Computer algebra independent integration tests

Summer 2022 edition

5-Inverse-trig-functions/5.1-Inverse-sine/144-5.1.5-Inverse-sine-functions

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Contents

Chapter 1

Introduction

Local contents

This report gives the result of running the computer algebra independent integration test.

The download section in the appendix contains links to download the problems in plain text format used for all CAS systems.

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

1.1 Listing of CAS systems tested

The following are the CAS systems tested:

1. Mathematica 13.1 (June 29, 2022) on windows 10.
2. Rubi 4.16.1 (Dec 19, 2018) on Mathematica 13.0.1 on windows 10.
3. Maple 2022.1 (June 1, 2022) on windows 10.
4. Maxima 5.46 (April 13, 2022) using Lisp SBCL 2.1.11.debian on Linux via sagemath 9.6.
5. Fricas 1.3.8 (June 21, 2022) based on sbcl 2.1.11.debian on Linux via sagemath 9.6.
6. Giac/Xcas 1.9.0-13 (July 3, 2022) on Linux via sagemath 9.6.
7. Sympy 1.10.1 (March 20, 2022) Using Python 3.10.4 on Linux.
8. Mupad using Matlab 2021a with Symbolic Math Toolbox Version 8.7 on windows 10.

Maxima and Fricas and Giac are called using Sagemath. This was done using Sagemath `integrate` command by changing the name of the algorithm to use the different CAS systems.

Sympy was called directly from Python.

1.2 Results

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

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

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

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

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

System	% solved	% Failed
Rubi	99.58 (472)	0.42 (2)
Mathematica	97.89 (464)	2.11 (10)
Maple	79.54 (377)	20.46 (97)
Giac	51.90 (246)	48.10 (228)
Fricas	43.04 (204)	56.96 (270)
Sympy	34.60 (164)	65.40 (310)
Maxima	25.95 (123)	74.05 (351)
Mupad	18.78 (89)	81.22 (385)

Table 1.1: Percentage solved for each CAS

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

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

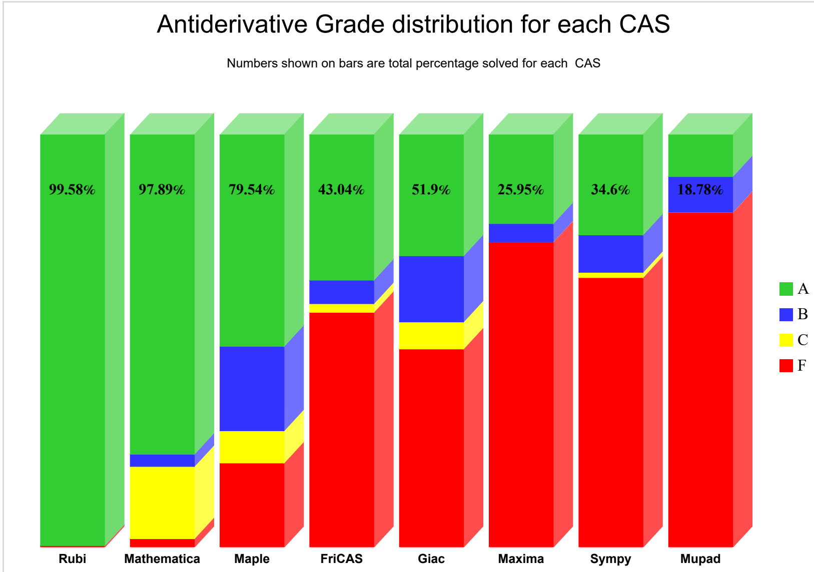
Table 1.2: Description of grading applied to integration result

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

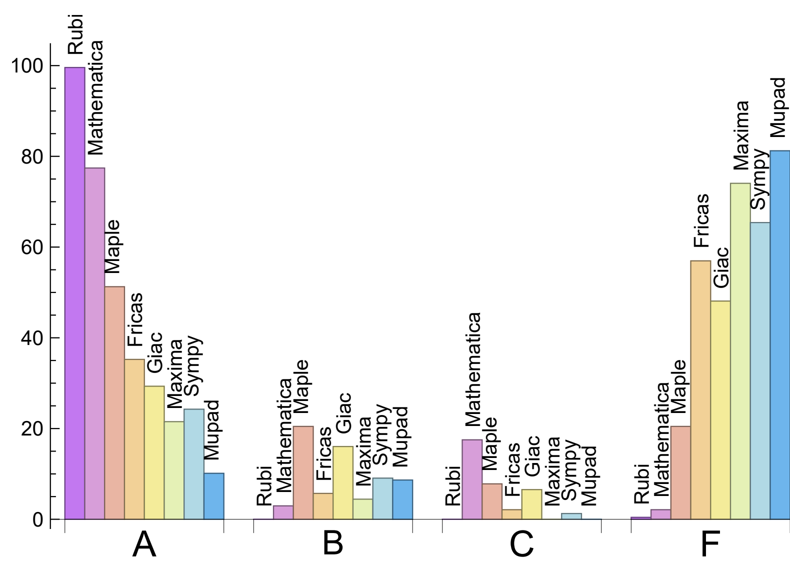
System	% A grade	% B grade	% C grade	% F grade
Rubi	99.58	0.00	0.00	0.42
Mathematica	77.43	2.95	17.51	2.11
Maple	51.27	20.46	7.81	20.46
Fricas	35.23	5.70	2.11	56.96
Giac	29.32	16.03	6.54	48.10
Sympy	24.26	9.07	1.27	65.40
Maxima	21.52	4.43	0.00	74.05
Mupad	N/A	8.65	0.00	81.22

Table 1.3: Antiderivative Grade distribution of each CAS

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



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



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

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

The third is due to an exception generated. Assigned **F(-2)**. This most likely indicates an interface problem between sagemath and the CAS (applicable only to FriCAS, Maxima and

Giac) or it could be an indication of an internal error in CAS. This type of error requires more investigations to determine the cause.

System	Number failed	Percentage normal failure	Percentage timeout failure	Percentage exception failure
Rubi	2	100.00 %	0.00 %	0.00 %
Mathematica	10	80.00 %	20.00 %	0.00 %
Maple	97	98.97 %	1.03 %	0.00 %
Fricas	270	69.26 %	1.11 %	29.63 %
Giac	228	80.70 %	1.32 %	17.98 %
Maxima	351	80.91 %	3.13 %	15.95 %
Sympy	310	87.42 %	3.87 %	8.71 %
Mupad	385	100.00 %	0.00 %	0.00 %

Table 1.4: Failure statistics for each CAS

1.3 Time and leaf size Performance

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

Mean size is the average leaf size produced by the CAS (before any normalization). The Normalized mean is relative to the mean size of the optimal anti-derivative given in the input files.

For example, if CAS has **Normalized mean** of 3, then the mean size of its leaf size is 3 times as large as the mean size of the optimal leaf size.

Median size is value of leaf size where half the values are larger than this and half are smaller (before any normalization). i.e. The Middle value.

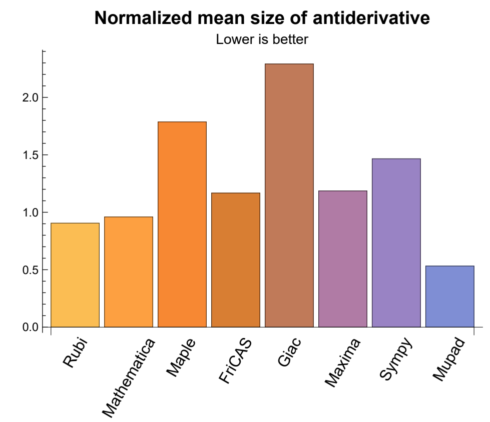
Similarly the **Normalized median** is relative to the median leaf size of the optimal.

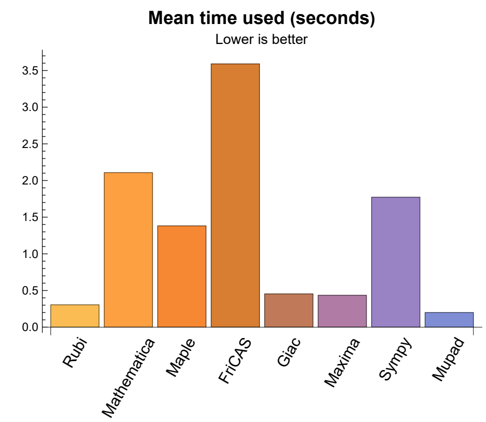
For example, if a CAS has Normalized median of 1.2, then its median is 1.2 as large as the median leaf size of the optimal.

System	Mean time (sec)	Mean size	Normalized mean	Median size	Normalized median
Rubi	0.30	250.89	0.91	144.00	1.00
Mathematica	2.11	244.06	0.96	136.00	0.90
Maple	1.38	671.66	1.79	206.00	1.40
Maxima	0.44	117.89	1.19	37.00	0.85
Fricas	3.59	188.35	1.17	65.00	0.97
Sympy	1.77	264.72	1.47	65.50	1.16
Giac	0.45	495.64	2.29	139.50	1.38
Mupad	0.20	27.74	0.53	-1.00	-0.01

Table 1.5: Time and leaf size performance for each CAS

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


Normalized mean size of antiderivative
Lower is better
0.0
0.5
1.0
1.5
2.0
Rubi
Mathematica
Maple
FriCAS
Giac
Maxima
Sympy
Mupad


Mean time used (seconds)
Lower is better
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
Rubi
Mathematica
Maple
FriCAS
Giac
Maxima
Sympy
Mupad

1.4 list of integrals that has no closed form antiderivative

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

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

Rubi {}

Mathematica {}

Maple {}

Maxima {}

Fricas {}

Sympy {}

Giac {}

Mupad {}

1.6 list of integrals solved by CAS but failed verification

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

Rubi $\{\}$

Mathematica $\{57, 84, 85, 101, 102, 111, 112, 213\}$

Maple Verification phase not implemented yet.

Maxima Verification phase not implemented yet.

Fricas Verification phase not implemented yet.

Sympy Verification phase not implemented yet.

Giac Verification phase not implemented yet.

Mupad Verification phase not implemented yet.

1.7 Timing

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

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

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

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

1.8 Verification

A verification phase was applied on the result of integration for `Rubi` and `Mathematica`.

Future version of this report will implement verification for the other CAS systems. For the integrals whose result was not run through a verification phase, it is assumed that the antiderivative was correct.

Verification phase also had 3 minutes time out. An integral whose result was not verified could still be correct, but further investigation is needed on those integrals. These integrals were marked in the summary table below and also in each integral separate section so they are easy to identify and locate.

1.9 Important notes about some of the results

1.9.1 Important note about Maxima results

Since tests were run in a batch mode, and using an automated script, then any integral where Maxima needed an interactive response from the user to answer a question during the evaluation of the integral will fail.

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

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

Such integrals can be identified by looking at the output of the integration in each section for Maxima. The exception message will indicate the cause of error.

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

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

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

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

```
maxima_lib.set('extra_integration_methods', '[]')
```

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

1.9.2 Important note about FriCAS result

There were few integrals which failed due to SageMath interface and not because FriCAS system could not do the integration.

These will fail With error `Exception raised: NotImplementedError`.

The number of such cases seems to be very small. About 1 or 2 percent of all integrals. These can be identified by looking at the exception message given in the result.

