^4}+\frac{3e\sqrt{\pi}a^2\mathrm{Erf}\left(1+i\sin^{-1}(a+bx)\right)}{8b^4}-\frac{\sqrt[4]{e}\sqrt{\pi}a^3\mathrm{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(a+bx)-i\right)\right)}{4b^4}-\frac{\sqrt[4]{e}\sqrt{\pi}a}{}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a + b*x]^2*x^3,x]
```

```
[Out] (E*Sqrt[Pi]*Erf[1 - I*ArcSin[a + b*x]])/(16*b^4) + (3*a^2*E*Sqrt[Pi]*Erf[1
- I*ArcSin[a + b*x]])/(8*b^4) - (E^4*Sqrt[Pi]*Erf[2 - I*ArcSin[a + b*x]])/(
32*b^4) + (E*Sqrt[Pi]*Erf[1 + I*ArcSin[a + b*x]])/(16*b^4) + (3*a^2*E*Sqrt[
Pi]*Erf[1 + I*ArcSin[a + b*x]])/(8*b^4) - (E^4*Sqrt[Pi]*Erf[2 + I*ArcSin[a
+ b*x]])/(32*b^4) - (3*a*E^(1/4)*Sqrt[Pi]*Erfi[(-I + 2*ArcSin[a + b*x])/2])
/(16*b^4) - (a^3*E^(1/4)*Sqrt[Pi]*Erfi[(-I + 2*ArcSin[a + b*x])/2])/(4*b^4)
 - (3*a*E^(1/4)*Sqrt[Pi]*Erfi[(I + 2*ArcSin[a + b*x])/2])/(16*b^4) - (a^3*E
^(1/4)*Sqrt[Pi]*Erfi[(I + 2*ArcSin[a + b*x])/2])/(4*b^4) + (3*a*E^(9/4)*Sqr
t[Pi]*Erfi[(-3*I + 2*ArcSin[a + b*x])/2])/(16*b^4) + (3*a*E^(9/4)*Sqrt[Pi]*
Erfi[(3*I + 2*ArcSin[a + b*x])/2])/(16*b^4)
```

Rule 4836

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -(a/b) + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSi
n[a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 4473

```
Int[Cos[v_]^(n_.)*(F_)^(u_), x_Symbol] :> Int[ExpandTrigToExp[F^u, Cos[v]^n
, x], x] /; FreeQ[F, x] && (LinearQ[u, x] || PolyQ[u, x, 2]) && (LinearQ[v,
 x] || PolyQ[v, x, 2]) && IGtQ[n, 0]
```

Rule 2234

```
Int[(F_)^((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> Dist[F^(a - b^2/
(4*c)), Int[F^((b + 2*c*x)^2/(4*c)), x], x] /; FreeQ[{F, a, b, c}, x]
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 4474

```
Int[Cos[v_]^(n_.)*(F_)^(u_)*Sin[v_]^(m_.), x_Symbol] :> Int[ExpandTrigToExp
[F^u, Sin[v]^m*Cos[v]^n, x], x] /; FreeQ[F, x] && (LinearQ[u, x] || PolyQ[u
, x, 2]) && (LinearQ[v, x] || PolyQ[v, x, 2]) && IGtQ[m, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int e^{\sin^{-1}(a+bx)^2}x^3\,dx = \frac{\text{Subst}\left(\int e^{x^2}\cos(x)\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)^3 dx, x, \sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \frac{e^{x^2}\cos(x)(-a+\sin(x))^3}{b^3} dx, x, \sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int e^{x^2}\cos(x)(-a+\sin(x))^3 dx, x, \sin^{-1}(a+bx)\right)}{b^4}$$
$$= \frac{\text{Subst}\left(\int \left(-a^3e^{x^2}\cos(x)+3a^2e^{x^2}\cos(x)\sin(x)-3ae^{x^2}\cos(x)\sin^2(x)+e^{x^2}\cos(x)\sin^3(x)\right) dx, x, s}{b^4}$$
$$= \frac{\text{Subst}\left(\int e^{x^2}\cos(x)\sin^3(x)\,dx, x, \sin^{-1}(a+bx)\right)}{b^4} - \frac{(3a)\,\text{Subst}\left(\int e^{x^2}\cos(x)\sin^2(x)\,dx, x, \sin^{-1}(a}{b^4}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{1}{8}ie^{-2ix+x^2}-\frac{1}{8}ie^{2ix+x^2}-\frac{1}{16}ie^{-4ix+x^2}+\frac{1}{16}ie^{4ix+x^2}\right) dx, x, \sin^{-1}(a+bx)\right)}{b^4} - \frac{(3a)\,\text{Subst}\left(\int\right.}{}$$
$$= -\frac{i\,\text{Subst}\left(\int e^{-4ix+x^2}dx, x, \sin^{-1}(a+bx)\right)}{16b^4} + \frac{i\,\text{Subst}\left(\int e^{4ix+x^2}dx, x, \sin^{-1}(a+bx)\right)}{16b^4} + \frac{i\,\text{Subst}\left(\int e\right.}{}$$
$$= -\frac{\left(3a\sqrt[4]{e}\right)\text{Subst}\left(\int e^{\frac{1}{4}(-i+2x)^2}dx, x, \sin^{-1}(a+bx)\right)}{8b^4} - \frac{\left(3a\sqrt[4]{e}\right)\text{Subst}\left(\int e^{\frac{1}{4}(i+2x)^2}dx, x, \sin^{-1}(a+bx\right.}{8b^4}$$
$$= \frac{e\sqrt{\pi}\,\text{erf}\left(1-i\sin^{-1}(a+bx)\right)}{16b^4} + \frac{3a^2e\sqrt{\pi}\,\text{erf}\left(1-i\sin^{-1}(a+bx)\right)}{8b^4} - \frac{e^4\sqrt{\pi}\,\text{erf}\left(2-i\sin^{-1}(a+bx)\right)}{32b^4}$$

Mathematica [A] time = 0.35796, size = 221, normalized size = 0.58

$$-\frac{\sqrt{\pi}\left(\sqrt[4]{e}\left(-2i\left(4a^2+3\right)a\,\text{Erf}\left(\frac{1}{2}+i\sin^{-1}(a+bx)\right)-2e^{3/4}\left(6a^2+1\right)\text{Erf}\left(1+i\sin^{-1}(a+bx)\right)+8a^3\,\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(a+\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a + b*x]^2*x^3,x]
```

```
[Out] -(Sqrt[Pi]*(-2*(E + 6*a^2*E)*Erf[1 - I*ArcSin[a + b*x]] + E^4*Erf[2 - I*Arc
Sin[a + b*x]] + E^(1/4)*((-2*I)*a*(3 + 4*a^2)*Erf[1/2 + I*ArcSin[a + b*x]]
- 2*(1 + 6*a^2)*E^(3/4)*Erf[1 + I*ArcSin[a + b*x]] + (6*I)*a*E^2*Erf[3/2 +
I*ArcSin[a + b*x]] + E^(15/4)*Erf[2 + I*ArcSin[a + b*x]] + 6*a*Erfi[(I + 2*
ArcSin[a + b*x])/2] + 8*a^3*Erfi[(I + 2*ArcSin[a + b*x])/2] - 6*a*E^2*Erfi[
```

```
(3*I + 2*ArcSin[a + b*x])/2])))/(32*b^4)
```

Maple [F] time = 0.011, size = 0, normalized size = 0.

$$\int e^{(\arcsin(bx+a))^2} x^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(b*x+a)^2)*x^3,x)
```

```
[Out] int(exp(arcsin(b*x+a)^2)*x^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int x^3 e^{\left(\arcsin(bx+a)^2\right)} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)*x^3,x, algorithm="maxima")
```

```
[Out] integrate(x^3*e^(arcsin(b*x + a)^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(x^3 e^{\left(\arcsin(bx+a)^2\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)*x^3,x, algorithm="fricas")
```

```
[Out] integral(x^3*e^(arcsin(b*x + a)^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x^3 e^{\operatorname{asin}^2(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(b*x+a)**2)*x**3,x)
```

```
[Out] Integral(x**3*exp(asin(a + b*x)**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int x^3 e^{\left(\arcsin(bx+a)^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)*x^3,x, algorithm="giac")
```

```
[Out] integrate(x^3*e^(arcsin(b*x + a)^2), x)
```

3.458 $\int e^{\sin^{-1}(a+bx)^2} x^2\,dx$

Optimal. Leaf size=265

$$\frac{\sqrt[4]{e}\sqrt{\pi}a^2\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(a+bx)-i\right)\right)}{4b^3}+\frac{\sqrt[4]{e}\sqrt{\pi}a^2\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(a+bx)+i\right)\right)}{4b^3}-\frac{e\sqrt{\pi}a\text{Erf}\left(1-i\sin^{-1}(a+bx)\right)}{4b^3}-\frac{e\sqrt{\pi}a}{}$$

```
[Out] -(a*E*Sqrt[Pi]*Erf[1 - I*ArcSin[a + b*x]])/(4*b^3) - (a*E*Sqrt[Pi]*Erf[1 +
I*ArcSin[a + b*x]])/(4*b^3) + (E^(1/4)*Sqrt[Pi]*Erfi[(-I + 2*ArcSin[a + b*x
])/2])/(16*b^3) + (a^2*E^(1/4)*Sqrt[Pi]*Erfi[(-I + 2*ArcSin[a + b*x])/2])/(
4*b^3) + (E^(1/4)*Sqrt[Pi]*Erfi[(I + 2*ArcSin[a + b*x])/2])/(16*b^3) + (a^2
*E^(1/4)*Sqrt[Pi]*Erfi[(I + 2*ArcSin[a + b*x])/2])/(4*b^3) - (E^(9/4)*Sqrt[
Pi]*Erfi[(-3*I + 2*ArcSin[a + b*x])/2])/(16*b^3) - (E^(9/4)*Sqrt[Pi]*Erfi[(
3*I + 2*ArcSin[a + b*x])/2])/(16*b^3)
```

Rubi [A] time = 0.474104, antiderivative size = 265, normalized size of antiderivative = 1., number of steps used = 27, number of rules used = 8, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.571, Rules used = {4836, 6741, 12, 6742, 4473, 2234, 2204, 4474}

$$\frac{\sqrt[4]{e}\sqrt{\pi}a^2\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(a+bx)-i\right)\right)}{4b^3}+\frac{\sqrt[4]{e}\sqrt{\pi}a^2\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(a+bx)+i\right)\right)}{4b^3}-\frac{e\sqrt{\pi}a\text{Erf}\left(1-i\sin^{-1}(a+bx)\right)}{4b^3}-\frac{e\sqrt{\pi}a}{}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a + b*x]^2*x^2,x]
```


```
[Out] -(a*E*Sqrt[Pi]*Erf[1 - I*ArcSin[a + b*x]])/(4*b^3) - (a*E*Sqrt[Pi]*Erf[1 +
I*ArcSin[a + b*x]])/(4*b^3) + (E^(1/4)*Sqrt[Pi]*Erfi[(-I + 2*ArcSin[a + b*x
])/2])/(16*b^3) + (a^2*E^(1/4)*Sqrt[Pi]*Erfi[(-I + 2*ArcSin[a + b*x])/2])/(
4*b^3) + (E^(1/4)*Sqrt[Pi]*Erfi[(I + 2*ArcSin[a + b*x])/2])/(16*b^3) + (a^2
*E^(1/4)*Sqrt[Pi]*Erfi[(I + 2*ArcSin[a + b*x])/2])/(4*b^3) - (E^(9/4)*Sqrt[
Pi]*Erfi[(-3*I + 2*ArcSin[a + b*x])/2])/(16*b^3) - (E^(9/4)*Sqrt[Pi]*Erfi[(
3*I + 2*ArcSin[a + b*x])/2])/(16*b^3)
```


Rule 4836

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -(a/b) + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSi
n[a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 4473

```
Int[Cos[v_]^(n_.)*(F_)^(u_), x_Symbol] :> Int[ExpandTrigToExp[F^u, Cos[v]^n
, x], x] /; FreeQ[F, x] && (LinearQ[u, x] || PolyQ[u, x, 2]) && (LinearQ[v,
 x] || PolyQ[v, x, 2]) && IGtQ[n, 0]
```

Rule 2234

```
Int[(F_)^((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> Dist[F^(a - b^2/
(4*c)), Int[F^((b + 2*c*x)^2/(4*c)), x], x] /; FreeQ[{F, a, b, c}, x]
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 4474

```
Int[Cos[v_]^(n_.)*(F_)^(u_)*Sin[v_]^(m_.), x_Symbol] :> Int[ExpandTrigToExp
[F^u, Sin[v]^m*Cos[v]^n, x], x] /; FreeQ[F, x] && (LinearQ[u, x] || PolyQ[u
, x, 2]) && (LinearQ[v, x] || PolyQ[v, x, 2]) && IGtQ[m, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int e^{\sin^{-1}(a+bx)^2}x^2\,dx = \frac{\text{Subst}\left(\int e^{x^2}\cos(x)\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)^2 dx, x, \sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \frac{e^{x^2}\cos(x)(a-\sin(x))^2}{b^2} dx, x, \sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int e^{x^2}\cos(x)(a-\sin(x))^2 dx, x, \sin^{-1}(a+bx)\right)}{b^3}$$
$$= \frac{\text{Subst}\left(\int \left(a^2e^{x^2}\cos(x)-2ae^{x^2}\cos(x)\sin(x)+e^{x^2}\cos(x)\sin^2(x)\right) dx, x, \sin^{-1}(a+bx)\right)}{b^3}$$
$$= \frac{\text{Subst}\left(\int e^{x^2}\cos(x)\sin^2(x)\,dx, x, \sin^{-1}(a+bx)\right)}{b^3} - \frac{(2a)\,\text{Subst}\left(\int e^{x^2}\cos(x)\sin(x)\,dx, x, \sin^{-1}(a+b\right.}{b^3}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{1}{8}e^{-ix+x^2}+\frac{1}{8}e^{ix+x^2}-\frac{1}{8}e^{-3ix+x^2}-\frac{1}{8}e^{3ix+x^2}\right) dx, x, \sin^{-1}(a+bx)\right)}{b^3} - \frac{(2a)\,\text{Subst}\left(\int \left(\frac{1}{4}ie^{-2ix}\right.\right.}{}$$
$$= \frac{\text{Subst}\left(\int e^{-ix+x^2} dx, x, \sin^{-1}(a+bx)\right)}{8b^3} + \frac{\text{Subst}\left(\int e^{ix+x^2} dx, x, \sin^{-1}(a+bx)\right)}{8b^3} - \frac{\text{Subst}\left(\int e^{-3ix+x^2} \right.}{8}$$
$$= \frac{\sqrt[4]{e}\,\text{Subst}\left(\int e^{\frac{1}{4}(-i+2x)^2} dx, x, \sin^{-1}(a+bx)\right)}{8b^3} + \frac{\sqrt[4]{e}\,\text{Subst}\left(\int e^{\frac{1}{4}(i+2x)^2} dx, x, \sin^{-1}(a+bx)\right)}{8b^3} + \frac{\left(a^2\sqrt[4]{e}\right.}{}$$
$$= -\frac{ae\sqrt{\pi}\text{erf}\left(1-i\sin^{-1}(a+bx)\right)}{4b^3} - \frac{ae\sqrt{\pi}\text{erf}\left(1+i\sin^{-1}(a+bx)\right)}{4b^3} + \frac{\sqrt[4]{e}\sqrt{\pi}\text{erfi}\left(\frac{1}{2}\left(-i+2\sin^{-1}(a+\right.\right.}{16b^3}$$