1.9.3 Important note about finding leaf size of antiderivative

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

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

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

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

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

  except Exception as ee:
        leafCount =1
```

1.9.4 Important note about Mupad results

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

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

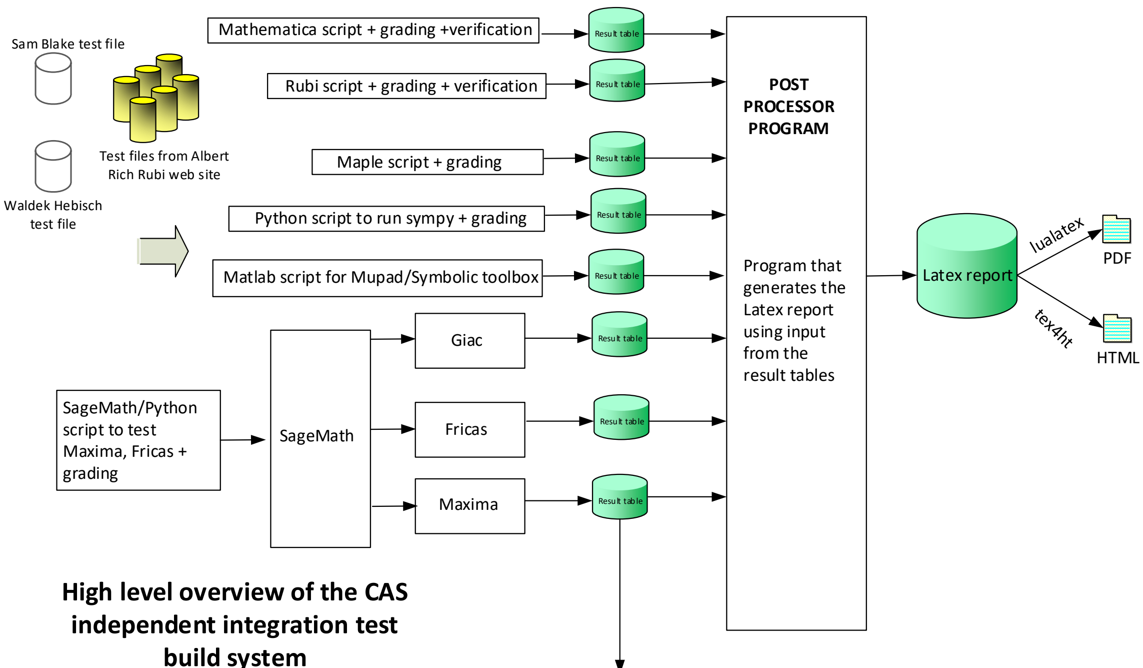
The following is an example of using Matlab's symbolic toolbox (Mupad) to solve an integral

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

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

1.10 Design of the test system

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



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

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

*The following fields are present only in **Rubi** Table file*

15. integer. Number of steps used.
16. integer. Number of rules used.
17. integer. Integrand leaf size.
18. real number. Ratio. Field 16 over field 17
19. String of form “{n,n,..}” which is list of the rules used by Rubi
20. String. The optimal antiderivative in Mathematica syntx

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August 26, 2022

Chapter 2

detailed summary tables of results

Local contents

2.1 List of integrals sorted by grade for each CAS

Local contents

2.1.1 Rubi

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

B grade: { }

C grade: { }

F grade: { 470, 474 }

2.1.2 Mathematica

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

B grade: { 84, 85, 100, 109, 125, 181, 205, 210, 211, 213, 373, 383, 388, 469 }

C grade: { 7, 54, 55, 56, 92, 101, 102, 110, 111, 112, 156, 157, 158, 159, 160, 161, 162, 164, 165, 166, 167, 168, 169, 170, 171, 187, 240, 241, 242, 243, 245, 246, 247, 248, 250, 251, 252, 253, 255, 256, 257, 259, 260, 261, 262, 265, 266, 267, 268, 269, 271, 272, 273, 274, 276, 277, 278, 279, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 350, 352, 353, 354, 355, 356, 357, 358, 359, 393, 394, 395, 396, 397, 398 }

F grade: { 28, 83, 173, 263, 300, 304, 432, 433, 434, 438 }

2.1.3 Maple

A grade: { 1, 2, 3, 4, 9, 10, 11, 12, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, 29, 30, 34, 47, 82, 87, 88, 89, 90, 97, 98, 99, 106, 107, 108, 122, 123, 124, 125, 127, 128, 129, 131, 132, 133, 134, 136, 137, 138, 139, 140, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 163, 164, 165, 166, 167, 172, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 194, 195, 196, 197, 198, 199, 200, 201, 205, 207, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 230, 231, 232, 237, 238, 240, 241, 242, 243, 244, 245, 247, 249, 254, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 275, 280, 282, 288, 290, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 312, 313, 314, 315, 316, 317, 318, 319, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 336, 337, 338, 339, 340, 341, 342, 343, 344, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 357, 358, 359, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 383, 387, 388, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 404, 411, 431, 434, 435, 436, 437, 438, 449, 450, 455, 456, 461, 462, 466, 469, 473, 474 }

B grade: { 5, 6, 7, 8, 14, 15, 39, 43, 48, 52, 57, 75, 76, 77, 79, 80, 81, 91, 92, 93, 94, 95, 96, 100, 101, 102, 103, 104, 105, 109, 110, 111, 112, 113, 115, 116, 117, 120, 121, 126, 130, 158, 159, 160, 161, 162, 168, 169, 170, 171, 193, 202, 203, 204, 206, 208, 209, 210, 211, 212, 213, 214, 227, 228, 229, 233, 234, 235, 236, 239, 246, 248, 250, 251, 252, 253, 255, 256, 257, 271, 272, 273, 274, 276, 277, 278, 279, 284, 286, 320, 321, 322, 335, 356, 386, 432, 433 }

C grade: { 31, 32, 33, 35, 36, 37, 38, 40, 41, 42, 44, 45, 46, 49, 50, 51, 53, 54, 55, 56, 58, 59, 60, 62, 63, 64, 66, 67, 68, 70, 71, 72, 281, 283, 285, 287, 289 }

F grade: { 13, 25, 28, 61, 65, 69, 73, 74, 78, 83, 84, 85, 86, 114, 118, 119, 135, 141, 142, 173, 174, 175, 291, 292, 293, 294, 295, 296, 297, 298, 299, 310, 311, 345, 360, 379, 380, 381, 382, 384, 385, 389, 400, 401, 402, 403, 405, 406, 407, 408, 409, 410, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 451, 452, 453, 454, 457, 458, 459, 460, 463, 464, 465, 467, 468, 470, 471, 472 }

2.1.4 Maxima

A grade: { 1, 2, 3, 4, 12, 20, 21, 25, 26, 27, 29, 30, 46, 72, 87, 88, 89, 90, 97, 98, 99, 106, 107, 108, 125, 146, 150, 154, 172, 176, 181, 220, 226, 232, 244, 249, 254, 258, 264, 270, 275, 280, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 312, 333, 336, 337, 340, 341, 342, 343, 344, 346, 347, 348, 349, 350, 351, 361, 362, 363, 365, 366, 367, 368, 369, 370, 371, 372, 373, 375, 376, 377, 378, 387, 388, 399, 400, 404, 411, 431, 435, 436, 437, 449, 450, 455, 456, 461, 462, 466, 470, 473 }

B grade: { 122, 123, 124, 177, 178, 179, 180, 183, 184, 186, 195, 315, 322, 328, 329, 331, 332, 335, 338, 339, 386 }

C grade: { }

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

2.1.5 FriCAS

A grade: { 1, 2, 3, 4, 9, 10, 11, 12, 20, 21, 25, 26, 27, 29, 30, 82, 87, 88, 89, 90, 97, 98, 99, 106, 107, 108, 115, 116, 117, 122, 123, 124, 125, 127, 128, 129, 130, 131, 132, 133, 134, 138, 139, 140, 146, 150, 154, 172, 176, 178, 179, 180, 181, 184, 191, 192, 195, 201, 220, 226, 232, 238, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 312, 313, 314, 315, 320, 321, 322, 327, 328, 329, 330, 331, 332, 336, 337, 340, 341, 342, 343, 344, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 361, 362, 363, 365, 366, 367, 368, 369, 370, 371, 372, 375, 376, 377, 378, 386, 387, 388, 390, 391, 392, 393, 394, 395, 396, 399, 400, 401, 402, 403, 404, 408, 409, 410, 411, 415, 416, 431, 435, 436, 437, 439, 440, 441, 442, 449, 450, 451, 452, 453, 454, 455, 456, 461, 462, 463, 464, 465, 466, 470, 471, 472, 473, 474 }

B grade: { 6, 7, 8, 93, 94, 95, 103, 177, 183, 185, 186, 187, 188, 189, 190, 197, 198, 199, 200, 206, 207, 208, 209, 214, 335, 373, 469 }

C grade: { 281, 282, 283, 284, 285, 286, 287, 288, 289, 290 }

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

2.1.6 Sympy

A grade: { 1, 2, 3, 4, 10, 11, 12, 20, 21, 25, 26, 27, 29, 30, 87, 90, 124, 125, 131, 132, 133, 134, 138, 139, 140, 146, 150, 154, 172, 176, 181, 220, 226, 232, 238, 244, 249, 254, 264, 270, 275, 280, 282, 283, 284, 300, 302, 303, 304, 306, 307, 308, 309, 312, 336, 337, 340, 341, 342, 343, 344, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 361, 362, 363, 366, 367, 368, 369, 370, 371, 372, 373, 375, 376, 377, 378, 386, 387, 388, 399, 435, 437, 439, 440, 441, 442, 449, 450, 451, 452, 453, 454, 455, 456, 461, 462, 463, 464, 465, 466, 473 }

B grade: { 9, 88, 89, 97, 98, 99, 106, 107, 108, 115, 116, 117, 122, 123, 177, 178, 179, 180, 188, 189, 190, 191, 192, 197, 198, 199, 200, 201, 206, 207, 208, 209, 214, 320, 321, 322, 327, 328, 329, 330, 331, 332, 400 }

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

F grade: { 5, 6, 7, 8, 13, 14, 15, 16, 17, 18, 19, 22, 23, 24, 28, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 91, 92, 93, 94, 95, 96, 100, 101, 102, 103, 104, 105, 109, 110, 111, 112, 113, 114, 118, 119, 120, 121, 126, 127, 128, 129, 130, 135, 136, 137, 141, 142, 143, 144, 145, 147, 148, 149, 151, 152, 153, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 173, 174, 175, 182, 183, 184, 185, 186, 187, 193, 194, 195, 196, 202, 203, 204, 205, 210, 211, 212, 213, 215, 216, 217, 218, 219, 221, 222, 223, 224, 225, 227, 228, 229, 230, 231, 233, 234, 235, 236, 237, 239, 240, 241, 242, 243, 245, 246, 247, 248, 250, 251, 252, 253, 255, 256, 257, 258, 259, 260, 261, 262, 263, 265, 266, 267, 268, 269, 271, 272, 273, 274, 276, 277, 278, 279, 281, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 301, 305, 310, 311, 313, 314, 315, 316, 317, 318, 319, 323, 324, 325, 326, 333, 334, 335, 338, 339, 345, 360, 364, 374, 379, 383, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 436, 438, 443, 444, 445, 446, 447, 448, 457, 458, 459, 460, 467, 468, 469, 470, 471, 472, 474 }

2.1.7 Giac

A grade: { 1, 2, 3, 4, 11, 12, 16, 17, 18, 19, 20, 21, 25, 26, 27, 29, 30, 82, 87, 90, 124, 125, 127, 131, 132, 133, 134, 138, 139, 140, 143, 144, 145, 146, 148, 149, 150, 151, 152, 153, 154, 176, 177, 178, 179, 180, 181, 191, 192, 217, 218, 219, 220, 226, 232, 238, 244, 249, 254, 258, 264, 270, 275, 280, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 335, 336, 337, 340, 341, 342, 343, 344, 361, 362, 363, 365, 375, 376, 377, 378, 387, 388, 399, 400, 404, 411, 416, 431, 435, 436, 437, 439, 440, 441, 442, 449, 450, 451, 452, 453, 454, 455, 456, 461, 462, 466, 473, 474 }

B grade: { 6, 9, 10, 22, 23, 24, 88, 89, 97, 98, 99, 106, 107, 108, 115, 116, 117, 122, 123, 128, 129, 130, 147, 183, 184, 185, 186, 187, 188, 189, 190, 195, 197, 198, 199, 200, 201, 206, 207, 208, 209, 214, 215, 216, 221, 222, 223, 224, 225, 227, 228, 229, 230, 231, 233, 234, 235, 236, 237, 239, 346, 347, 348, 349, 350, 351, 366, 367, 368, 369, 370, 371, 372, 373, 386, 469 }

C grade: { 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 240, 241, 242, 243, 245, 246, 247, 248, 250, 251, 252, 253, 255, 256, 257, 259, 260, 261, 262, 263 }

F grade: { 5, 7, 8, 13, 14, 15, 28, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 83, 84, 85, 86, 91, 92, 93, 94, 95, 96, 100, 101, 102, 103, 104, 105, 109, 110, 111, 112, 113, 114, 118, 119, 120, 121, 126, 135, 136, 137, 141, 142, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 182, 193, 194, 196, 202, 203, 204, 205, 210, 211, 212, 213, 265, 266, 267, 268, 269, 271, 272, 273, 274, 276, 277, 278, 279, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 310, 311, 333, 334, 338, 339, 345, 352, 353, 354, 355, 356, 357, 358, 359, 360, 364, 374, 379, 380, 381, 382, 383, 384, 385, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 401, 402, 403, 405, 406, 407, 408, 409, 410, 412, 413, 414, 415, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 432, 433, 434, 438, 443, 444, 445, 446, 447, 448, 457, 458, 459, 460, 463, 464, 465, 467, 468, 470, 471, 472 }

2.1.8 Mupad

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

B grade: { 3, 4, 12, 125, 134, 140, 181, 192, 201, 209, 214, 327, 328, 329, 330, 331, 332, 343, 344, 345, 346, 360, 363, 364, 372, 373, 374, 375, 376, 388, 399, 400, 404, 411, 437, 438, 466, 469, 472, 473, 474 }

C grade: { }

F grade: { 1, 2, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 19, 22, 23, 24, 28, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 83, 84, 85, 86, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 126, 127, 128, 129, 130, 131, 132, 133, 135, 136, 137, 138, 139, 141, 142, 143, 144, 145, 147, 148, 149, 151, 152, 153, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 173, 174, 175, 177, 178, 179, 180, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 193, 194, 195, 196, 197, 198, 199, 200, 202, 203, 204, 205, 206, 207, 208, 210, 211, 212, 213, 215, 216, 217, 218, 219, 221, 222, 223, 224, 225, 227, 228, 229, 230, 231, 233, 234, 235, 236, 237, 239, 240, 241, 242, 243, 245, 246, 247, 248, 250, 251, 252, 253, 255, 256, 257, 259, 260, 261, 262, 263, 265, 266, 267, 268, 269, 271, 272, 273, 274, 276, 277, 278, 279, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 310, 311, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 333, 334, 335, 338, 339, 340, 341, 342, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 361, 362, 365, 366, 367, 368, 369, 370, 371, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 401, 402, 403, 405, 406, 407, 408, 409, 410, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 432, 433, 434, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 451, 452, 453, 454, 457, 458, 459, 460, 463, 464, 465, 467, 468, 470, 471 }

2.2 Detailed conclusion table per each integral for all CAS systems

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

In this table,the column `N.S.` in the table below, which stands for **normalized size** is defined as $\frac{\text{antiderivative leaf size}}{\text{optimal antiderivative leaf size}}$. To help make the table fit, **`Mathematica`** was abbreviated to **`MMA`**.

Problem 1	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	179	179	165	265	229	197	316	317	-1
N.S.	1	1.00	0.92	1.48	1.28	1.10	1.77	1.77	-0.01
time (sec)	N/A	0.125	0.103	0.118	0.483	2.364	0.297	0.394	0.000

Problem 2	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	121	193	150	136	190	194	-1
N.S.	1	1.00	0.98	1.56	1.21	1.10	1.53	1.56	-0.01
time (sec)	N/A	0.067	0.067	0.098	0.481	2.345	0.200	0.413	0.000

Problem 3	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	92	97	83	80	99	98	77
N.S.	1	1.00	0.94	0.99	0.85	0.82	1.01	1.00	0.79
time (sec)	N/A	0.035	0.034	0.007	0.478	1.892	0.116	0.380	0.409

Problem 4	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	30	29	31	26	29	28
N.S.	1	1.00	1.00	1.00	0.97	1.03	0.87	0.97	0.93
time (sec)	N/A	0.010	0.007	0.000	0.473	1.652	0.064	0.371	0.282

Problem 5	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	229	229	214	769	0	0	0	0	-1
N.S.	1	1.00	0.93	3.36	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.209	0.114	0.631	0.000	0.000	0.000	0.000	0.000

Problem 6	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	83	201	0	359	0	200	-1
N.S.	1	1.00	0.98	2.36	0.00	4.22	0.00	2.35	-0.01
time (sec)	N/A	0.039	0.103	0.822	0.000	2.480	0.000	0.394	0.000

Problem 7	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	207	305	0	657	0	0	-1
N.S.	1	1.00	1.53	2.26	0.00	4.87	0.00	0.00	-0.01
time (sec)	N/A	0.062	0.254	0.322	0.000	2.447	0.000	0.000	0.000

Problem 8	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	191	191	241	564	0	1099	0	0	-1
N.S.	1	1.00	1.26	2.95	0.00	5.75	0.00	0.00	-0.01
time (sec)	N/A	0.104	0.347	0.122	0.000	4.347	0.000	0.000	0.000

Problem 9	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	374	374	355	660	0	435	743	816	-1
N.S.	1	1.00	0.95	1.76	0.00	1.16	1.99	2.18	-0.00
time (sec)	N/A	0.480	0.276	0.178	0.000	2.131	0.598	0.427	0.000

Problem 10	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	242	242	249	420	0	289	454	487	-1
N.S.	1	1.00	1.03	1.74	0.00	1.19	1.88	2.01	-0.00
time (sec)	N/A	0.323	0.196	0.141	0.000	2.846	0.346	0.405	0.000

Problem 11	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	142	142	147	198	0	163	233	244	-1
N.S.	1	1.00	1.04	1.39	0.00	1.15	1.64	1.72	-0.01
time (sec)	N/A	0.202	0.183	0.080	0.000	2.127	0.184	0.402	0.000

Problem 12	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	47	72	72	65	82	75	142
N.S.	1	1.00	1.00	1.53	1.53	1.38	1.74	1.60	3.02
time (sec)	N/A	0.042	0.031	0.056	0.485	2.562	0.107	0.387	0.370

Problem 13	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	347	347	330	0	0	0	0	0	-1
N.S.	1	1.00	0.95	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.348	0.258	0.078	0.000	0.000	0.000	0.000	0.000

Problem 14	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	309	309	230	666	0	0	0	0	-1
N.S.	1	1.00	0.74	2.16	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.369	0.231	0.969	0.000	0.000	0.000	0.000	0.000

Problem 15	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	401	401	314	1179	0	0	0	0	-1
N.S.	1	1.00	0.78	2.94	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.471	0.747	1.481	0.000	0.000	0.000	0.000	0.000

Problem 16	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	393	393	304	327	0	0	0	609	-1
N.S.	1	1.00	0.77	0.83	0.00	0.00	0.00	1.55	-0.00
time (sec)	N/A	0.820	0.471	0.161	0.000	0.000	0.000	0.436	0.000

Problem 17	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	244	244	187	206	0	0	0	337	-1
N.S.	1	1.00	0.77	0.84	0.00	0.00	0.00	1.38	-0.00
time (sec)	N/A	0.490	0.272	0.125	0.000	0.000	0.000	0.422	0.000

Problem 18	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	115	115	98	103	0	0	0	139	-1
N.S.	1	1.00	0.85	0.90	0.00	0.00	0.00	1.21	-0.01
time (sec)	N/A	0.230	0.113	0.071	0.000	0.000	0.000	0.405	0.000

Problem 19	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	44	48	0	0	0	49	-1
N.S.	1	1.00	0.83	0.91	0.00	0.00	0.00	0.92	-0.02
time (sec)	N/A	0.048	0.021	0.000	0.000	0.000	0.000	0.406	0.000

Problem 20	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	21	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.020	0.148	2.974	0.000	0.000	0.000	0.000	0.000

Problem 21	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	21	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.019	0.287	2.158	0.000	0.000	0.000	0.000	0.000

Problem 22	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	362	362	290	526	0	0	0	1276	-1
N.S.	1	1.00	0.80	1.45	0.00	0.00	0.00	3.52	-0.00
time (sec)	N/A	0.365	1.121	0.336	0.000	0.000	0.000	0.471	0.000

Problem 23	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	181	181	149	257	0	0	0	554	-1
N.S.	1	1.00	0.82	1.42	0.00	0.00	0.00	3.06	-0.01
time (sec)	N/A	0.207	0.409	0.129	0.000	0.000	0.000	0.449	0.000

Problem 24	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	72	76	0	0	0	192	-1
N.S.	1	1.00	0.84	0.88	0.00	0.00	0.00	2.23	-0.01
time (sec)	N/A	0.107	0.068	0.070	0.000	0.000	0.000	0.398	0.000

Problem 25	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	F(-1)	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	21	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.019	3.990	180.000	0.000	0.000	0.000	0.000	0.000

Problem 26	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	21	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.019	8.405	1.973	0.000	0.000	0.000	0.000	0.000

Problem 27	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	76	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.137	8.479	0.217	0.000	0.000	0.000	0.000	0.000

Problem 28	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	F	F	F	F	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	154	154	0	0	0	0	0	0	-1
N.S.	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.063	0.032	0.233	0.000	0.000	0.000	0.000	0.000

Problem 29	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	21	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.018	0.278	2.372	0.000	0.000	0.000	0.000	0.000

Problem 30	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	21	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.019	0.583	1.357	0.000	0.000	0.000	0.000	0.000

Problem 31	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	669	669	356	1408	0	0	0	0	-1
N.S.	1	1.00	0.53	2.10	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.485	0.295	0.889	0.000	0.000	0.000	0.000	0.000

Problem 32	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	450	450	237	981	0	0	0	0	-1
N.S.	1	1.00	0.53	2.18	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.366	0.347	0.588	0.000	0.000	0.000	0.000	0.000

Problem 33	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	238	238	132	628	0	0	0	0	-1
N.S.	1	1.00	0.55	2.64	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.174	0.201	0.501	0.000	0.000	0.000	0.000	0.000

Problem 34	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	736	736	368	1206	0	0	0	0	-1
N.S.	1	1.00	0.50	1.64	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.322	0.683	0.607	0.000	0.000	0.000	0.000	0.000

Problem 35	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F(-2)	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	860	860	600	1573	0	0	0	0	-1
N.S.	1	1.00	0.70	1.83	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.865	1.734	0.858	0.000	0.000	0.000	0.000	0.000

Problem 36	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	959	959	463	2096	0	0	0	0	-1
N.S.	1	1.00	0.48	2.19	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.636	0.816	0.934	0.000	0.000	0.000	0.000	0.000

Problem 37	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	680	680	332	1552	0	0	0	0	-1
N.S.	1	1.00	0.49	2.28	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.486	0.339	0.631	0.000	0.000	0.000	0.000	0.000

Problem 38	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	370	370	216	1014	0	0	0	0	-1
N.S.	1	1.00	0.58	2.74	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.228	0.221	0.494	0.000	0.000	0.000	0.000	0.000

Problem 39	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1073	1073	507	2742	0	0	0	0	-1
N.S.	1	1.00	0.47	2.56	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.546	0.986	0.514	0.000	0.000	0.000	0.000	0.000

Problem 40	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-2)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1281	1281	587	2935	0	0	0	0	-1
N.S.	1	1.00	0.46	2.29	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.777	0.688	0.993	0.000	0.000	0.000	0.000	0.000

Problem 41	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	940	940	390	2116	0	0	0	0	-1
N.S.	1	1.00	0.41	2.25	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.600	0.492	0.700	0.000	0.000	0.000	0.000	0.000

Problem 42	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	517	517	251	1423	0	0	0	0	-1
N.S.	1	1.00	0.49	2.75	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.275	0.292	0.533	0.000	0.000	0.000	0.000	0.000

Problem 43	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1648	1648	787	4685	0	0	0	0	-1
N.S.	1	1.00	0.48	2.84	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.893	1.833	0.595	0.000	0.000	0.000	0.000	0.000

Problem 44	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	450	450	343	861	0	0	0	0	-1
N.S.	1	1.00	0.76	1.91	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.377	0.692	0.833	0.000	0.000	0.000	0.000	0.000

Problem 45	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	270	270	266	507	0	0	0	0	-1
N.S.	1	1.00	0.99	1.88	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.274	0.455	0.615	0.000	0.000	0.000	0.000	0.000

Problem 46	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	172	247	90	0	0	0	-1
N.S.	1	1.00	1.37	1.96	0.71	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.137	0.239	0.488	0.487	0.000	0.000	0.000	0.000

Problem 47	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	380	380	232	502	0	0	0	0	-1
N.S.	1	1.00	0.61	1.32	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.417	0.136	0.408	0.000	0.000	0.000	0.000	0.000

Problem 48	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	507	507	295	1678	0	0	0	0	-1
N.S.	1	1.00	0.58	3.31	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.501	0.351	0.760	0.000	0.000	0.000	0.000	0.000

Problem 49	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-2)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	315	315	194	1158	0	0	0	0	-1
N.S.	1	1.00	0.62	3.68	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.382	0.742	0.813	0.000	0.000	0.000	0.000	0.000

Problem 50	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	213	213	156	867	0	0	0	0	-1
N.S.	1	1.00	0.73	4.07	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.294	0.527	0.612	0.000	0.000	0.000	0.000	0.000

Problem 51	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	135	444	0	0	0	0	-1
N.S.	1	1.00	0.94	3.08	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.128	0.374	0.489	0.000	0.000	0.000	0.000	0.000

Problem 52	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	654	654	359	1902	0	0	0	0	-1
N.S.	1	1.00	0.55	2.91	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.813	1.385	0.696	0.000	0.000	0.000	0.000	0.000

Problem 53	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	528	754	868	6743	0	0	0	0	-1
N.S.	1	1.43	1.64	12.77	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.498	2.137	1.010	0.000	0.000	0.000	0.000	0.000

Problem 54	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	410	410	366	5114	0	0	0	0	-1
N.S.	1	1.00	0.89	12.47	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.289	0.811	0.795	0.000	0.000	0.000	0.000	0.000

Problem 55	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	271	354	285	3783	0	0	0	0	-1
N.S.	1	1.31	1.05	13.96	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.253	0.627	0.684	0.000	0.000	0.000	0.000	0.000

Problem 56	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	228	228	208	2237	0	0	0	0	-1
N.S.	1	1.00	0.91	9.81	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.138	0.512	0.566	0.000	0.000	0.000	0.000	0.000

Problem 57	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1300	1300	2078	8295	0	0	0	0	-1
N.S.	1	1.00	1.60	6.38	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.214	12.596	0.709	0.000	0.000	0.000	0.000	0.000

Problem 58	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1154	1154	696	2754	0	0	0	0	-1
N.S.	1	1.00	0.60	2.39	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.019	0.793	0.877	0.000	0.000	0.000	0.000	0.000

Problem 59	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	737	737	441	1870	0	0	0	0	-1
N.S.	1	1.00	0.60	2.54	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.673	0.646	0.718	0.000	0.000	0.000	0.000	0.000

Problem 60	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	396	396	224	1236	0	0	0	0	-1
N.S.	1	1.00	0.57	3.12	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.332	0.199	0.503	0.000	0.000	0.000	0.000	0.000

Problem 61	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1442	1442	516	0	0	0	0	0	-1
N.S.	1	1.00	0.36	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.035	0.973	0.014	0.000	0.000	0.000	0.000	0.000

Problem 62	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1685	1685	872	4216	0	0	0	0	-1
N.S.	1	1.00	0.52	2.50	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.560	1.701	0.931	0.000	0.000	0.000	0.000	0.000

Problem 63	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1108	1108	616	3063	0	0	0	0	-1
N.S.	1	1.00	0.56	2.76	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.953	0.724	0.817	0.000	0.000	0.000	0.000	0.000

Problem 64	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	621	621	395	2021	0	0	0	0	-1
N.S.	1	1.00	0.64	3.25	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.458	0.453	0.512	0.000	0.000	0.000	0.000	0.000

Problem 65	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1992	1992	740	0	0	0	0	0	-1
N.S.	1	1.00	0.37	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.641	1.716	0.004	0.000	0.000	0.000	0.000	0.000

Problem 66	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-2)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	2290	2290	1114	6031	0	0	0	0	-1
N.S.	1	1.00	0.49	2.63	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.176	1.276	1.016	0.000	0.000	0.000	0.000	0.000

Problem 67	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-2)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1533	1533	742	4214	0	0	0	0	-1
N.S.	1	1.00	0.48	2.75	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.386	0.974	0.753	0.000	0.000	0.000	0.000	0.000

Problem 68	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	878	878	470	2852	0	0	0	0	-1
N.S.	1	1.00	0.54	3.25	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.613	0.635	0.560	0.000	0.000	0.000	0.000	0.000

Problem 69	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	2989	2989	1277	0	0	0	0	0	-1
N.S.	1	1.00	0.43	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.357	3.095	0.003	0.000	0.000	0.000	0.000	0.000

Problem 70	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	692	692	582	1651	0	0	0	0	-1
N.S.	1	1.00	0.84	2.39	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.459	0.901	0.863	0.000	0.000	0.000	0.000	0.000

Problem 71	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	410	410	400	936	0	0	0	0	-1
N.S.	1	1.00	0.98	2.28	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.350	0.895	0.632	0.000	0.000	0.000	0.000	0.000

Problem 72	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	171	207	291	460	184	0	0	0	-1
N.S.	1	1.21	1.70	2.69	1.08	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.247	0.385	0.535	0.497	0.000	0.000	0.000	0.000

Problem 73	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	589	589	357	0	0	0	0	0	-1
N.S.	1	1.00	0.61	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.670	0.247	0.658	0.000	0.000	0.000	0.000	0.000

Problem 74	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1113	1113	651	0	0	0	0	0	-1
N.S.	1	1.00	0.58	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.007	0.503	0.004	0.000	0.000	0.000	0.000	0.000

Problem 75	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-2)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	738	738	325	2663	0	0	0	0	-1
N.S.	1	1.00	0.44	3.61	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.793	2.363	0.995	0.000	0.000	0.000	0.000	0.000

Problem 76	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	513	513	259	1861	0	0	0	0	-1
N.S.	1	1.00	0.50	3.63	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.689	1.341	0.701	0.000	0.000	0.000	0.000	0.000

Problem 77	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	410	410	237	1046	0	0	0	0	-1
N.S.	1	1.00	0.58	2.55	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.410	0.914	0.613	0.000	0.000	0.000	0.000	0.000

Problem 78	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1137	1137	597	0	0	0	0	0	-1
N.S.	1	1.00	0.53	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.462	3.408	0.004	0.000	0.000	0.000	0.000	0.000

Problem 79	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1589	1589	715	13140	0	0	0	0	-1
N.S.	1	1.00	0.45	8.27	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.390	6.165	0.996	0.000	0.000	0.000	0.000	0.000

Problem 80	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1025	1025	618	9720	0	0	0	0	-1
N.S.	1	1.00	0.60	9.48	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.865	4.730	0.730	0.000	0.000	0.000	0.000	0.000

Problem 81	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	641	641	591	5894	0	0	0	0	-1
N.S.	1	1.00	0.92	9.20	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.517	4.529	0.690	0.000	0.000	0.000	0.000	0.000

Problem 82	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	38	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.128	0.105	1.970	0.000	0.000	0.000	0.000	0.000

Problem 83	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	F	F	F	F	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	634	634	0	0	0	0	0	0	-1
N.S.	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.601	135.818	3.231	0.000	0.000	0.000	0.000	0.000

Problem 84	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	514	514	10642	0	0	0	0	0	-1
N.S.	1	1.00	20.70	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.519	121.193	3.035	0.000	0.000	0.000	0.000	0.000

Problem 85	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	390	390	2724	0	0	0	0	0	-1
N.S.	1	1.00	6.98	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.423	8.430	2.583	0.000	0.000	0.000	0.000	0.000

Problem 86	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	237	237	246	0	0	0	0	0	-1
N.S.	1	1.00	1.04	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.230	0.017	0.073	0.000	0.000	0.000	0.000	0.000

Problem 87	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	38	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.136	0.140	1.941	0.000	0.000	0.000	0.000	0.000

Problem 88	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	351	351	305	490	524	421	770	784	-1
N.S.	1	1.00	0.87	1.40	1.49	1.20	2.19	2.23	-0.00
time (sec)	N/A	0.677	0.273	0.124	0.492	1.946	0.510	0.433	0.000

Problem 89	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	248	248	211	338	353	287	502	491	-1
N.S.	1	1.00	0.85	1.36	1.42	1.16	2.02	1.98	-0.00
time (sec)	N/A	0.366	0.203	0.118	0.478	1.538	0.352	0.405	0.000

Problem 90	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	148	148	138	198	203	170	267	259	-1
N.S.	1	1.00	0.93	1.34	1.37	1.15	1.80	1.75	-0.01
time (sec)	N/A	0.140	0.126	0.007	0.468	1.937	0.210	0.406	0.000

Problem 91	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	344	344	602	1593	0	0	0	0	-1
N.S.	1	1.00	1.75	4.63	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.478	0.874	1.321	0.000	0.000	0.000	0.000	0.000

Problem 92	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	358	358	438	1006	0	0	0	0	-1
N.S.	1	1.00	1.22	2.81	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.682	1.221	1.694	0.000	0.000	0.000	0.000	0.000

Problem 93	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	202	202	263	800	0	1145	0	0	-1
N.S.	1	1.00	1.30	3.96	0.00	5.67	0.00	0.00	-0.00
time (sec)	N/A	0.256	0.352	0.133	0.000	8.863	0.000	0.000	0.000

Problem 94	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	257	257	321	1258	0	1887	0	0	-1
N.S.	1	1.00	1.25	4.89	0.00	7.34	0.00	0.00	-0.00
time (sec)	N/A	0.302	0.480	0.129	0.000	38.352	0.000	0.000	0.000

Problem 95	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	360	360	418	1793	0	2824	0	0	-1
N.S.	1	1.00	1.16	4.98	0.00	7.84	0.00	0.00	-0.00
time (sec)	N/A	0.476	0.779	1.231	0.000	104.667	0.000	0.000	0.000

Problem 96	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F(-1)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	457	457	494	2420	0	0	0	0	-1
N.S.	1	1.00	1.08	5.30	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.675	0.877	0.109	0.000	0.000	0.000	0.000	0.000

Problem 97	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	512	509	463	705	853	639	1263	1337	-1
N.S.	1	0.99	0.90	1.38	1.67	1.25	2.47	2.61	-0.00
time (sec)	N/A	1.378	0.281	0.276	0.490	3.858	0.786	0.437	0.000

Problem 98	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	361	361	323	502	581	437	821	847	-1
N.S.	1	1.00	0.89	1.39	1.61	1.21	2.27	2.35	-0.00
time (sec)	N/A	0.713	0.192	0.178	0.497	3.400	0.580	0.412	0.000

Problem 99	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	223	223	186	307	340	256	449	448	-1
N.S.	1	1.00	0.83	1.38	1.52	1.15	2.01	2.01	-0.00
time (sec)	N/A	0.310	0.179	0.135	0.479	2.706	0.377	0.427	0.000

Problem 100	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	459	459	928	2485	0	0	0	0	-1
N.S.	1	1.00	2.02	5.41	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.566	2.000	0.865	0.000	0.000	0.000	0.000	0.000

Problem 101	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	460	460	770	1958	0	0	0	0	-1
N.S.	1	1.00	1.67	4.26	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.599	1.848	1.718	0.000	0.000	0.000	0.000	0.000

Problem 102	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	488	488	939	2732	0	0	0	0	-1
N.S.	1	1.00	1.92	5.60	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.920	4.395	2.837	0.000	0.000	0.000	0.000	0.000

Problem 103	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	349	349	442	2140	0	2872	0	0	-1
N.S.	1	1.00	1.27	6.13	0.00	8.23	0.00	0.00	-0.00
time (sec)	N/A	0.429	1.096	0.134	0.000	203.909	0.000	0.000	0.000

Problem 104	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F(-1)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	470	470	575	2965	0	0	0	0	-1
N.S.	1	1.00	1.22	6.31	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.653	1.800	0.112	0.000	0.000	0.000	0.000	0.000

Problem 105	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F(-1)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	593	593	682	4037	0	0	0	0	-1
N.S.	1	1.00	1.15	6.81	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.893	1.520	0.114	0.000	0.000	0.000	0.000	0.000

Problem 106	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	684	684	619	932	1215	885	1809	2010	-1
N.S.	1	1.00	0.90	1.36	1.78	1.29	2.64	2.94	-0.00
time (sec)	N/A	3.171	0.409	0.154	0.494	2.544	1.190	0.444	0.000

Problem 107	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	484	482	431	674	834	612	1197	1287	-1
N.S.	1	1.00	0.89	1.39	1.72	1.26	2.47	2.66	-0.00
time (sec)	N/A	1.401	0.274	0.108	0.485	2.339	0.799	0.440	0.000

Problem 108	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	308	308	265	428	494	369	658	692	-1
N.S.	1	1.00	0.86	1.39	1.60	1.20	2.14	2.25	-0.00
time (sec)	N/A	0.621	0.161	0.007	0.478	3.371	0.540	0.418	0.000

Problem 109	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	623	623	1650	3470	0	0	0	0	-1
N.S.	1	1.00	2.65	5.57	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.811	4.955	1.260	0.000	0.000	0.000	0.000	0.000

Problem 110	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	617	617	1168	2986	0	0	0	0	-1
N.S.	1	1.00	1.89	4.84	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.121	3.398	3.270	0.000	0.000	0.000	0.000	0.000

Problem 111	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1016	1016	1556	4586	0	0	0	0	-1
N.S.	1	1.00	1.53	4.51	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.903	6.088	3.940	0.000	0.000	0.000	0.000	0.000

Problem 112	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1278	1278	1921	5711	0	0	0	0	-1
N.S.	1	1.00	1.50	4.47	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.047	6.401	6.754	0.000	0.000	0.000	0.000	0.000

Problem 113	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	935	935	574	3108	0	0	0	0	-1
N.S.	1	1.00	0.61	3.32	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.154	1.122	1.892	0.000	0.000	0.000	0.000	0.000

Problem 114	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1678	1678	903	0	0	0	0	0	-1
N.S.	1	1.00	0.54	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.728	2.816	0.981	0.000	0.000	0.000	0.000	0.000

Problem 115	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1016	1016	734	2600	0	1590	2992	3444	-1
N.S.	1	1.00	0.72	2.56	0.00	1.56	2.94	3.39	-0.00
time (sec)	N/A	0.996	0.677	0.555	0.000	3.171	1.441	0.496	0.000

Problem 116	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	701	701	534	1633	0	1057	1935	2166	-1
N.S.	1	1.00	0.76	2.33	0.00	1.51	2.76	3.09	-0.00
time (sec)	N/A	0.757	0.364	0.342	0.000	2.499	0.915	0.453	0.000

Problem 117	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	425	425	364	870	0	600	1059	1145	-1
N.S.	1	1.00	0.86	2.05	0.00	1.41	2.49	2.69	-0.00
time (sec)	N/A	0.485	0.248	0.253	0.000	2.068	0.606	0.450	0.000

Problem 118	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1067	1067	556	0	0	0	0	0	-1
N.S.	1	1.00	0.52	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.353	0.460	0.303	0.000	0.000	0.000	0.000	0.000

Problem 119	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1323	1323	688	0	0	0	0	0	-1
N.S.	1	1.00	0.52	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.736	0.849	0.471	0.000	0.000	0.000	0.000	0.000

Problem 120	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	520	520	307	1427	0	0	0	0	-1
N.S.	1	1.00	0.59	2.74	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.150	0.287	1.723	0.000	0.000	0.000	0.000	0.000

Problem 121	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	920	920	526	2636	0	0	0	0	-1
N.S.	1	1.00	0.57	2.87	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.823	0.545	3.820	0.000	0.000	0.000	0.000	0.000

Problem 122	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	137	99	213	333	93	255	284	-1
N.S.	1	1.00	0.72	1.55	2.43	0.68	1.86	2.07	-0.01
time (sec)	N/A	0.135	0.064	0.038	0.467	2.752	0.300	0.415	0.000

Problem 123	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	94	77	137	220	74	170	173	-1
N.S.	1	1.00	0.82	1.46	2.34	0.79	1.81	1.84	-0.01
time (sec)	N/A	0.082	0.045	0.004	0.467	2.074	0.202	0.405	0.000

Problem 124	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	62	79	153	58	104	91	-1
N.S.	1	1.00	0.78	0.99	1.91	0.72	1.30	1.14	-0.01
time (sec)	N/A	0.053	0.032	0.005	0.467	2.611	0.114	0.412	0.000

Problem 125	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	154	31	30	39	46	30	86
N.S.	1	1.00	4.40	0.89	0.86	1.11	1.31	0.86	2.46
time (sec)	N/A	0.011	0.228	0.007	0.467	2.860	0.070	0.396	0.562

Problem 126	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	181	181	197	579	0	0	0	0	-1
N.S.	1	1.00	1.09	3.20	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.187	0.012	0.640	0.000	0.000	0.000	0.000	0.000

Problem 127	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	66	82	0	233	0	79	-1
N.S.	1	1.00	1.03	1.28	0.00	3.64	0.00	1.23	-0.02
time (sec)	N/A	0.056	0.034	0.147	0.000	2.898	0.000	0.404	0.000

Problem 128	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	125	124	0	325	0	243	-1
N.S.	1	1.00	1.21	1.20	0.00	3.16	0.00	2.36	-0.01
time (sec)	N/A	0.080	0.138	0.008	0.000	3.445	0.000	0.417	0.000

Problem 129	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	166	240	0	404	0	557	-1
N.S.	1	1.00	1.15	1.67	0.00	2.81	0.00	3.87	-0.01
time (sec)	N/A	0.124	0.147	0.009	0.000	3.450	0.000	0.436	0.000

Problem 130	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	186	186	194	408	0	484	0	1112	-1
N.S.	1	1.00	1.04	2.19	0.00	2.60	0.00	5.98	-0.01
time (sec)	N/A	0.190	0.160	0.007	0.000	3.606	0.000	0.446	0.000

Problem 131	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	343	343	148	436	0	147	366	440	-1
N.S.	1	1.00	0.43	1.27	0.00	0.43	1.07	1.28	-0.00
time (sec)	N/A	0.392	0.124	0.132	0.000	3.548	0.461	0.400	0.000

Problem 132	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	220	220	111	231	0	111	243	271	-1
N.S.	1	1.00	0.50	1.05	0.00	0.50	1.10	1.23	-0.00
time (sec)	N/A	0.271	0.099	0.094	0.000	2.539	0.293	0.410	0.000

Problem 133	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	83	124	0	80	138	139	-1
N.S.	1	1.00	0.64	0.95	0.00	0.62	1.06	1.07	-0.01
time (sec)	N/A	0.168	0.057	0.082	0.000	1.661	0.170	0.401	0.000

Problem 134	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	49	48	0	53	63	52	44
N.S.	1	1.00	1.04	1.02	0.00	1.13	1.34	1.11	0.94
time (sec)	N/A	0.037	0.020	0.071	0.000	1.966	0.114	0.398	0.253

Problem 135	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	271	271	309	0	0	0	0	0	-1
N.S.	1	1.00	1.14	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.275	0.025	1.895	0.000	0.000	0.000	0.000	0.000

Problem 136	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	230	208	208	313	0	0	0	0	-1
N.S.	1	0.90	0.90	1.36	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.300	0.086	0.711	0.000	0.000	0.000	0.000	0.000

Problem 137	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	272	272	314	521	0	0	0	0	-1
N.S.	1	1.00	1.15	1.92	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.396	0.091	1.225	0.000	0.000	0.000	0.000	0.000

Problem 138	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	371	371	181	344	0	152	432	389	-1
N.S.	1	1.00	0.49	0.93	0.00	0.41	1.16	1.05	-0.00
time (sec)	N/A	0.314	0.138	0.108	0.000	2.280	0.473	0.418	0.000

Problem 139	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	211	211	135	185	0	108	248	203	-1
N.S.	1	1.00	0.64	0.88	0.00	0.51	1.18	0.96	-0.00
time (sec)	N/A	0.223	0.092	0.095	0.000	1.630	0.276	0.398	0.000

Problem 140	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	74	71	0	66	109	78	59
N.S.	1	1.00	0.90	0.87	0.00	0.80	1.33	0.95	0.72
time (sec)	N/A	0.056	0.025	0.063	0.000	1.973	0.150	0.384	0.246

Problem 141	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	365	365	424	0	0	0	0	0	-1
N.S.	1	1.00	1.16	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.314	0.029	1.698	0.000	0.000	0.000	0.000	0.000

Problem 142	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	316	316	309	0	0	0	0	0	-1
N.S.	1	1.00	0.98	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.432	0.077	1.116	0.000	0.000	0.000	0.000	0.000

Problem 143	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	60	45	49	0	0	0	56	-1
N.S.	1	1.00	0.75	0.82	0.00	0.00	0.00	0.93	-0.02
time (sec)	N/A	0.449	0.100	0.079	0.000	0.000	0.000	0.425	0.000

Problem 144	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	27	0	0	0	28	-1
N.S.	1	1.00	1.00	0.90	0.00	0.00	0.00	0.93	-0.03
time (sec)	N/A	0.162	0.038	0.072	0.000	0.000	0.000	0.413	0.000

Problem 145	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	11	11	11	12	0	0	0	11	-1
N.S.	1	1.00	1.00	1.09	0.00	0.00	0.00	1.00	-0.09
time (sec)	N/A	0.016	0.014	0.062	0.000	0.000	0.000	0.392	0.000

Problem 146	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	15	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.07
time (sec)	N/A	0.027	0.155	1.764	0.000	0.000	0.000	0.000	0.000

Problem 147	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	161	86	149	0	0	0	169	-1
N.S.	1	1.92	1.02	1.77	0.00	0.00	0.00	2.01	-0.01
time (sec)	N/A	0.149	0.336	0.108	0.000	0.000	0.000	0.427	0.000

Problem 148	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	87	63	72	0	0	0	83	-1
N.S.	1	1.58	1.15	1.31	0.00	0.00	0.00	1.51	-0.02
time (sec)	N/A	0.093	0.103	0.099	0.000	0.000	0.000	0.420	0.000

Problem 149	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	37	38	0	0	0	39	-1
N.S.	1	1.00	0.90	0.93	0.00	0.00	0.00	0.95	-0.02
time (sec)	N/A	0.054	0.053	0.067	0.000	0.000	0.000	0.393	0.000

Problem 150	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	15	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.07
time (sec)	N/A	0.026	1.928	2.595	0.000	0.000	0.000	0.000	0.000

Problem 151	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	176	263	115	215	0	0	0	272	-1
N.S.	1	1.49	0.65	1.22	0.00	0.00	0.00	1.55	-0.01
time (sec)	N/A	0.337	0.266	0.203	0.000	0.000	0.000	0.431	0.000

Problem 152	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	108	151	121	109	0	0	0	139	-1
N.S.	1	1.40	1.12	1.01	0.00	0.00	0.00	1.29	-0.01
time (sec)	N/A	0.176	0.054	0.099	0.000	0.000	0.000	0.423	0.000

Problem 153	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	65	53	0	0	0	57	-1
N.S.	1	1.00	1.00	0.82	0.00	0.00	0.00	0.88	-0.02
time (sec)	N/A	0.053	0.049	0.063	0.000	0.000	0.000	0.396	0.000

Problem 154	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	15	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.07
time (sec)	N/A	0.025	1.703	2.920	0.000	0.000	0.000	0.000	0.000

Problem 155	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	535	535	473	783	0	0	0	2255	-1
N.S.	1	1.00	0.88	1.46	0.00	0.00	0.00	4.21	-0.00
time (sec)	N/A	1.718	1.086	1.188	0.000	0.000	0.000	1.304	0.000

Problem 156	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	269	269	256	396	0	0	0	1079	-1
N.S.	1	1.00	0.95	1.47	0.00	0.00	0.00	4.01	-0.00
time (sec)	N/A	0.605	2.015	0.468	0.000	0.000	0.000	0.964	0.000

Problem 157	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	129	203	0	0	0	563	-1
N.S.	1	1.00	0.97	1.53	0.00	0.00	0.00	4.23	-0.01
time (sec)	N/A	0.181	0.061	0.282	0.000	0.000	0.000	0.688	0.000

Problem 158	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	343	343	635	605	0	0	0	1987	-1
N.S.	1	1.00	1.85	1.76	0.00	0.00	0.00	5.79	-0.00
time (sec)	N/A	0.772	6.919	0.493	0.000	0.000	0.000	1.026	0.000

Problem 159	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	175	175	313	304	0	0	0	1061	-1
N.S.	1	1.00	1.79	1.74	0.00	0.00	0.00	6.06	-0.01
time (sec)	N/A	0.182	1.999	0.271	0.000	0.000	0.000	0.887	0.000

Problem 160	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	406	406	1083	887	0	0	0	2671	-1
N.S.	1	1.00	2.67	2.18	0.00	0.00	0.00	6.58	-0.00
time (sec)	N/A	0.864	8.288	0.523	0.000	0.000	0.000	1.365	0.000

Problem 161	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	204	204	432	441	0	0	0	1279	-1
N.S.	1	1.00	2.12	2.16	0.00	0.00	0.00	6.27	-0.00
time (sec)	N/A	0.269	2.103	0.300	0.000	0.000	0.000	1.188	0.000

Problem 162	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F(-2)	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	243	243	551	616	0	0	0	2308	-1
N.S.	1	1.00	2.27	2.53	0.00	0.00	0.00	9.50	-0.00
time (sec)	N/A	0.276	3.401	0.292	0.000	0.000	0.000	1.456	0.000

Problem 163	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	440	440	335	428	0	0	0	646	-1
N.S.	1	1.00	0.76	0.97	0.00	0.00	0.00	1.47	-0.00
time (sec)	N/A	0.777	0.723	0.585	0.000	0.000	0.000	0.692	0.000

Problem 164	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	211	211	224	208	0	0	0	306	-1
N.S.	1	1.00	1.06	0.99	0.00	0.00	0.00	1.45	-0.00
time (sec)	N/A	0.330	0.414	0.362	0.000	0.000	0.000	0.594	0.000

Problem 165	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	131	94	0	0	0	167	-1
N.S.	1	1.00	1.25	0.90	0.00	0.00	0.00	1.59	-0.01
time (sec)	N/A	0.090	0.073	0.157	0.000	0.000	0.000	0.526	0.000

Problem 166	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	287	287	287	326	0	0	0	0	-1
N.S.	1	1.00	1.00	1.14	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.355	1.473	0.464	0.000	0.000	0.000	0.000	0.000

Problem 167	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	185	170	0	0	0	0	-1
N.S.	1	1.00	1.28	1.18	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.175	0.192	0.251	0.000	0.000	0.000	0.000	0.000

Problem 168	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	384	384	392	738	0	0	0	0	-1
N.S.	1	1.00	1.02	1.92	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.620	1.792	0.492	0.000	0.000	0.000	0.000	0.000

Problem 169	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	179	179	238	370	0	0	0	0	-1
N.S.	1	1.00	1.33	2.07	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.207	0.646	0.280	0.000	0.000	0.000	0.000	0.000

Problem 170	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	468	468	524	1256	0	0	0	0	-1
N.S.	1	1.00	1.12	2.68	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.708	1.216	0.525	0.000	0.000	0.000	0.000	0.000

Problem 171	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	218	218	287	624	0	0	0	0	-1
N.S.	1	1.00	1.32	2.86	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.291	0.468	0.298	0.000	0.000	0.000	0.000	0.000

Problem 172	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	19	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.035	0.357	2.014	0.000	0.000	0.000	0.000	0.000

Problem 173	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	F	F	F	F	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	611	611	0	0	0	0	0	0	-1
N.S.	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.858	1.114	0.855	0.000	0.000	0.000	0.000	0.000

Problem 174	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	301	301	372	0	0	0	0	0	-1
N.S.	1	1.00	1.24	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.383	0.642	0.454	0.000	0.000	0.000	0.000	0.000

Problem 175	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	147	147	159	0	0	0	0	0	-1
N.S.	1	1.00	1.08	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.089	0.013	0.101	0.000	0.000	0.000	0.000	0.000

Problem 176	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	19	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.038	0.134	0.202	0.000	0.000	0.000	0.000	0.000

Problem 177	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	B	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	77	99	1270	220	527	174	-1
N.S.	1	1.00	0.73	0.93	11.98	2.08	4.97	1.64	-0.01
time (sec)	N/A	0.064	0.077	0.145	0.509	2.650	0.484	0.417	0.000

Problem 178	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	B	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	87	90	808	174	394	136	-1
N.S.	1	1.00	0.80	0.83	7.41	1.60	3.61	1.25	-0.01
time (sec)	N/A	0.052	0.056	0.107	0.494	2.710	0.344	0.429	0.000

Problem 179	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	B	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	64	77	451	127	258	110	-1
N.S.	1	1.00	0.80	0.96	5.64	1.59	3.22	1.38	-0.01
time (sec)	N/A	0.050	0.037	0.107	0.479	3.384	0.180	0.412	0.000

Problem 180	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	B	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	59	64	208	92	148	77	-1
N.S.	1	1.00	0.84	0.91	2.97	1.31	2.11	1.10	-0.01
time (sec)	N/A	0.029	0.047	0.007	0.474	3.301	0.119	0.404	0.000

Problem 181	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	159	36	35	48	51	35	92
N.S.	1	1.00	3.98	0.90	0.88	1.20	1.28	0.88	2.30
time (sec)	N/A	0.017	0.251	0.062	0.467	3.074	0.069	0.399	0.612

Problem 182	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	71	168	0	0	0	0	-1
N.S.	1	1.00	0.80	1.89	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.072	0.041	0.352	0.000	0.000	0.000	0.000	0.000

Problem 183	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	45	56	111	97	0	108	-1
N.S.	1	1.00	0.88	1.10	2.18	1.90	0.00	2.12	-0.02
time (sec)	N/A	0.040	0.023	0.120	0.486	3.221	0.000	0.422	0.000

Problem 184	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	49	62	112	95	0	231	-1
N.S.	1	1.00	0.80	1.02	1.84	1.56	0.00	3.79	-0.02
time (sec)	N/A	0.040	0.038	0.125	0.483	2.566	0.000	0.407	0.000

Problem 185	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	86	78	0	199	0	388	-1
N.S.	1	1.00	0.98	0.89	0.00	2.26	0.00	4.41	-0.01
time (sec)	N/A	0.055	0.061	0.125	0.000	2.129	0.000	0.695	0.000

Problem 186	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	94	63	84	249	180	0	447	-1
N.S.	1	1.00	0.67	0.89	2.65	1.91	0.00	4.76	-0.01
time (sec)	N/A	0.050	0.054	0.125	0.514	1.860	0.000	0.453	0.000

Problem 187	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	65	100	0	305	0	598	-1
N.S.	1	1.00	0.54	0.83	0.00	2.52	0.00	4.94	-0.01
time (sec)	N/A	0.070	0.062	0.116	0.000	1.943	0.000	0.771	0.000

Problem 188	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	203	203	164	194	0	496	1268	443	-1
N.S.	1	1.00	0.81	0.96	0.00	2.44	6.25	2.18	-0.00
time (sec)	N/A	0.222	0.287	0.145	0.000	2.785	0.807	0.439	0.000

Problem 189	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	176	176	142	203	0	382	916	342	-1
N.S.	1	1.00	0.81	1.15	0.00	2.17	5.20	1.94	-0.01
time (sec)	N/A	0.185	0.142	0.124	0.000	2.260	0.582	0.440	0.000

Problem 190	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	112	152	0	266	610	274	-1
N.S.	1	1.00	0.80	1.09	0.00	1.90	4.36	1.96	-0.01
time (sec)	N/A	0.141	0.144	0.108	0.000	1.397	0.393	0.457	0.000

Problem 191	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	B	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	86	146	0	186	335	184	-1
N.S.	1	1.00	0.82	1.39	0.00	1.77	3.19	1.75	-0.01
time (sec)	N/A	0.103	0.051	0.049	0.000	2.108	0.199	0.433	0.000

Problem 192	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	61	92	0	94	143	111	88
N.S.	1	1.00	1.03	1.56	0.00	1.59	2.42	1.88	1.49
time (sec)	N/A	0.053	0.068	0.053	0.000	2.813	0.181	0.409	0.484

Problem 193	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	170	420	0	0	0	0	-1
N.S.	1	1.00	1.35	3.33	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.129	0.114	0.196	0.000	0.000	0.000	0.000	0.000

Problem 194	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	176	229	0	0	0	0	-1
N.S.	1	1.00	1.52	1.97	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.117	0.413	0.154	0.000	0.000	0.000	0.000	0.000

Problem 195	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	126	136	222	139	0	510	-1
N.S.	1	1.00	1.45	1.56	2.55	1.60	0.00	5.86	-0.01
time (sec)	N/A	0.098	0.156	0.167	0.499	1.616	0.000	0.494	0.000

Problem 196	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	187	187	246	300	0	0	0	0	-1
N.S.	1	1.00	1.32	1.60	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.175	1.448	0.589	0.000	0.000	0.000	0.000	0.000

Problem 197	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	338	338	307	383	0	892	2518	832	-1
N.S.	1	1.00	0.91	1.13	0.00	2.64	7.45	2.46	-0.00
time (sec)	N/A	0.339	0.609	0.113	0.000	1.990	1.464	0.471	0.000

Problem 198	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	287	287	232	394	0	681	1828	641	-1
N.S.	1	1.00	0.81	1.37	0.00	2.37	6.37	2.23	-0.00
time (sec)	N/A	0.291	0.337	0.123	0.000	1.099	0.976	0.454	0.000

Problem 199	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	235	235	199	280	0	466	1173	504	-1
N.S.	1	1.00	0.85	1.19	0.00	1.98	4.99	2.14	-0.00
time (sec)	N/A	0.230	0.234	0.115	0.000	2.724	0.585	0.473	0.000

Problem 200	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	165	165	137	266	0	321	685	340	-1
N.S.	1	1.00	0.83	1.61	0.00	1.95	4.15	2.06	-0.01
time (sec)	N/A	0.154	0.146	0.050	0.000	0.957	0.399	0.456	0.000

Problem 201	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	96	166	0	158	282	208	152
N.S.	1	1.00	0.92	1.60	0.00	1.52	2.71	2.00	1.46
time (sec)	N/A	0.084	0.050	0.035	0.000	2.171	0.188	0.405	0.500

Problem 202	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	169	169	304	766	0	0	0	0	-1
N.S.	1	1.00	1.80	4.53	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.151	0.122	0.216	0.000	0.000	0.000	0.000	0.000

Problem 203	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	190	190	342	487	0	0	0	0	-1
N.S.	1	1.00	1.80	2.56	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.185	0.523	0.367	0.000	0.000	0.000	0.000	0.000

Problem 204	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	167	167	248	364	0	0	0	0	-1
N.S.	1	1.00	1.49	2.18	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.180	0.512	0.379	0.000	0.000	0.000	0.000	0.000

Problem 205	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	291	291	732	646	0	0	0	0	-1
N.S.	1	1.00	2.52	2.22	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.290	7.230	0.605	0.000	0.000	0.000	0.000	0.000

Problem 206	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	357	357	287	657	0	1032	2876	1016	-1
N.S.	1	1.00	0.80	1.84	0.00	2.89	8.06	2.85	-0.00
time (sec)	N/A	0.442	0.327	0.115	0.000	1.232	1.536	0.481	0.000

Problem 207	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	289	289	235	440	0	697	1889	809	-1
N.S.	1	1.00	0.81	1.52	0.00	2.41	6.54	2.80	-0.00
time (sec)	N/A	0.335	0.430	0.125	0.000	1.502	0.922	0.480	0.000

Problem 208	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	198	198	163	412	0	471	1027	533	-1
N.S.	1	1.00	0.82	2.08	0.00	2.38	5.19	2.69	-0.01
time (sec)	N/A	0.220	0.184	0.055	0.000	2.152	0.600	0.469	0.000

Problem 209	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	115	255	0	233	444	329	229
N.S.	1	1.00	0.97	2.14	0.00	1.96	3.73	2.76	1.92
time (sec)	N/A	0.114	0.096	0.068	0.000	1.871	0.335	0.429	0.583

Problem 210	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	202	202	439	1200	0	0	0	0	-1
N.S.	1	1.00	2.17	5.94	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.176	0.252	0.189	0.000	0.000	0.000	0.000	0.000

Problem 211	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	270	270	575	839	0	0	0	0	-1
N.S.	1	1.00	2.13	3.11	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.220	1.171	0.356	0.000	0.000	0.000	0.000	0.000

Problem 212	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	198	198	385	681	0	0	0	0	-1
N.S.	1	1.00	1.94	3.44	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.220	0.849	0.376	0.000	0.000	0.000	0.000	0.000

Problem 213	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	439	439	1274	1212	0	0	0	0	-1
N.S.	1	1.00	2.90	2.76	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.400	9.142	0.577	0.000	0.000	0.000	0.000	0.000

Problem 214	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	164	164	150	367	0	323	663	482	317
N.S.	1	1.00	0.91	2.24	0.00	1.97	4.04	2.94	1.93
time (sec)	N/A	0.145	0.129	0.072	0.000	2.272	0.488	0.425	0.669

Problem 215	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	213	213	150	155	0	0	0	419	-1
N.S.	1	1.00	0.70	0.73	0.00	0.00	0.00	1.97	-0.00
time (sec)	N/A	0.287	0.236	0.117	0.000	0.000	0.000	0.436	0.000

Problem 216	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	145	145	109	112	0	0	0	277	-1
N.S.	1	1.00	0.75	0.77	0.00	0.00	0.00	1.91	-0.01
time (sec)	N/A	0.218	0.175	0.115	0.000	0.000	0.000	0.445	0.000

Problem 217	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	141	102	103	0	0	0	203	-1
N.S.	1	1.00	0.72	0.73	0.00	0.00	0.00	1.44	-0.01
time (sec)	N/A	0.184	0.147	0.109	0.000	0.000	0.000	0.416	0.000

Problem 218	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	61	60	0	0	0	95	-1
N.S.	1	1.00	0.88	0.87	0.00	0.00	0.00	1.38	-0.01
time (sec)	N/A	0.098	0.068	0.036	0.000	0.000	0.000	0.429	0.000

Problem 219	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	48	52	0	0	0	53	-1
N.S.	1	1.00	0.84	0.91	0.00	0.00	0.00	0.93	-0.02
time (sec)	N/A	0.061	0.066	0.089	0.000	0.000	0.000	0.424	0.000

Problem 220	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.043	0.598	0.138	0.000	0.000	0.000	0.000	0.000

Problem 221	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	258	258	283	397	0	0	0	1401	-1
N.S.	1	1.00	1.10	1.54	0.00	0.00	0.00	5.43	-0.00
time (sec)	N/A	0.250	0.865	0.278	0.000	0.000	0.000	0.508	0.000

Problem 222	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	190	190	220	280	0	0	0	928	-1
N.S.	1	1.00	1.16	1.47	0.00	0.00	0.00	4.88	-0.01
time (sec)	N/A	0.191	0.621	0.131	0.000	0.000	0.000	0.492	0.000

Problem 223	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	186	186	140	266	0	0	0	698	-1
N.S.	1	1.00	0.75	1.43	0.00	0.00	0.00	3.75	-0.01
time (sec)	N/A	0.170	0.545	0.236	0.000	0.000	0.000	0.509	0.000

Problem 224	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	99	151	0	0	0	341	-1
N.S.	1	1.00	0.95	1.45	0.00	0.00	0.00	3.28	-0.01
time (sec)	N/A	0.096	0.218	0.036	0.000	0.000	0.000	0.478	0.000

Problem 225	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	93	93	79	83	0	0	0	215	-1
N.S.	1	1.00	0.85	0.89	0.00	0.00	0.00	2.31	-0.01
time (sec)	N/A	0.116	0.064	0.075	0.000	0.000	0.000	0.432	0.000

Problem 226	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.040	1.864	0.118	0.000	0.000	0.000	0.000	0.000

Problem 227	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	322	322	317	720	0	0	0	3180	-1
N.S.	1	1.00	0.98	2.24	0.00	0.00	0.00	9.88	-0.00
time (sec)	N/A	0.573	1.025	0.310	0.000	0.000	0.000	0.656	0.000

Problem 228	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	249	249	181	507	0	0	0	2201	-1
N.S.	1	1.00	0.73	2.04	0.00	0.00	0.00	8.84	-0.00
time (sec)	N/A	0.427	0.479	0.134	0.000	0.000	0.000	0.626	0.000

Problem 229	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	248	248	219	476	0	0	0	1641	-1
N.S.	1	1.00	0.88	1.92	0.00	0.00	0.00	6.62	-0.00
time (sec)	N/A	0.370	0.514	0.240	0.000	0.000	0.000	0.626	0.000

Problem 230	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	157	157	107	263	0	0	0	888	-1
N.S.	1	1.00	0.68	1.68	0.00	0.00	0.00	5.66	-0.01
time (sec)	N/A	0.228	0.427	0.039	0.000	0.000	0.000	0.594	0.000

Problem 231	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	127	127	100	158	0	0	0	547	-1
N.S.	1	1.00	0.79	1.24	0.00	0.00	0.00	4.31	-0.01
time (sec)	N/A	0.130	0.448	0.066	0.000	0.000	0.000	0.414	0.000

Problem 232	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.044	0.764	0.136	0.000	0.000	0.000	0.000	0.000

Problem 233	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	416	416	414	1138	0	0	0	5870	-1
N.S.	1	1.00	1.00	2.74	0.00	0.00	0.00	14.11	-0.00
time (sec)	N/A	0.563	1.099	0.362	0.000	0.000	0.000	0.824	0.000

Problem 234	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	346	346	320	783	0	0	0	4040	-1
N.S.	1	1.00	0.92	2.26	0.00	0.00	0.00	11.68	-0.00
time (sec)	N/A	0.428	0.696	0.112	0.000	0.000	0.000	0.847	0.000

Problem 235	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	337	337	264	753	0	0	0	3109	-1
N.S.	1	1.00	0.78	2.23	0.00	0.00	0.00	9.23	-0.00
time (sec)	N/A	0.430	0.750	0.274	0.000	0.000	0.000	0.809	0.000

Problem 236	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	208	208	186	399	0	0	0	1665	-1
N.S.	1	1.00	0.89	1.92	0.00	0.00	0.00	8.00	-0.00
time (sec)	N/A	0.239	0.516	0.041	0.000	0.000	0.000	0.745	0.000

Problem 237	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-1)	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	164	164	134	270	0	0	0	1112	-1
N.S.	1	1.00	0.82	1.65	0.00	0.00	0.00	6.78	-0.01
time (sec)	N/A	0.181	0.249	0.170	0.000	0.000	0.000	0.419	0.000

Problem 238	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.045	4.118	0.891	0.000	0.000	0.000	0.000	0.000

Problem 239	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	191	191	156	387	0	0	0	1915	-1
N.S.	1	1.00	0.82	2.03	0.00	0.00	0.00	10.03	-0.01
time (sec)	N/A	0.205	0.284	0.164	0.000	0.000	0.000	0.427	0.000

Problem 240	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	288	288	269	401	0	0	0	1088	-1
N.S.	1	1.00	0.93	1.39	0.00	0.00	0.00	3.78	-0.00
time (sec)	N/A	0.432	0.127	0.559	0.000	0.000	0.000	1.227	0.000

Problem 241	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	274	274	269	394	0	0	0	1169	-1
N.S.	1	1.00	0.98	1.44	0.00	0.00	0.00	4.27	-0.00
time (sec)	N/A	0.501	0.193	0.513	0.000	0.000	0.000	1.277	0.000

Problem 242	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	156	156	154	209	0	0	0	488	-1
N.S.	1	1.00	0.99	1.34	0.00	0.00	0.00	3.13	-0.01
time (sec)	N/A	0.255	0.059	0.241	0.000	0.000	0.000	1.097	0.000

Problem 243	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	129	203	0	0	0	563	-1
N.S.	1	1.00	0.97	1.53	0.00	0.00	0.00	4.23	-0.01
time (sec)	N/A	0.169	0.043	0.001	0.000	0.000	0.000	0.689	0.000

Problem 244	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.056	1.598	0.248	0.000	0.000	0.000	0.000	0.000

Problem 245	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	380	380	273	610	0	0	0	2237	-1
N.S.	1	1.00	0.72	1.61	0.00	0.00	0.00	5.89	-0.00
time (sec)	N/A	0.688	0.131	0.504	0.000	0.000	0.000	1.286	0.000

Problem 246	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	361	361	268	600	0	0	0	2199	-1
N.S.	1	1.00	0.74	1.66	0.00	0.00	0.00	6.09	-0.00
time (sec)	N/A	0.673	0.187	0.562	0.000	0.000	0.000	1.468	0.000

Problem 247	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	199	199	137	314	0	0	0	929	-1
N.S.	1	1.00	0.69	1.58	0.00	0.00	0.00	4.67	-0.01
time (sec)	N/A	0.293	0.045	0.254	0.000	0.000	0.000	0.872	0.000

Problem 248	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	175	175	313	304	0	0	0	1061	-1
N.S.	1	1.00	1.79	1.74	0.00	0.00	0.00	6.06	-0.01
time (sec)	N/A	0.183	1.361	0.000	0.000	0.000	0.000	0.894	0.000

Problem 249	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.063	1.260	0.230	0.000	0.000	0.000	0.000	0.000

Problem 250	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	475	475	269	892	0	0	0	3408	-1
N.S.	1	1.00	0.57	1.88	0.00	0.00	0.00	7.17	-0.00
time (sec)	N/A	0.947	0.194	0.516	0.000	0.000	0.000	1.741	0.000

Problem 251	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	427	427	249	879	0	0	0	2826	-1
N.S.	1	1.00	0.58	2.06	0.00	0.00	0.00	6.62	-0.00
time (sec)	N/A	0.882	0.174	0.531	0.000	0.000	0.000	2.035	0.000

Problem 252	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	256	256	154	455	0	0	0	1449	-1
N.S.	1	1.00	0.60	1.78	0.00	0.00	0.00	5.66	-0.00
time (sec)	N/A	0.434	0.064	0.272	0.000	0.000	0.000	1.113	0.000

Problem 253	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	204	204	432	441	0	0	0	1279	-1
N.S.	1	1.00	2.12	2.16	0.00	0.00	0.00	6.27	-0.00
time (sec)	N/A	0.261	1.135	0.164	0.000	0.000	0.000	1.203	0.000

Problem 254	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.064	0.917	0.241	0.000	0.000	0.000	0.000	0.000

Problem 255	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F(-2)	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	518	518	267	1234	0	0	0	8028	-1
N.S.	1	1.00	0.52	2.38	0.00	0.00	0.00	15.50	-0.00
time (sec)	N/A	1.110	0.208	0.613	0.000	0.000	0.000	2.665	0.000

Problem 256	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F(-2)	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	301	301	137	635	0	0	0	2561	-1
N.S.	1	1.00	0.46	2.11	0.00	0.00	0.00	8.51	-0.00
time (sec)	N/A	0.479	0.044	0.271	0.000	0.000	0.000	1.312	0.000

Problem 257	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F(-2)	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	243	243	551	616	0	0	0	2308	-1
N.S.	1	1.00	2.27	2.53	0.00	0.00	0.00	9.50	-0.00
time (sec)	N/A	0.281	1.380	0.208	0.000	0.000	0.000	1.435	0.000

Problem 258	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.063	0.878	0.339	0.000	0.000	0.000	0.000	0.000

Problem 259	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	365	365	370	317	0	0	0	507	-1
N.S.	1	1.00	1.01	0.87	0.00	0.00	0.00	1.39	-0.00
time (sec)	N/A	0.621	0.163	0.605	0.000	0.000	0.000	0.860	0.000

Problem 260	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	233	233	249	211	0	0	0	318	-1
N.S.	1	1.00	1.07	0.91	0.00	0.00	0.00	1.36	-0.00
time (sec)	N/A	0.323	0.089	0.405	0.000	0.000	0.000	0.822	0.000

Problem 261	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	243	243	249	207	0	0	0	345	-1
N.S.	1	1.00	1.02	0.85	0.00	0.00	0.00	1.42	-0.00
time (sec)	N/A	0.372	0.163	0.354	0.000	0.000	0.000	0.842	0.000

Problem 262	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	134	99	0	0	0	142	-1
N.S.	1	1.00	1.28	0.94	0.00	0.00	0.00	1.35	-0.01
time (sec)	N/A	0.135	0.040	0.124	0.000	0.000	0.000	0.781	0.000

Problem 263	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	A	F	F(-2)	F	C	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	0	95	0	0	0	167	-1
N.S.	1	1.00	0.00	0.90	0.00	0.00	0.00	1.59	-0.01
time (sec)	N/A	0.095	0.025	0.023	0.000	0.000	0.000	0.510	0.000

Problem 264	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.059	0.051	0.236	0.000	0.000	0.000	0.000	0.000

Problem 265	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	412	412	572	483	0	0	0	0	-1
N.S.	1	1.00	1.39	1.17	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.568	0.422	0.537	0.000	0.000	0.000	0.000	0.000

Problem 266	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	270	270	300	335	0	0	0	0	-1
N.S.	1	1.00	1.11	1.24	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.324	0.205	0.353	0.000	0.000	0.000	0.000	0.000

Problem 267	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	280	280	380	326	0	0	0	0	-1
N.S.	1	1.00	1.36	1.16	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.347	0.236	0.327	0.000	0.000	0.000	0.000	0.000

Problem 268	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	168	174	0	0	0	0	-1
N.S.	1	1.00	1.17	1.21	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.137	0.096	0.234	0.000	0.000	0.000	0.000	0.000

Problem 269	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	185	170	0	0	0	0	-1
N.S.	1	1.00	1.28	1.18	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.173	0.092	0.144	0.000	0.000	0.000	0.000	0.000

Problem 270	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.069	0.053	0.326	0.000	0.000	0.000	0.000	0.000

Problem 271	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	344	344	351	744	0	0	0	0	-1
N.S.	1	1.00	1.02	2.16	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.724	1.343	0.477	0.000	0.000	0.000	0.000	0.000

Problem 272	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	342	342	411	733	0	0	0	0	-1
N.S.	1	1.00	1.20	2.14	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.737	1.206	0.526	0.000	0.000	0.000	0.000	0.000

Problem 273	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	207	207	192	383	0	0	0	0	-1
N.S.	1	1.00	0.93	1.85	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.339	0.746	0.263	0.000	0.000	0.000	0.000	0.000

Problem 274	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	179	179	238	370	0	0	0	0	-1
N.S.	1	1.00	1.33	2.07	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.203	0.354	0.164	0.000	0.000	0.000	0.000	0.000

Problem 275	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.067	0.057	0.334	0.000	0.000	0.000	0.000	0.000

Problem 276	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	442	442	445	1265	0	0	0	0	-1
N.S.	1	1.00	1.01	2.86	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.722	1.573	0.526	0.000	0.000	0.000	0.000	0.000

Problem 277	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	441	441	538	1247	0	0	0	0	-1
N.S.	1	1.00	1.22	2.83	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.780	1.200	0.572	0.000	0.000	0.000	0.000	0.000

Problem 278	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	252	252	254	643	0	0	0	0	-1
N.S.	1	1.00	1.01	2.55	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.339	0.570	0.278	0.000	0.000	0.000	0.000	0.000

Problem 279	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	218	218	287	624	0	0	0	0	-1
N.S.	1	1.00	1.32	2.86	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.284	0.154	0.168	0.000	0.000	0.000	0.000	0.000

Problem 280	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.069	0.057	0.339	0.000	0.000	0.000	0.000	0.000

Problem 281	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	C	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	156	156	115	228	0	237	0	0	-1
N.S.	1	1.00	0.74	1.46	0.00	1.52	0.00	0.00	-0.01
time (sec)	N/A	0.086	0.157	0.376	0.000	0.681	0.000	0.000	0.000

Problem 282	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	C	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	115	206	0	193	163	0	-1
N.S.	1	1.00	0.85	1.51	0.00	1.42	1.20	0.00	-0.01
time (sec)	N/A	0.078	0.115	0.125	0.000	0.566	78.291	0.000	0.000

Problem 283	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	C	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	117	117	87	194	0	152	156	0	-1
N.S.	1	1.00	0.74	1.66	0.00	1.30	1.33	0.00	-0.01
time (sec)	N/A	0.070	0.034	0.130	0.000	0.559	10.799	0.000	0.000

Problem 284	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	C	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	87	172	0	108	104	0	-1
N.S.	1	1.00	0.88	1.74	0.00	1.09	1.05	0.00	-0.01
time (sec)	N/A	0.060	0.023	0.138	0.000	0.892	1.339	0.000	0.000

Problem 285	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	C	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	59	149	0	66	0	0	-1
N.S.	1	1.00	0.73	1.84	0.00	0.81	0.00	0.00	-0.01
time (sec)	N/A	0.057	0.022	0.125	0.000	0.855	0.000	0.000	0.000

Problem 286	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	54	132	0	80	0	0	-1
N.S.	1	1.00	0.89	2.16	0.00	1.31	0.00	0.00	-0.02
time (sec)	N/A	0.049	0.017	0.122	0.000	0.591	0.000	0.000	0.000

Problem 287	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	122	122	56	190	0	141	0	0	-1
N.S.	1	1.00	0.46	1.56	0.00	1.16	0.00	0.00	-0.01
time (sec)	N/A	0.075	0.022	0.151	0.000	0.621	0.000	0.000	0.000

Problem 288	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	59	169	0	165	0	0	-1
N.S.	1	1.00	0.58	1.66	0.00	1.62	0.00	0.00	-0.01
time (sec)	N/A	0.066	0.027	0.138	0.000	0.792	0.000	0.000	0.000

Problem 289	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	C	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	159	159	66	225	0	223	0	0	-1
N.S.	1	1.00	0.42	1.42	0.00	1.40	0.00	0.00	-0.01
time (sec)	N/A	0.097	0.032	0.129	0.000	0.872	0.000	0.000	0.000

Problem 290	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	66	203	0	247	0	0	-1
N.S.	1	1.00	0.47	1.46	0.00	1.78	0.00	0.00	-0.01
time (sec)	N/A	0.085	0.032	0.138	0.000	0.708	0.000	0.000	0.000

Problem 291	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	114	0	0	0	0	0	-1
N.S.	1	1.00	0.88	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.155	0.077	0.231	0.000	0.000	0.000	0.000	0.000

Problem 292	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	106	0	0	0	0	0	-1
N.S.	1	1.00	0.82	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.141	0.085	0.197	0.000	0.000	0.000	0.000	0.000

Problem 293	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	107	0	0	0	0	0	-1
N.S.	1	1.00	0.82	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.151	0.078	0.208	0.000	0.000	0.000	0.000	0.000

Problem 294	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	107	0	0	0	0	0	-1
N.S.	1	1.00	0.82	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.143	0.067	0.199	0.000	0.000	0.000	0.000	0.000

Problem 295	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	107	0	0	0	0	0	-1
N.S.	1	1.00	0.84	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.134	0.060	180.000	0.000	0.000	0.000	0.000	0.000

Problem 296	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	104	0	0	0	0	0	-1
N.S.	1	1.00	0.83	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.143	0.057	0.224	0.000	0.000	0.000	0.000	0.000

Problem 297	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	102	0	0	0	0	0	-1
N.S.	1	1.00	0.78	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.149	0.059	0.216	0.000	0.000	0.000	0.000	0.000

Problem 298	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	106	0	0	0	0	0	-1
N.S.	1	1.00	0.82	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.147	0.057	0.217	0.000	0.000	0.000	0.000	0.000

Problem 299	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	114	0	0	0	0	0	-1
N.S.	1	1.00	0.88	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.151	0.064	0.219	0.000	0.000	0.000	0.000	0.000

Problem 300	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	82	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.130	180.001	0.201	0.000	0.000	0.000	0.000	0.000

Problem 301	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	80	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.122	127.539	180.000	0.000	0.000	0.000	0.000	0.000

Problem 302	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	80	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.131	96.689	0.221	0.000	0.000	0.000	0.000	0.000

Problem 303	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	82	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.139	93.205	0.223	0.000	0.000	0.000	0.000	0.000

Problem 304	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	84	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.131	180.002	0.216	0.000	0.000	0.000	0.000	0.000

Problem 305	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	80	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.122	56.612	180.000	0.000	0.000	0.000	0.000	0.000

Problem 306	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	80	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.126	75.605	0.232	0.000	0.000	0.000	0.000	0.000

Problem 307	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	84	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.134	93.670	0.221	0.000	0.000	0.000	0.000	0.000

Problem 308	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	89	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.131	2.637	1.122	0.000	0.000	0.000	0.000	0.000

Problem 309	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	89	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.126	1.593	0.619	0.000	0.000	0.000	0.000	0.000

Problem 310	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	183	183	151	0	0	0	0	0	-1
N.S.	1	1.00	0.83	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.151	0.084	1.378	0.000	0.000	0.000	0.000	0.000

Problem 311	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	77	0	0	0	0	0	-1
N.S.	1	1.00	0.87	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.044	0.030	1.677	0.000	0.000	0.000	0.000	0.000

Problem 312	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.040	2.215	1.977	0.000	0.000	0.000	0.000	0.000

Problem 313	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	133	215	0	110	0	162	-1
N.S.	1	1.00	0.99	1.59	0.00	0.81	0.00	1.20	-0.01
time (sec)	N/A	0.134	0.088	0.749	0.000	3.694	0.000	0.482	0.000

Problem 314	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	116	179	0	91	0	125	-1
N.S.	1	1.00	1.05	1.61	0.00	0.82	0.00	1.13	-0.01
time (sec)	N/A	0.092	0.071	0.418	0.000	7.707	0.000	0.462	0.000

Problem 315	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	64	96	240	63	0	79	-1
N.S.	1	1.00	1.02	1.52	3.81	1.00	0.00	1.25	-0.02
time (sec)	N/A	0.048	0.043	0.418	0.492	7.367	0.000	0.438	0.000

Problem 316	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	24	23	0	0	0	27	-1
N.S.	1	1.00	0.77	0.74	0.00	0.00	0.00	0.87	-0.03
time (sec)	N/A	0.084	0.052	0.489	0.000	0.000	0.000	0.450	0.000

Problem 317	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	46	42	0	0	0	44	-1
N.S.	1	1.00	1.18	1.08	0.00	0.00	0.00	1.13	-0.03
time (sec)	N/A	0.086	0.048	0.460	0.000	0.000	0.000	0.492	0.000

Problem 318	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	73	88	61	0	0	0	84	-1
N.S.	1	1.03	1.24	0.86	0.00	0.00	0.00	1.18	-0.01
time (sec)	N/A	0.083	0.182	0.454	0.000	0.000	0.000	0.491	0.000

Problem 319	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-1)	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	115	115	117	81	0	0	0	128	-1
N.S.	1	1.00	1.02	0.70	0.00	0.00	0.00	1.11	-0.01
time (sec)	N/A	0.158	0.075	0.457	0.000	0.000	0.000	0.482	0.000

Problem 320	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	B	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	245	245	272	628	0	243	694	296	-1
N.S.	1	1.00	1.11	2.56	0.00	0.99	2.83	1.21	-0.00
time (sec)	N/A	0.225	0.152	0.504	0.000	2.623	1.469	0.507	0.000

Problem 321	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	B	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	199	199	216	515	0	185	568	227	-1
N.S.	1	1.00	1.09	2.59	0.00	0.93	2.85	1.14	-0.01
time (sec)	N/A	0.145	0.123	0.474	0.000	2.215	0.948	0.486	0.000

Problem 322	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	B	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	129	280	402	125	298	141	-1
N.S.	1	1.00	1.17	2.55	3.65	1.14	2.71	1.28	-0.01
time (sec)	N/A	0.078	0.052	0.418	0.486	3.349	0.618	0.459	0.000

Problem 323	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	37	36	0	0	0	41	-1
N.S.	1	1.00	0.79	0.77	0.00	0.00	0.00	0.87	-0.02
time (sec)	N/A	0.096	0.194	0.416	0.000	0.000	0.000	0.456	0.000

Problem 324	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	70	70	0	0	0	61	-1
N.S.	1	1.00	1.23	1.23	0.00	0.00	0.00	1.07	-0.02
time (sec)	N/A	0.112	0.185	0.435	0.000	0.000	0.000	0.505	0.000

Problem 325	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	110	108	0	0	0	101	-1
N.S.	1	1.00	1.22	1.20	0.00	0.00	0.00	1.12	-0.01
time (sec)	N/A	0.202	0.268	0.425	0.000	0.000	0.000	0.491	0.000

Problem 326	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-1)	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	155	155	143	148	0	0	0	163	-1
N.S.	1	1.00	0.92	0.95	0.00	0.00	0.00	1.05	-0.01
time (sec)	N/A	0.243	0.273	0.421	0.000	0.000	0.000	0.501	0.000

Problem 327	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	19	20	0	22	60	19	37
N.S.	1	1.00	1.00	1.05	0.00	1.16	3.16	1.00	1.95
time (sec)	N/A	0.051	0.021	0.516	0.000	3.838	0.572	0.433	0.487

Problem 328	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	14	130	13	26	13	13
N.S.	1	1.00	1.00	0.93	8.67	0.87	1.73	0.87	0.87
time (sec)	N/A	0.050	0.016	0.373	0.495	2.141	0.422	0.450	0.279

Problem 329	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	14	83	13	24	13	13
N.S.	1	1.00	1.00	0.93	5.53	0.87	1.60	0.87	0.87
time (sec)	N/A	0.027	0.014	0.359	0.476	2.583	0.390	0.426	0.264

Problem 330	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	11	11	11	12	0	13	22	12	11
N.S.	1	1.00	1.00	1.09	0.00	1.18	2.00	1.09	1.00
time (sec)	N/A	0.050	0.026	0.358	0.000	2.273	0.512	0.427	0.284

Problem 331	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	13	13	13	14	33	13	26	13	13
N.S.	1	1.00	1.00	1.08	2.54	1.00	2.00	1.00	1.00
time (sec)	N/A	0.048	0.013	0.368	0.735	1.610	0.648	0.479	0.275

Problem 332	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	14	33	13	29	13	13
N.S.	1	1.00	1.00	0.93	2.20	0.87	1.93	0.87	0.87
time (sec)	N/A	0.047	0.012	0.369	16.591	1.623	0.747	0.480	0.264

Problem 333	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	144	229	137	0	0	0	-1
N.S.	1	1.00	1.12	1.79	1.07	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.140	0.387	0.905	0.624	0.000	0.000	0.000	0.000

Problem 334	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	114	189	0	0	0	0	-1
N.S.	1	1.00	1.18	1.95	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.115	0.249	0.653	0.000	0.000	0.000	0.000	0.000

Problem 335	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	66	155	160	99	0	83	-1
N.S.	1	1.00	1.32	3.10	3.20	1.98	0.00	1.66	-0.02
time (sec)	N/A	0.043	0.067	0.453	0.494	1.866	0.000	0.479	0.000

Problem 336	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.053	0.552	1.346	0.000	0.000	0.000	0.000	0.000

Problem 337	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	59	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.078	7.547	1.178	0.000	0.000	0.000	0.000	0.000

Problem 338	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	46	80	206	0	0	0	-1
N.S.	1	1.00	1.00	1.74	4.48	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.101	0.052	0.365	0.485	0.000	0.000	0.000	0.000

Problem 339	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	54	80	200	0	0	0	-1
N.S.	1	1.00	1.17	1.74	4.35	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.050	0.031	0.364	0.481	0.000	0.000	0.000	0.000

Problem 340	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	60	71	76	65	90	140	-1
N.S.	1	1.00	0.71	0.85	0.90	0.77	1.07	1.67	-0.01
time (sec)	N/A	0.042	0.039	0.033	0.470	3.365	1.866	0.416	0.000

Problem 341	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	87	95	130	65	85	110	-1
N.S.	1	1.00	1.06	1.16	1.59	0.79	1.04	1.34	-0.01
time (sec)	N/A	0.044	0.024	0.022	0.485	2.395	0.943	0.425	0.000

Problem 342	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	70	62	59	55	65	87	-1
N.S.	1	1.00	1.13	1.00	0.95	0.89	1.05	1.40	-0.02
time (sec)	N/A	0.034	0.030	0.013	0.470	2.240	0.437	0.411	0.000

Problem 343	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	62	74	88	53	60	59	50
N.S.	1	1.00	1.09	1.30	1.54	0.93	1.05	1.04	0.88
time (sec)	N/A	0.031	0.018	0.013	0.475	2.421	0.194	0.411	0.352

Problem 344	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	43	39	37	38	42	38	37
N.S.	1	1.00	0.96	0.87	0.82	0.84	0.93	0.84	0.82
time (sec)	N/A	0.027	0.008	0.070	0.474	2.439	0.085	0.409	0.367

Problem 345	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	64	0	0	0	0	0	57
N.S.	1	1.00	0.93	0.00	0.00	0.00	0.00	0.00	0.83
time (sec)	N/A	0.067	0.027	0.063	0.000	0.000	0.000	0.000	0.430

Problem 346	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	44	38	57	61	54	354	36
N.S.	1	1.00	1.13	0.97	1.46	1.56	1.38	9.08	0.92
time (sec)	N/A	0.025	0.006	0.012	0.469	2.275	1.103	0.455	0.323

Problem 347	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	46	54	38	42	70	176	-1
N.S.	1	1.00	1.12	1.32	0.93	1.02	1.71	4.29	-0.02
time (sec)	N/A	0.018	0.013	0.022	0.472	2.712	1.057	0.424	0.000

Problem 348	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	69	61	81	84	126	301	-1
N.S.	1	1.00	1.08	0.95	1.27	1.31	1.97	4.70	-0.02
time (sec)	N/A	0.032	0.017	0.014	0.473	3.185	2.251	0.614	0.000

Problem 349	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	60	64	61	54	112	342	-1
N.S.	1	1.00	0.91	0.97	0.92	0.82	1.70	5.18	-0.02
time (sec)	N/A	0.025	0.026	0.014	0.502	2.843	2.505	0.440	0.000

Problem 350	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	63	84	125	97	201	467	-1
N.S.	1	1.00	0.71	0.94	1.40	1.09	2.26	5.25	-0.01
time (sec)	N/A	0.042	0.016	0.015	0.471	3.508	5.886	1.093	0.000

Problem 351	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	68	72	82	64	170	504	-1
N.S.	1	1.00	0.75	0.79	0.90	0.70	1.87	5.54	-0.01
time (sec)	N/A	0.032	0.034	0.015	0.481	3.699	6.583	0.434	0.000

Problem 352	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	82	108	0	58	58	0	-1
N.S.	1	1.00	0.95	1.26	0.00	0.67	0.67	0.00	-0.01
time (sec)	N/A	0.034	0.141	0.010	0.000	0.808	1.664	0.000	0.000

Problem 353	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	93	101	0	59	58	0	-1
N.S.	1	1.00	1.12	1.22	0.00	0.71	0.70	0.00	-0.01
time (sec)	N/A	0.040	0.159	0.010	0.000	0.679	1.289	0.000	0.000

Problem 354	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	72	88	0	42	58	0	-1
N.S.	1	1.00	1.18	1.44	0.00	0.69	0.95	0.00	-0.02
time (sec)	N/A	0.024	0.102	0.010	0.000	0.453	1.090	0.000	0.000

Problem 355	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	39	71	0	41	49	0	-1
N.S.	1	1.00	0.80	1.45	0.00	0.84	1.00	0.00	-0.02
time (sec)	N/A	0.028	10.011	0.017	0.000	0.405	0.610	0.000	0.000

Problem 356	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	44	66	0	45	49	0	-1
N.S.	1	1.00	1.29	1.94	0.00	1.32	1.44	0.00	-0.03
time (sec)	N/A	0.015	0.047	0.010	0.000	0.711	0.807	0.000	0.000

Problem 357	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	89	97	0	0	60	0	-1
N.S.	1	1.00	1.10	1.20	0.00	0.00	0.74	0.00	-0.01
time (sec)	N/A	0.040	0.130	0.012	0.000	0.000	1.033	0.000	0.000

Problem 358	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	72	87	0	0	61	0	-1
N.S.	1	1.00	1.18	1.43	0.00	0.00	1.00	0.00	-0.02
time (sec)	N/A	0.023	0.096	0.013	0.000	0.000	1.359	0.000	0.000

Problem 359	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	100	118	0	0	65	0	-1
N.S.	1	1.00	0.94	1.11	0.00	0.00	0.61	0.00	-0.01
time (sec)	N/A	0.050	0.173	0.014	0.000	0.000	2.084	0.000	0.000

Problem 360	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	58	0	0	0	0	0	50
N.S.	1	1.00	0.94	0.00	0.00	0.00	0.00	0.00	0.81
time (sec)	N/A	0.042	0.026	0.050	0.000	0.000	0.000	0.000	0.369

Problem 361	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	64	53	52	36	82	77	-1
N.S.	1	1.00	0.82	0.68	0.67	0.46	1.05	0.99	-0.01
time (sec)	N/A	0.021	0.024	0.040	0.481	2.408	4.933	0.395	0.000

Problem 362	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	60	47	41	40	31	66	50	-1
N.S.	1	1.00	0.78	0.68	0.67	0.52	1.10	0.83	-0.02
time (sec)	N/A	0.015	0.018	0.010	0.471	2.204	2.162	0.401	0.000

Problem 363	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	46	26	25	24	29	27	37
N.S.	1	1.00	1.24	0.70	0.68	0.65	0.78	0.73	1.00
time (sec)	N/A	0.009	0.065	0.006	0.477	2.898	0.097	0.412	0.739

Problem 364	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	53	97	0	0	0	0	42
N.S.	1	1.00	0.95	1.73	0.00	0.00	0.00	0.00	0.75
time (sec)	N/A	0.043	0.032	0.326	0.000	0.000	0.000	0.000	0.535

Problem 365	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	C	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	23	23	22	21	42	40	-1
N.S.	1	1.00	0.82	0.82	0.79	0.75	1.50	1.43	-0.04
time (sec)	N/A	0.009	0.011	0.005	0.466	2.233	1.873	0.401	0.000

Problem 366	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	32	35	34	28	51	74	-1
N.S.	1	1.00	0.64	0.70	0.68	0.56	1.02	1.48	-0.02
time (sec)	N/A	0.013	0.029	0.007	0.474	2.848	4.665	0.420	0.000

Problem 367	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	44	47	46	33	66	106	-1
N.S.	1	1.00	0.65	0.69	0.68	0.49	0.97	1.56	-0.01
time (sec)	N/A	0.016	0.020	0.008	0.479	2.015	11.902	0.405	0.000

Problem 368	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	49	59	58	38	78	138	-1
N.S.	1	1.00	0.57	0.69	0.67	0.44	0.91	1.60	-0.01
time (sec)	N/A	0.019	0.022	0.007	0.482	2.519	31.740	0.398	0.000

Problem 369	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	91	88	125	118	175	464	-1
N.S.	1	1.00	1.02	0.99	1.40	1.33	1.97	5.21	-0.01
time (sec)	N/A	0.041	0.055	0.154	0.480	3.363	4.004	1.105	0.000

Problem 370	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	59	71	59	51	107	340	-1
N.S.	1	1.00	0.92	1.11	0.92	0.80	1.67	5.31	-0.02
time (sec)	N/A	0.026	0.033	0.008	0.471	2.809	1.728	0.453	0.000

Problem 371	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	79	68	81	106	105	298	-1
N.S.	1	1.00	1.23	1.06	1.27	1.66	1.64	4.66	-0.02
time (sec)	N/A	0.030	0.037	0.014	0.473	2.519	2.109	0.590	0.000

Problem 372	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	47	51	36	40	58	174	36
N.S.	1	1.00	1.21	1.31	0.92	1.03	1.49	4.46	0.92
time (sec)	N/A	0.013	0.025	0.015	0.472	2.422	1.209	0.425	0.285

Problem 373	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	89	37	52	75	32	60	32
N.S.	1	1.00	2.87	1.19	1.68	2.42	1.03	1.94	1.03
time (sec)	N/A	0.016	0.063	0.017	0.473	2.677	1.088	0.405	0.736

Problem 374	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	61	141	0	0	0	0	57
N.S.	1	1.00	0.91	2.10	0.00	0.00	0.00	0.00	0.85
time (sec)	N/A	0.067	0.027	0.421	0.000	0.000	0.000	0.000	0.440

Problem 375	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	39	39	37	40	32	38	37
N.S.	1	1.00	1.00	1.00	0.95	1.03	0.82	0.97	0.95
time (sec)	N/A	0.026	0.018	0.056	0.476	2.612	0.437	0.413	0.289

Problem 376	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	65	59	86	55	112	70	50
N.S.	1	1.00	1.14	1.04	1.51	0.96	1.96	1.23	0.88
time (sec)	N/A	0.029	0.024	0.010	0.475	2.136	1.987	0.407	0.339

Problem 377	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	60	67	58	57	112	88	-1
N.S.	1	1.00	0.97	1.08	0.94	0.92	1.81	1.42	-0.02
time (sec)	N/A	0.032	0.041	0.008	0.484	2.365	1.785	0.402	0.000

Problem 378	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	77	79	126	67	180	111	-1
N.S.	1	1.00	0.94	0.96	1.54	0.82	2.20	1.35	-0.01
time (sec)	N/A	0.038	0.033	0.007	0.472	4.377	3.939	0.409	0.000

Problem 379	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	78	0	0	0	0	0	-1
N.S.	1	1.00	0.96	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.037	0.073	0.023	0.000	0.000	0.000	0.000	0.000

Problem 380	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	75	0	0	0	66	0	-1
N.S.	1	1.00	1.10	0.00	0.00	0.00	0.97	0.00	-0.01
time (sec)	N/A	0.031	0.042	0.020	0.000	0.000	4.396	0.000	0.000

Problem 381	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	75	0	0	0	60	0	-1
N.S.	1	1.00	1.09	0.00	0.00	0.00	0.87	0.00	-0.01
time (sec)	N/A	0.028	0.042	0.003	0.000	0.000	2.498	0.000	0.000

Problem 382	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	60	60	0	0	0	56	0	-1
N.S.	1	1.00	1.00	0.00	0.00	0.00	0.93	0.00	-0.02
time (sec)	N/A	0.026	0.040	0.003	0.000	0.000	1.295	0.000	0.000

Problem 383	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	157	150	0	0	0	0	-1
N.S.	1	1.00	2.09	2.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.074	0.119	0.487	0.000	0.000	0.000	0.000	0.000

Problem 384	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	68	0	0	0	60	0	-1
N.S.	1	1.00	0.99	0.00	0.00	0.00	0.87	0.00	-0.01
time (sec)	N/A	0.031	0.052	0.003	0.000	0.000	2.625	0.000	0.000

Problem 385	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	75	0	0	0	61	0	-1
N.S.	1	1.00	1.04	0.00	0.00	0.00	0.85	0.00	-0.01
time (sec)	N/A	0.033	0.040	0.002	0.000	0.000	5.060	0.000	0.000

Problem 386	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	129	129	116	258	245	97	204	254	-1
N.S.	1	1.00	0.90	2.00	1.90	0.75	1.58	1.97	-0.01
time (sec)	N/A	0.119	0.083	0.066	0.478	2.208	0.514	0.430	0.000

Problem 387	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	115	115	98	191	174	79	133	128	-1
N.S.	1	1.00	0.85	1.66	1.51	0.69	1.16	1.11	-0.01
time (sec)	N/A	0.092	0.057	0.017	0.492	2.760	0.252	0.404	0.000

Problem 388	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	183	50	45	57	76	49	108
N.S.	1	1.00	3.21	0.88	0.79	1.00	1.33	0.86	1.89
time (sec)	N/A	0.048	0.107	0.069	0.468	3.243	0.107	0.409	0.731

Problem 389	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	230	0	0	0	0	0	-1
N.S.	1	1.00	1.07	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.274	0.016	0.069	0.000	0.000	0.000	0.000	0.000

Problem 390	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	81	89	0	280	0	0	-1
N.S.	1	1.00	0.90	0.99	0.00	3.11	0.00	0.00	-0.01
time (sec)	N/A	0.066	0.056	0.016	0.000	3.227	0.000	0.000	0.000

Problem 391	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	137	148	132	0	392	0	0	-1
N.S.	1	1.00	1.08	0.96	0.00	2.86	0.00	0.00	-0.01
time (sec)	N/A	0.099	0.262	0.017	0.000	3.177	0.000	0.000	0.000

Problem 392	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	190	190	174	246	0	496	0	0	-1
N.S.	1	1.00	0.92	1.29	0.00	2.61	0.00	0.00	-0.01
time (sec)	N/A	0.156	0.234	0.017	0.000	3.381	0.000	0.000	0.000

Problem 393	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	336	336	349	346	0	88	0	0	-1
N.S.	1	1.00	1.04	1.03	0.00	0.26	0.00	0.00	-0.00
time (sec)	N/A	0.312	0.415	0.033	0.000	0.847	0.000	0.000	0.000

Problem 394	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	287	287	307	295	0	72	0	0	-1
N.S.	1	1.00	1.07	1.03	0.00	0.25	0.00	0.00	-0.00
time (sec)	N/A	0.226	0.363	0.013	0.000	0.515	0.000	0.000	0.000

Problem 395	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	237	237	155	153	0	55	0	0	-1
N.S.	1	1.00	0.65	0.65	0.00	0.23	0.00	0.00	-0.00
time (sec)	N/A	0.182	10.094	0.012	0.000	0.551	0.000	0.000	0.000

Problem 396	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	140	114	0	17	0	0	-1
N.S.	1	1.00	1.11	0.90	0.00	0.13	0.00	0.00	-0.01
time (sec)	N/A	0.063	0.159	0.012	0.000	0.710	0.000	0.000	0.000

Problem 397	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	284	284	243	207	0	0	0	0	-1
N.S.	1	1.00	0.86	0.73	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.208	0.278	0.013	0.000	0.000	0.000	0.000	0.000

Problem 398	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	355	355	370	346	0	0	0	0	-1
N.S.	1	1.00	1.04	0.97	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.273	0.532	0.015	0.000	0.000	0.000	0.000	0.000

Problem 399	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	41	38	37	46	61	37	99
N.S.	1	1.00	0.87	0.81	0.79	0.98	1.30	0.79	2.11
time (sec)	N/A	0.039	0.019	0.007	0.488	2.992	0.225	0.417	0.708

Problem 400	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	47	0	39	57	76	39	109
N.S.	1	1.00	1.00	0.00	0.83	1.21	1.62	0.83	2.32
time (sec)	N/A	0.041	0.026	0.045	0.485	2.067	22.109	0.401	0.348

Problem 401	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	127	127	123	0	0	207	0	0	-1
N.S.	1	1.00	0.97	0.00	0.00	1.63	0.00	0.00	-0.01
time (sec)	N/A	0.022	0.073	0.063	0.000	2.493	0.000	0.000	0.000

Problem 402	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	162	0	0	144	0	0	-1
N.S.	1	1.00	1.47	0.00	0.00	1.31	0.00	0.00	-0.01
time (sec)	N/A	0.041	0.083	0.046	0.000	1.936	0.000	0.000	0.000

Problem 403	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	63	0	0	91	0	0	-1
N.S.	1	1.00	1.00	0.00	0.00	1.44	0.00	0.00	-0.02
time (sec)	N/A	0.009	0.012	0.059	0.000	2.280	0.000	0.000	0.000

Problem 404	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	41	45	45	48	0	55	39
N.S.	1	1.00	0.95	1.05	1.05	1.12	0.00	1.28	0.91
time (sec)	N/A	0.025	0.017	0.012	0.507	2.509	0.000	0.402	0.509

Problem 405	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	159	159	120	0	0	0	0	0	-1
N.S.	1	1.00	0.75	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.029	0.497	0.051	0.000	0.000	0.000	0.000	0.000

Problem 406	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	205	205	164	0	0	0	0	0	-1
N.S.	1	1.00	0.80	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.019	0.952	0.045	0.000	0.000	0.000	0.000	0.000

Problem 407	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	227	227	187	0	0	0	0	0	-1
N.S.	1	1.00	0.82	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.034	0.359	0.046	0.000	0.000	0.000	0.000	0.000

Problem 408	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	131	0	0	207	0	0	-1
N.S.	1	1.00	0.97	0.00	0.00	1.53	0.00	0.00	-0.01
time (sec)	N/A	0.021	0.078	0.045	0.000	2.606	0.000	0.000	0.000

Problem 409	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	115	115	166	0	0	144	0	0	-1
N.S.	1	1.00	1.44	0.00	0.00	1.25	0.00	0.00	-0.01
time (sec)	N/A	0.042	0.082	0.046	0.000	2.297	0.000	0.000	0.000

Problem 410	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	67	0	0	91	0	0	-1
N.S.	1	1.00	1.00	0.00	0.00	1.36	0.00	0.00	-0.01
time (sec)	N/A	0.009	0.017	0.048	0.000	2.409	0.000	0.000	0.000

Problem 411	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	43	45	45	48	0	50	39
N.S.	1	1.00	0.96	1.00	1.00	1.07	0.00	1.11	0.87
time (sec)	N/A	0.026	0.019	0.010	0.482	2.410	0.000	0.406	0.455

Problem 412	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	168	168	130	0	0	0	0	0	-1
N.S.	1	1.00	0.77	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.016	0.143	0.046	0.000	0.000	0.000	0.000	0.000

Problem 413	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	216	216	183	0	0	0	0	0	-1
N.S.	1	1.00	0.85	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.017	0.258	0.045	0.000	0.000	0.000	0.000	0.000

Problem 414	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	240	240	195	0	0	0	0	0	-1
N.S.	1	1.00	0.81	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.032	0.360	0.046	0.000	0.000	0.000	0.000	0.000

Problem 415	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	40	0	0	39	0	0	-1
N.S.	1	1.00	1.00	0.00	0.00	0.98	0.00	0.00	-0.02
time (sec)	N/A	0.004	0.010	0.048	0.000	3.183	0.000	0.000	0.000

Problem 416	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	44	0	0	43	0	58	-1
N.S.	1	1.00	1.00	0.00	0.00	0.98	0.00	1.32	-0.02
time (sec)	N/A	0.005	0.011	0.049	0.000	3.251	0.000	0.411	0.000

Problem 417	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	277	277	269	0	0	0	0	0	-1
N.S.	1	1.00	0.97	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.074	0.190	0.055	0.000	0.000	0.000	0.000	0.000

Problem 418	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	247	247	249	0	0	0	0	0	-1
N.S.	1	1.00	1.01	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.044	0.266	0.047	0.000	0.000	0.000	0.000	0.000

Problem 419	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	207	0	0	0	0	0	-1
N.S.	1	1.00	0.99	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.017	0.038	0.046	0.000	0.000	0.000	0.000	0.000

Problem 420	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	185	185	143	0	0	0	0	0	-1
N.S.	1	1.00	0.77	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.016	0.027	0.047	0.000	0.000	0.000	0.000	0.000

Problem 421	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	238	238	238	0	0	0	0	0	-1
N.S.	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.025	0.415	0.049	0.000	0.000	0.000	0.000	0.000

Problem 422	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	261	261	247	0	0	0	0	0	-1
N.S.	1	1.00	0.95	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.045	0.370	0.044	0.000	0.000	0.000	0.000	0.000

Problem 423	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	317	317	297	0	0	0	0	0	-1
N.S.	1	1.00	0.94	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.050	0.586	0.047	0.000	0.000	0.000	0.000	0.000

Problem 424	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	299	299	292	0	0	0	0	0	-1
N.S.	1	1.00	0.98	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.105	0.225	0.049	0.000	0.000	0.000	0.000	0.000

Problem 425	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	267	267	265	0	0	0	0	0	-1
N.S.	1	1.00	0.99	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.067	0.283	0.050	0.000	0.000	0.000	0.000	0.000

Problem 426	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	228	228	225	0	0	0	0	0	-1
N.S.	1	1.00	0.99	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.028	0.038	0.045	0.000	0.000	0.000	0.000	0.000

Problem 427	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	201	201	155	0	0	0	0	0	-1
N.S.	1	1.00	0.77	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.020	0.037	0.048	0.000	0.000	0.000	0.000	0.000

Problem 428	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	256	256	256	0	0	0	0	0	-1
N.S.	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.043	0.318	0.049	0.000	0.000	0.000	0.000	0.000

Problem 429	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	281	281	270	0	0	0	0	0	-1
N.S.	1	1.00	0.96	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.050	0.571	0.045	0.000	0.000	0.000	0.000	0.000

Problem 430	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	339	339	319	0	0	0	0	0	-1
N.S.	1	1.00	0.94	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.068	0.650	0.050	0.000	0.000	0.000	0.000	0.000

Problem 431	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	43	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.032	0.066	0.931	0.000	0.000	0.000	0.000	0.000

Problem 432	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	B	F	F	F(-1)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	275	275	0	1232	0	0	0	0	-1
N.S.	1	1.00	0.00	4.48	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.155	0.206	0.888	0.000	0.000	0.000	0.000	0.000

Problem 433	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	B	F	F	F(-1)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	205	205	0	681	0	0	0	0	-1
N.S.	1	1.00	0.00	3.32	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.129	0.362	0.147	0.000	0.000	0.000	0.000	0.000

Problem 434	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	A	F	F	F(-1)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	141	141	0	276	0	0	0	0	-1
N.S.	1	1.00	0.00	1.96	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.080	0.787	0.151	0.000	0.000	0.000	0.000	0.000

Problem 435	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	43	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.030	0.072	0.312	0.000	0.000	0.000	0.000	0.000

Problem 436	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	43	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.028	1.177	0.497	0.000	0.000	0.000	0.000	0.000

Problem 437	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	18	17	17	17	17	17
N.S.	1	1.00	1.00	0.82	0.77	0.77	0.77	0.77	0.77
time (sec)	N/A	0.024	0.007	0.021	0.482	2.741	0.213	0.388	0.344

Problem 438	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	A	F	F(-2)	F	F	B
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	0	170	0	0	0	0	70
N.S.	1	1.00	0.00	2.02	0.00	0.00	0.00	0.00	0.83
time (sec)	N/A	0.051	0.978	0.429	0.000	0.000	0.000	0.000	0.742

Problem 439	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	50	0	0	54	100	97	-1
N.S.	1	1.00	0.62	0.00	0.00	0.67	1.23	1.20	-0.01
time (sec)	N/A	0.046	0.095	0.006	0.000	2.855	0.544	0.396	0.000

Problem 440	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	50	0	0	45	80	76	-1
N.S.	1	1.00	0.61	0.00	0.00	0.55	0.98	0.93	-0.01
time (sec)	N/A	0.048	0.087	0.005	0.000	3.458	0.267	0.409	0.000

Problem 441	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	30	0	0	35	53	53	-1
N.S.	1	1.00	0.73	0.00	0.00	0.85	1.29	1.29	-0.02
time (sec)	N/A	0.027	0.028	0.004	0.000	2.687	0.137	0.395	0.000

Problem 442	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	31	0	0	26	32	31	-1
N.S.	1	1.00	0.79	0.00	0.00	0.67	0.82	0.79	-0.03
time (sec)	N/A	0.012	0.020	0.004	0.000	1.718	0.083	0.377	0.000

Problem 443	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	75	0	0	0	0	0	-1
N.S.	1	1.00	1.74	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.045	0.038	0.004	0.000	0.000	0.000	0.000	0.000

Problem 444	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	54	0	0	0	0	0	-1
N.S.	1	1.00	0.65	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.080	0.074	0.005	0.000	0.000	0.000	0.000	0.000

Problem 445	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	67	0	0	0	0	0	-1
N.S.	1	1.00	0.66	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.094	0.059	0.006	0.000	0.000	0.000	0.000	0.000

Problem 446	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	129	129	84	0	0	0	0	0	-1
N.S.	1	1.00	0.65	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.099	0.068	0.006	0.000	0.000	0.000	0.000	0.000

Problem 447	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	36	0	0	0	0	0	-1
N.S.	1	1.00	0.73	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.046	0.023	0.006	0.000	0.000	0.000	0.000	0.000

Problem 448	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	48	0	0	0	0	0	-1
N.S.	1	1.00	0.74	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.037	0.027	0.004	0.000	0.000	0.000	0.000	0.000

Problem 449	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	20	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.027	0.142	0.004	0.000	0.000	0.000	0.000	0.000

Problem 450	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	22	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.054	1.234	0.004	0.000	0.000	0.000	0.000	0.000

Problem 451	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	309	309	148	0	0	129	416	334	-1
N.S.	1	1.00	0.48	0.00	0.00	0.42	1.35	1.08	-0.00
time (sec)	N/A	0.383	0.286	0.021	0.000	1.627	0.668	0.420	0.000

Problem 452	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	205	205	103	0	0	85	243	208	-1
N.S.	1	1.00	0.50	0.00	0.00	0.41	1.19	1.01	-0.00
time (sec)	N/A	0.264	0.155	0.005	0.000	2.623	0.360	0.441	0.000

Problem 453	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	59	0	0	63	146	108	-1
N.S.	1	1.00	0.58	0.00	0.00	0.62	1.45	1.07	-0.01
time (sec)	N/A	0.138	0.105	0.004	0.000	3.351	0.178	0.431	0.000

Problem 454	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	35	0	0	39	65	43	-1
N.S.	1	1.00	0.69	0.00	0.00	0.76	1.27	0.84	-0.02
time (sec)	N/A	0.014	0.013	0.003	0.000	2.496	0.105	0.396	0.000

Problem 455	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	20	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.145	0.091	0.003	0.000	0.000	0.000	0.000	0.000

Problem 456	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	22	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.198	0.196	0.004	0.000	0.000	0.000	0.000	0.000

Problem 457	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	381	381	221	0	0	0	0	0	-1
N.S.	1	1.00	0.58	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.492	0.222	0.006	0.000	0.000	0.000	0.000	0.000

Problem 458	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	265	265	161	0	0	0	0	0	-1
N.S.	1	1.00	0.61	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.360	0.138	0.003	0.000	0.000	0.000	0.000	0.000

Problem 459	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	93	0	0	0	0	0	-1
N.S.	1	1.00	0.76	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.202	0.080	0.006	0.000	0.000	0.000	0.000	0.000

Problem 460	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	52	0	0	0	0	0	-1
N.S.	1	1.00	0.75	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.038	0.033	0.004	0.000	0.000	0.000	0.000	0.000

Problem 461	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	22	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.152	0.103	0.006	0.000	0.000	0.000	0.000	0.000

Problem 462	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	24	0	0	0	0	0	0	0	-1
N.S.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.205	0.377	0.004	0.000	0.000	0.000	0.000	0.000

Problem 463	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	A	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	162	162	69	0	0	71	141	0	-1
N.S.	1	1.00	0.43	0.00	0.00	0.44	0.87	0.00	-0.01
time (sec)	N/A	0.301	0.264	0.083	0.000	2.092	17.880	0.000	0.000

Problem 464	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	A	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	51	0	0	55	95	0	-1
N.S.	1	1.00	0.46	0.00	0.00	0.49	0.85	0.00	-0.01
time (sec)	N/A	0.213	0.118	0.077	0.000	2.247	1.741	0.000	0.000

Problem 465	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	A	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	31	0	0	35	49	0	-1
N.S.	1	1.00	0.50	0.00	0.00	0.56	0.79	0.00	-0.02
time (sec)	N/A	0.144	0.055	0.069	0.000	1.872	0.135	0.000	0.000

Problem 466	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	10	10	10	10	9	9	8	9	9
N.S.	1	1.00	1.00	1.00	0.90	0.90	0.80	0.90	0.90
time (sec)	N/A	0.151	0.016	0.132	0.474	1.171	0.212	0.396	0.254

Problem 467	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	45	0	0	0	0	0	-1
N.S.	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.182	0.050	0.079	0.000	0.000	0.000	0.000	0.000

Problem 468	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	84	0	0	0	0	0	-1
N.S.	1	1.00	0.88	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.202	0.123	0.070	0.000	0.000	0.000	0.000	0.000

Problem 469	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	F	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	345	47	0	141	0	95	42
N.S.	1	1.00	7.34	1.00	0.00	3.00	0.00	2.02	0.89
time (sec)	N/A	0.023	0.642	0.227	0.000	1.026	0.000	0.429	0.674

Problem 470	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	A	F	A	A	F	F	F
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	28	0	1	3	0	0	-1
N.S.	1	0.00	1.04	0.00	0.04	0.11	0.00	0.00	-0.04
time (sec)	N/A	0.027	0.357	0.096	0.480	3.297	0.000	0.000	0.000

Problem 471	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	38	0	0	41	0	0	-1
N.S.	1	1.00	1.00	0.00	0.00	1.08	0.00	0.00	-0.03
time (sec)	N/A	0.045	0.033	0.230	0.000	3.023	0.000	0.000	0.000

Problem 472	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	F	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	26	0	0	28	0	0	26
N.S.	1	1.00	0.87	0.00	0.00	0.93	0.00	0.00	0.87
time (sec)	N/A	0.039	0.018	0.236	0.000	2.053	0.000	0.000	0.340

Problem 473	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	17	12	14	12	14	12
N.S.	1	1.00	1.00	1.06	0.75	0.88	0.75	0.88	0.75
time (sec)	N/A	0.020	0.020	0.211	0.480	2.046	0.085	0.540	0.315

Problem 474	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	A	A	F	A	F	A	B
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	0	16	17	0	14	0	20	12
N.S.	1	0.00	1.00	1.06	0.00	0.88	0.00	1.25	0.75
time (sec)	N/A	0.104	0.069	0.136	0.000	0.959	0.000	0.479	0.291

2.3 Detailed conclusion table specific for Rubi results

The following table is specific to Rubi. It gives additional statistics for each integral. the column **steps** is the number of steps used by Rubi to obtain the antiderivative. The **rules** column is the number of unique rules used. The **integrand size** column is the leaf size of the integrand. Finally the ratio $\frac{\text{number of rules}}{\text{integrand size}}$ is given. The larger this ratio is, the harder the integral was to solve. In this test, problem number [432] had the largest ratio of [40]

Table 2.1: Rubi specific breakdown of results for each integral

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1	A	5	5	1.00	16	0.312
2	A	4	4	1.00	16	0.250
3	A	4	4	1.00	14	0.286
4	A	3	2	1.00	8	0.250
5	A	8	5	1.00	16	0.312
6	A	3	3	1.00	16	0.188
7	A	4	4	1.00	16	0.250
8	A	5	5	1.00	16	0.312
9	A	18	7	1.00	18	0.389
10	A	13	7	1.00	18	0.389
11	A	9	7	1.00	16	0.438
12	A	3	3	1.00	10	0.300
13	A	10	6	1.00	18	0.333
14	A	10	7	1.00	18	0.389
15	A	13	10	1.00	18	0.556
16	A	27	7	1.00	18	0.389
17	A	17	6	1.00	18	0.333
18	A	11	7	1.00	16	0.438
19	A	4	4	1.00	10	0.400
20	A	0	0	0.00	0	0.000
21	A	0	0	0.00	0	0.000
22	A	19	7	1.00	18	0.389
23	A	11	7	1.00	16	0.438
24	A	5	5	1.00	10	0.500
25	A	0	0	0.00	0	0.000

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
26	A	0	0	0.00	0	0.000
27	A	0	0	0.00	0	0.000
28	A	3	3	1.00	16	0.188
29	A	0	0	0.00	0	0.000
30	A	0	0	0.00	0	0.000
31	A	16	12	1.00	31	0.387
32	A	13	8	1.00	31	0.258
33	A	8	6	1.00	29	0.207
34	A	22	19	1.00	31	0.613
35	A	35	22	1.00	31	0.710
36	A	24	17	1.00	31	0.548
37	A	20	12	1.00	31	0.387
38	A	12	9	1.00	29	0.310
39	A	29	23	1.00	31	0.742
40	A	30	18	1.00	31	0.581
41	A	26	15	1.00	31	0.484
42	A	14	10	1.00	29	0.345
43	A	37	28	1.00	31	0.903
44	A	13	7	1.00	31	0.226
45	A	9	7	1.00	31	0.226
46	A	6	5	1.00	29	0.172
47	A	10	7	1.00	31	0.226
48	A	13	10	1.00	31	0.323
49	A	11	10	1.00	31	0.323
50	A	8	7	1.00	31	0.226
51	A	6	6	1.00	29	0.207
52	A	20	11	1.00	31	0.355
53	A	13	10	1.43	31	0.323
54	A	10	7	1.00	31	0.226
55	A	10	7	1.31	31	0.226
56	A	6	6	1.00	29	0.207
57	A	30	12	1.00	31	0.387
58	A	37	16	1.00	33	0.485
59	A	23	13	1.00	33	0.394
60	A	13	11	1.00	31	0.355

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
61	A	38	23	1.00	33	0.697
62	A	56	27	1.00	33	0.818
63	A	36	21	1.00	33	0.636
64	A	19	15	1.00	31	0.484
65	A	50	32	1.00	33	0.970
66	A	77	32	1.00	33	0.970
67	A	50	24	1.00	33	0.727
68	A	25	15	1.00	31	0.484
69	A	74	35	1.00	33	1.061
70	A	17	10	1.00	33	0.303
71	A	11	9	1.00	33	0.273
72	A	8	6	1.21	31	0.194
73	A	12	8	1.00	33	0.242
74	A	20	12	1.00	33	0.364
75	A	23	15	1.00	33	0.454
76	A	19	13	1.00	33	0.394
77	A	16	11	1.00	31	0.355
78	A	28	14	1.00	33	0.424
79	A	37	12	1.00	33	0.364
80	A	30	18	1.00	33	0.546
81	A	21	14	1.00	31	0.452
82	A	0	0	0.00	0	0.000
83	A	15	9	1.00	35	0.257
84	A	13	9	1.00	35	0.257
85	A	11	8	1.00	33	0.242
86	A	9	7	1.00	25	0.280
87	A	0	0	0.00	0	0.000
88	A	6	4	1.00	21	0.190
89	A	6	5	1.00	21	0.238
90	A	5	5	1.00	19	0.263
91	A	14	12	1.00	21	0.571
92	A	15	13	1.00	21	0.619
93	A	7	8	1.00	21	0.381
94	A	6	7	1.00	21	0.333
95	A	7	7	1.00	21	0.333

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
96	A	8	7	1.00	21	0.333
97	A	8	5	0.99	26	0.192
98	A	7	5	1.00	26	0.192
99	A	6	5	1.00	24	0.208
100	A	15	12	1.00	26	0.462
101	A	16	14	1.00	26	0.538
102	A	16	14	1.00	26	0.538
103	A	6	7	1.00	26	0.269
104	A	7	8	1.00	26	0.308
105	A	8	8	1.00	26	0.308
106	A	9	5	1.00	31	0.161
107	A	8	5	1.00	31	0.161
108	A	7	5	1.00	29	0.172
109	A	16	13	1.00	31	0.419
110	A	18	15	1.00	31	0.484
111	A	30	18	1.00	31	0.581
112	A	29	17	1.00	31	0.548
113	A	33	20	1.00	23	0.870
114	A	55	25	1.00	25	1.000
115	A	35	8	1.00	28	0.286
116	A	27	8	1.00	28	0.286
117	A	20	8	1.00	26	0.308
118	A	38	23	1.00	28	0.821
119	A	45	25	1.00	28	0.893
120	A	20	18	1.00	33	0.546
121	A	32	25	1.00	35	0.714
122	A	6	6	1.00	10	0.600
123	A	5	5	1.00	10	0.500
124	A	5	5	1.00	8	0.625
125	A	3	3	1.00	6	0.500
126	A	9	6	1.00	10	0.600
127	A	4	4	1.00	10	0.400
128	A	5	5	1.00	10	0.500
129	A	6	6	1.00	10	0.600
130	A	7	7	1.00	10	0.700

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
131	A	19	8	1.00	12	0.667
132	A	14	8	1.00	12	0.667
133	A	10	8	1.00	10	0.800
134	A	4	4	1.00	8	0.500
135	A	11	7	1.00	12	0.583
136	A	11	8	0.90	12	0.667
137	A	14	11	1.00	12	0.917
138	A	18	11	1.00	12	0.917
139	A	12	10	1.00	10	1.000
140	A	5	4	1.00	8	0.500
141	A	13	8	1.00	12	0.667
142	A	13	9	1.00	12	0.750
143	A	14	8	1.00	12	0.667
144	A	10	8	1.00	10	0.800
145	A	3	3	1.00	8	0.375
146	A	0	0	0.00	0	0.000
147	A	12	7	1.92	12	0.583
148	A	8	7	1.58	10	0.700
149	A	4	4	1.00	8	0.500
150	A	0	0	0.00	0	0.000
151	A	24	12	1.49	12	1.000
152	A	14	12	1.40	10	1.200
153	A	5	5	1.00	8	0.625
154	A	0	0	0.00	0	0.000
155	A	23	12	1.00	18	0.667
156	A	14	10	1.00	16	0.625
157	A	8	8	1.00	14	0.571
158	A	16	10	1.00	16	0.625
159	A	9	9	1.00	14	0.643
160	A	18	10	1.00	16	0.625
161	A	10	9	1.00	14	0.643
162	A	11	9	1.00	14	0.643
163	A	20	9	1.00	18	0.500
164	A	12	8	1.00	16	0.500
165	A	7	7	1.00	14	0.500

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
166	A	16	10	1.00	16	0.625
167	A	8	8	1.00	14	0.571
168	A	22	15	1.00	16	0.938
169	A	9	9	1.00	14	0.643
170	A	21	13	1.00	16	0.812
171	A	10	9	1.00	14	0.643
172	A	0	0	0.00	0	0.000
173	A	22	9	1.00	16	0.562
174	A	14	9	1.00	14	0.643
175	A	5	4	1.00	12	0.333
176	A	0	0	0.00	0	0.000
177	A	6	5	1.00	21	0.238
178	A	6	5	1.00	21	0.238
179	A	6	5	1.00	21	0.238
180	A	5	5	1.00	19	0.263
181	A	4	3	1.00	10	0.300
182	A	7	7	1.00	21	0.333
183	A	6	6	1.00	21	0.286
184	A	4	4	1.00	21	0.190
185	A	7	7	1.00	21	0.333
186	A	5	5	1.00	21	0.238
187	A	8	7	1.00	21	0.333
188	A	9	7	1.00	23	0.304
189	A	8	6	1.00	23	0.261
190	A	7	7	1.00	23	0.304
191	A	6	6	1.00	21	0.286
192	A	4	4	1.00	12	0.333
193	A	8	8	1.00	23	0.348
194	A	9	7	1.00	23	0.304
195	A	5	5	1.00	23	0.217
196	A	11	9	1.00	23	0.391
197	A	17	9	1.00	23	0.391
198	A	13	7	1.00	23	0.304
199	A	12	9	1.00	23	0.391
200	A	8	7	1.00	21	0.333

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
201	A	6	4	1.00	12	0.333
202	A	9	9	1.00	23	0.391
203	A	11	8	1.00	23	0.348
204	A	9	9	1.00	23	0.391
205	A	16	12	1.00	23	0.522
206	A	16	6	1.00	23	0.261
207	A	13	8	1.00	23	0.348
208	A	9	6	1.00	21	0.286
209	A	6	4	1.00	12	0.333
210	A	10	9	1.00	23	0.391
211	A	13	9	1.00	23	0.391
212	A	10	10	1.00	23	0.435
213	A	21	12	1.00	23	0.522
214	A	8	4	1.00	12	0.333
215	A	14	7	1.00	23	0.304
216	A	11	7	1.00	23	0.304
217	A	11	7	1.00	23	0.304
218	A	8	7	1.00	21	0.333
219	A	5	5	1.00	12	0.417
220	A	0	0	0.00	0	0.000
221	A	13	6	1.00	23	0.261
222	A	10	6	1.00	23	0.261
223	A	10	6	1.00	23	0.261
224	A	6	6	1.00	21	0.286
225	A	6	6	1.00	12	0.500
226	A	0	0	0.00	0	0.000
227	A	26	9	1.00	23	0.391
228	A	20	9	1.00	23	0.391
229	A	18	10	1.00	23	0.435
230	A	11	10	1.00	21	0.476
231	A	7	7	1.00	12	0.583
232	A	0	0	0.00	0	0.000
233	A	24	8	1.00	23	0.348
234	A	17	8	1.00	23	0.348
235	A	18	10	1.00	23	0.435

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
236	A	9	9	1.00	21	0.429
237	A	8	7	1.00	12	0.583
238	A	0	0	0.00	0	0.000
239	A	9	7	1.00	12	0.583
240	A	16	10	1.00	25	0.400
241	A	16	10	1.00	25	0.400
242	A	11	10	1.00	23	0.435
243	A	8	8	1.00	14	0.571
244	A	0	0	0.00	0	0.000
245	A	27	12	1.00	25	0.480
246	A	24	13	1.00	25	0.520
247	A	13	12	1.00	23	0.522
248	A	9	9	1.00	14	0.643
249	A	0	0	0.00	0	0.000
250	A	29	12	1.00	25	0.480
251	A	26	13	1.00	25	0.520
252	A	14	12	1.00	23	0.522
253	A	10	9	1.00	14	0.643
254	A	0	0	0.00	0	0.000
255	A	35	14	1.00	25	0.560
256	A	16	12	1.00	23	0.522
257	A	11	9	1.00	14	0.643
258	A	0	0	0.00	0	0.000
259	A	20	9	1.00	25	0.360
260	A	15	9	1.00	25	0.360
261	A	15	9	1.00	25	0.360
262	A	10	9	1.00	23	0.391
263	A	7	7	1.00	14	0.500
264	A	0	0	0.00	0	0.000
265	A	19	8	1.00	25	0.320
266	A	14	8	1.00	25	0.320
267	A	14	8	1.00	25	0.320
268	A	8	8	1.00	23	0.348
269	A	8	8	1.00	14	0.571
270	A	0	0	0.00	0	0.000

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
271	A	26	11	1.00	25	0.440
272	A	24	12	1.00	25	0.480
273	A	13	12	1.00	23	0.522
274	A	9	9	1.00	14	0.643
275	A	0	0	0.00	0	0.000
276	A	23	10	1.00	25	0.400
277	A	24	12	1.00	25	0.480
278	A	11	11	1.00	23	0.478
279	A	10	9	1.00	14	0.643
280	A	0	0	0.00	0	0.000
281	A	7	6	1.00	23	0.261
282	A	6	5	1.00	23	0.217
283	A	6	6	1.00	23	0.261
284	A	5	5	1.00	23	0.217
285	A	5	5	1.00	23	0.217
286	A	4	4	1.00	23	0.174
287	A	6	6	1.00	23	0.261
288	A	5	5	1.00	23	0.217
289	A	7	6	1.00	23	0.261
290	A	6	5	1.00	23	0.217
291	A	3	3	1.00	25	0.120
292	A	3	3	1.00	25	0.120
293	A	3	3	1.00	25	0.120
294	A	3	3	1.00	25	0.120
295	A	3	3	1.00	25	0.120
296	A	3	3	1.00	25	0.120
297	A	3	3	1.00	25	0.120
298	A	3	3	1.00	25	0.120
299	A	3	3	1.00	25	0.120
300	A	0	0	0.00	0	0.000
301	A	0	0	0.00	0	0.000
302	A	0	0	0.00	0	0.000
303	A	0	0	0.00	0	0.000
304	A	0	0	0.00	0	0.000
305	A	0	0	0.00	0	0.000

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
306	A	0	0	0.00	0	0.000
307	A	0	0	0.00	0	0.000
308	A	0	0	0.00	0	0.000
309	A	0	0	0.00	0	0.000
310	A	3	3	1.00	23	0.130
311	A	3	3	1.00	21	0.143
312	A	0	0	0.00	0	0.000
313	A	7	6	1.00	33	0.182
314	A	6	6	1.00	33	0.182
315	A	4	4	1.00	31	0.129
316	A	5	4	1.00	33	0.121
317	A	6	6	1.00	33	0.182
318	A	4	4	1.03	33	0.121
319	A	9	9	1.00	33	0.273
320	A	15	9	1.00	33	0.273
321	A	11	9	1.00	33	0.273
322	A	7	6	1.00	31	0.194
323	A	6	4	1.00	33	0.121
324	A	7	5	1.00	33	0.152
325	A	11	8	1.00	33	0.242
326	A	18	7	1.00	33	0.212
327	A	2	2	1.00	33	0.061
328	A	2	2	1.00	33	0.061
329	A	2	2	1.00	31	0.065
330	A	2	2	1.00	33	0.061
331	A	2	2	1.00	33	0.061
332	A	2	2	1.00	33	0.061
333	A	8	8	1.00	33	0.242
334	A	7	7	1.00	33	0.212
335	A	3	3	1.00	31	0.097
336	A	0	0	0.00	0	0.000
337	A	0	0	0.00	0	0.000
338	A	2	4	1.00	23	0.174
339	A	2	2	1.00	36	0.056
340	A	5	4	1.00	14	0.286

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
341	A	6	5	1.00	14	0.357
342	A	5	4	1.00	14	0.286
343	A	5	5	1.00	14	0.357
344	A	4	3	1.00	12	0.250
345	A	7	6	1.00	14	0.429
346	A	5	5	1.00	14	0.357
347	A	3	3	1.00	14	0.214
348	A	6	6	1.00	14	0.429
349	A	4	4	1.00	14	0.286
350	A	7	6	1.00	14	0.429
351	A	5	4	1.00	14	0.286
352	A	5	4	1.00	14	0.286
353	A	7	7	1.00	14	0.500
354	A	4	4	1.00	14	0.286
355	A	7	6	1.00	10	0.600
356	A	3	3	1.00	14	0.214
357	A	7	7	1.00	14	0.500
358	A	4	4	1.00	14	0.286
359	A	8	7	1.00	14	0.500
360	A	5	5	1.00	10	0.500
361	A	8	6	1.00	10	0.600
362	A	7	6	1.00	8	0.750
363	A	6	6	1.00	6	1.000
364	A	5	5	1.00	10	0.500
365	A	3	3	1.00	10	0.300
366	A	4	4	1.00	10	0.400
367	A	5	4	1.00	10	0.400
368	A	6	4	1.00	10	0.400
369	A	7	6	1.00	14	0.429
370	A	4	4	1.00	14	0.286
371	A	6	6	1.00	14	0.429
372	A	3	3	1.00	12	0.250
373	A	6	5	1.00	10	0.500
374	A	7	6	1.00	14	0.429
375	A	4	3	1.00	14	0.214

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
376	A	5	5	1.00	14	0.357
377	A	5	4	1.00	14	0.286
378	A	6	5	1.00	14	0.357
379	A	3	3	1.00	14	0.214
380	A	3	3	1.00	14	0.214
381	A	3	3	1.00	12	0.250
382	A	4	3	1.00	10	0.300
383	A	7	6	1.00	14	0.429
384	A	3	3	1.00	14	0.214
385	A	3	3	1.00	14	0.214
386	A	7	7	1.00	16	0.438
387	A	7	7	1.00	16	0.438
388	A	5	4	1.00	14	0.286
389	A	12	7	1.00	16	0.438
390	A	5	5	1.00	16	0.312
391	A	6	6	1.00	16	0.375
392	A	7	7	1.00	16	0.438
393	A	8	8	1.00	16	0.500
394	A	7	7	1.00	16	0.438
395	A	7	6	1.00	12	0.500
396	A	4	4	1.00	16	0.250
397	A	8	7	1.00	16	0.438
398	A	8	8	1.00	16	0.500
399	A	4	4	1.00	12	0.333
400	A	4	4	1.00	14	0.286
401	A	3	2	1.00	14	0.143
402	A	5	4	1.00	14	0.286
403	A	2	2	1.00	14	0.143
404	A	4	3	1.00	12	0.250
405	A	1	1	1.00	14	0.071
406	A	1	1	1.00	14	0.071
407	A	2	2	1.00	14	0.143
408	A	3	2	1.00	16	0.125
409	A	5	4	1.00	16	0.250
410	A	2	2	1.00	16	0.125

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
411	A	4	3	1.00	14	0.214
412	A	1	1	1.00	16	0.062
413	A	1	1	1.00	16	0.062
414	A	2	2	1.00	16	0.125
415	A	2	2	1.00	8	0.250
416	A	2	2	1.00	10	0.200
417	A	2	2	1.00	16	0.125
418	A	2	2	1.00	16	0.125
419	A	1	1	1.00	16	0.062
420	A	1	1	1.00	16	0.062
421	A	1	1	1.00	16	0.062
422	A	2	2	1.00	16	0.125
423	A	2	2	1.00	16	0.125
424	A	2	2	1.00	18	0.111
425	A	2	2	1.00	18	0.111
426	A	1	1	1.00	18	0.056
427	A	1	1	1.00	18	0.056
428	A	1	1	1.00	18	0.056
429	A	2	2	1.00	18	0.111
430	A	2	2	1.00	18	0.111
431	A	0	0	0.00	0	0.000
432	A	8	8	1.00	40	0.200
433	A	7	7	1.00	40	0.175
434	A	6	7	1.00	38	0.184
435	A	0	0	0.00	0	0.000
436	A	0	0	0.00	0	0.000
437	A	3	4	1.00	8	0.500
438	A	6	6	1.00	10	0.600
439	A	6	4	1.00	10	0.400
440	A	6	4	1.00	10	0.400
441	A	5	4	1.00	8	0.500
442	A	2	2	1.00	6	0.333
443	A	6	5	1.00	10	0.500
444	A	6	4	1.00	10	0.400
445	A	12	5	1.00	12	0.417

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
446	A	12	5	1.00	12	0.417
447	A	8	5	1.00	10	0.500
448	A	7	4	1.00	8	0.500
449	A	0	0	0.00	0	0.000
450	A	0	0	0.00	0	0.000
451	A	17	7	1.00	12	0.583
452	A	13	7	1.00	12	0.583
453	A	9	7	1.00	10	0.700
454	A	2	2	1.00	8	0.250
455	A	0	0	0.00	0	0.000
456	A	0	0	0.00	0	0.000
457	A	37	8	1.00	14	0.571
458	A	27	8	1.00	14	0.571
459	A	17	8	1.00	12	0.667
460	A	7	4	1.00	10	0.400
461	A	0	0	0.00	0	0.000
462	A	0	0	0.00	0	0.000
463	A	7	5	1.00	21	0.238
464	A	6	5	1.00	21	0.238
465	A	5	5	1.00	21	0.238
466	A	4	4	1.00	21	0.190
467	A	4	4	1.00	21	0.190
468	A	5	5	1.00	21	0.238
469	A	6	6	1.00	10	0.600
470	F	0	0	N/A	0.	N/A
471	A	2	2	1.00	26	0.077
472	A	2	2	1.00	26	0.077
473	A	3	2	1.00	28	0.071
474	F	0	0	N/A	0.	N/A

Chapter 3

Listing of integrals

Local contents

3.1 $\int (d+ex)^3(a+b\mathbf{ArcSin}(cx))\,dx$

Optimal. Leaf size=179

$$\frac{7bd(d+ex)^2\sqrt{1-c^2x^2}}{48c}+\frac{b(d+ex)^3\sqrt{1-c^2x^2}}{16c}+\frac{b(4d(19c^2d^2+16e^2)+e(26c^2d^2+9e^2)\,x)\,\sqrt{1-c^2x^2}}{96c^3}-\frac{b(8}{}$$

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

Rubi [A]
time = 0.12, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.312$, Rules used = {4827, 757, 847, 794, 222}

$$\frac{(d+ex)^4(a+b\text{ArcSin}(cx))}{4e}-\frac{b\text{ArcSin}(cx)\,(8c^4d^4+24c^2d^2e^2+3e^4)}{32c^4e}+\frac{b\sqrt{1-c^2x^2}\,(d+ex)^3}{16c}+\frac{7bd\sqrt{1-c^2x^2}\,(d+ex)^2}{48c}+\frac{b\sqrt{1-c^2x^2}\,(ex(26c^2d^2+9e^2)+4d(19c^2d^2+16e^2))}{96c^3}$$

Antiderivative was successfully verified.

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

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

Rule 222

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

Rule 757

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

Rule 794

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

```
Q[p, -1]
```

Rule 847

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

Rule 4827

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

Rubi steps

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

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

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

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

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

Mathematica [A]
time = 0.10, size = 165, normalized size = 0.92

$$\frac{24ac^4x(4d^3+6d^2ex+4de^2x^2+e^3x^3)+bc\sqrt{1-c^2x^2}\left(e^2(64d+9ex)+c^2(96d^3+72d^2ex+32de^2x^2+6e^3x^3)\right)+3b(-24c^2d^2e-3e^3+8c^4x(4d^3+6d^2ex+4de^2x^2+e^3x^3))\operatorname{ArcSin}(cx)}{96c^4}$$

Antiderivative was successfully verified.

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

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

Maple [A]
time = 0.12, size = 265, normalized size = 1.48

method	result
derivativedivides	$\frac{\frac{(cex+dc)^4 a}{4c^3 e} + \frac{b\left(\frac{\arcsin(cx)c^4d^4}{4e} + \arcsin(cx)c^4d^3x + \frac{3e\arcsin(cx)c^4d^2x^2}{2} + e^2\arcsin(cx)c^4d\,x^3 + \frac{e^3\arcsin(cx)c^4x^4}{4} - \frac{c^4d^4\arcsin(cx) - 4}{\ldots}\right.}{\ldots}}{\ldots}$
default	$\frac{\frac{(cex+dc)^4 a}{4c^3 e} + \frac{b\left(\frac{\arcsin(cx)c^4d^4}{4e} + \arcsin(cx)c^4d^3x + \frac{3e\arcsin(cx)c^4d^2x^2}{2} + e^2\arcsin(cx)c^4d\,x^3 + \frac{e^3\arcsin(cx)c^4x^4}{4} - \frac{c^4d^4\arcsin(cx) - 4}{\ldots}\right.}{\ldots}}{\ldots}$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [A]
time = 0.48, size = 229, normalized size = 1.28

$$\frac{1}{4}\,ax^4e^3 + adx^3e^2 + \frac{3}{2}\,ad^2x^2e + ad^3x + \frac{3}{4}\left(2\,x^2\arcsin(cx) + c\left(\frac{\sqrt{-c^2x^2+1}\,x}{c^2} - \frac{\arcsin(cx)}{c^3}\right)\right)bd^2e + \frac{\left(cx\arcsin(cx) + \sqrt{-c^2x^2+1}\right)bd^3}{c} + \frac{1}{3}\left(3\,x^3\arcsin(cx) + c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2} + \frac{2\sqrt{-c^2x^2+1}}{c^4}\right)\right)bde^2 + \frac{1}{32}\left(8\,x^4\arcsin(cx) + \left(\frac{2\sqrt{-c^2x^2+1}\,x^3}{c^2} + \frac{3\sqrt{-c^2x^2+1}\,x}{c^4} - \frac{3\arcsin(cx)}{c^5}\right)c\right)be^3$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*a*x^4*e^3 + a*d*x^3*e^2 + 3/2*a*d^2*x^2*e + a*d^3*x + 3/4*(2*x^2*arcsin
(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c*x)/c^3))*b*d^2*e + (c*x*arcs
in(c*x) + sqrt(-c^2*x^2 + 1))*b*d^3/c + 1/3*(3*x^3*arcsin(c*x) + c*(sqrt(-c
^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*d*e^2 + 1/32*(8*x^4*arcs
in(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*ar
csin(c*x)/c^5)*c)*b*e^3
```

Fricas [A]
time = 2.36, size = 197, normalized size = 1.10

$$\frac{24\,ac^{4}x^{4}e^{3}+96\,ac^{4}dx^{3}e^{2}+144\,ac^{4}d^{2}x^{2}e+96\,ac^{4}d^{3}x+3\,(32\,bc^{4}dx^{3}e^{2}+32\,bc^{4}d^{3}x+(8\,bc^{4}x^{4}-3\,b)e^{3}+24\,(2\,bc^{4}d^{2}x^{2}-bc^{2}d^{2})e)\arcsin\left(cx\right)+(72\,bc^{3}d^{2}xe+96\,bc^{3}d^{3}+3\,(2\,bc^{3}x^{3}+3\,bcx)e^{3}+32\,(bc^{3}dx^{2}+2\,bcd)e^{2})\sqrt{-c^{2}x^{2}+1}}{96\,c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/96*(24*a*c^4*x^4*e^3 + 96*a*c^4*d*x^3*e^2 + 144*a*c^4*d^2*x^2*e + 96*a*c^
4*d^3*x + 3*(32*b*c^4*d*x^3*e^2 + 32*b*c^4*d^3*x + (8*b*c^4*x^4 - 3*b)*e^3
+ 24*(2*b*c^4*d^2*x^2 - b*c^2*d^2)*e)*arcsin(c*x) + (72*b*c^3*d^2*x*e + 96*
b*c^3*d^3 + 3*(2*b*c^3*x^3 + 3*b*c*x)*e^3 + 32*(b*c^3*d*x^2 + 2*b*c*d)*e^2)
*sqrt(-c^2*x^2 + 1))/c^4
```

Sympy [A]
time = 0.30, size = 316, normalized size = 1.77

$$\begin{cases} ad^{3}x+\frac{3ad^{2}ex^{2}}{2}+ade^{2}x^{3}+\frac{ae^{3}x^{4}}{4}+bd^{3}x\operatorname{asin}\left(cx\right)+\frac{3bd^{2}ex^{2}\operatorname{asin}\left(cx\right)}{2}+bde^{2}x^{3}\operatorname{asin}\left(cx\right)+\frac{be^{3}x^{4}\operatorname{asin}\left(cx\right)}{4}+\frac{bd^{3}\sqrt{-c^{2}x^{2}+1}}{c}+\frac{3bd^{2}ex\sqrt{-c^{2}x^{2}+1}}{4c}+\frac{bde^{2}x^{2}\sqrt{-c^{2}x^{2}+1}}{3c}+\frac{be^{3}x^{3}\sqrt{-c^{2}x^{2}+1}}{16c}-\frac{3bd^{2}e\operatorname{asin}\left(cx\right)}{4c^{2}}+\frac{2bde^{2}\sqrt{-c^{2}x^{2}+1}}{3c^{3}}+\frac{3be^{3}x\sqrt{-c^{2}x^{2}+1}}{32c^{3}}-\frac{3be^{3}\operatorname{asin}\left(cx\right)}{32c^{4}} & \text{for}\: c \neq 0 \\ a\left(d^{3}x+\frac{3d^{2}ex^{2}}{2}+de^{2}x^{3}+\frac{e^{3}x^{4}}{4}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A]
time = 0.39, size = 317, normalized size = 1.77

$$\frac{1}{4}\,ae^{3}x^{4}+ade^{2}x^{3}+bd^{3}x\arcsin\left(cx\right)+ad^{3}x+\frac{(c^{2}x^{2}-1)bde^{2}x\arcsin\left(cx\right)}{c^{2}}+\frac{3\,\sqrt{-c^{2}x^{2}+1}\,bd^{2}ex}{4\,c}+\frac{3\,(c^{2}x^{2}-1)bd^{2}e\arcsin\left(cx\right)}{2\,c^{2}}+\frac{bde^{2}x\arcsin\left(cx\right)}{c^{2}}+\frac{\sqrt{-c^{2}x^{2}+1}\,bd^{3}}{c}-\frac{(-c^{2}x^{2}+1)^{\frac{3}{2}}be^{3}x}{16\,c^{3}}+\frac{3\,(c^{2}x^{2}-1)ad^{2}e}{2\,c^{2}}+\frac{3\,bd^{2}e\arcsin\left(cx\right)}{4\,c^{2}}+\frac{(c^{2}x^{2}-1)^{2}be^{3}\arcsin\left(cx\right)}{4\,c^{4}}-\frac{(-c^{2}x^{2}+1)^{\frac{3}{2}}bde^{2}}{3\,c^{3}}+\frac{5\,\sqrt{-c^{2}x^{2}+1}\,be^{3}x}{32\,c^{3}}+\frac{(c^{2}x^{2}-1)be^{3}\arcsin\left(cx\right)}{2\,c^{4}}+\frac{\sqrt{-c^{2}x^{2}+1}\,bde^{2}}{c^{3}}+\frac{5\,be^{3}\arcsin\left(cx\right)}{32\,c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

```
*b*e^3*x/c^3 + 1/2*(c^2*x^2 - 1)*b*e^3*arcsin(c*x)/c^4 + sqrt(-c^2*x^2 + 1)
*b*d*e^2/c^3 + 5/32*b*e^3*arcsin(c*x)/c^4
```

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

$$\int (a + b\,\text{asin}(c\,x))\,\left(d + e\,x\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.2 $\int (d+ex)^2(a+b\textbf{ArcSin}(cx))\,dx$

Optimal. Leaf size=124

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

```
[Out] -1/6*b*d*(2*d^2+3*e^2/c^2)*arcsin(c*x)/e+1/3*(e*x+d)^3*(a+b*arcsin(c*x))/e+
1/9*b*(e*x+d)^2*(-c^2*x^2+1)^(1/2)/c+1/18*b*(5*c^2*d*e*x+16*c^2*d^2+4*e^2)*
(-c^2*x^2+1)^(1/2)/c^3
```

Rubi [A]
time = 0.07, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {4827, 757, 794, 222}

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

Antiderivative was successfully verified.

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

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

Rule 222

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

Rule 757

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

Rule 794

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

```
Q[p, -1]
```

Rule 4827

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

Rubi steps

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

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

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

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

Mathematica [A]
time = 0.07, size = 121, normalized size = 0.98

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

Antiderivative was successfully verified.

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

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

Maple [A]
time = 0.10, size = 193, normalized size = 1.56

method	result

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [A]
time = 0.48, size = 150, normalized size = 1.21

$$\frac{1}{3}ax^3e^2+adx^2e+ad^2x+\frac{1}{2}\left(2x^2\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}\,x}{c^2}-\frac{\arcsin(cx)}{c^3}\right)\right)bde+\frac{\left(cx\arcsin(cx)+\sqrt{-c^2x^2+1}\right)bd^2}{c}+\frac{1}{9}\left(3x^3\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2}+\frac{2\sqrt{-c^2x^2+1}}{c^4}\right)\right)be^2$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A]
time = 2.34, size = 136, normalized size = 1.10

$$\frac{6\,ac^3x^3e^2+18\,ac^3dx^2e+18\,ac^3d^2x+3\left(2\,bc^3x^3e^2+6\,bc^3d^2x+3\left(2\,bc^3dx^2-bcd\right)e\right)\arcsin(cx)+\left(9\,bc^2dxe+18\,bc^2d^2+2\left(bc^2x^2+2\,b\right)e^2\right)\sqrt{-c^2x^2+1}}{18\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A]
time = 0.20, size = 190, normalized size = 1.53

$$\begin{cases} ad^2x + adex^2 + \frac{ae^2x^3}{3} + bd^2x \operatorname{asin}(cx) + bdex^2 \operatorname{asin}(cx) + \frac{be^2x^3 \operatorname{asin}(cx)}{3} + \frac{bd^2\sqrt{-c^2x^2+1}}{c} + \frac{bdex\sqrt{-c^2x^2+1}}{2c} + \frac{be^2x^2\sqrt{-c^2x^2+1}}{9c} - \frac{bde \operatorname{asin}(cx)}{2c^2} + \frac{2be^2\sqrt{-c^2x^2+1}}{9c^3} & \text{for } c \neq 0 \\ a\left(d^2x + dex^2 + \frac{e^2x^3}{3}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A]
time = 0.41, size = 194, normalized size = 1.56

$$\frac{1}{3}ae^2x^3 + bd^2x \arcsin(cx) + ad^2x + \frac{(c^2x^2-1)be^2x \arcsin(cx)}{3c^2} + \frac{\sqrt{-c^2x^2+1}\,bdex}{2c} + \frac{(c^2x^2-1)bde \arcsin(cx)}{c^2} + \frac{be^2x \arcsin(cx)}{3c^2} + \frac{\sqrt{-c^2x^2+1}\,bd^2}{c} + \frac{(c^2x^2-1)ade}{c^2} + \frac{bde \arcsin(cx)}{2c^2} - \frac{(-c^2x^2+1)^{\frac{3}{2}}be^2}{9c^3} + \frac{\sqrt{-c^2x^2+1}\,be^2}{3c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\begin{cases} b\,e^2\left(\frac{\sqrt{\frac{1}{c^2}-x^2}\,\left(\frac{2}{c^2}+x^2\right)}{9} + \frac{x^3\operatorname{asin}(c\,x)}{3}\right) + \frac{a\,x\,(3\,d^2+3\,d\,e\,x+e^2\,x^2)}{3} + \frac{b\,d^2\left(\sqrt{1-c^2\,x^2}+c\,x\operatorname{asin}(c\,x)\right)}{c} + \frac{2\,b\,d\,e\left(\frac{\operatorname{asin}(c\,x)\,(2\,c^2\,x^2-1)}{4}+\frac{c\,x\,\sqrt{1-c^2\,x^2}}{4}\right)}{c^2} & \text{if } 0<c \\ \int (a+b\operatorname{asin}(c\,x))\,(d+e\,x)^2\,dx & \text{if } \neg 0<c \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] piecewise(0 < c, b*e^2*(((1/c^2 - x^2)^(1/2)*(2/c^2 + x^2))/9 + (x^3*asin(c
*x))/3) + (a*x*(3*d^2 + e^2*x^2 + 3*d*e*x))/3 + (b*d^2*((- c^2*x^2 + 1)^(1/
2) + c*x*asin(c*x)))/c + (2*b*d*e*((asin(c*x)*(2*c^2*x^2 - 1))/4 + (c*x*(-
c^2*x^2 + 1)^(1/2))/4))/c^2, ~0 < c, int((a + b*asin(c*x))*(d + e*x)^2, x))
```

3.3 $\int (d+ex)(a+b\textbf{ArcSin}(cx))\,dx$

Optimal. Leaf size=98

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

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

Rubi [A]
time = 0.04, antiderivative size = 98, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {4827, 757, 655, 222}

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

Antiderivative was successfully verified.

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

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

Rule 222

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

Rule 655

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

Rule 757

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

Rule 4827

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

Rubi steps

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

Mathematica [A]
time = 0.03, size = 92, normalized size = 0.94

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

Antiderivative was successfully verified.

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

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

Maple [A]
time = 0.01, size = 97, normalized size = 0.99

method	result	s
derivativedivides	$\frac{\frac{a\left(d\,c^2x+\frac{1}{2}c^2e\,x^2\right)}{c}+\frac{b\left(\arcsin(cx)d\,c^2x+\frac{\arcsin(cx)e\,c^2x^2}{2}+dc\sqrt{-c^2x^2+1}-\frac{e\left(-\frac{cx\sqrt{-c^2x^2+1}}{2}+\frac{\arcsin(cx)}{2}\right)}{2}\right)}{c}}{c}$	9

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [A]
time = 0.48, size = 83, normalized size = 0.85

$$\frac{1}{2}\,ax^2e+adx+\frac{1}{4}\left(2\,x^2\arcsin\left(cx\right)+c\left(\frac{\sqrt{-c^2x^2+1}\,x}{c^2}-\frac{\arcsin\left(cx\right)}{c^3}\right)\right)be+\frac{\left(cx\arcsin\left(cx\right)+\sqrt{-c^2x^2+1}\right)bd}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A]
time = 1.89, size = 80, normalized size = 0.82

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A]
time = 0.12, size = 99, normalized size = 1.01

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A]
time = 0.38, size = 98, normalized size = 1.00

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Mupad [B]
time = 0.41, size = 77, normalized size = 0.79

$$\frac{a\,x\,(2\,d+e\,x)}{2} + \frac{b\,e\left(\frac{\operatorname{asin}(c\,x)\,\left(2\,c^2\,x^2-1\right)}{4} + \frac{c\,x\,\sqrt{1-c^2\,x^2}}{4}\right)}{c^2} + \frac{b\,d\left(\sqrt{1-c^2\,x^2} + c\,x\,\operatorname{asin}(c\,x)\right)}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.4 $\int (a+b\mathbf{ArcSin}(cx))\,dx$

Optimal. Leaf size=30

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

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

Rubi [A]
time = 0.01, antiderivative size = 30, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {4715, 267}

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

Antiderivative was successfully verified.

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

Rule 267

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

Rule 4715

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

Rubi steps

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

Mathematica [A]
time = 0.01, size = 30, normalized size = 1.00

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

Antiderivative was successfully verified.

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

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

method	result	size
default	$ax+\frac{b\left(cx\arcsin(cx)+\sqrt{-c^2x^2+1}\right)}{c}$	30
derivativedivides	$\frac{cxa+b\left(cx\arcsin(cx)+\sqrt{-c^2x^2+1}\right)}{c}$	32

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a+b*arcsin(c*x),x,method=_RETURNVERBOSE)
[Out] a*x+b/c*(c*x*arcsin(c*x)+(-c^2*x^2+1)^(1/2))
```

Maxima [A]
time = 0.47, size = 29, normalized size = 0.97

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(c*x),x, algorithm="maxima")
[Out] a*x + (c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*b/c
```

Fricas [A]
time = 1.65, size = 31, normalized size = 1.03

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(c*x),x, algorithm="fricas")
[Out] (b*c*x*arcsin(c*x) + a*c*x + sqrt(-c^2*x^2 + 1)*b)/c
```

Sympy [A]
time = 0.06, size = 26, normalized size = 0.87

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A]
time = 0.37, size = 29, normalized size = 0.97

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Mupad [B]
time = 0.28, size = 28, normalized size = 0.93

$$a\,x + \frac{b\,\sqrt{1 - c^2\,x^2}}{c} + b\,x\,\mathrm{asin}(c\,x)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.5 $\int \frac{a+b\mathbf{ArcSin}(cx)}{d+ex}\,dx$

Optimal. Leaf size=229

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

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

Rubi [A]
time = 0.21, antiderivative size = 229, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.312$, Rules used = {4825, 4615, 2221, 2317, 2438}

$$\frac{(a+b\text{ArcSin}(cx))\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e}+\frac{(a+b\text{ArcSin}(cx))\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e}-\frac{i(a+b\text{ArcSin}(cx))^2}{2be}-\frac{ib\text{Li}_2\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e}-\frac{ib\text{Li}_2\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)}{e}$$

Antiderivative was successfully verified.

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

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

Rule 2221

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

Rule 2317

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

Rule 2438

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

Rule 4615

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Int[(e + f*x)^m*(E^(I*(c + d*x))/(a - Rt[a^2 - b^2, 2] - I*b*E^(
I*(c + d*x)))), x] + Int[(e + f*x)^m*(E^(I*(c + d*x))/(a + Rt[a^2 - b^2, 2]
 - I*b*E^(I*(c + d*x)))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0]
 && PosQ[a^2 - b^2]
```

Rule 4825

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

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{d+ex}\,dx = \text{Subst}\left(\int \frac{(a+bx)\cos(x)}{cd+e\sin(x)}\,dx, x, \sin^{-1}(cx)\right)$$

$$= -\frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2be} + \text{Subst}\left(\int \frac{e^{ix}(a+bx)}{cd-\sqrt{c^2d^2-e^2}-iee^{ix}}\,dx, x, \sin^{-1}(cx)\right) + \text{Sul}$$

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

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

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

Mathematica [A]
time = 0.11, size = 214, normalized size = 0.93

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

Antiderivative was successfully verified.

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

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

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 768 vs. $2(244) = 488$.
time = 0.63, size = 769, normalized size = 3.36

method	result
derivativedivides	$\frac{\frac{ac\ln(cex+dc)}{e}-\frac{ibc\arcsin(cx)^2}{2e}-\frac{ib\,c^3\,\mathrm{dilog}\left(\frac{idc+e\left(icx+\sqrt{-c^2x^2+1}\right)+\sqrt{-c^2d^2+e^2}}{idc+\sqrt{-c^2d^2+e^2}}\right)d^2}{e\left(c^2d^2-e^2\right)}+\frac{b\,c^3\arcsin(cx)\ln\left(\frac{idc+\cdots}{\cdots}\right.}{\cdots}}{\cdots}$
default	$\frac{\frac{ac\ln(cex+dc)}{e}-\frac{ibc\arcsin(cx)^2}{2e}-\frac{ib\,c^3\,\mathrm{dilog}\left(\frac{idc+e\left(icx+\sqrt{-c^2x^2+1}\right)+\sqrt{-c^2d^2+e^2}}{idc+\sqrt{-c^2d^2+e^2}}\right)d^2}{e\left(c^2d^2-e^2\right)}+\frac{b\,c^3\arcsin(cx)\ln\left(\frac{idc+\cdots}{\cdots}\right.}{\cdots}}{\cdots}$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a + b \operatorname{asin}(c\,x)}{d + e\,x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.6 $\int \frac{a+b\text{ArcSin}(cx)}{(d+ex)^2}\,dx$

Optimal. Leaf size=85

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

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

Rubi [A]
time = 0.04, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}=0.188$, Rules used = {4827, 739, 210}

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

Antiderivative was successfully verified.

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

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

Rule 210

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

Rule 739

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

Rule 4827

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

Rubi steps

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

Mathematica [A]
time = 0.10, size = 83, normalized size = 0.98

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

Antiderivative was successfully verified.

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

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

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 200 vs. $2(81) = 162$.
time = 0.82, size = 201, normalized size = 2.36

method	result
derivativedivides	$\frac{-\frac{a c^2}{(cex+dc)e}-\frac{b c^2 \arcsin(cx)}{(cex+dc)e}-\frac{b c^2 \ln\left(\frac{-\frac{2(c^2d^2-e^2)}{e^2}+\frac{2dc\left(cx+\frac{dc}{e}\right)}{e}+2\sqrt{-\frac{c^2d^2-e^2}{e^2}}\sqrt{-\left(cx+\frac{dc}{e}\right)^2+\frac{2dc\left(cx+\frac{d}{\cdots}\right.}{e}\cdots}}{cx+\frac{dc}{e}}\right)}{e^2\sqrt{-\frac{c^2d^2-e^2}{e^2}}}}{c}$

default	$\frac{-\frac{a\,c^{2}}{(c e x+d c) e}-\frac{b\,c^{2} \arcsin (c x)}{(c e x+d c) e}-\frac{b\,c^{2} \ln \left(\frac{-\frac{2\left(c^{2} d^{2}-e^{2}\right)}{e^{2}}+\frac{2 d c\left(c x+\frac{d c}{e}\right)}{e}+2 \sqrt{-\frac{c^{2} d^{2}-e^{2}}{e^{2}}}\, \sqrt{-\left(c x+\frac{d c}{e}\right)^{2}+\frac{2 d c\left(c x+\frac{d c}{e}\right)}{e}}}{c x+\frac{d c}{e}}\right)}{e^{2} \sqrt{-\frac{c^{2} d^{2}-e^{2}}{e^{2}}}}}{c}$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c*d-%e>0)', see `assume?` for more
details
```

Fricas [**B**] Leaf count of result is larger than twice the leaf count of optimal. 166 vs. 2(77) = 154.
time = 2.48, size = 359, normalized size = 4.22

$$\left[-\frac{2\,ac^2d^2+\sqrt{-c^2d^2+e^2}\,(bcxe+bcd)\log\left(\frac{2\,c^4d^2x^2+2\,c^2dxe-c^2d^2-2\,\sqrt{-c^2d^2+e^2}\,(c^2dx+e)\,\sqrt{-c^2x^2+1}-(c^2x^2-2)e^2}{x^2e^2+2\,dxe+d^2}\right)+2\,(bc^2d^2-be^2)\arcsin(cx)-2\,ae^2}{2\,(c^2d^2xe^2+c^2d^3e-xe^4-de^3)},\ -\frac{ac^2d^2-\sqrt{c^2d^2-e^2}\,(bcxe+bcd)\arctan\left(-\frac{\sqrt{c^2d^2-e^2}\,(c^2dx+e)\,\sqrt{-c^2x^2+1}}{c^4d^2x^2-c^2d^2-(c^2x^2-1)e^2}\right)+(bc^2d^2-be^2)\arcsin(cx)-ae^2}{c^2d^2xe^2+c^2d^3e-xe^4-de^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 200 vs. 2(79) = 158.
time = 0.39, size = 200, normalized size = 2.35

$$-\frac{be^2\left(\frac{2\,c^2\arctan\left(\frac{\frac{cde\left(\sqrt{-\frac{(ex+d)^2\left(c-\frac{cd}{ex+d}\right)^2}{e^2}+1}-1\right)}{(ex+d)\left(c-\frac{cd}{ex+d}\right)}-e}{\sqrt{c^2d^2-e^2}}\right)}{\sqrt{c^2d^2-e^2}\,e^3}+\frac{c^2\arcsin\left(-\frac{c\left(d-\frac{\frac{(ex+d)\left(c-\frac{cd}{ex+d}\right)e}{c}+de}{e}\right)}{e}\right)}{\left((ex+d)\left(c-\frac{cd}{ex+d}\right)+cd\right)e^3}\right)}{c}-\frac{a}{(ex+d)e}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.7 $\int \frac{a+b\text{ArcSin}(cx)}{(d+ex)^3}\,dx$

Optimal. Leaf size=135

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

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

Rubi [A]
time = 0.06, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {4827, 745, 739, 210}

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

Antiderivative was successfully verified.

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

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

Rule 210

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

Rule 739

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

Rule 745

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
e*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1)/((m + 1)*(c*d^2 + a*e^2))), x] + D
ist[c*(d/(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; F
```

```
reeQ[{a, c, d, e, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[m + 2*p + 3, 0]
```

Rule 4827

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

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}(cx)}{(d+ex)^3}\,dx &= -\frac{a+b\sin^{-1}(cx)}{2e(d+ex)^2}+\frac{(bc)\int \frac{1}{(d+ex)^2\sqrt{1-c^2x^2}}\,dx}{2e}\\
&= \frac{bc\sqrt{1-c^2x^2}}{2\left(c^2d^2-e^2\right)(d+ex)}-\frac{a+b\sin^{-1}(cx)}{2e(d+ex)^2}+\frac{\left(bc^3d\right)\int \frac{1}{(d+ex)\sqrt{1-c^2x^2}}\,dx}{2e\left(c^2d^2-e^2\right)}\\
&= \frac{bc\sqrt{1-c^2x^2}}{2\left(c^2d^2-e^2\right)(d+ex)}-\frac{a+b\sin^{-1}(cx)}{2e(d+ex)^2}-\frac{\left(bc^3d\right)\mathrm{Subst}\left(\int \frac{1}{-c^2d^2+e^2-x^2}\,dx,x,\frac{e+c}{\sqrt{1-}}\right.}{2e\left(c^2d^2-e^2\right)}\\
&= \frac{bc\sqrt{1-c^2x^2}}{2\left(c^2d^2-e^2\right)(d+ex)}-\frac{a+b\sin^{-1}(cx)}{2e(d+ex)^2}+\frac{bc^3d\tan^{-1}\left(\frac{e+c^2dx}{\sqrt{c^2d^2-e^2}\sqrt{1-c^2x^2}}\right)}{2e\left(c^2d^2-e^2\right)^{3/2}}
\end{aligned}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.25, size = 207, normalized size = 1.53

$$\frac{1}{2}\left(-\frac{a}{e(d+ex)^2}+\frac{bc\sqrt{1-c^2x^2}}{\left(c^2d^2-e^2\right)(d+ex)}-\frac{b\mathrm{ArcSin}(cx)}{e(d+ex)^2}-\frac{ibc^3d\left(\log(4)+\log\left(\frac{e^2\sqrt{c^2d^2-e^2}\left(ie+ic^2dx+\sqrt{c^2d^2-e^2}\sqrt{1-c^2x^2}\right)}{bc^3d(d+ex)}\right)\right)}{(cd-e)e(cd+e)\sqrt{c^2d^2-e^2}}\right)$$

Antiderivative was successfully verified.

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

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

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 304 vs. 2(124) = 248.
time = 0.32, size = 305, normalized size = 2.26

method	result
derivativedivides	$\frac{-\frac{a\,c^3}{2(cex+dc)^2 e}-\frac{b\,c^3\arcsin(cx)}{2(cex+dc)^2 e}+\frac{b\,c^3\sqrt{-\left(cx+\frac{dc}{e}\right)^2+\frac{2dc\left(cx+\frac{dc}{e}\right)}{e}-\frac{c^2d^2-e^2}{e^2}}}{2e\left(c^2d^2-e^2\right)\left(cx+\frac{dc}{e}\right)}-\frac{b\,c^4 d\ln\left(-\frac{2\left(c^2d^2-e^2\right)}{e^2}+\frac{2dc\left(cx\cdots\right.}{e}\cdots\right)}{\cdots}}{c}$
default	$\frac{-\frac{a\,c^3}{2(cex+dc)^2 e}-\frac{b\,c^3\arcsin(cx)}{2(cex+dc)^2 e}+\frac{b\,c^3\sqrt{-\left(cx+\frac{dc}{e}\right)^2+\frac{2dc\left(cx+\frac{dc}{e}\right)}{e}-\frac{c^2d^2-e^2}{e^2}}}{2e\left(c^2d^2-e^2\right)\left(cx+\frac{dc}{e}\right)}-\frac{b\,c^4 d\ln\left(-\frac{2\left(c^2d^2-e^2\right)}{e^2}+\frac{2dc\left(cx\cdots\right.}{e}\cdots\right)}{\cdots}}{c}$

Verification of antiderivative is not currently implemented for this CAS.

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

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

<u>Maxima</u> [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c*d-%e>0)', see `assume?` for more
details
```

<u>Fricas</u> [B] Leaf count of result is larger than twice the leaf count of optimal. 314 vs. $2(119) = 238$.
time = 2.45, size = 657, normalized size = 4.87

$$\left[-\frac{2\,ac^4d^4-4\,ac^2d^2e^2-(bc^3dx^2e^2+2\,bc^3d^2xe+bc^3d^3)\sqrt{-c^2d^2+e^2}\log\left(\frac{2\,c^4d^2x^2+2\,c^2dxe-c^2d^2+2\,\sqrt{-c^2d^2+e^2}(c^2dx+e)\sqrt{-c^2x^2+1}-(c^2x^2-2)e^2}{x^2e^2+2\,dxe+d^2}\right)+2\,(bc^4d^4-2\,bc^2d^2e^2+be^4)\arcsin(cx)+2\,ae^4-2\,(bc^3d^2xe^2+bc^3d^3e-bcxe^4-bcde^3)\sqrt{-c^2x^2+1}}{4\,(2\,c^4d^5xe^2+c^4d^6e-4\,c^2d^3xe^4+x^2e^7+2\,dxe^6-(2\,c^2d^2x^2-d^2)e^5+(c^4d^4x^2-2\,c^2d^4)e^3)},\ -\frac{ac^4d^4-2\,ac^2d^2e^2-(bc^3dx^2e^2+2\,bc^3d^2xe+bc^3d^3)\sqrt{c^2d^2-e^2}\arctan\left(-\frac{\sqrt{c^2d^2-e^2}(c^2dx+e)\sqrt{-c^2x^2+1}}{c^4d^2x^2-c^2d^2-(c^2x^2-1)e^2}\right)+(bc^4d^4-2\,bc^2d^2e^2+be^4)\arcsin(cx)+ae^4-(bc^3d^2xe^2+bc^3d^3e-bcxe^4-bcde^3)\sqrt{-c^2x^2+1}}{2\,(2\,c^4d^5xe^2+c^4d^6e-4\,c^2d^3xe^4+x^2e^7+2\,dxe^6-(2\,c^2d^2x^2-d^2)e^5+(c^4d^4x^2-2\,c^2d^4)e^3)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] [-1/4*(2*a*c^4*d^4 - 4*a*c^2*d^2*e^2 - (b*c^3*d*x^2*e^2 + 2*b*c^3*d^2*x*e +
 b*c^3*d^3)*sqrt(-c^2*d^2 + e^2)*log((2*c^4*d^2*x^2 + 2*c^2*d*x*e - c^2*d^2
 + 2*sqrt(-c^2*d^2 + e^2)*(c^2*d*x + e)*sqrt(-c^2*x^2 + 1) - (c^2*x^2 - 2)*
e^2)/(x^2*e^2 + 2*d*x*e + d^2)) + 2*(b*c^4*d^4 - 2*b*c^2*d^2*e^2 + b*e^4)*a
rcsin(c*x) + 2*a*e^4 - 2*(b*c^3*d^2*x*e^2 + b*c^3*d^3*e - b*c*x*e^4 - b*c*d
*e^3)*sqrt(-c^2*x^2 + 1))/(2*c^4*d^5*x*e^2 + c^4*d^6*e - 4*c^2*d^3*x*e^4 +
x^2*e^7 + 2*d*x*e^6 - (2*c^2*d^2*x^2 - d^2)*e^5 + (c^4*d^4*x^2 - 2*c^2*d^4)
*e^3), -1/2*(a*c^4*d^4 - 2*a*c^2*d^2*e^2 - (b*c^3*d*x^2*e^2 + 2*b*c^3*d^2*x
*e + b*c^3*d^3)*sqrt(c^2*d^2 - e^2)*arctan(-sqrt(c^2*d^2 - e^2)*(c^2*d*x +
e)*sqrt(-c^2*x^2 + 1)/(c^4*d^2*x^2 - c^2*d^2 - (c^2*x^2 - 1)*e^2)) + (b*c^4
*d^4 - 2*b*c^2*d^2*e^2 + b*e^4)*arcsin(c*x) + a*e^4 - (b*c^3*d^2*x*e^2 + b*
c^3*d^3*e - b*c*x*e^4 - b*c*d*e^3)*sqrt(-c^2*x^2 + 1))/(2*c^4*d^5*x*e^2 + c
^4*d^6*e - 4*c^2*d^3*x*e^4 + x^2*e^7 + 2*d*x*e^6 - (2*c^2*d^2*x^2 - d^2)*e^
5 + (c^4*d^4*x^2 - 2*c^2*d^4)*e^3)]
```

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

$$\int \frac{a + b \operatorname{asin}{\left(cx \right)}}{\left(d + ex\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*arcsin(c*x) + a)/(e*x + d)^3, x)
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.8 $\int \frac{a+b\mathbf{ArcSin}(cx)}{(d+ex)^4}\,dx$

Optimal. Leaf size=191

$$\frac{bc\sqrt{1-c^2x^2}}{6\left(c^2d^2-e^2\right)(d+ex)^2}+\frac{bc^3d\sqrt{1-c^2x^2}}{2\left(c^2d^2-e^2\right)^2(d+ex)}-\frac{a+b\text{ArcSin}(cx)}{3e(d+ex)^3}+\frac{bc^3\left(2c^2d^2+e^2\right)\text{ArcTan}\left(\frac{e+c^2dx}{\sqrt{c^2d^2-e^2}\sqrt{1}}\right.}{6e\left(c^2d^2-e^2\right)^{5/2}}$$

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

Rubi [A]
time = 0.10, antiderivative size = 191, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.312$, Rules used = {4827, 759, 821, 739, 210}

$$-\frac{a+b\text{ArcSin}(cx)}{3e(d+ex)^3}+\frac{bc^3\left(2c^2d^2+e^2\right)\text{ArcTan}\left(\frac{c^2dx+e}{\sqrt{1-c^2x^2}\sqrt{c^2d^2-e^2}}\right)}{6e\left(c^2d^2-e^2\right)^{5/2}}+\frac{bc\sqrt{1-c^2x^2}}{6\left(c^2d^2-e^2\right)(d+ex)^2}+\frac{bc^3d\sqrt{1-c^2x^2}}{2\left(c^2d^2-e^2\right)^2(d+ex)}$$

Antiderivative was successfully verified.

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

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

Rule 210

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

Rule 739

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

Rule 759

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
e*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1)/((m + 1)*(c*d^2 + a*e^2))), x] + D
```

```
ist[c/((m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)*Simp[d*(m + 1) - e*(
m + 2*p + 3)*x, x]*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, m, p}, x] &&
 NeQ[c*d^2 + a*e^2, 0] && NeQ[m, -1] && ((LtQ[m, -1] && IntQuadraticQ[a, 0,
 c, d, e, m, p, x]) || (SumSimplerQ[m, 1] && IntegerQ[p]) || ILtQ[Simplify[
m + 2*p + 3], 0])
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(-(e*f - d*g))*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1
)/(2*(p + 1)*(c*d^2 + a*e^2))), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2),
Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m,
p}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 4827

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

Rubi steps

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

$$= \frac{bc\sqrt{1-c^2x^2}}{6\left(c^2d^2-e^2\right)(d+ex)^2}-\frac{a+b\sin^{-1}(cx)}{3e(d+ex)^3}-\frac{\left(bc^3\right)\int \frac{-2d+ex}{(d+ex)^2\sqrt{1-c^2x^2}}\,dx}{6e\left(c^2d^2-e^2\right)}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{6\left(c^2d^2-e^2\right)(d+ex)^2}+\frac{bc^3d\sqrt{1-c^2x^2}}{2\left(c^2d^2-e^2\right)^2(d+ex)}-\frac{a+b\sin^{-1}(cx)}{3e(d+ex)^3}+\frac{(bc^3(2c^2d^2+}{6}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{6\left(c^2d^2-e^2\right)(d+ex)^2}+\frac{bc^3d\sqrt{1-c^2x^2}}{2\left(c^2d^2-e^2\right)^2(d+ex)}-\frac{a+b\sin^{-1}(cx)}{3e(d+ex)^3}-\frac{(bc^3(2c^2d^2+}{}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{6\left(c^2d^2-e^2\right)(d+ex)^2}+\frac{bc^3d\sqrt{1-c^2x^2}}{2\left(c^2d^2-e^2\right)^2(d+ex)}-\frac{a+b\sin^{-1}(cx)}{3e(d+ex)^3}+\frac{bc^3(2c^2d^2+e}{}$$

Mathematica [A]

time = 0.35, size = 241, normalized size = 1.26

$$\frac{1}{6}\left(-\frac{2a}{e(d+ex)^3}+\frac{b\sqrt{1-c^2x^2}\,(-ce^2+c^3d(4d+3ex))}{\left(-c^2d^2+e^2\right)^2(d+ex)^2}-\frac{2b\text{ArcSin}(cx)}{e(d+ex)^3}+\frac{bc^3(2c^2d^2+e^2)\log(d+ex)}{e(-cd+e)^2(cd+e)^2\sqrt{-c^2d^2+e^2}}-\frac{bc^3(2c^2d^2+e^2)\log\left(e+c^2dx+\sqrt{-c^2d^2+e^2}\,\sqrt{1-c^2x^2}\right)}{e(-cd+e)^2(cd+e)^2\sqrt{-c^2d^2+e^2}}\right)$$

Antiderivative was successfully verified.

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

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

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 563 vs. $2(176) = 352$.
time = 0.12, size = 564, normalized size = 2.95

method	result
derivativedivides	$-\frac{a\,c^4}{3(cex+dc)^3e}-\frac{b\,c^4\arcsin(cx)}{3(cex+dc)^3e}+\frac{b\,c^4\sqrt{-\left(cx+\frac{dc}{e}\right)^2+\frac{2dc\left(cx+\frac{dc}{e}\right)}{e}-\frac{c^2d^2-e^2}{e^2}}}{6e^2\left(c^2d^2-e^2\right)\left(cx+\frac{dc}{e}\right)^2}+\frac{b\,c^5d\sqrt{-\left(cx+\frac{dc}{e}\right)^2+ \cdots}}{2e\left(c^2d^2-e^2\right)^{2} \cdots}$
default	$-\frac{a\,c^4}{3(cex+dc)^3e}-\frac{b\,c^4\arcsin(cx)}{3(cex+dc)^3e}+\frac{b\,c^4\sqrt{-\left(cx+\frac{dc}{e}\right)^2+\frac{2dc\left(cx+\frac{dc}{e}\right)}{e}-\frac{c^2d^2-e^2}{e^2}}}{6e^2\left(c^2d^2-e^2\right)\left(cx+\frac{dc}{e}\right)^2}+\frac{b\,c^5d\sqrt{-\left(cx+\frac{dc}{e}\right)^2+ \cdots}}{2e\left(c^2d^2-e^2\right)^{2} \cdots}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(e*x+d)^4,x,method=_RETURNVERBOSE)
```

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

```
^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)
)/(c*x+d*c/e)))
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/3*(3*(c*x^3*e^4 + 3*c*d*x^2*e^3 + 3*c*d^2*x*e^2 + c*d^3*e)*integrate(1/3
*e^(1/2*log(c*x + 1) + 1/2*log(-c*x + 1))/(c^4*x^7*e^4 + 3*c^4*d*x^6*e^3 -
3*c^2*d^2*x^3*e^2 - c^2*d^3*x^2*e + (3*c^4*d^2*e^2 - c^2*e^4)*x^5 + (c^4*d^
3*e - 3*c^2*d*e^3)*x^4 + (c^2*x^5*e^4 + 3*c^2*d*x^4*e^3 + (3*c^2*d^2*e^2 -
e^4)*x^3 - 3*d^2*x*e^2 - d^3*e + (c^2*d^3*e - 3*d*e^3)*x^2)*e^(log(c*x + 1)
 + log(-c*x + 1))), x) + arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*b/(x^3
*e^4 + 3*d*x^2*e^3 + 3*d^2*x*e^2 + d^3*e) - 1/3*a/(x^3*e^4 + 3*d*x^2*e^3 +
3*d^2*x*e^2 + d^3*e)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 537 vs. $2(170) = 340$.
time = 4.35, size = 1099, normalized size = 5.75

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] [-1/12*(4*a*c^6*d^6 - 12*a*c^4*d^4*e^2 + 12*a*c^2*d^2*e^4 + (6*b*c^5*d^4*x*
e + 2*b*c^5*d^5 + b*c^3*x^3*e^5 + 3*b*c^3*d*x^2*e^4 + (2*b*c^5*d^2*x^3 + 3*
b*c^3*d^2*x)*e^3 + (6*b*c^5*d^3*x^2 + b*c^3*d^3)*e^2)*sqrt(-c^2*d^2 + e^2)*
log((2*c^4*d^2*x^2 + 2*c^2*d*x*e - c^2*d^2 - 2*sqrt(-c^2*d^2 + e^2)*(c^2*d*
x + e)*sqrt(-c^2*x^2 + 1) - (c^2*x^2 - 2)*e^2)/(x^2*e^2 + 2*d*x*e + d^2)) +
 4*(b*c^6*d^6 - 3*b*c^4*d^4*e^2 + 3*b*c^2*d^2*e^4 - b*e^6)*arcsin(c*x) - 4*
a*e^6 - 2*(7*b*c^5*d^4*x*e^2 + 4*b*c^5*d^5*e - 8*b*c^3*d^2*x*e^4 + b*c*x*e^
6 - (3*b*c^3*d*x^2 - b*c*d)*e^5 + (3*b*c^5*d^3*x^2 - 5*b*c^3*d^3)*e^3)*sqrt
(-c^2*x^2 + 1))/(3*c^6*d^8*x*e^2 + c^6*d^9*e - x^3*e^10 - 3*d*x^2*e^9 + 3*(
c^2*d^2*x^3 - d^2*x)*e^8 + (9*c^2*d^3*x^2 - d^3)*e^7 - 3*(c^4*d^4*x^3 - 3*c
^2*d^4*x)*e^6 - 3*(3*c^4*d^5*x^2 - c^2*d^5)*e^5 + (c^6*d^6*x^3 - 9*c^4*d^6*
x)*e^4 + 3*(c^6*d^7*x^2 - c^4*d^7)*e^3), -1/6*(2*a*c^6*d^6 - 6*a*c^4*d^4*e^
2 + 6*a*c^2*d^2*e^4 - (6*b*c^5*d^4*x*e + 2*b*c^5*d^5 + b*c^3*x^3*e^5 + 3*b*
c^3*d*x^2*e^4 + (2*b*c^5*d^2*x^3 + 3*b*c^3*d^2*x)*e^3 + (6*b*c^5*d^3*x^2 +
b*c^3*d^3)*e^2)*sqrt(c^2*d^2 - e^2)*arctan(-sqrt(c^2*d^2 - e^2)*(c^2*d*x +
e)*sqrt(-c^2*x^2 + 1)/(c^4*d^2*x^2 - c^2*d^2 - (c^2*x^2 - 1)*e^2)) + 2*(b*c
^6*d^6 - 3*b*c^4*d^4*e^2 + 3*b*c^2*d^2*e^4 - b*e^6)*arcsin(c*x) - 2*a*e^6 -
```

```
(7*b*c^5*d^4*x*e^2 + 4*b*c^5*d^5*e - 8*b*c^3*d^2*x*e^4 + b*c*x*e^6 - (3*b*
c^3*d*x^2 - b*c*d)*e^5 + (3*b*c^5*d^3*x^2 - 5*b*c^3*d^3)*e^3)*sqrt(-c^2*x^2
 + 1))/(3*c^6*d^8*x*e^2 + c^6*d^9*e - x^3*e^10 - 3*d*x^2*e^9 + 3*(c^2*d^2*x
^3 - d^2*x)*e^8 + (9*c^2*d^3*x^2 - d^3)*e^7 - 3*(c^4*d^4*x^3 - 3*c^2*d^4*x)
*e^6 - 3*(3*c^4*d^5*x^2 - c^2*d^5)*e^5 + (c^6*d^6*x^3 - 9*c^4*d^6*x)*e^4 +
3*(c^6*d^7*x^2 - c^4*d^7)*e^3)]
```

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

$$\int \frac{a + b \operatorname{asin}{\left(cx \right)}}{\left(d + ex\right)^{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral((a + b*asin(c*x))/(d + e*x)**4, x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*arcsin(c*x) + a)/(e*x + d)^4, x)
```

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

$$\int \frac{a+b\,\mathrm{asin}\left(c\,x\right)}{{\left(d+e\,x\right)}^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a + b*asin(c*x))/(d + e*x)^4, x)
```

3.9 $\int (d+ex)^3(a+b\mathbf{ArcSin}(cx))^2\,dx$

Optimal. Leaf size=374

$$-2b^2d^3x-\frac{4b^2de^2x}{3c^2}-\frac{3}{4}b^2d^2ex^2-\frac{3b^2e^3x^2}{32c^2}-\frac{2}{9}b^2de^2x^3-\frac{1}{32}b^2e^3x^4+\frac{2bd^3\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{c}+\frac{4bde^2\sqrt{}}{}$$

```
[Out] -2*b^2*d^3*x-4/3*b^2*d*e^2*x/c^2-3/4*b^2*d^2*e*x^2-3/32*b^2*e^3*x^2/c^2-2/9
*b^2*d*e^2*x^3-1/32*b^2*e^3*x^4-1/4*d^4*(a+b*arcsin(c*x))^2/e-3/4*d^2*e*(a+
b*arcsin(c*x))^2/c^2-3/32*e^3*(a+b*arcsin(c*x))^2/c^4+1/4*(e*x+d)^4*(a+b*ar
csin(c*x))^2/e+2*b*d^3*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c+4/3*b*d*e^2*(
a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3+3/2*b*d^2*e*x*(a+b*arcsin(c*x))*(-c
^2*x^2+1)^(1/2)/c+3/16*b*e^3*x*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3+2/3
*b*d*e^2*x^2*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c+1/8*b*e^3*x^3*(a+b*arcs
in(c*x))*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A]
time = 0.48, antiderivative size = 374, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.389$, Rules used = {4827, 4847, 4737, 4767, 8, 4795, 30}

$$-\frac{3e^3(a+b\text{ArcSin}(cx))^2}{32c^4}+\frac{2bd^3\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{c}+\frac{3bd^2ex\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{2c}-\frac{3d^2e(a+b\text{ArcSin}(cx))^2}{4c^2}+\frac{2bde^2x^2\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{3c}+\frac{be^3x^3\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{8c}+\frac{4bde^2\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{3c^3}+\frac{3be^3x\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{16c^3}-\frac{d^4(a+b\text{ArcSin}(cx))^2}{4e}+\frac{(d+ex)^4(a+b\text{ArcSin}(cx))^2}{4e}-\frac{4b^2de^2x}{3c^2}-\frac{3b^2e^3x^2}{32c^2}-2b^2d^3x-\frac{3}{4}b^2d^2ex^2-\frac{2}{9}b^2de^2x^3-\frac{1}{32}b^2e^3x^4$$

Antiderivative was successfully verified.

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

```
[Out] -2*b^2*d^3*x - (4*b^2*d*e^2*x)/(3*c^2) - (3*b^2*d^2*e*x^2)/4 - (3*b^2*e^3*x
^2)/(32*c^2) - (2*b^2*d*e^2*x^3)/9 - (b^2*e^3*x^4)/32 + (2*b*d^3*Sqrt[1 - c
^2*x^2]*(a + b*ArcSin[c*x]))/c + (4*b*d*e^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin
[c*x]))/(3*c^3) + (3*b*d^2*e*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(2*c)
 + (3*b*e^3*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(16*c^3) + (2*b*d*e^2*
x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(3*c) + (b*e^3*x^3*Sqrt[1 - c^2*
x^2]*(a + b*ArcSin[c*x]))/(8*c) - (d^4*(a + b*ArcSin[c*x])^2)/(4*e) - (3*d^
2*e*(a + b*ArcSin[c*x])^2)/(4*c^2) - (3*e^3*(a + b*ArcSin[c*x])^2)/(32*c^4)
 + ((d + e*x)^4*(a + b*ArcSin[c*x])^2)/(4*e)
```

Rule 8

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

Rule 30

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

Rule 4737

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

Rule 4767

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

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4827

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

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

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

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

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

$$= \frac{2bd^3\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))}{c} + \frac{3bd^2ex\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx)}{2c}$$

$$= -2b^2d^3x - \frac{3}{4}b^2d^2ex^2 - \frac{2}{9}b^2de^2x^3 - \frac{1}{32}b^2e^3x^4 + \frac{2bd^3\sqrt{1-c^2x^2}\,(a+b}{c}$$

$$= -2b^2d^3x - \frac{4b^2de^2x}{3c^2} - \frac{3}{4}b^2d^2ex^2 - \frac{3b^2e^3x^2}{32c^2} - \frac{2}{9}b^2de^2x^3 - \frac{1}{32}b^2e^3x^4 + \cdots$$

Mathematica [A]
time = 0.28, size = 355, normalized size = 0.95

$$\frac{c\left(72a^2c^3x(4d^3+6d^2ex+4de^2x^2+e^3x^3)+6ab\sqrt{1-c^2x^2}\,(e^2(64d+9ex)+c^2(96d^3+72d^2ex+32de^2x^2+6e^3x^3))-b^2cx(3e^2(128d+9ex)+c^2(576d^3+216d^2ex+64de^2x^2+9e^3x^3))\right)+6b\left(3a(-24c^2d^2e-3e^3+8c^4x(4d^3+6d^2ex+4de^2x^2+e^3x^3))+bc\sqrt{1-c^2x^2}\,(e^2(64d+9ex)+c^2(96d^3+72d^2ex+32de^2x^2+6e^3x^3))\right)\text{ArcSin}(cx)+9b^2(-24c^2d^2e-3e^3+8c^4x(4d^3+6d^2ex+4de^2x^2+e^3x^3))\text{ArcSin}(cx)^2}{288c^4}$$

Antiderivative was successfully verified.

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

```
[Out] (c*(72*a^2*c^3*x*(4*d^3 + 6*d^2*e*x + 4*d*e^2*x^2 + e^3*x^3) + 6*a*b*Sqrt[1
 - c^2*x^2]*(e^2*(64*d + 9*e*x) + c^2*(96*d^3 + 72*d^2*e*x + 32*d*e^2*x^2 +
 6*e^3*x^3)) - b^2*c*x*(3*e^2*(128*d + 9*e*x) + c^2*(576*d^3 + 216*d^2*e*x
+ 64*d*e^2*x^2 + 9*e^3*x^3))) + 6*b*(3*a*(-24*c^2*d^2*e - 3*e^3 + 8*c^4*x*(
4*d^3 + 6*d^2*e*x + 4*d*e^2*x^2 + e^3*x^3)) + b*c*Sqrt[1 - c^2*x^2]*(e^2*(6
4*d + 9*e*x) + c^2*(96*d^3 + 72*d^2*e*x + 32*d*e^2*x^2 + 6*e^3*x^3)))*ArcSi
n[c*x] + 9*b^2*(-24*c^2*d^2*e - 3*e^3 + 8*c^4*x*(4*d^3 + 6*d^2*e*x + 4*d*e^
2*x^2 + e^3*x^3))*ArcSin[c*x]^2)/(288*c^4)
```

Maple [A]
time = 0.18, size = 660, normalized size = 1.76

method	result

derivativedivides	$\frac{\frac{(cex+dc)^4a^2}{4c^3e}+b^2\left(\frac{e^3\left(32\arcsin(cx)^2c^4x^4+16\arcsin(cx)\sqrt{-c^2x^2+1}\,c^3x^3-64\arcsin(cx)^2c^2x^2-4c^4x^4-40\arcsin(cx)\sqrt{-c^2\right.}{128}\right.}{}$
default	$\frac{\frac{(cex+dc)^4a^2}{4c^3e}+b^2\left(\frac{e^3\left(32\arcsin(cx)^2c^4x^4+16\arcsin(cx)\sqrt{-c^2x^2+1}\,c^3x^3-64\arcsin(cx)^2c^2x^2-4c^4x^4-40\arcsin(cx)\sqrt{-c^2\right.}{128}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^3*(a+b*arcsin(c*x))^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(1/4*(c*e*x+c*d)^4*a^2/c^3/e+b^2/c^3*(1/128*e^3*(32*arcsin(c*x)^2*c^4*x
^4+16*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^3*x^3-64*arcsin(c*x)^2*c^2*x^2-4*c^4
*x^4-40*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*x+20*arcsin(c*x)^2+20*c^2*x^2-25)+
3/4*c^2*d^2*e*(2*arcsin(c*x)^2*c^2*x^2+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*x
-arcsin(c*x)^2-c^2*x^2)+1/9*d*c*e^2*(9*c^3*x^3*arcsin(c*x)^2+6*arcsin(c*x)*
(-c^2*x^2+1)^(1/2)*c^2*x^2-27*c*x*arcsin(c*x)^2-2*c^3*x^3-42*arcsin(c*x)*(-
c^2*x^2+1)^(1/2)+42*c*x)+d^3*c^3*(c*x*arcsin(c*x)^2-2*c*x+2*arcsin(c*x)*(-c
^2*x^2+1)^(1/2))+1/4*e^3*(2*arcsin(c*x)^2*c^2*x^2+2*arcsin(c*x)*(-c^2*x^2+1
)^(1/2)*c*x-arcsin(c*x)^2-c^2*x^2)+3*d*c*e^2*(c*x*arcsin(c*x)^2-2*c*x+2*arc
sin(c*x)*(-c^2*x^2+1)^(1/2)))+2*a*b/c^3*(1/4/e*arcsin(c*x)*c^4*d^4+arcsin(c
*x)*c^4*d^3*x+3/2*e*arcsin(c*x)*c^4*d^2*x^2+e^2*arcsin(c*x)*c^4*d*x^3+1/4*e
^3*arcsin(c*x)*c^4*x^4-1/4/e*(c^4*d^4*arcsin(c*x)-4*d^3*c^3*e*(-c^2*x^2+1)^
(1/2)+6*d^2*c^2*e^2*(-1/2*c*x*(-c^2*x^2+1)^(1/2)+1/2*arcsin(c*x))+4*d*c*e^3
*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-c^2*x^2+1)^(1/2))+e^4*(-1/4*c^3*x^3
*(-c^2*x^2+1)^(1/2)-3/8*c*x*(-c^2*x^2+1)^(1/2)+3/8*arcsin(c*x)))))
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] b^2*d^3*x*arcsin(c*x)^2 + 1/4*a^2*x^4*e^3 + a^2*d*x^3*e^2 + 3/2*a^2*d^2*x^2
*e - 2*b^2*d^3*(x - sqrt(-c^2*x^2 + 1)*arcsin(c*x)/c) + a^2*d^3*x + 3/2*(2*
x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c*x)/c^3))*a*b*d^2*e
 + 2*(c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*a*b*d^3/c + 2/3*(3*x^3*arcsin(c
*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*d*e^2
+ 1/16*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2
```

```
 + 1)*x/c^4 - 3*arcsin(c*x)/c^5)*c)*a*b*e^3 + 1/4*(b^2*x^4*e^3 + 4*b^2*d*x^
3*e^2 + 6*b^2*d^2*x^2*e)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + int
egrate(1/2*(b^2*c*x^4*e^3 + 4*b^2*c*d*x^3*e^2 + 6*b^2*c*d^2*x^2*e)*sqrt(c*x
 + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^2*x^2 -
1), x)
```

Fricas [A]
time = 2.13, size = 435, normalized size = 1.16

$$\frac{216\,(2\,a^2-b^2)c^4d^2x^2e+288\,(a^2-2\,b^2)c^4d^3x+9\,(32\,b^2c^4dx^3e^2+32\,b^2c^4d^3x+(8\,b^2c^4x^4-3\,b^2)e^3+24\,(2\,b^2c^4d^2x^2-b^2c^2d^2)e)\arcsin(cx)^2+18\,(32\,abc^4dx^3e^2+32\,abc^4d^3x+(8\,abc^4x^4-3\,ab)e^3+24\,(2\,abc^4d^2x^2-abc^2d^2)e)\arcsin(cx)+9\,((8\,a^2-b^2)c^4x^4-3\,b^2c^2x^2)e^3+32\,((9\,a^2-2\,b^2)c^4dx^3-12\,b^2c^2dx)e^2+6\,(72\,abc^3d^2xe+96\,abc^3d^3+(72\,b^2c^3d^2xe+96\,b^2c^3d^3+3\,(2\,b^2c^3x^3+3\,b^2cx)e^3+32\,(b^2c^3dx^2+2\,b^2cd)e^2)\arcsin(cx)+3\,(2\,abc^3x^3+3\,abcx)e^3+32\,(abc^3dx^2+2\,abcd)e^2)\sqrt{-c^2x^2+1}}{288\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/288*(216*(2*a^2 - b^2)*c^4*d^2*x^2*e + 288*(a^2 - 2*b^2)*c^4*d^3*x + 9*(3
2*b^2*c^4*d*x^3*e^2 + 32*b^2*c^4*d^3*x + (8*b^2*c^4*x^4 - 3*b^2)*e^3 + 24*(
2*b^2*c^4*d^2*x^2 - b^2*c^2*d^2)*e)*arcsin(c*x)^2 + 18*(32*a*b*c^4*d*x^3*e^
2 + 32*a*b*c^4*d^3*x + (8*a*b*c^4*x^4 - 3*a*b)*e^3 + 24*(2*a*b*c^4*d^2*x^2
- a*b*c^2*d^2)*e)*arcsin(c*x) + 9*((8*a^2 - b^2)*c^4*x^4 - 3*b^2*c^2*x^2)*e
^3 + 32*((9*a^2 - 2*b^2)*c^4*d*x^3 - 12*b^2*c^2*d*x)*e^2 + 6*(72*a*b*c^3*d^
2*x*e + 96*a*b*c^3*d^3 + (72*b^2*c^3*d^2*x*e + 96*b^2*c^3*d^3 + 3*(2*b^2*c^
3*x^3 + 3*b^2*c*x)*e^3 + 32*(b^2*c^3*d*x^2 + 2*b^2*c*d)*e^2)*arcsin(c*x) +
3*(2*a*b*c^3*x^3 + 3*a*b*c*x)*e^3 + 32*(a*b*c^3*d*x^2 + 2*a*b*c*d)*e^2)*sqr
t(-c^2*x^2 + 1))/c^4
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 743 vs. $2(364) = 728$.
time = 0.60, size = 743, normalized size = 1.99

$$\begin{cases} a^2d^3x+\frac{3a^2d^2ex^2}{2}+a^2de^2x^3+\frac{a^2e^3x^4}{4}+2abd^3x\operatorname{asin}(cx)+3abd^2ex^2\operatorname{asin}(cx)+2abde^2x^3\operatorname{asin}(cx)+\frac{abe^3x^4\operatorname{asin}(cx)}{2}+\frac{2abd^3\sqrt{-c^2x^2+1}}{c}+\frac{3abd^2ex\sqrt{-c^2x^2+1}}{2c}+\frac{2abde^2x^2\sqrt{-c^2x^2+1}}{3c}+\frac{abe^3x^3\sqrt{-c^2x^2+1}}{8c}-\frac{3abd^2e\operatorname{asin}(cx)}{2c^2}+\frac{4abde^2\sqrt{-c^2x^2+1}}{3c^3}+\frac{3abe^3x\sqrt{-c^2x^2+1}}{16c^3}-\frac{3abe^3\operatorname{asin}(cx)}{16c^4}+b^2d^3x\operatorname{asin}^2(cx)-2b^2d^3x+\frac{3b^2d^2ex^2\operatorname{asin}^2(cx)}{2}-\frac{3b^2d^2ex^2}{4}+b^2de^2x^3\operatorname{asin}^2(cx)-\frac{2b^2de^2x^3}{9}+\frac{b^2e^3x^4\operatorname{asin}^2(cx)}{4}-\frac{b^2e^3x^4}{32}+\frac{2b^2d^3\sqrt{-c^2x^2+1}\operatorname{asin}(cx)}{c}+\frac{3b^2d^2ex\sqrt{-c^2x^2+1}\operatorname{asin}(cx)}{2c}+\frac{2b^2de^2x^2\sqrt{-c^2x^2+1}\operatorname{asin}(cx)}{3c}+\frac{b^2e^3x^3\sqrt{-c^2x^2+1}\operatorname{asin}(cx)}{8c}-\frac{3b^2d^2e\operatorname{asin}^2(cx)}{4c^2}-\frac{4b^2de^2x}{3c^2}-\frac{3b^2e^3x^2}{32c^2}+\frac{4b^2de^2\sqrt{-c^2x^2+1}\operatorname{asin}(cx)}{3c^3}+\frac{3b^2e^3x\sqrt{-c^2x^2+1}\operatorname{asin}(cx)}{16c^3}-\frac{3b^2e^3\operatorname{asin}^2(cx)}{32c^4} & \text{for}\: c \neq 0 \\ a^2\left(d^3x+\frac{3d^2ex^2}{2}+de^2x^3+\frac{e^3x^4}{4}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**3*(a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((a**2*d**3*x + 3*a**2*d**2*e*x**2/2 + a**2*d*e**2*x**3 + a**2*e**
3*x**4/4 + 2*a*b*d**3*x*asin(c*x) + 3*a*b*d**2*e*x**2*asin(c*x) + 2*a*b*d*e
**2*x**3*asin(c*x) + a*b*e**3*x**4*asin(c*x)/2 + 2*a*b*d**3*sqrt(-c**2*x**2
 + 1)/c + 3*a*b*d**2*e*x*sqrt(-c**2*x**2 + 1)/(2*c) + 2*a*b*d*e**2*x**2*sqr
t(-c**2*x**2 + 1)/(3*c) + a*b*e**3*x**3*sqrt(-c**2*x**2 + 1)/(8*c) - 3*a*b*
d**2*e*asin(c*x)/(2*c**2) + 4*a*b*d*e**2*sqrt(-c**2*x**2 + 1)/(3*c**3) + 3*
a*b*e**3*x*sqrt(-c**2*x**2 + 1)/(16*c**3) - 3*a*b*e**3*asin(c*x)/(16*c**4)
+ b**2*d**3*x*asin(c*x)**2 - 2*b**2*d**3*x + 3*b**2*d**2*e*x**2*asin(c*x)**
2/2 - 3*b**2*d**2*e*x**2/4 + b**2*d*e**2*x**3*asin(c*x)**2 - 2*b**2*d*e**2*
x**3/9 + b**2*e**3*x**4*asin(c*x)**2/4 - b**2*e**3*x**4/32 + 2*b**2*d**3*sq
rt(-c**2*x**2 + 1)*asin(c*x)/c + 3*b**2*d**2*e*x*sqrt(-c**2*x**2 + 1)*asin(
c*x)/(2*c) + 2*b**2*d*e**2*x**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(3*c) + b**2
```

```
*e**3*x**3*sqrt(-c**2*x**2 + 1)*asin(c*x)/(8*c) - 3*b**2*d**2*e*asin(c*x)**
2/(4*c**2) - 4*b**2*d*e**2*x/(3*c**2) - 3*b**2*e**3*x**2/(32*c**2) + 4*b**2
*d*e**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(3*c**3) + 3*b**2*e**3*x*sqrt(-c**2*
x**2 + 1)*asin(c*x)/(16*c**3) - 3*b**2*e**3*asin(c*x)**2/(32*c**4), Ne(c, 0
)), (a**2*(d**3*x + 3*d**2*e*x**2/2 + d*e**2*x**3 + e**3*x**4/4), True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 816 vs. $2(334) = 668$.

time = 0.43, size = 816, normalized size = 2.18

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*a^2*e^3*x^4 + a^2*d*e^2*x^3 + b^2*d^3*x*arcsin(c*x)^2 + 2*a*b*d^3*x*arc
sin(c*x) + (c^2*x^2 - 1)*b^2*d*e^2*x*arcsin(c*x)^2/c^2 + 3/2*sqrt(-c^2*x^2
+ 1)*b^2*d^2*e*x*arcsin(c*x)/c + a^2*d^3*x - 2*b^2*d^3*x + 2*(c^2*x^2 - 1)*
a*b*d*e^2*x*arcsin(c*x)/c^2 + 3/2*(c^2*x^2 - 1)*b^2*d^2*e*arcsin(c*x)^2/c^2
 + b^2*d*e^2*x*arcsin(c*x)^2/c^2 + 3/2*sqrt(-c^2*x^2 + 1)*a*b*d^2*e*x/c + 2
*sqrt(-c^2*x^2 + 1)*b^2*d^3*arcsin(c*x)/c - 1/8*(-c^2*x^2 + 1)^(3/2)*b^2*e^
3*x*arcsin(c*x)/c^3 - 2/9*(c^2*x^2 - 1)*b^2*d*e^2*x/c^2 + 3*(c^2*x^2 - 1)*a
*b*d^2*e*arcsin(c*x)/c^2 + 2*a*b*d*e^2*x*arcsin(c*x)/c^2 + 3/4*b^2*d^2*e*ar
csin(c*x)^2/c^2 + 1/4*(c^2*x^2 - 1)^2*b^2*e^3*arcsin(c*x)^2/c^4 + 2*sqrt(-c
^2*x^2 + 1)*a*b*d^3/c - 1/8*(-c^2*x^2 + 1)^(3/2)*a*b*e^3*x/c^3 - 2/3*(-c^2*
x^2 + 1)^(3/2)*b^2*d*e^2*arcsin(c*x)/c^3 + 5/16*sqrt(-c^2*x^2 + 1)*b^2*e^3*
x*arcsin(c*x)/c^3 + 3/2*(c^2*x^2 - 1)*a^2*d^2*e/c^2 - 3/4*(c^2*x^2 - 1)*b^2
*d^2*e/c^2 - 14/9*b^2*d*e^2*x/c^2 + 3/2*a*b*d^2*e*arcsin(c*x)/c^2 + 1/2*(c^
2*x^2 - 1)^2*a*b*e^3*arcsin(c*x)/c^4 + 1/2*(c^2*x^2 - 1)*b^2*e^3*arcsin(c*x
)^2/c^4 - 2/3*(-c^2*x^2 + 1)^(3/2)*a*b*d*e^2/c^3 + 5/16*sqrt(-c^2*x^2 + 1)*
a*b*e^3*x/c^3 + 2*sqrt(-c^2*x^2 + 1)*b^2*d*e^2*arcsin(c*x)/c^3 - 3/8*b^2*d^
2*e/c^2 - 1/32*(c^2*x^2 - 1)^2*b^2*e^3/c^4 + (c^2*x^2 - 1)*a*b*e^3*arcsin(c
*x)/c^4 + 5/32*b^2*e^3*arcsin(c*x)^2/c^4 + 2*sqrt(-c^2*x^2 + 1)*a*b*d*e^2/c
^3 - 5/32*(c^2*x^2 - 1)*b^2*e^3/c^4 + 5/16*a*b*e^3*arcsin(c*x)/c^4 - 17/256
*b^2*e^3/c^4
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.00

$$\int (a + b\,\mathrm{asin}(c\,x))^2\,(d + e\,x)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a + b*asin(c*x))^2*(d + e*x)^3, x)
```

3.10 $\int (d+ex)^2(a+b\mathbf{ArcSin}(cx))^2\,dx$

Optimal. Leaf size=242

$$-2b^2d^2x-\frac{4b^2e^2x}{9c^2}-\frac{1}{2}b^2dex^2-\frac{2}{27}b^2e^2x^3+\frac{2bd^2\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{c}+\frac{4be^2\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(c$$

```
[Out] -2*b^2*d^2*x-4/9*b^2*e^2*x/c^2-1/2*b^2*d*e*x^2-2/27*b^2*e^2*x^3-1/3*d^3*(a+
b*arcsin(c*x))^2/e-1/2*d*e*(a+b*arcsin(c*x))^2/c^2+1/3*(e*x+d)^3*(a+b*arcsi
n(c*x))^2/e+2*b*d^2*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c+4/9*b*e^2*(a+b*a
rcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3+b*d*e*x*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(
1/2)/c+2/9*b*e^2*x^2*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A]
time = 0.32, antiderivative size = 242, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.389$, Rules used = {4827, 4847, 4737, 4767, 8, 4795, 30}

$$\frac{2bd^2\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{c}+\frac{bdex\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{c}-\frac{de(a+b\text{ArcSin}(cx))^2}{2c^2}+\frac{2be^2x^2\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{9c}+\frac{4be^2\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{9c^3}-\frac{d^3(a+b\text{ArcSin}(cx))^2}{3e}+\frac{(d+ex)^3(a+b\text{ArcSin}(cx))^2}{3e}-\frac{4b^2e^2x}{9c^2}-2b^2d^2x-\frac{1}{2}b^2dex^2-\frac{2}{27}b^2e^2x^3$$

Antiderivative was successfully verified.

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

```
[Out] -2*b^2*d^2*x - (4*b^2*e^2*x)/(9*c^2) - (b^2*d*e*x^2)/2 - (2*b^2*e^2*x^3)/27
 + (2*b*d^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c + (4*b*e^2*Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x]))/(9*c^3) + (b*d*e*x*Sqrt[1 - c^2*x^2]*(a + b*Arc
Sin[c*x]))/c + (2*b*e^2*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(9*c) -
(d^3*(a + b*ArcSin[c*x])^2)/(3*e) - (d*e*(a + b*ArcSin[c*x])^2)/(2*c^2) + (
(d + e*x)^3*(a + b*ArcSin[c*x])^2)/(3*e)
```

Rule 8

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

Rule 30

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

Rule 4737

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

Rule 4767

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

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4827

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

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

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

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

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

$$= \frac{2bd^2\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))}{c} + \frac{bdex\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))}{c} \ldots$$

$$= -2b^2d^2x - \frac{1}{2}b^2dex^2 - \frac{2}{27}b^2e^2x^3 + \frac{2bd^2\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))}{c} + \ldots$$

$$= -2b^2d^2x - \frac{4b^2e^2x}{9c^2} - \frac{1}{2}b^2dex^2 - \frac{2}{27}b^2e^2x^3 + \frac{2bd^2\sqrt{1-c^2x^2}\,(a+b\sin^{\ldots}}{c}$$

Mathematica [A]

time = 0.20, size = 249, normalized size = 1.03

$$\frac{18a^2c^3x(3d^2+3dex+e^2x^2)+6ab\sqrt{1-c^2x^2}\,(4e^2+c^2(18d^2+9dex+2e^2x^2))-b^2cx(24e^2+c^2(108d^2+27dex+4e^2x^2))+6b\left(-9acde+6ac^3x(3d^2+3dex+e^2x^2)+b\sqrt{1-c^2x^2}\,(4e^2+c^2(18d^2+9dex+2e^2x^2))\right)\text{ArcSin}(cx)+9b^2c(6c^2d^2x+2c^2e^2x^3+3de(-1+2c^2x^2))\,\text{ArcSin}(cx)^2}{54c^3}$$

Antiderivative was successfully verified.

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

```
[Out] (18*a^2*c^3*x*(3*d^2 + 3*d*e*x + e^2*x^2) + 6*a*b*Sqrt[1 - c^2*x^2]*(4*e^2
+ c^2*(18*d^2 + 9*d*e*x + 2*e^2*x^2)) - b^2*c*x*(24*e^2 + c^2*(108*d^2 + 27
*d*e*x + 4*e^2*x^2)) + 6*b*(-9*a*c*d*e + 6*a*c^3*x*(3*d^2 + 3*d*e*x + e^2*x
^2) + b*Sqrt[1 - c^2*x^2]*(4*e^2 + c^2*(18*d^2 + 9*d*e*x + 2*e^2*x^2)))*Arc
Sin[c*x] + 9*b^2*c*(6*c^2*d^2*x + 2*c^2*e^2*x^3 + 3*d*e*(-1 + 2*c^2*x^2))*A
rcSin[c*x]^2)/(54*c^3)
```

Maple [A]

time = 0.14, size = 420, normalized size = 1.74

method	result
derivativedivides	$\frac{(cex+dc)^3a^2}{3c^2e} + \frac{b^2\left(\frac{e^2\left(9c^3x^3\arcsin(cx)^2+6\arcsin(cx)\sqrt{-c^2x^2+1}\,c^2x^2-27cx\arcsin(cx)^2-2c^3x^3-42\arcsin(cx)\sqrt{-c^2x \ldots}\right.}{27}\right.}{\ldots}$

default	$\frac{(cex+dc)^3a^2}{3c^2e} + \frac{b^2\left(\frac{e^2\left(9c^3x^3\arcsin(cx)^2+6\arcsin(cx)\sqrt{-c^2x^2+1}\,c^2x^2-27cx\arcsin(cx)^2-2c^3x^3-42\arcsin(cx)\sqrt{-c^2x^2}\right.}{27}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] 1/c*(1/3*(c*e*x+c*d)^3*a^2/c^2/e+b^2/c^2*(1/27*e^2*(9*c^3*x^3*arcsin(c*x)^2
+6*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x^2-27*c*x*arcsin(c*x)^2-2*c^3*x^3-42
*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+42*c*x)+1/2*c*d*e*(2*arcsin(c*x)^2*c^2*x^2+
2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*x-arcsin(c*x)^2-c^2*x^2)+d^2*c^2*(c*x*ar
csin(c*x)^2-2*c*x+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2))+e^2*(c*x*arcsin(c*x)^2-
2*c*x+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)))+2*a*b/c^2*(1/3/e*arcsin(c*x)*c^3*d
^3+arcsin(c*x)*c^3*d^2*x+e*arcsin(c*x)*c^3*d*x^2+1/3*arcsin(c*x)*e^2*c^3*x^
3-1/3/e*(c^3*d^3*arcsin(c*x)-3*d^2*c^2*e*(-c^2*x^2+1)^(1/2)+3*d*c*e^2*(-1/2
*c*x*(-c^2*x^2+1)^(1/2)+1/2*arcsin(c*x))+e^3*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/
2)-2/3*(-c^2*x^2+1)^(1/2)))))

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] b^2*d^2*x*arcsin(c*x)^2 + 1/3*a^2*x^3*e^2 + a^2*d*x^2*e - 2*b^2*d^2*(x - sq
rt(-c^2*x^2 + 1)*arcsin(c*x)/c) + a^2*d^2*x + (2*x^2*arcsin(c*x) + c*(sqrt(
-c^2*x^2 + 1)*x/c^2 - arcsin(c*x)/c^3))*a*b*d*e + 2*(c*x*arcsin(c*x) + sqrt
(-c^2*x^2 + 1))*a*b*d^2/c + 2/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*
x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*e^2 + 1/3*(b^2*x^3*e^2 + 3*b^2*d*x
^2*e)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + integrate(2/3*(b^2*c*x
^3*e^2 + 3*b^2*c*d*x^2*e)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*
x + 1)*sqrt(-c*x + 1))/(c^2*x^2 - 1), x)

Fricas [A]
time = 2.85, size = 289, normalized size = 1.19

$$\frac{27\,(2\,a^2-b^2)c^3dx^2e+54\,(a^2-2\,b^2)c^3d^2x+9\,(2\,b^2c^3x^3e^2+6\,b^2c^3d^2x+3\,(2\,b^2c^3dx^2-b^2cd)e)\arcsin(cx)^2+18\,(2\,abc^3x^3e^2+6\,abc^3d^2x+3\,(2\,abc^3dx^2-abcd)e)\arcsin(cx)+2\,((9\,a^2-2\,b^2)c^3x^3-12\,b^2cx)e^2+6\,(9\,abc^2dxe+18\,abc^2d^2+(9\,b^2c^2dxe+18\,b^2c^2d^2+2\,(b^2c^2x^2+2\,b^2)e^2)\arcsin(cx)+2\,(abc^2x^2+2\,ab)e^2)\sqrt{-c^2x^2+1}}{54\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/54*(27*(2*a^2 - b^2)*c^3*d*x^2*e + 54*(a^2 - 2*b^2)*c^3*d^2*x + 9*(2*b^2*
c^3*x^3*e^2 + 6*b^2*c^3*d^2*x + 3*(2*b^2*c^3*d*x^2 - b^2*c*d)*e)*arcsin(c*x
)^2 + 18*(2*a*b*c^3*x^3*e^2 + 6*a*b*c^3*d^2*x + 3*(2*a*b*c^3*d*x^2 - a*b*c*
d)*e)*arcsin(c*x) + 2*((9*a^2 - 2*b^2)*c^3*x^3 - 12*b^2*c*x)*e^2 + 6*(9*a*b
*c^2*d*x*e + 18*a*b*c^2*d^2 + (9*b^2*c^2*d*x*e + 18*b^2*c^2*d^2 + 2*(b^2*c^
2*x^2 + 2*b^2)*e^2)*arcsin(c*x) + 2*(a*b*c^2*x^2 + 2*a*b)*e^2)*sqrt(-c^2*x^
2 + 1))/c^3
```