Mathematica [A] time = 0.214028, size = 161, normalized size = 0.61

$$-\frac{\sqrt{\pi}\left(i\sqrt[4]{e}\left(4a^2\text{Erf}\left(\frac{1}{2}+i\sin^{-1}(a+bx)\right)-\left(4a^2+1\right)\text{Erf}\left(\frac{1}{2}-i\sin^{-1}(a+bx)\right)-4ie^{3/4}a\text{Erf}\left(1+i\sin^{-1}(a+bx)\right)+e^2\text{Erf}\left(\frac{3}{2}\right.\right.\right.}{16b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a + b*x]^2*x^2,x]
```

```
[Out] -(Sqrt[Pi]*(4*a*E*Erf[1 - I*ArcSin[a + b*x]] + I*E^(1/4)*(-((1 + 4*a^2)*Erf
[1/2 - I*ArcSin[a + b*x]]) + E^2*Erf[3/2 - I*ArcSin[a + b*x]] + Erf[1/2 + I
*ArcSin[a + b*x]] + 4*a^2*Erf[1/2 + I*ArcSin[a + b*x]] - (4*I)*a*E^(3/4)*Er
f[1 + I*ArcSin[a + b*x]] - E^2*Erf[3/2 + I*ArcSin[a + b*x]])))/(16*b^3)
```

Maple [F] time = 0.007, size = 0, normalized size = 0.

$$\int \mathrm{e}^{(\arcsin(bx+a))^2} x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(b*x+a)^2)*x^2,x)
```

```
[Out] int(exp(arcsin(b*x+a)^2)*x^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int x^2 e^{\left(\arcsin(bx+a)^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)*x^2,x, algorithm="maxima")
```

```
[Out] integrate(x^2*e^(arcsin(b*x + a)^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(x^2 e^{\left(\arcsin(bx+a)^2\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)*x^2,x, algorithm="fricas")
```

```
[Out] integral(x^2*e^(arcsin(b*x + a)^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x^2 e^{\operatorname{asin}^2(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(b*x+a)**2)*x**2,x)
```

```
[Out] Integral(x**2*exp(asin(a + b*x)**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int x^2 e^{\left(\arcsin(bx+a)^2\right)} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)*x^2,x, algorithm="giac")
```

```
[Out] integrate(x^2*e^(arcsin(b*x + a)^2), x)
```

3.459 $\int e^{\sin^{-1}(a+bx)^2} x\,dx$

Optimal. Leaf size=123

$$\frac{e\sqrt{\pi}\operatorname{Erf}\left(1-i\sin^{-1}(a+bx)\right)}{8b^2}+\frac{e\sqrt{\pi}\operatorname{Erf}\left(1+i\sin^{-1}(a+bx)\right)}{8b^2}-\frac{\sqrt[4]{e}\sqrt{\pi}a\operatorname{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(a+bx)-i\right)\right)}{4b^2}-\frac{\sqrt[4]{e}\sqrt{\pi}a\operatorname{Erfi}\left(\frac{1}{2}\left(\right.\right.}{}$$

```
[Out] (E*Sqrt[Pi]*Erf[1 - I*ArcSin[a + b*x]])/(8*b^2) + (E*Sqrt[Pi]*Erf[1 + I*Arc
Sin[a + b*x]])/(8*b^2) - (a*E^(1/4)*Sqrt[Pi]*Erfi[(-I + 2*ArcSin[a + b*x])/
2])/(4*b^2) - (a*E^(1/4)*Sqrt[Pi]*Erfi[(I + 2*ArcSin[a + b*x])/2])/(4*b^2)
```

Rubi [A] time = 0.272831, antiderivative size = 123, normalized size of antiderivative = 1., number of steps used = 17, number of rules used = 8, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667, Rules used = {4836, 6741, 12, 6742, 4473, 2234, 2204, 4474}

$$\frac{e\sqrt{\pi}\operatorname{Erf}\left(1-i\sin^{-1}(a+bx)\right)}{8b^2}+\frac{e\sqrt{\pi}\operatorname{Erf}\left(1+i\sin^{-1}(a+bx)\right)}{8b^2}-\frac{\sqrt[4]{e}\sqrt{\pi}a\operatorname{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(a+bx)-i\right)\right)}{4b^2}-\frac{\sqrt[4]{e}\sqrt{\pi}a\operatorname{Erfi}\left(\frac{1}{2}\left(\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a + b*x]^2*x,x]
```

```
[Out] (E*Sqrt[Pi]*Erf[1 - I*ArcSin[a + b*x]])/(8*b^2) + (E*Sqrt[Pi]*Erf[1 + I*Arc
Sin[a + b*x]])/(8*b^2) - (a*E^(1/4)*Sqrt[Pi]*Erfi[(-I + 2*ArcSin[a + b*x])/
2])/(4*b^2) - (a*E^(1/4)*Sqrt[Pi]*Erfi[(I + 2*ArcSin[a + b*x])/2])/(4*b^2)
```

Rule 4836

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -(a/b) + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSi
n[a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 4473

```
Int[Cos[v_]^(n_.)*(F_)^(u_), x_Symbol] :> Int[ExpandTrigToExp[F^u, Cos[v]^n
, x], x] /; FreeQ[F, x] && (LinearQ[u, x] || PolyQ[u, x, 2]) && (LinearQ[v,
 x] || PolyQ[v, x, 2]) && IGtQ[n, 0]
```

Rule 2234

```
Int[(F_)^((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> Dist[F^(a - b^2/
(4*c)), Int[F^((b + 2*c*x)^2/(4*c)), x], x] /; FreeQ[{F, a, b, c}, x]
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 4474

```
Int[Cos[v_]^(n_.)*(F_)^(u_)*Sin[v_]^(m_.), x_Symbol] :> Int[ExpandTrigToExp
[F^u, Sin[v]^m*Cos[v]^n, x], x] /; FreeQ[F, x] && (LinearQ[u, x] || PolyQ[u
, x, 2]) && (LinearQ[v, x] || PolyQ[v, x, 2]) && IGtQ[m, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int e^{\sin^{-1}(a+bx)^2} x\,dx = \frac{\text{Subst}\left(\int e^{x^2}\cos(x)\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)dx, x, \sin^{-1}(a+bx)\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \frac{e^{x^2}\cos(x)(-a+\sin(x))}{b}dx, x, \sin^{-1}(a+bx)\right)}{b}$$

$$= \frac{\text{Subst}\left(\int e^{x^2}\cos(x)(-a+\sin(x))\,dx, x, \sin^{-1}(a+bx)\right)}{b^2}$$

$$= \frac{\text{Subst}\left(\int \left(-ae^{x^2}\cos(x)+e^{x^2}\cos(x)\sin(x)\right)dx, x, \sin^{-1}(a+bx)\right)}{b^2}$$

$$= \frac{\text{Subst}\left(\int e^{x^2}\cos(x)\sin(x)\,dx, x, \sin^{-1}(a+bx)\right)}{b^2} - \frac{a\,\text{Subst}\left(\int e^{x^2}\cos(x)\,dx, x, \sin^{-1}(a+bx)\right)}{b^2}$$

$$= \frac{\text{Subst}\left(\int \left(\frac{1}{4}ie^{-2ix+x^2}-\frac{1}{4}ie^{2ix+x^2}\right)dx, x, \sin^{-1}(a+bx)\right)}{b^2} - \frac{a\,\text{Subst}\left(\int \left(\frac{1}{2}e^{-ix+x^2}+\frac{1}{2}e^{ix+x^2}\right)dx, x, \sin\right.}{b^2}$$

$$= \frac{i\,\text{Subst}\left(\int e^{-2ix+x^2}dx, x, \sin^{-1}(a+bx)\right)}{4b^2} - \frac{i\,\text{Subst}\left(\int e^{2ix+x^2}dx, x, \sin^{-1}(a+bx)\right)}{4b^2} - \frac{a\,\text{Subst}\left(\int e^{-i\right.}{}$$

$$= -\frac{\left(a\sqrt[4]{e}\right)\text{Subst}\left(\int e^{\frac{1}{4}(-i+2x)^2}dx, x, \sin^{-1}(a+bx)\right)}{2b^2} - \frac{\left(a\sqrt[4]{e}\right)\text{Subst}\left(\int e^{\frac{1}{4}(i+2x)^2}dx, x, \sin^{-1}(a+bx)\right)}{2b^2} +$$

$$= \frac{e\sqrt{\pi}\,\text{erf}\left(1-i\sin^{-1}(a+bx)\right)}{8b^2} + \frac{e\sqrt{\pi}\,\text{erf}\left(1+i\sin^{-1}(a+bx)\right)}{8b^2} - \frac{a\sqrt[4]{e}\sqrt{\pi}\,\text{erfi}\left(\frac{1}{2}\left(-i+2\sin^{-1}(a+bx\right.\right.}{4b^2}$$

Mathematica [A] time = 0.1061, size = 93, normalized size = 0.76

$$\frac{\sqrt{\pi}\left(e\text{Erf}\left(1-i\sin^{-1}(a+bx)\right)+e\text{Erf}\left(1+i\sin^{-1}(a+bx)\right)-2\sqrt[4]{e}a\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(a+bx)-i\right)\right)-2\sqrt[4]{e}a\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(\right.\right.\right.}{8b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a + b*x]^2*x,x]
```

```
[Out] (Sqrt[Pi]*(E*Erf[1 - I*ArcSin[a + b*x]] + E*Erf[1 + I*ArcSin[a + b*x]] - 2*
a*E^(1/4)*Erfi[(-I + 2*ArcSin[a + b*x])/2] - 2*a*E^(1/4)*Erfi[(I + 2*ArcSin
[a + b*x])/2]))/(8*b^2)
```

Maple [F] time = 0.009, size = 0, normalized size = 0.

$$\int e^{(\arcsin(bx+a))^2} x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(b*x+a)^2)*x,x)
```

```
[Out] int(exp(arcsin(b*x+a)^2)*x,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int xe^{\left(\arcsin(bx+a)^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)*x,x, algorithm="maxima")
```

```
[Out] integrate(x*e^(arcsin(b*x + a)^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(xe^{\left(\arcsin(bx+a)^2\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)*x,x, algorithm="fricas")
```

```
[Out] integral(x*e^(arcsin(b*x + a)^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int xe^{\operatorname{asin}^{2}(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(b*x+a)**2)*x,x)
```

```
[Out] Integral(x*exp(asin(a + b*x)**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int xe^{\left(\arcsin(bx+a)^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)*x,x, algorithm="giac")
```

```
[Out] integrate(x*e^(arcsin(b*x + a)^2), x)
```

3.460 $\int e^{\sin^{-1}(a+bx)^2}\,dx$

Optimal. Leaf size=69

$$\frac{\sqrt[4]{e}\sqrt{\pi}\,\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(a+bx)-i\right)\right)}{4b}+\frac{\sqrt[4]{e}\sqrt{\pi}\,\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(a+bx)+i\right)\right)}{4b}$$

```
[Out] (E^(1/4)*Sqrt[Pi]*Erfi[(-I + 2*ArcSin[a + b*x])/2])/(4*b) + (E^(1/4)*Sqrt[P
i]*Erfi[(I + 2*ArcSin[a + b*x])/2])/(4*b)
```

Rubi [A] time = 0.0518688, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.4, Rules used = {4836, 4473, 2234, 2204}

$$\frac{\sqrt[4]{e}\sqrt{\pi}\,\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(a+bx)-i\right)\right)}{4b}+\frac{\sqrt[4]{e}\sqrt{\pi}\,\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(a+bx)+i\right)\right)}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a + b*x]^2,x]
```

```
[Out] (E^(1/4)*Sqrt[Pi]*Erfi[(-I + 2*ArcSin[a + b*x])/2])/(4*b) + (E^(1/4)*Sqrt[P
i]*Erfi[(I + 2*ArcSin[a + b*x])/2])/(4*b)
```

Rule 4836

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -(a/b) + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSi
n[a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 4473

```
Int[Cos[v_]^(n_.)*(F_)^(u_), x_Symbol] :> Int[ExpandTrigToExp[F^u, Cos[v]^n
, x], x] /; FreeQ[F, x] && (LinearQ[u, x] || PolyQ[u, x, 2]) && (LinearQ[v,
 x] || PolyQ[v, x, 2]) && IGtQ[n, 0]
```

Rule 2234

```
Int[(F_)^((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> Dist[F^(a - b^2/
(4*c)), Int[F^((b + 2*c*x)^2/(4*c)), x], x] /; FreeQ[{F, a, b, c}, x]
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rubi steps

$$\begin{aligned}\int e^{\sin^{-1}(a+bx)^2}\,dx &= \frac{\text{Subst}\left(\int e^{x^2}\cos(x)\,dx, x, \sin^{-1}(a+bx)\right)}{b}\\ &= \frac{\text{Subst}\left(\int \left(\frac{1}{2}e^{-ix+x^2}+\frac{1}{2}e^{ix+x^2}\right)dx, x, \sin^{-1}(a+bx)\right)}{b}\\ &= \frac{\text{Subst}\left(\int e^{-ix+x^2}\,dx, x, \sin^{-1}(a+bx)\right)}{2b}+\frac{\text{Subst}\left(\int e^{ix+x^2}\,dx, x, \sin^{-1}(a+bx)\right)}{2b}\\ &= \frac{\sqrt[4]{e}\,\text{Subst}\left(\int e^{\frac{1}{4}(-i+2x)^2}\,dx, x, \sin^{-1}(a+bx)\right)}{2b}+\frac{\sqrt[4]{e}\,\text{Subst}\left(\int e^{\frac{1}{4}(i+2x)^2}\,dx, x, \sin^{-1}(a+bx)\right)}{2b}\\ &= \frac{\sqrt[4]{e}\sqrt{\pi}\,\text{erfi}\left(\frac{1}{2}\left(-i+2\sin^{-1}(a+bx)\right)\right)}{4b}+\frac{\sqrt[4]{e}\sqrt{\pi}\,\text{erfi}\left(\frac{1}{2}\left(i+2\sin^{-1}(a+bx)\right)\right)}{4b}\end{aligned}$$

Mathematica [A] time = 0.0324684, size = 52, normalized size = 0.75

$$\frac{\sqrt[4]{e}\sqrt{\pi}\left(\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(a+bx)-i\right)\right)+\text{Erfi}\left(\frac{1}{2}\left(2\sin^{-1}(a+bx)+i\right)\right)\right)}{4b}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a + b*x]^2,x]
```

```
[Out] (E^(1/4)*Sqrt[Pi]*(Erfi[(-I + 2*ArcSin[a + b*x])/2] + Erfi[(I + 2*ArcSin[a
+ b*x])/2]))/(4*b)
```

Maple [F] time = 0.006, size = 0, normalized size = 0.

$$\int e^{(\arcsin(bx+a))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(b*x+a)^2),x)
```

```
[Out] int(exp(arcsin(b*x+a)^2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int e^{\left(\arcsin(bx+a)^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2),x, algorithm="maxima")
```

```
[Out] integrate(e^(arcsin(b*x + a)^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(e^{\left(\arcsin(bx+a)^2\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2),x, algorithm="fricas")
```

```
[Out] integral(e^(arcsin(b*x + a)^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int e^{\operatorname{asin}^2(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(b*x+a)**2),x)
```

```
[Out] Integral(exp(asin(a + b*x)**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int e^{\left(\arcsin(bx+a)^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2),x, algorithm="giac")
```

```
[Out] integrate(e^(arcsin(b*x + a)^2), x)
```

3.461 $\int \frac{e^{\sin^{-1}(a+bx)^2}}{x}\,dx$

Optimal. Leaf size=21

$$b\text{CannotIntegrate}\left(\frac{e^{\sin^{-1}(a+bx)^2}}{bx},x\right)$$

```
[Out] b*CannotIntegrate[E^ArcSin[a + b*x]^2/(b*x), x]
```

Rubi [A] time = 0.197, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{e^{\sin^{-1}(a+bx)^2}}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[E^ArcSin[a + b*x]^2/x,x]
```

```
[Out] Defer[Subst][Defer[Int][(E^x^2*Cos[x])/(-a + Sin[x]), x], x, ArcSin[a + b*x
]]
```

Rubi steps

$$\begin{aligned}\int \frac{e^{\sin^{-1}(a+bx)^2}}{x}\,dx &= \frac{\text{Subst}\left(\int \frac{e^{x^2}\cos(x)}{-\frac{a}{b}+\frac{\sin(x)}{b}}\,dx,x,\sin^{-1}(a+bx)\right)}{b}\\ &= \frac{\text{Subst}\left(\int \frac{be^{x^2}\cos(x)}{-a+\sin(x)}\,dx,x,\sin^{-1}(a+bx)\right)}{b}\\ &= \text{Subst}\left(\int \frac{e^{x^2}\cos(x)}{-a+\sin(x)}\,dx,x,\sin^{-1}(a+bx)\right)\end{aligned}$$

Mathematica [A] time = 0.120758, size = 0, normalized size = 0.

$$\int \frac{e^{\sin^{-1}(a+bx)^2}}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[E^ArcSin[a + b*x]^2/x,x]
```

```
[Out] Integrate[E^ArcSin[a + b*x]^2/x, x]
```

Maple [A] time = 0.008, size = 0, normalized size = 0.

$$\int \frac{\mathrm{e}^{(\arcsin(bx+a))^2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(b*x+a)^2)/x,x)
```

```
[Out] int(exp(arcsin(b*x+a)^2)/x,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(\arcsin(bx+a)^2\right)}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)/x,x, algorithm="maxima")
```

```
[Out] integrate(e^(arcsin(b*x + a)^2)/x, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{e^{\left(\arcsin(bx+a)^2\right)}}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)/x,x, algorithm="fricas")
```

```
[Out] integral(e^(arcsin(b*x + a)^2)/x, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\operatorname{asin}^2(a+bx)}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(b*x+a)**2)/x,x)
```

```
[Out] Integral(exp(asin(a + b*x)**2)/x, x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(\arcsin(bx+a)^2\right)}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)/x,x, algorithm="giac")
```

```
[Out] integrate(e^(arcsin(b*x + a)^2)/x, x)
```

3.462 $\int \frac{e^{\sin^{-1}(a+bx)^2}}{x^2}\,dx$

Optimal. Leaf size=23

$$b^2\text{CannotIntegrate}\left(\frac{e^{\sin^{-1}(a+bx)^2}}{b^2x^2},x\right)$$

```
[Out] b^2*CannotIntegrate[E^ArcSin[a + b*x]^2/(b^2*x^2), x]
```

Rubi [A] time = 0.263946, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$, Rules used = {}

$$\int \frac{e^{\sin^{-1}(a+bx)^2}}{x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[E^ArcSin[a + b*x]^2/x^2,x]
```

```
[Out] b*Defer[Subst][Defer[Int][(E^x^2*Cos[x])/(a - Sin[x])^2, x], x, ArcSin[a + b*x]]
```

Rubi steps

$$\begin{aligned}\int \frac{e^{\sin^{-1}(a+bx)^2}}{x^2}\,dx &= \frac{\text{Subst}\left(\int \frac{e^{x^2}\cos(x)}{\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)^2}\,dx,x,\sin^{-1}(a+bx)\right)}{b}\\ &= \frac{\text{Subst}\left(\int \frac{b^2e^{x^2}\cos(x)}{(a-\sin(x))^2}\,dx,x,\sin^{-1}(a+bx)\right)}{b}\\ &= b\,\text{Subst}\left(\int \frac{e^{x^2}\cos(x)}{(a-\sin(x))^2}\,dx,x,\sin^{-1}(a+bx)\right)\end{aligned}$$

Mathematica [A] time = 0.461235, size = 0, normalized size = 0.

$$\int \frac{e^{\sin^{-1}(a+bx)^2}}{x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[E^ArcSin[a + b*x]^2/x^2,x]
```

```
[Out] Integrate[E^ArcSin[a + b*x]^2/x^2, x]
```

Maple [A] time = 0.01, size = 0, normalized size = 0.

$$\int \frac{\mathrm{e}^{(\arcsin(bx+a))^2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(b*x+a)^2)/x^2,x)
```

```
[Out] int(exp(arcsin(b*x+a)^2)/x^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(\arcsin(bx+a)^2\right)}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)/x^2,x, algorithm="maxima")
```

```
[Out] integrate(e^(arcsin(b*x + a)^2)/x^2, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{e^{\left(\arcsin(bx+a)^2\right)}}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)/x^2,x, algorithm="fricas")
```

```
[Out] integral(e^(arcsin(b*x + a)^2)/x^2, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\operatorname{asin}^2(a+bx)}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(b*x+a)**2)/x**2,x)
```

```
[Out] Integral(exp(asin(a + b*x)**2)/x**2, x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(\arcsin(bx+a)^2\right)}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)/x^2,x, algorithm="giac")
```

```
[Out] integrate(e^(arcsin(b*x + a)^2)/x^2, x)
```

3.463 $\int e^{\sin^{-1}(ax)} \left(1-a^2x^2\right)^{5/2} dx$

Optimal. Leaf size=162

$$\frac{\left(1-a^2x^2\right)^3 e^{\sin^{-1}(ax)}}{37a}+\frac{6}{37}x\left(1-a^2x^2\right)^{5/2}e^{\sin^{-1}(ax)}+\frac{30\left(1-a^2x^2\right)^2 e^{\sin^{-1}(ax)}}{629a}+\frac{120}{629}x\left(1-a^2x^2\right)^{3/2}e^{\sin^{-1}(ax)}+\frac{72\left(1-a^2x^2\right)}{629a}$$

```
[Out] (144*E^ArcSin[a*x])/(629*a) + (144*E^ArcSin[a*x]*x*Sqrt[1 - a^2*x^2])/629 +
 (72*E^ArcSin[a*x]*(1 - a^2*x^2))/(629*a) + (120*E^ArcSin[a*x]*x*(1 - a^2*x
^2)^(3/2))/629 + (30*E^ArcSin[a*x]*(1 - a^2*x^2)^2)/(629*a) + (6*E^ArcSin[a
*x]*x*(1 - a^2*x^2)^(5/2))/37 + (E^ArcSin[a*x]*(1 - a^2*x^2)^3)/(37*a)
```

Rubi [A] time = 0.430422, antiderivative size = 162, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {4836, 6688, 6720, 4435, 2194}

$$\frac{\left(1-a^2x^2\right)^3 e^{\sin^{-1}(ax)}}{37a}+\frac{6}{37}x\left(1-a^2x^2\right)^{5/2}e^{\sin^{-1}(ax)}+\frac{30\left(1-a^2x^2\right)^2 e^{\sin^{-1}(ax)}}{629a}+\frac{120}{629}x\left(1-a^2x^2\right)^{3/2}e^{\sin^{-1}(ax)}+\frac{72\left(1-a^2x^2\right)}{629a}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]*(1 - a^2*x^2)^(5/2),x]
```

```
[Out] (144*E^ArcSin[a*x])/(629*a) + (144*E^ArcSin[a*x]*x*Sqrt[1 - a^2*x^2])/629 +
 (72*E^ArcSin[a*x]*(1 - a^2*x^2))/(629*a) + (120*E^ArcSin[a*x]*x*(1 - a^2*x
^2)^(3/2))/629 + (30*E^ArcSin[a*x]*(1 - a^2*x^2)^2)/(629*a) + (6*E^ArcSin[a
*x]*x*(1 - a^2*x^2)^(5/2))/37 + (E^ArcSin[a*x]*(1 - a^2*x^2)^3)/(37*a)
```

Rule 4836

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -(a/b) + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSi
n[a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6720

```
Int[(u_.)*((a_.)*(v_)^(m_.))^(p_), x_Symbol] :> Dist[(a^IntPart[p]*(a*v^m)^
FracPart[p])/v^(m*FracPart[p]), Int[u*v^(m*p), x], x] /; FreeQ[{a, m, p}, x
] && !IntegerQ[p] && !FreeQ[v, x] && !(EqQ[a, 1] && EqQ[m, 1]) && !(EqQ
[v, x] && EqQ[m, 1])
```

Rule 4435

```
Int[Cos[(d_.) + (e_.)*(x_)]^(m_)*(F_)^((c_.)*((a_.) + (b_.)*(x_))), x_Symbo
l] :> Simp[(b*c*Log[F]*F^(c*(a + b*x))*Cos[d + e*x]^m)/(e^2*m^2 + b^2*c^2*L
og[F]^2), x] + (Dist[(m*(m - 1)*e^2)/(e^2*m^2 + b^2*c^2*Log[F]^2), Int[F^(c
*(a + b*x))*Cos[d + e*x]^(m - 2), x], x] + Simp[(e*m*F^(c*(a + b*x))*Sin[d
+ e*x]*Cos[d + e*x]^(m - 1))/(e^2*m^2 + b^2*c^2*Log[F]^2), x]) /; FreeQ[{F,
 a, b, c, d, e}, x] && NeQ[e^2*m^2 + b^2*c^2*Log[F]^2, 0] && GtQ[m, 1]
```

Rule 2194

```
Int[((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.), x_Symbol] :> Simp[(F^(c*(a +
 b*x)))^n/(b*c*n*Log[F]), x] /; FreeQ[{F, a, b, c, n}, x]
```

Rubi steps

$$\begin{aligned}
\int e^{\sin^{-1}(ax)}\left(1-a^2x^2\right)^{5/2}\,dx &= \frac{\text{Subst}\left(\int e^x\cos(x)\left(1-\sin^2(x)\right)^{5/2}\,dx,x,\sin^{-1}(ax)\right)}{a}\\
&= \frac{\text{Subst}\left(\int e^x\cos(x)\cos^2(x)^{5/2}\,dx,x,\sin^{-1}(ax)\right)}{a}\\
&= \frac{\text{Subst}\left(\int e^x\cos^6(x)\,dx,x,\sin^{-1}(ax)\right)}{a}\\
&= \frac{6}{37}e^{\sin^{-1}(ax)}x\left(1-a^2x^2\right)^{5/2}+\frac{e^{\sin^{-1}(ax)}\left(1-a^2x^2\right)^3}{37a}+\frac{30\,\text{Subst}\left(\int e^x\cos^4(x)\,dx,x,\sin^{-1}(ax\right.}{37a}\\
&= \frac{120}{629}e^{\sin^{-1}(ax)}x\left(1-a^2x^2\right)^{3/2}+\frac{30e^{\sin^{-1}(ax)}\left(1-a^2x^2\right)^2}{629a}+\frac{6}{37}e^{\sin^{-1}(ax)}x\left(1-a^2x^2\right)^{5/2}+\frac{e^{\sin^{-1}}}{}\\
&= \frac{144}{629}e^{\sin^{-1}(ax)}x\sqrt{1-a^2x^2}+\frac{72e^{\sin^{-1}(ax)}\left(1-a^2x^2\right)}{629a}+\frac{120}{629}e^{\sin^{-1}(ax)}x\left(1-a^2x^2\right)^{3/2}+\frac{30e^{\sin^{-1}}}{}\\
&= \frac{144e^{\sin^{-1}(ax)}}{629a}+\frac{144}{629}e^{\sin^{-1}(ax)}x\sqrt{1-a^2x^2}+\frac{72e^{\sin^{-1}(ax)}\left(1-a^2x^2\right)}{629a}+\frac{120}{629}e^{\sin^{-1}(ax)}x\left(1-a^2x\right.
\end{aligned}$$

Mathematica [A] time = 0.333929, size = 69, normalized size = 0.43

$$\frac{e^{\sin^{-1}(ax)}\left(3774\sin\left(2\sin^{-1}(ax)\right)+888\sin\left(4\sin^{-1}(ax)\right)+102\sin\left(6\sin^{-1}(ax)\right)+1887\cos\left(2\sin^{-1}(ax)\right)+222\cos\left(4\sin\right.\right.}{20128a}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]*(1 - a^2*x^2)^(5/2),x]
```

```
[Out] (E^ArcSin[a*x]*(6290 + 1887*Cos[2*ArcSin[a*x]] + 222*Cos[4*ArcSin[a*x]] + 1
7*Cos[6*ArcSin[a*x]] + 3774*Sin[2*ArcSin[a*x]] + 888*Sin[4*ArcSin[a*x]] + 1
02*Sin[6*ArcSin[a*x]]))/(20128*a)
```

Maple [F] time = 0.086, size = 0, normalized size = 0.

$$\int \mathrm{e}^{\arcsin(ax)} \left(-a^{2} x^{2}+1\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x))*(-a^2*x^2+1)^(5/2),x)
```

```
[Out] int(exp(arcsin(a*x))*(-a^2*x^2+1)^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(-a^{2} x^{2}+1\right)^{\frac{5}{2}} e^{\left(\arcsin(ax)\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*(-a^2*x^2+1)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((-a^2*x^2 + 1)^(5/2)*e^(arcsin(a*x)), x)
```

Fricas [A] time = 2.0783, size = 176, normalized size = 1.09

$$-\frac{\left(17\, a^{6} x^{6} - 81\, a^{4} x^{4} + 183\, a^{2} x^{2} - 6 \left(17\, a^{5} x^{5} - 54\, a^{3} x^{3} + 61\, a x\right) \sqrt{-a^{2} x^{2}+1} - 263\right) e^{\left(\arcsin(ax)\right)}}{629\, a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*(-a^2*x^2+1)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/629*(17*a^6*x^6 - 81*a^4*x^4 + 183*a^2*x^2 - 6*(17*a^5*x^5 - 54*a^3*x^3
+ 61*a*x)*sqrt(-a^2*x^2 + 1) - 263)*e^(arcsin(a*x))/a
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x))*(-a**2*x**2+1)**(5/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.20448, size = 193, normalized size = 1.19

$$\frac{6}{37}\left(a^2x^2-1\right)^2\sqrt{-a^2x^2+1}xe^{(\arcsin(ax))}+\frac{120}{629}\left(-a^2x^2+1\right)^{\frac{3}{2}}xe^{(\arcsin(ax))}-\frac{\left(a^2x^2-1\right)^3e^{(\arcsin(ax))}}{37\,a}+\frac{144}{629}\sqrt{-a^2x^2+1}xe^{(\mathrm{arc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*(-a^2*x^2+1)^(5/2),x, algorithm="giac")
```

```
[Out] 6/37*(a^2*x^2 - 1)^2*sqrt(-a^2*x^2 + 1)*x*e^(arcsin(a*x)) + 120/629*(-a^2*x
^2 + 1)^(3/2)*x*e^(arcsin(a*x)) - 1/37*(a^2*x^2 - 1)^3*e^(arcsin(a*x))/a +
144/629*sqrt(-a^2*x^2 + 1)*x*e^(arcsin(a*x)) + 30/629*(a^2*x^2 - 1)^2*e^(ar
csin(a*x))/a - 72/629*(a^2*x^2 - 1)*e^(arcsin(a*x))/a + 144/629*e^(arcsin(a
*x))/a
```

3.464 $\int e^{\sin^{-1}(ax)}\left(1-a^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=112

$$\frac{\left(1-a^2x^2\right)^2 e^{\sin^{-1}(ax)}}{17a}+\frac{4}{17}x\left(1-a^2x^2\right)^{3/2}e^{\sin^{-1}(ax)}+\frac{12\left(1-a^2x^2\right)e^{\sin^{-1}(ax)}}{85a}+\frac{24}{85}x\sqrt{1-a^2x^2}e^{\sin^{-1}(ax)}+\frac{24e^{\sin^{-1}(ax)}}{85a}$$