Sympy [**A**]
time = 0.35, size = 454, normalized size = 1.88

$$\begin{cases} a^2d^2x + a^2dex^2 + \frac{a^2e^2x^3}{3} + 2abd^2x\operatorname{asin}(cx) + 2abdex^2\operatorname{asin}(cx) + \frac{2abe^2x^3\operatorname{asin}(cx)}{3} + \frac{2abd^2\sqrt{-c^2x^2+1}}{c} + \frac{abdex\sqrt{-c^2x^2+1}}{c} + \frac{2abe^2x^2\sqrt{-c^2x^2+1}}{9c} - \frac{abde\operatorname{asin}(cx)}{c^2} + \frac{4abe^2\sqrt{-c^2x^2+1}}{9c^3} + b^2d^2x\operatorname{asin}^2(cx) - 2b^2d^2x + b^2dex^2\operatorname{asin}^2(cx) - \frac{b^2dex^2}{2} + \frac{b^2e^2x^3\operatorname{asin}^2(cx)}{3} - \frac{2b^2e^2x^3}{27} + \frac{2b^2d^2\sqrt{-c^2x^2+1}\operatorname{asin}(cx)}{c} + \frac{b^2dex\sqrt{-c^2x^2+1}\operatorname{asin}(cx)}{c} + \frac{2b^2e^2x^2\sqrt{-c^2x^2+1}\operatorname{asin}(cx)}{9c} - \frac{b^2de\operatorname{asin}^2(cx)}{2c^2} - \frac{4b^2e^2x}{9c^2} + \frac{4b^2e^2\sqrt{-c^2x^2+1}\operatorname{asin}(cx)}{9c^3} & \text{for } c \neq 0 \\ a^2\left(d^2x + dex^2 + \frac{e^2x^3}{3}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a**2*d**2*x + a**2*d*e*x**2 + a**2*e**2*x**3/3 + 2*a*b*d**2*x*as
in(c*x) + 2*a*b*d*e*x**2*asin(c*x) + 2*a*b*e**2*x**3*asin(c*x)/3 + 2*a*b*d*
*2*sqrt(-c**2*x**2 + 1)/c + a*b*d*e*x*sqrt(-c**2*x**2 + 1)/c + 2*a*b*e**2*x
**2*sqrt(-c**2*x**2 + 1)/(9*c) - a*b*d*e*asin(c*x)/c**2 + 4*a*b*e**2*sqrt(-
c**2*x**2 + 1)/(9*c**3) + b**2*d**2*x*asin(c*x)**2 - 2*b**2*d**2*x + b**2*d
*e*x**2*asin(c*x)**2 - b**2*d*e*x**2/2 + b**2*e**2*x**3*asin(c*x)**2/3 - 2*
b**2*e**2*x**3/27 + 2*b**2*d**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/c + b**2*d*e
*x*sqrt(-c**2*x**2 + 1)*asin(c*x)/c + 2*b**2*e**2*x**2*sqrt(-c**2*x**2 + 1)
*asin(c*x)/(9*c) - b**2*d*e*asin(c*x)**2/(2*c**2) - 4*b**2*e**2*x/(9*c**2)
+ 4*b**2*e**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(9*c**3), Ne(c, 0)), (a**2*(d*
*2*x + d*e*x**2 + e**2*x**3/3), True))
```

Giac [**B**] Leaf count of result is larger than twice the leaf count of optimal. 487 vs. 2(218) = 436.
time = 0.40, size = 487, normalized size = 2.01

$$\frac{1}{3}a^2e^2x^3 + b^2d^2x\arcsin(cx)^2 + 2abd^2x\arcsin(cx) + \frac{(c^2x^2-1)b^2e^2x\arcsin(cx)^2}{3c^2} + \frac{\sqrt{-c^2x^2+1}\,b^2dex\arcsin(cx)}{c} + a^2d^2x - 2b^2d^2x + \frac{2(c^2x^2-1)abe^2x\arcsin(cx)}{3c^2} + \frac{(c^2x^2-1)b^2de\arcsin(cx)^2}{c^2} + \frac{b^2e^2x\arcsin(cx)^2}{3c^2} + \frac{\sqrt{-c^2x^2+1}\,abdex}{c} + \frac{2\sqrt{-c^2x^2+1}\,b^2d^2\arcsin(cx)}{c} - \frac{2(c^2x^2-1)b^2e^2x}{27c^2} + \frac{2(c^2x^2-1)abde\arcsin(cx)}{c^2} + \frac{2abe^2x\arcsin(cx)}{3c^2} + \frac{b^2de\arcsin(cx)^2}{2c^2} + \frac{2\sqrt{-c^2x^2+1}\,abd^2}{c} - \frac{2(-c^2x^2+1)^{\frac{3}{2}}b^2e^2\arcsin(cx)}{9c^3} + \frac{(c^2x^2-1)a^2de}{c^2} - \frac{(c^2x^2-1)b^2de}{2c^2} - \frac{14b^2e^2x}{27c^2} + \frac{abde\arcsin(cx)}{c^2} - \frac{2(-c^2x^2+1)^{\frac{3}{2}}abe^2}{9c^3} + \frac{2\sqrt{-c^2x^2+1}\,b^2e^2\arcsin(cx)}{3c^3} - \frac{b^2de}{4c^2} + \frac{2\sqrt{-c^2x^2+1}\,abe^2}{3c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/3*a^2*e^2*x^3 + b^2*d^2*x*arcsin(c*x)^2 + 2*a*b*d^2*x*arcsin(c*x) + 1/3*(
c^2*x^2 - 1)*b^2*e^2*x*arcsin(c*x)^2/c^2 + sqrt(-c^2*x^2 + 1)*b^2*d*e*x*arc
sin(c*x)/c + a^2*d^2*x - 2*b^2*d^2*x + 2/3*(c^2*x^2 - 1)*a*b*e^2*x*arcsin(c
*x)/c^2 + (c^2*x^2 - 1)*b^2*d*e*arcsin(c*x)^2/c^2 + 1/3*b^2*e^2*x*arcsin(c*
x)^2/c^2 + sqrt(-c^2*x^2 + 1)*a*b*d*e*x/c + 2*sqrt(-c^2*x^2 + 1)*b^2*d^2*ar
csin(c*x)/c - 2/27*(c^2*x^2 - 1)*b^2*e^2*x/c^2 + 2*(c^2*x^2 - 1)*a*b*d*e*ar
csin(c*x)/c^2 + 2/3*a*b*e^2*x*arcsin(c*x)/c^2 + 1/2*b^2*d*e*arcsin(c*x)^2/c
^2 + 2*sqrt(-c^2*x^2 + 1)*a*b*d^2/c - 2/9*(-c^2*x^2 + 1)^(3/2)*b^2*e^2*arcs
in(c*x)/c^3 + (c^2*x^2 - 1)*a^2*d*e/c^2 - 1/2*(c^2*x^2 - 1)*b^2*d*e/c^2 - 1
```

```
4/27*b^2*e^2*x/c^2 + a*b*d*e*arcsin(c*x)/c^2 - 2/9*(-c^2*x^2 + 1)^(3/2)*a*b
*e^2/c^3 + 2/3*sqrt(-c^2*x^2 + 1)*b^2*e^2*arcsin(c*x)/c^3 - 1/4*b^2*d*e/c^2
 + 2/3*sqrt(-c^2*x^2 + 1)*a*b*e^2/c^3
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (a + b\,\mathrm{asin}(c\,x))^2\,(d + e\,x)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.11 $\int (d+ex)(a+b\textbf{ArcSin}(cx))^2\,dx$

Optimal. Leaf size=142

$$-2b^2dx-\frac{1}{4}b^2ex^2+\frac{2bd\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{c}+\frac{bex\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{2c}-\frac{d^2(a+b\text{ArcSin}(cx}{2e}$$

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

Rubi [A]
time = 0.20, antiderivative size = 142, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.438$, Rules used = {4827, 4847, 4737, 4767, 8, 4795, 30}

$$\frac{2bd\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{c}+\frac{bex\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{2c}-\frac{e(a+b\text{ArcSin}(cx))^2}{4c^2}-\frac{d^2(a+b\text{ArcSin}(cx))^2}{2e}+\frac{(d+ex)^2(a+b\text{ArcSin}(cx))^2}{2e}-2b^2dx-\frac{1}{4}b^2ex^2$$

Antiderivative was successfully verified.

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

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

Rule 8

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

Rule 30

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

Rule 4737

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

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
```

```
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4827

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

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

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

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

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

$$= \frac{2bd\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))}{c} + \frac{bex\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))}{2c} - \frac{d}{}$$

$$= -2b^2dx - \frac{1}{4}b^2ex^2 + \frac{2bd\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))}{c} + \frac{bex\sqrt{1-c^2x^2}\,(}{2}$$

Mathematica [A]
time = 0.18, size = 147, normalized size = 1.04

$$\frac{c\left(2a^2cx(2d+ex)-b^2cx(8d+ex)+2ab(4d+ex)\sqrt{1-c^2x^2}\right)+2b\left(4ac^2dx+bc(4d+ex)\sqrt{1-c^2x^2}+ae(-1+2c^2x^2)\right)\text{ArcSin}(cx)+b^2(4c^2dx+e(-1+2c^2x^2))\text{ArcSin}(cx)^2}{4c^2}$$

Antiderivative was successfully verified.

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

```
[Out] (c*(2*a^2*c*x*(2*d + e*x) - b^2*c*x*(8*d + e*x) + 2*a*b*(4*d + e*x)*Sqrt[1
- c^2*x^2]) + 2*b*(4*a*c^2*d*x + b*c*(4*d + e*x)*Sqrt[1 - c^2*x^2] + a*e*(-
1 + 2*c^2*x^2))*ArcSin[c*x] + b^2*(4*c^2*d*x + e*(-1 + 2*c^2*x^2))*ArcSin[c
*x]^2)/(4*c^2)
```

Maple [A]
time = 0.08, size = 198, normalized size = 1.39

method	result
derivativedivides	$\frac{\frac{a^2\left(d\,c^2x+\frac{1}{2}c^2e\,x^2\right)}{c}+\frac{b^2\left(dc\left(cx\arcsin(cx)^2-2cx+2\arcsin(cx)\sqrt{-c^2x^2+1}\right)+\frac{e\left(2\arcsin(cx)^2c^2x^2+2\arcsin(cx)\sqrt{-c^2x}\right.}{4}\right.}{c}}{}$
default	$\frac{\frac{a^2\left(d\,c^2x+\frac{1}{2}c^2e\,x^2\right)}{c}+\frac{b^2\left(dc\left(cx\arcsin(cx)^2-2cx+2\arcsin(cx)\sqrt{-c^2x^2+1}\right)+\frac{e\left(2\arcsin(cx)^2c^2x^2+2\arcsin(cx)\sqrt{-c^2x}\right.}{4}\right.}{c}}{}$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] b^2*d*x*arcsin(c*x)^2 + 1/2*a^2*x^2*e - 2*b^2*d*(x - sqrt(-c^2*x^2 + 1)*arc
sin(c*x)/c) + a^2*d*x + 1/2*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^
2 - arcsin(c*x)/c^3))*a*b*e + 1/2*(x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x
 + 1))^2 + 2*c*integrate(sqrt(c*x + 1)*sqrt(-c*x + 1)*x^2*arctan2(c*x, sqrt
(c*x + 1)*sqrt(-c*x + 1))/(c^2*x^2 - 1), x))*b^2*e + 2*(c*x*arcsin(c*x) + s
qrt(-c^2*x^2 + 1))*a*b*d/c
```

Fricas [A]
time = 2.13, size = 163, normalized size = 1.15

$$\frac{(2\,a^2-b^2)c^2x^2e+4\,(a^2-2\,b^2)c^2dx+(4\,b^2c^2dx+(2\,b^2c^2x^2-b^2)e)\arcsin\left(cx\right)^2+2\,(4\,abc^2dx+(2\,abc^2x^2-ab)e)\arcsin\left(cx\right)+2\,(abcxe+4\,abcd+(b^2cxe+4\,b^2cd)\arcsin\left(cx\right))\sqrt{-c^2x^2+1}}{4\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A]
time = 0.18, size = 233, normalized size = 1.64

$$\begin{cases} a^2dx+\frac{a^2ex^2}{2}+2abdx\operatorname{asin}\left(cx\right)+abex^2\operatorname{asin}\left(cx\right)+\frac{2abd\sqrt{-c^2x^2+1}}{c}+\frac{abex\sqrt{-c^2x^2+1}}{2c}-\frac{abe\operatorname{asin}\left(cx\right)}{2c^2}+b^2dx\operatorname{asin}^2\left(cx\right)-2b^2dx+\frac{b^2ex^2\operatorname{asin}^2\left(cx\right)}{2}-\frac{b^2ex^2}{4}+\frac{2b^2d\sqrt{-c^2x^2+1}\operatorname{asin}\left(cx\right)}{c}+\frac{b^2ex\sqrt{-c^2x^2+1}\operatorname{asin}\left(cx\right)}{2c}-\frac{b^2e\operatorname{asin}^2\left(cx\right)}{4c^2} & \text{for}\ c\neq 0\\ a^2\left(dx+\frac{ex^2}{2}\right) & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A]
time = 0.40, size = 244, normalized size = 1.72

$$b^2dx\arcsin(cx)^2 + 2\,abdx\arcsin(cx) + \frac{\sqrt{-c^2x^2+1}\,b^2ex\arcsin(cx)}{2\,c} + a^2dx - 2\,b^2dx + \frac{(c^2x^2-1)b^2e\arcsin(cx)^2}{2\,c^2} + \frac{\sqrt{-c^2x^2+1}\,abex}{2\,c} + \frac{2\,\sqrt{-c^2x^2+1}\,b^2d\arcsin(cx)}{c} + \frac{(c^2x^2-1)abe\arcsin(cx)}{c^2} + \frac{b^2e\arcsin(cx)^2}{4\,c^2} + \frac{2\,\sqrt{-c^2x^2+1}\,abd}{c} + \frac{(c^2x^2-1)a^2e}{2\,c^2} - \frac{(c^2x^2-1)b^2e}{4\,c^2} + \frac{abe\arcsin(cx)}{2\,c^2} - \frac{b^2e}{8\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int {\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,\left(d+e\,x\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.12 $\int (a+b\mathbf{ArcSin}(cx))^2\,dx$

Optimal. Leaf size=47

$$-2b^2x+\frac{2b\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{c}+x(a+b\text{ArcSin}(cx))^2$$

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

Rubi [A]
time = 0.04, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}=0.300$, Rules used = {4715, 4767, 8}

$$\frac{2b\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{c}+x(a+b\text{ArcSin}(cx))^2-2b^2x$$

Antiderivative was successfully verified.

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

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

Rule 8

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

Rule 4715

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

Rule 4767

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

Rubi steps

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

Mathematica [A]
time = 0.03, size = 47, normalized size = 1.00

$$-2b^2x + \frac{2b\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{c} + x(a+b\text{ArcSin}(cx))^2$$

Antiderivative was successfully verified.

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

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

Maple [A]
time = 0.06, size = 72, normalized size = 1.53

method	result	size
derivativedivides	$\frac{cx\,a^2+b^2\left(cx\arcsin(cx)^2-2cx+2\arcsin(cx)\sqrt{-c^2x^2+1}\right)+2ab\left(cx\arcsin(cx)+\sqrt{-c^2x^2+1}\right)}{c}$	72
default	$\frac{cx\,a^2+b^2\left(cx\arcsin(cx)^2-2cx+2\arcsin(cx)\sqrt{-c^2x^2+1}\right)+2ab\left(cx\arcsin(cx)+\sqrt{-c^2x^2+1}\right)}{c}$	72

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2,x,method=_RETURNVERBOSE)
```

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

Maxima [A]
time = 0.48, size = 72, normalized size = 1.53

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A]
time = 2.56, size = 65, normalized size = 1.38

$$\frac{b^2cx\arcsin{(cx)}^2+2\,abcx\arcsin{(cx)}+(a^2-2\,b^2)cx+2\,\sqrt{-c^2x^2+1}\,(b^2\arcsin{(cx)}+ab)}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A]
time = 0.11, size = 82, normalized size = 1.74

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A]
time = 0.39, size = 75, normalized size = 1.60

$$b^2x\arcsin{(cx)}^2+2\,abx\arcsin{(cx)}+a^2x-2\,b^2x+\frac{2\,\sqrt{-c^2x^2+1}\,b^2\arcsin{(cx)}}{c}+\frac{2\,\sqrt{-c^2x^2+1}\,ab}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Mupad [B]
time = 0.37, size = 142, normalized size = 3.02

$$\begin{cases} b^2\left(x\left(\operatorname{asin}(c\,x)^2-2\right)+2\operatorname{asin}(c\,x)\,\sqrt{\frac{1}{c^2}-x^2}\right)+a^2\,x+\frac{2\,a\,b\left(\sqrt{1-c^2\,x^2}+c\,x\operatorname{asin}(c\,x)\right)}{c} & \text{if}\ \ 0<c \\ a^2\,x+b^2\,x\left(\operatorname{asin}(c\,x)^2-2\right)+\frac{2\,b^2\operatorname{asin}(c\,x)\,\sqrt{1-c^2\,x^2}}{c}+\frac{2\,a\,b\left(\sqrt{1-c^2\,x^2}+c\,x\operatorname{asin}(c\,x)\right)}{c} & \text{if}\ \ \neg 0<c \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] piecewise(0 < c, b^2*(x*(asin(c*x)^2 - 2) + 2*asin(c*x)*(1/c^2 - x^2)^(1/2)
) + a^2*x + (2*a*b*((- c^2*x^2 + 1)^(1/2) + c*x*asin(c*x)))/c, ~0 < c, a^2*
x + b^2*x*(asin(c*x)^2 - 2) + (2*b^2*asin(c*x)*(- c^2*x^2 + 1)^(1/2))/c + (
2*a*b*((- c^2*x^2 + 1)^(1/2) + c*x*asin(c*x)))/c)
```

3.13 $\int \frac{(a+b\mathbf{ArcSin}(cx))^2}{d+ex}\,dx$

Optimal. Leaf size=347

$$-\frac{i(a+b\text{ArcSin}(cx))^3}{3be}+\frac{(a+b\text{ArcSin}(cx))^2\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e}+\frac{(a+b\text{ArcSin}(cx))^2\log\left(1-\frac{iee^{i\text{Ar}}}{cd+\sqrt{c^2}}\right.}{e}$$

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

Rubi [A]
time = 0.35, antiderivative size = 347, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$, Rules used = {4825, 4615, 2221, 2611, 2320, 6724}

$$-\frac{2ib(a+b\text{ArcSin}(cx))\text{Li}_2\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e}-\frac{2ib(a+b\text{ArcSin}(cx))\text{Li}_2\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)}{e}+\frac{(a+b\text{ArcSin}(cx))^2\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e}+\frac{(a+b\text{ArcSin}(cx))^2\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e}-\frac{i(a+b\text{ArcSin}(cx))^3}{3be}+\frac{2b^2\text{Li}_3\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e}+\frac{2b^2\text{Li}_3\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)}{e}$$

Antiderivative was successfully verified.

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

```
[Out] ((-1/3*I)*(a + b*ArcSin[c*x])^3)/(b*e) + ((a + b*ArcSin[c*x])^2*Log[1 - (I*
e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e + ((a + b*ArcSin[c*x])
^2*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e - ((2*I)
*b*(a + b*ArcSin[c*x])*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d
^2 - e^2])])/e - ((2*I)*b*(a + b*ArcSin[c*x])*PolyLog[2, (I*e*E^(I*ArcSin[c
*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e + (2*b^2*PolyLog[3, (I*e*E^(I*ArcSin[
c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e + (2*b^2*PolyLog[3, (I*e*E^(I*ArcSin
[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e
```

Rule 2221

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

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 4615

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Int[(e + f*x)^m*(E^(I*(c + d*x))/(a - Rt[a^2 - b^2, 2] - I*b*E^(
I*(c + d*x)))), x] + Int[(e + f*x)^m*(E^(I*(c + d*x))/(a + Rt[a^2 - b^2, 2]
 - I*b*E^(I*(c + d*x)))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0]
 && PosQ[a^2 - b^2]
```

Rule 4825

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

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\sin^{-1}(cx))^2}{d+ex}\,dx = \text{Subst}\left(\int \frac{(a+bx)^2\cos(x)}{cd+e\sin(x)}\,dx, x, \sin^{-1}(cx)\right)$$

$$= -\frac{i(a+b\sin^{-1}(cx))^3}{3be} + \text{Subst}\left(\int \frac{e^{ix}(a+bx)^2}{cd-\sqrt{c^2d^2-e^2}-iee^{ix}}\,dx, x, \sin^{-1}(cx)\right) + \text{Su}$$

$$= -\frac{i(a+b\sin^{-1}(cx))^3}{3be} + \frac{(a+b\sin^{-1}(cx))^2\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e} + \frac{(a+b\sin}{}$$

$$= -\frac{i(a+b\sin^{-1}(cx))^3}{3be} + \frac{(a+b\sin^{-1}(cx))^2\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e} + \frac{(a+b\sin}{}$$

$$= -\frac{i(a+b\sin^{-1}(cx))^3}{3be} + \frac{(a+b\sin^{-1}(cx))^2\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e} + \frac{(a+b\sin}{}$$

$$= -\frac{i(a+b\sin^{-1}(cx))^3}{3be} + \frac{(a+b\sin^{-1}(cx))^2\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e} + \frac{(a+b\sin}{}$$

Mathematica [**A**]
time = 0.26, size = 330, normalized size = 0.95

$$\frac{-\frac{i(a+b\text{ArcSin}(cx))^3}{b}+3(a+b\text{ArcSin}(cx))^2\log\left(1+\frac{iee^{i\text{ArcSin}(cx)}}{-cd+\sqrt{c^2d^2-e^2}}\right)+3(a+b\text{ArcSin}(cx))^2\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)+6b\left(-i(a+b\text{ArcSin}(cx))\text{PolyLog}\left(2,-\frac{iee^{i\text{ArcSin}(cx)}}{-cd+\sqrt{c^2d^2-e^2}}\right)+b\text{PolyLog}\left(3,-\frac{iee^{i\text{ArcSin}(cx)}}{-cd+\sqrt{c^2d^2-e^2}}\right)\right)+6b\left(-i(a+b\text{ArcSin}(cx))\text{PolyLog}\left(2,\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)+b\text{PolyLog}\left(3,\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)\right)}{3e}$$

Antiderivative was successfully verified.

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

```
[Out] (((-I)*(a + b*ArcSin[c*x])^3)/b + 3*(a + b*ArcSin[c*x])^2*Log[1 + (I*e*E^(I
*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] + 3*(a + b*ArcSin[c*x])^2*Lo
g[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])] + 6*b*((-I)*(a +
 b*ArcSin[c*x])*PolyLog[2, ((-I)*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^
2 - e^2])] + b*PolyLog[3, ((-I)*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2
 - e^2])]) + 6*b*((-I)*(a + b*ArcSin[c*x])*PolyLog[2, (I*e*E^(I*ArcSin[c*x]
))/(c*d + Sqrt[c^2*d^2 - e^2])] + b*PolyLog[3, (I*e*E^(I*ArcSin[c*x]))/(c*d
 + Sqrt[c^2*d^2 - e^2])]))/(3*e)
```

Maple [**F**]
time = 0.08, size = 0, normalized size = 0.00

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] a^2*e^(-1)*log(x*e + d) + integrate((b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c
*x + 1))^2 + 2*a*b*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))/(x*e + d), x
)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

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

Verification of antiderivative is not currently implemented for this CAS.

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

3.14 $\int \frac{(a+b\mathbf{ArcSin}(cx))^2}{(d+ex)^2}\,dx$

Optimal. Leaf size=309

$$-\frac{(a+b\text{ArcSin}(cx))^2}{e(d+ex)}-\frac{2ibc(a+b\text{ArcSin}(cx))\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e\sqrt{c^2d^2-e^2}}+\frac{2ibc(a+b\text{ArcSin}(cx))\log\left(1-\right.}{e\sqrt{c^2d^2-e^2}}$$

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

Rubi [A]
time = 0.37, antiderivative size = 309, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.389$, Rules used = {4827, 4857, 3404, 2296, 2221, 2317, 2438}

$$-\frac{2ibc(a+b\text{ArcSin}(cx))\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e\sqrt{c^2d^2-e^2}}+\frac{2ibc(a+b\text{ArcSin}(cx))\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e\sqrt{c^2d^2-e^2}}-\frac{(a+b\text{ArcSin}(cx))^2}{e(d+ex)}-\frac{2b^2c\text{Li}_2\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e\sqrt{c^2d^2-e^2}}+\frac{2b^2c\text{Li}_2\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)}{e\sqrt{c^2d^2-e^2}}$$

Antiderivative was successfully verified.

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

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

Rule 2221

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

Rule 2296

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[2*(c/q), Int[
```

```
(f + g*x)^m*(F^u/(b - q + 2*c*F^u)), x], x] - Dist[2*(c/q), Int[(f + g*x)^m
*(F^u/(b + q + 2*c*F^u)), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2317

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

Rule 2438

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

Rule 3404

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[(c + d*x)^m*(E^(I*(e + f*x))/(I*b + 2*a*E^(I*(e + f*x)
) - I*b*E^(2*I*(e + f*x)))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4827

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

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+b\sin^{-1}(cx))^2}{(d+ex)^2}\,dx &= -\frac{(a+b\sin^{-1}(cx))^2}{e(d+ex)}+\frac{(2bc)\int \frac{a+b\sin^{-1}(cx)}{(d+ex)\sqrt{1-c^2x^2}}\,dx}{e} \\
&= -\frac{(a+b\sin^{-1}(cx))^2}{e(d+ex)}+\frac{(2bc)\text{Subst}\left(\int \frac{a+bx}{cd+e\sin(x)}\,dx,x,\sin^{-1}(cx)\right)}{e} \\
&= -\frac{(a+b\sin^{-1}(cx))^2}{e(d+ex)}+\frac{(4bc)\text{Subst}\left(\int \frac{e^{ix}(a+bx)}{ie+2cde^{ix}-iee^{2ix}}\,dx,x,\sin^{-1}(cx)\right)}{e} \\
&= -\frac{(a+b\sin^{-1}(cx))^2}{e(d+ex)}-\frac{(4ibc)\text{Subst}\left(\int \frac{e^{ix}(a+bx)}{2cd-2\sqrt{c^2d^2-e^2}-2iee^{ix}}\,dx,x,\sin^{-1}(cx)\right)}{\sqrt{c^2d^2-e^2}} \\
&= -\frac{(a+b\sin^{-1}(cx))^2}{e(d+ex)}-\frac{2ibc(a+b\sin^{-1}(cx))\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e\sqrt{c^2d^2-e^2}}+\frac{2ibc(a}{} \\
&= -\frac{(a+b\sin^{-1}(cx))^2}{e(d+ex)}-\frac{2ibc(a+b\sin^{-1}(cx))\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e\sqrt{c^2d^2-e^2}}+\frac{2ibc(a}{} \\
&= -\frac{(a+b\sin^{-1}(cx))^2}{e(d+ex)}-\frac{2ibc(a+b\sin^{-1}(cx))\log\left(1-\frac{iee^{i\sin^{-1}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e\sqrt{c^2d^2-e^2}}+\frac{2ibc(a}{}
\end{aligned}$$

Mathematica [**A**]
time = 0.23, size = 230, normalized size = 0.74

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

Antiderivative was successfully verified.

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

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

Maple [**B**] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 665 vs. 2(319) = 638.
time = 0.97, size = 666, normalized size = 2.16

method	result
derivativedivides	$\frac{-\frac{a^2c^2}{(cex+dc)e}-\frac{b^2c^2\arcsin(cx)^2}{(cex+dc)e}+\frac{2b^2c^2\sqrt{-c^2d^2+e^2}\,\arcsin(cx)\ln\left(\frac{idc+e\left(icx+\sqrt{-c^2x^2+1}\right)+\sqrt{-c^2d^2+e^2}}{idc+\sqrt{-c^2d^2+e^2}}\right.}{e\left(c^2d^2-e^2\right)}}{}$
default	$\frac{-\frac{a^2c^2}{(cex+dc)e}-\frac{b^2c^2\arcsin(cx)^2}{(cex+dc)e}+\frac{2b^2c^2\sqrt{-c^2d^2+e^2}\,\arcsin(cx)\ln\left(\frac{idc+e\left(icx+\sqrt{-c^2x^2+1}\right)+\sqrt{-c^2d^2+e^2}}{idc+\sqrt{-c^2d^2+e^2}}\right.}{e\left(c^2d^2-e^2\right)}}{}$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c*d-%e>0)', see `assume?` for more
details
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

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

Verification of antiderivative is not currently implemented for this CAS.

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

3.15 $\int \frac{(a+b\text{ArcSin}(cx))^2}{(d+ex)^3}\,dx$

Optimal. Leaf size=401

$$\frac{bc\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{(c^2d^2-e^2)(d+ex)}-\frac{(a+b\text{ArcSin}(cx))^2}{2e(d+ex)^2}-\frac{ibc^3d(a+b\text{ArcSin}(cx))\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e\,(c^2d^2-e^2)^{3/2}}+ i$$

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

Rubi [A]
time = 0.47, antiderivative size = 401, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.556$, Rules used = {4827, 4857, 3405, 3404, 2296, 2221, 2317, 2438, 2747, 31}

$$\frac{bc\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{(c^2d^2-e^2)(d+ex)}-\frac{ibc^3d(a+b\text{ArcSin}(cx))\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e\,(c^2d^2-e^2)^{3/2}}+\frac{ibc^3d(a+b\text{ArcSin}(cx))\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e\,(c^2d^2-e^2)^{3/2}}-\frac{(a+b\text{ArcSin}(cx))^2}{2e(d+ex)^2}-\frac{b^2c^3d\text{Li}_2\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e\,(c^2d^2-e^2)^{3/2}}+\frac{b^2c^3d\text{Li}_2\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)}{e\,(c^2d^2-e^2)^{3/2}}-\frac{b^2c^2\log(d+ex)}{e\,(c^2d^2-e^2)}$$

Antiderivative was successfully verified.

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

```
[Out] (b*c*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/((c^2*d^2 - e^2)*(d + e*x)) - (
a + b*ArcSin[c*x])^2/(2*e*(d + e*x)^2) - (I*b*c^3*d*(a + b*ArcSin[c*x])*Log
[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/(e*(c^2*d^2 - e^
2)^(3/2)) + (I*b*c^3*d*(a + b*ArcSin[c*x])*Log[1 - (I*e*E^(I*ArcSin[c*x]))/
(c*d + Sqrt[c^2*d^2 - e^2])])/(e*(c^2*d^2 - e^2)^(3/2)) - (b^2*c^2*Log[d +
e*x])/(e*(c^2*d^2 - e^2)) - (b^2*c^3*d*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(
c*d - Sqrt[c^2*d^2 - e^2])])/(e*(c^2*d^2 - e^2)^(3/2)) + (b^2*c^3*d*PolyLog
[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/(e*(c^2*d^2 - e^2
)^(3/2))
```

Rule 31

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

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2296

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[2*(c/q), Int[
(f + g*x)^m*(F^u/(b - q + 2*c*F^u)), x], x] - Dist[2*(c/q), Int[(f + g*x)^m
*(F^u/(b + q + 2*c*F^u)), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2317

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

Rule 2438

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

Rule 2747

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rule 3404

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[(c + d*x)^m*(E^(I*(e + f*x))/(I*b + 2*a*E^(I*(e + f*x)
) - I*b*E^(2*I*(e + f*x)))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3405

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[b*(c + d*x)^m*(Cos[e + f*x]/(f*(a^2 - b^2)*(a + b*Sin[e + f
*x]))), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[b*d*(m/(f*(a^2 - b^2))), Int[(c + d*x)^(m - 1)*(Cos[e + f*x]/(a
+ b*Sin[e + f*x])), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 4827

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

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(a+b\sin^{-1}(cx))^2}{(d+ex)^3}\,dx &= -\frac{(a+b\sin^{-1}(cx))^2}{2e(d+ex)^2} + \frac{(bc)\int \frac{a+b\sin^{-1}(cx)}{(d+ex)^2\sqrt{1-c^2x^2}}\,dx}{e} \\
&= -\frac{(a+b\sin^{-1}(cx))^2}{2e(d+ex)^2} + \frac{(bc^2)\,\text{Subst}\left(\int \frac{a+bx}{(cd+e\sin(x))^2}\,dx, x, \sin^{-1}(cx)\right)}{e} \\
&= \frac{bc\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))}{(c^2d^2-e^2)(d+ex)} - \frac{(a+b\sin^{-1}(cx))^2}{2e(d+ex)^2} - \frac{(b^2c^2)\,\text{Subst}\left(\int \frac{\cos(x)}{cd+e\sin(x)}\right.}{c^2d^2-e^2} \\
&= \frac{bc\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))}{(c^2d^2-e^2)(d+ex)} - \frac{(a+b\sin^{-1}(cx))^2}{2e(d+ex)^2} - \frac{(b^2c^2)\,\text{Subst}\left(\int \frac{1}{cd+x}\,dx, x,\right.}{e(c^2d^2-e^2)} \\
&= \frac{bc\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))}{(c^2d^2-e^2)(d+ex)} - \frac{(a+b\sin^{-1}(cx))^2}{2e(d+ex)^2} - \frac{b^2c^2\log(d+ex)}{e(c^2d^2-e^2)} - \frac{(2ibc^3}{} \\
&= \frac{bc\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))}{(c^2d^2-e^2)(d+ex)} - \frac{(a+b\sin^{-1}(cx))^2}{2e(d+ex)^2} - \frac{ibc^3d(a+b\sin^{-1}(cx))\log}{e(c^2d^2-} \\
&= \frac{bc\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))}{(c^2d^2-e^2)(d+ex)} - \frac{(a+b\sin^{-1}(cx))^2}{2e(d+ex)^2} - \frac{ibc^3d(a+b\sin^{-1}(cx))\log}{e(c^2d^2-} \\
&= \frac{bc\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))}{(c^2d^2-e^2)(d+ex)} - \frac{(a+b\sin^{-1}(cx))^2}{2e(d+ex)^2} - \frac{ibc^3d(a+b\sin^{-1}(cx))\log}{e(c^2d^2-}
\end{aligned}
$$

Mathematica [A]
time = 0.75, size = 314, normalized size = 0.78

$$
\frac{\frac{2bce\sqrt{1-c^2x^2}(a+b\text{ArcSin}(cx))}{(c^2d^2-e^2)(d+ex)} - \frac{(a+b\text{ArcSin}(cx))^2}{(d+ex)^2} - \frac{2b^2c^2\log(d+ex)}{c^2d^2-e^2} + \frac{2bc^3d\left(-i(a+b\text{ArcSin}(cx))\left(\log\left(1+\frac{iee^{i\text{ArcSin}(cx)}}{-cd+\sqrt{c^2d^2-e^2}}\right)-\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)\right)-b\text{PolyLog}\left(2,-\frac{iee^{i\text{ArcSin}(cx)}}{-cd+\sqrt{c^2d^2-e^2}}\right)+b\text{PolyLog}\left(2,\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)\right)}{(c^2d^2-e^2)^{3/2}}}{2e}
$$

Antiderivative was successfully verified.

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

```
[Out] ((2*b*c*e*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/((c^2*d^2 - e^2)*(d + e*x)
) - (a + b*ArcSin[c*x])^2/(d + e*x)^2 - (2*b^2*c^2*Log[d + e*x])/(c^2*d^2 -
 e^2) + (2*b*c^3*d*((-I)*(a + b*ArcSin[c*x])*(Log[1 + (I*e*E^(I*ArcSin[c*x]
))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] - Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d +
 Sqrt[c^2*d^2 - e^2])]) - b*PolyLog[2, ((-I)*e*E^(I*ArcSin[c*x]))/(-(c*d) +
```

```
Sqrt[c^2*d^2 - e^2])] + b*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c
^2*d^2 - e^2])]))/(c^2*d^2 - e^2)^(3/2))/(2*e)
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 1178 vs. $2(407) = 814$.
time = 1.48, size = 1179, normalized size = 2.94 Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(e*x+d)^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(-1/2*a^2*c^3/(c*e*x+c*d)^2/e-1/2*b^2*c^5*arcsin(c*x)^2/(c*e*x+c*d)^2/(
c^2*d^2-e^2)/e*d^2+I*b^2*c^4/e*(-c^2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)^2*d*dilog
((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2
+e^2)^(1/2)))-I*b^2*c^5*arcsin(c*x)/(c*e*x+c*d)^2/(c^2*d^2-e^2)/e*d^2-2*I*b
^2*c^5*arcsin(c*x)/(c*e*x+c*d)^2/(c^2*d^2-e^2)*d*x+b^2*c^4*arcsin(c*x)/(c*e
*x+c*d)^2/(c^2*d^2-e^2)*(-c^2*x^2+1)^(1/2)*d+b^2*c^4*arcsin(c*x)/(c*e*x+c*d
)^2/(c^2*d^2-e^2)*e*(-c^2*x^2+1)^(1/2)*x+1/2*b^2*c^3*arcsin(c*x)^2/(c*e*x+c
*d)^2/(c^2*d^2-e^2)*e+2*b^2*c^3/e/(c^2*d^2-e^2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)
)-b^2*c^3/e/(c^2*d^2-e^2)*ln(I*e*(I*c*x+(-c^2*x^2+1)^(1/2))^2-2*d*c*(I*c*x+
(-c^2*x^2+1)^(1/2))-I*e)-I*b^2*c^5*arcsin(c*x)/(c*e*x+c*d)^2/(c^2*d^2-e^2)*
e*x^2-b^2*c^4/e*(-c^2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)^2*d*arcsin(c*x)*ln((I*d*
c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^
(1/2)))-I*b^2*c^4/e*(-c^2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)^2*d*dilog((I*d*c+e*(
I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)
))+b^2*c^4/e*(-c^2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)^2*d*arcsin(c*x)*ln((I*d*c+e
*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/
2)))-a*b*c^3/(c*e*x+c*d)^2/e*arcsin(c*x)+a*b*c^3/e/(c^2*d^2-e^2)/(c*x+d*c/e
)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)-a*b*c^4/e^2*
d/(c^2*d^2-e^2)/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e
*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/
e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e)))
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c*d-%e>0)', see `assume?` for more
details
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{(a + b \operatorname{asin}(cx))^2}{(d + ex)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(e*x+d)**3,x)
```

```
[Out] Integral((a + b*asin(c*x))**2/(d + e*x)**3, x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b \operatorname{asin}(c\,x))^2}{(d + e\,x)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a + b*asin(c*x))^2/(d + e*x)^3, x)
```

3.16 $\int \frac{(d+ex)^3}{a+b\textbf{ArcSin}(cx)}\,dx$

Optimal. Leaf size=393

$$\frac{d^3\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)}{bc}+\frac{3de^2\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)}{4bc^3}-\frac{3de^2\cos\left(\frac{3a}{b}\right)\text{CosInteg}}{4b}$$

```
[Out] d^3*Ci(a/b+arcsin(c*x))*cos(a/b)/b/c+3/4*d*e^2*Ci(a/b+arcsin(c*x))*cos(a/b)
/b/c^3-3/4*d*e^2*Ci(3*a/b+3*arcsin(c*x))*cos(3*a/b)/b/c^3+3/2*d^2*e*cos(2*a
/b)*Si(2*a/b+2*arcsin(c*x))/b/c^2+1/4*e^3*cos(2*a/b)*Si(2*a/b+2*arcsin(c*x)
)/b/c^4-1/8*e^3*cos(4*a/b)*Si(4*a/b+4*arcsin(c*x))/b/c^4+d^3*Si(a/b+arcsin(
c*x))*sin(a/b)/b/c+3/4*d*e^2*Si(a/b+arcsin(c*x))*sin(a/b)/b/c^3-3/2*d^2*e*C
i(2*a/b+2*arcsin(c*x))*sin(2*a/b)/b/c^2-1/4*e^3*Ci(2*a/b+2*arcsin(c*x))*sin
(2*a/b)/b/c^4-3/4*d*e^2*Si(3*a/b+3*arcsin(c*x))*sin(3*a/b)/b/c^3+1/8*e^3*Ci
(4*a/b+4*arcsin(c*x))*sin(4*a/b)/b/c^4
```

Rubi [A]
time = 0.82, antiderivative size = 393, normalized size of antiderivative = 1.00, number of steps used = 27, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}=0.389$, Rules used = {4831, 6874, 3384, 3380, 3383, 4491, 12}

$$-\frac{e^3\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\text{ArcSin}(cx)\right)}{4bc^4}+\frac{e^3\sin\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4a}{b}+4\text{ArcSin}(cx)\right)}{8bc^4}+\frac{e^3\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\text{ArcSin}(cx)\right)}{4bc^4}-\frac{e^3\cos\left(\frac{4a}{b}\right)\text{Si}\left(\frac{4a}{b}+4\text{ArcSin}(cx)\right)}{8bc^4}+\frac{3de^2\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)}{4bc^3}-\frac{3de^2\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\text{ArcSin}(cx)\right)}{4bc^3}+\frac{3de^2\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)}{4bc^3}-\frac{3de^2\sin\left(\frac{3a}{b}\right)\text{Si}\left(\frac{3a}{b}+3\text{ArcSin}(cx)\right)}{4bc^3}-\frac{3d^2e\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\text{ArcSin}(cx)\right)}{2bc^2}+\frac{3d^2e\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\text{ArcSin}(cx)\right)}{2bc^2}+\frac{d^3\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)}{bc}+\frac{d^3\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)}{bc}$$

Antiderivative was successfully verified.

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

```
[Out] (d^3*Cos[a/b]*CosIntegral[a/b + ArcSin[c*x]])/(b*c) + (3*d*e^2*Cos[a/b]*Cos
Integral[a/b + ArcSin[c*x]])/(4*b*c^3) - (3*d*e^2*Cos[(3*a)/b]*CosIntegral[
(3*a)/b + 3*ArcSin[c*x]])/(4*b*c^3) - (3*d^2*e*CosIntegral[(2*a)/b + 2*ArcS
in[c*x]]*Sin[(2*a)/b])/(2*b*c^2) - (e^3*CosIntegral[(2*a)/b + 2*ArcSin[c*x]
]*Sin[(2*a)/b])/(4*b*c^4) + (e^3*CosIntegral[(4*a)/b + 4*ArcSin[c*x]]*Sin[(
4*a)/b])/(8*b*c^4) + (d^3*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(b*c) +
(3*d*e^2*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(4*b*c^3) + (3*d^2*e*Cos[
(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c*x]])/(2*b*c^2) + (e^3*Cos[(2*a)/b
]*SinIntegral[(2*a)/b + 2*ArcSin[c*x]])/(4*b*c^4) - (3*d*e^2*Sin[(3*a)/b]*S
inIntegral[(3*a)/b + 3*ArcSin[c*x]])/(4*b*c^3) - (e^3*Cos[(4*a)/b]*SinInteg
ral[(4*a)/b + 4*ArcSin[c*x]])/(8*b*c^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3380

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

Rule 3383

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

Rule 3384

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

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4831

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

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(d+ex)^3}{a+b\sin^{-1}(cx)}\,dx = \frac{\text{Subst}\left(\int \frac{\cos(x)(cd+e\sin(x))^3}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c^4}$$

$$= \frac{\text{Subst}\left(\int \left(\frac{c^3d^3\cos(x)}{a+bx} + \frac{3c^2d^2e\cos(x)\sin(x)}{a+bx} + \frac{3cde^2\cos(x)\sin^2(x)}{a+bx} + \frac{e^3\cos(x)\sin^3(x)}{a+bx}\right)dx, x, \sin^{-1}(\right.}{c^4}$$

$$= \frac{d^3\text{Subst}\left(\int \frac{\cos(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c} + \frac{(3d^2e)\,\text{Subst}\left(\int \frac{\cos(x)\sin(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c^2} + \frac{(}{}$$

$$= \frac{(3d^2e)\,\text{Subst}\left(\int \frac{\sin(2x)}{2(a+bx)}\,dx, x, \sin^{-1}(cx)\right)}{c^2} + \frac{(3de^2)\,\text{Subst}\left(\int \left(\frac{\cos(x)}{4(a+bx)} - \frac{\cos(3x)}{4(a+bx)}\right)dx, x,\right.}{c^3}$$

$$= \frac{d^3\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc} + \frac{d^3\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc} + \frac{(3d^2e)\,\text{Subst}\left(\int \frac{\sin(2x)}{a+bx}\right.}{2c^2}$$

$$= \frac{d^3\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc} + \frac{d^3\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc} + \frac{\left(3de^2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\right.}{}$$

$$= \frac{d^3\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc} + \frac{3de^2\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{4bc^3} - \frac{3de^2\cos\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3a}{b}\right.}{4bc^3}$$

Mathematica [A]
time = 0.47, size = 304, normalized size = 0.77

$$\frac{d^3\left(\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)+\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)\right)}{bc} + \frac{3de^2\left(\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)-\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(3\left(\frac{a}{b}+\text{ArcSin}(cx)\right)\right)+\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)-\sin\left(\frac{3a}{b}\right)\text{Si}\left(3\left(\frac{a}{b}+\text{ArcSin}(cx)\right)\right)\right)}{4bc^3} + \frac{e^3\left(-2\text{CosIntegral}\left(2\left(\frac{a}{b}+\text{ArcSin}(cx)\right)\right)\sin\left(\frac{2a}{b}\right)+\text{CosIntegral}\left(4\left(\frac{a}{b}+\text{ArcSin}(cx)\right)\right)\sin\left(\frac{4a}{b}\right)+2\cos\left(\frac{2a}{b}\right)\text{Si}\left(2\left(\frac{a}{b}+\text{ArcSin}(cx)\right)\right)-\cos\left(\frac{4a}{b}\right)\text{Si}\left(4\left(\frac{a}{b}+\text{ArcSin}(cx)\right)\right)\right)}{8bc^4} + \frac{3d^2e\left(-\text{CosIntegral}\left(\frac{2a}{b}+2\text{ArcSin}(cx)\right)\sin\left(\frac{2a}{b}\right)+\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\text{ArcSin}(cx)\right)\right)}{2bc^2}$$

Antiderivative was successfully verified.

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

```
[Out] (d^3*(Cos[a/b]*CosIntegral[a/b + ArcSin[c*x]] + Sin[a/b]*SinIntegral[a/b +
ArcSin[c*x]]))/(b*c) + (3*d*e^2*(Cos[a/b]*CosIntegral[a/b + ArcSin[c*x]] -
Cos[(3*a)/b]*CosIntegral[3*(a/b + ArcSin[c*x])] + Sin[a/b]*SinIntegral[a/b
+ ArcSin[c*x]] - Sin[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c*x])]))/(4*b*c^3
) + (e^3*(-2*CosIntegral[2*(a/b + ArcSin[c*x])]*Sin[(2*a)/b] + CosIntegral[
4*(a/b + ArcSin[c*x])]*Sin[(4*a)/b] + 2*Cos[(2*a)/b]*SinIntegral[2*(a/b + A
rcSin[c*x])] - Cos[(4*a)/b]*SinIntegral[4*(a/b + ArcSin[c*x])]))/(8*b*c^4)
+ (3*d^2*e*(-(CosIntegral[(2*a)/b + 2*ArcSin[c*x]]*Sin[(2*a)/b]) + Cos[(2*a
)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c*x]]))/(2*b*c^2)
```

Maple [A]
time = 0.16, size = 327, normalized size = 0.83

method	result

derivativedivides	$\frac{8\,\mathrm{sinIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)c^3d^3+8\,\mathrm{cosineIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)c^3d^3+12\,\mathrm{sinIntegral}\left(2\arcsin(cx)+\frac{2a}{b}\right.}{}$
default	$\frac{8\,\mathrm{sinIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)c^3d^3+8\,\mathrm{cosineIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)c^3d^3+12\,\mathrm{sinIntegral}\left(2\arcsin(cx)+\frac{2a}{b}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/8/c^4*(8*Si(arcsin(c*x)+a/b)*sin(a/b)*c^3*d^3+8*Ci(arcsin(c*x)+a/b)*cos(a
/b)*c^3*d^3+12*Si(2*arcsin(c*x)+2*a/b)*cos(2*a/b)*c^2*d^2*e-12*Ci(2*arcsin(
c*x)+2*a/b)*sin(2*a/b)*c^2*d^2*e+6*Si(arcsin(c*x)+a/b)*sin(a/b)*c*d*e^2+6*C
i(arcsin(c*x)+a/b)*cos(a/b)*c*d*e^2-6*Si(3*arcsin(c*x)+3*a/b)*sin(3*a/b)*c*
d*e^2-6*Ci(3*arcsin(c*x)+3*a/b)*cos(3*a/b)*c*d*e^2+2*Si(2*arcsin(c*x)+2*a/b
)*cos(2*a/b)*e^3-2*Ci(2*arcsin(c*x)+2*a/b)*sin(2*a/b)*e^3-cos(4*a/b)*Si(4*a
rcsin(c*x)+4*a/b)*e^3+sin(4*a/b)*Ci(4*arcsin(c*x)+4*a/b)*e^3)/b
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((x*e + d)^3/(b*arcsin(c*x) + a), x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{(d+ex)^3}{a+b\,\mathrm{asin}\,(cx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A]
time = 0.44, size = 609, normalized size = 1.55

$$-\frac{3 \, d e^{2} \cos\left(\frac{a}{b}\right)^{3} \operatorname{Ci}\left(\frac{3 \, a}{b} + 3 \, \arcsin\left(c x\right)\right)}{b c^{3}} + \frac{d^{3} \cos\left(\frac{a}{b}\right) \operatorname{Ci}\left(\frac{a}{b} + \arcsin\left(c x\right)\right)}{b c} + \frac{e^{3} \cos\left(\frac{a}{b}\right)^{3} \operatorname{Ci}\left(\frac{4 \, a}{b} + 4 \, \arcsin\left(c x\right)\right) \sin\left(\frac{a}{b}\right)}{b c^{4}} - \frac{3 \, d^{2} e \cos\left(\frac{a}{b}\right) \operatorname{Ci}\left(\frac{2 \, a}{b} + 2 \, \arcsin\left(c x\right)\right) \sin\left(\frac{a}{b}\right)}{b c^{2}} - \frac{e^{3} \cos\left(\frac{a}{b}\right)^{4} \operatorname{Si}\left(\frac{4 \, a}{b} + 4 \, \arcsin\left(c x\right)\right)}{b c^{4}} - \frac{3 \, d e^{2} \cos\left(\frac{a}{b}\right)^{2} \sin\left(\frac{a}{b}\right) \operatorname{Si}\left(\frac{3 \, a}{b} + 3 \, \arcsin\left(c x\right)\right)}{b c^{3}} + \frac{3 \, d^{2} e \cos\left(\frac{a}{b}\right)^{2} \operatorname{Si}\left(\frac{2 \, a}{b} + 2 \, \arcsin\left(c x\right)\right)}{b c^{2}} + \frac{d^{3} \sin\left(\frac{a}{b}\right) \operatorname{Si}\left(\frac{a}{b} + \arcsin\left(c x\right)\right)}{b c} + \frac{9 \, d e^{2} \cos\left(\frac{a}{b}\right) \operatorname{Ci}\left(\frac{3 \, a}{b} + 3 \, \arcsin\left(c x\right)\right)}{4 \, b c^{3}} + \frac{3 \, d e^{2} \cos\left(\frac{a}{b}\right) \operatorname{Ci}\left(\frac{a}{b} + \arcsin\left(c x\right)\right)}{4 \, b c^{3}} - \frac{e^{3} \cos\left(\frac{a}{b}\right) \operatorname{Ci}\left(\frac{4 \, a}{b} + 4 \, \arcsin\left(c x\right)\right) \sin\left(\frac{a}{b}\right)}{2 \, b c^{4}} - \frac{e^{3} \cos\left(\frac{a}{b}\right) \operatorname{Ci}\left(\frac{2 \, a}{b} + 2 \, \arcsin\left(c x\right)\right) \sin\left(\frac{a}{b}\right)}{2 \, b c^{4}} + \frac{e^{3} \cos\left(\frac{a}{b}\right)^{2} \operatorname{Si}\left(\frac{4 \, a}{b} + 4 \, \arcsin\left(c x\right)\right)}{b c^{4}} + \frac{3 \, d e^{2} \sin\left(\frac{a}{b}\right) \operatorname{Si}\left(\frac{3 \, a}{b} + 3 \, \arcsin\left(c x\right)\right)}{4 \, b c^{3}} - \frac{3 \, d^{2} e \operatorname{Si}\left(\frac{2 \, a}{b} + 2 \, \arcsin\left(c x\right)\right)}{2 \, b c^{2}} + \frac{e^{3} \cos\left(\frac{a}{b}\right)^{2} \operatorname{Si}\left(\frac{2 \, a}{b} + 2 \, \arcsin\left(c x\right)\right)}{2 \, b c^{4}} + \frac{3 \, d e^{2} \sin\left(\frac{a}{b}\right) \operatorname{Si}\left(\frac{a}{b} + \arcsin\left(c x\right)\right)}{4 \, b c^{3}} - \frac{e^{3} \operatorname{Si}\left(\frac{4 \, a}{b} + 4 \, \arcsin\left(c x\right)\right)}{8 \, b c^{4}} - \frac{e^{3} \operatorname{Si}\left(\frac{2 \, a}{b} + 2 \, \arcsin\left(c x\right)\right)}{4 \, b c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -3*d*e^2*cos(a/b)^3*cos_integral(3*a/b + 3*arcsin(c*x))/(b*c^3) + d^3*cos(a
/b)*cos_integral(a/b + arcsin(c*x))/(b*c) + e^3*cos(a/b)^3*cos_integral(4*a
/b + 4*arcsin(c*x))*sin(a/b)/(b*c^4) - 3*d^2*e*cos(a/b)*cos_integral(2*a/b
+ 2*arcsin(c*x))*sin(a/b)/(b*c^2) - e^3*cos(a/b)^4*sin_integral(4*a/b + 4*a
rcsin(c*x))/(b*c^4) - 3*d*e^2*cos(a/b)^2*sin(a/b)*sin_integral(3*a/b + 3*ar
csin(c*x))/(b*c^3) + 3*d^2*e*cos(a/b)^2*sin_integral(2*a/b + 2*arcsin(c*x))
/(b*c^2) + d^3*sin(a/b)*sin_integral(a/b + arcsin(c*x))/(b*c) + 9/4*d*e^2*c
os(a/b)*cos_integral(3*a/b + 3*arcsin(c*x))/(b*c^3) + 3/4*d*e^2*cos(a/b)*co
s_integral(a/b + arcsin(c*x))/(b*c^3) - 1/2*e^3*cos(a/b)*cos_integral(4*a/b
 + 4*arcsin(c*x))*sin(a/b)/(b*c^4) - 1/2*e^3*cos(a/b)*cos_integral(2*a/b +
2*arcsin(c*x))*sin(a/b)/(b*c^4) + e^3*cos(a/b)^2*sin_integral(4*a/b + 4*arc
sin(c*x))/(b*c^4) + 3/4*d*e^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(c*x))/
(b*c^3) - 3/2*d^2*e*sin_integral(2*a/b + 2*arcsin(c*x))/(b*c^2) + 1/2*e^3*c
os(a/b)^2*sin_integral(2*a/b + 2*arcsin(c*x))/(b*c^4) + 3/4*d*e^2*sin(a/b)*
sin_integral(a/b + arcsin(c*x))/(b*c^3) - 1/8*e^3*sin_integral(4*a/b + 4*ar
csin(c*x))/(b*c^4) - 1/4*e^3*sin_integral(2*a/b + 2*arcsin(c*x))/(b*c^4)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.17 $\int \frac{(d+ex)^2}{a+b\textbf{ArcSin}(cx)}\,dx$

Optimal. Leaf size=244

$$\frac{d^2\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)}{bc}+\frac{e^2\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)}{4bc^3}-\frac{e^2\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\right.}{4bc^3}$$

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

Rubi [A]

time = 0.49, antiderivative size = 244, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 6, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$, Rules used = {4831, 6874, 3384, 3380, 3383, 4491}

$$\frac{e^2\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)}{4bc^3}-\frac{e^2\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\text{ArcSin}(cx)\right)}{4bc^3}+\frac{e^2\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)}{4bc^3}-\frac{e^2\sin\left(\frac{3a}{b}\right)\text{Si}\left(\frac{3a}{b}+3\text{ArcSin}(cx)\right)}{4bc^3}-\frac{de\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\text{ArcSin}(cx)\right)}{bc^2}+\frac{de\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\text{ArcSin}(cx)\right)}{bc^2}+\frac{d^2\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)}{bc}+\frac{d^2\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)}{bc}$$

Antiderivative was successfully verified.

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

```
[Out] (d^2*Cos[a/b]*CosIntegral[a/b + ArcSin[c*x]])/(b*c) + (e^2*Cos[a/b]*CosInte
gral[a/b + ArcSin[c*x]])/(4*b*c^3) - (e^2*Cos[(3*a)/b]*CosIntegral[(3*a)/b
+ 3*ArcSin[c*x]])/(4*b*c^3) - (d*e*CosIntegral[(2*a)/b + 2*ArcSin[c*x]]*Sin
[(2*a)/b])/(b*c^2) + (d^2*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(b*c) +
(e^2*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(4*b*c^3) + (d*e*Cos[(2*a)/b]
*SinIntegral[(2*a)/b + 2*ArcSin[c*x]])/(b*c^2) - (e^2*Sin[(3*a)/b]*SinInteg
ral[(3*a)/b + 3*ArcSin[c*x]])/(4*b*c^3)
```

Rule 3380

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

Rule 3383

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

Rule 3384

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

```
)/d], Int[Cos[c*(f/d) + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4831

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

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(d+ex)^2}{a+b\sin^{-1}(cx)}\,dx &= \frac{\text{Subst}\left(\int \frac{\cos(x)(cd+e\sin(x))^2}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{c^3}\\
&= \frac{\text{Subst}\left(\int \left(\frac{c^2d^2\cos(x)}{a+bx}+\frac{e^2\cos(x)\sin^2(x)}{a+bx}+\frac{cde\sin(2x)}{a+bx}\right)\,dx,x,\sin^{-1}(cx)\right)}{c^3}\\
&= \frac{d^2\text{Subst}\left(\int \frac{\cos(x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{c}+\frac{(de)\text{Subst}\left(\int \frac{\sin(2x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{c^2}+\frac{e^2\text{Subst}}{}\\
&= \frac{e^2\text{Subst}\left(\int \left(\frac{\cos(x)}{4(a+bx)}-\frac{\cos(3x)}{4(a+bx)}\right)\,dx,x,\sin^{-1}(cx)\right)}{c^3}+\frac{\left(d^2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+x\right)}{a+bx}\,dx,\right.}{c}\\
&= \frac{d^2\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc}-\frac{de\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)\sin\left(\frac{2a}{b}\right)}{bc^2}+\frac{d^2\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{s}\right.}{bc}\\
&= \frac{d^2\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc}-\frac{de\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)\sin\left(\frac{2a}{b}\right)}{bc^2}+\frac{d^2\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{s}\right.}{bc}\\
&= \frac{d^2\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc}+\frac{e^2\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{4bc^3}-\frac{e^2\cos\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3a}{b}+3\right.}{4bc^3}
\end{aligned}
$$

Mathematica [A]

time = 0.27, size = 187, normalized size = 0.77

$$\frac{(4c^2d^2+e^2)\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)-e^2\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(3\left(\frac{a}{b}+\text{ArcSin}(cx)\right)\right)-4cde\text{CosIntegral}\left(2\left(\frac{a}{b}+\text{ArcSin}(cx)\right)\right)\sin\left(\frac{2a}{b}\right)+4c^2d^2\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)+e^2\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)+4cde\cos\left(\frac{2a}{b}\right)\text{Si}\left(2\left(\frac{a}{b}+\text{ArcSin}(cx)\right)\right)-e^2\sin\left(\frac{3a}{b}\right)\text{Si}\left(3\left(\frac{a}{b}+\text{ArcSin}(cx)\right)\right)}{4bc^3}$$

Antiderivative was successfully verified.

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

```
[Out] ((4*c^2*d^2 + e^2)*Cos[a/b]*CosIntegral[a/b + ArcSin[c*x]] - e^2*Cos[(3*a)/
b]*CosIntegral[3*(a/b + ArcSin[c*x])] - 4*c*d*e*CosIntegral[2*(a/b + ArcSin
[c*x])]*Sin[(2*a)/b] + 4*c^2*d^2*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]] +
e^2*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]] + 4*c*d*e*Cos[(2*a)/b]*SinInteg
ral[2*(a/b + ArcSin[c*x])] - e^2*Sin[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c
*x])])/(4*b*c^3)
```

Maple [A]
time = 0.12, size = 206, normalized size = 0.84

method	result
derivativedivides	$-\frac{-4\,\text{sinIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)c^2d^2-4\,\text{cosineIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)c^2d^2-4\,\text{sinIntegral}\left(2\arcsin(cx)+\right.}{}$
default	$-\frac{-4\,\text{sinIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)c^2d^2-4\,\text{cosineIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)c^2d^2-4\,\text{sinIntegral}\left(2\arcsin(cx)+\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A]
time = 0.42, size = 337, normalized size = 1.38

$$-\frac{e^2\cos\left(\frac{a}{b}\right)^3\,\mathrm{Ci}\left(\frac{3a}{b}+3\arcsin(cx)\right)}{bc^3}+\frac{d^2\cos\left(\frac{a}{b}\right)\mathrm{Ci}\left(\frac{a}{b}+\arcsin(cx)\right)}{bc}-\frac{2de\cos\left(\frac{a}{b}\right)\mathrm{Ci}\left(\frac{2a}{b}+2\arcsin(cx)\right)\sin\left(\frac{a}{b}\right)}{bc^2}-\frac{e^2\cos\left(\frac{a}{b}\right)^2\sin\left(\frac{a}{b}\right)\mathrm{Si}\left(\frac{3a}{b}+3\arcsin(cx)\right)}{bc^3}+\frac{2de\cos\left(\frac{a}{b}\right)^2\mathrm{Si}\left(\frac{2a}{b}+2\arcsin(cx)\right)}{bc^2}+\frac{d^2\sin\left(\frac{a}{b}\right)\mathrm{Si}\left(\frac{a}{b}+\arcsin(cx)\right)}{bc}+\frac{3e^2\cos\left(\frac{a}{b}\right)\mathrm{Ci}\left(\frac{3a}{b}+3\arcsin(cx)\right)}{4bc^3}+\frac{e^2\cos\left(\frac{a}{b}\right)\mathrm{Ci}\left(\frac{a}{b}+\arcsin(cx)\right)}{4bc^3}+\frac{e^2\sin\left(\frac{a}{b}\right)\mathrm{Si}\left(\frac{3a}{b}+3\arcsin(cx)\right)}{4bc^3}-\frac{de\,\mathrm{Si}\left(\frac{2a}{b}+2\arcsin(cx)\right)}{bc^2}+\frac{e^2\sin\left(\frac{a}{b}\right)\mathrm{Si}\left(\frac{a}{b}+\arcsin(cx)\right)}{4bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.18 $\int \frac{d+ex}{a+b\mathbf{ArcSin}(cx)}\,dx$

Optimal. Leaf size=115

$$\frac{d\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)}{bc}-\frac{e\text{CosIntegral}\left(\frac{2a}{b}+2\text{ArcSin}(cx)\right)\sin\left(\frac{2a}{b}\right)}{2bc^2}+\frac{d\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}\right.}{bc}$$

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

Rubi [A]
time = 0.23, antiderivative size = 115, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.438$, Rules used = {4831, 6874, 3384, 3380, 3383, 4491, 12}

$$-\frac{e\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\text{ArcSin}(cx)\right)}{2bc^2}+\frac{e\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\text{ArcSin}(cx)\right)}{2bc^2}+\frac{d\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)}{bc}+\frac{d\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)}{bc}$$

Antiderivative was successfully verified.

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

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

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3380

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

Rule 3383

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

Rule 3384

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

```
)/d], Int[Cos[c*(f/d) + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4831

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

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\begin{aligned}
\int \frac{d+ex}{a+b\sin^{-1}(cx)}\,dx &= \frac{\text{Subst}\left(\int \frac{\cos(x)(cd+e\sin(x))}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c^2}\\
&= \frac{\text{Subst}\left(\int \left(\frac{cd\cos(x)}{a+bx}+\frac{e\cos(x)\sin(x)}{a+bx}\right)dx, x, \sin^{-1}(cx)\right)}{c^2}\\
&= \frac{d\text{Subst}\left(\int \frac{\cos(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c}+\frac{e\text{Subst}\left(\int \frac{\cos(x)\sin(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c^2}\\
&= \frac{e\text{Subst}\left(\int \frac{\sin(2x)}{2(a+bx)}\,dx, x, \sin^{-1}(cx)\right)}{c^2}+\frac{\left(d\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+x\right)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c}\\
&= \frac{d\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc}+\frac{d\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc}+\frac{e\text{Subst}\left(\int \frac{\sin(2x)}{a+bx}\,dx, x, \text{s}\right.}{2c^2}\\
&= \frac{d\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc}+\frac{d\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc}+\frac{\left(e\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \right.}{2}\\
&= \frac{d\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc}-\frac{e\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)\sin\left(\frac{2a}{b}\right)}{2bc^2}+\frac{d\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}\right.}{bc}
\end{aligned}$$

Mathematica [A]

time = 0.11, size = 98, normalized size = 0.85

$$\frac{2cd\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)-e\,\text{CosIntegral}\left(2\left(\frac{a}{b}+\text{ArcSin}(cx)\right)\right)\sin\left(\frac{2a}{b}\right)+2cd\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)+e\cos\left(\frac{2a}{b}\right)\text{Si}\left(2\left(\frac{a}{b}+\text{ArcSin}(cx)\right)\right)}{2bc^2}$$

Antiderivative was successfully verified.

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

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

Maple [A]
time = 0.07, size = 103, normalized size = 0.90

method	result
derivativedivides	$\frac{\frac{d\left(\text{sinIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)+\text{cosineIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)\right)}{b}+\frac{e\left(\text{sinIntegral}\left(2\arcsin(cx)+\frac{2a}{b}\right)\cos\left(\frac{2a}{b}\right)-\text{cosineInt}\right.}{2cb}}{c}$
default	$\frac{\frac{d\left(\text{sinIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)+\text{cosineIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)\right)}{b}+\frac{e\left(\text{sinIntegral}\left(2\arcsin(cx)+\frac{2a}{b}\right)\cos\left(\frac{2a}{b}\right)-\text{cosineInt}\right.}{2cb}}{c}$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A]
time = 0.40, size = 139, normalized size = 1.21

$$\frac{d\cos\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{a}{b} + \arcsin(cx)\right)}{bc} - \frac{e\cos\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{2a}{b} + 2\arcsin(cx)\right)\sin\left(\frac{a}{b}\right)}{bc^2} + \frac{e\cos\left(\frac{a}{b}\right)^2\operatorname{Si}\left(\frac{2a}{b} + 2\arcsin(cx)\right)}{bc^2} + \frac{d\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a}{b} + \arcsin(cx)\right)}{bc} - \frac{e\operatorname{Si}\left(\frac{2a}{b} + 2\arcsin(cx)\right)}{2bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{d + e\,x}{a + b\operatorname{asin}(c\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.19 $\int \frac{1}{a+b\mathbf{ArcSin}(cx)}\,dx$

Optimal. Leaf size=53

$$\frac{\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(cx)}{b}\right)}{bc}+\frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\text{ArcSin}(cx)}{b}\right)}{bc}$$

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

Rubi [A]
time = 0.05, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$, Rules used = {4719, 3384, 3380, 3383}

$$\frac{\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(cx)}{b}\right)}{bc}+\frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\text{ArcSin}(cx)}{b}\right)}{bc}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^(-1),x]
```

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

Rule 3380

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

Rule 3383

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

Rule 3384

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

Rule 4719

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[-a/b + x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c
```

```
, n}, x]
```

Rubi steps

$$\int \frac{1}{a+b\sin^{-1}(cx)}\,dx = \frac{\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}-\frac{x}{b}\right)}{x}\,dx, x, a+b\sin^{-1}(cx)\right)}{bc}$$
$$= \frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\cos\left(\frac{x}{b}\right)}{x}\,dx, x, a+b\sin^{-1}(cx)\right)}{bc} + \frac{\sin\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\sin\left(\frac{x}{b}\right)}{x}\,dx, x, a+b\sin^{-1}(cx)\right)}{bc}$$
$$= \frac{\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{bc} + \frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{bc}$$

Mathematica [A]
time = 0.02, size = 44, normalized size = 0.83

$$\frac{\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)+\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)}{bc}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])^(-1),x]
[Out] (Cos[a/b]*CosIntegral[a/b + ArcSin[c*x]] + Sin[a/b]*SinIntegral[a/b + ArcSi
n[c*x]])/(b*c)
```

Maple [A]
time = 0.00, size = 48, normalized size = 0.91

method	result	size
derivativedivides	$\frac{\frac{\text{sinIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)}{b}+\frac{\text{cosineIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)}{b}}{c}$	48
default	$\frac{\frac{\text{sinIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)}{b}+\frac{\text{cosineIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)}{b}}{c}$	48

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(c*x)),x,method=_RETURNVERBOSE)
[Out] 1/c*(Si(arcsin(c*x)+a/b)*sin(a/b)/b+Ci(arcsin(c*x)+a/b)*cos(a/b)/b)
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate(1/(b*arcsin(c*x) + a), x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral(1/(b*arcsin(c*x) + a), x)
```

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

$$\int \frac{1}{a+b\operatorname{asin}(cx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(c*x)),x)
```

```
[Out] Integral(1/(a + b*asin(c*x)), x)
```

Giac [A]
time = 0.41, size = 49, normalized size = 0.92

$$\frac{\cos\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{a}{b}+\arcsin(cx)\right)}{bc}+\frac{\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a}{b}+\arcsin(cx)\right)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] cos(a/b)*cos_integral(a/b + arcsin(c*x))/(b*c) + sin(a/b)*sin_integral(a/b
+ arcsin(c*x))/(b*c)
```

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

$$\int \frac{1}{a+b\operatorname{asin}(c\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(c*x)),x)
```

```
[Out] int(1/(a + b*asin(c*x)), x)
```

3.20 $\int \frac{1}{(d+ex)(a+b\mathbf{ArcSin}(cx))}\,dx$

Optimal. Leaf size=21

$$\text{Int}\left(\frac{1}{(d+ex)(a+b\text{ArcSin}(cx))},x\right)$$

```
[Out] Unintegrable(1/(e*x+d)/(a+b*arcsin(c*x)),x)
```

Rubi [A]
time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(d+ex)(a+b\text{ArcSin}(cx))}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((d + e*x)*(a + b*ArcSin[c*x])),x]
[Out] Defer[Int][1/((d + e*x)*(a + b*ArcSin[c*x])), x]
```

Rubi steps

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

Mathematica [A]
time = 0.15, size = 0, normalized size = 0.00

$$\int \frac{1}{(d+ex)(a+b\text{ArcSin}(cx))}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((d + e*x)*(a + b*ArcSin[c*x])),x]
[Out] Integrate[1/((d + e*x)*(a + b*ArcSin[c*x])), x]
```

Maple [A]
time = 2.97, size = 0, normalized size = 0.00

$$\int \frac{1}{(ex+d)\left(a+b\arcsin(cx)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x+d)/(a+b*arcsin(c*x)),x)
[Out] int(1/(e*x+d)/(a+b*arcsin(c*x)),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)/(a+b*arcsin(c*x)),x, algorithm="maxima")
[Out] integrate(1/((b*arcsin(c*x) + a)*(x*e + d)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral(1/(a*x*e + a*d + (b*x*e + b*d)*arcsin(c*x)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a + b \operatorname{asin}(cx))(d + ex)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)/(a+b*asin(c*x)),x)
[Out] Integral(1/((a + b*asin(c*x))*(d + e*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)/(a+b*arcsin(c*x)),x, algorithm="giac")
[Out] integrate(1/((e*x + d)*(b*arcsin(c*x) + a)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{1}{(a + b \operatorname{asin}(c\,x))\,(d + e\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*asin(c*x))*(d + e*x)),x)
[Out] int(1/((a + b*asin(c*x))*(d + e*x)), x)
```

3.21 $\int \frac{1}{(d+ex)^2(a+b\text{ArcSin}(cx))} dx$

Optimal. Leaf size=21

$$\text{Int}\left(\frac{1}{(d+ex)^2(a+b\text{ArcSin}(cx))},x\right)$$

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

Rubi [A]
time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(d+ex)^2(a+b\text{ArcSin}(cx))} dx$$

Verification is not applicable to the result.

```
[In] Int[1/((d + e*x)^2*(a + b*ArcSin[c*x])),x]
[Out] Defer[Int][1/((d + e*x)^2*(a + b*ArcSin[c*x])), x]
```

Rubi steps

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

Mathematica [A]
time = 0.29, size = 0, normalized size = 0.00

$$\int \frac{1}{(d+ex)^2(a+b\text{ArcSin}(cx))} dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((d + e*x)^2*(a + b*ArcSin[c*x])),x]
[Out] Integrate[1/((d + e*x)^2*(a + b*ArcSin[c*x])), x]
```

Maple [A]
time = 2.16, size = 0, normalized size = 0.00

$$\int \frac{1}{(ex+d)^2 (a+b\arcsin(cx))} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x+d)^2/(a+b*arcsin(c*x)),x)
```

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

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)^2/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

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

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)^2/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

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

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a + b \operatorname{asin}(cx))(d + ex)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)**2/(a+b*asin(c*x)),x)
```

```
[Out] Integral(1/((a + b*asin(c*x))*(d + e*x)**2), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)^2/(a+b*arcsin(c*x)),x, algorithm="giac")
```

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

Mupad [A]
time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{1}{(a+b\,\mathrm{asin}\,(c\,x))\,\left(d+e\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*asin(c*x))*(d + e*x)^2),x)
[Out] int(1/((a + b*asin(c*x))*(d + e*x)^2), x)
```

3.22 $\int \frac{(d+ex)^2}{(a+b\mathbf{ArcSin}(cx))^2}\,dx$

Optimal. Leaf size=362

$$-\frac{d^2\sqrt{1-c^2x^2}}{bc(a+b\text{ArcSin}(cx))}-\frac{2dex\sqrt{1-c^2x^2}}{bc(a+b\text{ArcSin}(cx))}-\frac{e^2x^2\sqrt{1-c^2x^2}}{bc(a+b\text{ArcSin}(cx))}+\frac{2de\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2(a+b\text{ArcSin}(c}{b}\right.}{b^2c^2}$$

```
[Out] 2*d*e*Ci(2*(a+b*arcsin(c*x))/b)*cos(2*a/b)/b^2/c^2-d^2*cos(a/b)*Si((a+b*arc
sin(c*x))/b)/b^2/c-1/4*e^2*cos(a/b)*Si((a+b*arcsin(c*x))/b)/b^2/c^3+3/4*e^2
*cos(3*a/b)*Si(3*(a+b*arcsin(c*x))/b)/b^2/c^3+d^2*Ci((a+b*arcsin(c*x))/b)*s
in(a/b)/b^2/c+1/4*e^2*Ci((a+b*arcsin(c*x))/b)*sin(a/b)/b^2/c^3+2*d*e*Si(2*(
a+b*arcsin(c*x))/b)*sin(2*a/b)/b^2/c^2-3/4*e^2*Ci(3*(a+b*arcsin(c*x))/b)*si
n(3*a/b)/b^2/c^3-d^2*(-c^2*x^2+1)^(1/2)/b/c/(a+b*arcsin(c*x))-2*d*e*x*(-c^2
*x^2+1)^(1/2)/b/c/(a+b*arcsin(c*x))-e^2*x^2*(-c^2*x^2+1)^(1/2)/b/c/(a+b*arc
sin(c*x))
```

Rubi [A]

time = 0.36, antiderivative size = 362, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.389$, Rules used = {4829, 4717, 4809, 3384, 3380, 3383, 4727}

$$\frac{e^2\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(cx)}{b}\right)}{4b^2c^3}-\frac{3e^2\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3(a+b\text{ArcSin}(cx))}{b}\right)}{4b^2c^3}-\frac{e^2\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\text{ArcSin}(cx)}{b}\right)}{4b^2c^3}+\frac{3e^2\cos\left(\frac{3a}{b}\right)\text{Si}\left(\frac{3(a+b\text{ArcSin}(cx))}{b}\right)}{4b^2c^3}+\frac{2de\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2(a+b\text{ArcSin}(cx))}{b}\right)}{b^2c^2}+\frac{2de\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2(a+b\text{ArcSin}(cx))}{b}\right)}{b^2c^2}+\frac{d^2\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(cx)}{b}\right)}{b^2c}-\frac{d^2\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\text{ArcSin}(cx)}{b}\right)}{b^2c}-\frac{d^2\sqrt{1-c^2x^2}}{bc(a+b\text{ArcSin}(cx))}-\frac{2dex\sqrt{1-c^2x^2}}{bc(a+b\text{ArcSin}(cx))}-\frac{e^2x^2\sqrt{1-c^2x^2}}{bc(a+b\text{ArcSin}(cx))}$$

Antiderivative was successfully verified.