```
[Out] (24*E^ArcSin[a*x])/(85*a) + (24*E^ArcSin[a*x]*x*Sqrt[1 - a^2*x^2])/85 + (12
*E^ArcSin[a*x]*(1 - a^2*x^2))/(85*a) + (4*E^ArcSin[a*x]*x*(1 - a^2*x^2)^(3/
2))/17 + (E^ArcSin[a*x]*(1 - a^2*x^2)^2)/(17*a)
```

Rubi [A] time = 0.303462, antiderivative size = 112, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {4836, 6688, 6720, 4435, 2194}

$$\frac{\left(1-a^2x^2\right)^2 e^{\sin^{-1}(ax)}}{17a}+\frac{4}{17}x\left(1-a^2x^2\right)^{3/2}e^{\sin^{-1}(ax)}+\frac{12\left(1-a^2x^2\right)e^{\sin^{-1}(ax)}}{85a}+\frac{24}{85}x\sqrt{1-a^2x^2}e^{\sin^{-1}(ax)}+\frac{24e^{\sin^{-1}(ax)}}{85a}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]*(1 - a^2*x^2)^(3/2),x]
```


```
[Out] (24*E^ArcSin[a*x])/(85*a) + (24*E^ArcSin[a*x]*x*Sqrt[1 - a^2*x^2])/85 + (12
*E^ArcSin[a*x]*(1 - a^2*x^2))/(85*a) + (4*E^ArcSin[a*x]*x*(1 - a^2*x^2)^(3/
2))/17 + (E^ArcSin[a*x]*(1 - a^2*x^2)^2)/(17*a)
```


Rule 4836

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -(a/b) + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSi
n[a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6720

```
Int[(u_.)*((a_.)*(v_)^(m_.))^(p_), x_Symbol] :> Dist[(a^IntPart[p]*(a*v^m)^
FracPart[p])/v^(m*FracPart[p]), Int[u*v^(m*p), x], x] /; FreeQ[{a, m, p}, x
```

```
] && !IntegerQ[p] && !FreeQ[v, x] && !(EqQ[a, 1] && EqQ[m, 1]) && !(EqQ
[v, x] && EqQ[m, 1])
```

Rule 4435

```
Int[Cos[(d_.) + (e_.)*(x_)]^(m_)*(F_)^((c_.)*((a_.) + (b_.)*(x_))), x_Symbo
l] :> Simp[(b*c*Log[F]*F^(c*(a + b*x))*Cos[d + e*x]^m)/(e^2*m^2 + b^2*c^2*L
og[F]^2), x] + (Dist[(m*(m - 1)*e^2)/(e^2*m^2 + b^2*c^2*Log[F]^2), Int[F^(c
*(a + b*x))*Cos[d + e*x]^(m - 2), x], x] + Simp[(e*m*F^(c*(a + b*x))*Sin[d
+ e*x]*Cos[d + e*x]^(m - 1))/(e^2*m^2 + b^2*c^2*Log[F]^2), x]) /; FreeQ[{F,
 a, b, c, d, e}, x] && NeQ[e^2*m^2 + b^2*c^2*Log[F]^2, 0] && GtQ[m, 1]
```

Rule 2194

```
Int[((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.), x_Symbol] :> Simp[(F^(c*(a +
 b*x)))^n/(b*c*n*Log[F]), x] /; FreeQ[{F, a, b, c, n}, x]
```

Rubi steps

$$\begin{aligned}
\int e^{\sin^{-1}(ax)}\left(1-a^2x^2\right)^{3/2}\,dx &= \frac{\text{Subst}\left(\int e^x\cos(x)\left(1-\sin^2(x)\right)^{3/2}\,dx,x,\sin^{-1}(ax)\right)}{a}\\
&= \frac{\text{Subst}\left(\int e^x\cos(x)\cos^2(x)^{3/2}\,dx,x,\sin^{-1}(ax)\right)}{a}\\
&= \frac{\text{Subst}\left(\int e^x\cos^4(x)\,dx,x,\sin^{-1}(ax)\right)}{a}\\
&= \frac{4}{17}e^{\sin^{-1}(ax)}x\left(1-a^2x^2\right)^{3/2}+\frac{e^{\sin^{-1}(ax)}\left(1-a^2x^2\right)^2}{17a}+\frac{12\,\text{Subst}\left(\int e^x\cos^2(x)\,dx,x,\sin^{-1}(ax\right.}{17a}\\
&= \frac{24}{85}e^{\sin^{-1}(ax)}x\sqrt{1-a^2x^2}+\frac{12e^{\sin^{-1}(ax)}\left(1-a^2x^2\right)}{85a}+\frac{4}{17}e^{\sin^{-1}(ax)}x\left(1-a^2x^2\right)^{3/2}+\frac{e^{\sin^{-1}(ax)}\left(1\right.}{17}\\
&= \frac{24e^{\sin^{-1}(ax)}}{85a}+\frac{24}{85}e^{\sin^{-1}(ax)}x\sqrt{1-a^2x^2}+\frac{12e^{\sin^{-1}(ax)}\left(1-a^2x^2\right)}{85a}+\frac{4}{17}e^{\sin^{-1}(ax)}x\left(1-a^2x^2\right)^{3/}
\end{aligned}$$

Mathematica [A] time = 0.150005, size = 51, normalized size = 0.46

$$\frac{e^{\sin^{-1}(ax)}\left(136\sin\left(2\sin^{-1}(ax)\right)+20\sin\left(4\sin^{-1}(ax)\right)+68\cos\left(2\sin^{-1}(ax)\right)+5\cos\left(4\sin^{-1}(ax)\right)+255\right)}{680a}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]*(1 - a^2*x^2)^(3/2),x]
```

```
[Out] (E^ArcSin[a*x]*(255 + 68*Cos[2*ArcSin[a*x]] + 5*Cos[4*ArcSin[a*x]] + 136*Si
n[2*ArcSin[a*x]] + 20*Sin[4*ArcSin[a*x]]))/(680*a)
```

Maple [F] time = 0.079, size = 0, normalized size = 0.

$$\int e^{\arcsin(ax)} \left(-a^2x^2+1\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x))*(-a^2*x^2+1)^(3/2),x)
```

```
[Out] int(exp(arcsin(a*x))*(-a^2*x^2+1)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(-a^2x^2+1\right)^{\frac{3}{2}} e^{(\arcsin(ax))}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*(-a^2*x^2+1)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((-a^2*x^2 + 1)^(3/2)*e^(arcsin(a*x)), x)
```

Fricas [A] time = 2.01153, size = 132, normalized size = 1.18

$$\frac{\left(5\,a^4x^4 - 22\,a^2x^2 - 4\left(5\,a^3x^3 - 11\,ax\right)\sqrt{-a^2x^2+1} + 41\right)e^{(\arcsin(ax))}}{85\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*(-a^2*x^2+1)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/85*(5*a^4*x^4 - 22*a^2*x^2 - 4*(5*a^3*x^3 - 11*a*x)*sqrt(-a^2*x^2 + 1) +
41)*e^(arcsin(a*x))/a
```

Sympy [A] time = 27.3924, size = 95, normalized size = 0.85

$$\begin{cases} \frac{a^{3}x^{4}e^{\operatorname{asin}{(ax)}}}{17} - \frac{4a^{2}x^{3}\sqrt{-a^{2}x^{2}+1}e^{\operatorname{asin}{(ax)}}}{17} - \frac{22ax^{2}e^{\operatorname{asin}{(ax)}}}{85} + \frac{44x\sqrt{-a^{2}x^{2}+1}e^{\operatorname{asin}{(ax)}}}{85} + \frac{41e^{\operatorname{asin}{(ax)}}}{85a} & \text{for } a \neq 0 \\ x & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x))*(-a**2*x**2+1)**(3/2),x)
```

```
[Out] Piecewise((a**3*x**4*exp(asin(a*x))/17 - 4*a**2*x**3*sqrt(-a**2*x**2 + 1)*e
xp(asin(a*x))/17 - 22*a*x**2*exp(asin(a*x))/85 + 44*x*sqrt(-a**2*x**2 + 1)*
exp(asin(a*x))/85 + 41*exp(asin(a*x))/(85*a), Ne(a, 0)), (x, True))
```

Giac [A] time = 1.26209, size = 123, normalized size = 1.1

$$\frac{4}{17}\left(-a^{2}x^{2}+1\right)^{\frac{3}{2}}xe^{(\arcsin(ax))} + \frac{24}{85}\sqrt{-a^{2}x^{2}+1}xe^{(\arcsin(ax))} + \frac{\left(a^{2}x^{2}-1\right)^{2}e^{(\arcsin(ax))}}{17\,a} - \frac{12\left(a^{2}x^{2}-1\right)e^{(\arcsin(ax))}}{85\,a} + \frac{24\,e^{(\mathrm{arc}}}{85}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*(-a^2*x^2+1)^(3/2),x, algorithm="giac")
```

```
[Out] 4/17*(-a^2*x^2 + 1)^(3/2)*x*e^(arcsin(a*x)) + 24/85*sqrt(-a^2*x^2 + 1)*x*e^
(arcsin(a*x)) + 1/17*(a^2*x^2 - 1)^2*e^(arcsin(a*x))/a - 12/85*(a^2*x^2 - 1
)*e^(arcsin(a*x))/a + 24/85*e^(arcsin(a*x))/a
```

3.465 $\int e^{\sin^{-1}(ax)}\sqrt{1-a^2x^2}\,dx$

Optimal. Leaf size=62

$$\frac{2}{5}x\sqrt{1-a^2x^2}e^{\sin^{-1}(ax)}+\frac{(1-a^2x^2)\,e^{\sin^{-1}(ax)}}{5a}+\frac{2e^{\sin^{-1}(ax)}}{5a}$$

```
[Out] (2*E^ArcSin[a*x])/(5*a) + (2*E^ArcSin[a*x]*x*Sqrt[1 - a^2*x^2])/5 + (E^ArcS
in[a*x]*(1 - a^2*x^2))/(5*a)
```

Rubi [A] time = 0.20668, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {4836, 6688, 6720, 4435, 2194}

$$\frac{2}{5}x\sqrt{1-a^2x^2}e^{\sin^{-1}(ax)}+\frac{(1-a^2x^2)\,e^{\sin^{-1}(ax)}}{5a}+\frac{2e^{\sin^{-1}(ax)}}{5a}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]*Sqrt[1 - a^2*x^2],x]
```

```
[Out] (2*E^ArcSin[a*x])/(5*a) + (2*E^ArcSin[a*x]*x*Sqrt[1 - a^2*x^2])/5 + (E^ArcS
in[a*x]*(1 - a^2*x^2))/(5*a)
```

Rule 4836

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -(a/b) + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSi
n[a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6720

```
Int[(u_.)*((a_.)*(v_)^(m_.))^(p_), x_Symbol] :> Dist[(a^IntPart[p]*(a*v^m)^
FracPart[p])/v^(m*FracPart[p]), Int[u*v^(m*p), x], x] /; FreeQ[{a, m, p}, x
] && !IntegerQ[p] && !FreeQ[v, x] && !(EqQ[a, 1] && EqQ[m, 1]) && !(EqQ
[v, x] && EqQ[m, 1])
```

Rule 4435

```
Int[Cos[(d_.) + (e_.)*(x_)]^(m_)*(F_)^((c_.)*((a_.) + (b_.)*(x_))), x_Symbo
l] :> Simp[(b*c*Log[F]*F^(c*(a + b*x))*Cos[d + e*x]^m)/(e^2*m^2 + b^2*c^2*L
og[F]^2), x] + (Dist[(m*(m - 1)*e^2)/(e^2*m^2 + b^2*c^2*Log[F]^2), Int[F^(c
*(a + b*x))*Cos[d + e*x]^(m - 2), x], x] + Simp[(e*m*F^(c*(a + b*x))*Sin[d
+ e*x]*Cos[d + e*x]^(m - 1))/(e^2*m^2 + b^2*c^2*Log[F]^2), x]) /; FreeQ[{F,
 a, b, c, d, e}, x] && NeQ[e^2*m^2 + b^2*c^2*Log[F]^2, 0] && GtQ[m, 1]
```

Rule 2194

```
Int[((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.), x_Symbol] :> Simp[(F^(c*(a +
 b*x)))^n/(b*c*n*Log[F]), x] /; FreeQ[{F, a, b, c, n}, x]
```

Rubi steps

$$
\begin{aligned}
\int e^{\sin^{-1}(ax)}\sqrt{1-a^2x^2}\,dx &= \frac{\text{Subst}\left(\int e^x\cos(x)\sqrt{1-\sin^2(x)}\,dx,x,\sin^{-1}(ax)\right)}{a}\\
&= \frac{\text{Subst}\left(\int e^x\cos(x)\sqrt{\cos^2(x)}\,dx,x,\sin^{-1}(ax)\right)}{a}\\
&= \frac{\text{Subst}\left(\int e^x\cos^2(x)\,dx,x,\sin^{-1}(ax)\right)}{a}\\
&= \frac{2}{5}e^{\sin^{-1}(ax)}x\sqrt{1-a^2x^2}+\frac{e^{\sin^{-1}(ax)}\left(1-a^2x^2\right)}{5a}+\frac{2\,\text{Subst}\left(\int e^x\,dx,x,\sin^{-1}(ax)\right)}{5a}\\
&= \frac{2e^{\sin^{-1}(ax)}}{5a}+\frac{2}{5}e^{\sin^{-1}(ax)}x\sqrt{1-a^2x^2}+\frac{e^{\sin^{-1}(ax)}\left(1-a^2x^2\right)}{5a}
\end{aligned}
$$

Mathematica [A] time = 0.0732716, size = 31, normalized size = 0.5

$$\frac{e^{\sin^{-1}(ax)}\left(2\sin\left(2\sin^{-1}(ax)\right)+\cos\left(2\sin^{-1}(ax)\right)+5\right)}{10a}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]*Sqrt[1 - a^2*x^2],x]
```

```
[Out] (E^ArcSin[a*x]*(5 + Cos[2*ArcSin[a*x]] + 2*Sin[2*ArcSin[a*x]]))/(10*a)
```

Maple [F] time = 0.08, size = 0, normalized size = 0.

$$\int \mathrm{e}^{\arcsin(ax)}\sqrt{-a^2x^2+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x))*(-a^2*x^2+1)^(1/2),x)
```

```
[Out] int(exp(arcsin(a*x))*(-a^2*x^2+1)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{-a^2x^2+1}e^{(\arcsin(ax))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(-a^2*x^2 + 1)*e^(arcsin(a*x)), x)
```

Fricas [A] time = 2.03805, size = 88, normalized size = 1.42

$$-\frac{\left(a^2x^2-2\sqrt{-a^2x^2+1}ax-3\right)e^{(\arcsin(ax))}}{5\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/5*(a^2*x^2 - 2*sqrt(-a^2*x^2 + 1)*a*x - 3)*e^(arcsin(a*x))/a
```

Sympy [A] time = 0.542048, size = 49, normalized size = 0.79

$$\begin{cases} -\frac{ax^2e^{\operatorname{asin}(ax)}}{5}+\frac{2x\sqrt{-a^2x^2+1}e^{\operatorname{asin}(ax)}}{5}+\frac{3e^{\operatorname{asin}(ax)}}{5a} & \text{for } a\neq 0 \\ x & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x))*(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Piecewise((-a*x**2*exp(asin(a*x))/5 + 2*x*sqrt(-a**2*x**2 + 1)*exp(asin(a*x
))/5 + 3*exp(asin(a*x))/(5*a), Ne(a, 0)), (x, True))
```

Giac [A] time = 1.22359, size = 68, normalized size = 1.1

$$\frac{2}{5}\sqrt{-a^2x^2+1}xe^{(\arcsin(ax))} - \frac{\left(a^2x^2-1\right)e^{(\arcsin(ax))}}{5\,a} + \frac{2\,e^{(\arcsin(ax))}}{5\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] 2/5*sqrt(-a^2*x^2 + 1)*x*e^(arcsin(a*x)) - 1/5*(a^2*x^2 - 1)*e^(arcsin(a*x)
)/a + 2/5*e^(arcsin(a*x))/a
```

3.466 $\int \frac{e^{\sin^{-1}(ax)}}{\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=10

$$\frac{e^{\sin^{-1}(ax)}}{a}$$

```
[Out] E^ArcSin[a*x]/a
```

Rubi [A] time = 0.214341, antiderivative size = 10, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.19, Rules used = {4836, 6688, 6720, 2194}

$$\frac{e^{\sin^{-1}(ax)}}{a}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]/Sqrt[1 - a^2*x^2],x]
```

```
[Out] E^ArcSin[a*x]/a
```

Rule 4836

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -(a/b) + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSi
n[a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6720

```
Int[(u_.)*((a_.)*(v_)^(m_.))^(p_), x_Symbol] :> Dist[(a^IntPart[p]*(a*v^m)^
FracPart[p])/v^(m*FracPart[p]), Int[u*v^(m*p), x], x] /; FreeQ[{a, m, p}, x
] && !IntegerQ[p] && !FreeQ[v, x] && !(EqQ[a, 1] && EqQ[m, 1]) && !(EqQ
[v, x] && EqQ[m, 1])
```

Rule 2194

```
Int[((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.), x_Symbol] :> Simp[(F^(c*(a +
 b*x)))^n/(b*c*n*Log[F]), x] /; FreeQ[{F, a, b, c, n}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{e^{\sin^{-1}(ax)}}{\sqrt{1-a^2x^2}}\,dx &= \frac{\text{Subst}\left(\int \frac{e^x\cos(x)}{\sqrt{1-\sin^2(x)}}\,dx, x, \sin^{-1}(ax)\right)}{a}\\ &= \frac{\text{Subst}\left(\int e^x\sqrt{\cos^2(x)}\sec(x)\,dx, x, \sin^{-1}(ax)\right)}{a}\\ &= \frac{\text{Subst}\left(\int e^x\,dx, x, \sin^{-1}(ax)\right)}{a}\\ &= \frac{e^{\sin^{-1}(ax)}}{a}\end{aligned}$$

Mathematica [A] time = 0.0153145, size = 10, normalized size = 1.

$$\frac{e^{\sin^{-1}(ax)}}{a}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]/Sqrt[1 - a^2*x^2],x]

[Out] E^ArcSin[a*x]/a
```

Maple [A] time = 0.005, size = 10, normalized size = 1.

$$\frac{e^{\arcsin(ax)}}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x))/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] exp(arcsin(a*x))/a
```

Maxima [A] time = 1.47392, size = 12, normalized size = 1.2

$$\frac{e^{(\arcsin(ax))}}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] e^(arcsin(a*x))/a
```

Fricas [A] time = 2.18016, size = 26, normalized size = 2.6

$$\frac{e^{(\arcsin(ax))}}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] e^(arcsin(a*x))/a
```

Sympy [A] time = 0.461056, size = 8, normalized size = 0.8

$$\begin{cases} \frac{e^{\operatorname{asin}{(ax)}}}{a} & \text{for}\: a \neq 0 \\ x & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x))/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Piecewise((exp(asin(a*x))/a, Ne(a, 0)), (x, True))
```

Giac [A] time = 1.16343, size = 12, normalized size = 1.2

$$\frac{e^{(\arcsin(ax))}}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] e^(arcsin(a*x))/a
```

3.467 $\int \frac{e^{\sin^{-1}(ax)}}{\left(1-a^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=45

$$\frac{\left(\frac{4}{5}-\frac{8i}{5}\right)e^{(1+2i)\sin^{-1}(ax)}\text{Hypergeometric2F1}\left(1-\frac{i}{2},2,2-\frac{i}{2},-e^{2i\sin^{-1}(ax)}\right)}{a}$$

```
[Out] ((4/5 - (8*I)/5)*E^((1 + 2*I)*ArcSin[a*x])*Hypergeometric2F1[1 - I/2, 2, 2
- I/2, -E^((2*I)*ArcSin[a*x])])/a
```

Rubi [A] time = 0.258082, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.19, Rules used = {4836, 6688, 6720, 4451}

$$\frac{\left(\frac{4}{5}-\frac{8i}{5}\right)e^{(1+2i)\sin^{-1}(ax)}\,{}_2F_1\left(1-\frac{i}{2},2;2-\frac{i}{2};-e^{2i\sin^{-1}(ax)}\right)}{a}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]/(1 - a^2*x^2)^(3/2),x]
```

```
[Out] ((4/5 - (8*I)/5)*E^((1 + 2*I)*ArcSin[a*x])*Hypergeometric2F1[1 - I/2, 2, 2
- I/2, -E^((2*I)*ArcSin[a*x])])/a
```

Rule 4836

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -(a/b) + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSi
n[a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6720

```
Int[(u_.)*((a_.)*(v_)^(m_.))^(p_), x_Symbol] :> Dist[(a^IntPart[p]*(a*v^m)^
FracPart[p])/v^(m*FracPart[p]), Int[u*v^(m*p), x], x] /; FreeQ[{a, m, p}, x
```

```
] &&  !IntegerQ[p] &&  !FreeQ[v, x] &&  !(EqQ[a, 1] && EqQ[m, 1]) &&  !(EqQ
[v, x] && EqQ[m, 1])
```

Rule 4451

```
Int[(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sec[(d_.) + (e_.)*(x_)]^(n_.), x_Symb
ol] :> Simp[(2^n*E^(I*n*(d + e*x))*F^(c*(a + b*x))*Hypergeometric2F1[n, n/2
 - (I*b*c*Log[F])/(2*e), 1 + n/2 - (I*b*c*Log[F])/(2*e), -E^(2*I*(d + e*x))
])/(I*e*n + b*c*Log[F]), x] /; FreeQ[{F, a, b, c, d, e}, x] && IntegerQ[n]
```

Rubi steps

$$\begin{aligned}
\int \frac{e^{\sin^{-1}(ax)}}{\left(1-a^2x^2\right)^{3/2}}\,dx &= \frac{\text{Subst}\left(\int \frac{e^x\cos(x)}{\left(1-\sin^2(x)\right)^{3/2}}\,dx, x, \sin^{-1}(ax)\right)}{a}\\
&= \frac{\text{Subst}\left(\int \frac{e^x\cos(x)}{\cos^2(x)^{3/2}}\,dx, x, \sin^{-1}(ax)\right)}{a}\\
&= \frac{\text{Subst}\left(\int e^x\sec^2(x)\,dx, x, \sin^{-1}(ax)\right)}{a}\\
&= \frac{\left(\frac{4}{5}-\frac{8i}{5}\right)e^{(1+2i)\sin^{-1}(ax)}\,{}_2F_1\left(1-\frac{i}{2},2;2-\frac{i}{2};-e^{2i\sin^{-1}(ax)}\right)}{a}
\end{aligned}$$

Mathematica [A] time = 0.0680029, size = 45, normalized size = 1.

$$\frac{\left(\frac{4}{5}-\frac{8i}{5}\right)e^{(1+2i)\sin^{-1}(ax)}\text{Hypergeometric2F1}\left(1-\frac{i}{2},2,2-\frac{i}{2},-e^{2i\sin^{-1}(ax)}\right)}{a}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]/(1 - a^2*x^2)^(3/2),x]
```

```
[Out] ((4/5 - (8*I)/5)*E^((1 + 2*I)*ArcSin[a*x])*Hypergeometric2F1[1 - I/2, 2, 2
- I/2, -E^((2*I)*ArcSin[a*x])])/a
```

Maple [F] time = 0.08, size = 0, normalized size = 0.

$$\int \mathrm{e}^{\arcsin(ax)}\left(-a^2x^2+1\right)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x))/(-a^2*x^2+1)^(3/2),x)
```

```
[Out] int(exp(arcsin(a*x))/(-a^2*x^2+1)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{(\arcsin(ax))}}{\left(-a^2x^2+1\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/(-a^2*x^2+1)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(e^(arcsin(a*x))/(-a^2*x^2 + 1)^(3/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{-a^2x^2+1}e^{(\arcsin(ax))}}{a^4x^4-2\,a^2x^2+1}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/(-a^2*x^2+1)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-a^2*x^2 + 1)*e^(arcsin(a*x))/(a^4*x^4 - 2*a^2*x^2 + 1), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\operatorname{asin}(ax)}}{\left(-(ax-1)(ax+1)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x))/(-a**2*x**2+1)**(3/2),x)
```

```
[Out] Integral(exp(asin(a*x))/(-(a*x - 1)*(a*x + 1))**(3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{(\arcsin(ax))}}{\left(-a^2x^2+1\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/(-a^2*x^2+1)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(e^(arcsin(a*x))/(-a^2*x^2 + 1)^(3/2), x)
```

3.468 $\int \frac{e^{\sin^{-1}(ax)}}{\left(1-a^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=96

$$\frac{\left(\frac{2}{3}-\frac{4i}{3}\right)e^{(1+2i)\sin^{-1}(ax)}\text{Hypergeometric2F1}\left(1-\frac{i}{2},2,2-\frac{i}{2},-e^{2i\sin^{-1}(ax)}\right)}{a}+\frac{xe^{\sin^{-1}(ax)}}{3\left(1-a^2x^2\right)^{3/2}}-\frac{e^{\sin^{-1}(ax)}}{6a\left(1-a^2x^2\right)}$$

```
[Out] (E^ArcSin[a*x]*x)/(3*(1 - a^2*x^2)^(3/2)) - E^ArcSin[a*x]/(6*a*(1 - a^2*x^2
)) + ((2/3 - (4*I)/3)*E^((1 + 2*I)*ArcSin[a*x])*Hypergeometric2F1[1 - I/2,
2, 2 - I/2, -E^((2*I)*ArcSin[a*x])])/a
```

Rubi [A] time = 0.289181, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {4836, 6688, 6720, 4448, 4451}

$$\frac{xe^{\sin^{-1}(ax)}}{3\left(1-a^2x^2\right)^{3/2}}-\frac{e^{\sin^{-1}(ax)}}{6a\left(1-a^2x^2\right)}+\frac{\left(\frac{2}{3}-\frac{4i}{3}\right)e^{(1+2i)\sin^{-1}(ax)}\,{}_2F_1\left(1-\frac{i}{2},2;2-\frac{i}{2};-e^{2i\sin^{-1}(ax)}\right)}{a}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]/(1 - a^2*x^2)^(5/2),x]
```

```
[Out] (E^ArcSin[a*x]*x)/(3*(1 - a^2*x^2)^(3/2)) - E^ArcSin[a*x]/(6*a*(1 - a^2*x^2
)) + ((2/3 - (4*I)/3)*E^((1 + 2*I)*ArcSin[a*x])*Hypergeometric2F1[1 - I/2,
2, 2 - I/2, -E^((2*I)*ArcSin[a*x])])/a
```

Rule 4836

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -(a/b) + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSi
n[a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6720

```
Int[(u_.)*((a_.)*(v_)^(m_.))^(p_), x_Symbol] :> Dist[(a^IntPart[p]*(a*v^m)^
FracPart[p])/v^(m*FracPart[p]), Int[u*v^(m*p), x], x] /; FreeQ[{a, m, p}, x
] && !IntegerQ[p] && !FreeQ[v, x] && !(EqQ[a, 1] && EqQ[m, 1]) && !(EqQ
[v, x] && EqQ[m, 1])
```

Rule 4448

```
Int[(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sec[(d_.) + (e_.)*(x_)]^(n_), x_Symbo
l] :> -Simp[(b*c*Log[F]*F^(c*(a + b*x))*Sec[d + e*x]^(n - 2))/(e^2*(n - 1)*
(n - 2)), x] + (Dist[(e^2*(n - 2)^2 + b^2*c^2*Log[F]^2)/(e^2*(n - 1)*(n - 2
)), Int[F^(c*(a + b*x))*Sec[d + e*x]^(n - 2), x], x] + Simp[(F^(c*(a + b*x)
)*Sec[d + e*x]^(n - 1)*Sin[d + e*x])/(e*(n - 1)), x]) /; FreeQ[{F, a, b, c,
 d, e}, x] && NeQ[b^2*c^2*Log[F]^2 + e^2*(n - 2)^2, 0] && GtQ[n, 1] && NeQ[
n, 2]
```

Rule 4451

```
Int[(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sec[(d_.) + (e_.)*(x_)]^(n_.), x_Symb
ol] :> Simp[(2^n*E^(I*n*(d + e*x))*F^(c*(a + b*x))*Hypergeometric2F1[n, n/2
 - (I*b*c*Log[F])/(2*e), 1 + n/2 - (I*b*c*Log[F])/(2*e), -E^(2*I*(d + e*x))
])/(I*e*n + b*c*Log[F]), x] /; FreeQ[{F, a, b, c, d, e}, x] && IntegerQ[n]
```

Rubi steps

$$\begin{aligned}
\int \frac{e^{\sin^{-1}(ax)}}{\left(1-a^2x^2\right)^{5/2}}\,dx &= \frac{\text{Subst}\left(\int \frac{e^x\cos(x)}{\left(1-\sin^2(x)\right)^{5/2}}\,dx, x, \sin^{-1}(ax)\right)}{a} \\
&= \frac{\text{Subst}\left(\int \frac{e^x\cos(x)}{\cos^2(x)^{5/2}}\,dx, x, \sin^{-1}(ax)\right)}{a} \\
&= \frac{\text{Subst}\left(\int e^x\sec^4(x)\,dx, x, \sin^{-1}(ax)\right)}{a} \\
&= \frac{e^{\sin^{-1}(ax)}x}{3\left(1-a^2x^2\right)^{3/2}} - \frac{e^{\sin^{-1}(ax)}}{6a\left(1-a^2x^2\right)} + \frac{5\,\text{Subst}\left(\int e^x\sec^2(x)\,dx, x, \sin^{-1}(ax)\right)}{6a} \\
&= \frac{e^{\sin^{-1}(ax)}x}{3\left(1-a^2x^2\right)^{3/2}} - \frac{e^{\sin^{-1}(ax)}}{6a\left(1-a^2x^2\right)} + \frac{\left(\frac{2}{3}-\frac{4i}{3}\right)e^{(1+2i)\sin^{-1}(ax)}\,{}_2F_1\left(1-\frac{i}{2},2;2-\frac{i}{2};-e^{2i\sin^{-1}(ax)}\right)}{a}
\end{aligned}$$

Mathematica [A] time = 0.170193, size = 84, normalized size = 0.88

$$\frac{e^{\sin^{-1}(ax)}\left((1-2i)\left(1+e^{2i\sin^{-1}(ax)}\right)^2\text{Hypergeometric2F1}\left(1-\frac{i}{2},2,2-\frac{i}{2},-e^{2i\sin^{-1}(ax)}\right)+\frac{2ax}{\sqrt{1-a^2x^2}}-1\right)}{6\left(a-a^3x^2\right)}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[E^ArcSin[a*x]/(1 - a^2*x^2)^(5/2),x]
```

```
[Out] (E^ArcSin[a*x]*(-1 + (2*a*x)/Sqrt[1 - a^2*x^2] + (1 - 2*I)*(1 + E^((2*I)*Ar
cSin[a*x]))^2*Hypergeometric2F1[1 - I/2, 2, 2 - I/2, -E^((2*I)*ArcSin[a*x])
]))/(6*(a - a^3*x^2))
```

Maple [F] time = 0.076, size = 0, normalized size = 0.

$$\int \mathrm{e}^{\arcsin(ax)}\left(-a^2x^2+1\right)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x))/(-a^2*x^2+1)^(5/2),x)
```

```
[Out] int(exp(arcsin(a*x))/(-a^2*x^2+1)^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{(\arcsin(ax))}}{\left(-a^2x^2+1\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/(-a^2*x^2+1)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(e^(arcsin(a*x))/(-a^2*x^2 + 1)^(5/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\sqrt{-a^2x^2+1}e^{(\arcsin(ax))}}{a^6x^6-3\,a^4x^4+3\,a^2x^2-1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/(-a^2*x^2+1)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-a^2*x^2 + 1)*e^(arcsin(a*x))/(a^6*x^6 - 3*a^4*x^4 + 3*a^2*x
^2 - 1), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{e^{\operatorname{asin}(ax)}}{\left(-(ax-1)(ax+1)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x))/(-a**2*x**2+1)**(5/2),x)
```