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

```
[Out] -((d^2*Sqrt[1 - c^2*x^2])/(b*c*(a + b*ArcSin[c*x]))) - (2*d*e*x*Sqrt[1 - c^
2*x^2])/(b*c*(a + b*ArcSin[c*x])) - (e^2*x^2*Sqrt[1 - c^2*x^2])/(b*c*(a + b
*ArcSin[c*x])) + (2*d*e*Cos[(2*a)/b]*CosIntegral[(2*(a + b*ArcSin[c*x]))/b]
)/(b^2*c^2) + (d^2*CosIntegral[(a + b*ArcSin[c*x])/b]*Sin[a/b])/(b^2*c) + (
e^2*CosIntegral[(a + b*ArcSin[c*x])/b]*Sin[a/b])/(4*b^2*c^3) - (3*e^2*CosIn
tegral[(3*(a + b*ArcSin[c*x]))/b]*Sin[(3*a)/b])/(4*b^2*c^3) - (d^2*Cos[a/b]
*SinIntegral[(a + b*ArcSin[c*x])/b])/(b^2*c) - (e^2*Cos[a/b]*SinIntegral[(a
 + b*ArcSin[c*x])/b])/(4*b^2*c^3) + (2*d*e*Sin[(2*a)/b]*SinIntegral[(2*(a +
 b*ArcSin[c*x]))/b])/(b^2*c^2) + (3*e^2*Cos[(3*a)/b]*SinIntegral[(3*(a + b*
ArcSin[c*x]))/b])/(4*b^2*c^3)
```

Rule 3380

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

Rule 3383

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

```
c*f, 0]
```

Rule 3384

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

Rule 4717

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

Rule 4727

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] - Dist
[1/(b^2*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[x^(n + 1), Sin[-a/b
+ x/b]^(m - 1)*(m - (m + 1)*Sin[-a/b + x/b]^2), x], x], x, a + b*ArcSin[c*x
]], x] /; FreeQ[{a, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4809

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

Rule 4829

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_))^(m_.), x_Sy
mbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*ArcSin[c*x])^n, x], x] /; F
reeQ[{a, b, c, d, e}, x] && IGtQ[m, 0] && LtQ[n, -1]
```

Rubi steps

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

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

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

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

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

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

Mathematica [A]
time = 1.12, size = 290, normalized size = 0.80

$$-\frac{\frac{4bc^2d^2\sqrt{1-c^2x^2}}{a+b\mathrm{ArcSin}(cx)}+\frac{8bc^2dex\sqrt{1-c^2x^2}}{a+b\mathrm{ArcSin}(cx)}+\frac{4bc^2e^2x^2\sqrt{1-c^2x^2}}{a+b\mathrm{ArcSin}(cx)}-8cde\cos\left(\frac{2a}{b}\right)\mathrm{CosIntegral}\left(2\left(\frac{a}{b}+\mathrm{ArcSin}(cx)\right)\right)-(4c^2d^2+e^2)\,\mathrm{CosIntegral}\left(\frac{a}{b}+\mathrm{ArcSin}(cx)\right)\sin\left(\frac{a}{b}\right)+3e^2\mathrm{CosIntegral}\left(3\left(\frac{a}{b}+\mathrm{ArcSin}(cx)\right)\right)\sin\left(\frac{3a}{b}\right)+4c^2d^2\cos\left(\frac{a}{b}\right)\mathrm{Si}\left(\frac{a}{b}+\mathrm{ArcSin}(cx)\right)+e^2\cos\left(\frac{a}{b}\right)\mathrm{Si}\left(\frac{a}{b}+\mathrm{ArcSin}(cx)\right)-8cde\sin\left(\frac{2a}{b}\right)\mathrm{Si}\left(2\left(\frac{a}{b}+\mathrm{ArcSin}(cx)\right)\right)-3e^2\cos\left(\frac{3a}{b}\right)\mathrm{Si}\left(3\left(\frac{a}{b}+\mathrm{ArcSin}(cx)\right)\right)}{4b^2c^3}$$

Antiderivative was successfully verified.

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

```
[Out] -1/4*((4*b*c^2*d^2*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x]) + (8*b*c^2*d*e*x*
Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x]) + (4*b*c^2*e^2*x^2*Sqrt[1 - c^2*x^2]
)/(a + b*ArcSin[c*x]) - 8*c*d*e*Cos[(2*a)/b]*CosIntegral[2*(a/b + ArcSin[c*
x])] - (4*c^2*d^2 + e^2)*CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b] + 3*e^2*Co
sIntegral[3*(a/b + ArcSin[c*x])]*Sin[(3*a)/b] + 4*c^2*d^2*Cos[a/b]*SinInteg
ral[a/b + ArcSin[c*x]] + e^2*Cos[a/b]*SinIntegral[a/b + ArcSin[c*x]] - 8*c*
d*e*Sin[(2*a)/b]*SinIntegral[2*(a/b + ArcSin[c*x])] - 3*e^2*Cos[(3*a)/b]*Si
nIntegral[3*(a/b + ArcSin[c*x])])/(b^2*c^3)
```

Maple [A]
time = 0.34, size = 526, normalized size = 1.45

method	result
derivativedivides	$\frac{-4\arcsin(cx)\,\mathrm{sinIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)b\,c^2d^2+4\arcsin(cx)\,\mathrm{cosineIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)b\,c^2d^2+8\arcsin}{}$

default	$\frac{-4\arcsin(cx)\,\mathrm{sinIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)b\,c^2d^2+4\arcsin(cx)\,\mathrm{cosineIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)b\,c^2d^2+8\arcs}{}$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4/c^3*(-4*arcsin(c*x)*Si(arcsin(c*x)+a/b)*cos(a/b)*b*c^2*d^2+4*arcsin(c*x
)*Ci(arcsin(c*x)+a/b)*sin(a/b)*b*c^2*d^2+8*arcsin(c*x)*Si(2*arcsin(c*x)+2*a
/b)*sin(2*a/b)*b*c*d*e+8*arcsin(c*x)*Ci(2*arcsin(c*x)+2*a/b)*cos(2*a/b)*b*c
*d*e-4*Si(arcsin(c*x)+a/b)*cos(a/b)*a*c^2*d^2+4*Ci(arcsin(c*x)+a/b)*sin(a/b
)*a*c^2*d^2+3*arcsin(c*x)*Si(3*arcsin(c*x)+3*a/b)*cos(3*a/b)*b*e^2-3*arcsin
(c*x)*Ci(3*arcsin(c*x)+3*a/b)*sin(3*a/b)*b*e^2-arcsin(c*x)*cos(a/b)*Si(arcs
in(c*x)+a/b)*b*e^2+arcsin(c*x)*Ci(arcsin(c*x)+a/b)*sin(a/b)*b*e^2-4*(-c^2*x
^2+1)^(1/2)*b*c^2*d^2+8*Si(2*arcsin(c*x)+2*a/b)*sin(2*a/b)*a*c*d*e+8*Ci(2*a
rcsin(c*x)+2*a/b)*cos(2*a/b)*a*c*d*e+3*Si(3*arcsin(c*x)+3*a/b)*cos(3*a/b)*a
*e^2-3*Ci(3*arcsin(c*x)+3*a/b)*sin(3*a/b)*a*e^2-cos(a/b)*Si(arcsin(c*x)+a/b
)*a*e^2+Ci(arcsin(c*x)+a/b)*sin(a/b)*a*e^2-4*sin(2*arcsin(c*x))*b*c*d*e-(-c
^2*x^2+1)^(1/2)*b*e^2+cos(3*arcsin(c*x))*b*e^2)/(a+b*arcsin(c*x))/b^2
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -((x^2*e^2 + 2*d*x*e + d^2)*sqrt(c*x + 1)*sqrt(-c*x + 1) - (b^2*c*arctan2(c
*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c)*integrate((3*c^2*x^3*e^2 + 4*c^2
*d*x^2*e + (c^2*d^2 - 2*e^2)*x - 2*d*e)*sqrt(c*x + 1)*sqrt(-c*x + 1)/(a*b*c
^3*x^2 - a*b*c + (b^2*c^3*x^2 - b^2*c)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x
 + 1))), x))/(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 1276 vs. 2(348) = 696.
time = 0.47, size = 1276, normalized size = 3.52

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 4*b*c*d*e*arcsin(c*x)*cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(c*x))/(b^3*c
^3*arcsin(c*x) + a*b^2*c^3) - 3*b*e^2*arcsin(c*x)*cos(a/b)^2*cos_integral(3
*a/b + 3*arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + b*c^2*d^
2*arcsin(c*x)*cos_integral(a/b + arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x)
 + a*b^2*c^3) + 3*b*e^2*arcsin(c*x)*cos(a/b)^3*sin_integral(3*a/b + 3*arcsi
n(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 4*b*c*d*e*arcsin(c*x)*cos(a/b)*
sin(a/b)*sin_integral(2*a/b + 2*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c
^3) - b*c^2*d^2*arcsin(c*x)*cos(a/b)*sin_integral(a/b + arcsin(c*x))/(b^3*c
^3*arcsin(c*x) + a*b^2*c^3) + 4*a*c*d*e*cos(a/b)^2*cos_integral(2*a/b + 2*a
rcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 3*a*e^2*cos(a/b)^2*cos_inte
gral(3*a/b + 3*arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + a*
c^2*d^2*cos_integral(a/b + arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b
^2*c^3) + 3*a*e^2*cos(a/b)^3*sin_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^3*a
rcsin(c*x) + a*b^2*c^3) + 4*a*c*d*e*cos(a/b)*sin(a/b)*sin_integral(2*a/b +
2*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - a*c^2*d^2*cos(a/b)*sin_i
ntegral(a/b + arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 2*sqrt(-c^2*
x^2 + 1)*b*c^2*d*e*x/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 2*b*c*d*e*arcsin(c
*x)*cos_integral(2*a/b + 2*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) +
 3/4*b*e^2*arcsin(c*x)*cos_integral(3*a/b + 3*arcsin(c*x))*sin(a/b)/(b^3*c^
3*arcsin(c*x) + a*b^2*c^3) + 1/4*b*e^2*arcsin(c*x)*cos_integral(a/b + arcsi
n(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 9/4*b*e^2*arcsin(c*x)*
cos(a/b)*sin_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c
^3) - 1/4*b*e^2*arcsin(c*x)*cos(a/b)*sin_integral(a/b + arcsin(c*x))/(b^3*c
^3*arcsin(c*x) + a*b^2*c^3) - sqrt(-c^2*x^2 + 1)*b*c^2*d^2/(b^3*c^3*arcsin(
c*x) + a*b^2*c^3) - 2*a*c*d*e*cos_integral(2*a/b + 2*arcsin(c*x))/(b^3*c^3*
```

```
arcsin(c*x) + a*b^2*c^3) + 3/4*a*e^2*cos_integral(3*a/b + 3*arcsin(c*x))*si
n(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 1/4*a*e^2*cos_integral(a/b + arc
sin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 9/4*a*e^2*cos(a/b)*s
in_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 1/4*
a*e^2*cos(a/b)*sin_integral(a/b + arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2
*c^3) + (-c^2*x^2 + 1)^(3/2)*b*e^2/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - sqrt
(-c^2*x^2 + 1)*b*e^2/(b^3*c^3*arcsin(c*x) + a*b^2*c^3)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

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

Verification of antiderivative is not currently implemented for this CAS.

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

3.23 $\int \frac{d+ex}{(a+b\mathbf{ArcSin}(cx))^2}\,dx$

Optimal. Leaf size=181

$$-\frac{d\sqrt{1-c^2x^2}}{bc(a+b\text{ArcSin}(cx))}-\frac{ex\sqrt{1-c^2x^2}}{bc(a+b\text{ArcSin}(cx))}+\frac{e\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2(a+b\text{ArcSin}(cx))}{b}\right)}{b^2c^2}+\frac{d\text{CosIntegral}\left(\frac{a+b\text{A}}{}\right.}{b^2}$$

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

Rubi [A]
time = 0.21, antiderivative size = 181, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.438$, Rules used = {4829, 4717, 4809, 3384, 3380, 3383, 4727}

$$\frac{e\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2(a+b\text{ArcSin}(cx))}{b}\right)}{b^2c^2}+\frac{e\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2(a+b\text{ArcSin}(cx))}{b}\right)}{b^2c^2}+\frac{d\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(cx)}{b}\right)}{b^2c}-\frac{d\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\text{ArcSin}(cx)}{b}\right)}{b^2c}-\frac{d\sqrt{1-c^2x^2}}{bc(a+b\text{ArcSin}(cx))}-\frac{ex\sqrt{1-c^2x^2}}{bc(a+b\text{ArcSin}(cx))}$$

Antiderivative was successfully verified.

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

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

Rule 3380

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

Rule 3383

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

Rule 3384

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

Rule 4717

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

Rule 4727

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] - Dist
[1/(b^2*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[x^(n + 1), Sin[-a/b
+ x/b]^(m - 1)*(m - (m + 1)*Sin[-a/b + x/b]^2), x], x], x, a + b*ArcSin[c*x
]], x] /; FreeQ[{a, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4809

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

Rule 4829

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_))^(m_.), x_Sy
mbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*ArcSin[c*x])^n, x], x] /; F
reeQ[{a, b, c, d, e}, x] && IGtQ[m, 0] && LtQ[n, -1]
```

Rubi steps

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

Mathematica [A]

time = 0.41, size = 149, normalized size = 0.82

$$\frac{-\frac{bc(d+ex)\sqrt{1-c^2x^2}}{a+b\text{ArcSin}(cx)} + e\log(a+b\text{ArcSin}(cx)) + cd\left(\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)\sin\left(\frac{a}{b}\right) - \cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)\right) + e\left(\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(2\left(\frac{a}{b}+\text{ArcSin}(cx)\right)\right) - \log(a+b\text{ArcSin}(cx)) + \sin\left(\frac{2a}{b}\right)\text{Si}\left(2\left(\frac{a}{b}+\text{ArcSin}(cx)\right)\right)\right)}{b^2c^2}$$

Antiderivative was successfully verified.

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

```
[Out] (-((b*c*(d + e*x)*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x])) + e*Log[a + b*Arc
Sin[c*x]] + c*d*(CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b] - Cos[a/b]*SinInte
gral[a/b + ArcSin[c*x]]) + e*(Cos[(2*a)/b]*CosIntegral[2*(a/b + ArcSin[c*x]
)] - Log[a + b*ArcSin[c*x]] + Sin[(2*a)/b]*SinIntegral[2*(a/b + ArcSin[c*x]
)]))/(b^2*c^2)
```

Maple [A]

time = 0.13, size = 257, normalized size = 1.42

method	result
derivativedivides	$-\frac{\frac{d\left(\arcsin(cx)\,\text{sinIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)b-\arcsin(cx)\,\text{cosineIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)b+\text{sinIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\right.\right.}{(a+b\arcsin(cx))b^2}}{}$
default	$-\frac{\frac{d\left(\arcsin(cx)\,\text{sinIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)b-\arcsin(cx)\,\text{cosineIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)b+\text{sinIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\right.\right.}{(a+b\arcsin(cx))b^2}}{}$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(sqrt(c*x + 1)*sqrt(-c*x + 1)*(x*e + d) - (b^2*c*arctan2(c*x, sqrt(c*x + 1
)*sqrt(-c*x + 1)) + a*b*c)*integrate((2*c^2*x^2*e + c^2*d*x - e)*sqrt(c*x +
 1)*sqrt(-c*x + 1)/(a*b*c^3*x^2 - a*b*c + (b^2*c^3*x^2 - b^2*c)*arctan2(c*x
, sqrt(c*x + 1)*sqrt(-c*x + 1))), x))/(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqr
t(-c*x + 1)) + a*b*c)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 554 vs. 2(177) = 354.
time = 0.45, size = 554, normalized size = 3.06

$$\frac{2\,be\arcsin\left(cx\right)\cos\left(\frac{a}{b}\right)^{2}\operatorname{Ci}\left(\frac{2\,a}{b}+2\,\arcsin\left(cx\right)\right)}{b^{3}c^{2}\arcsin\left(cx\right)+ab^{2}c^{2}}+\frac{bcd\arcsin\left(cx\right)\operatorname{Ci}\left(\frac{a}{b}+\arcsin\left(cx\right)\right)\sin\left(\frac{a}{b}\right)}{b^{3}c^{2}\arcsin\left(cx\right)+ab^{2}c^{2}}+\frac{2\,be\arcsin\left(cx\right)\cos\left(\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{2\,a}{b}+2\,\arcsin\left(cx\right)\right)}{b^{3}c^{2}\arcsin\left(cx\right)+ab^{2}c^{2}}-\frac{bcd\arcsin\left(cx\right)\cos\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a}{b}+\arcsin\left(cx\right)\right)}{b^{3}c^{2}\arcsin\left(cx\right)+ab^{2}c^{2}}+\frac{2\,ae\cos\left(\frac{a}{b}\right)^{2}\operatorname{Ci}\left(\frac{2\,a}{b}+2\,\arcsin\left(cx\right)\right)}{b^{3}c^{2}\arcsin\left(cx\right)+ab^{2}c^{2}}+\frac{acd\operatorname{Ci}\left(\frac{a}{b}+\arcsin\left(cx\right)\right)\sin\left(\frac{a}{b}\right)}{b^{3}c^{2}\arcsin\left(cx\right)+ab^{2}c^{2}}+\frac{2\,ae\cos\left(\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{2\,a}{b}+2\,\arcsin\left(cx\right)\right)}{b^{3}c^{2}\arcsin\left(cx\right)+ab^{2}c^{2}}-\frac{acd\cos\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a}{b}+\arcsin\left(cx\right)\right)}{b^{3}c^{2}\arcsin\left(cx\right)+ab^{2}c^{2}}-\frac{\sqrt{-c^{2}x^{2}+1}\,bcex}{b^{3}c^{2}\arcsin\left(cx\right)+ab^{2}c^{2}}-\frac{be\arcsin\left(cx\right)\operatorname{Ci}\left(\frac{2\,a}{b}+2\,\arcsin\left(cx\right)\right)}{b^{3}c^{2}\arcsin\left(cx\right)+ab^{2}c^{2}}-\frac{\sqrt{-c^{2}x^{2}+1}\,bcd}{b^{3}c^{2}\arcsin\left(cx\right)+ab^{2}c^{2}}-\frac{ae\operatorname{Ci}\left(\frac{2\,a}{b}+2\,\arcsin\left(cx\right)\right)}{b^{3}c^{2}\arcsin\left(cx\right)+ab^{2}c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 2*b*e*arcsin(c*x)*cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(c*x))/(b^3*c^2*a
rcsin(c*x) + a*b^2*c^2) + b*c*d*arcsin(c*x)*cos_integral(a/b + arcsin(c*x))
*sin(a/b)/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 2*b*e*arcsin(c*x)*cos(a/b)*si
n(a/b)*sin_integral(2*a/b + 2*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2
) - b*c*d*arcsin(c*x)*cos(a/b)*sin_integral(a/b + arcsin(c*x))/(b^3*c^2*arc
sin(c*x) + a*b^2*c^2) + 2*a*e*cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(c*x)
)/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + a*c*d*cos_integral(a/b + arcsin(c*x))
*sin(a/b)/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 2*a*e*cos(a/b)*sin(a/b)*sin_i
ntegral(2*a/b + 2*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) - a*c*d*co
s(a/b)*sin_integral(a/b + arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) -
sqrt(-c^2*x^2 + 1)*b*c*e*x/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) - b*e*arcsin(c
*x)*cos_integral(2*a/b + 2*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) -
 sqrt(-c^2*x^2 + 1)*b*c*d/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) - a*e*cos_integ
ral(2*a/b + 2*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2)
```

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

$$\int \frac{d + e\,x}{{\left(a + b\,\mathrm{asin}\left(c\,x\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.24 $\int \frac{1}{(a+b\mathbf{ArcSin}(cx))^2} dx$

Optimal. Leaf size=86

$$-\frac{\sqrt{1-c^2x^2}}{bc(a+b\text{ArcSin}(cx))}+\frac{\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(cx)}{b}\right)\sin\left(\frac{a}{b}\right)}{b^2c}-\frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\text{ArcSin}(cx)}{b}\right)}{b^2c}$$

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

Rubi [A]
time = 0.11, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {4717, 4809, 3384, 3380, 3383}

$$\frac{\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(cx)}{b}\right)}{b^2c}-\frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\text{ArcSin}(cx)}{b}\right)}{b^2c}-\frac{\sqrt{1-c^2x^2}}{bc(a+b\text{ArcSin}(cx))}$$

Antiderivative was successfully verified.

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

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

Rule 3380

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

Rule 3383

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

Rule 3384

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

Rule 4717

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

Rule 4809

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

Rubi steps

$$\begin{aligned}
\int \frac{1}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx &= -\frac{\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{c\int \frac{x}{\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))}\,dx}{b}\\
&= -\frac{\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{\text{Subst}\left(\int \frac{\sin(x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{bc}\\
&= -\frac{\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{bc}+\frac{\sin\left(\frac{a}{b}\right)\text{Subs}}{}\\
&= -\frac{\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)\sin\left(\frac{a}{b}\right)}{b^2c}-\frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{b^2c}
\end{aligned}$$

Mathematica [A]
time = 0.07, size = 72, normalized size = 0.84

$$\frac{-\frac{b\sqrt{1-c^2x^2}}{a+b\text{ArcSin}(cx)}+\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)\sin\left(\frac{a}{b}\right)-\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(cx)\right)}{b^2c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])^(-2),x]
[Out] (-((b*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x])) + CosIntegral[a/b + ArcSin[c*
x]]*Sin[a/b] - Cos[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(b^2*c)
```

Maple [A]
time = 0.07, size = 76, normalized size = 0.88

method	result	size
derivativedivides	$\frac{-\frac{\sqrt{-c^2x^2+1}}{(a+b\arcsin(cx))b}-\frac{\mathrm{sinIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)-\mathrm{cosineIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)}{b^2}}{c}$	76
default	$\frac{-\frac{\sqrt{-c^2x^2+1}}{(a+b\arcsin(cx))b}-\frac{\mathrm{sinIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)-\mathrm{cosineIntegral}\left(\arcsin(cx)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)}{b^2}}{c}$	76

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(c*x))^2,x,method=_RETURNVERBOSE)
```

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

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] ((b^2*c^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c^2)*integrate(s
qrt(c*x + 1)*sqrt(-c*x + 1)*x/(a*b*c^2*x^2 - a*b + (b^2*c^2*x^2 - b^2)*arct
an2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))), x) - sqrt(c*x + 1)*sqrt(-c*x + 1))
/(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{1}{\left(a + b \operatorname{asin}{\left(cx \right)}\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(c*x))**2,x)
```

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

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 192 vs. 2(84) = 168.
time = 0.40, size = 192, normalized size = 2.23

$$\frac{b\arcsin\left(cx\right)\operatorname{Ci}\left(\frac{a}{b}+\arcsin\left(cx\right)\right)\sin\left(\frac{a}{b}\right)}{b^{3}c\arcsin\left(cx\right)+ab^{2}c}-\frac{b\arcsin\left(cx\right)\cos\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a}{b}+\arcsin\left(cx\right)\right)}{b^{3}c\arcsin\left(cx\right)+ab^{2}c}+\frac{a\operatorname{Ci}\left(\frac{a}{b}+\arcsin\left(cx\right)\right)\sin\left(\frac{a}{b}\right)}{b^{3}c\arcsin\left(cx\right)+ab^{2}c}-\frac{a\cos\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a}{b}+\arcsin\left(cx\right)\right)}{b^{3}c\arcsin\left(cx\right)+ab^{2}c}-\frac{\sqrt{-c^{2}x^{2}+1}\,b}{b^{3}c\arcsin\left(cx\right)+ab^{2}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

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

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

$$\int \frac{1}{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(c*x))^2,x)
```

```
[Out] int(1/(a + b*asin(c*x))^2, x)
```

3.25 $\int \frac{1}{(d+ex)(a+b\mathbf{ArcSin}(cx))^2}\,dx$

Optimal. Leaf size=21

$$\mathrm{Int}\left(\frac{1}{(d+ex)(a+b\mathrm{ArcSin}(cx))^2},x\right)$$

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

Rubi [A]
time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(d+ex)(a+b\mathrm{ArcSin}(cx))^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((d + e*x)*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] Defer[Int][1/((d + e*x)*(a + b*ArcSin[c*x])^2), x]
```

Rubi steps

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

Mathematica [A]
time = 3.99, size = 0, normalized size = 0.00

$$\int \frac{1}{(d+ex)(a+b\mathrm{ArcSin}(cx))^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((d + e*x)*(a + b*ArcSin[c*x])^2),x]
```

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

Maple [F(-1)]
time = 180.00, size = 0, normalized size = 0.00 hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x+d)/(a+b*arcsin(c*x))^2,x)
```

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

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] ((a*b*c*x*e + a*b*c*d + (b^2*c*x*e + b^2*c*d)*arctan2(c*x, sqrt(c*x + 1)*sq
rt(-c*x + 1)))*integrate((c^2*d*x + e)*sqrt(c*x + 1)*sqrt(-c*x + 1)/(a*b*c^
3*x^4*e^2 + 2*a*b*c^3*d*x^3*e - 2*a*b*c*d*x*e - a*b*c*d^2 + (a*b*c^3*d^2 -
a*b*c*e^2)*x^2 + (b^2*c^3*x^4*e^2 + 2*b^2*c^3*d*x^3*e - 2*b^2*c*d*x*e - b^2
*c*d^2 + (b^2*c^3*d^2 - b^2*c*e^2)*x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*
x + 1))), x) - sqrt(c*x + 1)*sqrt(-c*x + 1))/(a*b*c*x*e + a*b*c*d + (b^2*c*
x*e + b^2*c*d)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

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

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b \operatorname{asin}{\left(c x \right)}\right)^{2} \left(d + e x\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(1/((a + b*asin(c*x))**2*(d + e*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

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

Mupad [A]
time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{1}{(a+b\,\mathrm{asin}\,(c\,x))^2\,\,(d+e\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*asin(c*x))^2*(d + e*x)),x)
```

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

3.26 $\int \frac{1}{(d+ex)^2(a+b\text{ArcSin}(cx))^2}\,dx$

Optimal. Leaf size=21

$$\text{Int}\left(\frac{1}{(d+ex)^2(a+b\text{ArcSin}(cx))^2},x\right)$$

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

Rubi [A]
time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(d+ex)^2(a+b\text{ArcSin}(cx))^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((d + e*x)^2*(a + b*ArcSin[c*x])^2),x]
[Out] Defer[Int][1/((d + e*x)^2*(a + b*ArcSin[c*x])^2), x]
```

Rubi steps

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

Mathematica [A]
time = 8.41, size = 0, normalized size = 0.00

$$\int \frac{1}{(d+ex)^2(a+b\text{ArcSin}(cx))^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((d + e*x)^2*(a + b*ArcSin[c*x])^2),x]
[Out] Integrate[1/((d + e*x)^2*(a + b*ArcSin[c*x])^2), x]
```

Maple [A]
time = 1.97, size = 0, normalized size = 0.00

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x+d)^2/(a+b*arcsin(c*x))^2,x)
```

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

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)^2/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] -((a*b*c*x^2*e^2 + 2*a*b*c*d*x*e + a*b*c*d^2 + (b^2*c*x^2*e^2 + 2*b^2*c*d*x
*e + b^2*c*d^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*integrate((c^2*
x^2*e - c^2*d*x - 2*e)*sqrt(c*x + 1)*sqrt(-c*x + 1)/(a*b*c^3*x^5*e^3 + 3*a*
b*c^3*d*x^4*e^2 - 3*a*b*c*d^2*x*e - a*b*c*d^3 + (3*a*b*c^3*d^2*e - a*b*c*e^
3)*x^3 + (a*b*c^3*d^3 - 3*a*b*c*d*e^2)*x^2 + (b^2*c^3*x^5*e^3 + 3*b^2*c^3*d
*x^4*e^2 - 3*b^2*c*d^2*x*e - b^2*c*d^3 + (3*b^2*c^3*d^2*e - b^2*c*e^3)*x^3
+ (b^2*c^3*d^3 - 3*b^2*c*d*e^2)*x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x +
 1))), x) + sqrt(c*x + 1)*sqrt(-c*x + 1))/(a*b*c*x^2*e^2 + 2*a*b*c*d*x*e +
a*b*c*d^2 + (b^2*c*x^2*e^2 + 2*b^2*c*d*x*e + b^2*c*d^2)*arctan2(c*x, sqrt(c
*x + 1)*sqrt(-c*x + 1)))
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)^2/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

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

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b \operatorname{asin}{\left(cx \right)}\right)^{2} \left(d + ex\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)**2/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(1/((a + b*asin(c*x))**2*(d + e*x)**2), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x+d)^2/(a+b*arcsin(c*x))^2,x, algorithm="giac")
[Out] integrate(1/((e*x + d)^2*(b*arcsin(c*x) + a)^2), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{1}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(d+e\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*asin(c*x))^2*(d + e*x)^2),x)
[Out] int(1/((a + b*asin(c*x))^2*(d + e*x)^2), x)
```

3.27 $\int (d+ex)^m(a+b\mathbf{ArcSin}(cx))^2\,dx$

Optimal. Leaf size=76

$$\frac{(d+ex)^{1+m}(a+b\text{ArcSin}(cx))^2}{e(1+m)}-\frac{2bc\text{Int}\left(\frac{(d+ex)^{1+m}(a+b\text{ArcSin}(cx))}{\sqrt{1-c^2x^2}},x\right)}{e(1+m)}$$

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

Rubi [A]
time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int (d+ex)^m(a+b\text{ArcSin}(cx))^2\,dx$$

Verification is not applicable to the result.

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

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

Rubi steps

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

Mathematica [A]
time = 8.48, size = 0, normalized size = 0.00

$$\int (d+ex)^m(a+b\text{ArcSin}(cx))^2\,dx$$

Verification is not applicable to the result.

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

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

Maple [A]
time = 0.22, size = 0, normalized size = 0.00

$$\int (ex+d)^m\left(a+b\arcsin(cx)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (x*e + d)^(m + 1)*a^2*e^(-1)/(m + 1) + ((b^2*x*e + b^2*d)*(x*e + d)^m*arcta
n2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + (m*e + e)*integrate(2*((b^2*c*x*e
 + b^2*c*d)*sqrt(c*x + 1)*sqrt(-c*x + 1)*(x*e + d)^m*arctan2(c*x, sqrt(c*x
+ 1)*sqrt(-c*x + 1)) - (a*b*m*e - (a*b*c^2*m*e + a*b*c^2*e)*x^2 + a*b*e)*(x
*e + d)^m*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))/((c^2*m*e + c^2*e)*x^
2 - m*e - e), x))/(m*e + e)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*(x*e + d)^m, x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*arcsin(c*x) + a)^2*(e*x + d)^m, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int (a+b\,\mathrm{asin}(c\,x))^2\,(d+e\,x)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a + b*asin(c*x))^2*(d + e*x)^m, x)
```

3.28 $\int (d+ex)^m(a+b\textbf{ArcSin}(cx))\,dx$

Optimal. Leaf size=154

$$-\frac{bc(d+ex)^{2+m}\sqrt{1-\frac{c(d+ex)}{cd-e}}\sqrt{1-\frac{c(d+ex)}{cd+e}}\,F_1\left(2+m;\frac{1}{2},\frac{1}{2};3+m;\frac{c(d+ex)}{cd-e},\frac{c(d+ex)}{cd+e}\right)}{e^2(1+m)(2+m)\sqrt{1-c^2x^2}}+\frac{(d+ex)^{1+m}(a+}{e(1+}$$

```
[Out] (e*x+d)^(1+m)*(a+b*arcsin(c*x))/e/(1+m)-b*c*(e*x+d)^(2+m)*AppellF1(2+m,1/2,
1/2,3+m,c*(e*x+d)/(c*d-e),c*(e*x+d)/(c*d+e))*(1-c*(e*x+d)/(c*d-e))^(1/2)*(1
-c*(e*x+d)/(c*d+e))^(1/2)/e^2/(1+m)/(2+m)/(-c^2*x^2+1)^(1/2)
```

Rubi [A]
time = 0.06, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.188$, Rules used = {4827, 774, 138}

$$\frac{(d+ex)^{m+1}(a+b\text{ArcSin}(cx))}{e(m+1)}-\frac{bc\sqrt{1-\frac{c(d+ex)}{cd-e}}\sqrt{1-\frac{c(d+ex)}{cd+e}}(d+ex)^{m+2}F_1\left(m+2;\frac{1}{2},\frac{1}{2};m+3;\frac{c(d+ex)}{cd-e},\frac{c(d+ex)}{cd+e}\right)}{e^2(m+1)(m+2)\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

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

```
[Out] -((b*c*(d + e*x)^(2 + m)*Sqrt[1 - (c*(d + e*x))/(c*d - e)]*Sqrt[1 - (c*(d +
 e*x))/(c*d + e)]*AppellF1[2 + m, 1/2, 1/2, 3 + m, (c*(d + e*x))/(c*d - e),
 (c*(d + e*x))/(c*d + e)])/(e^2*(1 + m)*(2 + m)*Sqrt[1 - c^2*x^2])) + ((d +
 e*x)^(1 + m)*(a + b*ArcSin[c*x]))/(e*(1 + m))
```

Rule 138

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[c^n*e^p*((b*x)^(m + 1)/(b*(m + 1)))*AppellF1[m + 1, -n, -p,
 m + 2, (-d)*(x/c), (-f)*(x/e)], x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rule 774

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> With[
{q = Rt[(-a)*c, 2]}, Dist[(a + c*x^2)^p/(e*(1 - (d + e*x)/(d + e*(q/c)))^p*
(1 - (d + e*x)/(d - e*(q/c)))^p), Subst[Int[x^m*Simp[1 - x/(d + e*(q/c)), x
]^p*Simp[1 - x/(d - e*(q/c)), x]^p, x], x, d + e*x], x]] /; FreeQ[{a, c, d,
 e, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IntegerQ[p]
```

Rule 4827

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(e*(m + 1))), x] -
```

```
Dist[b*c*(n/(e*(m + 1))), Int[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1
)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rubi steps

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

$$= \frac{(d+ex)^{1+m}\left(a+b\sin^{-1}(cx)\right)}{e(1+m)} - \frac{\left(bc\sqrt{1-\frac{d+ex}{d-\frac{e}{c}}}\sqrt{1-\frac{d+ex}{d+\frac{e}{c}}}\right)\text{Su}}{e^2(1}$$

$$= -\frac{bc(d+ex)^{2+m}\sqrt{1-\frac{c(d+ex)}{cd-e}}\sqrt{1-\frac{c(d+ex)}{cd+e}}\,F_1\left(2+m;\frac{1}{2},\frac{1}{2};3+\right.}{e^2(1+m)(2+m)\sqrt{1-c^2x^2}}$$

Mathematica [F]
time = 0.03, size = 0, normalized size = 0.00

$$\int (d+ex)^m(a+b\text{ArcSin}(cx))\,dx$$

Verification is not applicable to the result.

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

Maple [F]
time = 0.23, size = 0, normalized size = 0.00

$$\int (ex+d)^m \left(a+b\arcsin(cx)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (x*e + d)^(m + 1)*a*e^(-1)/(m + 1) + ((x*e + d)*(x*e + d)^m*arctan2(c*x, sq
rt(c*x + 1)*sqrt(-c*x + 1)) + (m*e + e)*integrate((c*x*e + c*d)*sqrt(c*x +
1)*sqrt(-c*x + 1)*(x*e + d)^m/((c^2*m*e + c^2*e)*x^2 - m*e - e), x))*b/(m*e
 + e)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int (a + b \operatorname{asin}(c\,x)) \, (d + e\,x)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a + b*asin(c*x))*(d + e*x)^m, x)
```

3.29 $\int \frac{(d+ex)^m}{a+b\text{ArcSin}(cx)}\,dx$

Optimal. Leaf size=21

$$\text{Int}\left(\frac{(d+ex)^m}{a+b\text{ArcSin}(cx)},x\right)$$

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

Rubi [A]
time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(d+ex)^m}{a+b\text{ArcSin}(cx)}\,dx$$

Verification is not applicable to the result.

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

Rubi steps

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

Mathematica [A]
time = 0.28, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)^m}{a+b\text{ArcSin}(cx)}\,dx$$

Verification is not applicable to the result.

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

Maple [A]
time = 2.37, size = 0, normalized size = 0.00

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

Verification of antiderivative is not currently implemented for this CAS.

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

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

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

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

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

Verification of antiderivative is not currently implemented for this CAS.

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

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

Mupad [A]
time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{(d+e\,x)^m}{a+b\operatorname{asin}(c\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)^m/(a + b*asin(c*x)),x)
[Out] int((d + e*x)^m/(a + b*asin(c*x)), x)
```

3.30 $\int \frac{(d+ex)^m}{(a+b\text{ArcSin}(cx))^2}\,dx$

Optimal. Leaf size=21

$$\text{Int}\left(\frac{(d+ex)^m}{(a+b\text{ArcSin}(cx))^2},x\right)$$

```
[Out] Unintegrable((e*x+d)^m/(a+b*arcsin(c*x))^2,x)
```

Rubi [A]
time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(d+ex)^m}{(a+b\text{ArcSin}(cx))^2}\,dx$$

Verification is not applicable to the result.

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

Rubi steps

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

Mathematica [A]
time = 0.58, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)^m}{(a+b\text{ArcSin}(cx))^2}\,dx$$

Verification is not applicable to the result.

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

Maple [A]
time = 1.36, size = 0, normalized size = 0.00

$$\int \frac{(ex+d)^m}{\left(a+b\arcsin\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(sqrt(c*x + 1)*sqrt(-c*x + 1)*(x*e + d)^m - (b^2*c*arctan2(c*x, sqrt(c*x +
 1)*sqrt(-c*x + 1)) + a*b*c)*integrate((c^2*d*x + (c^2*m*e + c^2*e)*x^2 - m
*e)*sqrt(c*x + 1)*sqrt(-c*x + 1)*(x*e + d)^m/(a*b*c^3*x^3*e + a*b*c^3*d*x^2
 - a*b*c*x*e - a*b*c*d + (b^2*c^3*x^3*e + b^2*c^3*d*x^2 - b^2*c*x*e - b^2*c
*d)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))), x))/(b^2*c*arctan2(c*x, sq
rt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral((x*e + d)^m/(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((e*x + d)^m/(b*arcsin(c*x) + a)^2, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{(d+e\,x)^m}{(a+b\,\mathrm{asin}\,(c\,x))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

3.31 $\int (f+gx)^3\sqrt{d-c^2dx^2}\,(a+b\mathbf{ArcSin}(cx))\,dx$

Optimal. Leaf size=669

$$\frac{bf^2gx\sqrt{d-c^2dx^2}}{c\sqrt{1-c^2x^2}}+\frac{2bg^3x\sqrt{d-c^2dx^2}}{15c^3\sqrt{1-c^2x^2}}-\frac{bcf^3x^2\sqrt{d-c^2dx^2}}{4\sqrt{1-c^2x^2}}+\frac{3bfg^2x^2\sqrt{d-c^2dx^2}}{16c\sqrt{1-c^2x^2}}-\frac{bcf^2gx^3\sqrt{d-c^2dx^2}}{3\sqrt{1-c^2x^2}}$$

```
[Out] 1/2*f^3*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)-3/8*f*g^2*x*(a+b*arcsin(c*
x))*(-c^2*d*x^2+d)^(1/2)/c^2+3/4*f*g^2*x^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)
^(1/2)-f^2*g*(-c^2*x^2+1)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c^2-1/3*g^
3*(-c^2*x^2+1)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c^4+1/5*g^3*(-c^2*x^2
+1)^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c^4+b*f^2*g*x*(-c^2*d*x^2+d)^(
1/2)/c/(-c^2*x^2+1)^(1/2)+2/15*b*g^3*x*(-c^2*d*x^2+d)^(1/2)/c^3/(-c^2*x^2+1
)^(1/2)-1/4*b*c*f^3*x^2*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+3/16*b*f*g^
2*x^2*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-1/3*b*c*f^2*g*x^3*(-c^2*d*x
^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/45*b*g^3*x^3*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*
x^2+1)^(1/2)-3/16*b*c*f*g^2*x^4*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-1/2
5*b*c*g^3*x^5*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/4*f^3*(a+b*arcsin(c
*x))^2*(-c^2*d*x^2+d)^(1/2)/b/c/(-c^2*x^2+1)^(1/2)+3/16*f*g^2*(a+b*arcsin(c
*x))^2*(-c^2*d*x^2+d)^(1/2)/b/c^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A]
time = 0.49, antiderivative size = 669, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 12, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.387$, Rules used = {4861, 4847, 4741, 4737, 30, 4767, 4783, 4795, 272, 45, 4779, 12}

$$\frac{1}{2}f^3x\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))+\frac{f^3\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))^2}{4bc\sqrt{1-c^2x^2}}-\frac{f^2g(1-c^2x^2)\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))}{c^2}-\frac{3fg^2x\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))}{8c^2}+\frac{3}{4}fg^2x^3\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))+\frac{g^3(1-c^2x^2)^2\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))}{5c^4}-\frac{g^3(1-c^2x^2)\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))}{3c^4}+\frac{3fg^2\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))^2}{16bc^3\sqrt{1-c^2x^2}}-\frac{bcf^3x^2\sqrt{d-c^2dx^2}}{4\sqrt{1-c^2x^2}}+\frac{bf^2gx\sqrt{d-c^2dx^2}}{c\sqrt{1-c^2x^2}}-\frac{bcf^2gx^3\sqrt{d-c^2dx^2}}{3\sqrt{1-c^2x^2}}+\frac{3bfg^2x^2\sqrt{d-c^2dx^2}}{16c\sqrt{1-c^2x^2}}-\frac{3bcfg^2x^4\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}}-\frac{bcg^3x^5\sqrt{d-c^2dx^2}}{25\sqrt{1-c^2x^2}}+\frac{bg^3x^3\sqrt{d-c^2dx^2}}{45c\sqrt{1-c^2x^2}}+\frac{2bg^3x\sqrt{d-c^2dx^2}}{15c^3\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*f^2*g*x*Sqrt[d - c^2*d*x^2])/(c*Sqrt[1 - c^2*x^2]) + (2*b*g^3*x*Sqrt[d -
 c^2*d*x^2])/(15*c^3*Sqrt[1 - c^2*x^2]) - (b*c*f^3*x^2*Sqrt[d - c^2*d*x^2])
/(4*Sqrt[1 - c^2*x^2]) + (3*b*f*g^2*x^2*Sqrt[d - c^2*d*x^2])/(16*c*Sqrt[1 -
 c^2*x^2]) - (b*c*f^2*g*x^3*Sqrt[d - c^2*d*x^2])/(3*Sqrt[1 - c^2*x^2]) + (b
*g^3*x^3*Sqrt[d - c^2*d*x^2])/(45*c*Sqrt[1 - c^2*x^2]) - (3*b*c*f*g^2*x^4*S
qrt[d - c^2*d*x^2])/(16*Sqrt[1 - c^2*x^2]) - (b*c*g^3*x^5*Sqrt[d - c^2*d*x^
2])/(25*Sqrt[1 - c^2*x^2]) + (f^3*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])
)/2 - (3*f*g^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*c^2) + (3*f*g^
2*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/4 - (f^2*g*(1 - c^2*x^2)*Sqr
t[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/c^2 - (g^3*(1 - c^2*x^2)*Sqrt[d - c^2
*d*x^2]*(a + b*ArcSin[c*x]))/(3*c^4) + (g^3*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*
x^2]*(a + b*ArcSin[c*x]))/(5*c^4) + (f^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[
c*x])^2)/(4*b*c*Sqrt[1 - c^2*x^2]) + (3*f*g^2*Sqrt[d - c^2*d*x^2]*(a + b*Ar
cSin[c*x])^2)/(16*b*c^3*Sqrt[1 - c^2*x^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

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

Rule 45

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

Rule 272

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

Rule 4737

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

Rule 4741

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

Rule 4767

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

Rule 4779

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[
c*x], u, x] - Dist[b*c*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[Simplif
yIntegrand[u/Sqrt[d + e*x^2], x], x], x]] /; FreeQ[{a, b, c, d, e}, x] && E
qQ[c^2*d + e, 0] && IntegerQ[p - 1/2] && NeQ[p, -2^(-1)] && (IGtQ[(m + 1)/2
, 0] || ILtQ[(m + 2*p + 3)/2, 0])
```

Rule 4783

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

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

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

$$= \frac{\sqrt{d-c^2dx^2}\int \left(f^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)+3f^2gx\sqrt{1-\cdots}\right.}{\cdots}$$

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

$$= \frac{1}{2}f^3x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{3}{4}fg^2x^3\sqrt{d-c^2dx^2}\left(a\cdots\right.$$

$$= \frac{bf^2gx\sqrt{d-c^2dx^2}}{c\sqrt{1-c^2x^2}}-\frac{bcf^3x^2\sqrt{d-c^2dx^2}}{4\sqrt{1-c^2x^2}}-\frac{bcf^2gx^3\sqrt{d-c\cdots}}{3\sqrt{1-c^2x^2}}\cdots$$

$$= \frac{bf^2gx\sqrt{d-c^2dx^2}}{c\sqrt{1-c^2x^2}}+\frac{2bg^3x\sqrt{d-c^2dx^2}}{15c^3\sqrt{1-c^2x^2}}-\frac{bcf^3x^2\sqrt{d-c^2d\cdots}}{4\sqrt{1-c^2x^2}}\cdots$$

Mathematica [A]
time = 0.29, size = 356, normalized size = 0.53

$$\frac{\sqrt{d-c^2dx^2}\left(225a^2(4c^3f^3+3cfg^2)+30ab\sqrt{1-c^2x^2}\left(-16g^3-c^2g(120f^2+45fgx+8g^2x^2)+6c^4x(10f^3+20f^2gx+15fg^2x^2+4g^3x^3)\right)+b^2cx\left(480g^3+5c^2g(720f^2+135fgx+16g^2x^2)-3c^4x(300f^3+400f^2gx+225fg^2x^2+48g^3x^3)\right)+30b\left(15a(4c^3f^3+3cfg^2)+b\sqrt{1-c^2x^2}\left(-16g^3-c^2g(120f^2+45fgx+8g^2x^2)+6c^4x(10f^3+20f^2gx+15fg^2x^2+4g^3x^3)\right)\right)\text{ArcSin}(cx)+225b^2cf(4c^2f^2+3g^2)\text{ArcSin}(cx)^2\right)}{3600bc^4\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(225*a^2*(4*c^3*f^3 + 3*c*f*g^2) + 30*a*b*Sqrt[1 - c^2
*x^2]*(-16*g^3 - c^2*g*(120*f^2 + 45*f*g*x + 8*g^2*x^2) + 6*c^4*x*(10*f^3 +
 20*f^2*g*x + 15*f*g^2*x^2 + 4*g^3*x^3)) + b^2*c*x*(480*g^3 + 5*c^2*g*(720*
f^2 + 135*f*g*x + 16*g^2*x^2) - 3*c^4*x*(300*f^3 + 400*f^2*g*x + 225*f*g^2*
x^2 + 48*g^3*x^3)) + 30*b*(15*a*(4*c^3*f^3 + 3*c*f*g^2) + b*Sqrt[1 - c^2*x^
2]*(-16*g^3 - c^2*g*(120*f^2 + 45*f*g*x + 8*g^2*x^2) + 6*c^4*x*(10*f^3 + 20
*f^2*g*x + 15*f*g^2*x^2 + 4*g^3*x^3)))*ArcSin[c*x] + 225*b^2*c*f*(4*c^2*f^2
 + 3*g^2)*ArcSin[c*x]^2))/(3600*b*c^4*Sqrt[1 - c^2*x^2])
```

Maple [C] Result contains complex when optimal does not.
time = 0.89, size = 1408, normalized size = 2.10

method	result	size
default	Expression too large to display	1408

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2),x,method=_RETURNVERBOS
E)
```

```
[Out] -1/5*a*g^3*x^2*(-c^2*d*x^2+d)^(3/2)/c^2/d-2/15*a*g^3/d/c^4*(-c^2*d*x^2+d)^(
3/2)-3/4*a*f*g^2*x*(-c^2*d*x^2+d)^(3/2)/c^2/d+3/8*a*f*g^2/c^2*x*(-c^2*d*x^2
+d)^(1/2)+3/8*a*f*g^2/c^2*d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^
2+d)^(1/2))-a*f^2*g/c^2/d*(-c^2*d*x^2+d)^(3/2)+1/2*a*f^3*x*(-c^2*d*x^2+d)^(
1/2)+1/2*a*f^3*d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))
+b*(-1/16*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/(c^2*x^2-1)*arcsin(
c*x)^2*f*(4*c^2*f^2+3*g^2)+1/800*(-d*(c^2*x^2-1))^(1/2)*(16*c^6*x^6-28*c^4*
x^4-16*I*(-c^2*x^2+1)^(1/2)*x^5*c^5+13*c^2*x^2+20*I*(-c^2*x^2+1)^(1/2)*x^3*
c^3-5*I*(-c^2*x^2+1)^(1/2)*x*c-1)*g^3*(I+5*arcsin(c*x))/c^4/(c^2*x^2-1)+3/2
56*(-d*(c^2*x^2-1))^(1/2)*(-8*I*(-c^2*x^2+1)^(1/2)*x^4*c^4+8*c^5*x^5+8*I*(-
c^2*x^2+1)^(1/2)*x^2*c^2-12*c^3*x^3-I*(-c^2*x^2+1)^(1/2)+4*c*x)*f*g^2*(I+4*
arcsin(c*x))/c^3/(c^2*x^2-1)+1/288*(-d*(c^2*x^2-1))^(1/2)*(4*c^4*x^4-5*c^2*
x^2-4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+3*I*(-c^2*x^2+1)^(1/2)*x*c+1)*g*(36*arcs
in(c*x)*c^2*f^2+12*I*f^2*c^2+3*arcsin(c*x)*g^2+I*g^2)/c^4/(c^2*x^2-1)+1/16*
(-d*(c^2*x^2-1))^(1/2)*(-2*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+2*c^3*x^3+I*(-c^2*x
^2+1)^(1/2)-2*c*x)*f^3*(I+2*arcsin(c*x))/c/(c^2*x^2-1)-1/16*(-d*(c^2*x^2-1)
)^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*g*(6*arcsin(c*x)*c^2*f^2+6*I*f
^2*c^2+arcsin(c*x)*g^2+I*g^2)/c^4/(c^2*x^2-1)-1/16*(-d*(c^2*x^2-1))^(1/2)*(
I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(6*arcsin(c*x)*c^2*f^2-6*I*f^2*c^2+ar
csin(c*x)*g^2-I*g^2)/c^4/(c^2*x^2-1)+1/16*(-d*(c^2*x^2-1))^(1/2)*(2*I*(-c^2
*x^2+1)^(1/2)*x^2*c^2+2*c^3*x^3-I*(-c^2*x^2+1)^(1/2)-2*c*x)*f^3*(-I+2*arcsi
n(c*x))/c/(c^2*x^2-1)+1/288*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*
x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*g*(36*arcsin(c*x)
*c^2*f^2-12*I*f^2*c^2+3*arcsin(c*x)*g^2-I*g^2)/c^4/(c^2*x^2-1)+3/256*(-d*(c
^2*x^2-1))^(1/2)*(8*I*(-c^2*x^2+1)^(1/2)*x^4*c^4+8*c^5*x^5-8*I*(-c^2*x^2+1)
^(1/2)*x^2*c^2-12*c^3*x^3+I*(-c^2*x^2+1)^(1/2)+4*c*x)*f*g^2*(-I+4*arcsin(c*
x))/c^3/(c^2*x^2-1)+1/800*(-d*(c^2*x^2-1))^(1/2)*(16*I*(-c^2*x^2+1)^(1/2)*x
^5*c^5+16*c^6*x^6-20*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-28*c^4*x^4+5*I*(-c^2*x^2+
1)^(1/2)*x*c+13*c^2*x^2-1)*g^3*(-I+5*arcsin(c*x))/c^4/(c^2*x^2-1))
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2),x, algorithm="ma
xima")
```

```
[Out] 1/2*(sqrt(-c^2*d*x^2 + d)*x + sqrt(d)*arcsin(c*x)/c)*a*f^3 - 1/15*a*g^3*(3*
(-c^2*d*x^2 + d)^(3/2)*x^2/(c^2*d) + 2*(-c^2*d*x^2 + d)^(3/2)/(c^4*d)) + 3/
8*a*f*g^2*(sqrt(-c^2*d*x^2 + d)*x/c^2 - 2*(-c^2*d*x^2 + d)^(3/2)*x/(c^2*d)
+ sqrt(d)*arcsin(c*x)/c^3) - (-c^2*d*x^2 + d)^(3/2)*a*f^2*g/(c^2*d) + sqrt(
d)*integrate((b*g^3*x^3 + 3*b*f*g^2*x^2 + 3*b*f^2*g*x + b*f^3)*sqrt(c*x + 1
)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)), x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2),x, algorithm="fr
icas")
```

```
[Out] integral((a*g^3*x^3 + 3*a*f*g^2*x^2 + 3*a*f^2*g*x + a*f^3 + (b*g^3*x^3 + 3*
b*f*g^2*x^2 + 3*b*f^2*g*x + b*f^3)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d), x)
```

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

$$\int \sqrt{-d\,(cx-1)\,(cx+1)}\,(a+b\operatorname{asin}{(cx)})\,(f+gx)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*asin(c*x))*(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))*(f + g*x)**3, x)
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2),x, algorithm="gi
ac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(f+g\,x\right)}^3\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\sqrt{d-c^2\,d\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^3*(a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2),x)
[Out] int((f + g*x)^3*(a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2), x)
```

3.32 $\int (f+gx)^2\sqrt{d-c^2dx^2}\,(a+b\mathbf{ArcSin}(cx))\,dx$

Optimal. Leaf size=450

$$\frac{2bfgx\sqrt{d-c^2dx^2}}{3c\sqrt{1-c^2x^2}}-\frac{bcf^2x^2\sqrt{d-c^2dx^2}}{4\sqrt{1-c^2x^2}}+\frac{bg^2x^2\sqrt{d-c^2dx^2}}{16c\sqrt{1-c^2x^2}}-\frac{2bcfgx^3\sqrt{d-c^2dx^2}}{9\sqrt{1-c^2x^2}}-\frac{bcg^2x^4\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}}+$$

```
[Out] 1/2*f^2*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)-1/8*g^2*x*(a+b*arcsin(c*x)
)*(-c^2*d*x^2+d)^(1/2)/c^2+1/4*g^2*x^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/
2)-2/3*f*g*(-c^2*x^2+1)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c^2+2/3*b*f*
g*x*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-1/4*b*c*f^2*x^2*(-c^2*d*x^2+d
)^(1/2)/(-c^2*x^2+1)^(1/2)+1/16*b*g^2*x^2*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+
1)^(1/2)-2/9*b*c*f*g*x^3*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-1/16*b*c*g
^2*x^4*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/4*f^2*(a+b*arcsin(c*x))^2*
(-c^2*d*x^2+d)^(1/2)/b/c/(-c^2*x^2+1)^(1/2)+1/16*g^2*(a+b*arcsin(c*x))^2*(-
c^2*d*x^2+d)^(1/2)/b/c^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A]
time = 0.37, antiderivative size = 450, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 8, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.258$, Rules used = {4861, 4847, 4741, 4737, 30, 4767, 4783, 4795}

$$\frac{1}{2}f^2x\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))+\frac{f^2\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))^2}{4bc\sqrt{1-c^2x^2}}-\frac{2fg(1-c^2x^2)\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))}{3c^2}-\frac{g^2x\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))}{8c^2}+\frac{1}{4}g^2x^3\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))+\frac{g^2\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))^2}{16bc^3\sqrt{1-c^2x^2}}-\frac{bcf^2x^2\sqrt{d-c^2dx^2}}{4\sqrt{1-c^2x^2}}+\frac{2bfgx\sqrt{d-c^2dx^2}}{3c\sqrt{1-c^2x^2}}-\frac{2bcfgx^3\sqrt{d-c^2dx^2}}{9\sqrt{1-c^2x^2}}+\frac{bg^2x^2\sqrt{d-c^2dx^2}}{16c\sqrt{1-c^2x^2}}-\frac{bcg^2x^4\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (2*b*f*g*x*Sqrt[d - c^2*d*x^2])/(3*c*Sqrt[1 - c^2*x^2]) - (b*c*f^2*x^2*Sqrt
[d - c^2*d*x^2])/(4*Sqrt[1 - c^2*x^2]) + (b*g^2*x^2*Sqrt[d - c^2*d*x^2])/(1
6*c*Sqrt[1 - c^2*x^2]) - (2*b*c*f*g*x^3*Sqrt[d - c^2*d*x^2])/(9*Sqrt[1 - c^
2*x^2]) - (b*c*g^2*x^4*Sqrt[d - c^2*d*x^2])/(16*Sqrt[1 - c^2*x^2]) + (f^2*x
*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/2 - (g^2*x*Sqrt[d - c^2*d*x^2]*(a
 + b*ArcSin[c*x]))/(8*c^2) + (g^2*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x
]))/4 - (2*f*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*c^
2) + (f^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(4*b*c*Sqrt[1 - c^2*x^
2]) + (g^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(16*b*c^3*Sqrt[1 - c^
2*x^2])
```

Rule 30

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

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
```

```
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4741

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

Rule 4767

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

Rule 4783

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

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
```

```
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$
\begin{aligned}
\int (f+gx)^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)\,dx &= \frac{\sqrt{d-c^2dx^2}\int (f+gx)^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\,dx}{\sqrt{1-c^2x^2}}\\
&= \frac{\sqrt{d-c^2dx^2}\int \left(f^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)+2fgx\sqrt{1-\right.}{\sqrt{1}}\\
&= \frac{\left(f^2\sqrt{d-c^2dx^2}\right)\int \sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\,dx}{\sqrt{1-c^2x^2}}+\frac{\left(2fg\right.}{}\\
&= \frac{1}{2}f^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}g^2x^3\sqrt{d-c^2dx^2}\left(a\right.\\
&= \frac{2bfgx\sqrt{d-c^2dx^2}}{3c\sqrt{1-c^2x^2}}-\frac{bcf^2x^2\sqrt{d-c^2dx^2}}{4\sqrt{1-c^2x^2}}-\frac{2bcfgx^3\sqrt{d-c}}{9\sqrt{1-c^2x}}\\
&= \frac{2bfgx\sqrt{d-c^2dx^2}}{3c\sqrt{1-c^2x^2}}-\frac{bcf^2x^2\sqrt{d-c^2dx^2}}{4\sqrt{1-c^2x^2}}+\frac{bg^2x^2\sqrt{d-c^2d}}{16c\sqrt{1-c^2x}}
\end{aligned}
$$

Mathematica [A]
time = 0.35, size = 237, normalized size = 0.53

$$
\frac{\sqrt{d-c^2dx^2}\left(-36bcf^2x^2-9bcg^2x^4-\frac{32bfgx(-3+c^2x^2)}{c}+72f^2x\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))+36g^2x^3\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))-\frac{96fg(1-c^2x^2)^{3/2}(a+b\text{ArcSin}(cx))}{c^2}+\frac{36f^2(a+b\text{ArcSin}(cx))^2}{bc}+\frac{9g^2\left(bc^2x^2-2cx\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))+\frac{(a+b\text{ArcSin}(cx))^2}{b}\right)}{c^3}\right)}{144\sqrt{1-c^2x^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(-36*b*c*f^2*x^2 - 9*b*c*g^2*x^4 - (32*b*f*g*x*(-3 + c
^2*x^2))/c + 72*f^2*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) + 36*g^2*x^3*Sq
rt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) - (96*f*g*(1 - c^2*x^2)^(3/2)*(a + b*Ar
```

```
cSin[c*x]))/c^2 + (36*f^2*(a + b*ArcSin[c*x])^2)/(b*c) + (9*g^2*(b*c^2*x^2
- 2*c*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) + (a + b*ArcSin[c*x])^2/b))/c
^3))/(144*Sqrt[1 - c^2*x^2])
```

Maple [C] Result contains complex when optimal does not.
time = 0.59, size = 981, normalized size = 2.18

method	result
default	$-\frac{a g^2 x(-c^2 d x^2+d)^{\frac{3}{2}}}{4c^2 d}+\frac{a g^2 x\sqrt{-c^2 d x^2+d}}{8c^2}+\frac{a g^2 d \arctan\left(\frac{\sqrt{c^2 d}\, x}{\sqrt{-c^2 d x^2+d}}\right)}{8c^2\sqrt{c^2 d}}-\frac{2 a f g(-c^2 d x^2+d)^{\frac{3}{2}}}{3c^2 d}+\frac{a f^2 x \sqrt{}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2),x,method=_RETURNVERBOS
E)
```

```
[Out] -1/4*a*g^2*x*(-c^2*d*x^2+d)^(3/2)/c^2/d+1/8*a*g^2/c^2*x*(-c^2*d*x^2+d)^(1/2
)+1/8*a*g^2/c^2*d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2)
)-2/3*a*f*g/c^2/d*(-c^2*d*x^2+d)^(3/2)+1/2*a*f^2*x*(-c^2*d*x^2+d)^(1/2)+1/2
*a*f^2*d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+b*(-1/1
6*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/(c^2*x^2-1)*arcsin(c*x)^2*(
4*c^2*f^2+g^2)+1/256*(-d*(c^2*x^2-1))^(1/2)*(-8*I*(-c^2*x^2+1)^(1/2)*x^4*c^
4+8*c^5*x^5+8*I*(-c^2*x^2+1)^(1/2)*x^2*c^2-12*c^3*x^3-I*(-c^2*x^2+1)^(1/2)+
4*c*x)*g^2*(I+4*arcsin(c*x))/c^3/(c^2*x^2-1)+1/36*(-d*(c^2*x^2-1))^(1/2)*(4
*c^4*x^4-5*c^2*x^2-4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+3*I*(-c^2*x^2+1)^(1/2)*x*
c+1)*f*g*(I+3*arcsin(c*x))/c^2/(c^2*x^2-1)+1/16*(-d*(c^2*x^2-1))^(1/2)*(-2*
I*(-c^2*x^2+1)^(1/2)*x^2*c^2+2*c^3*x^3+I*(-c^2*x^2+1)^(1/2)-2*c*x)*f^2*(I+2
*arcsin(c*x))/c/(c^2*x^2-1)-1/4*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2
+1)^(1/2)*x*c-1)*f*g*(arcsin(c*x)+I)/c^2/(c^2*x^2-1)-1/4*(-d*(c^2*x^2-1))^(
1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*f*g*(arcsin(c*x)-I)/c^2/(c^2*x^2-
1)+1/16*(-d*(c^2*x^2-1))^(1/2)*(2*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+2*c^3*x^3-I*
(-c^2*x^2+1)^(1/2)-2*c*x)*f^2*(-I+2*arcsin(c*x))/c/(c^2*x^2-1)+1/36*(-d*(c^
2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^
(1/2)*x*c-5*c^2*x^2+1)*f*g*(-I+3*arcsin(c*x))/c^2/(c^2*x^2-1)+1/256*(-d*(c^
2*x^2-1))^(1/2)*(8*I*(-c^2*x^2+1)^(1/2)*x^4*c^4+8*c^5*x^5-8*I*(-c^2*x^2+1)^
(1/2)*x^2*c^2-12*c^3*x^3+I*(-c^2*x^2+1)^(1/2)+4*c*x)*g^2*(-I+4*arcsin(c*x))
/c^3/(c^2*x^2-1))
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2),x, algorithm="ma
xima")
```

```
[Out] 1/2*(sqrt(-c^2*d*x^2 + d)*x + sqrt(d)*arcsin(c*x)/c)*a*f^2 + 1/8*a*g^2*(sqr
t(-c^2*d*x^2 + d)*x/c^2 - 2*(-c^2*d*x^2 + d)^(3/2)*x/(c^2*d) + sqrt(d)*arcs
in(c*x)/c^3) - 2/3*(-c^2*d*x^2 + d)^(3/2)*a*f*g/(c^2*d) + sqrt(d)*integrate
((b*g^2*x^2 + 2*b*f*g*x + b*f^2)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x,
sqrt(c*x + 1)*sqrt(-c*x + 1)), x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2),x, algorithm="fr
icas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(a*g^2*x^2 + 2*a*f*g*x + a*f^2 + (b*g^2*x^2 +
 2*b*f*g*x + b*f^2)*arcsin(c*x)), x)
```

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

$$\int \sqrt{-d\left(cx-1\right)\left(cx+1\right)}\left(a+b\operatorname{asin}\left(cx\right)\right)\left(f+gx\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*asin(c*x))*(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))*(f + g*x)**2, x)
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2),x, algorithm="gi
ac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(f+g\,x\right)}^2\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\sqrt{d-c^2\,d\,x^2}\,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2*(a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2),x)
[Out] int((f + g*x)^2*(a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2), x)
```

3.33 $\int (f+gx)\sqrt{d-c^2dx^2}\,(a+b\mathbf{ArcSin}(cx))\,dx$

Optimal. Leaf size=238

$$\frac{bgx\sqrt{d-c^2dx^2}}{3c\sqrt{1-c^2x^2}}-\frac{bcfx^2\sqrt{d-c^2dx^2}}{4\sqrt{1-c^2x^2}}-\frac{bcgx^3\sqrt{d-c^2dx^2}}{9\sqrt{1-c^2x^2}}+\frac{1}{2}fx\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))-\frac{g(1-c^2x^2)\,\sqrt{}}{}$$

```
[Out] 1/2*f*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)-1/3*g*(-c^2*x^2+1)*(a+b*arcs
in(c*x))*(-c^2*d*x^2+d)^(1/2)/c^2+1/3*b*g*x*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^
2+1)^(1/2)-1/4*b*c*f*x^2*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-1/9*b*c*g*
x^3*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/4*f*(a+b*arcsin(c*x))^2*(-c^2
*d*x^2+d)^(1/2)/b/c/(-c^2*x^2+1)^(1/2)
```

Rubi [A]
time = 0.17, antiderivative size = 238, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = {4861, 4847, 4741, 4737, 30, 4767}

$$\frac{1}{2}fx\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))+\frac{f\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))^2}{4bc\sqrt{1-c^2x^2}}-\frac{g(1-c^2x^2)\,\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))}{3c^2}-\frac{bcfx^2\sqrt{d-c^2dx^2}}{4\sqrt{1-c^2x^2}}+\frac{bgx\sqrt{d-c^2dx^2}}{3c\sqrt{1-c^2x^2}}-\frac{bcgx^3\sqrt{d-c^2dx^2}}{9\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```

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

Rule 30

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

Rule 4737

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

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[x*Sqrt[d + e*x^2]*((a + b*ArcSin[c*x])^n/2), x] + (Dist[(1/2
)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[(a + b*ArcSin[c*x])^n/Sqrt[1
```

```
 - c^2*x^2], x], x] - Dist[b*c*(n/2)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]
], Int[x*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x]
&& EqQ[c^2*d + e, 0] && GtQ[n, 0]
```

Rule 4767

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

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

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

$$=\frac{\sqrt{d-c^2dx^2}\int \left(f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)+gx\sqrt{1-c^2\cdots}\right.}{\sqrt{1-c^2x^2}}$$

$$=\frac{\left(f\sqrt{d-c^2dx^2}\right)\int \sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\,dx}{\sqrt{1-c^2x^2}}+\frac{\left(g\sqrt{d\cdots}\right.}{\cdots}$$

$$=\frac{1}{2}fx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)-\frac{g(1-c^2x^2)\sqrt{d-c^2dx\cdots}}{3c^2\cdots}$$

$$=\frac{bgx\sqrt{d-c^2dx^2}}{3c\sqrt{1-c^2x^2}}-\frac{bcfx^2\sqrt{d-c^2dx^2}}{4\sqrt{1-c^2x^2}}-\frac{bcgx^3\sqrt{d-c^2dx^2}}{9\sqrt{1-c^2x^2}}\cdots$$

Mathematica [A]
time = 0.20, size = 132, normalized size = 0.55

$$\frac{\sqrt{d-c^2dx^2}\left(-9bcfx^2-\frac{4bgx(-3+c^2x^2)}{c}+18fx\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))-\frac{12g(1-c^2x^2)^{3/2}(a+b\text{ArcSin}(cx))}{c^2}+\frac{9f(a+b\text{ArcSin}(cx))^2}{bc}\right)}{36\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(-9*b*c*f*x^2 - (4*b*g*x*(-3 + c^2*x^2))/c + 18*f*x*Sq
rt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) - (12*g*(1 - c^2*x^2)^(3/2)*(a + b*ArcS
in[c*x]))/c^2 + (9*f*(a + b*ArcSin[c*x])^2)/(b*c)))/(36*Sqrt[1 - c^2*x^2])
```

Maple [C] Result contains complex when optimal does not.
time = 0.50, size = 628, normalized size = 2.64

method	result
default	$-\frac{ag(-c^2dx^2+d)^{\frac{3}{2}}}{3c^2d}+\frac{afx\sqrt{-c^2dx^2+d}}{2}+\frac{afd\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2dx^2+d}}\right)}{2\sqrt{c^2d}}+b\left(-\frac{\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x}}{4c(c^2x^2-1)}\right.$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/3*a*g/c^2/d*(-c^2*d*x^2+d)^(3/2)+1/2*a*f*x*(-c^2*d*x^2+d)^(1/2)+1/2*a*f*
d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+b*(-1/4*(-d*(c
^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcsin(c*x)^2*f+1/72*(-d*
(c^2*x^2-1))^(1/2)*(4*c^4*x^4-5*c^2*x^2-4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+3*I*
(-c^2*x^2+1)^(1/2)*x*c+1)*g*(I+3*arcsin(c*x))/c^2/(c^2*x^2-1)+1/16*(-d*(c^2
*x^2-1))^(1/2)*(-2*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+2*c^3*x^3+I*(-c^2*x^2+1)^(1
/2)-2*c*x)*f*(I+2*arcsin(c*x))/c/(c^2*x^2-1)-1/8*(-d*(c^2*x^2-1))^(1/2)*(c^
2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*g*(arcsin(c*x)+I)/c^2/(c^2*x^2-1)-1/8*(-d
*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(arcsin(c*x)-I)/
c^2/(c^2*x^2-1)+1/16*(-d*(c^2*x^2-1))^(1/2)*(2*I*(-c^2*x^2+1)^(1/2)*x^2*c^2
+2*c^3*x^3-I*(-c^2*x^2+1)^(1/2)-2*c*x)*f*(-I+2*arcsin(c*x))/c/(c^2*x^2-1)+1
/72*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-
c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*g*(-I+3*arcsin(c*x))/c^2/(c^2*x^2-1))
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2),x, algorithm="maxi
ma")
```

```
[Out] 1/2*(sqrt(-c^2*d*x^2 + d)*x + sqrt(d)*arcsin(c*x)/c)*a*f + sqrt(d)*integrat
e((b*g*x + b*f)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqr
t(-c*x + 1)), x) - 1/3*(-c^2*d*x^2 + d)^(3/2)*a*g/(c^2*d)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2),x, algorithm="fric
as")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(a*g*x + a*f + (b*g*x + b*f)*arcsin(c*x)), x)
```

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

$$\int \sqrt{-d\left(cx-1\right)\left(cx+1\right)}\left(a+b\operatorname{asin}\left(cx\right)\right)\left(f+gx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))*(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))*(f + g*x), x)
```

Giac [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2),x, algorithm="giac
")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \left(f+g\,x\right)\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\sqrt{d-c^2\,d\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int((f + g*x)*(a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2), x)
```

3.34 $\int \frac{\sqrt{d-c^2dx^2}(a+b\mathbf{ArcSin}(cx))}{f+gx}\,dx$

Optimal. Leaf size=736

$$\frac{a\sqrt{d-c^2dx^2}}{g}-\frac{bcx\sqrt{d-c^2dx^2}}{g\sqrt{1-c^2x^2}}+\frac{b\sqrt{d-c^2dx^2}\,\text{ArcSin}(cx)}{g}+\frac{cx\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))^2}{2bg\sqrt{1-c^2x^2}}-\frac{\left(1-\frac{c^2f^2}{g^2}\right)}{2}$$

```
[Out] a*(-c^2*d*x^2+d)^(1/2)/g+b*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/g-b*c*x*(-c^2*d
*x^2+d)^(1/2)/g/(-c^2*x^2+1)^(1/2)+1/2*c*x*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+
d)^(1/2)/b/g/(-c^2*x^2+1)^(1/2)-1/2*(1-c^2*f^2/g^2)*(a+b*arcsin(c*x))^2*(-c
^2*d*x^2+d)^(1/2)/b/c/(g*x+f)/(-c^2*x^2+1)^(1/2)-a*arctan((c^2*f*x+g)/(c^2*
f^2-g^2)^(1/2)/(-c^2*x^2+1)^(1/2))*(c^2*f^2-g^2)^(1/2)*(-c^2*d*x^2+d)^(1/2)
/g^2/(-c^2*x^2+1)^(1/2)+I*b*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g
/(c*f-(c^2*f^2-g^2)^(1/2)))*(c^2*f^2-g^2)^(1/2)*(-c^2*d*x^2+d)^(1/2)/g^2/(-
c^2*x^2+1)^(1/2)-I*b*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(
c^2*f^2-g^2)^(1/2)))*(c^2*f^2-g^2)^(1/2)*(-c^2*d*x^2+d)^(1/2)/g^2/(-c^2*x^2
+1)^(1/2)+b*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/
2)))*(c^2*f^2-g^2)^(1/2)*(-c^2*d*x^2+d)^(1/2)/g^2/(-c^2*x^2+1)^(1/2)-b*poly
log(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))*(c^2*f^2-g^
2)^(1/2)*(-c^2*d*x^2+d)^(1/2)/g^2/(-c^2*x^2+1)^(1/2)+1/2*(a+b*arcsin(c*x))^
2*(-c^2*x^2+1)^(1/2)*(-c^2*d*x^2+d)^(1/2)/b/c/(g*x+f)
```

Rubi [A]
time = 1.32, antiderivative size = 736, normalized size of antiderivative = 1.00, number of steps used = 22, number of rules used = 19, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.613$, Rules used = {4861, 4849, 697, 4841, 6874, 739, 210, 1668, 12, 4883, 4881, 4767, 8, 4857, 3404, 2296, 2221, 2317, 2438}

$$-\frac{\sqrt{d-c^2dx^2}\left(1-\frac{c^2f^2}{g^2}\right)(a+b\text{ArcSin}(cx))^2}{2bc\sqrt{1-c^2x^2}\,(f+gx)}+\frac{\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))^2}{2bc(f+gx)}+\frac{cx\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))^2}{2bg\sqrt{1-c^2x^2}}-\frac{a\sqrt{d-c^2dx^2}\,\sqrt{c^2f^2-g^2}\,\text{ArcTan}\left(\frac{c^2fx+g}{\sqrt{1-c^2x^2}\,\sqrt{c^2f^2-g^2}}\right)}{g^2\sqrt{1-c^2x^2}}+\frac{a\sqrt{d-c^2dx^2}}{g}+\frac{b\sqrt{d-c^2dx^2}\,\sqrt{c^2f^2-g^2}\,\text{Li}_2\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{g^2\sqrt{1-c^2x^2}}-\frac{b\sqrt{d-c^2dx^2}\,\sqrt{c^2f^2-g^2}\,\text{Li}_2\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)}{g^2\sqrt{1-c^2x^2}}+\frac{ib\text{ArcSin}(cx)\sqrt{d-c^2dx^2}\,\sqrt{c^2f^2-g^2}\,\log\left(1-\frac{ige^{i\text{ArcSin}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{g^2\sqrt{1-c^2x^2}}-\frac{ib\text{ArcSin}(cx)\sqrt{d-c^2dx^2}\,\sqrt{c^2f^2-g^2}\,\log\left(1-\frac{ige^{i\text{ArcSin}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{g^2\sqrt{1-c^2x^2}}+\frac{b\text{ArcSin}(cx)\sqrt{d-c^2dx^2}}{g}-\frac{bcx\sqrt{d-c^2dx^2}}{g\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(f + g*x),x]
```

```
[Out] (a*Sqrt[d - c^2*d*x^2])/g - (b*c*x*Sqrt[d - c^2*d*x^2])/(g*Sqrt[1 - c^2*x^2
]) + (b*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/g + (c*x*Sqrt[d - c^2*d*x^2]*(a +
b*ArcSin[c*x])^2)/(2*b*g*Sqrt[1 - c^2*x^2]) - ((1 - (c^2*f^2)/g^2)*Sqrt[d -
 c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c*(f + g*x)*Sqrt[1 - c^2*x^2]) + (S
qrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c*(f + g*x
)) - (a*Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]*ArcTan[(g + c^2*f*x)/(Sqrt[
c^2*f^2 - g^2]*Sqrt[1 - c^2*x^2])]])/(g^2*Sqrt[1 - c^2*x^2]) + (I*b*Sqrt[c^2
*f^2 - g^2]*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)
/(c*f - Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) - (I*b*Sqrt[c^2*f^2
- g^2]*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f
```

```
 + Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) + (b*Sqrt[c^2*f^2 - g^2]*
Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2
 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) - (b*Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x
^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^2*S
qrt[1 - c^2*x^2])
```

Rule 8

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

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 210

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

Rule 697

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[2*c*d - b*e, 0] &
& IGtQ[p, 0] &&  !(EqQ[m, 3] && NeQ[p, 1])
```