```
[Out] Integral(exp(asin(a*x))/(-(a*x - 1)*(a*x + 1))**(5/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{e^{(\arcsin(ax))}}{\left(-a^2x^2+1\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/(-a^2*x^2+1)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(e^(arcsin(a*x))/(-a^2*x^2 + 1)^(5/2), x)
```

3.469 $\int \sin^{-1}\left(\frac{c}{a+bx}\right) dx$

Optimal. Leaf size=47

$$\frac{c\tanh^{-1}\left(\sqrt{1-\frac{c^2}{(a+bx)^2}}\right)}{b}+\frac{(a+bx)\csc^{-1}\left(\frac{a}{c}+\frac{bx}{c}\right)}{b}$$

```
[Out] ((a + b*x)*ArcCsc[a/c + (b*x)/c])/b + (c*ArcTanh[Sqrt[1 - c^2/(a + b*x)^2]]
)/b
```

Rubi [A] time = 0.032551, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.6, Rules used = {4832, 5251, 372, 266, 63, 206}

$$\frac{c\tanh^{-1}\left(\sqrt{1-\frac{c^2}{(a+bx)^2}}\right)}{b}+\frac{(a+bx)\csc^{-1}\left(\frac{a}{c}+\frac{bx}{c}\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[c/(a + b*x)],x]
```

```
[Out] ((a + b*x)*ArcCsc[a/c + (b*x)/c])/b + (c*ArcTanh[Sqrt[1 - c^2/(a + b*x)^2]]
)/b
```

Rule 4832

```
Int[ArcSin[(c_.)/((a_.) + (b_.)*(x_)^(n_.))]^(m_.)*(u_.), x_Symbol] :> Int[
u*ArcCsc[a/c + (b*x^n)/c]^m, x] /; FreeQ[{a, b, c, n, m}, x]
```

Rule 5251

```
Int[ArcCsc[(c_) + (d_.)*(x_)], x_Symbol] :> Simp[((c + d*x)*ArcCsc[c + d*x]
)/d, x] + Int[1/((c + d*x)*Sqrt[1 - 1/(c + d*x)^2]), x] /; FreeQ[{c, d}, x]
```

Rule 372

```
Int[(u_)^(m_.)*((a_) + (b_.)*(v_)^(n_))^(p_.), x_Symbol] :> Dist[u^m/(Coeff
icient[v, x, 1]*v^m), Subst[Int[x^m*(a + b*x^n)^p, x], x, v], x] /; FreeQ[{
a, b, m, n, p}, x] && LinearPairQ[u, v, x]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \sin^{-1}\left(\frac{c}{a+bx}\right)dx = \int \csc^{-1}\left(\frac{a}{c}+\frac{bx}{c}\right)dx$$
$$= \frac{(a+bx)\csc^{-1}\left(\frac{a}{c}+\frac{bx}{c}\right)}{b} + \int \frac{1}{\left(\frac{a}{c}+\frac{bx}{c}\right)\sqrt{1-\frac{1}{\left(\frac{a}{c}+\frac{bx}{c}\right)^2}}}dx$$
$$= \frac{(a+bx)\csc^{-1}\left(\frac{a}{c}+\frac{bx}{c}\right)}{b} + \frac{c\,\text{Subst}\left(\int \frac{1}{\sqrt{1-\frac{1}{x^2}}x}dx, x, \frac{a}{c}+\frac{bx}{c}\right)}{b}$$
$$= \frac{(a+bx)\csc^{-1}\left(\frac{a}{c}+\frac{bx}{c}\right)}{b} - \frac{c\,\text{Subst}\left(\int \frac{1}{\sqrt{1-x}x}dx, x, \frac{1}{\left(\frac{a}{c}+\frac{bx}{c}\right)^2}\right)}{2b}$$
$$= \frac{(a+bx)\csc^{-1}\left(\frac{a}{c}+\frac{bx}{c}\right)}{b} + \frac{c\,\text{Subst}\left(\int \frac{1}{1-x^2}dx, x, \sqrt{1-\frac{c^2}{(a+bx)^2}}\right)}{b}$$
$$= \frac{(a+bx)\csc^{-1}\left(\frac{a}{c}+\frac{bx}{c}\right)}{b} + \frac{c\tanh^{-1}\left(\sqrt{1-\frac{c^2}{(a+bx)^2}}\right)}{b}$$

Mathematica [B] time = 0.137934, size = 140, normalized size = 2.98

$$\frac{(a+bx)\sqrt{\frac{a^2+2abx+b^2x^2-c^2}{(a+bx)^2}}\left(c\tanh^{-1}\left(\frac{a+bx}{\sqrt{a^2+2abx+b^2x^2-c^2}}\right)-a\tan^{-1}\left(\frac{\sqrt{(a+bx)^2-c^2}}{c}\right)\right)}{b\sqrt{a^2+2abx+b^2x^2-c^2}}+x\sin^{-1}\left(\frac{c}{a+bx}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[c/(a + b*x)],x]
```

```
[Out] x*ArcSin[c/(a + b*x)] + ((a + b*x)*Sqrt[(a^2 - c^2 + 2*a*b*x + b^2*x^2)/(a
+ b*x)^2]*(-(a*ArcTan[Sqrt[-c^2 + (a + b*x)^2]/c]) + c*ArcTanh[(a + b*x)/Sq
rt[a^2 - c^2 + 2*a*b*x + b^2*x^2]]))/(b*Sqrt[a^2 - c^2 + 2*a*b*x + b^2*x^2]
)
```

Maple [A] time = 0.017, size = 47, normalized size = 1.

$$-\frac{c}{b}\left(-\frac{bx+a}{c}\arcsin\left(\frac{c}{bx+a}\right)-\operatorname{Artanh}\left(\frac{1}{\sqrt{1-\frac{c^2}{(bx+a)^2}}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(c/(b*x+a)),x)
```

```
[Out] -1/b*c*(-1/c*(b*x+a)*arcsin(c/(b*x+a))-arctanh(1/(1-c^2/(b*x+a)^2)^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$x\arctan\left(c,\sqrt{bx+a+c}\sqrt{bx+a-c}\right)+\int\frac{\left(b^2cx^2+abcx\right)e^{\left(\frac{1}{2}\log(bx+a+c)+\frac{1}{2}\log(bx+a-c)\right)}}{b^2c^2x^2+2\,abc^2x+a^2c^2-c^4+\left(b^2x^2+2\,abx+a^2-c^2\right)e^{(\log(bx+a+c)+\log(bx+a-c))}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(c/(b*x+a)),x, algorithm="maxima")
```

```
[Out] x*arctan2(c, sqrt(b*x + a + c)*sqrt(b*x + a - c)) + integrate((b^2*c*x^2 +
a*b*c*x)*e^(1/2*log(b*x + a + c) + 1/2*log(b*x + a - c))/(b^2*c^2*x^2 + 2*a
*b*c^2*x + a^2*c^2 - c^4 + (b^2*x^2 + 2*a*b*x + a^2 - c^2)*e^(log(b*x + a +
 c) + log(b*x + a - c))), x)
```

Fricas [B] time = 2.52404, size = 305, normalized size = 6.49

$$\frac{bx\arcsin\left(\frac{c}{bx+a}\right)-2\,a\arctan\left(-\frac{bx-(bx+a)\sqrt{\frac{b^2x^2+2\,abx+a^2-c^2}{b^2x^2+2\,abx+a^2}}+a}{c}\right)-c\log\left(-bx+(bx+a)\sqrt{\frac{b^2x^2+2\,abx+a^2-c^2}{b^2x^2+2\,abx+a^2}}-a\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(c/(b*x+a)),x, algorithm="fricas")
```

```
[Out] (b*x*arcsin(c/(b*x + a)) - 2*a*arctan(-(b*x - (b*x + a)*sqrt((b^2*x^2 + 2*a
*b*x + a^2 - c^2)/(b^2*x^2 + 2*a*b*x + a^2)) + a)/c) - c*log(-b*x + (b*x +
a)*sqrt((b^2*x^2 + 2*a*b*x + a^2 - c^2)/(b^2*x^2 + 2*a*b*x + a^2)) - a))/b
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \operatorname{asin}\left(\frac{c}{a+bx}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(c/(b*x+a)),x)
```

```
[Out] Integral(asin(c/(a + b*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \arcsin\left(\frac{c}{bx+a}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(c/(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(arcsin(c/(b*x + a)), x)
```

3.470 $\int \frac{x}{\sin^{-1}(\sin(x))} \, dx$

Optimal. Leaf size=27

$$\sin^{-1}(\sin(x)) + \log\left(\sin^{-1}(\sin(x))\right)\left(x\sqrt{\cos^2(x)}\sec(x) - \sin^{-1}(\sin(x))\right)$$

```
[Out] ArcSin[Sin[x]] + Log[ArcSin[Sin[x]]]*(-ArcSin[Sin[x]] + x*Sqrt[Cos[x]^2]*Se
c[x])
```

Rubi [F] time = 0.0387074, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$, Rules used = {}

$$\int \frac{x}{\sin^{-1}(\sin(x))} \, dx$$

Verification is Not applicable to the result.

```
[In] Int[x/ArcSin[Sin[x]],x]
```

```
[Out] Defer[Int][x/ArcSin[Sin[x]], x]
```

Rubi steps

$$\int \frac{x}{\sin^{-1}(\sin(x))} \, dx = \int \frac{x}{\sin^{-1}(\sin(x))} \, dx$$

Mathematica [A] time = 0.526656, size = 28, normalized size = 1.04

$$x\sqrt{\cos^2(x)}\sec(x)\log\left(\sin^{-1}(\sin(x))\right) - \sin^{-1}(\sin(x))\left(\log\left(\sin^{-1}(\sin(x))\right) - 1\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x/ArcSin[Sin[x]],x]
```

```
[Out] -(ArcSin[Sin[x]]*(-1 + Log[ArcSin[Sin[x]]])) + x*Sqrt[Cos[x]^2]*Log[ArcSin[
Sin[x]]]*Sec[x]
```

Maple [F] time = 0.073, size = 0, normalized size = 0.

$$\int \frac{x}{\arcsin\left(\sin\left(x\right)\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/arcsin(sin(x)),x)
```

```
[Out] int(x/arcsin(sin(x)),x)
```

Maxima [A] time = 1.51935, size = 1, normalized size = 0.04

$$x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(sin(x)),x, algorithm="maxima")
```

```
[Out] x
```

Fricas [A] time = 1.7056, size = 5, normalized size = 0.19

$$-x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(sin(x)),x, algorithm="fricas")
```

```
[Out] -x
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{\operatorname{asin}{\left(\sin{\left(x \right)} \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/asin(sin(x)),x)
```

```
[Out] Integral(x/asin(sin(x)), x)
```

Giac [A] time = 1.15805, size = 1, normalized size = 0.04

$$x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(sin(x)),x, algorithm="giac")
```

```
[Out] x
```

3.471 $\int \frac{\sin^{-1}\left(\sqrt{1+bx^2}\right)^n}{\sqrt{1+bx^2}}\,dx$

Optimal. Leaf size=38

$$\frac{\sqrt{-bx^2}\sin^{-1}\left(\sqrt{bx^2+1}\right)^{n+1}}{b(n+1)x}$$

```
[Out] (Sqrt[-(b*x^2)]*ArcSin[Sqrt[1 + b*x^2]]^(1 + n))/(b*(1 + n)*x)
```

Rubi [A] time = 0.067233, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {4834, 4641}

$$\frac{\sqrt{-bx^2}\sin^{-1}\left(\sqrt{bx^2+1}\right)^{n+1}}{b(n+1)x}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[Sqrt[1 + b*x^2]]^n/Sqrt[1 + b*x^2],x]
```

```
[Out] (Sqrt[-(b*x^2)]*ArcSin[Sqrt[1 + b*x^2]]^(1 + n))/(b*(1 + n)*x)
```

Rule 4834

```
Int[ArcSin[Sqrt[1 + (b_.)*(x_)^2]]^(n_.)/Sqrt[1 + (b_.)*(x_)^2], x_Symbol]
:> Dist[Sqrt[-(b*x^2)]/(b*x), Subst[Int[ArcSin[x]^n/Sqrt[1 - x^2], x], x, S
qrt[1 + b*x^2]], x] /; FreeQ[{b, n}, x]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{\sin^{-1}\left(\sqrt{1+bx^2}\right)^n}{\sqrt{1+bx^2}}\,dx = \frac{\sqrt{-bx^2}\,\text{Subst}\left(\int \frac{\sin^{-1}(x)^n}{\sqrt{1-x^2}}\,dx, x, \sqrt{1+bx^2}\right)}{bx}$$
$$= \frac{\sqrt{-bx^2}\sin^{-1}\left(\sqrt{1+bx^2}\right)^{1+n}}{b(1+n)x}$$

Mathematica [A] time = 0.0450492, size = 38, normalized size = 1.

$$\frac{\sqrt{-bx^2}\sin^{-1}\left(\sqrt{bx^2+1}\right)^{n+1}}{b(n+1)x}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[Sqrt[1 + b*x^2]]^n/Sqrt[1 + b*x^2],x]
```

```
[Out] (Sqrt[-(b*x^2)]*ArcSin[Sqrt[1 + b*x^2]]^(1 + n))/(b*(1 + n)*x)
```

Maple [F] time = 0.187, size = 0, normalized size = 0.

$$\int \left(\arcsin\left(\sqrt{bx^2+1}\right)\right)^n \frac{1}{\sqrt{bx^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin((b*x^2+1)^(1/2))^n/(b*x^2+1)^(1/2),x)
```

```
[Out] int(arcsin((b*x^2+1)^(1/2))^n/(b*x^2+1)^(1/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin((b*x^2+1)^(1/2))^n/(b*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 2.27725, size = 105, normalized size = 2.76

$$\frac{\sqrt{-bx^2}\arcsin\left(\sqrt{bx^2+1}\right)^n\arcsin\left(\sqrt{bx^2+1}\right)}{(bn+b)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin((b*x^2+1)^(1/2))^n/(b*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] sqrt(-b*x^2)*arcsin(sqrt(b*x^2 + 1))^n*arcsin(sqrt(b*x^2 + 1))/((b*n + b)*x
)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin((b*x**2+1)**(1/2))**n/(b*x**2+1)**(1/2),x)
```

```
[Out] Exception raised: TypeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\arcsin\left(\sqrt{bx^2+1}\right)^n}{\sqrt{bx^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin((b*x^2+1)^(1/2))^n/(b*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(arcsin(sqrt(b*x^2 + 1))^n/sqrt(b*x^2 + 1), x)
```

3.472 $\int \frac{1}{\sqrt{1+bx^2}\sin^{-1}\left(\sqrt{1+bx^2}\right)}\,dx$

Optimal. Leaf size=30

$$\frac{\sqrt{-bx^2}\log\left(\sin^{-1}\left(\sqrt{bx^2+1}\right)\right)}{bx}$$

```
[Out] (Sqrt[-(b*x^2)]*Log[ArcSin[Sqrt[1 + b*x^2]]])/(b*x)
```

Rubi [A] time = 0.0605774, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {4834, 4639}

$$\frac{\sqrt{-bx^2}\log\left(\sin^{-1}\left(\sqrt{bx^2+1}\right)\right)}{bx}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[1 + b*x^2]*ArcSin[Sqrt[1 + b*x^2]]),x]
```

```
[Out] (Sqrt[-(b*x^2)]*Log[ArcSin[Sqrt[1 + b*x^2]]])/(b*x)
```