Rule 739

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

Rule 1668

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :
> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[f*(d + e*x)
^(m + q - 1)*((a + c*x^2)^(p + 1)/(c*e^(q - 1)*(m + q + 2*p + 1))), x] + Di
st[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + c*x^2)^p*ExpandToSum[c
*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1)*(d + e*x)^q - f*(d + e*x)
^(q - 2)*(a*e^2*(m + q - 1) - c*d^2*(m + q + 2*p + 1) - 2*c*d*e*(m + q + p)
*x), x], x], x] /; GtQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, c, d,
 e, m, p}, x] && PolyQ[Pq, x] && NeQ[c*d^2 + a*e^2, 0] &&  !(EqQ[d, 0] && T
rue) &&  !(IGtQ[m, 0] && RationalQ[a, c, d, e] && (IntegerQ[p] || ILtQ[p +
1/2, 0]))
```

Rule 2221

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

Rule 2296

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[2*(c/q), Int[
(f + g*x)^m*(F^u/(b - q + 2*c*F^u)), x], x] - Dist[2*(c/q), Int[(f + g*x)^m
*(F^u/(b + q + 2*c*F^u)), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2317

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

Rule 2438

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

Rule 3404

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[(c + d*x)^m*(E^(I*(e + f*x))/(I*b + 2*a*E^(I*(e + f*x)
) - I*b*E^(2*I*(e + f*x)))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4767

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

Rule 4841

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.) + (g_.)*(x_) + (h_.)*(x
_)^2)^(p_.))/((d_) + (e_.)*(x_))^2, x_Symbol] :> With[{u = IntHide[(f + g*x
 + h*x^2)^p/(d + e*x)^2, x]}, Dist[(a + b*ArcSin[c*x])^n, u, x] - Dist[b*c*
```

```
n, Int[SimplifyIntegrand[u*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*x^2]),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, h}, x] && IGtQ[n, 0] && IGtQ[p,
 0] && EqQ[e*g - 2*d*h, 0]
```

Rule 4849

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

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4881

```
Int[ArcSin[(c_.)*(x_)]^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p_), x_Symbol] :
> With[{u = ExpandIntegrand[(d + e*x^2)^p*ArcSin[c*x]^n, RFx, x]}, Int[u, x
] /; SumQ[u]] /; FreeQ[{c, d, e}, x] && RationalFunctionQ[RFx, x] && IGtQ[n
, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 4883

```
Int[(ArcSin[(c_.)*(x_)]*(b_.) + (a_))^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p
_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p, RFx*(a + b*ArcSin[c*x])
^n, x], x] /; FreeQ[{a, b, c, d, e}, x] && RationalFunctionQ[RFx, x] && IGt
Q[n, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\sqrt{d-c^2dx^2}\,(a+b\sin^{-1}(cx))}{f+gx}\,dx = \frac{\sqrt{d-c^2dx^2}\,\int \frac{\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))}{f+gx}\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}\,(a+b\sin^{-1}(cx))^2}{2bc(f+gx)} - \frac{\sqrt{d-c^2dx^2}\,\int \frac{(-g-2c^2f \cdots}{\cdots}}{2bc\sqrt{1 \cdots}}$$

$$= \frac{cx\sqrt{d-c^2dx^2}\,(a+b\sin^{-1}(cx))^2}{2bg\sqrt{1-c^2x^2}} - \frac{\left(1-\frac{c^2f^2}{g^2}\right)\sqrt{d-c^2dx^2}\,(a+b\,\mathrm{si}\cdots}{2bc(f+gx)\sqrt{1-c^2x^2}\cdots}$$

$$= \frac{cx\sqrt{d-c^2dx^2}\,(a+b\sin^{-1}(cx))^2}{2bg\sqrt{1-c^2x^2}} - \frac{\left(1-\frac{c^2f^2}{g^2}\right)\sqrt{d-c^2dx^2}\,(a+b\,\mathrm{si}\cdots}{2bc(f+gx)\sqrt{1-c^2x^2}\cdots}$$

$$= \frac{cx\sqrt{d-c^2dx^2}\,(a+b\sin^{-1}(cx))^2}{2bg\sqrt{1-c^2x^2}} - \frac{\left(1-\frac{c^2f^2}{g^2}\right)\sqrt{d-c^2dx^2}\,(a+b\,\mathrm{si}\cdots}{2bc(f+gx)\sqrt{1-c^2x^2}\cdots}$$

$$= \frac{a\sqrt{d-c^2dx^2}}{g} + \frac{cx\sqrt{d-c^2dx^2}\,(a+b\sin^{-1}(cx))^2}{2bg\sqrt{1-c^2x^2}} - \frac{\left(1-\frac{c^2f^2}{g^2}\right)\sqrt{d \cdots}}{2bc(f \cdots}$$

$$= \frac{a\sqrt{d-c^2dx^2}}{g} + \frac{cx\sqrt{d-c^2dx^2}\,(a+b\sin^{-1}(cx))^2}{2bg\sqrt{1-c^2x^2}} - \frac{\left(1-\frac{c^2f^2}{g^2}\right)\sqrt{d \cdots}}{2bc(f \cdots}$$

$$= \frac{a\sqrt{d-c^2dx^2}}{g} + \frac{b\sqrt{d-c^2dx^2}\,\sin^{-1}(cx)}{g} + \frac{cx\sqrt{d-c^2dx^2}\,(a+b\sin \cdots}{2bg\sqrt{1-c^2x^2}\cdots}$$

$$= \frac{a\sqrt{d-c^2dx^2}}{g} - \frac{bcx\sqrt{d-c^2dx^2}}{g\sqrt{1-c^2x^2}} + \frac{b\sqrt{d-c^2dx^2}\,\sin^{-1}(cx)}{g} + \frac{cx\sqrt{\cdots}}{\cdots}$$

$$= \frac{a\sqrt{d-c^2dx^2}}{g} - \frac{bcx\sqrt{d-c^2dx^2}}{g\sqrt{1-c^2x^2}} + \frac{b\sqrt{d-c^2dx^2}\,\sin^{-1}(cx)}{g} + \frac{cx\sqrt{\cdots}}{\cdots}$$

$$= \frac{a\sqrt{d-c^2dx^2}}{g} - \frac{bcx\sqrt{d-c^2dx^2}}{g\sqrt{1-c^2x^2}} + \frac{b\sqrt{d-c^2dx^2}\,\sin^{-1}(cx)}{g} + \frac{cx\sqrt{\cdots}}{\cdots}$$

$$= \frac{a\sqrt{d-c^2dx^2}}{g} - \frac{bcx\sqrt{d-c^2dx^2}}{g\sqrt{1-c^2x^2}} + \frac{b\sqrt{d-c^2dx^2}\,\sin^{-1}(cx)}{g} + \frac{cx\sqrt{\cdots}}{\cdots}$$

$$= \frac{a\sqrt{d-c^2dx^2}}{g} - \frac{bcx\sqrt{d-c^2dx^2}}{g\sqrt{1-c^2x^2}} + \frac{b\sqrt{d-c^2dx^2}\,\sin^{-1}(cx)}{g} + \frac{cx\sqrt{\cdots}}{\cdots}$$

Mathematica [A]
time = 0.68, size = 368, normalized size = 0.50

$$\frac{\sqrt{d-c^2dx^2}\left((c^2f^2-g^2)(a+b\text{ArcSin}(cx))^2+c^2gx(f+gx)(a+b\text{ArcSin}(cx))^2+g^2(1-c^2x^2)(a+b\text{ArcSin}(cx))^2-2bc(f+gx)\left(bcgx-g\sqrt{1-c^2x^2}(a+b\text{ArcSin}(cx))-i\sqrt{c^2f^2-g^2}\left((a+b\text{ArcSin}(cx))\left(\log\left(1+\frac{ie^{i\text{ArcSin}(cx)}g}{-cf+\sqrt{c^2f^2-g^2}}\right)-\log\left(1-\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)\right)-ib\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)+ib\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)\right)\right)\right)}{2bcg^2(f+gx)\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(f + g*x),x]
```

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

Maple [A]
time = 0.61, size = 1206, normalized size = 1.64

method	result
default	$\frac{a\sqrt{-c^2d\left(x+\frac{f}{g}\right)^2+\frac{2c^2df\left(x+\frac{f}{g}\right)}{g}-\frac{d(c^2f^2-g^2)}{g^2}}}{g}+\frac{a\,c^2df\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2d\left(x+\frac{f}{g}\right)^2+\frac{2c^2df\left(x+\frac{f}{g}\right)}{g}-\frac{d(c^2f^2}{g}}}\right.}{g^2\sqrt{c^2d}}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(g*x+f),x,method=_RETURNVERBOSE)
```

```
[Out] a/g*(-c^2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2)+a/g^2*
c^2*d*f/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*(x+f/g)^2+2*c^2*d*f/g*
(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))+a/g^3*d/(-d*(c^2*f^2-g^2)/g^2)^(1/2)*ln
((-2*d*(c^2*f^2-g^2)/g^2+2*c^2*d*f/g*(x+f/g)+2*(-d*(c^2*f^2-g^2)/g^2)^(1/2)
*(-c^2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))/(x+f/g))
*c^2*f^2-a/g*d/(-d*(c^2*f^2-g^2)/g^2)^(1/2)*ln((-2*d*(c^2*f^2-g^2)/g^2+2*c^
2*d*f/g*(x+f/g)+2*(-d*(c^2*f^2-g^2)/g^2)^(1/2)*(-c^2*d*(x+f/g)^2+2*c^2*d*f/
g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))/(x+f/g))-1/2*b*(-d*(c^2*x^2-1))^(1/2)
*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*arcsin(c*x)^2*f*c/g^2+b*(-d*(c^2*x^2-1))^(1
/2)/(c^2*x^2-1)/g*arcsin(c*x)*x^2*c^2+b*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)/
g*(-c^2*x^2+1)^(1/2)*x*c-b*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)/g*arcsin(c*x)
+b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-
1)/g^2*ln((I*c*f+(I*c*x+(-c^2*x^2+1)^(1/2))*g+(-c^2*f^2+g^2)^(1/2))/(I*c*f+
(-c^2*f^2+g^2)^(1/2)))*arcsin(c*x)-b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^
```

```
(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)/g^2*ln((-I*c*f-(I*c*x+(-c^2*x^2+1)^(1/
2))*g+(-c^2*f^2+g^2)^(1/2))/(-I*c*f+(-c^2*f^2+g^2)^(1/2)))*arcsin(c*x)+I*b*
(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)/
g^2*dilog(-I/(-I*c*f+(-c^2*f^2+g^2)^(1/2))*c*f-1/(-I*c*f+(-c^2*f^2+g^2)^(1/
2))*(I*c*x+(-c^2*x^2+1)^(1/2))*g+1/(-I*c*f+(-c^2*f^2+g^2)^(1/2))*(-c^2*f^2+
g^2)^(1/2))-I*b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1
/2)/(c^2*x^2-1)/g^2*dilog(I/(I*c*f+(-c^2*f^2+g^2)^(1/2))*c*f+1/(I*c*f+(-c^2
*f^2+g^2)^(1/2))*(I*c*x+(-c^2*x^2+1)^(1/2))*g+1/(I*c*f+(-c^2*f^2+g^2)^(1/2)
)*(-c^2*f^2+g^2)^(1/2))
```

Maxima [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(g*x+f),x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(g-c*f>0)', see `assume?` for more d
etails)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(g*x+f),x, algorithm="fric
as")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(g*x + f), x)
```

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

$$\int \frac{\sqrt{-d\,(cx-1)\,(cx+1)}\,(a+b\operatorname{asin}(cx))}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))*(-c**2*d*x**2+d)**(1/2)/(g*x+f),x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))/(f + g*x), x)
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(g*x+f),x, algorithm="giac
")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,sageVARx):;OUTPUT:sym2poly/r2sym(const gen & e,const in
dex_m & i,const vecteur & l) Error: Bad Argument Value
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))\,\sqrt{d-c^2\,d\,x^2}}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2))/(f + g*x),x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2))/(f + g*x), x)
```

3.35 $\int \frac{\sqrt{d-c^2dx^2}\,(a+b\,\mathbf{ArcSin}(cx))}{(f+gx)^2}\,dx$

Optimal. Leaf size=860

$$-\frac{a\sqrt{d-c^2dx^2}}{g(f+gx)}-\frac{b\sqrt{d-c^2dx^2}\,\mathrm{ArcSin}(cx)}{g(f+gx)}-\frac{ac^3f^2\sqrt{d-c^2dx^2}\,\mathrm{ArcSin}(cx)}{g^2\left(c^2f^2-g^2\right)\sqrt{1-c^2x^2}}-\frac{bc^3f^2\sqrt{d-c^2dx^2}\,\mathrm{ArcSin}(cx)^2}{2g^2\left(c^2f^2-g^2\right)\sqrt{1-c^2x^2}}$$

```
[Out] -a*(-c^2*d*x^2+d)^(1/2)/g/(g*x+f)-b*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/g/(g*x
+f)-a*c^3*f^2*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/g^2/(c^2*f^2-g^2)/(-c^2*x^2+
1)^(1/2)-1/2*b*c^3*f^2*arcsin(c*x)^2*(-c^2*d*x^2+d)^(1/2)/g^2/(c^2*f^2-g^2)
/(-c^2*x^2+1)^(1/2)+1/2*(c^2*f*x+g)^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1
/2)/b/c/(c^2*f^2-g^2)/(g*x+f)^2/(-c^2*x^2+1)^(1/2)+b*c*ln(g*x+f)*(-c^2*d*x^
2+d)^(1/2)/g^2/(-c^2*x^2+1)^(1/2)+a*c^2*f*arctan((c^2*f*x+g)/(c^2*f^2-g^2)^
(1/2)/(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/g^2/(c^2*f^2-g^2)^(1/2)/(-c^
2*x^2+1)^(1/2)-I*b*c^2*f*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c
*f-(c^2*f^2-g^2)^(1/2)))*(-c^2*d*x^2+d)^(1/2)/g^2/(c^2*f^2-g^2)^(1/2)/(-c^2
*x^2+1)^(1/2)+I*b*c^2*f*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*
f+(c^2*f^2-g^2)^(1/2)))*(-c^2*d*x^2+d)^(1/2)/g^2/(c^2*f^2-g^2)^(1/2)/(-c^2*
x^2+1)^(1/2)-b*c^2*f*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2
-g^2)^(1/2)))*(-c^2*d*x^2+d)^(1/2)/g^2/(c^2*f^2-g^2)^(1/2)/(-c^2*x^2+1)^(1/
2)+b*c^2*f*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2
)))*(-c^2*d*x^2+d)^(1/2)/g^2/(c^2*f^2-g^2)^(1/2)/(-c^2*x^2+1)^(1/2)+1/2*(a+
b*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)*(-c^2*d*x^2+d)^(1/2)/b/c/(g*x+f)^2
```

Rubi [A]
time = 1.87, antiderivative size = 860, normalized size of antiderivative = 1.00, number of steps used = 35, number of rules used = 22, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.710$, Rules used = {4861, 4849, 37, 4839, 12, 1665, 858, 222, 739, 210, 4883, 4881, 4737, 4857, 3405, 3404, 2296, 2221, 2317, 2438, 2747, 31}

$$-\frac{bf^2\sqrt{d-c^2dx^2}\,\mathrm{ArcSin}(cx)^2c^3}{2g^2\left(c^2f^2-g^2\right)\sqrt{1-c^2x^2}}-\frac{af^2\sqrt{d-c^2dx^2}\,\mathrm{ArcSin}(cx)c^3}{g^2\left(c^2f^2-g^2\right)\sqrt{1-c^2x^2}}+\frac{af\sqrt{d-c^2dx^2}\,\mathrm{ArcTan}\left(\frac{fxc^2+g}{\sqrt{c^2f^2-g^2}\sqrt{1-c^2x^2}}\right)c^2}{g^2\sqrt{c^2f^2-g^2}\sqrt{1-c^2x^2}}-\frac{ibf\sqrt{d-c^2dx^2}\,\mathrm{ArcSin}(cx)\log\left(1-\frac{ie^{i\mathrm{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)c^2}{g^2\sqrt{c^2f^2-g^2}\sqrt{1-c^2x^2}}+\frac{ibf\sqrt{d-c^2dx^2}\,\mathrm{ArcSin}(cx)\log\left(1-\frac{ie^{i\mathrm{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)c^2}{g^2\sqrt{c^2f^2-g^2}\sqrt{1-c^2x^2}}-\frac{bf\sqrt{d-c^2dx^2}\,\mathrm{Li}_2\left(\frac{ie^{i\mathrm{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)c^2}{g^2\sqrt{c^2f^2-g^2}\sqrt{1-c^2x^2}}+\frac{bf\sqrt{d-c^2dx^2}\,\mathrm{Li}_2\left(\frac{ie^{i\mathrm{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)c^2}{g^2\sqrt{c^2f^2-g^2}\sqrt{1-c^2x^2}}+\frac{b\sqrt{d-c^2dx^2}\log(f+gx)c}{g^2\sqrt{1-c^2x^2}}-\frac{b\sqrt{d-c^2dx^2}\,\mathrm{ArcSin}(cx)}{g(f+gx)}-\frac{a\sqrt{d-c^2dx^2}}{g(f+gx)}+\frac{\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}\,(a+b\mathrm{ArcSin}(cx))^2}{2b(f+gx)^2c}+\frac{\left(fxc^2+g\right)^2\sqrt{d-c^2dx^2}\,(a+b\mathrm{ArcSin}(cx))^2}{2b\left(c^2f^2-g^2\right)(f+gx)^2\sqrt{1-c^2x^2}\,c}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(f + g*x)^2,x]
```

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

```
*x^2]) - (I*b*c^2*f*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[
c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])]])/(g^2*Sqrt[c^2*f^2 - g^2]*Sqrt[1 - c^
2*x^2]) + (I*b*c^2*f*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin
[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]])/(g^2*Sqrt[c^2*f^2 - g^2]*Sqrt[1 - c
^2*x^2]) + (b*c*Sqrt[d - c^2*d*x^2]*Log[f + g*x])/(g^2*Sqrt[1 - c^2*x^2]) -
 (b*c^2*f*Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqr
t[c^2*f^2 - g^2])]])/(g^2*Sqrt[c^2*f^2 - g^2]*Sqrt[1 - c^2*x^2]) + (b*c^2*f*
Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2
- g^2])]])/(g^2*Sqrt[c^2*f^2 - g^2]*Sqrt[1 - c^2*x^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

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

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 210

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

Rule 222

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

Rule 739

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

Rule 858

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
```

```
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rule 1665

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :>
 With[{Q = PolynomialQuotient[Pq, d + e*x, x], R = PolynomialRemainder[Pq,
d + e*x, x]}, Simp[(e*R*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*
d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)
*(a + c*x^2)^p*ExpandToSum[(m + 1)*(c*d^2 + a*e^2)*Q + c*d*R*(m + 1) - c*e*
R*(m + 2*p + 3)*x, x], x], x]] /; FreeQ[{a, c, d, e, p}, x] && PolyQ[Pq, x]
 && NeQ[c*d^2 + a*e^2, 0] && LtQ[m, -1]
```

Rule 2221

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

Rule 2296

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[2*(c/q), Int[
(f + g*x)^m*(F^u/(b - q + 2*c*F^u)), x], x] - Dist[2*(c/q), Int[(f + g*x)^m
*(F^u/(b + q + 2*c*F^u)), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2317

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

Rule 2438

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

Rule 2747

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rule 3404

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[(c + d*x)^m*(E^(I*(e + f*x))/(I*b + 2*a*E^(I*(e + f*x)
) - I*b*E^(2*I*(e + f*x)))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3405

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[b*(c + d*x)^m*(Cos[e + f*x]/(f*(a^2 - b^2)*(a + b*Sin[e + f
*x]))), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[b*d*(m/(f*(a^2 - b^2))), Int[(c + d*x)^(m - 1)*(Cos[e + f*x]/(a
+ b*Sin[e + f*x])), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 4737

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

Rule 4839

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_))^(m_)*((f_.)
 + (g_.)*(x_))^(p_.), x_Symbol] :> With[{u = IntHide[(f + g*x)^p*(d + e*x)^
m, x]}, Dist[(a + b*ArcSin[c*x])^n, u, x] - Dist[b*c*n, Int[SimplifyIntegra
nd[u*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*x^2]), x], x], x]] /; FreeQ[
{a, b, c, d, e, f, g}, x] && IGtQ[n, 0] && IGtQ[p, 0] && ILtQ[m, 0] && LtQ[
m + p + 1, 0]
```

Rule 4849

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

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
```

```
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4881

```
Int[ArcSin[(c_.)*(x_)]^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p_), x_Symbol] :
> With[{u = ExpandIntegrand[(d + e*x^2)^p*ArcSin[c*x]^n, RFx, x]}, Int[u, x
] /; SumQ[u]] /; FreeQ[{c, d, e}, x] && RationalFunctionQ[RFx, x] && IGtQ[n
, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 4883

```
Int[(ArcSin[(c_.)*(x_)]*(b_.) + (a_))^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p
_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p, RFx*(a + b*ArcSin[c*x])
^n, x], x] /; FreeQ[{a, b, c, d, e}, x] && RationalFunctionQ[RFx, x] && IGt
Q[n, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rubi steps

$$\int \frac{\sqrt{d-c^2dx^2}\,(a+b\sin^{-1}(cx))}{(f+gx)^2}\,dx = \frac{\sqrt{d-c^2dx^2}\int \frac{\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))}{(f+gx)^2}\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}\,(a+b\sin^{-1}(cx))^2}{2bc(f+gx)^2} - \frac{\sqrt{d-c^2dx^2}\int \frac{(-2g-2c^2fx}{(}}{2bc\sqrt{1-c^2}}$$

$$= \frac{(g+c^2fx)^2\sqrt{d-c^2dx^2}\,(a+b\sin^{-1}(cx))^2}{2bc\,(c^2f^2-g^2)\,(f+gx)^2\sqrt{1-c^2x^2}} + \frac{\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}}{2bc(f+g}$$

$$= \frac{(g+c^2fx)^2\sqrt{d-c^2dx^2}\,(a+b\sin^{-1}(cx))^2}{2bc\,(c^2f^2-g^2)\,(f+gx)^2\sqrt{1-c^2x^2}} + \frac{\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}}{2bc(f+g}$$

$$= \frac{(g+c^2fx)^2\sqrt{d-c^2dx^2}\,(a+b\sin^{-1}(cx))^2}{2bc\,(c^2f^2-g^2)\,(f+gx)^2\sqrt{1-c^2x^2}} + \frac{\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}}{2bc(f+g}$$

$$= \frac{(g+c^2fx)^2\sqrt{d-c^2dx^2}\,(a+b\sin^{-1}(cx))^2}{2bc\,(c^2f^2-g^2)\,(f+gx)^2\sqrt{1-c^2x^2}} + \frac{\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}}{2bc(f+g}$$

$$= -\frac{a\sqrt{d-c^2dx^2}}{g(f+gx)} + \frac{(g+c^2fx)^2\sqrt{d-c^2dx^2}\,(a+b\sin^{-1}(cx))^2}{2bc\,(c^2f^2-g^2)\,(f+gx)^2\sqrt{1-c^2x^2}} + \frac{\sqrt{1-}}{}$$

$$= -\frac{a\sqrt{d-c^2dx^2}}{g(f+gx)} + \frac{(g+c^2fx)^2\sqrt{d-c^2dx^2}\,(a+b\sin^{-1}(cx))^2}{2bc\,(c^2f^2-g^2)\,(f+gx)^2\sqrt{1-c^2x^2}} + \frac{\sqrt{1-}}{}$$

$$= -\frac{a\sqrt{d-c^2dx^2}}{g(f+gx)} - \frac{ac^3f^2\sqrt{d-c^2dx^2}\,\sin^{-1}(cx)}{g^2\,(c^2f^2-g^2)\sqrt{1-c^2x^2}} - \frac{bc^3f^2\sqrt{d-c^2dx^2}\,\mathrm{s}}{2g^2\,(c^2f^2-g^2)\sqrt{1}}$$

$$= -\frac{a\sqrt{d-c^2dx^2}}{g(f+gx)} - \frac{b\sqrt{d-c^2dx^2}\,\sin^{-1}(cx)}{g(f+gx)} - \frac{ac^3f^2\sqrt{d-c^2dx^2}\,\sin^{-1}}{g^2\,(c^2f^2-g^2)\sqrt{1-c^2}}$$

$$= -\frac{a\sqrt{d-c^2dx^2}}{g(f+gx)} - \frac{b\sqrt{d-c^2dx^2}\,\sin^{-1}(cx)}{g(f+gx)} - \frac{ac^3f^2\sqrt{d-c^2dx^2}\,\sin^{-1}}{g^2\,(c^2f^2-g^2)\sqrt{1-c^2}}$$

$$= -\frac{a\sqrt{d-c^2dx^2}}{g(f+gx)} - \frac{b\sqrt{d-c^2dx^2}\,\sin^{-1}(cx)}{g(f+gx)} - \frac{ac^3f^2\sqrt{d-c^2dx^2}\,\sin^{-1}}{g^2\,(c^2f^2-g^2)\sqrt{1-c^2}}$$

$$= -\frac{a\sqrt{d-c^2dx^2}}{g(f+gx)} - \frac{b\sqrt{d-c^2dx^2}\,\sin^{-1}(cx)}{g(f+gx)} - \frac{ac^3f^2\sqrt{d-c^2dx^2}\,\sin^{-1}}{g^2\,(c^2f^2-g^2)\sqrt{1-c^2}}$$

Mathematica [A]
time = 1.73, size = 600, normalized size = 0.70

$$\frac{\sqrt{d-c^2dx^2}\left(\frac{(c^2f^2-g^2)(a+b\text{ArcSin}(cx))^2}{g^2(f+gx)^2}-\frac{2c^2f(a+b\text{ArcSin}(cx))^2}{g^2(f+gx)}+\frac{(1-c^2x^2)(a+b\text{ArcSin}(cx))^2}{(f+gx)^2}+\frac{4bc^3f\left(-i(a+b\text{ArcSin}(cx))\left(\log\left(1+\frac{ie^{i\text{ArcSin}(cx)}g}{-cf+\sqrt{c^2f^2-g^2}}\right)-\log\left(1-\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)\right)-b\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)+b\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)\right)}{g^2\sqrt{c^2f^2-g^2}}+\frac{2bc^2\left(-\frac{g\sqrt{1-c^2x^2}(a+b\text{ArcSin}(cx))}{cf+cgx}+b\log(f+gx)+\frac{cf\left(i(a+b\text{ArcSin}(cx))\left(\log\left(1+\frac{ie^{i\text{ArcSin}(cx)}g}{-cf+\sqrt{c^2f^2-g^2}}\right)-\log\left(1-\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)\right)+b\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)-b\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)\right)}{\sqrt{c^2f^2-g^2}}\right)}{g^2}\right)}{2bc\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(f + g*x)^2,x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(((c^2*f^2 - g^2)*(a + b*ArcSin[c*x])^2)/(g^2*(f + g*x
)^2) - (2*c^2*f*(a + b*ArcSin[c*x])^2)/(g^2*(f + g*x)) + ((1 - c^2*x^2)*(a
+ b*ArcSin[c*x])^2)/(f + g*x)^2 + (4*b*c^3*f*((-I)*(a + b*ArcSin[c*x])*(Log
[1 + (I*E^(I*ArcSin[c*x])*g)/(-(c*f) + Sqrt[c^2*f^2 - g^2])] - Log[1 - (I*E
^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]) - b*PolyLog[2, (I*E^(I*Ar
cSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])] + b*PolyLog[2, (I*E^(I*ArcSin[c*
x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]))/(g^2*Sqrt[c^2*f^2 - g^2]) + (2*b*c^2*
(-((g*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(c*f + c*g*x)) + b*Log[f + g*x
] + (c*f*(I*(a + b*ArcSin[c*x])*(Log[1 + (I*E^(I*ArcSin[c*x])*g)/(-(c*f) +
Sqrt[c^2*f^2 - g^2])] - Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2
 - g^2])]) + b*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2
])] - b*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]))/S
qrt[c^2*f^2 - g^2]))/g^2))/(2*b*c*Sqrt[1 - c^2*x^2])
```

Maple [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.86, size = 1573, normalized size = 1.83

method	result	size
default	Expression too large to display	1573

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(g*x+f)^2,x,method=_RETURNVERBOS
E)
```

```
[Out] a/d/(c^2*f^2-g^2)/(x+f/g)*(-c^2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-
g^2)/g^2)^(3/2)-a/g*c^2*f/(c^2*f^2-g^2)*(-c^2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/
g)-d*(c^2*f^2-g^2)/g^2)^(1/2)-a/g^2*c^4*f^2/(c^2*f^2-g^2)*d/(c^2*d)^(1/2)*a
rctan((c^2*d)^(1/2)*x/(-c^2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)
/g^2)^(1/2))-a/g^3*c^4*f^3/(c^2*f^2-g^2)*d/(-d*(c^2*f^2-g^2)/g^2)^(1/2)*ln(
(-2*d*(c^2*f^2-g^2)/g^2+2*c^2*d*f/g*(x+f/g)+2*(-d*(c^2*f^2-g^2)/g^2)^(1/2)*
(-c^2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))/(x+f/g))+
a/g*c^2*f/(c^2*f^2-g^2)*d/(-d*(c^2*f^2-g^2)/g^2)^(1/2)*ln((-2*d*(c^2*f^2-g^
2)/g^2+2*c^2*d*f/g*(x+f/g)+2*(-d*(c^2*f^2-g^2)/g^2)^(1/2)*(-c^2*d*(x+f/g)^2
+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))/(x+f/g))+a*c^2/(c^2*f^2-g^
2)*(-c^2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2)*x+a*c^2
/(c^2*f^2-g^2)*d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*(x+f/g)^2+2*c
```

```
^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))+b*(1/2*(-d*(c^2*x^2-1))^(1/2)*
(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*arcsin(c*x)^2*c/g^2-(-d*(c^2*x^2-1))^(1/2)*(
I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*arcsin(c*x)*(c^2*f*x+g-I*(-c^2*x^2+1)^(
1/2)*c*f)/(c^2*x^2-1)/g^2/(g*x+f)-(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)
/(c^2*x^2-1)/g^2/(c^2*f^2-g^2)*(I*dilog(-I/(-I*c*f+(-c^2*f^2+g^2)^(1/2))*c*
f-1/(-I*c*f+(-c^2*f^2+g^2)^(1/2))*(I*c*x+(-c^2*x^2+1)^(1/2))*g+1/(-I*c*f+(-
c^2*f^2+g^2)^(1/2))*(-c^2*f^2+g^2)^(1/2))*(-c^2*f^2+g^2)^(1/2)*c*f-I*dilog(
I/(I*c*f+(-c^2*f^2+g^2)^(1/2))*c*f+1/(I*c*f+(-c^2*f^2+g^2)^(1/2))*(I*c*x+(-
c^2*x^2+1)^(1/2))*g+1/(I*c*f+(-c^2*f^2+g^2)^(1/2))*(-c^2*f^2+g^2)^(1/2))*(-
c^2*f^2+g^2)^(1/2)*c*f+ln((I*c*f+(I*c*x+(-c^2*x^2+1)^(1/2))*g+(-c^2*f^2+g^2
)^(1/2))/(I*c*f+(-c^2*f^2+g^2)^(1/2)))*arcsin(c*x)*(-c^2*f^2+g^2)^(1/2)*c*f
+ln((I*c*x+(-c^2*x^2+1)^(1/2))^2*g+2*I*c*f*(I*c*x+(-c^2*x^2+1)^(1/2))-g)*c^
2*f^2+2*Im(arcsin(c*x))*c^2*f^2-ln((-I*c*f-(I*c*x+(-c^2*x^2+1)^(1/2))*g+(-c
^2*f^2+g^2)^(1/2))/(-I*c*f+(-c^2*f^2+g^2)^(1/2)))*arcsin(c*x)*(-c^2*f^2+g^2
)^(1/2)*c*f-2*ln(exp(I*Re(arcsin(c*x))))*c^2*f^2-ln((I*c*x+(-c^2*x^2+1)^(1/
2))^2*g+2*I*c*f*(I*c*x+(-c^2*x^2+1)^(1/2))-g)*g^2-2*Im(arcsin(c*x))*g^2+2*l
n(exp(I*Re(arcsin(c*x))))*g^2)*c)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(g*x+f)^2,x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(g-c*f>0)', see `assume?` for more d
etails)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(g*x+f)^2,x, algorithm="fr
icas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(g^2*x^2 + 2*f*g*x + f^2)
, x)
```

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

$$\int \frac{\sqrt{-d\left(cx-1\right)\left(cx+1\right)}\left(a+b\operatorname{asin}\left(cx\right)\right)}{\left(f+gx\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))*(-c**2*d*x**2+d)**(1/2)/(g*x+f)**2,x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))/(f + g*x)**2, x)
```

Giac [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(g*x+f)^2,x, algorithm="gi
ac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,sageVARx):;OUTPUT:sym2poly/r2sym(const gen & e,const in
dex_m & i,const vecteur & l) Error: Bad Argument Value
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\sqrt{d-c^2\,d\,x^2}}{{\left(f+g\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2))/(f + g*x)^2,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2))/(f + g*x)^2, x)
```

3.36 $\int (f+gx)^3 \left(d-c^2dx^2\right)^{3/2} (a+b\mathbf{ArcSin}(cx))\,dx$

Optimal. Leaf size=959

$$\frac{3bdf^2gx\sqrt{d-c^2dx^2}}{5c\sqrt{1-c^2x^2}}+\frac{2bdg^3x\sqrt{d-c^2dx^2}}{35c^3\sqrt{1-c^2x^2}}-\frac{5bcdf^3x^2\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}}+\frac{3bdfg^2x^2\sqrt{d-c^2dx^2}}{32c\sqrt{1-c^2x^2}}-\frac{2bcdf^2gx^3\sqrt{d-}}{5\sqrt{1-c^2x^2}}$$

```
[Out] 3/8*d*f^3*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)-3/16*d*f*g^2*x*(a+b*arcs
in(c*x))*(-c^2*d*x^2+d)^(1/2)/c^2+3/8*d*f*g^2*x^3*(a+b*arcsin(c*x))*(-c^2*d
*x^2+d)^(1/2)+1/4*d*f^3*x*(-c^2*x^2+1)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/
2)+1/2*d*f*g^2*x^3*(-c^2*x^2+1)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)-3/5*
d*f^2*g*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c^2-1/5*d*g^3
*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c^4+1/7*d*g^3*(-c^2*
x^2+1)^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c^4+3/5*b*d*f^2*g*x*(-c^2*d
*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)+2/35*b*d*g^3*x*(-c^2*d*x^2+d)^(1/2)/c^3/
(-c^2*x^2+1)^(1/2)-5/16*b*c*d*f^3*x^2*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/
2)+3/32*b*d*f*g^2*x^2*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-2/5*b*c*d*f
^2*g*x^3*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/105*b*d*g^3*x^3*(-c^2*d*
x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)+1/16*b*c^3*d*f^3*x^4*(-c^2*d*x^2+d)^(1/2)
/(-c^2*x^2+1)^(1/2)-7/32*b*c*d*f*g^2*x^4*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^
(1/2)+3/25*b*c^3*d*f^2*g*x^5*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-8/175*
b*c*d*g^3*x^5*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/12*b*c^3*d*f*g^2*x^
6*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/49*b*c^3*d*g^3*x^7*(-c^2*d*x^2+
d)^(1/2)/(-c^2*x^2+1)^(1/2)+3/16*d*f^3*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(
1/2)/b/c/(-c^2*x^2+1)^(1/2)+3/32*d*f*g^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)
^(1/2)/b/c^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A]
time = 0.64, antiderivative size = 959, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 17, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.548$, Rules used = {4861, 4847, 4743, 4741, 4737, 30, 14, 4767, 200, 4787, 4783, 4795, 272, 45, 4779, 12, 380}

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (3*b*d*f^2*g*x*Sqrt[d - c^2*d*x^2])/(5*c*Sqrt[1 - c^2*x^2]) + (2*b*d*g^3*x*
Sqrt[d - c^2*d*x^2])/(35*c^3*Sqrt[1 - c^2*x^2]) - (5*b*c*d*f^3*x^2*Sqrt[d -
 c^2*d*x^2])/(16*Sqrt[1 - c^2*x^2]) + (3*b*d*f*g^2*x^2*Sqrt[d - c^2*d*x^2])
/(32*c*Sqrt[1 - c^2*x^2]) - (2*b*c*d*f^2*g*x^3*Sqrt[d - c^2*d*x^2])/(5*Sqrt
[1 - c^2*x^2]) + (b*d*g^3*x^3*Sqrt[d - c^2*d*x^2])/(105*c*Sqrt[1 - c^2*x^2]
) + (b*c^3*d*f^3*x^4*Sqrt[d - c^2*d*x^2])/(16*Sqrt[1 - c^2*x^2]) - (7*b*c*d
*f*g^2*x^4*Sqrt[d - c^2*d*x^2])/(32*Sqrt[1 - c^2*x^2]) + (3*b*c^3*d*f^2*g*x
```

```
^5*Sqrt[d - c^2*d*x^2])/(25*Sqrt[1 - c^2*x^2]) - (8*b*c*d*g^3*x^5*Sqrt[d -
c^2*d*x^2])/(175*Sqrt[1 - c^2*x^2]) + (b*c^3*d*f*g^2*x^6*Sqrt[d - c^2*d*x^2
])/(12*Sqrt[1 - c^2*x^2]) + (b*c^3*d*g^3*x^7*Sqrt[d - c^2*d*x^2])/(49*Sqrt[
1 - c^2*x^2]) + (3*d*f^3*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/8 - (3*
d*f*g^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(16*c^2) + (3*d*f*g^2*x^
3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/8 + (d*f^3*x*(1 - c^2*x^2)*Sqrt[
d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/4 + (d*f*g^2*x^3*(1 - c^2*x^2)*Sqrt[d -
 c^2*d*x^2]*(a + b*ArcSin[c*x]))/2 - (3*d*f^2*g*(1 - c^2*x^2)^2*Sqrt[d - c^
2*d*x^2]*(a + b*ArcSin[c*x]))/(5*c^2) - (d*g^3*(1 - c^2*x^2)^2*Sqrt[d - c^2
*d*x^2]*(a + b*ArcSin[c*x]))/(5*c^4) + (d*g^3*(1 - c^2*x^2)^3*Sqrt[d - c^2*
d*x^2]*(a + b*ArcSin[c*x]))/(7*c^4) + (3*d*f^3*Sqrt[d - c^2*d*x^2]*(a + b*A
rcSin[c*x])^2)/(16*b*c*Sqrt[1 - c^2*x^2]) + (3*d*f*g^2*Sqrt[d - c^2*d*x^2]*
(a + b*ArcSin[c*x])^2)/(32*b*c^3*Sqrt[1 - c^2*x^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

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

Rule 45

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

Rule 200

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 272

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

Rule 380

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.), x_Symbol
] :> Int[ExpandIntegrand[(a + b*x^n)^p*(c + d*x^n)^q, x], x] /; FreeQ[{a, b
, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[p, 0] && IGtQ[q, 0]
```

Rule 4737

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

Rule 4741

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

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[x*(d + e*x^2)^p*((a + b*ArcSin[c*x])^n/(2*p + 1)), x] + (D
ist[2*d*(p/(2*p + 1)), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[b*c*(n/(2*p + 1))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[x*(1 -
c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c,
d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0]
```

Rule 4767

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

Rule 4779

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[
c*x], u, x] - Dist[b*c*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[Simplif
yIntegrand[u/Sqrt[d + e*x^2], x], x], x]] /; FreeQ[{a, b, c, d, e}, x] && E
qQ[c^2*d + e, 0] && IntegerQ[p - 1/2] && NeQ[p, -2^(-1)] && (IGtQ[(m + 1)/2
```

```
, 0] || ILtQ[(m + 2*p + 3)/2, 0])
```

Rule 4783

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

Rule 4787

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[(f*x)^(m + 1)*(d + e*x^2)^p*((a + b*ArcS
in[c*x])^n/(f*(m + 2*p + 1))), x] + (Dist[2*d*(p/(m + 2*p + 1)), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[b*c*(n/(f*(m + 2
*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)^(m + 1)*(1 - c^2*x
^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0] &&  !LtQ[m, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
```

```
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int (f+gx)^3 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right) \, dx = \frac{\left(d\sqrt{d-c^2dx^2}\right) \int (f+gx)^3 \left(1-c^2x^2\right)^{3/2} \left(a+b\sin^{-1}(cx\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d\sqrt{d-c^2dx^2}\right) \int \left(f^3(1-c^2x^2)^{3/2} \left(a+b\sin^{-1}(cx)\right)+3\right.}{}$$

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

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

$$= \frac{3}{8}df^3x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{3}{8}dfg^2x^3\sqrt{d-c^2dx}$$

$$= \frac{3bdf^2gx\sqrt{d-c^2dx^2}}{5c\sqrt{1-c^2x^2}} - \frac{5bcdf^3x^2\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}} - \frac{2bcdf^2gx}{5\sqrt{}}$$

$$= \frac{3bdf^2gx\sqrt{d-c^2dx^2}}{5c\sqrt{1-c^2x^2}} + \frac{2bdg^3x\sqrt{d-c^2dx^2}}{35c^3\sqrt{1-c^2x^2}} - \frac{5bcdf^3x^2\sqrt{}}{16\sqrt{1}}$$

Mathematica [A]
time = 0.82, size = 463, normalized size = 0.48

$$\frac{d\sqrt{d-c^2dx^2}\left(11025a^2cf(2c^2f^2+g^2)-210ab\sqrt{1-c^2x^2}(32g^3+c^2g(336f^2+105fgx+16g^2x^2)+4c^6x^3(35f^3+84f^2gx+70fg^2x^2+20g^3x^3)-2c^4x(175f^3+336f^2gx+245fg^2x^2+64g^3x^3))+b^2cx(6720g^3+35c^2g(2016f^2+315fgx+32g^2x^2)-21c^4x(1750f^3+2240f^2gx+1225fg^2x^2+256g^3x^3)+2c^6x^3(3675f^3+7056f^2gx+4900fg^2x^2+1200g^3x^3))-210b\left(-105acf(2c^2f^2+g^2)+b\sqrt{1-c^2x^2}(32g^3+c^2g(336f^2+105fgx+16g^2x^2)+4c^6x^3(35f^3+84f^2gx+70fg^2x^2+20g^3x^3)-2c^4x(175f^3+336f^2gx+245fg^2x^2+64g^3x^3))\right)\mathrm{ArcSin}(cx)+11025b^2cf(2c^2f^2+g^2)\,\mathrm{ArcSin}(cx)^2\right)}{117600bc^4\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d*Sqrt[d - c^2*d*x^2]*(11025*a^2*c*f*(2*c^2*f^2 + g^2) - 210*a*b*Sqrt[1 -
c^2*x^2]*(32*g^3 + c^2*g*(336*f^2 + 105*f*g*x + 16*g^2*x^2) + 4*c^6*x^3*(35
*f^3 + 84*f^2*g*x + 70*f*g^2*x^2 + 20*g^3*x^3) - 2*c^4*x*(175*f^3 + 336*f^2
*g*x + 245*f*g^2*x^2 + 64*g^3*x^3)) + b^2*c*x*(6720*g^3 + 35*c^2*g*(2016*f^
2 + 315*f*g*x + 32*g^2*x^2) - 21*c^4*x*(1750*f^3 + 2240*f^2*g*x + 1225*f*g^
2*x^2 + 256*g^3*x^3) + 2*c^6*x^3*(3675*f^3 + 7056*f^2*g*x + 4900*f*g^2*x^2
+ 1200*g^3*x^3)) - 210*b*(-105*a*c*f*(2*c^2*f^2 + g^2) + b*Sqrt[1 - c^2*x^2
]*(32*g^3 + c^2*g*(336*f^2 + 105*f*g*x + 16*g^2*x^2) + 4*c^6*x^3*(35*f^3 +
```

```
84*f^2*g*x + 70*f*g^2*x^2 + 20*g^3*x^3) - 2*c^4*x*(175*f^3 + 336*f^2*g*x +
245*f*g^2*x^2 + 64*g^3*x^3)))*ArcSin[c*x] + 11025*b^2*c*f*(2*c^2*f^2 + g^2)
*ArcSin[c*x]^2))/(117600*b*c^4*Sqrt[1 - c^2*x^2])
```

Maple [C] Result contains complex when optimal does not.
time = 0.93, size = 2096, normalized size = 2.19

method	result	size
default	Expression too large to display	2096

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x,method=_RETURNVERBOS
E)
```

```
[Out] -1/7*a*g^3*x^2*(-c^2*d*x^2+d)^(5/2)/c^2/d-2/35*a*g^3/d/c^4*(-c^2*d*x^2+d)^(
5/2)-1/2*a*f*g^2*x*(-c^2*d*x^2+d)^(5/2)/c^2/d+1/8*a*f*g^2/c^2*x*(-c^2*d*x^2
+d)^(3/2)+3/16*a*f*g^2/c^2*d*x*(-c^2*d*x^2+d)^(1/2)+3/16*a*f*g^2/c^2*d^2/(c
^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-3/5*a*f^2*g/c^2/d*
(-c^2*d*x^2+d)^(5/2)+1/4*a*f^3*x*(-c^2*d*x^2+d)^(3/2)+3/8*a*f^3*d*x*(-c^2*d
*x^2+d)^(1/2)+3/8*a*f^3*d^2/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^
2+d)^(1/2))+b*(-3/32*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/(c^2*x^2
-1)*arcsin(c*x)^2*f*(2*c^2*f^2+g^2)*d-1/6272*(-d*(c^2*x^2-1))^(1/2)*(64*c^8
*x^8-144*c^6*x^6-64*I*(-c^2*x^2+1)^(1/2)*x^7*c^7+104*c^4*x^4+112*I*(-c^2*x^
2+1)^(1/2)*x^5*c^5-25*c^2*x^2-56*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+7*I*(-c^2*x^2
+1)^(1/2)*x*c+1)*g^3*(I+7*arcsin(c*x))*d/c^4/(c^2*x^2-1)-1/768*(-d*(c^2*x^2
-1))^(1/2)*(-32*I*(-c^2*x^2+1)^(1/2)*x^6*c^6+32*c^7*x^7+48*I*(-c^2*x^2+1)^(
1/2)*x^4*c^4-64*c^5*x^5-18*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+38*c^3*x^3+I*(-c^2*
x^2+1)^(1/2)-6*c*x)*f*g^2*(I+6*arcsin(c*x))*d/c^3/(c^2*x^2-1)-1/3200*(-d*(c
^2*x^2-1))^(1/2)*(16*c^6*x^6-28*c^4*x^4-16*I*(-c^2*x^2+1)^(1/2)*x^5*c^5+13*
c^2*x^2+20*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-5*I*(-c^2*x^2+1)^(1/2)*x*c-1)*g*(12
*I*f^2*c^2+60*arcsin(c*x)*c^2*f^2-I*g^2-5*arcsin(c*x)*g^2)*d/c^4/(c^2*x^2-1
)-1/512*(-d*(c^2*x^2-1))^(1/2)*(-8*I*(-c^2*x^2+1)^(1/2)*x^4*c^4+8*c^5*x^5+8
*I*(-c^2*x^2+1)^(1/2)*x^2*c^2-12*c^3*x^3-I*(-c^2*x^2+1)^(1/2)+4*c*x)*f*(2*I
*f^2*c^2+8*arcsin(c*x)*c^2*f^2-3*I*g^2-12*arcsin(c*x)*g^2)*d/c^3/(c^2*x^2-1
)-3/128*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*g*(8*I*
f^2*c^2+8*arcsin(c*x)*c^2*f^2+I*g^2+arcsin(c*x)*g^2)*d/c^4/(c^2*x^2-1)-3/12
8*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(8*arcsin(c
*x)*c^2*f^2-8*I*f^2*c^2+arcsin(c*x)*g^2-I*g^2)*d/c^4/(c^2*x^2-1)+1/256*(-d*
(c^2*x^2-1))^(1/2)*(2*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+2*c^3*x^3-I*(-c^2*x^2+1)
^(1/2)-2*c*x)*f*(-16*I*f^2*c^2+32*arcsin(c*x)*c^2*f^2-3*I*g^2+6*arcsin(c*x)
*g^2)*d/c^3/(c^2*x^2-1)+1/384*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2
)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*g*(36*arcsin(c*
x)*c^2*f^2-12*I*f^2*c^2+3*arcsin(c*x)*g^2-I*g^2)*d/c^4/(c^2*x^2-1)-1/768*(-
d*(c^2*x^2-1))^(1/2)*(32*I*(-c^2*x^2+1)^(1/2)*x^6*c^6+32*c^7*x^7-48*I*(-c^2
*x^2+1)^(1/2)*x^4*c^4-64*c^5*x^5+18*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+38*c^3*x^3
```

```
-I*(-c^2*x^2+1)^(1/2)-6*c*x)*f*g^2*(-I+6*arcsin(c*x))*d/c^3/(c^2*x^2-1)-1/6
272*(-d*(c^2*x^2-1))^(1/2)*(64*I*(-c^2*x^2+1)^(1/2)*x^7*c^7+64*c^8*x^8-112*
I*(-c^2*x^2+1)^(1/2)*x^5*c^5-144*c^6*x^6+56*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+10
4*c^4*x^4-7*I*(-c^2*x^2+1)^(1/2)*x*c-25*c^2*x^2+1)*g^3*(-I+7*arcsin(c*x))*d
/c^4/(c^2*x^2-1)-1/2400*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^
2*x^2-1)*g*(66*I*f^2*c^2+270*arcsin(c*x)*c^2*f^2+7*I*g^2+15*arcsin(c*x)*g^2
)*cos(4*arcsin(c*x))*d/c^4/(c^2*x^2-1)-1/4800*(-d*(c^2*x^2-1))^(1/2)*(I*x^2
*c^2-c*x*(-c^2*x^2+1)^(1/2)-I)*g*(168*I*f^2*c^2+360*arcsin(c*x)*c^2*f^2+11*
I*g^2+45*arcsin(c*x)*g^2)*sin(4*arcsin(c*x))*d/c^4/(c^2*x^2-1)-1/512*(-d*(c
^2*x^2-1))^(1/2)*(I*x^2*c^2-c*x*(-c^2*x^2+1)^(1/2)-I)*f*(34*I*f^2*c^2+56*ar
csin(c*x)*c^2*f^2+3*I*g^2+24*arcsin(c*x)*g^2)*cos(3*arcsin(c*x))*d/c^3/(c^2
*x^2-1)+3/512*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*f
*(10*I*f^2*c^2+24*arcsin(c*x)*c^2*f^2+3*I*g^2)*sin(3*arcsin(c*x))*d/c^3/(c^
2*x^2-1))
```

<u>Maxima</u> [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="ma
xima")
```

```
[Out] 1/8*(2*(-c^2*d*x^2 + d)^(3/2)*x + 3*sqrt(-c^2*d*x^2 + d)*d*x + 3*d^(3/2)*ar
csin(c*x)/c)*a*f^3 - 1/35*(5*(-c^2*d*x^2 + d)^(5/2)*x^2/(c^2*d) + 2*(-c^2*d
*x^2 + d)^(5/2)/(c^4*d))*a*g^3 + 1/16*a*f*g^2*(2*(-c^2*d*x^2 + d)^(3/2)*x/c
^2 - 8*(-c^2*d*x^2 + d)^(5/2)*x/(c^2*d) + 3*sqrt(-c^2*d*x^2 + d)*d*x/c^2 +
3*d^(3/2)*arcsin(c*x)/c^3) - 3/5*(-c^2*d*x^2 + d)^(5/2)*a*f^2*g/(c^2*d) + s
qrt(d)*integrate(-(b*c^2*d*g^3*x^5 + 3*b*c^2*d*f*g^2*x^4 - 3*b*d*f^2*g*x -
b*d*f^3 + (3*b*c^2*d*f^2*g - b*d*g^3)*x^3 + (b*c^2*d*f^3 - 3*b*d*f*g^2)*x^2
)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)),
x)
```

<u>Fricas</u> [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="fr
icas")
```

```
[Out] integral(-(a*c^2*d*g^3*x^5 + 3*a*c^2*d*f*g^2*x^4 - 3*a*d*f^2*g*x - a*d*f^3
+ (3*a*c^2*d*f^2*g - a*d*g^3)*x^3 + (a*c^2*d*f^3 - 3*a*d*f*g^2)*x^2 + (b*c^
2*d*g^3*x^5 + 3*b*c^2*d*f*g^2*x^4 - 3*b*d*f^2*g*x - b*d*f^3 + (3*b*c^2*d*f^
```

```
2*g - b*d*g^3)*x^3 + (b*c^2*d*f^3 - 3*b*d*f*g^2)*x^2)*arcsin(c*x))*sqrt(-c^
2*d*x^2 + d), x)
```

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

$$\int \left(-d(cx-1)\,(cx+1)\right)^{\frac{3}{2}}\,(a+b\operatorname{asin}{(cx)})\,(f+gx)^3\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x)),x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))*(f + g*x)**3, x)
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="gi
ac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(f+g\,x\right)}^3\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(d-c^2\,d\,x^2\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^3*(a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int((f + g*x)^3*(a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2), x)
```

3.37 $\int (f+gx)^2 \left(d-c^2dx^2\right)^{3/2} (a+b\textbf{ArcSin}(cx)) \, dx$

Optimal. Leaf size=680

$$\frac{2bdfgx\sqrt{d-c^2dx^2}}{5c\sqrt{1-c^2x^2}}-\frac{5bcdf^2x^2\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}}+\frac{bdg^2x^2\sqrt{d-c^2dx^2}}{32c\sqrt{1-c^2x^2}}-\frac{4bcdfgx^3\sqrt{d-c^2dx^2}}{15\sqrt{1-c^2x^2}}+\frac{bc^3df^2x^4\sqrt{d-c^2}}{16\sqrt{1-c^2x^2}}$$

```
[Out] 3/8*d*f^2*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)-1/16*d*g^2*x*(a+b*arcsin
(c*x))*(-c^2*d*x^2+d)^(1/2)/c^2+1/8*d*g^2*x^3*(a+b*arcsin(c*x))*(-c^2*d*x^2
+d)^(1/2)+1/4*d*f^2*x*(-c^2*x^2+1)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)+1
/6*d*g^2*x^3*(-c^2*x^2+1)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)-2/5*d*f*g*
(-c^2*x^2+1)^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c^2+2/5*b*d*f*g*x*(-c
^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-5/16*b*c*d*f^2*x^2*(-c^2*d*x^2+d)^(1
/2)/(-c^2*x^2+1)^(1/2)+1/32*b*d*g^2*x^2*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)
^(1/2)-4/15*b*c*d*f*g*x^3*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/16*b*c^
3*d*f^2*x^4*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-7/96*b*c*d*g^2*x^4*(-c^
2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+2/25*b*c^3*d*f*g*x^5*(-c^2*d*x^2+d)^(1/
2)/(-c^2*x^2+1)^(1/2)+1/36*b*c^3*d*g^2*x^6*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1
)^(1/2)+3/16*d*f^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/b/c/(-c^2*x^2+1
)^(1/2)+1/32*d*g^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/b/c^3/(-c^2*x^2
+1)^(1/2)
```

Rubi [A]
time = 0.49, antiderivative size = 680, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 12, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.387$, Rules used = {4861, 4847, 4743, 4741, 4737, 30, 14, 4767, 200, 4787, 4783, 4795}

$$\frac{3}{8}df^2x\sqrt{d-c^2dx^2}(a+b\text{ArcSin}(cx))+\frac{1}{4}df^2x(1-c^2x^2)\sqrt{d-c^2dx^2}(a+b\text{ArcSin}(cx))+\frac{3df^2\sqrt{d-c^2dx^2}(a+b\text{ArcSin}(cx))^2}{16bc\sqrt{1-c^2x^2}}-\frac{2dfg(1-c^2x^2)^2\sqrt{d-c^2dx^2}(a+b\text{ArcSin}(cx))}{5c^2}-\frac{dg^2x\sqrt{d-c^2dx^2}(a+b\text{ArcSin}(cx))}{16c^2}+\frac{1}{8}dg^2x^3\sqrt{d-c^2dx^2}(a+b\text{ArcSin}(cx))+\frac{1}{6}dg^2x^3(1-c^2x^2)\sqrt{d-c^2dx^2}(a+b\text{ArcSin}(cx))+\frac{dg^2\sqrt{d-c^2dx^2}(a+b\text{ArcSin}(cx))^2}{32bc^3\sqrt{1-c^2x^2}}-\frac{5bcdf^2x^2\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}}+\frac{2bdfgx\sqrt{d-c^2dx^2}}{5c\sqrt{1-c^2x^2}}-\frac{4bcdfgx^3\sqrt{d-c^2dx^2}}{15\sqrt{1-c^2x^2}}+\frac{bdg^2x^2\sqrt{d-c^2dx^2}}{32c\sqrt{1-c^2x^2}}-\frac{7bcdg^2x^4\sqrt{d-c^2dx^2}}{96\sqrt{1-c^2x^2}}+\frac{bc^3df^2x^4\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}}+\frac{2bc^3dfgx^5\sqrt{d-c^2dx^2}}{25\sqrt{1-c^2x^2}}+\frac{bc^3dg^2x^6\sqrt{d-c^2dx^2}}{36\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (2*b*d*f*g*x*Sqrt[d - c^2*d*x^2])/(5*c*Sqrt[1 - c^2*x^2]) - (5*b*c*d*f^2*x^
2*Sqrt[d - c^2*d*x^2])/(16*Sqrt[1 - c^2*x^2]) + (b*d*g^2*x^2*Sqrt[d - c^2*d
*x^2])/(32*c*Sqrt[1 - c^2*x^2]) - (4*b*c*d*f*g*x^3*Sqrt[d - c^2*d*x^2])/(15
*Sqrt[1 - c^2*x^2]) + (b*c^3*d*f^2*x^4*Sqrt[d - c^2*d*x^2])/(16*Sqrt[1 - c^
2*x^2]) - (7*b*c*d*g^2*x^4*Sqrt[d - c^2*d*x^2])/(96*Sqrt[1 - c^2*x^2]) + (2
*b*c^3*d*f*g*x^5*Sqrt[d - c^2*d*x^2])/(25*Sqrt[1 - c^2*x^2]) + (b*c^3*d*g^2
*x^6*Sqrt[d - c^2*d*x^2])/(36*Sqrt[1 - c^2*x^2]) + (3*d*f^2*x*Sqrt[d - c^2*
d*x^2]*(a + b*ArcSin[c*x]))/8 - (d*g^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[
c*x]))/(16*c^2) + (d*g^2*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/8 + (
d*f^2*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/4 + (d*g^2*x
^3*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/6 - (2*d*f*g*(1 -
 c^2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(5*c^2) + (3*d*f^2*Sqr
```

```
t[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(16*b*c*Sqrt[1 - c^2*x^2]) + (d*g^2
*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(32*b*c^3*Sqrt[1 - c^2*x^2])
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

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

Rule 200

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4737

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

Rule 4741

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

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[x*(d + e*x^2)^p*((a + b*ArcSin[c*x])^n/(2*p + 1)), x] + (D
ist[2*d*(p/(2*p + 1)), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[b*c*(n/(2*p + 1))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[x*(1 -
c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c,
d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
```

```
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4783

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

Rule 4787

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[(f*x)^(m + 1)*(d + e*x^2)^p*((a + b*ArcS
in[c*x])^n/(f*(m + 2*p + 1))), x] + (Dist[2*d*(p/(m + 2*p + 1)), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[b*c*(n/(f*(m + 2
*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)^(m + 1)*(1 - c^2*x
^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0] &&  !LtQ[m, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
```

```
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int (f+gx)^2 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right) dx = \frac{\left(d\sqrt{d-c^2dx^2}\right)\int (f+gx)^2 \left(1-c^2x^2\right)^{3/2} \left(a+b\sin^{-1}(c\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d\sqrt{d-c^2dx^2}\right)\int \left(f^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)+\right.}{}$$

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

$$= \frac{1}{4}df^2x\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{6}dg^2x$$

$$= \frac{3}{8}df^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{8}dg^2x^3\sqrt{d-c^2d}$$

$$= \frac{2bdfgx\sqrt{d-c^2dx^2}}{5c\sqrt{1-c^2x^2}}-\frac{5bcdf^2x^2\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}}-\frac{4bcdfgx}{15\sqrt{}}$$

$$= \frac{2bdfgx\sqrt{d-c^2dx^2}}{5c\sqrt{1-c^2x^2}}-\frac{5bcdf^2x^2\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}}+\frac{bdg^2x^2\sqrt{}}{32c\sqrt{}}$$

Mathematica [A]
time = 0.34, size = 332, normalized size = 0.49

$$\frac{d\sqrt{d-c^2dx^2}\left(225a^2(6c^2f^2+g^2)+b^2c^2x\left(450c^2f^2x(-5+c^2x^2)+192fg(15-10c^2x^2+3c^4x^4)+25g^2x(9-21c^2x^2+8c^4x^4)\right)-30abc\sqrt{1-c^2x^2}\left(96fg(-1+c^2x^2)^2+30c^2f^2x(-5+2c^2x^2)+5g^2x(3-14c^2x^2+8c^4x^4)\right)+30b\left(15a(6c^2f^2+g^2)-bc\sqrt{1-c^2x^2}\left(96fg(-1+c^2x^2)^2+30c^2f^2x(-5+2c^2x^2)+5g^2x(3-14c^2x^2+8c^4x^4)\right)\right)\mathrm{ArcSin}(cx)+225b^2(6c^2f^2+g^2)\mathrm{ArcSin}(cx)^2\right)}{7200bc^3\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d*Sqrt[d - c^2*d*x^2]*(225*a^2*(6*c^2*f^2 + g^2) + b^2*c^2*x*(450*c^2*f^2*
x*(-5 + c^2*x^2) + 192*f*g*(15 - 10*c^2*x^2 + 3*c^4*x^4) + 25*g^2*x*(9 - 21
*c^2*x^2 + 8*c^4*x^4)) - 30*a*b*c*Sqrt[1 - c^2*x^2]*(96*f*g*(-1 + c^2*x^2)^
2 + 30*c^2*f^2*x*(-5 + 2*c^2*x^2) + 5*g^2*x*(3 - 14*c^2*x^2 + 8*c^4*x^4)) +
 30*b*(15*a*(6*c^2*f^2 + g^2) - b*c*Sqrt[1 - c^2*x^2]*(96*f*g*(-1 + c^2*x^2
)^2 + 30*c^2*f^2*x*(-5 + 2*c^2*x^2) + 5*g^2*x*(3 - 14*c^2*x^2 + 8*c^4*x^4))
)*ArcSin[c*x] + 225*b^2*(6*c^2*f^2 + g^2)*ArcSin[c*x]^2))/(7200*b*c^3*Sqrt[
1 - c^2*x^2])
```

Maple [C] Result contains complex when optimal does not.
time = 0.63, size = 1552, normalized size = 2.28

method	result	size
default	Expression too large to display	1552

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x,method=_RETURNVERBOS
E)
```

```
[Out] -1/6*a*g^2*x*(-c^2*d*x^2+d)^(5/2)/c^2/d+1/24*a*g^2/c^2*x*(-c^2*d*x^2+d)^(3/
2)+1/16*a*g^2/c^2*d*x*(-c^2*d*x^2+d)^(1/2)+1/16*a*g^2/c^2*d^2/(c^2*d)^(1/2)
*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-2/5*a*f*g/c^2/d*(-c^2*d*x^2+d
)^(5/2)+1/4*a*f^2*x*(-c^2*d*x^2+d)^(3/2)+3/8*a*f^2*d*x*(-c^2*d*x^2+d)^(1/2)
+3/8*a*f^2*d^2/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+b
*(-1/32*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/(c^2*x^2-1)*arcsin(c*
x)^2*(6*c^2*f^2+g^2)*d-1/2304*(-d*(c^2*x^2-1))^(1/2)*(-32*I*(-c^2*x^2+1)^(1
/2)*x^6*c^6+32*c^7*x^7+48*I*(-c^2*x^2+1)^(1/2)*x^4*c^4-64*c^5*x^5-18*I*(-c^
2*x^2+1)^(1/2)*x^2*c^2+38*c^3*x^3+I*(-c^2*x^2+1)^(1/2)-6*c*x)*g^2*(I+6*arcs
in(c*x))*d/c^3/(c^2*x^2-1)-1/400*(-d*(c^2*x^2-1))^(1/2)*(16*c^6*x^6-28*c^4*
x^4-16*I*(-c^2*x^2+1)^(1/2)*x^5*c^5+13*c^2*x^2+20*I*(-c^2*x^2+1)^(1/2)*x^3*
c^3-5*I*(-c^2*x^2+1)^(1/2)*x*c-1)*f*g*(I+5*arcsin(c*x))*d/c^2/(c^2*x^2-1)-1
/512*(-d*(c^2*x^2-1))^(1/2)*(-8*I*(-c^2*x^2+1)^(1/2)*x^4*c^4+8*c^5*x^5+8*I*
(-c^2*x^2+1)^(1/2)*x^2*c^2-12*c^3*x^3-I*(-c^2*x^2+1)^(1/2)+4*c*x)*(8*arcsin
(c*x)*c^2*f^2+2*I*f^2*c^2-4*arcsin(c*x)*g^2-I*g^2)*d/c^3/(c^2*x^2-1)-1/8*(-
d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*f*g*(arcsin(c*x)+
I)*d/c^2/(c^2*x^2-1)-1/8*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c
^2*x^2-1)*f*g*(arcsin(c*x)-I)*d/c^2/(c^2*x^2-1)+1/256*(-d*(c^2*x^2-1))^(1/2
)*(2*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+2*c^3*x^3-I*(-c^2*x^2+1)^(1/2)-2*c*x)*(-1
6*I*f^2*c^2+32*arcsin(c*x)*c^2*f^2-I*g^2+2*arcsin(c*x)*g^2)*d/c^3/(c^2*x^2-
1)+1/48*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*
I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*f*g*(-I+3*arcsin(c*x))*d/c^2/(c^2*x^2
-1)-1/2304*(-d*(c^2*x^2-1))^(1/2)*(32*I*(-c^2*x^2+1)^(1/2)*x^6*c^6+32*c^7*x
^7-48*I*(-c^2*x^2+1)^(1/2)*x^4*c^4-64*c^5*x^5+18*I*(-c^2*x^2+1)^(1/2)*x^2*c
^2+38*c^3*x^3-I*(-c^2*x^2+1)^(1/2)-6*c*x)*g^2*(-I+6*arcsin(c*x))*d/c^3/(c^2
*x^2-1)-1/600*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*f
*g*(11*I+45*arcsin(c*x))*cos(4*arcsin(c*x))*d/c^2/(c^2*x^2-1)-1/300*(-d*(c^
2*x^2-1))^(1/2)*(I*x^2*c^2-c*x*(-c^2*x^2+1)^(1/2)-I)*f*g*(7*I+15*arcsin(c*x
))*sin(4*arcsin(c*x))*d/c^2/(c^2*x^2-1)-1/512*(-d*(c^2*x^2-1))^(1/2)*(I*x^2
*c^2-c*x*(-c^2*x^2+1)^(1/2)-I)*(34*I*f^2*c^2+56*arcsin(c*x)*c^2*f^2+I*g^2+8
*arcsin(c*x)*g^2)*cos(3*arcsin(c*x))*d/c^3/(c^2*x^2-1)+3/512*(-d*(c^2*x^2-1
))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(10*I*f^2*c^2+24*arcsin(c*x)*
c^2*f^2+I*g^2)*sin(3*arcsin(c*x))*d/c^3/(c^2*x^2-1))
```

Maxima [F]

time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="ma
xima")
```

```
[Out] 1/8*(2*(-c^2*d*x^2 + d)^(3/2)*x + 3*sqrt(-c^2*d*x^2 + d)*d*x + 3*d^(3/2)*ar
csin(c*x)/c)*a*f^2 + 1/48*a*g^2*(2*(-c^2*d*x^2 + d)^(3/2)*x/c^2 - 8*(-c^2*d
*x^2 + d)^(5/2)*x/(c^2*d) + 3*sqrt(-c^2*d*x^2 + d)*d*x/c^2 + 3*d^(3/2)*arcs
in(c*x)/c^3) - 2/5*(-c^2*d*x^2 + d)^(5/2)*a*f*g/(c^2*d) + sqrt(d)*integrate
(-(b*c^2*d*g^2*x^4 + 2*b*c^2*d*f*g*x^3 - 2*b*d*f*g*x - b*d*f^2 + (b*c^2*d*f
^2 - b*d*g^2)*x^2)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*
sqrt(-c*x + 1)), x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="fr
icas")
```

```
[Out] integral(-(a*c^2*d*g^2*x^4 + 2*a*c^2*d*f*g*x^3 - 2*a*d*f*g*x - a*d*f^2 + (a
*c^2*d*f^2 - a*d*g^2)*x^2 + (b*c^2*d*g^2*x^4 + 2*b*c^2*d*f*g*x^3 - 2*b*d*f*
g*x - b*d*f^2 + (b*c^2*d*f^2 - b*d*g^2)*x^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 +
 d), x)
```

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

$$\int (-d(cx-1)\,(cx+1))^{\frac{3}{2}}\,(a+b\,\mathrm{asin}\,(cx))\,(f+gx)^2\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x)),x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))*(f + g*x)**2, x)
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="gi
ac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (f+g\,x)^2\,(a+b\,\mathrm{asin}(c\,x))\,\left(d-c^2\,d\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2*(a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int((f + g*x)^2*(a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2), x)
```

3.38 $\int (f+gx) \left(d-c^2dx^2\right)^{3/2} (a+b\text{ArcSin}(cx)) \, dx$

Optimal. Leaf size=370

$$\frac{bdgx\sqrt{d-c^2dx^2}}{5c\sqrt{1-c^2x^2}}-\frac{5bcdfx^2\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}}-\frac{2bcdgx^3\sqrt{d-c^2dx^2}}{15\sqrt{1-c^2x^2}}+\frac{bc^3dfx^4\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}}+\frac{bc^3dgx^5\sqrt{d-c^2dx^2}}{25\sqrt{1-c^2x^2}}$$

```
[Out] 3/8*d*f*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)+1/4*d*f*x*(-c^2*x^2+1)*(a+
b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)-1/5*d*g*(-c^2*x^2+1)^2*(a+b*arcsin(c*x)
)*(-c^2*d*x^2+d)^(1/2)/c^2+1/5*b*d*g*x*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^
(1/2)-5/16*b*c*d*f*x^2*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-2/15*b*c*d*g
*x^3*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/16*b*c^3*d*f*x^4*(-c^2*d*x^2
+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/25*b*c^3*d*g*x^5*(-c^2*d*x^2+d)^(1/2)/(-c^2*
x^2+1)^(1/2)+3/16*d*f*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/b/c/(-c^2*x^
2+1)^(1/2)
```

Rubi [A]

time = 0.23, antiderivative size = 370, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.310$, Rules used = {4861, 4847, 4743, 4741, 4737, 30, 14, 4767, 200}

$$\frac{3}{8}dfx\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))+\frac{1}{4}dfx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))+\frac{3df\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))^2}{16bc\sqrt{1-c^2x^2}}-\frac{dg\left(1-c^2x^2\right)^2\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))}{5c^2}-\frac{5bcdfx^2\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}}+\frac{bdgx\sqrt{d-c^2dx^2}}{5c\sqrt{1-c^2x^2}}-\frac{2bcdgx^3\sqrt{d-c^2dx^2}}{15\sqrt{1-c^2x^2}}+\frac{bc^3dfx^4\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}}+\frac{bc^3dgx^5\sqrt{d-c^2dx^2}}{25\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*d*g*x*Sqrt[d - c^2*d*x^2])/(5*c*Sqrt[1 - c^2*x^2]) - (5*b*c*d*f*x^2*Sqrt
[d - c^2*d*x^2])/(16*Sqrt[1 - c^2*x^2]) - (2*b*c*d*g*x^3*Sqrt[d - c^2*d*x^2
])/(15*Sqrt[1 - c^2*x^2]) + (b*c^3*d*f*x^4*Sqrt[d - c^2*d*x^2])/(16*Sqrt[1
- c^2*x^2]) + (b*c^3*d*g*x^5*Sqrt[d - c^2*d*x^2])/(25*Sqrt[1 - c^2*x^2]) +
(3*d*f*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/8 + (d*f*x*(1 - c^2*x^2)*
Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/4 - (d*g*(1 - c^2*x^2)^2*Sqrt[d -
c^2*d*x^2]*(a + b*ArcSin[c*x]))/(5*c^2) + (3*d*f*Sqrt[d - c^2*d*x^2]*(a + b
*ArcSin[c*x])^2)/(16*b*c*Sqrt[1 - c^2*x^2])
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

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

Rule 200

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4737

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

Rule 4741

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

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[x*(d + e*x^2)^p*((a + b*ArcSin[c*x])^n/(2*p + 1)), x] + (D
ist[2*d*(p/(2*p + 1)), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[b*c*(n/(2*p + 1))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[x*(1 -
c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c,
d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0]
```

Rule 4767

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

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

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

$$= \frac{\left(d\sqrt{d-c^2dx^2}\right)\int \left(f\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)+ga\right.}{\sqrt{1-c^2x^2}}$$

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

$$= \frac{1}{4}dfx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)-\frac{dg(1-c}{}$$

$$= \frac{3}{8}dfx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}dfx\left(1-c^2x^2\right)\sqrt{d}$$

$$= \frac{bdgx\sqrt{d-c^2dx^2}}{5c\sqrt{1-c^2x^2}}-\frac{5bcdfx^2\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}}-\frac{2bcdgx^3\sqrt{d-}}{15\sqrt{1-}}$$

Mathematica [A]
time = 0.22, size = 216, normalized size = 0.58

$$\frac{d\sqrt{d-c^2dx^2}\left(225a^2cf-30ab\sqrt{1-c^2x^2}\left(8g\left(-1+c^2x^2\right)^2+5c^2fx\left(-5+2c^2x^2\right)\right)+b^2cx\left(75c^2fx\left(-5+c^2x^2\right)+16g\left(15-10c^2x^2+3c^4x^4\right)\right)+30b\left(15acf+b\sqrt{1-c^2x^2}\left(5c^2fx\left(5-2c^2x^2\right)-8g\left(-1+c^2x^2\right)^2\right)\right)\mathrm{ArcSin}(cx)+225b^2cf\,\mathrm{ArcSin}(cx)^2\right)}{1200bc^2\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d*Sqrt[d - c^2*d*x^2]*(225*a^2*c*f - 30*a*b*Sqrt[1 - c^2*x^2]*(8*g*(-1 + c
^2*x^2)^2 + 5*c^2*f*x*(-5 + 2*c^2*x^2)) + b^2*c*x*(75*c^2*f*x*(-5 + c^2*x^2
) + 16*g*(15 - 10*c^2*x^2 + 3*c^4*x^4)) + 30*b*(15*a*c*f + b*Sqrt[1 - c^2*x
^2]*(5*c^2*f*x*(5 - 2*c^2*x^2) - 8*g*(-1 + c^2*x^2)^2))*ArcSin[c*x] + 225*b
^2*c*f*ArcSin[c*x]^2))/(1200*b*c^2*Sqrt[1 - c^2*x^2])
```

Maple [C] Result contains complex when optimal does not.
time = 0.49, size = 1014, normalized size = 2.74

method	result
default	$-\frac{ag(-c^2d\,x^2+d)^{\frac{5}{2}}}{5c^2d}+\frac{afx(-c^2d\,x^2+d)^{\frac{3}{2}}}{4}+\frac{3afdx\sqrt{-c^2d\,x^2+d}}{8}+\frac{3af\,d^2\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2d\,x^2+d}}\right)}{8\sqrt{c^2d}}+b\left(-\frac{3\sqrt{}}{}\right.$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x,method=_RETURNVERBOSE)
```

```
[Out] -1/5*a*g/c^2/d*(-c^2*d*x^2+d)^(5/2)+1/4*a*f*x*(-c^2*d*x^2+d)^(3/2)+3/8*a*f*
d*x*(-c^2*d*x^2+d)^(1/2)+3/8*a*f*d^2/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(
-c^2*d*x^2+d)^(1/2))+b*(-3/16*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/(
c^2*x^2-1)*arcsin(c*x)^2*f*d-1/800*(-d*(c^2*x^2-1))^(1/2)*(16*c^6*x^6-28*c^
4*x^4-16*I*(-c^2*x^2+1)^(1/2)*x^5*c^5+13*c^2*x^2+20*I*(-c^2*x^2+1)^(1/2)*x^
3*c^3-5*I*(-c^2*x^2+1)^(1/2)*x*c-1)*g*(I+5*arcsin(c*x))*d/c^2/(c^2*x^2-1)-1
/256*(-d*(c^2*x^2-1))^(1/2)*(-8*I*(-c^2*x^2+1)^(1/2)*x^4*c^4+8*c^5*x^5+8*I*
(-c^2*x^2+1)^(1/2)*x^2*c^2-12*c^3*x^3-I*(-c^2*x^2+1)^(1/2)+4*c*x)*f*(I+4*ar
csin(c*x))*d/c/(c^2*x^2-1)-1/16*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2
+1)^(1/2)*x*c-1)*g*(arcsin(c*x)+I)*d/c^2/(c^2*x^2-1)-1/16*(-d*(c^2*x^2-1))^
(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(arcsin(c*x)-I)*d/c^2/(c^2*x^2
-1)+1/16*(-d*(c^2*x^2-1))^(1/2)*(2*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+2*c^3*x^3-I
*(-c^2*x^2+1)^(1/2)-2*c*x)*f*(-I+2*arcsin(c*x))*d/c/(c^2*x^2-1)+1/96*(-d*(c
^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)
^(1/2)*x*c-5*c^2*x^2+1)*g*(-I+3*arcsin(c*x))*d/c^2/(c^2*x^2-1)-1/1200*(-d*(
c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(11*I+45*arcsin(c*
x))*cos(4*arcsin(c*x))*d/c^2/(c^2*x^2-1)-1/600*(-d*(c^2*x^2-1))^(1/2)*(I*x^
2*c^2-c*x*(-c^2*x^2+1)^(1/2)-I)*g*(7*I+15*arcsin(c*x))*sin(4*arcsin(c*x))*d
/c^2/(c^2*x^2-1)-1/256*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2-c*x*(-c^2*x^2+1)^(
1/2)-I)*f*(17*I+28*arcsin(c*x))*cos(3*arcsin(c*x))*d/c/(c^2*x^2-1)+3/256*(-
d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*f*(5*I+12*arcsin(
c*x))*sin(3*arcsin(c*x))*d/c/(c^2*x^2-1))
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="maxi
ma")
```

```
[Out] 1/8*(2*(-c^2*d*x^2 + d)^(3/2)*x + 3*sqrt(-c^2*d*x^2 + d)*d*x + 3*d^(3/2)*ar
csin(c*x)/c)*a*f - 1/5*(-c^2*d*x^2 + d)^(5/2)*a*g/(c^2*d) + sqrt(d)*integra
te(-(b*c^2*d*g*x^3 + b*c^2*d*f*x^2 - b*d*g*x - b*d*f)*sqrt(c*x + 1)*sqrt(-c
*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)), x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="fric
as")
```

```
[Out] integral(-(a*c^2*d*g*x^3 + a*c^2*d*f*x^2 - a*d*g*x - a*d*f + (b*c^2*d*g*x^3
 + b*c^2*d*f*x^2 - b*d*g*x - b*d*f)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d), x)
```