Rule 4834

```
Int[ArcSin[Sqrt[1 + (b_.)*(x_)^2]]^(n_.)/Sqrt[1 + (b_.)*(x_)^2], x_Symbol]
:> Dist[Sqrt[-(b*x^2)]/(b*x), Subst[Int[ArcSin[x]^n/Sqrt[1 - x^2], x], x, S
qrt[1 + b*x^2]], x] /; FreeQ[{b, n}, x]
```

Rule 4639

```
Int[1/(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*Sqrt[(d_) + (e_.)*(x_)^2]), x_Sym
bol] :> Simp[Log[a + b*ArcSin[c*x]]/(b*c*Sqrt[d]), x] /; FreeQ[{a, b, c, d,
 e}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0]
```

Rubi steps

$$\int \frac{1}{\sqrt{1+bx^2}\sin^{-1}\left(\sqrt{1+bx^2}\right)}\,dx = \frac{\sqrt{-bx^2}\,\text{Subst}\left(\int \frac{1}{\sqrt{1-x^2}\sin^{-1}(x)}\,dx, x, \sqrt{1+bx^2}\right)}{bx}$$

$$= \frac{\sqrt{-bx^2}\log\left(\sin^{-1}\left(\sqrt{1+bx^2}\right)\right)}{bx}$$

Mathematica [A] time = 0.0232356, size = 26, normalized size = 0.87

$$-\frac{x\log\left(\sin^{-1}\left(\sqrt{bx^2+1}\right)\right)}{\sqrt{-bx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[1 + b*x^2]*ArcSin[Sqrt[1 + b*x^2]]),x]
```

```
[Out] -((x*Log[ArcSin[Sqrt[1 + b*x^2]]])/Sqrt[-(b*x^2)])
```

Maple [F] time = 0.155, size = 0, normalized size = 0.

$$\int \left(\arcsin\left(\sqrt{bx^2+1}\right)\right)^{-1}\frac{1}{\sqrt{bx^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/arcsin((b*x^2+1)^(1/2))/(b*x^2+1)^(1/2),x)
```

```
[Out] int(1/arcsin((b*x^2+1)^(1/2))/(b*x^2+1)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx^2+1}\arcsin\left(\sqrt{bx^2+1}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin((b*x^2+1)^(1/2))/(b*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/(sqrt(b*x^2 + 1)*arcsin(sqrt(b*x^2 + 1))), x)
```

Fricas [A] time = 1.91662, size = 68, normalized size = 2.27

$$\frac{\sqrt{-bx^2}\log\left(-\arcsin\left(\sqrt{bx^2+1}\right)\right)}{bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin((b*x^2+1)^(1/2))/(b*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] sqrt(-b*x^2)*log(-arcsin(sqrt(b*x^2 + 1)))/(b*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx^2+1}\,\mathrm{asin}\left(\sqrt{bx^2+1}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/asin((b*x**2+1)**(1/2))/(b*x**2+1)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(b*x**2 + 1)*asin(sqrt(b*x**2 + 1))), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx^2+1}\arcsin\left(\sqrt{bx^2+1}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin((b*x^2+1)^(1/2))/(b*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(b*x^2 + 1)*arcsin(sqrt(b*x^2 + 1))), x)
```

3.473 $\int \left(\frac{x}{1-x^2}+\frac{1}{\sqrt{1-x^2}\sin^{-1}(x)}\right) dx$

Optimal. Leaf size=16

$$\log\left(\sin^{-1}(x)\right)-\frac{1}{2}\log\left(1-x^2\right)$$

```
[Out] -Log[1 - x^2]/2 + Log[ArcSin[x]]
```

Rubi [A] time = 0.0282553, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.071, Rules used = {260, 4639}

$$\log\left(\sin^{-1}(x)\right)-\frac{1}{2}\log\left(1-x^2\right)$$

Antiderivative was successfully verified.

```
[In] Int[x/(1 - x^2) + 1/(Sqrt[1 - x^2]*ArcSin[x]),x]
```

```
[Out] -Log[1 - x^2]/2 + Log[ArcSin[x]]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 4639

```
Int[1/(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*Sqrt[(d_) + (e_.)*(x_)^2]), x_Sym
bol] :> Simp[Log[a + b*ArcSin[c*x]]/(b*c*Sqrt[d]), x] /; FreeQ[{a, b, c, d,
 e}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0]
```

Rubi steps

$$\begin{aligned}\int \left(\frac{x}{1-x^2}+\frac{1}{\sqrt{1-x^2}\sin^{-1}(x)}\right) dx &= \int \frac{x}{1-x^2}\,dx+\int \frac{1}{\sqrt{1-x^2}\sin^{-1}(x)}\,dx\\ &= -\frac{1}{2}\log\left(1-x^2\right)+\log\left(\sin^{-1}(x)\right)\end{aligned}$$

Mathematica [A] time = 0.0233533, size = 16, normalized size = 1.

$$\log\left(\sin^{-1}(x)\right)-\frac{1}{2}\log\left(1-x^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x/(1 - x^2) + 1/(Sqrt[1 - x^2]*ArcSin[x]),x]
```

```
[Out] -Log[1 - x^2]/2 + Log[ArcSin[x]]
```

Maple [A] time = 0.009, size = 17, normalized size = 1.1

$$-\frac{\ln(x-1)}{2}-\frac{\ln(x+1)}{2}+\ln(\arcsin(x))$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(-x^2+1)+1/arcsin(x)/(-x^2+1)^(1/2),x)
```

```
[Out] -1/2*ln(x-1)-1/2*ln(x+1)+ln(arcsin(x))
```

Maxima [A] time = 1.45961, size = 16, normalized size = 1.

$$-\frac{1}{2}\log\left(x^2-1\right)+\log(\arcsin(x))$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-x^2+1)+1/arcsin(x)/(-x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/2*log(x^2 - 1) + log(arcsin(x))
```

Fricas [A] time = 2.08817, size = 50, normalized size = 3.12

$$-\frac{1}{2}\log\left(x^2-1\right)+\log(-\arcsin(x))$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-x^2+1)+1/arcsin(x)/(-x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/2*log(x^2 - 1) + log(-arcsin(x))
```

Sympy [A] time = 0.235039, size = 12, normalized size = 0.75

$$-\frac{\log\left(x^2-1\right)}{2}+\log\left(\operatorname{asin}\left(x\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-x**2+1)+1/asin(x)/(-x**2+1)**(1/2),x)
```

```
[Out] -log(x**2 - 1)/2 + log(asin(x))
```

Giac [A] time = 1.14248, size = 19, normalized size = 1.19

$$-\frac{1}{2}\log\left(\left|x^2-1\right|\right)+\log\left(\left|\arcsin\left(x\right)\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-x^2+1)+1/arcsin(x)/(-x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] -1/2*log(abs(x^2 - 1)) + log(abs(arcsin(x)))
```

3.474 $\int \frac{\sqrt{1-x^2}+x \sin^{-1}(x)}{\sin^{-1}(x)-x^2 \sin^{-1}(x)} \, dx$

Optimal. Leaf size=16

$$\log\left(\sin^{-1}(x)\right) - \frac{1}{2}\log\left(1-x^2\right)$$

```
[Out] -Log[1 - x^2]/2 + Log[ArcSin[x]]
```

Rubi [F] time = 0.156641, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\sqrt{1-x^2}+x \sin^{-1}(x)}{\sin^{-1}(x)-x^2 \sin^{-1}(x)} \, dx$$

Verification is Not applicable to the result.

```
[In] Int[(Sqrt[1 - x^2] + x*ArcSin[x])/(ArcSin[x] - x^2*ArcSin[x]),x]

[Out] Defer[Int][(Sqrt[1 - x^2] + x*ArcSin[x])/((1 - x^2)*ArcSin[x]), x]
```

Rubi steps

$$\int \frac{\sqrt{1-x^2}+x \sin^{-1}(x)}{\sin^{-1}(x)-x^2 \sin^{-1}(x)} \, dx = \int \frac{\sqrt{1-x^2}+x \sin^{-1}(x)}{\left(1-x^2\right) \sin^{-1}(x)} \, dx$$

Mathematica [A] time = 0.0927873, size = 16, normalized size = 1.

$$\log\left(\sin^{-1}(x)\right) - \frac{1}{2}\log\left(1-x^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[1 - x^2] + x*ArcSin[x])/(ArcSin[x] - x^2*ArcSin[x]),x]

[Out] -Log[1 - x^2]/2 + Log[ArcSin[x]]
```

Maple [A] time = 0.004, size = 17, normalized size = 1.1

$$-\frac{\ln(x-1)}{2}-\frac{\ln(x+1)}{2}+\ln(\arcsin(x))$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*arcsin(x)+(-x^2+1)^(1/2))/(arcsin(x)-x^2*arcsin(x)),x)
```

```
[Out] -1/2*ln(x-1)-1/2*ln(x+1)+ln(arcsin(x))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\int\frac{\sqrt{x+1}\sqrt{-x+1}}{(x^2-1)\arctan\left(x,\sqrt{x+1}\sqrt{-x+1}\right)}\,dx-\frac{1}{2}\log(x+1)-\frac{1}{2}\log(x-1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((x*arcsin(x)+(-x^2+1)^(1/2))/(arcsin(x)-x^2*arcsin(x)),x, algorit
hm="maxima")
```

```
[Out] -integrate(sqrt(x + 1)*sqrt(-x + 1)/((x^2 - 1)*arctan2(x, sqrt(x + 1)*sqrt(
-x + 1))), x) - 1/2*log(x + 1) - 1/2*log(x - 1)
```

Fricas [A] time = 1.98462, size = 50, normalized size = 3.12

$$-\frac{1}{2}\log\left(x^2-1\right)+\log(-\arcsin(x))$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((x*arcsin(x)+(-x^2+1)^(1/2))/(arcsin(x)-x^2*arcsin(x)),x, algorit
hm="fricas")
```

```
[Out] -1/2*log(x^2 - 1) + log(-arcsin(x))
```

Sympy [A] time = 4.30566, size = 14, normalized size = 0.88

$$-\frac{\log\left(2x^2-2\right)}{2}+\log\left(\operatorname{asin}\left(x\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((x*asin(x)+(-x**2+1)**(1/2))/(asin(x)-x**2*asin(x)),x)
```

```
[Out] -log(2*x**2 - 2)/2 + log(asin(x))
```

Giac [A] time = 1.22327, size = 27, normalized size = 1.69

$$-\log\left(2\right)-\frac{1}{2}\log\left(\left|-x^2+1\right|\right)+\log\left(\left|\arcsin\left(x\right)\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((x*arcsin(x)+(-x^2+1)^(1/2))/(arcsin(x)-x^2*arcsin(x)),x, algorit
hm="giac")
```

```
[Out] -log(2) - 1/2*log(abs(-x^2 + 1)) + log(abs(arcsin(x)))
```

Chapter 4

Listing of Grading functions

The following are the current version of the grading functions used for grading the quality of the antiderivative with reference to the optimal antiderivative included in the test suite.

There is a version for Maple and for Mathematica/Rubi. There is a version for grading Sympy and version for use with Sagemath.

The following are links to the current source code.

The following are the listings of source code of the grading functions.

4.0.1 Mathematica and Rubi grading function

```
(* Original version thanks to Albert Rich emailed on 03/21/2017 *)
(* ::Package:: *)

(* ::Subsection:: *)
(*GradeAntiderivative[result,optimal]*)


(* ::Text:: *)
(*If result and optimal are mathematical expressions, *)
(*          GradeAntiderivative[result,optimal] returns*)
(*  "F" if the result fails to integrate an expression that*)
(*      is integrable*)
(*  "C" if result involves higher level functions than necessary*)
(*  "B" if result is more than twice the size of the optimal*)
(*      antiderivative*)
(*  "A" if result can be considered optimal*)


GradeAntiderivative[result_,optimal_] :=
  If[ExpnType[result]<=ExpnType[optimal],
    If[FreeQ[result,Complex] || Not[FreeQ[optimal,Complex]],
```

```
      If[LeafCount[result]<=2*LeafCount[optimal],
        "A",
      "B"],
    "C"],
  If[FreeQ[result,Integrate] && FreeQ[result,Int],
    "C",
  "F"]]


(* ::Text:: *)
(*The following summarizes the type number assigned an *)
(*expression based on the functions it involves*)
(*1 = rational function*)
(*2 = algebraic function*)
(*3 = elementary function*)
(*4 = special function*)
(*5 = hyperpergeometric function*)
(*6 = appell function*)
(*7 = rootsum function*)
(*8 = integrate function*)
(*9 = unknown function*)


ExpnType[expn_] :=
  If[AtomQ[expn],
    1,
  If[ListQ[expn],
    Max[Map[ExpnType,expn]],
  If[Head[expn]===Power,
    If[IntegerQ[expn[[2]]],
      ExpnType[expn[[1]]],
    If[Head[expn[[2]]]===Rational,
      If[IntegerQ[expn[[1]]] || Head[expn[[1]]]===Rational,
        1,
      Max[ExpnType[expn[[1]]],2]],
    Max[ExpnType[expn[[1]]],ExpnType[expn[[2]]],3]]],
  If[Head[expn]===Plus || Head[expn]===Times,
    Max[ExpnType[First[expn]],ExpnType[Rest[expn]]],
  If[ElementaryFunctionQ[Head[expn]],
    Max[3,ExpnType[expn[[1]]]],
  If[SpecialFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],4]],
  If[HypergeometricFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],5]],
  If[AppellFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],6]],
  If[Head[expn]===RootSum,
```

```
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],7]],
  If[Head[expn]===Integrate || Head[expn]===Int,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],8]],
  9]]]]]]]]]]


ElementaryFunctionQ[func_] :=
  MemberQ[{
        Exp,Log,
        Sin,Cos,Tan,Cot,Sec,Csc,
        ArcSin,ArcCos,ArcTan,ArcCot,ArcSec,ArcCsc,
        Sinh,Cosh,Tanh,Coth,Sech,Csch,
        ArcSinh,ArcCosh,ArcTanh,ArcCoth,ArcSech,ArcCsch
},func]


SpecialFunctionQ[func_] :=
  MemberQ[{
        Erf, Erfc, Erfi,
        FresnelS, FresnelC,
        ExpIntegralE, ExpIntegralEi, LogIntegral,
        SinIntegral, CosIntegral, SinhIntegral, CoshIntegral,
        Gamma, LogGamma, PolyGamma,
        Zeta, PolyLog, ProductLog,
        EllipticF, EllipticE, EllipticPi
},func]


HypergeometricFunctionQ[func_] :=
  MemberQ[{Hypergeometric1F1,Hypergeometric2F1,HypergeometricPFQ},func]


AppellFunctionQ[func_] :=
  MemberQ[{AppellF1},func]
```

4.0.2 Maple grading function

```
# File: GradeAntiderivative.mpl
# Original version thanks to Albert Rich emailed on 03/21/2017

#Nasser 03/22/2017  Use Maple leaf count instead since buildin
#Nasser 03/23/2017  missing 'ln' for ElementaryFunctionQ added
#Nasser 03/24/2017  corrected the check for complex result
#Nasser 10/27/2017  check for leafsize and do not call ExpnType()
#                   if leaf size is "too large". Set at 500,000
#Nasser 12/22/2019  Added debug flag, added 'dilog' to special functions
#                   see problem 156, file Apostol_Problems
```

```

GradeAntiderivative := proc(result,optimal)
local leaf_count_result, leaf_count_optimal,ExpnType_result,ExpnType_optimal,
    debug:=false;

      leaf_count_result:=leafcount(result);
      #do NOT call ExpnType() if leaf size is too large. Recursion problem
      if leaf_count_result > 500000 then
          return "B";
      fi;

      leaf_count_optimal:=leafcount(optimal);

      ExpnType_result:=ExpnType(result);
      ExpnType_optimal:=ExpnType(optimal);

      if debug then
         print("ExpnType_result",ExpnType_result," ExpnType_optimal=",
    ExpnType_optimal);
      fi;