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

$$\int \left(-d(cx-1)\left(cx+1\right)\right)^{\frac{3}{2}}\left(a+b\operatorname{asin}\left(cx\right)\right)\left(f+gx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x)),x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))*(f + g*x), x)
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="giac
")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (f+g\,x)\,\left(a+b\,\mathrm{asin}(c\,x)\right)\,{\left(d-c^2\,d\,x^2\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int((f + g*x)*(a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2), x)
```

3.39 $\int \frac{\left(d-c^2dx^2\right)^{3/2}(a+b\mathbf{ArcSin}(cx))}{f+gx}\,dx$

Optimal. Leaf size=1073

$$-\frac{ad(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3}-\frac{bcdx\sqrt{d-c^2dx^2}}{3g\sqrt{1-c^2x^2}}+\frac{bcd(cf-g)(cf+g)x\sqrt{d-c^2dx^2}}{g^3\sqrt{1-c^2x^2}}-\frac{bc^3dfx^2\sqrt{d-c^2}}{4g^2\sqrt{1-c^2x^2}}$$

```
[Out] -a*d*(c*f-g)*(c*f+g)*(-c^2*d*x^2+d)^(1/2)/g^3-b*d*(c*f-g)*(c*f+g)*arcsin(c*
x)*(-c^2*d*x^2+d)^(1/2)/g^3+1/2*c^2*d*f*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^
(1/2)/g^2+1/3*d*(-c^2*x^2+1)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/g-1/3*b
*c*d*x*(-c^2*d*x^2+d)^(1/2)/g/(-c^2*x^2+1)^(1/2)+b*c*d*(c*f-g)*(c*f+g)*x*(-
c^2*d*x^2+d)^(1/2)/g^3/(-c^2*x^2+1)^(1/2)-1/4*b*c^3*d*f*x^2*(-c^2*d*x^2+d)^
(1/2)/g^2/(-c^2*x^2+1)^(1/2)+1/9*b*c^3*d*x^3*(-c^2*d*x^2+d)^(1/2)/g/(-c^2*x
^2+1)^(1/2)+1/4*c*d*f*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/b/g^2/(-c^2*
x^2+1)^(1/2)-1/2*c*d*(c*f-g)*(c*f+g)*x*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(
1/2)/b/g^3/(-c^2*x^2+1)^(1/2)-1/2*d*(c^2*f^2-g^2)^2*(a+b*arcsin(c*x))^2*(-c
^2*d*x^2+d)^(1/2)/b/c/g^4/(g*x+f)/(-c^2*x^2+1)^(1/2)+a*d*(c^2*f^2-g^2)^(3/2
)*arctan((c^2*f*x+g)/(c^2*f^2-g^2)^(1/2)/(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)
^(1/2)/g^4/(-c^2*x^2+1)^(1/2)+I*b*d*(c^2*f^2-g^2)^(3/2)*arcsin(c*x)*ln(1-I*
(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))*(-c^2*d*x^2+d)^(1/2
)/g^4/(-c^2*x^2+1)^(1/2)-I*b*d*(c^2*f^2-g^2)^(3/2)*arcsin(c*x)*ln(1-I*(I*c*
x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))*(-c^2*d*x^2+d)^(1/2)/g^4
/(-c^2*x^2+1)^(1/2)-b*d*(c^2*f^2-g^2)^(3/2)*polylog(2,I*(I*c*x+(-c^2*x^2+1)
^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))*(-c^2*d*x^2+d)^(1/2)/g^4/(-c^2*x^2+1)^
(1/2)+b*d*(c^2*f^2-g^2)^(3/2)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f
+(c^2*f^2-g^2)^(1/2)))*(-c^2*d*x^2+d)^(1/2)/g^4/(-c^2*x^2+1)^(1/2)-1/2*d*(c
*f-g)*(c*f+g)*(a+b*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)*(-c^2*d*x^2+d)^(1/2)/b
/c/g^2/(g*x+f)
```

Rubi [A]

time = 1.55, antiderivative size = 1073, normalized size of antiderivative = 1.00, number of steps used = 29, number of rules used = 23, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.742$, Rules used = {4861, 4851, 4741, 4737, 30, 4767, 4849, 697, 4841, 6874, 739, 210, 1668, 12, 4883, 4881, 8, 4857, 3404, 2296, 2221, 2317, 2438}

$$\frac{bdx^3\sqrt{d-c^2dx^2}\,c^3}{9g\sqrt{1-c^2x^2}}-\frac{bdfx^2\sqrt{d-c^2dx^2}\,c^3}{4g^2\sqrt{1-c^2x^2}}+\frac{dfx\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))c^2}{2g^2}-\frac{d(cf-g)(cf+g)x\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))^2c}{2bg^3\sqrt{1-c^2x^2}}+\frac{df\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))^2c}{4bg^2\sqrt{1-c^2x^2}}+\frac{bd(cf-g)(cf+g)x\sqrt{d-c^2dx^2}\,c}{g^3\sqrt{1-c^2x^2}}-\frac{bdx\sqrt{d-c^2dx^2}\,c}{3g\sqrt{1-c^2x^2}}-\frac{bd(cf-g)(cf+g)\sqrt{d-c^2dx^2}\,\text{ArcSin}(cx)}{g^3}+\frac{d(1-c^2x^2)\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))}{3g}+\frac{ad(c^2f^2-g^2)^{3/2}\sqrt{d-c^2dx^2}\,\text{ArcTan}\left(\frac{fxc^2+g}{\sqrt{c^2f^2-g^2}\sqrt{1-c^2x^2}}\right)}{g^4\sqrt{1-c^2x^2}}-\frac{ibd(c^2f^2-g^2)^{3/2}\sqrt{d-c^2dx^2}\,\text{ArcSin}(cx)\log\left(1-\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{g^4\sqrt{1-c^2x^2}}+\frac{ibd(c^2f^2-g^2)^{3/2}\sqrt{d-c^2dx^2}\,\text{ArcSin}(cx)\log\left(1-\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)}{g^4\sqrt{1-c^2x^2}}-\frac{bd(c^2f^2-g^2)^{3/2}\sqrt{d-c^2dx^2}\,\text{Li}_2\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{g^4\sqrt{1-c^2x^2}}+\frac{bd(c^2f^2-g^2)^{3/2}\sqrt{d-c^2dx^2}\,\text{Li}_2\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)}{g^4\sqrt{1-c^2x^2}}-\frac{ad(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3}-\frac{d(cf-g)(cf+g)\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))^2}{2bg^2(f+gx)c}-\frac{d(c^2f^2-g^2)^2\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))^2}{2bg^4(f+gx)\sqrt{1-c^2x^2}\,c}$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(f + g*x),x]
```

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

```
*g^2*Sqrt[1 - c^2*x^2]) + (b*c^3*d*x^3*Sqrt[d - c^2*d*x^2])/(9*g*Sqrt[1 - c
^2*x^2]) - (b*d*(c*f - g)*(c*f + g)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/g^3 +
(c^2*d*f*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(2*g^2) + (d*(1 - c^2*x
^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*g) + (c*d*f*Sqrt[d - c^2*d*
x^2]*(a + b*ArcSin[c*x])^2)/(4*b*g^2*Sqrt[1 - c^2*x^2]) - (c*d*(c*f - g)*(c
*f + g)*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*g^3*Sqrt[1 - c^2*
x^2]) - (d*(c^2*f^2 - g^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(2*
b*c*g^4*(f + g*x)*Sqrt[1 - c^2*x^2]) - (d*(c*f - g)*(c*f + g)*Sqrt[1 - c^2*
x^2]*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c*g^2*(f + g*x)) + (a*
d*(c^2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]*ArcTan[(g + c^2*f*x)/(Sqrt[c^2*
f^2 - g^2]*Sqrt[1 - c^2*x^2])])/(g^4*Sqrt[1 - c^2*x^2]) - (I*b*d*(c^2*f^2 -
 g^2)^(3/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)
/(c*f - Sqrt[c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) + (I*b*d*(c^2*f^2 -
g^2)^(3/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/
(c*f + Sqrt[c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) - (b*d*(c^2*f^2 - g^2
)^(3/2)*Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[
c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) + (b*d*(c^2*f^2 - g^2)^(3/2)*Sqrt
[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^
2])])/(g^4*Sqrt[1 - c^2*x^2])
```

Rule 8

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

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

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

Rule 210

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

Rule 697

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[2*c*d - b*e, 0] &
& IGtQ[p, 0] &&  !(EqQ[m, 3] && NeQ[p, 1])
```

Rule 739

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

Rule 1668

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :
> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[f*(d + e*x)
^(m + q - 1)*((a + c*x^2)^(p + 1)/(c*e^(q - 1)*(m + q + 2*p + 1))), x] + Di
st[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + c*x^2)^p*ExpandToSum[c
*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1)*(d + e*x)^q - f*(d + e*x)
^(q - 2)*(a*e^2*(m + q - 1) - c*d^2*(m + q + 2*p + 1) - 2*c*d*e*(m + q + p)
*x), x], x], x] /; GtQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, c, d,
 e, m, p}, x] && PolyQ[Pq, x] && NeQ[c*d^2 + a*e^2, 0] &&  !(EqQ[d, 0] && T
rue) &&  !(IGtQ[m, 0] && RationalQ[a, c, d, e] && (IntegerQ[p] || ILtQ[p +
1/2, 0]))
```

Rule 2221

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

Rule 2296

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[2*(c/q), Int[
(f + g*x)^m*(F^u/(b - q + 2*c*F^u)), x], x] - Dist[2*(c/q), Int[(f + g*x)^m
*(F^u/(b + q + 2*c*F^u)), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2317

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

Rule 2438

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

Rule 3404

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[(c + d*x)^m*(E^(I*(e + f*x))/(I*b + 2*a*E^(I*(e + f*x)
) - I*b*E^(2*I*(e + f*x)))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4737

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

Rule 4741

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

Rule 4767

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

Rule 4841

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.) + (g_.)*(x_) + (h_.)*(x
_)^2)^(p_.))/((d_) + (e_.)*(x_))^2, x_Symbol] :> With[{u = IntHide[(f + g*x
 + h*x^2)^p/(d + e*x)^2, x]}, Dist[(a + b*ArcSin[c*x])^n, u, x] - Dist[b*c*
n, Int[SimplifyIntegrand[u*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*x^2]),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, h}, x] && IGtQ[n, 0] && IGtQ[p,
 0] && EqQ[e*g - 2*d*h, 0]
```

Rule 4849

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_)*Sqrt[
(d_) + (e_.)*(x_)^2], x_Symbol] :> Simp[(f + g*x)^m*(d + e*x^2)*((a + b*Arc
Sin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1))), x] - Dist[1/(b*c*Sqrt[d]*(n + 1))
, Int[(d*g*m + 2*e*f*x + e*g*(m + 2)*x^2)*(f + g*x)^(m - 1)*(a + b*ArcSin[c
```

```
*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0
] && ILtQ[m, 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4851

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[Sqrt[d + e*x^2]*(a
 + b*ArcSin[c*x])^n, (f + g*x)^m*(d + e*x^2)^(p - 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && IGtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4881

```
Int[ArcSin[(c_.)*(x_)]^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p_), x_Symbol] :
> With[{u = ExpandIntegrand[(d + e*x^2)^p*ArcSin[c*x]^n, RFx, x]}, Int[u, x
] /; SumQ[u]] /; FreeQ[{c, d, e}, x] && RationalFunctionQ[RFx, x] && IGtQ[n
, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 4883

```
Int[(ArcSin[(c_.)*(x_)]*(b_.) + (a_))^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p
_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p, RFx*(a + b*ArcSin[c*x])
^n, x], x] /; FreeQ[{a, b, c, d, e}, x] && RationalFunctionQ[RFx, x] && IGt
Q[n, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

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

$$= \frac{\left(d\sqrt{d-c^2dx^2}\right)\int \left(\frac{c^2f\sqrt{1-c^2x^2}(a+b\sin^{-1}(cx))}{g^2} - \frac{c^2x\sqrt{1-c^2x^2}(a+b}{g}\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d\left(1-\frac{c^2f^2}{g^2}\right)\sqrt{d-c^2dx^2}\right)\int \frac{\sqrt{1-c^2x^2}(a+b\sin^{-1}(cx))}{f+gx}\,dx}{\sqrt{1-c^2x^2}} + \frac{\left(c^2df\sqrt{\right.}{}$$

$$= \frac{c^2dfx\sqrt{d-c^2dx^2}(a+b\sin^{-1}(cx))}{2g^2} + \frac{d(1-c^2x^2)\sqrt{d-c^2dx^2}(a+}{3g}$$

$$= -\frac{bcdx\sqrt{d-c^2dx^2}}{3g\sqrt{1-c^2x^2}} - \frac{bc^3dfx^2\sqrt{d-c^2dx^2}}{4g^2\sqrt{1-c^2x^2}} + \frac{bc^3dx^3\sqrt{d-c^2dx^2}}{9g\sqrt{1-c^2x^2}} +$$

$$= -\frac{bcdx\sqrt{d-c^2dx^2}}{3g\sqrt{1-c^2x^2}} - \frac{bc^3dfx^2\sqrt{d-c^2dx^2}}{4g^2\sqrt{1-c^2x^2}} + \frac{bc^3dx^3\sqrt{d-c^2dx^2}}{9g\sqrt{1-c^2x^2}} +$$

$$= -\frac{bcdx\sqrt{d-c^2dx^2}}{3g\sqrt{1-c^2x^2}} - \frac{bc^3dfx^2\sqrt{d-c^2dx^2}}{4g^2\sqrt{1-c^2x^2}} + \frac{bc^3dx^3\sqrt{d-c^2dx^2}}{9g\sqrt{1-c^2x^2}} +$$

$$= -\frac{ad(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3} - \frac{bcdx\sqrt{d-c^2dx^2}}{3g\sqrt{1-c^2x^2}} - \frac{bc^3dfx^2\sqrt{}}{4g^2\sqrt{1}}$$

$$= -\frac{ad(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3} - \frac{bcdx\sqrt{d-c^2dx^2}}{3g\sqrt{1-c^2x^2}} - \frac{bc^3dfx^2\sqrt{}}{4g^2\sqrt{1}}$$

$$= -\frac{ad(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3} - \frac{bcdx\sqrt{d-c^2dx^2}}{3g\sqrt{1-c^2x^2}} - \frac{bc^3dfx^2\sqrt{}}{4g^2\sqrt{1}}$$

$$= -\frac{ad(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3} - \frac{bcdx\sqrt{d-c^2dx^2}}{3g\sqrt{1-c^2x^2}} - \frac{bcd\left(1-\right.}{g}$$

$$= -\frac{ad(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3} - \frac{bcdx\sqrt{d-c^2dx^2}}{3g\sqrt{1-c^2x^2}} - \frac{bcd\left(1-\right.}{g}$$

$$= -\frac{ad(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3} - \frac{bcdx\sqrt{d-c^2dx^2}}{3g\sqrt{1-c^2x^2}} - \frac{bcd\left(1-\right.}{g}$$

Mathematica [**A**]
time = 0.99, size = 507, normalized size = 0.47

$$\frac{d\sqrt{d-c^2dx^2}\left(-9bc^3fx^2+4bcgx(-3+c^2x^2)+18c^2fx\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))+12g(1-c^2x^2)^{3/2}\,(a+b\text{ArcSin}(cx))+\frac{9cf(a+b\text{ArcSin}(cx))^2}{b}+\frac{18(c^2f^2-g^2)(-1+c^2x^2)(a+b\text{ArcSin}(cx))^2}{bc(f+gx)}-\frac{18(c^2f^2-g^2)\left((c^2f^2-g^2)(a+b\text{ArcSin}(cx))^2+c^2gx(f+gx)(a+b\text{ArcSin}(cx))^2-2bc(f+gx)\left(bcgx-g\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))-i\sqrt{c^2f^2-g^2}\left((a+b\text{ArcSin}(cx))\left(\log\left(1+\frac{ie^{i\text{ArcSin}(cx)}g}{-cf+\sqrt{c^2f^2-g^2}}\right)-\log\left(1-\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)\right)-ib\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)+ib\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)\right)\right)\right)}{bcg^2(f+gx)}\right)}{36g^2\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(f + g*x),x]
```

```
[Out] (d*Sqrt[d - c^2*d*x^2]*(-9*b*c^3*f*x^2 + 4*b*c*g*x*(-3 + c^2*x^2) + 18*c^2*
f*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) + 12*g*(1 - c^2*x^2)^(3/2)*(a + b
*ArcSin[c*x]) + (9*c*f*(a + b*ArcSin[c*x])^2)/b + (18*(c^2*f^2 - g^2)*(-1 +
 c^2*x^2)*(a + b*ArcSin[c*x])^2)/(b*c*(f + g*x)) - (18*(c^2*f^2 - g^2)*((c^
2*f^2 - g^2)*(a + b*ArcSin[c*x])^2 + c^2*g*x*(f + g*x)*(a + b*ArcSin[c*x])^
2 - 2*b*c*(f + g*x)*(b*c*g*x - g*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) - I*
Sqrt[c^2*f^2 - g^2]*((a + b*ArcSin[c*x])*(Log[1 + (I*E^(I*ArcSin[c*x])*g)/(
-(c*f) + Sqrt[c^2*f^2 - g^2])] - Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqr
t[c^2*f^2 - g^2])]) - I*b*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^
2*f^2 - g^2])] + I*b*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2
 - g^2])]))))/(b*c*g^2*(f + g*x))))/(36*g^2*Sqrt[1 - c^2*x^2])
```

Maple [**B**] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 2741 vs. 2(999) = 1998.
time = 0.51, size = 2742, normalized size = 2.56

method	result	size
default	Expression too large to display	2742

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/(g*x+f),x,method=_RETURNVERBOSE)
```

```
[Out] -I*b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d/(c^2*
x^2-1)/g^4*dilog(-I/(-I*c*f+(-c^2*f^2+g^2)^(1/2))*c*f-1/(-I*c*f+(-c^2*f^2+g
^2)^(1/2))*(I*c*x+(-c^2*x^2+1)^(1/2))*g+1/(-I*c*f+(-c^2*f^2+g^2)^(1/2))*(-c
^2*f^2+g^2)^(1/2))*c^2*f^2+I*b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*
(-c^2*x^2+1)^(1/2)*d/(c^2*x^2-1)/g^4*dilog(I/(I*c*f+(-c^2*f^2+g^2)^(1/2))*c
*f+1/(I*c*f+(-c^2*f^2+g^2)^(1/2))*(I*c*x+(-c^2*x^2+1)^(1/2))*g+1/(I*c*f+(-c
^2*f^2+g^2)^(1/2))*(-c^2*f^2+g^2)^(1/2))*c^2*f^2-b*(-c^2*f^2+g^2)^(1/2)*(-d
*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d/(c^2*x^2-1)/g^4*ln((I*c*f+(I*c*x+(
-c^2*x^2+1)^(1/2))*g+(-c^2*f^2+g^2)^(1/2))/(I*c*f+(-c^2*f^2+g^2)^(1/2)))*ar
csin(c*x)*c^2*f^2+b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1
)^(1/2)*d/(c^2*x^2-1)/g^4*ln((-I*c*f-(I*c*x+(-c^2*x^2+1)^(1/2))*g+(-c^2*f^2
+g^2)^(1/2))/(-I*c*f+(-c^2*f^2+g^2)^(1/2)))*arcsin(c*x)*c^2*f^2+a/g*d*(-c^2
*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2)+1/3*a/g*(-c^2*d
*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(3/2)-a/g^3*d*(-c^2*d*(
x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2)*c^2*f^2-1/8*b*(-d*(
```

```
c^2*x^2-1))^(1/2)*f*d*c/(c^2*x^2-1)/g^2*(-c^2*x^2+1)^(1/2)-1/9*b*(-d*(c^2*x
^2-1))^(1/2)*d/(c^2*x^2-1)/g*(-c^2*x^2+1)^(1/2)*x^3*c^3-a/g*d^2/(-d*(c^2*f^
2-g^2)/g^2)^(1/2)*ln((-2*d*(c^2*f^2-g^2)/g^2+2*c^2*d*f/g*(x+f/g)+2*(-d*(c^2
*f^2-g^2)/g^2)^(1/2)*(-c^2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/
g^2)^(1/2))/(x+f/g))-a/g^5*d^2/(-d*(c^2*f^2-g^2)/g^2)^(1/2)*ln((-2*d*(c^2*f
^2-g^2)/g^2+2*c^2*d*f/g*(x+f/g)+2*(-d*(c^2*f^2-g^2)/g^2)^(1/2)*(-c^2*d*(x+f
/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))/(x+f/g))*c^4*f^4+2*a/
g^3*d^2/(-d*(c^2*f^2-g^2)/g^2)^(1/2)*ln((-2*d*(c^2*f^2-g^2)/g^2+2*c^2*d*f/g
*(x+f/g)+2*(-d*(c^2*f^2-g^2)/g^2)^(1/2)*(-c^2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/
g)-d*(c^2*f^2-g^2)/g^2)^(1/2))/(x+f/g))*c^2*f^2+4/3*b*(-d*(c^2*x^2-1))^(1/2
)*d/(c^2*x^2-1)/g*(-c^2*x^2+1)^(1/2)*x*c-1/3*b*(-d*(c^2*x^2-1))^(1/2)*d/(c^
2*x^2-1)/g*arcsin(c*x)*x^4*c^4+5/3*b*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)/g
*arcsin(c*x)*x^2*c^2+b*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)/g^3*arcsin(c*x)
*c^2*f^2-4/3*b*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)/g*arcsin(c*x)+1/2*a/g^2
*c^2*d*f*(-c^2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2)*x
+3/2*a/g^2*c^2*d^2*f/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*(x+f/g)^2
+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))-a/g^4*d^2*c^4*f^3/(c^2*d)^
(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f
^2-g^2)/g^2)^(1/2))+1/4*b*(-d*(c^2*x^2-1))^(1/2)*f*d*c^3/(c^2*x^2-1)/g^2*(-
c^2*x^2+1)^(1/2)*x^2-b*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)/g^3*(-c^2*x^2+1
)^(1/2)*x*c^3*f^2+b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1
)^(1/2)*d/(c^2*x^2-1)/g^2*ln((I*c*f+(I*c*x+(-c^2*x^2+1)^(1/2))*g+(-c^2*f^2+
g^2)^(1/2))/(I*c*f+(-c^2*f^2+g^2)^(1/2)))*arcsin(c*x)-b*(-c^2*f^2+g^2)^(1/2
)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d/(c^2*x^2-1)/g^2*ln((-I*c*f-(I
*c*x+(-c^2*x^2+1)^(1/2))*g+(-c^2*f^2+g^2)^(1/2))/(-I*c*f+(-c^2*f^2+g^2)^(1/
2)))*arcsin(c*x)-I*b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+
1)^(1/2)*d/(c^2*x^2-1)/g^2*dilog(I/(I*c*f+(-c^2*f^2+g^2)^(1/2))*c*f+1/(I*c*
f+(-c^2*f^2+g^2)^(1/2))*(I*c*x+(-c^2*x^2+1)^(1/2))*g+1/(I*c*f+(-c^2*f^2+g^2
)^(1/2))*(-c^2*f^2+g^2)^(1/2))-1/2*b*(-d*(c^2*x^2-1))^(1/2)*f*d*c^2/(c^2*x^
2-1)/g^2*arcsin(c*x)*x-b*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)/g^3*arcsin(c*
x)*x^2*c^4*f^2+I*b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)
^(1/2)*d/(c^2*x^2-1)/g^2*dilog(-I/(-I*c*f+(-c^2*f^2+g^2)^(1/2))*c*f-1/(-I*c
*f+(-c^2*f^2+g^2)^(1/2))*(I*c*x+(-c^2*x^2+1)^(1/2))*g+1/(-I*c*f+(-c^2*f^2+g
^2)^(1/2))*(-c^2*f^2+g^2)^(1/2))+1/2*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^
(1/2)/(c^2*x^2-1)*arcsin(c*x)^2*f^3*d*c^3/g^4-3/4*b*(-d*(c^2*x^2-1))^(1/2)*
(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*arcsin(c*x)^2*f*d*c/g^2+1/2*b*(-d*(c^2*x^2-1
))^(1/2)*f*d*c^4/(c^2*x^2-1)/g^2*arcsin(c*x)*x^3
```

Maxima [F(-2)]

time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/(g*x+f),x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(g-c*f>0)', see `assume?` for more d
etails)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/(g*x+f),x, algorithm="fric
as")
```

```
[Out] integral(-(a*c^2*d*x^2 - a*d + (b*c^2*d*x^2 - b*d)*arcsin(c*x))*sqrt(-c^2*d
*x^2 + d)/(g*x + f), x)
```

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

$$\int \frac{(-d(cx-1)(cx+1))^{\frac{3}{2}}(a+b\operatorname{asin}(cx))}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))/(g*x+f),x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))/(f + g*x), x)
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/(g*x+f),x, algorithm="giac
")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,sageVARx):;OUTPUT:sym2poly/r2sym(const gen & e,const in
dex_m & i,const vecteur & l) Error: Bad Argument Value
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\operatorname{asin}(c\,x))\,{\left(d-c^2\,d\,x^2\right)}^{3/2}}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2))/(f + g*x),x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2))/(f + g*x), x)
```

3.40 $\int (f+gx)^3 \left(d-c^2dx^2\right)^{5/2} (a+b\mathbf{ArcSin}(cx))\,dx$

Optimal. Leaf size=1281

$$\frac{3bd^2f^2gx\sqrt{d-c^2dx^2}}{7c\sqrt{1-c^2x^2}}+\frac{2bd^2g^3x\sqrt{d-c^2dx^2}}{63c^3\sqrt{1-c^2x^2}}-\frac{25bcd^2f^3x^2\sqrt{d-c^2dx^2}}{96\sqrt{1-c^2x^2}}+\frac{15bd^2fg^2x^2\sqrt{d-c^2dx^2}}{256c\sqrt{1-c^2x^2}}-\frac{3bcd^2f^2g\cdots}{7\sqrt{\cdots}}$$

```
[Out] 1/6*d^2*f^3*x*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)-1/7*d^2
*g^3*(-c^2*x^2+1)^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c^4+1/9*d^2*g^3*
(-c^2*x^2+1)^4*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c^4+5/16*d^2*f^3*x*(a
+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)-15/128*d^2*f*g^2*x*(a+b*arcsin(c*x))*(
-c^2*d*x^2+d)^(1/2)/c^2+5/16*d^2*f*g^2*x^3*(-c^2*x^2+1)*(a+b*arcsin(c*x))*(
-c^2*d*x^2+d)^(1/2)+3/8*d^2*f*g^2*x^3*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))*(-c^
2*d*x^2+d)^(1/2)-3/7*d^2*f^2*g*(-c^2*x^2+1)^3*(a+b*arcsin(c*x))*(-c^2*d*x^2
+d)^(1/2)/c^2+2/63*b*d^2*g^3*x*(-c^2*d*x^2+d)^(1/2)/c^3/(-c^2*x^2+1)^(1/2)-
25/96*b*c*d^2*f^3*x^2*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/189*b*d^2*g
^3*x^3*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)+5/96*b*c^3*d^2*f^3*x^4*(-c
^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-1/21*b*c*d^2*g^3*x^5*(-c^2*d*x^2+d)^(1
/2)/(-c^2*x^2+1)^(1/2)+19/441*b*c^3*d^2*g^3*x^7*(-c^2*d*x^2+d)^(1/2)/(-c^2*
x^2+1)^(1/2)-1/81*b*c^5*d^2*g^3*x^9*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
+5/32*d^2*f^3*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/b/c/(-c^2*x^2+1)^(1/
2)-3/64*b*c^5*d^2*f*g^2*x^8*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+15/256*
d^2*f*g^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/b/c^3/(-c^2*x^2+1)^(1/2)
+3/7*b*d^2*f^2*g*x*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)+15/256*b*d^2*f
*g^2*x^2*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-3/7*b*c*d^2*f^2*g*x^3*(-
c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-59/256*b*c*d^2*f*g^2*x^4*(-c^2*d*x^2+
d)^(1/2)/(-c^2*x^2+1)^(1/2)+9/35*b*c^3*d^2*f^2*g*x^5*(-c^2*d*x^2+d)^(1/2)/(
-c^2*x^2+1)^(1/2)+17/96*b*c^3*d^2*f*g^2*x^6*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+
1)^(1/2)-3/49*b*c^5*d^2*f^2*g*x^7*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1
/36*b*d^2*f^3*(-c^2*x^2+1)^(5/2)*(-c^2*d*x^2+d)^(1/2)/c+15/64*d^2*f*g^2*x^3
*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)+5/24*d^2*f^3*x*(-c^2*x^2+1)*(a+b*ar
csin(c*x))*(-c^2*d*x^2+d)^(1/2)
```

Rubi [A]
time = 0.78, antiderivative size = 1281, normalized size of antiderivative = 1.00, number of steps used = 30, number of rules used = 18, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.581$, Rules used = {4861, 4847, 4743, 4741, 4737, 30, 14, 267, 4767, 200, 4787, 4783, 4795, 272, 45, 4779, 12, 380}

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (3*b*d^2*f^2*g*x*Sqrt[d - c^2*d*x^2])/(7*c*Sqrt[1 - c^2*x^2]) + (2*b*d^2*g^
3*x*Sqrt[d - c^2*d*x^2])/(63*c^3*Sqrt[1 - c^2*x^2]) - (25*b*c*d^2*f^3*x^2*S
qrt[d - c^2*d*x^2])/(96*Sqrt[1 - c^2*x^2]) + (15*b*d^2*f*g^2*x^2*Sqrt[d - c
^2*d*x^2])/(256*c*Sqrt[1 - c^2*x^2]) - (3*b*c*d^2*f^2*g*x^3*Sqrt[d - c^2*d*
x^2])/(7*Sqrt[1 - c^2*x^2]) + (b*d^2*g^3*x^3*Sqrt[d - c^2*d*x^2])/(189*c*Sq
rt[1 - c^2*x^2]) + (5*b*c^3*d^2*f^3*x^4*Sqrt[d - c^2*d*x^2])/(96*Sqrt[1 - c
^2*x^2]) - (59*b*c*d^2*f*g^2*x^4*Sqrt[d - c^2*d*x^2])/(256*Sqrt[1 - c^2*x^2
]) + (9*b*c^3*d^2*f^2*g*x^5*Sqrt[d - c^2*d*x^2])/(35*Sqrt[1 - c^2*x^2]) - (
b*c*d^2*g^3*x^5*Sqrt[d - c^2*d*x^2])/(21*Sqrt[1 - c^2*x^2]) + (17*b*c^3*d^2
*f*g^2*x^6*Sqrt[d - c^2*d*x^2])/(96*Sqrt[1 - c^2*x^2]) - (3*b*c^5*d^2*f^2*g
*x^7*Sqrt[d - c^2*d*x^2])/(49*Sqrt[1 - c^2*x^2]) + (19*b*c^3*d^2*g^3*x^7*Sq
rt[d - c^2*d*x^2])/(441*Sqrt[1 - c^2*x^2]) - (3*b*c^5*d^2*f*g^2*x^8*Sqrt[d
- c^2*d*x^2])/(64*Sqrt[1 - c^2*x^2]) - (b*c^5*d^2*g^3*x^9*Sqrt[d - c^2*d*x^
2])/(81*Sqrt[1 - c^2*x^2]) + (b*d^2*f^3*(1 - c^2*x^2)^(5/2)*Sqrt[d - c^2*d*
x^2])/(36*c) + (5*d^2*f^3*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/16 - (
15*d^2*f*g^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(128*c^2) + (15*d^2
*f*g^2*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/64 + (5*d^2*f^3*x*(1 -
c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/24 + (5*d^2*f*g^2*x^3*(1
- c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/16 + (d^2*f^3*x*(1 - c^
2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/6 + (3*d^2*f*g^2*x^3*(1 -
 c^2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/8 - (3*d^2*f^2*g*(1 -
c^2*x^2)^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(7*c^2) - (d^2*g^3*(1 -
 c^2*x^2)^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(7*c^4) + (d^2*g^3*(1
- c^2*x^2)^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(9*c^4) + (5*d^2*f^3*
Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(32*b*c*Sqrt[1 - c^2*x^2]) + (15
*d^2*f*g^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(256*b*c^3*Sqrt[1 - c
^2*x^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

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

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
```

```
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 200

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 267

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

Rule 272

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

Rule 380

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.), x_Symbol
] :> Int[ExpandIntegrand[(a + b*x^n)^p*(c + d*x^n)^q, x], x] /; FreeQ[{a, b
, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[p, 0] && IGtQ[q, 0]
```

Rule 4737

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

Rule 4741

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

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[x*(d + e*x^2)^p*((a + b*ArcSin[c*x])^n/(2*p + 1)), x] + (D
```

```
ist[2*d*(p/(2*p + 1)), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[b*c*(n/(2*p + 1))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[x*(1 -
c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c,
d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0]
```

Rule 4767

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

Rule 4779

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[
c*x], u, x] - Dist[b*c*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[Simplif
yIntegrand[u/Sqrt[d + e*x^2], x], x], x]] /; FreeQ[{a, b, c, d, e}, x] && E
qQ[c^2*d + e, 0] && IntegerQ[p - 1/2] && NeQ[p, -2^(-1)] && (IGtQ[(m + 1)/2
, 0] || ILtQ[(m + 2*p + 3)/2, 0])
```

Rule 4783

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

Rule 4787

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[(f*x)^(m + 1)*(d + e*x^2)^p*((a + b*ArcS
in[c*x])^n/(f*(m + 2*p + 1))), x] + (Dist[2*d*(p/(m + 2*p + 1)), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[b*c*(n/(f*(m + 2
*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)^(m + 1)*(1 - c^2*x
^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0] &&  !LtQ[m, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
```

```
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int (f+gx)^3 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right)\, dx = \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int (f+gx)^3 \left(1-c^2x^2\right)^{5/2} \left(a+b\sin^{-1}(c\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int \left(f^3\left(1-c^2x^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right)+\right.}{}$$

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

$$= \frac{1}{6}d^2f^3x\left(1-c^2x^2\right)^2 \sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{3}{8}d^2$$

$$= \frac{bd^2f^3\left(1-c^2x^2\right)^{5/2}\sqrt{d-c^2dx^2}}{36c}+\frac{5}{24}d^2f^3x\left(1-c^2x^2\right)\sqrt{}$$

$$= \frac{3bd^2f^2gx\sqrt{d-c^2dx^2}}{7c\sqrt{1-c^2x^2}}-\frac{3bcd^2f^2gx^3\sqrt{d-c^2dx^2}}{7\sqrt{1-c^2x^2}}+\frac{9bc}{}$$

$$= \frac{3bd^2f^2gx\sqrt{d-c^2dx^2}}{7c\sqrt{1-c^2x^2}}+\frac{2bd^2g^3x\sqrt{d-c^2dx^2}}{63c^3\sqrt{1-c^2x^2}}-\frac{25bcd^2}{96}$$

$$= \frac{3bd^2f^2gx\sqrt{d-c^2dx^2}}{7c\sqrt{1-c^2x^2}}+\frac{2bd^2g^3x\sqrt{d-c^2dx^2}}{63c^3\sqrt{1-c^2x^2}}-\frac{25bcd^2}{96}$$

Mathematica [**A**]
time = 0.69, size = 587, normalized size = 0.46

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d^2*Sqrt[d - c^2*d*x^2]*(99225*a^2*(8*c^3*f^3 + 3*c*f*g^2) + 630*a*b*Sqrt[
1 - c^2*x^2]*(-256*g^3 - c^2*g*(3456*f^2 + 945*f*g*x + 128*g^2*x^2) + 16*c^
8*x^5*(84*f^3 + 216*f^2*g*x + 189*f*g^2*x^2 + 56*g^3*x^3) - 8*c^6*x^3*(546*
f^3 + 1296*f^2*g*x + 1071*f*g^2*x^2 + 304*g^3*x^3) + 6*c^4*x*(924*f^3 + 172
8*f^2*g*x + 1239*f*g^2*x^2 + 320*g^3*x^3)) + b^2*c*x*(161280*g^3 + 105*c^2*
g*(20736*f^2 + 2835*f*g*x + 256*g^2*x^2) - 945*c^4*x*(1848*f^3 + 2304*f^2*g
*x + 1239*f*g^2*x^2 + 256*g^3*x^3) + 72*c^6*x^3*(9555*f^3 + 18144*f^2*g*x +
 12495*f*g^2*x^2 + 3040*g^3*x^3) - 20*c^8*x^5*(7056*f^3 + 15552*f^2*g*x + 1
1907*f*g^2*x^2 + 3136*g^3*x^3)) + 630*b*(315*a*(8*c^3*f^3 + 3*c*f*g^2) + b*
Sqrt[1 - c^2*x^2]*(-256*g^3 - c^2*g*(3456*f^2 + 945*f*g*x + 128*g^2*x^2) +
```

```
16*c^8*x^5*(84*f^3 + 216*f^2*g*x + 189*f*g^2*x^2 + 56*g^3*x^3) - 8*c^6*x^3*
(546*f^3 + 1296*f^2*g*x + 1071*f*g^2*x^2 + 304*g^3*x^3) + 6*c^4*x*(924*f^3
+ 1728*f^2*g*x + 1239*f*g^2*x^2 + 320*g^3*x^3)))*ArcSin[c*x] + 99225*b^2*c*
f*(8*c^2*f^2 + 3*g^2)*ArcSin[c*x]^2))/(5080320*b*c^4*Sqrt[1 - c^2*x^2])
```

Maple [C] Result contains complex when optimal does not.
time = 0.99, size = 2935, normalized size = 2.29

method	result	size
default	Expression too large to display	2935

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x,method=_RETURNVERBOS
E)
```

```
[Out] -1/9*a*g^3*x^2*(-c^2*d*x^2+d)^(7/2)/c^2/d-2/63*a*g^3/d/c^4*(-c^2*d*x^2+d)^(
7/2)-3/8*a*f*g^2*x*(-c^2*d*x^2+d)^(7/2)/c^2/d+1/16*a*f*g^2/c^2*x*(-c^2*d*x^
2+d)^(5/2)+5/64*a*f*g^2/c^2*d*x*(-c^2*d*x^2+d)^(3/2)+15/128*a*f*g^2/c^2*d^2
*x*(-c^2*d*x^2+d)^(1/2)+15/128*a*f*g^2/c^2*d^3/(c^2*d)^(1/2)*arctan((c^2*d)
^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-3/7*a*f^2*g/c^2/d*(-c^2*d*x^2+d)^(7/2)+1/6*a
*f^3*x*(-c^2*d*x^2+d)^(5/2)+5/24*a*f^3*d*x*(-c^2*d*x^2+d)^(3/2)+5/16*a*f^3*
d^2*x*(-c^2*d*x^2+d)^(1/2)+5/16*a*f^3*d^3/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2
)*x/(-c^2*d*x^2+d)^(1/2))+b*(-5/256*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/
2)/c^3/(c^2*x^2-1)*arcsin(c*x)^2*f*(8*c^2*f^2+3*g^2)*d^2+1/41472*(-d*(c^2*x
^2-1))^(1/2)*(256*c^10*x^10-704*c^8*x^8-256*I*(-c^2*x^2+1)^(1/2)*x^9*c^9+68
8*c^6*x^6+576*I*(-c^2*x^2+1)^(1/2)*x^7*c^7-280*c^4*x^4-432*I*(-c^2*x^2+1)^(
1/2)*x^5*c^5+41*c^2*x^2+120*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-9*I*(-c^2*x^2+1)^(
1/2)*x*c-1)*g^3*(I+9*arcsin(c*x))*d^2/c^4/(c^2*x^2-1)+3/25088*(-d*(c^2*x^2-
1))^(1/2)*(64*c^8*x^8-144*c^6*x^6-64*I*(-c^2*x^2+1)^(1/2)*x^7*c^7+104*c^4*x
^4+112*I*(-c^2*x^2+1)^(1/2)*x^5*c^5-25*c^2*x^2-56*I*(-c^2*x^2+1)^(1/2)*x^3*
c^3+7*I*(-c^2*x^2+1)^(1/2)*x*c+1)*g*(4*I*f^2*c^2+28*arcsin(c*x)*c^2*f^2-I*g
^2-7*arcsin(c*x)*g^2)*d^2/c^4/(c^2*x^2-1)+3/16384*(-d*(c^2*x^2-1))^(1/2)*(1
28*I*(-c^2*x^2+1)^(1/2)*x^8*c^8+128*c^9*x^9-256*I*(-c^2*x^2+1)^(1/2)*x^6*c^
6-320*c^7*x^7+160*I*(-c^2*x^2+1)^(1/2)*x^4*c^4+272*c^5*x^5-32*I*(-c^2*x^2+1
)^(1/2)*x^2*c^2-88*c^3*x^3+I*(-c^2*x^2+1)^(1/2)+8*c*x)*f*g^2*(-I+8*arcsin(c
*x))*d^2/c^3/(c^2*x^2-1)-3/640*(-d*(c^2*x^2-1))^(1/2)*(16*c^6*x^6-28*c^4*x^
4-16*I*(-c^2*x^2+1)^(1/2)*x^5*c^5+13*c^2*x^2+20*I*(-c^2*x^2+1)^(1/2)*x^3*c^
3-5*I*(-c^2*x^2+1)^(1/2)*x*c-1)*f^2*g*(I+5*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)
+3/256*(-d*(c^2*x^2-1))^(1/2)*(2*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+2*c^3*x^3-I*(
-c^2*x^2+1)^(1/2)-2*c*x)*f*(-5*I*f^2*c^2+10*arcsin(c*x)*c^2*f^2-I*g^2+2*arc
sin(c*x)*g^2)*d^2/c^3/(c^2*x^2-1)+1/1152*(-d*(c^2*x^2-1))^(1/2)*(4*c^4*x^4-
5*c^2*x^2-4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+3*I*(-c^2*x^2+1)^(1/2)*x*c+1)*g*(2
7*I*f^2*c^2+81*arcsin(c*x)*c^2*f^2+2*I*g^2+6*arcsin(c*x)*g^2)*d^2/c^4/(c^2*
x^2-1)-3/256*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*g*
(10*I*f^2*c^2+10*arcsin(c*x)*c^2*f^2+I*g^2+arcsin(c*x)*g^2)*d^2/c^4/(c^2*x^
```

```
2-1)-3/256*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(1
0*arcsin(c*x)*c^2*f^2-10*I*f^2*c^2+arcsin(c*x)*g^2-I*g^2)*d^2/c^4/(c^2*x^2-
1)+1/1152*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-
3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*g*(81*arcsin(c*x)*c^2*f^2-27*I*f^2*
c^2+6*arcsin(c*x)*g^2-2*I*g^2)*d^2/c^4/(c^2*x^2-1)+3/16384*(-d*(c^2*x^2-1))
^(1/2)*(-128*I*(-c^2*x^2+1)^(1/2)*x^8*c^8+128*c^9*x^9+256*I*(-c^2*x^2+1)^(1
/2)*x^6*c^6-320*c^7*x^7-160*I*(-c^2*x^2+1)^(1/2)*x^4*c^4+272*c^5*x^5+32*I*(
-c^2*x^2+1)^(1/2)*x^2*c^2-88*c^3*x^3-I*(-c^2*x^2+1)^(1/2)+8*c*x)*f*g^2*(I+8
*arcsin(c*x))*d^2/c^3/(c^2*x^2-1)-3/640*(-d*(c^2*x^2-1))^(1/2)*(16*I*(-c^2*
x^2+1)^(1/2)*x^5*c^5+16*c^6*x^6-20*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-28*c^4*x^4+
5*I*(-c^2*x^2+1)^(1/2)*x*c+13*c^2*x^2-1)*f^2*g*(-I+5*arcsin(c*x))*d^2/c^2/(
c^2*x^2-1)+3/25088*(-d*(c^2*x^2-1))^(1/2)*(64*I*(-c^2*x^2+1)^(1/2)*x^7*c^7+
64*c^8*x^8-112*I*(-c^2*x^2+1)^(1/2)*x^5*c^5-144*c^6*x^6+56*I*(-c^2*x^2+1)^(
1/2)*x^3*c^3+104*c^4*x^4-7*I*(-c^2*x^2+1)^(1/2)*x*c-25*c^2*x^2+1)*g*(-4*I*f
^2*c^2+28*arcsin(c*x)*c^2*f^2+I*g^2-7*arcsin(c*x)*g^2)*d^2/c^4/(c^2*x^2-1)-
1/9216*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2-c*x*(-c^2*x^2+1)^(1/2)-I)*f*(58*I*
f^2*c^2+192*arcsin(c*x)*c^2*f^2-39*I*g^2-36*arcsin(c*x)*g^2)*cos(5*arcsin(c
*x))*d^2/c^3/(c^2*x^2-1)+1/41472*(-d*(c^2*x^2-1))^(1/2)*(256*I*(-c^2*x^2+1)
^(1/2)*x^9*c^9+256*c^10*x^10-576*I*(-c^2*x^2+1)^(1/2)*x^7*c^7-704*c^8*x^8+4
32*I*(-c^2*x^2+1)^(1/2)*x^5*c^5+688*c^6*x^6-120*I*(-c^2*x^2+1)^(1/2)*x^3*c^
3-280*c^4*x^4+9*I*(-c^2*x^2+1)^(1/2)*x*c+41*c^2*x^2-1)*g^3*(-I+9*arcsin(c*x
))*d^2/c^4/(c^2*x^2-1)-3/1024*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2-c*x*(-c^2*x
^2+1)^(1/2)-I)*f*(22*I*f^2*c^2+32*arcsin(c*x)*c^2*f^2+3*I*g^2+12*arcsin(c*x
)*g^2)*cos(3*arcsin(c*x))*d^2/c^3/(c^2*x^2-1)+5/9216*(-d*(c^2*x^2-1))^(1/2)
*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*f*(10*I*f^2*c^2+48*arcsin(c*x)*c^2*f^
2-3*I*g^2-36*arcsin(c*x)*g^2)*sin(5*arcsin(c*x))*d^2/c^3/(c^2*x^2-1)+1/2304
*(-d*(c^2*x^2-1))^(1/2)*(-32*I*(-c^2*x^2+1)^(1/2)*x^6*c^6+32*c^7*x^7+48*I*(
-c^2*x^2+1)^(1/2)*x^4*c^4-64*c^5*x^5-18*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+38*c^3
*x^3+I*(-c^2*x^2+1)^(1/2)-6*c*x)*f*(I*f^2*c^2+6*arcsin(c*x)*c^2*f^2-3*I*g^2
-18*arcsin(c*x)*g^2)*d^2/c^3/(c^2*x^2-1)+3/1024*(-d*(c^2*x^2-1))^(1/2)*(I*(
-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*f*(18*I*f^2*c^2+48*arcsin(c*x)*c^2*f^2+5*I
*g^2+4*arcsin(c*x)*g^2)*sin(3*arcsin(c*x))*d^2/c^3/(c^2*x^2-1))
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="ma
xima")
```

```
[Out] 1/48*(8*(-c^2*d*x^2 + d)^(5/2)*x + 10*(-c^2*d*x^2 + d)^(3/2)*d*x + 15*sqrt(
-c^2*d*x^2 + d)*d^2*x + 15*d^(5/2)*arcsin(c*x)/c)*a*f^3 + 1/128*(8*(-c^2*d*
x^2 + d)^(5/2)*x/c^2 - 48*(-c^2*d*x^2 + d)^(7/2)*x/(c^2*d) + 10*(-c^2*d*x^2
```

```
 + d)^(3/2)*d*x/c^2 + 15*sqrt(-c^2*d*x^2 + d)*d^2*x/c^2 + 15*d^(5/2)*arcsin
(c*x)/c^3)*a*f*g^2 - 1/63*(7*(-c^2*d*x^2 + d)^(7/2)*x^2/(c^2*d) + 2*(-c^2*d
*x^2 + d)^(7/2)/(c^4*d))*a*g^3 - 3/7*(-c^2*d*x^2 + d)^(7/2)*a*f^2*g/(c^2*d)
 + sqrt(d)*integrate((b*c^4*d^2*g^3*x^7 + 3*b*c^4*d^2*f*g^2*x^6 + 3*b*d^2*f
^2*g*x + b*d^2*f^3 + (3*b*c^4*d^2*f^2*g - 2*b*c^2*d^2*g^3)*x^5 + (b*c^4*d^2
*f^3 - 6*b*c^2*d^2*f*g^2)*x^4 - (6*b*c^2*d^2*f^2*g - b*d^2*g^3)*x^3 - (2*b*
c^2*d^2*f^3 - 3*b*d^2*f*g^2)*x^2)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x,
 sqrt(c*x + 1)*sqrt(-c*x + 1)), x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="fr
icas")
```

```
[Out] integral((a*c^4*d^2*g^3*x^7 + 3*a*c^4*d^2*f*g^2*x^6 + 3*a*d^2*f^2*g*x + a*d
^2*f^3 + (3*a*c^4*d^2*f^2*g - 2*a*c^2*d^2*g^3)*x^5 + (a*c^4*d^2*f^3 - 6*a*c
^2*d^2*f*g^2)*x^4 - (6*a*c^2*d^2*f^2*g - a*d^2*g^3)*x^3 - (2*a*c^2*d^2*f^3
- 3*a*d^2*f*g^2)*x^2 + (b*c^4*d^2*g^3*x^7 + 3*b*c^4*d^2*f*g^2*x^6 + 3*b*d^2
*f^2*g*x + b*d^2*f^3 + (3*b*c^4*d^2*f^2*g - 2*b*c^2*d^2*g^3)*x^5 + (b*c^4*d
^2*f^3 - 6*b*c^2*d^2*f*g^2)*x^4 - (6*b*c^2*d^2*f^2*g - b*d^2*g^3)*x^3 - (2*
b*c^2*d^2*f^3 - 3*b*d^2*f*g^2)*x^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d), x)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: SystemError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x)),x)
```

```
[Out] Exception raised: SystemError >> excessive stack use: stack is 3060 deep
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="gi
ac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int (f+g\,x)^3\,(a+b\,\mathrm{asin}(c\,x))\,\left(d-c^2\,d\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^3*(a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2),x)
[Out] int((f + g*x)^3*(a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2), x)
```

3.41 $\int (f+gx)^2 \left(d-c^2dx^2\right)^{5/2} (a+b\mathbf{ArcSin}(cx))\,dx$

Optimal. Leaf size=940

$$\frac{2bd^2fgx\sqrt{d-c^2dx^2}}{7c\sqrt{1-c^2x^2}}-\frac{25bcd^2f^2x^2\sqrt{d-c^2dx^2}}{96\sqrt{1-c^2x^2}}+\frac{5bd^2g^2x^2\sqrt{d-c^2dx^2}}{256c\sqrt{1-c^2x^2}}-\frac{2bcd^2fgx^3\sqrt{d-c^2dx^2}}{7\sqrt{1-c^2x^2}}+\frac{5bc^3d^2f^2x}{96\sqrt{}}$$

```
[Out] 1/36*b*d^2*f^2*(-c^2*x^2+1)^(5/2)*(-c^2*d*x^2+d)^(1/2)/c+5/16*d^2*f^2*x*(a+
b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)-5/128*d^2*g^2*x*(a+b*arcsin(c*x))*(-c^2
*d*x^2+d)^(1/2)/c^2+5/64*d^2*g^2*x^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)
+5/24*d^2*f^2*x*(-c^2*x^2+1)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)+5/48*d^
2*g^2*x^3*(-c^2*x^2+1)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)+1/6*d^2*f^2*x
*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)+1/8*d^2*g^2*x^3*(-c^
2*x^2+1)^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)-2/7*d^2*f*g*(-c^2*x^2+1)^
3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c^2+2/7*b*d^2*f*g*x*(-c^2*d*x^2+d)
^(1/2)/c/(-c^2*x^2+1)^(1/2)-25/96*b*c*d^2*f^2*x^2*(-c^2*d*x^2+d)^(1/2)/(-c^
2*x^2+1)^(1/2)+5/256*b*d^2*g^2*x^2*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2
)-2/7*b*c*d^2*f*g*x^3*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+5/96*b*c^3*d^
2*f^2*x^4*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-59/768*b*c*d^2*g^2*x^4*(-
c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+6/35*b*c^3*d^2*f*g*x^5*(-c^2*d*x^2+d)
^(1/2)/(-c^2*x^2+1)^(1/2)+17/288*b*c^3*d^2*g^2*x^6*(-c^2*d*x^2+d)^(1/2)/(-c
^2*x^2+1)^(1/2)-2/49*b*c^5*d^2*f*g*x^7*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1
/2)-1/64*b*c^5*d^2*g^2*x^8*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+5/32*d^2
*f^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/b/c/(-c^2*x^2+1)^(1/2)+5/256*
d^2*g^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/b/c^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A]
time = 0.60, antiderivative size = 940, normalized size of antiderivative = 1.00, number of steps used = 26, number of rules used = 15, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.484$, Rules used = {4861, 4847, 4743, 4741, 4737, 30, 14, 267, 4767, 200, 4787, 4783, 4795, 272, 45}

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (2*b*d^2*f*g*x*Sqrt[d - c^2*d*x^2])/(7*c*Sqrt[1 - c^2*x^2]) - (25*b*c*d^2*f
^2*x^2*Sqrt[d - c^2*d*x^2])/(96*Sqrt[1 - c^2*x^2]) + (5*b*d^2*g^2*x^2*Sqrt[
d - c^2*d*x^2])/(256*c*Sqrt[1 - c^2*x^2]) - (2*b*c*d^2*f*g*x^3*Sqrt[d - c^2
*d*x^2])/(7*Sqrt[1 - c^2*x^2]) + (5*b*c^3*d^2*f^2*x^4*Sqrt[d - c^2*d*x^2])/
(96*Sqrt[1 - c^2*x^2]) - (59*b*c*d^2*g^2*x^4*Sqrt[d - c^2*d*x^2])/(768*Sqrt
[1 - c^2*x^2]) + (6*b*c^3*d^2*f*g*x^5*Sqrt[d - c^2*d*x^2])/(35*Sqrt[1 - c^2
*x^2]) + (17*b*c^3*d^2*g^2*x^6*Sqrt[d - c^2*d*x^2])/(288*Sqrt[1 - c^2*x^2])
 - (2*b*c^5*d^2*f*g*x^7*Sqrt[d - c^2*d*x^2])/(49*Sqrt[1 - c^2*x^2]) - (b*c^
```

```
5*d^2*g^2*x^8*Sqrt[d - c^2*d*x^2])/(64*Sqrt[1 - c^2*x^2]) + (b*d^2*f^2*(1 -
 c^2*x^2)^(5/2)*Sqrt[d - c^2*d*x^2])/(36*c) + (5*d^2*f^2*x*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x]))/16 - (5*d^2*g^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSi
n[c*x]))/(128*c^2) + (5*d^2*g^2*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])
)/64 + (5*d^2*f^2*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/
24 + (5*d^2*g^2*x^3*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/
48 + (d^2*f^2*x*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/6
+ (d^2*g^2*x^3*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/8 -
 (2*d^2*f*g*(1 - c^2*x^2)^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(7*c^2
) + (5*d^2*f^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(32*b*c*Sqrt[1 -
c^2*x^2]) + (5*d^2*g^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(256*b*c^
3*Sqrt[1 - c^2*x^2])
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

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

Rule 45

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

Rule 200

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 267

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

Rule 272

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

Rule 4737

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

Rule 4741

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

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[x*(d + e*x^2)^p*((a + b*ArcSin[c*x])^n/(2*p + 1)), x] + (D
ist[2*d*(p/(2*p + 1)), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[b*c*(n/(2*p + 1))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[x*(1 -
c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c,
d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0]
```

Rule 4767

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

Rule 4783

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

Rule 4787

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[(f*x)^(m + 1)*(d + e*x^2)^p*((a + b*ArcS
```

```
in[c*x])^n/(f*(m + 2*p + 1))), x] + (Dist[2*d*(p/(m + 2*p + 1)), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[b*c*(n/(f*(m + 2
*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)^(m + 1)*(1 - c^2*x
^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0] &&  !LtQ[m, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int (f+gx)^2 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right) \, dx = \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int (f+gx)^2 \left(1-c^2x^2\right)^{5/2} \left(a+b\sin^{-1}(cx\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int \left(f^2(1-c^2x^2)^{5/2} \left(a+b\sin^{-1}(cx)\right)+2\right.}{}$$

$$= \frac{\left(d^2f^2\sqrt{d-c^2dx^2}\right)\int (1-c^2x^2)^{5/2} \left(a+b\sin^{-1}(cx)\right) \, dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{1}{6}d^2f^2x\left(1-c^2x^2\right)^2 \sqrt{d-c^2dx^2} \left(a+b\sin^{-1}(cx)\right)+\frac{1}{8}d^2g$$

$$= \frac{bd^2f^2(1-c^2x^2)^{5/2}\sqrt{d-c^2dx^2}}{36c}+\frac{5}{24}d^2f^2x\left(1-c^2x^2\right)\sqrt{d}$$

$$= \frac{2bd^2fgx\sqrt{d-c^2dx^2}}{7c\sqrt{1-c^2x^2}}-\frac{2bcd^2fgx^3\sqrt{d-c^2dx^2}}{7\sqrt{1-c^2x^2}}+\frac{6bc^3d^2}{35}$$

$$= \frac{2bd^2fgx\sqrt{d-c^2dx^2}}{7c\sqrt{1-c^2x^2}}-\frac{25bcd^2f^2x^2\sqrt{d-c^2dx^2}}{96\sqrt{1-c^2x^2}}-\frac{2bcd^2}{7}$$

$$= \frac{2bd^2fgx\sqrt{d-c^2dx^2}}{7c\sqrt{1-c^2x^2}}-\frac{25bcd^2f^2x^2\sqrt{d-c^2dx^2}}{96\sqrt{1-c^2x^2}}+\frac{5bd^2g}{256}$$

Mathematica [A]
time = 0.49, size = 390, normalized size = 0.41

$$\frac{d^2\sqrt{d-c^2dx^2}\left(11025a^2(8c^2f^2+g^2)+b^2c^2x(-1960c^2f^2x(99-39c^2x^2+8c^4x^4)-4608fg(-35+35c^2x^2-21c^4x^4+5c^6x^6)-245g^2x(-45+177c^2x^2-136c^4x^4+36c^6x^6))+210abc\sqrt{1-c^2x^2}\left(768fg(-1+c^2x^2)^3+56c^2f^2x(33-26c^2x^2+8c^4x^4)+7g^2x(-15+118c^2x^2-136c^4x^4+48c^6x^6)\right)+210b\left(105a(8c^2f^2+g^2)+bc\sqrt{1-c^2x^2}\left(768fg(-1+c^2x^2)^3+56c^2f^2x(33-26c^2x^2+8c^4x^4)+7g^2x(-15+118c^2x^2-136c^4x^4+48c^6x^6)\right)\right)\text{ArcSin}(cx)+11025b^2(8c^2f^2+g^2)\text{ArcSin}(cx)^2\right)}{564480bc^3\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d^2*Sqrt[d - c^2*d*x^2]*(11025*a^2*(8*c^2*f^2 + g^2) + b^2*c^2*x*(-1960*c^
2*f^2*x*(99 - 39*c^2*x^2 + 8*c^4*x^4) - 4608*f*g*(-35 + 35*c^2*x^2 - 21*c^4
*x^4 + 5*c^6*x^6) - 245*g^2*x*(-45 + 177*c^2*x^2 - 136*c^4*x^4 + 36*c^6*x^6
)) + 210*a*b*c*Sqrt[1 - c^2*x^2]*(768*f*g*(-1 + c^2*x^2)^3 + 56*c^2*f^2*x*(
33 - 26*c^2*x^2 + 8*c^4*x^4) + 7*g^2*x*(-15 + 118*c^2*x^2 - 136*c^4*x^4 + 4
8*c^6*x^6)) + 210*b*(105*a*(8*c^2*f^2 + g^2) + b*c*Sqrt[1 - c^2*x^2]*(768*f
*g*(-1 + c^2*x^2)^3 + 56*c^2*f^2*x*(33 - 26*c^2*x^2 + 8*c^4*x^4) + 7*g^2*x*
(-15 + 118*c^2*x^2 - 136*c^4*x^4 + 48*c^6*x^6)))*ArcSin[c*x] + 11025*b^2*(8
*c^2*f^2 + g^2)*ArcSin[c*x]^2))/(564480*b*c^3*Sqrt[1 - c^2*x^2])
```

Maple [C] Result contains complex when optimal does not.
time = 0.70, size = 2116, normalized size = 2.25

method	result	size
default	Expression too large to display	2116

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x,method=_RETURNVERBOS
E)
```

```
[Out] -1/8*a*g^2*x*(-c^2*d*x^2+d)^(7/2)/c^2/d+1/48*a*g^2/c^2*x*(-c^2*d*x^2+d)^(5/
2)+5/192*a*g^2/c^2*d*x*(-c^2*d*x^2+d)^(3/2)+5/128*a*g^2/c^2*d^2*x*(-c^2*d*x
^2+d)^(1/2)+5/128*a*g^2/c^2*d^3/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*
d*x^2+d)^(1/2))-2/7*a*f*g/c^2/d*(-c^2*d*x^2+d)^(7/2)+1/6*a*f^2*x*(-c^2*d*x^
2+d)^(5/2)+5/24*a*f^2*d*x*(-c^2*d*x^2+d)^(3/2)+5/16*a*f^2*d^2*x*(-c^2*d*x^2
+d)^(1/2)+5/16*a*f^2*d^3/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d
)^(1/2))+b*(-5/256*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/(c^2*x^2-1
)*arcsin(c*x)^2*(8*c^2*f^2+g^2)*d^2+1/16384*(-d*(c^2*x^2-1))^(1/2)*(-128*I*
(-c^2*x^2+1)^(1/2)*x^8*c^8+128*c^9*x^9+256*I*(-c^2*x^2+1)^(1/2)*x^6*c^6-320
*c^7*x^7-160*I*(-c^2*x^2+1)^(1/2)*x^4*c^4+272*c^5*x^5+32*I*(-c^2*x^2+1)^(1/
2)*x^2*c^2-88*c^3*x^3-I*(-c^2*x^2+1)^(1/2)+8*c*x)*g^2*(I+8*arcsin(c*x))*d^2
/c^3/(c^2*x^2-1)+1/3136*(-d*(c^2*x^2-1))^(1/2)*(64*c^8*x^8-144*c^6*x^6-64*I
*(-c^2*x^2+1)^(1/2)*x^7*c^7+104*c^4*x^4+112*I*(-c^2*x^2+1)^(1/2)*x^5*c^5-25
*c^2*x^2-56*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+7*I*(-c^2*x^2+1)^(1/2)*x*c+1)*f*g*
(I+7*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)-3/1024*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*
c^2-c*x*(-c^2*x^2+1)^(1/2)-I)*(22*I*f^2*c^2+32*arcsin(c*x)*c^2*f^2+I*g^2+4*
arcsin(c*x)*g^2)*cos(3*arcsin(c*x))*d^2/c^3/(c^2*x^2-1)-5/64*(-d*(c^2*x^2-1
))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*f*g*(arcsin(c*x)+I)*d^2/c^2/(
c^2*x^2-1)-5/64*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)
*f*g*(arcsin(c*x)-I)*d^2/c^2/(c^2*x^2-1)+1/2304*(-d*(c^2*x^2-1))^(1/2)*(-32
*I*(-c^2*x^2+1)^(1/2)*x^6*c^6+32*c^7*x^7+48*I*(-c^2*x^2+1)^(1/2)*x^4*c^4-64
*c^5*x^5-18*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+38*c^3*x^3+I*(-c^2*x^2+1)^(1/2)-6*
c*x)*(6*arcsin(c*x)*c^2*f^2+I*f^2*c^2-6*arcsin(c*x)*g^2-I*g^2)*d^2/c^3/(c^2
*x^2-1)+1/64*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^4*x
^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*f*g*(-I+3*arcsin(c*x))*d^2/c^2/(
c^2*x^2-1)+1/256*(-d*(c^2*x^2-1))^(1/2)*(2*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+2*c
^3*x^3-I*(-c^2*x^2+1)^(1/2)-2*c*x)*(30*arcsin(c*x)*c^2*f^2+2*arcsin(c*x)*g^
2-15*I*f^2*c^2-I*g^2)*d^2/c^3/(c^2*x^2-1)-1/3920*(-d*(c^2*x^2-1))^(1/2)*(I*
(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*f*g*(11*I+70*arcsin(c*x))*cos(6*arcsin(c*
x))*d^2/c^2/(c^2*x^2-1)-3/7840*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2-c*x*(-c^2*
x^2+1)^(1/2)-I)*f*g*(9*I+35*arcsin(c*x))*sin(6*arcsin(c*x))*d^2/c^2/(c^2*x^
2-1)-1/160*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2-c*x*(-c^2*x^2+1)^(1/2)-I)*f*g*
(3*I+5*arcsin(c*x))*sin(4*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)+5/9216*(-d*(c^2*
x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(10*I*f^2*c^2+48*arcsin(
c*x)*c^2*f^2-I*g^2-12*arcsin(c*x)*g^2)*sin(5*arcsin(c*x))*d^2/c^3/(c^2*x^2-
1)-1/80*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*f*g*(I+
```

```
5*arcsin(c*x))*cos(4*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)-1/9216*(-d*(c^2*x^2-1
))^(1/2)*(I*x^2*c^2-c*x*(-c^2*x^2+1)^(1/2)-I)*(58*I*f^2*c^2+192*arcsin(c*x)
*c^2*f^2-13*I*g^2-12*arcsin(c*x)*g^2)*cos(5*arcsin(c*x))*d^2/c^3/(c^2*x^2-1
)+1/16384*(-d*(c^2*x^2-1))^(1/2)*(128*I*(-c^2*x^2+1)^(1/2)*x^8*c^8+128*c^9*
x^9-256*I*(-c^2*x^2+1)^(1/2)*x^6*c^6-320*c^7*x^7+160*I*(-c^2*x^2+1)^(1/2)*x
^4*c^4+272*c^5*x^5-32*I*(-c^2*x^2+1)^(1/2)*x^2*c^2-88*c^3*x^3+I*(-c^2*x^2+1
)^(1/2)+8*c*x)*g^2*(-I+8*arcsin(c*x))*d^2/c^3/(c^2*x^2-1)+1/1024*(-d*(c^2*x
^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(54*I*f^2*c^2+144*arcsin(
c*x)*c^2*f^2+5*I*g^2+4*arcsin(c*x)*g^2)*sin(3*arcsin(c*x))*d^2/c^3/(c^2*x^2
-1))
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="ma
xima")
```

```
[Out] 1/48*(8*(-c^2*d*x^2 + d)^(5/2)*x + 10*(-c^2*d*x^2 + d)^(3/2)*d*x + 15*sqrt(
-c^2*d*x^2 + d)*d^2*x + 15*d^(5/2)*arcsin(c*x)/c)*a*f^2 + 1/384*(8*(-c^2*d*
x^2 + d)^(5/2)*x/c^2 - 48*(-c^2*d*x^2 + d)^(7/2)*x/(c^2*d) + 10*(-c^2*d*x^2
 + d)^(3/2)*d*x/c^2 + 15*sqrt(-c^2*d*x^2 + d)*d^2*x/c^2 + 15*d^(5/2)*arcsin
(c*x)/c^3)*a*g^2 - 2/7*(-c^2*d*x^2 + d)^(7/2)*a*f*g/(c^2*d) + sqrt(d)*integ
rate((b*c^4*d^2*g^2*x^6 + 2*b*c^4*d^2*f*g*x^5 - 4*b*c^2*d^2*f*g*x^3 + 2*b*d
^2*f*g*x + b*d^2*f^2 + (b*c^4*d^2*f^2 - 2*b*c^2*d^2*g^2)*x^4 - (2*b*c^2*d^2
*f^2 - b*d^2*g^2)*x^2)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x +
 1)*sqrt(-c*x + 1)), x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="fr
icas")
```

```
[Out] integral((a*c^4*d^2*g^2*x^6 + 2*a*c^4*d^2*f*g*x^5 - 4*a*c^2*d^2*f*g*x^3 + 2
*a*d^2*f*g*x + a*d^2*f^2 + (a*c^4*d^2*f^2 - 2*a*c^2*d^2*g^2)*x^4 - (2*a*c^2
*d^2*f^2 - a*d^2*g^2)*x^2 + (b*c^4*d^2*g^2*x^6 + 2*b*c^4*d^2*f*g*x^5 - 4*b*
c^2*d^2*f*g*x^3 + 2*b*d^2*f*g*x + b*d^2*f^2 + (b*c^4*d^2*f^2 - 2*b*c^2*d^2*
g^2)*x^4 - (2*b*c^2*d^2*f^2 - b*d^2*g^2)*x^2)*arcsin(c*x))*sqrt(-c^2*d*x^2
+ d), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x)),x)
```

```
[Out] Timed out
```

Giac [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="gi
ac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int (f+g\,x)^2\,(a+b\,\mathrm{asin}(c\,x))\,\left(d-c^2\,d\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2*(a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int((f + g*x)^2*(a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2), x)
```

3.42 $\int (f+gx)\left(d-c^2dx^2\right)^{5/2}(a+b\mathbf{ArcSin}(cx))\,dx$

Optimal. Leaf size=517

$$\frac{bd^2gx\sqrt{d-c^2dx^2}}{7c\sqrt{1-c^2x^2}}-\frac{25bcd^2fx^2\sqrt{d-c^2dx^2}}{96\sqrt{1-c^2x^2}}-\frac{bcd^2gx^3\sqrt{d-c^2dx^2}}{7\sqrt{1-c^2x^2}}+\frac{5bc^3d^2fx^4\sqrt{d-c^2dx^2}}{96\sqrt{1-c^2x^2}}+\frac{3bc^3d^2gx^5\sqrt{d-}}{35\sqrt{1-c^2}}$$

```
[Out] 1/36*b*d^2*f*(-c^2*x^2+1)^(5/2)*(-c^2*d*x^2+d)^(1/2)/c+5/16*d^2*f*x*(a+b*ar
csin(c*x))*(-c^2*d*x^2+d)^(1/2)+5/24*d^2*f*x*(-c^2*x^2+1)*(a+b*arcsin(c*x))
*(-c^2*d*x^2+d)^(1/2)+1/6*d^2*f*x*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))*(-c^2*d*
x^2+d)^(1/2)-1/7*d^2*g*(-c^2*x^2+1)^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2
)/c^2+1/7*b*d^2*g*x*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-25/96*b*c*d^2
*f*x^2*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-1/7*b*c*d^2*g*x^3*(-c^2*d*x^
2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+5/96*b*c^3*d^2*f*x^4*(-c^2*d*x^2+d)^(1/2)/(-c
^2*x^2+1)^(1/2)+3/35*b*c^3*d^2*g*x^5*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2
)-1/49*b*c^5*d^2*g*x^7*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+5/32*d^2*f*(
a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/b/c/(-c^2*x^2+1)^(1/2)
```

Rubi [A]
time = 0.27, antiderivative size = 517, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 10, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.345$, Rules used = {4861, 4847, 4743, 4741, 4737, 30, 14, 267, 4767, 200}

$$\frac{1}{6}d^2fx\left(1-c^2x^2\right)^2\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))+\frac{5}{16}d^2fx\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))+\frac{5}{24}d^2fx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))+\frac{5d^2f\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))^2}{32bc\sqrt{1-c^2x^2}}-\frac{d^2g\left(1-c^2x^2\right)^3\sqrt{d-c^2dx^2}\,(a+b\text{ArcSin}(cx))}{7c^2}-\frac{25bcd^2fx^2\sqrt{d-c^2dx^2}}{96\sqrt{1-c^2x^2}}+\frac{bd^2f\left(1-c^2x^2\right)^{5/2}\sqrt{d-c^2dx^2}}{36c}+\frac{bd^2gx\sqrt{d-c^2dx^2}}{7c\sqrt{1-c^2x^2}}-\frac{bcd^2gx^3\sqrt{d-c^2dx^2}}{7\sqrt{1-c^2x^2}}-\frac{bc^5d^2gx^7\sqrt{d-c^2dx^2}}{49\sqrt{1-c^2x^2}}+\frac{5bc^3d^2fx^4\sqrt{d-c^2dx^2}}{96\sqrt{1-c^2x^2}}+\frac{3bc^3d^2gx^5\sqrt{d-c^2dx^2}}{35\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*d^2*g*x*Sqrt[d - c^2*d*x^2])/(7*c*Sqrt[1 - c^2*x^2]) - (25*b*c*d^2*f*x^2
*Sqrt[d - c^2*d*x^2])/(96*Sqrt[1 - c^2*x^2]) - (b*c*d^2*g*x^3*Sqrt[d - c^2*
d*x^2])/(7*Sqrt[1 - c^2*x^2]) + (5*b*c^3*d^2*f*x^4*Sqrt[d - c^2*d*x^2])/(96
*Sqrt[1 - c^2*x^2]) + (3*b*c^3*d^2*g*x^5*Sqrt[d - c^2*d*x^2])/(35*Sqrt[1 -
c^2*x^2]) - (b*c^5*d^2*g*x^7*Sqrt[d - c^2*d*x^2])/(49*Sqrt[1 - c^2*x^2]) +
(b*d^2*f*(1 - c^2*x^2)^(5/2)*Sqrt[d - c^2*d*x^2])/(36*c) + (5*d^2*f*x*Sqrt[
d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/16 + (5*d^2*f*x*(1 - c^2*x^2)*Sqrt[d -
c^2*d*x^2]*(a + b*ArcSin[c*x]))/24 + (d^2*f*x*(1 - c^2*x^2)^2*Sqrt[d - c^2*
d*x^2]*(a + b*ArcSin[c*x]))/6 - (d^2*g*(1 - c^2*x^2)^3*Sqrt[d - c^2*d*x^2]*
(a + b*ArcSin[c*x]))/(7*c^2) + (5*d^2*f*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c
*x])^2)/(32*b*c*Sqrt[1 - c^2*x^2])
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

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

Rule 200

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 267

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

Rule 4737

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

Rule 4741

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

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[x*(d + e*x^2)^p*((a + b*ArcSin[c*x])^n/(2*p + 1)), x] + (D
ist[2*d*(p/(2*p + 1)), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[b*c*(n/(2*p + 1))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[x*(1 -
c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c,
d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
```

```
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int (f+gx)\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)\,dx = \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int (f+gx)\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int\left(f\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)+gx\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d^2f\sqrt{d-c^2dx^2}\right)\int\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)\,dx}{\sqrt{1-c^2x^2}} + $$

$$= \frac{1}{6}d^2fx\left(1-c^2x^2\right)^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right) - \frac{d^2g(1-}{}$$

$$= \frac{bd^2f\left(1-c^2x^2\right)^{5/2}\sqrt{d-c^2dx^2}}{36c} + \frac{5}{24}d^2fx\left(1-c^2x^2\right)\sqrt{d-}$$

$$= \frac{bd^2gx\sqrt{d-c^2dx^2}}{7c\sqrt{1-c^2x^2}} - \frac{bcd^2gx^3\sqrt{d-c^2dx^2}}{7\sqrt{1-c^2x^2}} + \frac{3bc^3d^2gx^5\sqrt{d}}{35\sqrt{1-}}$$

$$= \frac{bd^2gx\sqrt{d-c^2dx^2}}{7c\sqrt{1-c^2x^2}} - \frac{25bcd^2fx^2\sqrt{d-c^2dx^2}}{96\sqrt{1-c^2x^2}} - \frac{bcd^2gx^3\sqrt{}}{7\sqrt{1-}}$$

Mathematica [A]
time = 0.29, size = 251, normalized size = 0.49

$$\frac{d^2\sqrt{d-c^2dx^2}\left(11025a^2cf+210ab\sqrt{1-c^2x^2}\left(48g\left(-1+c^2x^2\right)^3+7c^2fx\left(33-26c^2x^2+8c^4x^4\right)\right)+b^2cx\left(-245c^2fx\left(99-39c^2x^2+8c^4x^4\right)-288g\left(-35+35c^2x^2-21c^4x^4+5c^6x^6\right)\right)+210b\left(105acf+b\sqrt{1-c^2x^2}\left(48g\left(-1+c^2x^2\right)^3+7c^2fx\left(33-26c^2x^2+8c^4x^4\right)\right)\right)\text{ArcSin}(cx)+11025b^2cf\,\text{ArcSin}(cx)^2\right)}{70560bc^2\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d^2*Sqrt[d - c^2*d*x^2]*(11025*a^2*c*f + 210*a*b*Sqrt[1 - c^2*x^2]*(48*g*(
-1 + c^2*x^2)^3 + 7*c^2*f*x*(33 - 26*c^2*x^2 + 8*c^4*x^4)) + b^2*c*x*(-245*
c^2*f*x*(99 - 39*c^2*x^2 + 8*c^4*x^4) - 288*g*(-35 + 35*c^2*x^2 - 21*c^4*x^
4 + 5*c^6*x^6)) + 210*b*(105*a*c*f + b*Sqrt[1 - c^2*x^2]*(48*g*(-1 + c^2*x^
2)^3 + 7*c^2*f*x*(33 - 26*c^2*x^2 + 8*c^4*x^4)))*ArcSin[c*x] + 11025*b^2*c*
f*ArcSin[c*x]^2))/(70560*b*c^2*Sqrt[1 - c^2*x^2])
```