# If result and optimal are mathematical expressions,
#  GradeAntiderivative[result,optimal] returns
#   "F" if the result fails to integrate an expression that
#       is integrable
#   "C" if result involves higher level functions than necessary
#   "B" if result is more than twice the size of the optimal
#       antiderivative
#   "A" if result can be considered optimal

  #This check below actually is not needed, since I only
  #call this grading only for passed integrals. i.e. I check
  #for "F" before calling this. But no harm of keeping it here.
  #just in case.


  if not type(result,freeof('int')) then
     return "F";
  end if;


  if ExpnType_result<=ExpnType_optimal then
      if debug then
           print("ExpnType_result<=ExpnType_optimal");
      fi;
      if is_contains_complex(result) then
         if is_contains_complex(optimal) then
```

```
            if debug then
               print("both result and optimal complex");
            fi;
            #both result and optimal complex
            if leaf_count_result<=2*leaf_count_optimal then
               return "A";
            else
               return "B";
            end if
         else #result contains complex but optimal is not
            if debug then
               print("result contains complex but optimal is not");
            fi;
            return "C";
         end if
      else # result do not contain complex
           # this assumes optimal do not as well
           if debug then
               print("result do not contain complex, this assumes optimal do not as well");
           fi;
           if leaf_count_result<=2*leaf_count_optimal then
              if debug then
                 print("leaf_count_result<=2*leaf_count_optimal");
              fi;
              return "A";
           else
              if debug then
                 print("leaf_count_result>2*leaf_count_optimal");
              fi;
              return "B";
           end if
      end if
  else #ExpnType(result) > ExpnType(optimal)
      if debug then
         print("ExpnType(result) > ExpnType(optimal)");
      fi;
      return "C";
  end if

end proc:

#
# is_contains_complex(result)
# takes expressions and returns true if it contains "I" else false
#
#Nasser 032417
```

```
is_contains_complex:= proc(expression)
  return (has(expression,I));
end proc:

# The following summarizes the type number assigned an expression
# based on the functions it involves
# 1 = rational function
# 2 = algebraic function
# 3 = elementary function
# 4 = special function
# 5 = hyperpergeometric function
# 6 = appell function
# 7 = rootsum function
# 8 = integrate function
# 9 = unknown function

ExpnType := proc(expn)
  if type(expn,'atomic') then
    1
  elif type(expn,'list') then
    apply(max,map(ExpnType,expn))
  elif type(expn,'sqrt') then
    if type(op(1,expn),'rational') then
       1
    else
       max(2,ExpnType(op(1,expn)))
    end if
  elif type(expn,'`^`') then
    if type(op(2,expn),'integer') then
      ExpnType(op(1,expn))
    elif type(op(2,expn),'rational') then
      if type(op(1,expn),'rational') then
         1
      else
         max(2,ExpnType(op(1,expn)))
      end if
    else
         max(3,ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    end if
  elif type(expn,'`+`') or type(expn,'`*`') then
    max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
  elif ElementaryFunctionQ(op(0,expn)) then
    max(3,ExpnType(op(1,expn)))
  elif SpecialFunctionQ(op(0,expn)) then
    max(4,apply(max,map(ExpnType,[op(expn)])))
  elif HypergeometricFunctionQ(op(0,expn)) then
    max(5,apply(max,map(ExpnType,[op(expn)])))
```

```
  elif AppellFunctionQ(op(0,expn)) then
    max(6,apply(max,map(ExpnType,[op(expn)])))
  elif op(0,expn)='int' then
    max(8,apply(max,map(ExpnType,[op(expn)]))) else
  9
  end if
end proc:


ElementaryFunctionQ := proc(func)
  member(func,[
        exp,log,ln,
        sin,cos,tan,cot,sec,csc,
        arcsin,arccos,arctan,arccot,arcsec,arccsc,
        sinh,cosh,tanh,coth,sech,csch,
        arcsinh,arccosh,arctanh,arccoth,arcsech,arccsch])
end proc:

SpecialFunctionQ := proc(func)
  member(func,[
        erf,erfc,erfi,
        FresnelS,FresnelC,
        Ei,Ei,Li,Si,Ci,Shi,Chi,
        GAMMA,lnGAMMA,Psi,Zeta,polylog,dilog,LambertW,
        EllipticF,EllipticE,EllipticPi])
end proc:

HypergeometricFunctionQ := proc(func)
  member(func,[Hypergeometric1F1,hypergeom,HypergeometricPFQ])
end proc:

AppellFunctionQ := proc(func)
  member(func,[AppellF1])
end proc:

# u is a sum or product.  rest(u) returns all but the
# first term or factor of u.
rest := proc(u) local v;
  if nops(u)=2 then
     op(2,u)
  else
     apply(op(0,u),op(2..nops(u),u))
  end if
end proc:

#leafcount(u) returns the number of nodes in u.
#Nasser 3/23/17  Replaced by build-in leafCount from package in Maple
```

```
leafcount := proc(u)
   MmaTranslator[Mma][LeafCount](u);
end proc:
```

4.0.3 Sympy grading function

```
#Dec 24, 2019. Nasser M. Abbasi:
#              Port of original Maple grading function by
#              Albert Rich to use with Sympy/Python
#Dec 27, 2019  Nasser. Added `RootSum`. See problem 177, Timofeev file
#              added 'exp_polar'
from sympy import *

def leaf_count(expr):
    #sympy do not have leaf count function. This is approximation
    return round(1.7*count_ops(expr))

def is_sqrt(expr):
    if isinstance(expr,Pow):
        if expr.args[1] == Rational(1,2):
            return True
        else:
            return False
    else:
        return False

def is_elementary_function(func):
    return func in [exp,log,ln,sin,cos,tan,cot,sec,csc,
            asin,acos,atan,acot,asec,acsc,sinh,cosh,tanh,coth,sech,csch,
            asinh,acosh,atanh,acoth,asech,acsch
        ]

def is_special_function(func):
    return func in [ erf,erfc,erfi,
             fresnels,fresnelc,Ei,Ei,Li,Si,Ci,Shi,Chi,
             gamma,loggamma,digamma,zeta,polylog,LambertW,
             elliptic_f,elliptic_e,elliptic_pi,exp_polar
         ]

def is_hypergeometric_function(func):
    return func in [hyper]

def is_appell_function(func):
    return func in [appellf1]

def is_atom(expn):
    try:
```

```
        if expn.isAtom or isinstance(expn,int) or isinstance(expn,float):
           return True
        else:
           return False

    except AttributeError as error:
        return False

def expnType(expn):
    debug=False
    if debug:
        print("expn=",expn,"type(expn)=",type(expn))

    if is_atom(expn):
       return 1
    elif isinstance(expn,list):
        return max(map(expnType, expn))   #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
            return 1
        else:
            return max(2,expnType(expn.args[0]))  #max(2,ExpnType(op(1,expn)))
    elif isinstance(expn,Pow):   #type(expn,'`^`')
        if isinstance(expn.args[1],Integer):  #type(op(2,expn),'integer')
            return expnType(expn.args[0])   #ExpnType(op(1,expn))
        elif isinstance(expn.args[1],Rational):  #type(op(2,expn),'rational')
            if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
                return 1
            else:
                return max(2,expnType(expn.args[0]))  #max(2,ExpnType(op(1,expn)))
        else:
            return max(3,expnType(expn.args[0]),expnType(expn.args[1])) #max(3,ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    elif isinstance(expn,Add) or isinstance(expn,Mul): #type(expn,'`+`') or type(expn,'`*`')
        m1 = expnType(expn.args[0])
        m2 = expnType(list(expn.args[1:]))
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.func):  #ElementaryFunctionQ(op(0,expn))
        return max(3,expnType(expn.args[0]))  #max(3,ExpnType(op(1,expn)))
    elif is_special_function(expn.func): #SpecialFunctionQ(op(0,expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(4,m1)   #max(4,apply(max,map(ExpnType,[op(expn)])))
    elif is_hypergeometric_function(expn.func): #HypergeometricFunctionQ(op(0,expn))
        m1 = max(map(expnType, list(expn.args)))
```

```
        return max(5,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif is_appell_function(expn.func):
        m1 = max(map(expnType, list(expn.args)))
        return max(6,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif isinstance(expn,RootSum):
        m1 = max(map(expnType, list(expn.args))) #Apply[Max,Append[Map[ExpnType, Apply[List,expn]],7]],
        return max(7,m1)
    elif str(expn).find("Integral") != -1:
        m1 = max(map(expnType, list(expn.args)))
        return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9

#main function
def grade_antiderivative(result,optimal):

    leaf_count_result  = leaf_count(result)
    leaf_count_optimal = leaf_count(optimal)

    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if str(result).find("Integral") != -1:
        return "F"

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex
                if leaf_count_result <= 2*leaf_count_optimal:
                    return "A"
                else:
                    return "B"
            else: #result contains complex but optimal is not
                return "C"
        else: # result do not contain complex, this assumes optimal do not as well
            if leaf_count_result <= 2*leaf_count_optimal:
                return "A"
            else:
                return "B"
    else:
        return "C"
```

4.0.4 SageMath grading function

```
#Dec 24, 2019. Nasser: Ported original Maple grading function by
```

```
#              Albert Rich to use with Sagemath. This is used to
#              grade Fricas, Giac and Maxima results.
#Dec 24, 2019. Nasser: Added 'exp_integral_e' and 'sng', 'sin_integral'
#              'arctan2','floor','abs','log_integral'

from sage.all import *
from sage.symbolic.operators import add_vararg, mul_vararg

def tree(expr):
    debug=False;
    if debug:
         print ("Enter tree(expr), expr=",expr)
         print ("expr.operator()=",expr.operator())
         print ("expr.operands()=",expr.operands())
         print ("map(tree, expr.operands()=",map(tree, expr.operands()))

    if expr.operator() is None:
        return expr
    else:
        return [expr.operator()]+list(map(tree, expr.operands()))

def leaf_count(anti):
    debug=False;

    if debug: print ("Enter leaf_count, anti=", anti, " len(anti)=", len(anti))

    if len(anti) == 0: #special check for optimal being 0 for some test cases.
       if debug: print ("len(anti) == 0")
       return 1
    else:
        if debug: print ("round(1.35*len(flatten(tree(anti))))=",round(1.35*len(
    flatten(tree(anti)))))
        return round(1.35*len(flatten(tree(anti)))) #fudge factor
                     #since this estimate of leaf count is bit lower than
                     #what it should be compared to Mathematica's

def is_sqrt(expr):
    debug=False;
    if expr.operator() == operator.pow:   #isinstance(expr,Pow):
        if expr.operands()[1]==1/2: #expr.args[1] == Rational(1,2):
            if debug: print ("expr is sqrt")
            return True
        else:
            return False
    else:
        return False

```

```
def is_elementary_function(func):
    debug = False

    m = func.name() in ['exp','log','ln',
            'sin','cos','tan','cot','sec','csc',
            'arcsin','arccos','arctan','arccot','arcsec','arccsc',
            'sinh','cosh','tanh','coth','sech','csch',
            'arcsinh','arccosh','arctanh','arccoth','arcsech','arccsch','sgn',
        'arctan2','floor','abs'
        ]
    if debug:
        if m:
            print ("func ", func , " is elementary_function")
        else:
            print ("func ", func , " is NOT elementary_function")


    return m

def is_special_function(func):
    debug = False

    if debug: print ("type(func)=", type(func))

    m= func.name() in ['erf','erfc','erfi','fresnel_sin','fresnel_cos','Ei',
           'Ei','Li','Si','sin_integral','Ci','cos_integral','Shi','
    sinh_integral'
           'Chi','cosh_integral','gamma','log_gamma','psi,zeta',
           'polylog','lambert_w','elliptic_f','elliptic_e',
           'elliptic_pi','exp_integral_e','log_integral']

    if debug:
        print ("m=",m)
        if m:
            print ("func ", func ," is special_function")
        else:
            print ("func ", func ," is NOT special_function")


    return m


def is_hypergeometric_function(func):
    return func.name() in ['hypergeometric','hypergeometric_M','hypergeometric_U
    ']

def is_appell_function(func):
```

```
    return func.name() in ['hypergeometric']   #[appellf1] can't find this in
    sagemath

def is_atom(expn):

    #thanks to answer at https://ask.sagemath.org/question/49179/what-is-
    sagemath-equivalent-to-atomic-type-in-maple/
    try:
        if expn.parent() is SR:
            return expn.operator() is None
        if expn.parent() in (ZZ, QQ, AA, QQbar):
            return expn in expn.parent() # Should always return True
        if hasattr(expn.parent(),"base_ring") and hasattr(expn.parent(),"gens"):
            return expn in expn.parent().base_ring() or expn in expn.parent().
    gens()
        return False

    except AttributeError as error:
        return False


def expnType(expn):
    debug=False

    if debug:
        print (">>>>>Enter expnType, expn=", expn)
        print (">>>>>is_atom(expn)=", is_atom(expn))

    if is_atom(expn):
        return 1
    elif type(expn)==list:   #isinstance(expn,list):
        return max(map(expnType, expn))   #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if  type(expn.operands()[0])==Rational: #type(isinstance(expn.args[0],
    Rational):
            return 1
        else:
            return max(2,expnType(expn.operands()[0]))  #max(2,expnType(expn.
    args[0]))
    elif expn.operator() == operator.pow:   #isinstance(expn,Pow)
        if type(expn.operands()[1])==Integer:  #isinstance(expn.args[1],Integer)
            return expnType(expn.operands()[0])   #expnType(expn.args[0])
        elif type(expn.operands()[1])==Rational:  #isinstance(expn.args[1],
    Rational)
            if type(expn.operands()[0])==Rational: #isinstance(expn.args[0],
    Rational)
                return 1
```

```
            else:
                return max(2,expnType(expn.operands()[0]))  #max(2,expnType(expn.args[0]))
        else:
            return max(3,expnType(expn.operands()[0]),expnType(expn.operands()[1])) #max(3,expnType(expn.operands()[0]),expnType(expn.operands()[1]))
    elif expn.operator() == add_vararg or expn.operator() == mul_vararg: #isinstance(expn,Add) or isinstance(expn,Mul)
        m1 = expnType(expn.operands()[0]) #expnType(expn.args[0])
        m2 = expnType(expn.operands()[1:]) #expnType(list(expn.args[1:]))
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.operator()):  #is_elementary_function(expn.func)
        return max(3,expnType(expn.operands()[0]))
    elif is_special_function(expn.operator()): #is_special_function(expn.func)
        m1 = max(map(expnType, expn.operands()))      #max(map(expnType, list(expn.args)))
        return max(4,m1)   #max(4,m1)
    elif is_hypergeometric_function(expn.operator()): #is_hypergeometric_function(expn.func)
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(expn.args)))
        return max(5,m1)   #max(5,m1)
    elif is_appell_function(expn.operator()):
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(expn.args)))
        return max(6,m1)   #max(6,m1)
    elif str(expn).find("Integral") != -1: #this will never happen, since it
                #is checked before calling the grading function that is passed.
                #but kept it here.
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(expn.args)))
        return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9

#main function
def grade_antiderivative(result,optimal):
    debug = False;

    if debug: print ("Enter grade_antiderivative for sagemath")

    leaf_count_result  = leaf_count(result)
    leaf_count_optimal = leaf_count(optimal)

    if debug: print ("leaf_count_result=", leaf_count_result, " leaf_count_optimal=",leaf_count_optimal)
```

```


    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if debug: print ("expnType_result=", expnType_result, "expnType_optimal=", expnType_optimal)

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex
                if leaf_count_result <= 2*leaf_count_optimal:
                    return "A"
                else:
                    return "B"
            else: #result contains complex but optimal is not
                return "C"
        else: # result do not contain complex, this assumes optimal do not as well
            if leaf_count_result <= 2*leaf_count_optimal:
                return "A"
            else:
                return "B"
    else:
        return "C"
```