Maple [C] Result contains complex when optimal does not.
time = 0.53, size = 1423, normalized size = 2.75

method	result	size
default	Expression too large to display	1423

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x,method=_RETURNVERBOSE)
```

```
[Out] -1/7*a*g/c^2/d*(-c^2*d*x^2+d)^(7/2)+1/6*a*f*x*(-c^2*d*x^2+d)^(5/2)+5/24*a*f
*d*x*(-c^2*d*x^2+d)^(3/2)+5/16*a*f*d^2*x*(-c^2*d*x^2+d)^(1/2)+5/16*a*f*d^3/
(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+b*(-5/32*(-d*(c^
2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcsin(c*x)^2*f*d^2+1/6272
*(-d*(c^2*x^2-1))^(1/2)*(64*c^8*x^8-144*c^6*x^6-64*I*(-c^2*x^2+1)^(1/2)*x^7
*c^7+104*c^4*x^4+112*I*(-c^2*x^2+1)^(1/2)*x^5*c^5-25*c^2*x^2-56*I*(-c^2*x^2
+1)^(1/2)*x^3*c^3+7*I*(-c^2*x^2+1)^(1/2)*x*c+1)*g*(I+7*arcsin(c*x))*d^2/c^2
/(c^2*x^2-1)+1/2304*(-d*(c^2*x^2-1))^(1/2)*(-32*I*(-c^2*x^2+1)^(1/2)*x^6*c^
6+32*c^7*x^7+48*I*(-c^2*x^2+1)^(1/2)*x^4*c^4-64*c^5*x^5-18*I*(-c^2*x^2+1)^(
1/2)*x^2*c^2+38*c^3*x^3+I*(-c^2*x^2+1)^(1/2)-6*c*x)*f*(I+6*arcsin(c*x))*d^2
/c/(c^2*x^2-1)-5/128*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x
*c-1)*g*(arcsin(c*x)+I)*d^2/c^2/(c^2*x^2-1)-5/128*(-d*(c^2*x^2-1))^(1/2)*(I
*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(arcsin(c*x)-I)*d^2/c^2/(c^2*x^2-1)+15
/256*(-d*(c^2*x^2-1))^(1/2)*(2*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+2*c^3*x^3-I*(-c
^2*x^2+1)^(1/2)-2*c*x)*f*(-I+2*arcsin(c*x))*d^2/c/(c^2*x^2-1)+1/128*(-d*(c^
2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^
(1/2)*x*c-5*c^2*x^2+1)*g*(-I+3*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)-1/7840*(-d*
(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(11*I+70*arcsin(c
*x))*cos(6*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)-3/15680*(-d*(c^2*x^2-1))^(1/2)*
(I*x^2*c^2-c*x*(-c^2*x^2+1)^(1/2)-I)*g*(9*I+35*arcsin(c*x))*sin(6*arcsin(c*
x))*d^2/c^2/(c^2*x^2-1)-1/4608*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2-c*x*(-c^2*
x^2+1)^(1/2)-I)*f*(29*I+96*arcsin(c*x))*cos(5*arcsin(c*x))*d^2/c/(c^2*x^2-1
)+5/4608*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*f*(5*I
+24*arcsin(c*x))*sin(5*arcsin(c*x))*d^2/c/(c^2*x^2-1)-1/160*(-d*(c^2*x^2-1)
)^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(I+5*arcsin(c*x))*cos(4*arcs
in(c*x))*d^2/c^2/(c^2*x^2-1)-1/320*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2-c*x*(-
```

```
c^2*x^2+1)^(1/2)-I)*g*(3*I+5*arcsin(c*x))*sin(4*arcsin(c*x))*d^2/c^2/(c^2*x
^2-1)-3/512*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2-c*x*(-c^2*x^2+1)^(1/2)-I)*f*(
11*I+16*arcsin(c*x))*cos(3*arcsin(c*x))*d^2/c/(c^2*x^2-1)+9/512*(-d*(c^2*x^
2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*f*(3*I+8*arcsin(c*x))*sin(
3*arcsin(c*x))*d^2/c/(c^2*x^2-1))
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="maxi
ma")
```

```
[Out] 1/48*(8*(-c^2*d*x^2 + d)^(5/2)*x + 10*(-c^2*d*x^2 + d)^(3/2)*d*x + 15*sqrt(
-c^2*d*x^2 + d)*d^2*x + 15*d^(5/2)*arcsin(c*x)/c)*a*f - 1/7*(-c^2*d*x^2 + d
)^(7/2)*a*g/(c^2*d) + sqrt(d)*integrate((b*c^4*d^2*g*x^5 + b*c^4*d^2*f*x^4
- 2*b*c^2*d^2*g*x^3 - 2*b*c^2*d^2*f*x^2 + b*d^2*g*x + b*d^2*f)*sqrt(c*x + 1
)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)), x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="fric
as")
```

```
[Out] integral((a*c^4*d^2*g*x^5 + a*c^4*d^2*f*x^4 - 2*a*c^2*d^2*g*x^3 - 2*a*c^2*d
^2*f*x^2 + a*d^2*g*x + a*d^2*f + (b*c^4*d^2*g*x^5 + b*c^4*d^2*f*x^4 - 2*b*c
^2*d^2*g*x^3 - 2*b*c^2*d^2*f*x^2 + b*d^2*g*x + b*d^2*f)*arcsin(c*x))*sqrt(-
c^2*d*x^2 + d), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x)),x)
```

```
[Out] Timed out
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="giac
")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int (f + g\,x)\,\left(a + b\,\mathrm{asin}(c\,x)\right)\,\left(d - c^2\,d\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int((f + g*x)*(a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2), x)
```

3.43 $\int \frac{(d-c^2dx^2)^{5/2}(a+b\mathbf{ArcSin}(cx))}{f+gx}\,dx$

Optimal. Leaf size=1648

$$\frac{ad^2(c^2f^2-g^2)^2\sqrt{d-c^2dx^2}}{g^5}+\frac{2bcd^2x\sqrt{d-c^2dx^2}}{15g\sqrt{1-c^2x^2}}+\frac{bcd^2(c^2f^2-2g^2)\,x\sqrt{d-c^2dx^2}}{3g^3\sqrt{1-c^2x^2}}-\frac{bcd^2(c^2f^2-g^2)^2\,x\sqrt{d}}{g^5\sqrt{1-c^2x^2}}$$

```
[Out] b*d^2*(c^2*f^2-g^2)^2*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/g^5-1/3*d^2*(c^2*f^2
-2*g^2)*(-c^2*x^2+1)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/g^3+1/8*c^2*d^2
*f*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/g^2-1/4*c^4*d^2*f*x^3*(a+b*arcs
in(c*x))*(-c^2*d*x^2+d)^(1/2)/g^2+2/15*b*c*d^2*x*(-c^2*d*x^2+d)^(1/2)/g/(-c
^2*x^2+1)^(1/2)+1/45*b*c^3*d^2*x^3*(-c^2*d*x^2+d)^(1/2)/g/(-c^2*x^2+1)^(1/2
)-1/25*b*c^5*d^2*x^5*(-c^2*d*x^2+d)^(1/2)/g/(-c^2*x^2+1)^(1/2)-a*d^2*(c^2*f
^2-g^2)^(5/2)*arctan((c^2*f*x+g)/(c^2*f^2-g^2)^(1/2)/(-c^2*x^2+1)^(1/2))*(-
c^2*d*x^2+d)^(1/2)/g^6/(-c^2*x^2+1)^(1/2)+b*d^2*(c^2*f^2-g^2)^(5/2)*polylog
(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))*(-c^2*d*x^2+d)
^(1/2)/g^6/(-c^2*x^2+1)^(1/2)-b*d^2*(c^2*f^2-g^2)^(5/2)*polylog(2,I*(I*c*x+
(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))*(-c^2*d*x^2+d)^(1/2)/g^6/(
-c^2*x^2+1)^(1/2)+a*d^2*(c^2*f^2-g^2)^2*(-c^2*d*x^2+d)^(1/2)/g^5-1/3*d^2*(-
c^2*x^2+1)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/g+1/5*d^2*(-c^2*x^2+1)^2*
(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/g+I*b*d^2*(c^2*f^2-g^2)^(5/2)*arcsin
(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))*(-c^2*
d*x^2+d)^(1/2)/g^6/(-c^2*x^2+1)^(1/2)+1/2*d^2*(c^2*f^2-g^2)^2*(a+b*arcsin(c
*x))^2*(-c^2*x^2+1)^(1/2)*(-c^2*d*x^2+d)^(1/2)/b/c/g^4/(g*x+f)-I*b*d^2*(c^2
*f^2-g^2)^(5/2)*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f
^2-g^2)^(1/2)))*(-c^2*d*x^2+d)^(1/2)/g^6/(-c^2*x^2+1)^(1/2)+1/4*b*c^3*d^2*f
*(c^2*f^2-2*g^2)*x^2*(-c^2*d*x^2+d)^(1/2)/g^4/(-c^2*x^2+1)^(1/2)-1/4*c*d^2*
f*(c^2*f^2-2*g^2)*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/b/g^4/(-c^2*x^2+
1)^(1/2)+1/2*c*d^2*(c^2*f^2-g^2)^2*x*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/
2)/b/g^5/(-c^2*x^2+1)^(1/2)+1/2*d^2*(c^2*f^2-g^2)^3*(a+b*arcsin(c*x))^2*(-c
^2*d*x^2+d)^(1/2)/b/c/g^6/(g*x+f)/(-c^2*x^2+1)^(1/2)-1/2*c^2*d^2*f*(c^2*f^2
-2*g^2)*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/g^4+1/3*b*c*d^2*(c^2*f^2-2
*g^2)*x*(-c^2*d*x^2+d)^(1/2)/g^3/(-c^2*x^2+1)^(1/2)-b*c*d^2*(c^2*f^2-g^2)^2
*x*(-c^2*d*x^2+d)^(1/2)/g^5/(-c^2*x^2+1)^(1/2)-1/16*b*c^3*d^2*f*x^2*(-c^2*d
*x^2+d)^(1/2)/g^2/(-c^2*x^2+1)^(1/2)-1/9*b*c^3*d^2*(c^2*f^2-2*g^2)*x^3*(-c^
2*d*x^2+d)^(1/2)/g^3/(-c^2*x^2+1)^(1/2)+1/16*b*c^5*d^2*f*x^4*(-c^2*d*x^2+d)
^(1/2)/g^2/(-c^2*x^2+1)^(1/2)-1/16*c*d^2*f*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+
d)^(1/2)/b/g^2/(-c^2*x^2+1)^(1/2)
```

Rubi [A]
time = 1.89, antiderivative size = 1648, normalized size of antiderivative = 1.00, number of steps used = 37, number of rules used = 28, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.903$, Rules used = {4861, 4851, 4741, 4737, 30, 4767, 4783, 4795, 272, 45, 4779, 12, 4849, 697,

4841, 6874, 739, 210, 1668, 4883, 4881, 8, 4857, 3404, 2296, 2221, 2317, 2438}

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(f + g*x),x]
```

```
[Out] (a*d^2*(c^2*f^2 - g^2)^2*Sqrt[d - c^2*d*x^2])/g^5 + (2*b*c*d^2*x*Sqrt[d - c
^2*d*x^2])/(15*g*Sqrt[1 - c^2*x^2]) + (b*c*d^2*(c^2*f^2 - 2*g^2)*x*Sqrt[d -
 c^2*d*x^2])/(3*g^3*Sqrt[1 - c^2*x^2]) - (b*c*d^2*(c^2*f^2 - g^2)^2*x*Sqrt[
d - c^2*d*x^2])/(g^5*Sqrt[1 - c^2*x^2]) - (b*c^3*d^2*f*x^2*Sqrt[d - c^2*d*x
^2])/(16*g^2*Sqrt[1 - c^2*x^2]) + (b*c^3*d^2*f*(c^2*f^2 - 2*g^2)*x^2*Sqrt[d
 - c^2*d*x^2])/(4*g^4*Sqrt[1 - c^2*x^2]) + (b*c^3*d^2*x^3*Sqrt[d - c^2*d*x^
2])/(45*g*Sqrt[1 - c^2*x^2]) - (b*c^3*d^2*(c^2*f^2 - 2*g^2)*x^3*Sqrt[d - c^
2*d*x^2])/(9*g^3*Sqrt[1 - c^2*x^2]) + (b*c^5*d^2*f*x^4*Sqrt[d - c^2*d*x^2])
/(16*g^2*Sqrt[1 - c^2*x^2]) - (b*c^5*d^2*x^5*Sqrt[d - c^2*d*x^2])/(25*g*Sqr
t[1 - c^2*x^2]) + (b*d^2*(c^2*f^2 - g^2)^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])
/g^5 + (c^2*d^2*f*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*g^2) - (c^2
*d^2*f*(c^2*f^2 - 2*g^2)*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(2*g^4)
 - (c^4*d^2*f*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(4*g^2) - (d^2*(
1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*g) - (d^2*(c^2*f^2
 - 2*g^2)*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*g^3) +
(d^2*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(5*g) - (c*d^
2*f*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(16*b*g^2*Sqrt[1 - c^2*x^2])
 - (c*d^2*f*(c^2*f^2 - 2*g^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(4
*b*g^4*Sqrt[1 - c^2*x^2]) + (c*d^2*(c^2*f^2 - g^2)^2*x*Sqrt[d - c^2*d*x^2]*
(a + b*ArcSin[c*x])^2)/(2*b*g^5*Sqrt[1 - c^2*x^2]) + (d^2*(c^2*f^2 - g^2)^3
*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c*g^6*(f + g*x)*Sqrt[1 - c
^2*x^2]) + (d^2*(c^2*f^2 - g^2)^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]*(a
+ b*ArcSin[c*x])^2)/(2*b*c*g^4*(f + g*x)) - (a*d^2*(c^2*f^2 - g^2)^(5/2)*Sq
rt[d - c^2*d*x^2]*ArcTan[(g + c^2*f*x)/(Sqrt[c^2*f^2 - g^2]*Sqrt[1 - c^2*x^
2])])/(g^6*Sqrt[1 - c^2*x^2]) + (I*b*d^2*(c^2*f^2 - g^2)^(5/2)*Sqrt[d - c^2
*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g
^2])])/(g^6*Sqrt[1 - c^2*x^2]) - (I*b*d^2*(c^2*f^2 - g^2)^(5/2)*Sqrt[d - c^
2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 -
g^2])])/(g^6*Sqrt[1 - c^2*x^2]) + (b*d^2*(c^2*f^2 - g^2)^(5/2)*Sqrt[d - c^2
*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(g
^6*Sqrt[1 - c^2*x^2]) - (b*d^2*(c^2*f^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*Po
lyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1
- c^2*x^2])
```

Rule 8

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

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

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

Rule 45

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

Rule 210

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

Rule 272

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

Rule 697

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[2*c*d - b*e, 0] &
& IGtQ[p, 0] &&  !(EqQ[m, 3] && NeQ[p, 1])
```

Rule 739

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

Rule 1668

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :
> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[f*(d + e*x)
^(m + q - 1)*((a + c*x^2)^(p + 1)/(c*e^(q - 1)*(m + q + 2*p + 1))), x] + Di
st[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + c*x^2)^p*ExpandToSum[c
```

```
*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1)*(d + e*x)^q - f*(d + e*x)
^(q - 2)*(a*e^2*(m + q - 1) - c*d^2*(m + q + 2*p + 1) - 2*c*d*e*(m + q + p)
*x), x], x], x] /; GtQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, c, d,
 e, m, p}, x] && PolyQ[Pq, x] && NeQ[c*d^2 + a*e^2, 0] &&  !(EqQ[d, 0] && T
rue) &&  !(IGtQ[m, 0] && RationalQ[a, c, d, e] && (IntegerQ[p] || ILtQ[p +
1/2, 0]))
```

Rule 2221

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

Rule 2296

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[2*(c/q), Int[
(f + g*x)^m*(F^u/(b - q + 2*c*F^u)), x], x] - Dist[2*(c/q), Int[(f + g*x)^m
*(F^u/(b + q + 2*c*F^u)), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2317

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

Rule 2438

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

Rule 3404

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[(c + d*x)^m*(E^(I*(e + f*x))/(I*b + 2*a*E^(I*(e + f*x)
) - I*b*E^(2*I*(e + f*x)))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4737

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

```
+ e, 0] && NeQ[n, -1]
```

Rule 4741

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

Rule 4767

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

Rule 4779

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[
c*x], u, x] - Dist[b*c*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[Simplif
yIntegrand[u/Sqrt[d + e*x^2], x], x], x]] /; FreeQ[{a, b, c, d, e}, x] && E
qQ[c^2*d + e, 0] && IntegerQ[p - 1/2] && NeQ[p, -2^(-1)] && (IGtQ[(m + 1)/2
, 0] || ILtQ[(m + 2*p + 3)/2, 0])
```

Rule 4783

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

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
```

```
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4841

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.) + (g_.)*(x_) + (h_.)*(x
_)^2)^(p_.))/((d_) + (e_.)*(x_))^2, x_Symbol] :> With[{u = IntHide[(f + g*x
 + h*x^2)^p/(d + e*x)^2, x]}, Dist[(a + b*ArcSin[c*x])^n, u, x] - Dist[b*c*
n, Int[SimplifyIntegrand[u*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*x^2]),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, h}, x] && IGtQ[n, 0] && IGtQ[p,
 0] && EqQ[e*g - 2*d*h, 0]
```

Rule 4849

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

Rule 4851

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[Sqrt[d + e*x^2]*(a
 + b*ArcSin[c*x])^n, (f + g*x)^m*(d + e*x^2)^(p - 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && IGtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4881

```
Int[ArcSin[(c_.)*(x_)]^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p_), x_Symbol] :
> With[{u = ExpandIntegrand[(d + e*x^2)^p*ArcSin[c*x]^n, RFx, x]}, Int[u, x
] /; SumQ[u]] /; FreeQ[{c, d, e}, x] && RationalFunctionQ[RFx, x] && IGtQ[n
, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 4883

```
Int[(ArcSin[(c_.)*(x_)]*(b_.) + (a_))^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p
_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p, RFx*(a + b*ArcSin[c*x])
^n, x], x] /; FreeQ[{a, b, c, d, e}, x] && RationalFunctionQ[RFx, x] && IGt
Q[n, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{f+gx}\,dx = \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int \frac{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{f+gx}\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int \left(-\frac{c^2f\left(c^2f^2-2g^2\right)\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{g^4}+\frac{c^2\left(c^2\cdots\right.}{\cdots}\right.}{\cdots}$$

$$= -\frac{\left(c^4d^2f\sqrt{d-c^2dx^2}\right)\int x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\,dx}{g^2\sqrt{1-c^2x^2}}+\frac{\left(c^4\cdots\right.}{\cdots}$$

$$= -\frac{c^2d^2f\left(c^2f^2-2g^2\right)x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2g^4}-\frac{c^4d^2fx^3\sqrt{d\cdots}}{\cdots}$$

$$= \frac{bcd^2\left(c^2f^2-2g^2\right)x\sqrt{d-c^2dx^2}}{3g^3\sqrt{1-c^2x^2}}+\frac{bc^3d^2f\left(c^2f^2-2g^2\right)x^2\sqrt{d-c^2dx\cdots}}{4g^4\sqrt{1-c^2x^2}}\cdots$$

$$= \frac{2bcd^2x\sqrt{d-c^2dx^2}}{15g\sqrt{1-c^2x^2}}+\frac{bcd^2\left(c^2f^2-2g^2\right)x\sqrt{d-c^2dx^2}}{3g^3\sqrt{1-c^2x^2}}-\frac{bc^3d^2fx^2\cdots}{16g^2\sqrt{\cdots}}$$

$$= \frac{2bcd^2x\sqrt{d-c^2dx^2}}{15g\sqrt{1-c^2x^2}}+\frac{bcd^2\left(c^2f^2-2g^2\right)x\sqrt{d-c^2dx^2}}{3g^3\sqrt{1-c^2x^2}}-\frac{bc^3d^2fx^2\cdots}{16g^2\sqrt{\cdots}}$$

$$= \frac{ad^2\left(c^2f^2-g^2\right)^2\sqrt{d-c^2dx^2}}{g^5}+\frac{2bcd^2x\sqrt{d-c^2dx^2}}{15g\sqrt{1-c^2x^2}}+\frac{bcd^2\left(c^2f^2-\cdots\right.}{3g^3\cdots}$$

$$= \frac{ad^2\left(c^2f^2-g^2\right)^2\sqrt{d-c^2dx^2}}{g^5}+\frac{2bcd^2x\sqrt{d-c^2dx^2}}{15g\sqrt{1-c^2x^2}}+\frac{bcd^2\left(c^2f^2-\cdots\right.}{3g^3\cdots}$$

$$= \frac{ad^2\left(c^2f^2-g^2\right)^2\sqrt{d-c^2dx^2}}{g^5}+\frac{2bcd^2x\sqrt{d-c^2dx^2}}{15g\sqrt{1-c^2x^2}}+\frac{bcd^2\left(c^2f^2-\cdots\right.}{3g^3\cdots}$$

$$= \frac{ad^2\left(c^2f^2-g^2\right)^2\sqrt{d-c^2dx^2}}{g^5}+\frac{2bcd^2x\sqrt{d-c^2dx^2}}{15g\sqrt{1-c^2x^2}}+\frac{bcd^2\left(c^2f^2-\cdots\right.}{3g^3\cdots}$$

$$= \frac{ad^2\left(c^2f^2-g^2\right)^2\sqrt{d-c^2dx^2}}{g^5}+\frac{2bcd^2x\sqrt{d-c^2dx^2}}{15g\sqrt{1-c^2x^2}}+\frac{bcd^2\left(c^2f^2-\cdots\right.}{3g^3\cdots}$$

$$= \frac{ad^2\left(c^2f^2-g^2\right)^2\sqrt{d-c^2dx^2}}{g^5}+\frac{2bcd^2x\sqrt{d-c^2dx^2}}{15g\sqrt{1-c^2x^2}}+\frac{bcd^2\left(c^2f^2-\cdots\right.}{3g^3\cdots}$$

Mathematica [A]
time = 1.83, size = 787, normalized size = 0.48

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(f + g*x),x]
```

```
[Out] -1/3600*(d^2*Sqrt[d - c^2*d*x^2]*(-900*b*c^3*f*(c^2*f^2 - 2*g^2)*x^2 - 225*
b*c^5*f*g^2*x^4 + 144*b*c^5*g^3*x^5 + 400*b*c*g*(c^2*f^2 - 2*g^2)*x*(-3 + c
^2*x^2) + 1800*c^2*f*(c^2*f^2 - 2*g^2)*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*
x]) + 900*c^4*f*g^2*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) - 720*c^4*g^3
*x^4*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) + 1200*g*(c^2*f^2 - 2*g^2)*(1 -
c^2*x^2)^(3/2)*(a + b*ArcSin[c*x]) + (900*c*f*(c^2*f^2 - 2*g^2)*(a + b*ArcS
in[c*x])^2)/b + (1800*(-(c^2*f^2) + g^2)^2*(-1 + c^2*x^2)*(a + b*ArcSin[c*x
])^2)/(b*c*(f + g*x)) - 80*g^3*(6*b*c*x + b*c^3*x^3 - 6*Sqrt[1 - c^2*x^2]*(
a + b*ArcSin[c*x]) - 3*c^2*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])) + 225
*c*f*g^2*(b*c^2*x^2 - 2*c*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) + (a + b*
ArcSin[c*x])^2/b) - (1800*(-(c^2*f^2) + g^2)^2*(c^2*g*x*(a + b*ArcSin[c*x])
^2 + ((c^2*f^2 - g^2)*(a + b*ArcSin[c*x])^2)/(f + g*x) - 2*b*c*(b*c*g*x - g
*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) - I*Sqrt[c^2*f^2 - g^2]*((a + b*ArcS
in[c*x])*(Log[1 + (I*E^(I*ArcSin[c*x])*g)/(-(c*f) + Sqrt[c^2*f^2 - g^2])] -
 Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]) - I*b*PolyLo
g[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])] + I*b*PolyLog[2,
(I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]))))/(b*c*g^2)))/(g^4*S
qrt[1 - c^2*x^2])
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 4684 vs. 2(1522) = 3044.
time = 0.60, size = 4685, normalized size = 2.84

method	result	size
default	Expression too large to display	4685

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/(g*x+f),x,method=_RETURNVERBOSE)
```

```
[Out] 1/4*a/g^2*c^2*d*f*(-c^2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2
)^(3/2)*x+7/8*a/g^2*c^2*d^2*f*(-c^2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*
f^2-g^2)/g^2)^(1/2)*x+15/8*a/g^2*c^2*d^3*f/(c^2*d)^(1/2)*arctan((c^2*d)^(1/
2)*x/(-c^2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))-1/2*
a/g^4*d^2*c^4*f^3*(-c^2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2
)^(1/2)*x-5/2*a/g^4*d^3*c^4*f^3/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*
d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))+a/g^6*d^3*c^6*f
^5/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/
```

g)-d*(c^2*f^2-g^2)/g^2)^(1/2))+a/g^7*d^3/(-d*(c^2*f^2-g^2)/g^2)^(1/2)*ln((-
2*d*(c^2*f^2-g^2)/g^2+2*c^2*d*f/g*(x+f/g)+2*(-d*(c^2*f^2-g^2)/g^2)^(1/2)*(-
c^2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))/(x+f/g))*c^
6*f^6-3*a/g^5*d^3/(-d*(c^2*f^2-g^2)/g^2)^(1/2)*ln((-2*d*(c^2*f^2-g^2)/g^2+2
*c^2*d*f/g*(x+f/g)+2*(-d*(c^2*f^2-g^2)/g^2)^(1/2)*(-c^2*d*(x+f/g)^2+2*c^2*d
f/g(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))/(x+f/g))*c^4*f^4+3*a/g^3*d^3/(-d*(
c^2*f^2-g^2)/g^2)^(1/2)*ln((-2*d*(c^2*f^2-g^2)/g^2+2*c^2*d*f/g*(x+f/g)+2*(-
d*(c^2*f^2-g^2)/g^2)^(1/2)*(-c^2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2
-g^2)/g^2)^(1/2))/(x+f/g))*c^2*f^2-1/3*a/g^3*d*(-c^2*d*(x+f/g)^2+2*c^2*d*f/
g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(3/2)*c^2*f^2+a/g^5*d^2*(-c^2*d*(x+f/g)^2+2*
c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2)*c^4*f^4-2*a/g^3*d^2*(-c^2*d*(x
+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2)*c^2*f^2-2*b*(-c^2*f^
2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)/g^4*d^2*
arcsin(c*x)*ln((I*c*f+(I*c*x+(-c^2*x^2+1)^(1/2))*g+(-c^2*f^2+g^2)^(1/2))/(I
*c*f+(-c^2*f^2+g^2)^(1/2)))*c^2*f^2+2*b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1
))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)/g^4*d^2*arcsin(c*x)*ln((-I*c*f-(I*c
*x+(-c^2*x^2+1)^(1/2))*g+(-c^2*f^2+g^2)^(1/2))/(-I*c*f+(-c^2*f^2+g^2)^(1/2)
))*c^2*f^2+I*b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/
2)/(c^2*x^2-1)/g^6*d^2*dilog(-I/(-I*c*f+(-c^2*f^2+g^2)^(1/2))*c*f-1/(-I*c*f
+(-c^2*f^2+g^2)^(1/2))*(I*c*x+(-c^2*x^2+1)^(1/2))*g+1/(-I*c*f+(-c^2*f^2+g^2
)^(1/2))*(-c^2*f^2+g^2)^(1/2))*c^4*f^4-I*b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^
2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)/g^6*d^2*dilog(I/(I*c*f+(-c^2*f^2
+g^2)^(1/2))*c*f+1/(I*c*f+(-c^2*f^2+g^2)^(1/2))*(I*c*x+(-c^2*x^2+1)^(1/2))*
g+1/(I*c*f+(-c^2*f^2+g^2)^(1/2))*(-c^2*f^2+g^2)^(1/2))*c^4*f^4-2*I*b*(-c^2*
f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)/g^4*d^
2*dilog(-I/(-I*c*f+(-c^2*f^2+g^2)^(1/2))*c*f-1/(-I*c*f+(-c^2*f^2+g^2)^(1/2)
)*(I*c*x+(-c^2*x^2+1)^(1/2))*g+1/(-I*c*f+(-c^2*f^2+g^2)^(1/2))*(-c^2*f^2+g^
2)^(1/2))*c^2*f^2+2*I*b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x
^2+1)^(1/2)/(c^2*x^2-1)/g^4*d^2*dilog(I/(I*c*f+(-c^2*f^2+g^2)^(1/2))*c*f+1/
(I*c*f+(-c^2*f^2+g^2)^(1/2))*(I*c*x+(-c^2*x^2+1)^(1/2))*g+1/(I*c*f+(-c^2*f^
2+g^2)^(1/2))*(-c^2*f^2+g^2)^(1/2))*c^2*f^2+b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2
x^2-1))^(1/2)(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)/g^6*d^2*arcsin(c*x)*ln((I*c*f
+(I*c*x+(-c^2*x^2+1)^(1/2))*g+(-c^2*f^2+g^2)^(1/2))/(I*c*f+(-c^2*f^2+g^2)^(
1/2)))*c^4*f^4-b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(
1/2)/(c^2*x^2-1)/g^6*d^2*arcsin(c*x)*ln((-I*c*f-(I*c*x+(-c^2*x^2+1)^(1/2))*
g+(-c^2*f^2+g^2)^(1/2))/(-I*c*f+(-c^2*f^2+g^2)^(1/2)))*c^4*f^4+1/5*a/g*(-c^
2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(5/2)+1/3*a/g*d*(-c^
2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(3/2)+a/g*d^2*(-c^2*
d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2)-a/g*d^3/(-d*(c^2
*f^2-g^2)/g^2)^(1/2)*ln((-2*d*(c^2*f^2-g^2)/g^2+2*c^2*d*f/g*(x+f/g)+2*(-d*(
c^2*f^2-g^2)/g^2)^(1/2)*(-c^2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^
2)/g^2)^(1/2))/(x+f/g))-33/128*b*(-d*(c^2*x^2-1))^(1/2)*f*d^2*c/(c^2*x^2-1)
/g^2*(-c^2*x^2+1)^(1/2)+1/8*b*(-d*(c^2*x^2-1))^(1/2)*f^3*d^2*c^3/(c^2*x^2-1
)/g^4*(-c^2*x^2+1)^(1/2)+1/25*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)/g*(-
c^2*x^2+1)^(1/2)*x^5*c^5-11/45*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)/g*(

```
-c^2*x^2+1)^(1/2)*x^3*c^3+23/15*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)/g*
(-c^2*x^2+1)^(1/2)*x*c+1/5*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)/g*arcsi
n(c*x)*x^6*c^6-14/15*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)/g*arcsin(c*x)
*x^4*c^4+34/15*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)/g*arcsin(c*x)*x^2*c
^2+7/3*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)/g^3*arcsin(c*x)*c^2*f^2-b*(
-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)/g^5*arcsin(c*x)*c^4*f^4-23/15*b*(-d*(
c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)/g*arcsin(c*x)-9/8*b*(-d*(c^2*x^2-1))^(1/2
)*f*d^2*c^2/(c^2*x^2-1)/g^2*arcsin(c*x)*x+1/3*b*(-d*(c^2*x^2-1))^(1/2)*d^2/
(c^2*x^2-1)/g^3*arcsin(c*x)*x^4*c^6*f^2-8/3*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(c
^2*x^2-1)/g^3*arcsin(c*x)*x^2*c^4*f^2+I*b*(-c^2*f^2+g^2)^(1/2)*(-d*(c^2*x^2
-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)/g^2*d^2*dilog(-I/(-I*c*f+(-c^2*f^
2+g^2)^(1/2))*c*f-1/(-I*c*f+(-c^2*f^2+g^2)^(1/2))*(I*c*x+(-c^2*x^2+1)^(1/2)
)*g+1/(-I*c*f+(-c^2*f^2+g^2)^(1/2))*(-c^2*f^2+g^2)^(1/2))-1/2*b*(-d*(c^2*x^
2-1))^(1/2)*f^3*d^2*c^6/(c^2*x^2-1)/g^4*arcsin(...
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/(g*x+f),x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(g-c*f>0)', see `assume?` for more d
etails)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/(g*x+f),x, algorithm="fric
as")
```

```
[Out] integral((a*c^4*d^2*x^4 - 2*a*c^2*d^2*x^2 + a*d^2 + (b*c^4*d^2*x^4 - 2*b*c^
2*d^2*x^2 + b*d^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/(g*x + f), x)
```

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

$$\int \frac{\left(-d(cx-1)\,(cx+1)\right)^{\frac{5}{2}}\,(a+b\,\mathrm{asin}\,(cx))}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))/(g*x+f),x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(5/2)*(a + b*asin(c*x))/(f + g*x), x)
```

Giac [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/(g*x+f),x, algorithm="giac
")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,sageVARx):;OUTPUT:sym2poly/r2sym(const gen & e,const in
dex_m & i,const vecteur & l) Error: Bad Argument Value
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))\,\left(d-c^2\,d\,x^2\right)^{5/2}}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2))/(f + g*x),x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2))/(f + g*x), x)
```

3.44 $\int \frac{(f+gx)^3(a+b\mathbf{ArcSin}(cx))}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=450

$$\frac{3bf^2gx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}}+\frac{2bg^3x\sqrt{1-c^2x^2}}{3c^3\sqrt{d-c^2dx^2}}+\frac{3bfg^2x^2\sqrt{1-c^2x^2}}{4c\sqrt{d-c^2dx^2}}+\frac{bg^3x^3\sqrt{1-c^2x^2}}{9c\sqrt{d-c^2dx^2}}-\frac{3f^2g(1-c^2x^2)\left(a+b\text{ArcSi}\right.}{c^2\sqrt{d-c^2dx^2}}$$

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

Rubi [A]
time = 0.38, antiderivative size = 450, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.226$, Rules used = {4861, 4847, 4737, 4767, 8, 4795, 30}

$$\frac{f^3\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^2}{2bc\sqrt{d-c^2dx^2}}-\frac{3f^2g(1-c^2x^2)\,(a+b\text{ArcSin}(cx))}{c^2\sqrt{d-c^2dx^2}}-\frac{3fg^2x(1-c^2x^2)\,(a+b\text{ArcSin}(cx))}{2c^2\sqrt{d-c^2dx^2}}-\frac{g^3x^2(1-c^2x^2)\,(a+b\text{ArcSin}(cx))}{3c^2\sqrt{d-c^2dx^2}}-\frac{2g^3(1-c^2x^2)\,(a+b\text{ArcSin}(cx))}{3c^4\sqrt{d-c^2dx^2}}+\frac{3fg^2\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^2}{4bc^3\sqrt{d-c^2dx^2}}+\frac{3bf^2gx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}}+\frac{3bfg^2x^2\sqrt{1-c^2x^2}}{4c\sqrt{d-c^2dx^2}}+\frac{bg^3x^3\sqrt{1-c^2x^2}}{9c\sqrt{d-c^2dx^2}}+\frac{2bg^3x\sqrt{1-c^2x^2}}{3c^3\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^3*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```

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

Rule 8

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

Rule 30

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

Rule 4737

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

Rule 4767

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

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

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

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{f^3\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} + \frac{3f^2gx\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} + \frac{3fg^2x^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} + \right.}{\sqrt{d-c^2dx^2}}$$

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

$$= -\frac{3f^2g(1-c^2x^2)\left(a+b\sin^{-1}(cx)\right)}{c^2\sqrt{d-c^2dx^2}} - \frac{3fg^2x(1-c^2x^2)\left(a+b\sin^{-1}(cx)\right)}{2c^2\sqrt{d-c^2dx^2}}$$

$$= \frac{3bf^2gx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}} + \frac{3bfg^2x^2\sqrt{1-c^2x^2}}{4c\sqrt{d-c^2dx^2}} + \frac{bg^3x^3\sqrt{1-c^2x^2}}{9c\sqrt{d-c^2dx^2}} - \frac{3f^2g(1}{}$$

$$= \frac{3bf^2gx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}} + \frac{2bg^3x\sqrt{1-c^2x^2}}{3c^3\sqrt{d-c^2dx^2}} + \frac{3bfg^2x^2\sqrt{1-c^2x^2}}{4c\sqrt{d-c^2dx^2}} + \frac{bg^3x^3\sqrt{}}{9c\sqrt{d}}$$

Mathematica [A]
time = 0.69, size = 343, normalized size = 0.76

$$\frac{-18bc\sqrt{d}\,f(2c^2f^2+3g^2)(-1+c^2x^2)\,\mathrm{ArcSin}(cx)^2 - 36acf(2c^2f^2+3g^2)\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}\,\mathrm{ArcTan}\left(\frac{cx\sqrt{d-c^2dx^2}}{\sqrt{d}(-1+c^2x^2)}\right) - \sqrt{d}\,g(-1+c^2x^2)\left(8bcx(6g^2+c^2(27f^2+g^2x^2)) - 12a\sqrt{1-c^2x^2}(4g^2+c^2(18f^2+9fgx+2g^2x^2)) - 27bcfg\cos(2\,\mathrm{ArcSin}(cx))\right) + 6b\sqrt{d}\,g(-1+c^2x^2)\,\mathrm{ArcSin}(cx)\left(4\sqrt{1-c^2x^2}(2g^2+c^2(9f^2+g^2x^2)) + 9cfg\sin(2\,\mathrm{ArcSin}(cx))\right)}{72c^4\sqrt{d}\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^3*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (-18*b*c*Sqrt[d]*f*(2*c^2*f^2 + 3*g^2)*(-1 + c^2*x^2)*ArcSin[c*x]^2 - 36*a*
c*f*(2*c^2*f^2 + 3*g^2)*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]*ArcTan[(c*x*S
qrt[d - c^2*d*x^2])/(Sqrt[d]*(-1 + c^2*x^2))] - Sqrt[d]*g*(-1 + c^2*x^2)*(8
*b*c*x*(6*g^2 + c^2*(27*f^2 + g^2*x^2)) - 12*a*Sqrt[1 - c^2*x^2]*(4*g^2 + c
^2*(18*f^2 + 9*f*g*x + 2*g^2*x^2)) - 27*b*c*f*g*Cos[2*ArcSin[c*x]]) + 6*b*S
qrt[d]*g*(-1 + c^2*x^2)*ArcSin[c*x]*(4*Sqrt[1 - c^2*x^2]*(2*g^2 + c^2*(9*f^
2 + g^2*x^2)) + 9*c*f*g*Sin[2*ArcSin[c*x]]))/(72*c^4*Sqrt[d]*Sqrt[1 - c^2*x
^2]*Sqrt[d - c^2*d*x^2])
```

Maple [C] Result contains complex when optimal does not.
time = 0.83, size = 861, normalized size = 1.91

method	result

default	$-\frac{a\,g^3x^2\sqrt{-c^2d\,x^2+d}}{3c^2d}-\frac{2a\,g^3\sqrt{-c^2d\,x^2+d}}{3d\,c^4}-\frac{3af\,g^2x\sqrt{-c^2d\,x^2+d}}{2c^2d}+\frac{3af\,g^2\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2d\,x^2+d}}\right)}{2c^2\sqrt{c^2d}}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x,method=_RETURNVERBOS
E)
```

```
[Out] -1/3*a*g^3*x^2/c^2/d*(-c^2*d*x^2+d)^(1/2)-2/3*a*g^3/d/c^4*(-c^2*d*x^2+d)^(1
/2)-3/2*a*f*g^2*x/c^2/d*(-c^2*d*x^2+d)^(1/2)+3/2*a*f*g^2/c^2/(c^2*d)^(1/2)*
arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-3*a*f^2*g/c^2/d*(-c^2*d*x^2+d)
^(1/2)+a*f^3/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+b*(
-1/4*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d/(c^2*x^2-1)*arcsin(c*x
)^2*f*(2*c^2*f^2+3*g^2)+1/144*(-d*(c^2*x^2-1))^(1/2)*(2*c^2*x^2-2*I*(-c^2*x
^2+1)^(1/2)*x*c-1)*g^3*(I+3*arcsin(c*x))/c^4/d/(c^2*x^2-1)-3/8*(-d*(c^2*x^2
-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*g*(4*arcsin(c*x)*c^2*f^2+4*
I*f^2*c^2+arcsin(c*x)*g^2+I*g^2)/c^4/d/(c^2*x^2-1)-3/8*(-d*(c^2*x^2-1))^(1/
2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(4*arcsin(c*x)*c^2*f^2-4*I*f^2*c^
2+arcsin(c*x)*g^2-I*g^2)/c^4/d/(c^2*x^2-1)+1/144*(-d*(c^2*x^2-1))^(1/2)*(2*
I*(-c^2*x^2+1)^(1/2)*x*c+2*c^2*x^2-1)*g^3*(-I+3*arcsin(c*x))/c^4/d/(c^2*x^2
-1)+3/16*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d/(c^2*x^2-1)*f*g^2+
3/8*(-d*(c^2*x^2-1))^(1/2)/c^2/d/(c^2*x^2-1)*f*g^2*arcsin(c*x)*x-1/24*(-d*(
c^2*x^2-1))^(1/2)/c^4/d/(c^2*x^2-1)*arcsin(c*x)*g^3*cos(4*arcsin(c*x))+1/72
*(-d*(c^2*x^2-1))^(1/2)/c^4/d/(c^2*x^2-1)*g^3*sin(4*arcsin(c*x))+3/16*(-d*(
c^2*x^2-1))^(1/2)/c^3/d/(c^2*x^2-1)*f*g^2*cos(3*arcsin(c*x))+3/8*(-d*(c^2*x
^2-1))^(1/2)/c^3/d/(c^2*x^2-1)*f*g^2*arcsin(c*x)*sin(3*arcsin(c*x)))
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="ma
xima")
```

```
[Out] -1/3*a*g^3*(sqrt(-c^2*d*x^2 + d)*x^2/(c^2*d) + 2*sqrt(-c^2*d*x^2 + d)/(c^4*
d)) - 3/2*a*f*g^2*(sqrt(-c^2*d*x^2 + d)*x/(c^2*d) - arcsin(c*x)/(c^3*sqrt(d
))) + 1/2*b*f^3*arcsin(c*x)^2/(c*sqrt(d)) + 3*b*f^2*g*x/(c*sqrt(d)) + a*f^3
*arcsin(c*x)/(c*sqrt(d)) - 3*sqrt(-c^2*d*x^2 + d)*b*f^2*g*arcsin(c*x)/(c^2*
d) - 3*sqrt(-c^2*d*x^2 + d)*a*f^2*g/(c^2*d) - sqrt(d)*integrate((b*g^3*x^3
+ 3*b*f*g^2*x^2)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sq
rt(-c*x + 1))/(c^2*d*x^2 - d), x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="fr
icas")
```

```
[Out] integral(-(a*g^3*x^3 + 3*a*f*g^2*x^2 + 3*a*f^2*g*x + a*f^3 + (b*g^3*x^3 + 3
*b*f*g^2*x^2 + 3*b*f^2*g*x + b*f^3)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/(c^2*
d*x^2 - d), x)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Exception raised: TypeError >> Invalid comparison of non-real zoo
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="gi
ac")
```

```
[Out] integrate((g*x + f)^3*(b*arcsin(c*x) + a)/sqrt(-c^2*d*x^2 + d), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^3\,(a+b\,\mathrm{asin}(c\,x))}{\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)^3*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int(((f + g*x)^3*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(1/2), x)
```

3.45 $\int \frac{(f+gx)^2(a+b\text{ArcSin}(cx))}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=270

$$\frac{2bfgx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}}+\frac{bg^2x^2\sqrt{1-c^2x^2}}{4c\sqrt{d-c^2dx^2}}-\frac{2fg(1-c^2x^2)\,(a+b\text{ArcSin}(cx))}{c^2\sqrt{d-c^2dx^2}}-\frac{g^2x(1-c^2x^2)\,(a+b\text{ArcSin}(cx))}{2c^2\sqrt{d-c^2dx^2}}$$

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

Rubi [A]

time = 0.27, antiderivative size = 270, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.226$, Rules used = {4861, 4847, 4737, 4767, 8, 4795, 30}

$$\frac{f^2\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^2}{2bc\sqrt{d-c^2dx^2}}-\frac{2fg(1-c^2x^2)\,(a+b\text{ArcSin}(cx))}{c^2\sqrt{d-c^2dx^2}}-\frac{g^2x(1-c^2x^2)\,(a+b\text{ArcSin}(cx))}{2c^2\sqrt{d-c^2dx^2}}+\frac{g^2\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^2}{4bc^3\sqrt{d-c^2dx^2}}+\frac{2bfgx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}}+\frac{bg^2x^2\sqrt{1-c^2x^2}}{4c\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^2*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```

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

Rule 8

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

Rule 30

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

Rule 4737

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

```
+ e, 0] && NeQ[n, -1]
```

Rule 4767

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

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx &= \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)^2(a+b\sin^{-1}(cx))}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}} \\
&= \frac{\sqrt{1-c^2x^2}\int \left(\frac{f^2(a+b\sin^{-1}(cx))}{\sqrt{1-c^2x^2}}+\frac{2fgx(a+b\sin^{-1}(cx))}{\sqrt{1-c^2x^2}}+\frac{g^2x^2(a+b\sin^{-1}(cx))}{\sqrt{1-c^2x^2}}\right) d}{\sqrt{d-c^2dx^2}} \\
&= \frac{\left(f^2\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}+\frac{\left(2fg\sqrt{1-c^2x^2}\right)\int \frac{x(a+b\sin^{-1}(cx))}{\sqrt{1-c^2x^2}}}{\sqrt{d-c^2dx^2}} \\
&= -\frac{2fg(1-c^2x^2)\left(a+b\sin^{-1}(cx)\right)}{c^2\sqrt{d-c^2dx^2}}-\frac{g^2x(1-c^2x^2)\left(a+b\sin^{-1}(cx)\right)}{2c^2\sqrt{d-c^2dx^2}}+ \\
&= \frac{2bfgx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}}+\frac{bg^2x^2\sqrt{1-c^2x^2}}{4c\sqrt{d-c^2dx^2}}-\frac{2fg(1-c^2x^2)\left(a+b\sin^{-1}(cx\right.}{c^2\sqrt{d-c^2dx^2}}
\end{aligned}
$$

Mathematica [A]
time = 0.46, size = 266, normalized size = 0.99

$$
\frac{-2b\sqrt{d}\,(2c^2f^2+g^2)(-1+c^2x^2)\,\text{ArcSin}(cx)^2-4a(2c^2f^2+g^2)\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}\,\text{ArcTan}\left(\frac{cx\sqrt{d-c^2dx^2}}{\sqrt{d}\,(-1+c^2x^2)}\right)+\sqrt{d}\,g(-1+c^2x^2)\left(4c\left(-4bcfx+a(4f+gx)\sqrt{1-c^2x^2}\right)+bg\cos(2\text{ArcSin}(cx))\right)+2b\sqrt{d}\,g(-1+c^2x^2)\,\text{ArcSin}(cx)\left(8cf\sqrt{1-c^2x^2}+g\sin(2\text{ArcSin}(cx))\right)}{8c^3\sqrt{d}\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^2*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (-2*b*Sqrt[d]*(2*c^2*f^2 + g^2)*(-1 + c^2*x^2)*ArcSin[c*x]^2 - 4*a*(2*c^2*f
^2 + g^2)*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]*ArcTan[(c*x*Sqrt[d - c^2*d*
x^2])/(Sqrt[d]*(-1 + c^2*x^2))] + Sqrt[d]*g*(-1 + c^2*x^2)*(4*c*(-4*b*c*f*x
 + a*(4*f + g*x)*Sqrt[1 - c^2*x^2]) + b*g*Cos[2*ArcSin[c*x]]) + 2*b*Sqrt[d]
*g*(-1 + c^2*x^2)*ArcSin[c*x]*(8*c*f*Sqrt[1 - c^2*x^2] + g*Sin[2*ArcSin[c*x
]]))/(8*c^3*Sqrt[d]*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2])
```

Maple [C] Result contains complex when optimal does not.
time = 0.62, size = 507, normalized size = 1.88

method	result
default	$-\frac{a\,g^2x\sqrt{-c^2d\,x^2+d}}{2c^2d}+\frac{a\,g^2\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2d\,x^2+d}}\right)}{2c^2\sqrt{c^2d}}-\frac{2afg\sqrt{-c^2d\,x^2+d}}{c^2d}+\frac{a\,f^2\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2d\,x^2-}}\right.}{\sqrt{c^2d}}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x,method=_RETURNVERBOS
E)
```

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

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="ma
xima")
```

```
[Out] -1/2*a*g^2*(sqrt(-c^2*d*x^2 + d)*x/(c^2*d) - arcsin(c*x)/(c^3*sqrt(d))) + 1
/2*b*f^2*arcsin(c*x)^2/(c*sqrt(d)) + b*g^2*integrate(x^2*arctan2(c*x, sqrt(
c*x + 1)*sqrt(-c*x + 1))/(sqrt(c*x + 1)*sqrt(-c*x + 1)), x)/sqrt(d) + 2*b*f
*g*x/(c*sqrt(d)) + a*f^2*arcsin(c*x)/(c*sqrt(d)) - 2*sqrt(-c^2*d*x^2 + d)*b
*f*g*arcsin(c*x)/(c^2*d) - 2*sqrt(-c^2*d*x^2 + d)*a*f*g/(c^2*d)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="fr
icas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(a*g^2*x^2 + 2*a*f*g*x + a*f^2 + (b*g^2*x^2
+ 2*b*f*g*x + b*f^2)*arcsin(c*x))/(c^2*d*x^2 - d), x)
```

Sympy [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Exception raised: TypeError >> Invalid comparison of non-real zoo
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="gi
ac")
```

```
[Out] integrate((g*x + f)^2*(b*arcsin(c*x) + a)/sqrt(-c^2*d*x^2 + d), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^2\,(a+b\,\mathrm{asin}(c\,x))}{\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)^2*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int(((f + g*x)^2*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(1/2), x)
```

3.46 $\int \frac{(f+gx)(a+b\text{ArcSin}(cx))}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=126

$$\frac{bgx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}}-\frac{g(1-c^2x^2)\,(a+b\text{ArcSin}(cx))}{c^2\sqrt{d-c^2dx^2}}+\frac{f\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^2}{2bc\sqrt{d-c^2dx^2}}$$

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

Rubi [A]
time = 0.14, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {4861, 4847, 4737, 4767, 8}

$$\frac{f\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^2}{2bc\sqrt{d-c^2dx^2}}-\frac{g(1-c^2x^2)\,(a+b\text{ArcSin}(cx))}{c^2\sqrt{d-c^2dx^2}}+\frac{bgx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (b*g*x*Sqrt[1 - c^2*x^2])/(c*Sqrt[d - c^2*d*x^2]) - (g*(1 - c^2*x^2)*(a + b
*ArcSin[c*x]))/(c^2*Sqrt[d - c^2*d*x^2]) + (f*Sqrt[1 - c^2*x^2]*(a + b*ArcS
in[c*x])^2)/(2*b*c*Sqrt[d - c^2*d*x^2])
```

Rule 8

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

Rule 4737

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

Rule 4767

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

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx &= \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}\\
&= \frac{\sqrt{1-c^2x^2}\int \left(\frac{f\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}+\frac{gx\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\right)dx}{\sqrt{d-c^2dx^2}}\\
&= \frac{\left(f\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}+\frac{\left(g\sqrt{1-c^2x^2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}\\
&= -\frac{g(1-c^2x^2)\left(a+b\sin^{-1}(cx)\right)}{c^2\sqrt{d-c^2dx^2}}+\frac{f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\sqrt{d-c^2dx^2}}+\frac{(bg\ldots}{\ldots}\\
&= \frac{bgx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}}-\frac{g(1-c^2x^2)\left(a+b\sin^{-1}(cx)\right)}{c^2\sqrt{d-c^2dx^2}}+\frac{f\sqrt{1-c^2x^2}\left(a+b\sin\ldots\right.}{2bc\sqrt{d-c^2dx\ldots}}
\end{aligned}
$$

Mathematica [A]
time = 0.24, size = 172, normalized size = 1.37

$$
\frac{2\sqrt{d}\,g\left(-a+ac^2x^2+bcx\sqrt{1-c^2x^2}\right)+2b\sqrt{d}\,g(-1+c^2x^2)\,\text{ArcSin}(cx)+bc\sqrt{d}\,f\sqrt{1-c^2x^2}\,\text{ArcSin}(cx)^2-2acf\sqrt{d-c^2dx^2}\,\text{ArcTan}\left(\frac{cx\sqrt{d-c^2dx^2}}{\sqrt{d}\,(-1+c^2x^2)}\right)}{2c^2\sqrt{d}\,\sqrt{d-c^2dx^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```

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

Maple [C] Result contains complex when optimal does not.
time = 0.49, size = 247, normalized size = 1.96

method	result
default	$-\frac{ag\sqrt{-c^2d\,x^2+d}}{c^2d}+\frac{af\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2d\,x^2+d}}\right)}{\sqrt{c^2d}}+b\left(-\frac{\sqrt{-d\,(c^2x^2-1)}\,\sqrt{-c^2x^2+1}\,\arcsin(cx)^2f}{2cd(c^2x^2-1)}-\right.$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((g*x+f)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x,method=_RETURNVERBOSE)

[Out] -a*g/c^2/d*(-c^2*d*x^2+d)^(1/2)+a*f/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+b*(-1/2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/d/(c^2*x^2-1)*arcsin(c*x)^2*f-1/2*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*g*(arcsin(c*x)+I)/c^2/d/(c^2*x^2-1)-1/2*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(arcsin(c*x)-I)/c^2/d/(c^2*x^2-1))

Maxima [A]
time = 0.49, size = 90, normalized size = 0.71

$$\frac{bf\arcsin\left(cx\right)^2}{2\,c\sqrt{d}}+\frac{bgx}{c\sqrt{d}}+\frac{af\arcsin\left(cx\right)}{c\sqrt{d}}-\frac{\sqrt{-c^2dx^2+d}\,bg\arcsin\left(cx\right)}{c^2d}-\frac{\sqrt{-c^2dx^2+d}\,ag}{c^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxima")

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

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="fricas")

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(a*g*x + a*f + (b*g*x + b*f)*arcsin(c*x))/(c
^2*d*x^2 - d), x)
```

Sympy [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Exception raised: TypeError >> Invalid comparison of non-real zoo
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac
")
```

```
[Out] integrate((g*x + f)*(b*arcsin(c*x) + a)/sqrt(-c^2*d*x^2 + d), x)
```

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

$$\int \frac{(f+g\,x)\,\left(a+b\,\mathrm{asin}(c\,x)\right)}{\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int(((f + g*x)*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(1/2), x)
```

3.47 $\int \frac{a+b\text{ArcSin}(cx)}{(f+gx)\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=380

$$-\frac{i\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))\log\left(1-\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{c^2f^2-g^2}\,\sqrt{d-c^2dx^2}}+\frac{i\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))\log\left(1-\frac{ie^{i\text{A}}}{cf+\sqrt{}}\right.}{\sqrt{c^2f^2-g^2}\,\sqrt{d-c^2dx^2}}$$

```
[Out] -I*(a+b*arcsin(c*x))*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)
^(1/2)))*(-c^2*x^2+1)^(1/2)/(c^2*f^2-g^2)^(1/2)/(-c^2*d*x^2+d)^(1/2)+I*(a+b
*arcsin(c*x))*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2))
)*(-c^2*x^2+1)^(1/2)/(c^2*f^2-g^2)^(1/2)/(-c^2*d*x^2+d)^(1/2)-b*polylog(2,I
*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))*(-c^2*x^2+1)^(1/2)
/(c^2*f^2-g^2)^(1/2)/(-c^2*d*x^2+d)^(1/2)+b*polylog(2,I*(I*c*x+(-c^2*x^2+1)
^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))*(-c^2*x^2+1)^(1/2)/(c^2*f^2-g^2)^(1/2)
/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A]
time = 0.42, antiderivative size = 380, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.226$, Rules used = {4861, 4857, 3404, 2296, 2221, 2317, 2438}

$$-\frac{i\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))\log\left(1-\frac{ige^{i\text{ArcSin}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{d-c^2dx^2}\,\sqrt{c^2f^2-g^2}}+\frac{i\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))\log\left(1-\frac{ige^{i\text{ArcSin}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{\sqrt{d-c^2dx^2}\,\sqrt{c^2f^2-g^2}}-\frac{b\sqrt{1-c^2x^2}\,\text{Li}_2\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{d-c^2dx^2}\,\sqrt{c^2f^2-g^2}}+\frac{b\sqrt{1-c^2x^2}\,\text{Li}_2\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)}{\sqrt{d-c^2dx^2}\,\sqrt{c^2f^2-g^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/((f + g*x)*Sqrt[d - c^2*d*x^2]),x]
```

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

Rule 2221

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

Rule 2296

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[2*(c/q), Int[
(f + g*x)^m*(F^u/(b - q + 2*c*F^u)), x], x] - Dist[2*(c/q), Int[(f + g*x)^m
*(F^u/(b + q + 2*c*F^u)), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2317

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

Rule 2438

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

Rule 3404

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[(c + d*x)^m*(E^(I*(e + f*x))/(I*b + 2*a*E^(I*(e + f*x)
) - I*b*E^(2*I*(e + f*x)))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{(f+gx)\sqrt{d-c^2dx^2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{a+b\sin^{-1}(cx)}{(f+gx)\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\,\text{Subst}\left(\int \frac{a+bx}{cf+g\sin(x)}\,dx, x, \sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(2\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int \frac{e^{ix}(a+bx)}{2ce^{ix}f+ig-ie^{2ix}g}\,dx, x, \sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}$$

$$= -\frac{\left(2ig\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int \frac{e^{ix}(a+bx)}{2cf-2ie^{ix}g-2\sqrt{c^2f^2-g^2}}\,dx, x, \sin^{-1}(cx)\right)}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}} + \frac{\left(2i\right.}{}$$

$$= -\frac{i\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}} + \frac{i\sqrt{1-c^2x^2}\,(a-}{}$$

$$= -\frac{i\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}} + \frac{i\sqrt{1-c^2x^2}\,(a-}{}$$

$$= -\frac{i\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}} + \frac{i\sqrt{1-c^2x^2}\,(a-}{}$$

Mathematica [A]
time = 0.14, size = 232, normalized size = 0.61

$$\frac{\sqrt{1-c^2x^2}\left(-i(a+b\text{ArcSin}(cx))\left(\log\left(1+\frac{ie^{i\text{ArcSin}(cx)}g}{-cf+\sqrt{c^2f^2-g^2}}\right)-\log\left(1-\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)\right)-b\text{PolyLog}\left(2,-\frac{ie^{i\text{ArcSin}(cx)}g}{-cf+\sqrt{c^2f^2-g^2}}\right)+b\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)\right)}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/((f + g*x)*Sqrt[d - c^2*d*x^2]),x]
```

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

Maple [A]
time = 0.41, size = 502, normalized size = 1.32

method	result
default	$-\frac{a\ln\left(\frac{-\frac{2d\left(c^2f^2-g^2\right)}{g^2}+\frac{2c^2df\left(x+\frac{f}{g}\right)}{g}+2\sqrt{-\frac{d\left(c^2f^2-g^2\right)}{g^2}}\sqrt{-c^2d\left(x+\frac{f}{g}\right)^2+\frac{2c^2df\left(x+\frac{f}{g}\right)}{g}-\frac{d\left(c^2f^2-g^2\right)}{g^2}}}{x+\frac{f}{g}}\right)}{g\sqrt{-\frac{d\left(c^2f^2-g^2\right)}{g^2}}}+\frac{ib\sqrt{}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(g*x+f)/(-c^2*d*x^2+d)^(1/2),x,method=_RETURNVERBOSE)
```

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

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(g*x+f)/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxi
ma")
```

```
[Out] integrate((b*arcsin(c*x) + a)/(sqrt(-c^2*d*x^2 + d)*(g*x + f)), x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(g*x+f)/(-c^2*d*x^2+d)^(1/2),x, algorithm="fric
as")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(c^2*d*g*x^3 + c^2*d*f*x
^2 - d*g*x - d*f), x)
```

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

$$\int \frac{a+b\,\mathrm{asin}\,(cx)}{\sqrt{-d\,(cx-1)\,(cx+1)}\,\,(f+gx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(g*x+f)/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral((a + b*asin(c*x))/(sqrt(-d*(c*x - 1)*(c*x + 1))*(f + g*x)), x)
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(g*x+f)/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac
")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,sageVARx):;OUTPUT:Warning, integration of abs or sign a
ssumes constant sign by intervals (correct if the argument is real):Check [
abs(t_
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\mathrm{asin}(c\,x)}{\left(f+g\,x\right)\,\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/((f + g*x)*(d - c^2*d*x^2)^(1/2)),x)
```

```
[Out] int((a + b*asin(c*x))/((f + g*x)*(d - c^2*d*x^2)^(1/2)), x)
```

3.48 $\int \frac{a+b\text{ArcSin}(cx)}{(f+gx)^2\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=507

$$\frac{g(1-c^2x^2)\,(a+b\text{ArcSin}(cx))}{(c^2f^2-g^2)\,(f+gx)\sqrt{d-c^2dx^2}}-\frac{ic^2f\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))\log\left(1-\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{(c^2f^2-g^2)^{3/2}\sqrt{d-c^2dx^2}}+\frac{ic^2f\sqrt{1}}{}$$

```
[Out] g*(-c^2*x^2+1)*(a+b*arcsin(c*x))/(c^2*f^2-g^2)/(g*x+f)/(-c^2*d*x^2+d)^(1/2)
-b*c*ln(g*x+f)*(-c^2*x^2+1)^(1/2)/(c^2*f^2-g^2)/(-c^2*d*x^2+d)^(1/2)-I*c^2*
f*(a+b*arcsin(c*x))*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^
(1/2)))*(-c^2*x^2+1)^(1/2)/(c^2*f^2-g^2)^(3/2)/(-c^2*d*x^2+d)^(1/2)+I*c^2*f
*(a+b*arcsin(c*x))*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(
1/2)))*(-c^2*x^2+1)^(1/2)/(c^2*f^2-g^2)^(3/2)/(-c^2*d*x^2+d)^(1/2)-b*c^2*f*
polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))*(-c^2*x
^2+1)^(1/2)/(c^2*f^2-g^2)^(3/2)/(-c^2*d*x^2+d)^(1/2)+b*c^2*f*polylog(2,I*(I
*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))*(-c^2*x^2+1)^(1/2)/(c
^2*f^2-g^2)^(3/2)/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A]
time = 0.50, antiderivative size = 507, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.323$, Rules used = {4861, 4857, 3405, 3404, 2296, 2221, 2317, 2438, 2747, 31}

$$\frac{g(1-c^2x^2)\,(a+b\text{ArcSin}(cx))}{\sqrt{d-c^2dx^2}\,(c^2f^2-g^2)\,(f+gx)}-\frac{ic^2f\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))\log\left(1-\frac{ige^{i\text{ArcSin}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{d-c^2dx^2}\,(c^2f^2-g^2)^{3/2}}+\frac{ic^2f\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))\log\left(1-\frac{ige^{i\text{ArcSin}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{\sqrt{d-c^2dx^2}\,(c^2f^2-g^2)^{3/2}}-\frac{bc^2f\sqrt{1-c^2x^2}\,\text{Li}_2\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{d-c^2dx^2}\,(c^2f^2-g^2)^{3/2}}+\frac{bc^2f\sqrt{1-c^2x^2}\,\text{Li}_2\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)}{\sqrt{d-c^2dx^2}\,(c^2f^2-g^2)^{3/2}}-\frac{bc\sqrt{1-c^2x^2}\,\log(f+gx)}{\sqrt{d-c^2dx^2}\,(c^2f^2-g^2)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/((f + g*x)^2*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] (g*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/((c^2*f^2 - g^2)*(f + g*x)*Sqrt[d - c
^2*d*x^2]) - (I*c^2*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 - (I*E^(I
*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)^(3/2)*Sqrt[
d - c^2*d*x^2]) + (I*c^2*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 - (I
*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)^(3/2)*
Sqrt[d - c^2*d*x^2]) - (b*c*Sqrt[1 - c^2*x^2]*Log[f + g*x])/((c^2*f^2 - g^2
)*Sqrt[d - c^2*d*x^2]) - (b*c^2*f*Sqrt[1 - c^2*x^2]*PolyLog[2, (I*E^(I*ArcS
in[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)^(3/2)*Sqrt[d - c
^2*d*x^2]) + (b*c^2*f*Sqrt[1 - c^2*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/
(c*f + Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2])
```

Rule 31

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

Rule 2221

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

Rule 2296

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[2*(c/q), Int[
(f + g*x)^m*(F^u/(b - q + 2*c*F^u)), x], x] - Dist[2*(c/q), Int[(f + g*x)^m
*(F^u/(b + q + 2*c*F^u)), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2317

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

Rule 2438

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

Rule 2747

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rule 3404

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[(c + d*x)^m*(E^(I*(e + f*x))/(I*b + 2*a*E^(I*(e + f*x)
) - I*b*E^(2*I*(e + f*x)))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3405

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

```
+ b*Sin[e + f*x])), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{(f+gx)^2\sqrt{d-c^2dx^2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{a+b\sin^{-1}(cx)}{(f+gx)^2\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(c\sqrt{1-c^2x^2}\right)\operatorname{Subst}\left(\int \frac{a+bx}{(cf+g\sin(x))^2}\,dx, x, \sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}$$

$$= \frac{g(1-c^2x^2)\left(a+b\sin^{-1}(cx)\right)}{(c^2f^2-g^2)(f+gx)\sqrt{d-c^2dx^2}} + \frac{\left(c^2f\sqrt{1-c^2x^2}\right)\operatorname{Subst}\Big(\int \frac{a+bx}{cf+g\sin(x)}\,dx,}{(c^2f^2-g^2)\sqrt{d-c^2dx^2}}$$

$$= \frac{g(1-c^2x^2)\left(a+b\sin^{-1}(cx)\right)}{(c^2f^2-g^2)(f+gx)\sqrt{d-c^2dx^2}} - \frac{\left(bc\sqrt{1-c^2x^2}\right)\operatorname{Subst}\Big(\int \frac{1}{cf+x}\,dx, x, cgx}{(c^2f^2-g^2)\sqrt{d-c^2dx^2}}$$

$$= \frac{g(1-c^2x^2)\left(a+b\sin^{-1}(cx)\right)}{(c^2f^2-g^2)(f+gx)\sqrt{d-c^2dx^2}} - \frac{bc\sqrt{1-c^2x^2}\log(f+gx)}{(c^2f^2-g^2)\sqrt{d-c^2dx^2}} - \frac{\Big(2ic^2fg\sqrt{1}}{}$$

$$= \frac{g(1-c^2x^2)\left(a+b\sin^{-1}(cx)\right)}{(c^2f^2-g^2)(f+gx)\sqrt{d-c^2dx^2}} - \frac{ic^2f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\log\Big(1}{(c^2f^2-g^2)^{3/2}\sqrt{d-c^2d}}$$

$$= \frac{g(1-c^2x^2)\left(a+b\sin^{-1}(cx)\right)}{(c^2f^2-g^2)(f+gx)\sqrt{d-c^2dx^2}} - \frac{ic^2f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\log\Big(1}{(c^2f^2-g^2)^{3/2}\sqrt{d-c^2d}}$$

$$= \frac{g(1-c^2x^2)\left(a+b\sin^{-1}(cx)\right)}{(c^2f^2-g^2)(f+gx)\sqrt{d-c^2dx^2}} - \frac{ic^2f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\log\Big(1}{(c^2f^2-g^2)^{3/2}\sqrt{d-c^2d}}$$

<u>Mathematica</u> [A]
time = 0.35, size = 295, normalized size = 0.58

$$\frac{c\sqrt{1-c^2x^2}\left(\frac{g\sqrt{1-c^2x^2}(a+b\text{ArcSin}(cx))}{cf+cgx} - b\log(f+gx) + \frac{cf\left(-i(a+b\text{ArcSin}(cx))\left(\log\left(1+\frac{ie^{i\text{ArcSin}(cx)}g}{-cf+\sqrt{c^2f^2-g^2}}\right)-\log\left(1-\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)\right)-b\text{PolyLog}\left(2,-\frac{ie^{i\text{ArcSin}(cx)}g}{-cf+\sqrt{c^2f^2-g^2}}\right)+b\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)\right)}{\sqrt{c^2f^2-g^2}}\right)}{(c^2f^2-g^2)\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/((f + g*x)^2*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] (c*Sqrt[1 - c^2*x^2]*((g*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(c*f + c*g*
x) - b*Log[f + g*x] + (c*f*((-I)*(a + b*ArcSin[c*x])*(Log[1 + (I*E^(I*ArcSi
n[c*x])*g)/(-(c*f) + Sqrt[c^2*f^2 - g^2])] - Log[1 - (I*E^(I*ArcSin[c*x])*g
```

```
)/(c*f + Sqrt[c^2*f^2 - g^2])]) - b*PolyLog[2, ((-I)*E^(I*ArcSin[c*x])*g)/(
-(c*f) + Sqrt[c^2*f^2 - g^2])] + b*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f
+ Sqrt[c^2*f^2 - g^2])]))/Sqrt[c^2*f^2 - g^2]))/((c^2*f^2 - g^2)*Sqrt[d - c
^2*d*x^2])
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 1677 vs. $2(495) = 990$.
time = 0.76, size = 1678, normalized size = 3.31

method	result	size
default	Expression too large to display	1678

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(g*x+f)^2/(-c^2*d*x^2+d)^(1/2),x,method=_RETURNVERBOS
E)
```

```
[Out] a/d/(c^2*f^2-g^2)/(x+f/g)*(-c^2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-
g^2)/g^2)^(1/2)-a/g*c^2*f/(c^2*f^2-g^2)/(-d*(c^2*f^2-g^2)/g^2)^(1/2)*ln((-2
*d*(c^2*f^2-g^2)/g^2+2*c^2*d*f/g*(x+f/g)+2*(-d*(c^2*f^2-g^2)/g^2)^(1/2)*(-c
^2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))/(x+f/g))+b*(
-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/d/(c^2*x^2-1)/(c^2*f^2-g^2)/(g*x+f)*(-c^2
*x^2+1)*x*c^2*f+b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/d/(c^2*x^2-1)/(c^2*f^2
-g^2)/(g*x+f)*x^3*c^4*f+I*b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/d/(c^2*x^2-1
)/(c^2*f^2-g^2)/(g*x+f)*(-c^2*x^2+1)^(1/2)*x*c*g+b*(-d*(c^2*x^2-1))^(1/2)*a
rcsin(c*x)/d/(c^2*x^2-1)/(c^2*f^2-g^2)/(g*x+f)*x^2*c^2*g+I*b*(-d*(c^2*x^2-1
))^(1/2)*arcsin(c*x)/d/(c^2*x^2-1)/(c^2*f^2-g^2)/(g*x+f)*(-c^2*x^2+1)^(1/2)
*c*f-b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/d/(c^2*x^2-1)/(c^2*f^2-g^2)/(g*x+
f)*x*c^2*f-b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/d/(c^2*x^2-1)/(c^2*f^2-g^2)
/(g*x+f)*g+b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d/(c^2*x^2-1)/(c^2*f
^2-g^2)^2*c^3*ln((I*c*x+(-c^2*x^2+1)^(1/2))^2*g+2*I*c*f*(I*c*x+(-c^2*x^2+1)
^(1/2))-g)*f^2-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d/(c^2*x^2-1)/(c
^2*f^2-g^2)^2*c^2*(-c^2*f^2+g^2)^(1/2)*f*arcsin(c*x)*ln((I*c*f+(I*c*x+(-c^2
*x^2+1)^(1/2))*g+(-c^2*f^2+g^2)^(1/2))/(I*c*f+(-c^2*f^2+g^2)^(1/2)))+b*(-d*
(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d/(c^2*x^2-1)/(c^2*f^2-g^2)^2*c^2*(-c
^2*f^2+g^2)^(1/2)*f*arcsin(c*x)*ln((-I*c*f-(I*c*x+(-c^2*x^2+1)^(1/2))*g+(-c
^2*f^2+g^2)^(1/2))/(-I*c*f+(-c^2*f^2+g^2)^(1/2)))-2*b*(-d*(c^2*x^2-1))^(1/2
)*(-c^2*x^2+1)^(1/2)/d/(c^2*x^2-1)/(c^2*f^2-g^2)^2*c^3*ln(I*c*x+(-c^2*x^2+1
)^(1/2))*f^2+I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d/(c^2*x^2-1)/(c
^2*f^2-g^2)^2*c^2*(-c^2*f^2+g^2)^(1/2)*dilog((I*c*f+(I*c*x+(-c^2*x^2+1)^(1/
2))*g+(-c^2*f^2+g^2)^(1/2))/(I*c*f+(-c^2*f^2+g^2)^(1/2)))*f-I*b*(-d*(c^2*x^
2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d/(c^2*x^2-1)/(c^2*f^2-g^2)^2*c^2*(-c^2*f^2+
g^2)^(1/2)*dilog((-I*c*f-(I*c*x+(-c^2*x^2+1)^(1/2))*g+(-c^2*f^2+g^2)^(1/2))
/(-I*c*f+(-c^2*f^2+g^2)^(1/2)))*f-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/
2)/d/(c^2*x^2-1)/(c^2*f^2-g^2)^2*c*ln((I*c*x+(-c^2*x^2+1)^(1/2))^2*g+2*I*c*
```

```
f*(I*c*x+(-c^2*x^2+1)^(1/2))-g)*g^2+2*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)
^(1/2)/d/(c^2*x^2-1)/(c^2*f^2-g^2)^2*c*ln(I*c*x+(-c^2*x^2+1)^(1/2))*g^2
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(g*x+f)^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="ma
xima")
```

```
[Out] integrate((b*arcsin(c*x) + a)/(sqrt(-c^2*d*x^2 + d)*(g*x + f)^2), x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(g*x+f)^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="fr
icas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(c^2*d*g^2*x^4 + 2*c^2*d
*f*g*x^3 - 2*d*f*g*x - d*f^2 + (c^2*d*f^2 - d*g^2)*x^2), x)
```

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

$$\int \frac{a + b\operatorname{asin}(cx)}{\sqrt{-d(cx-1)(cx+1)}\,(f+gx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(g*x+f)**2/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral((a + b*asin(c*x))/(sqrt(-d*(c*x - 1)*(c*x + 1))*(f + g*x)**2), x)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(g*x+f)^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="gi
ac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/(sqrt(-c^2*d*x^2 + d)*(g*x + f)^2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\mathrm{asin}(c\,x)}{{\left(f+g\,x\right)}^2\,\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/((f + g*x)^2*(d - c^2*d*x^2)^(1/2)),x)
[Out] int((a + b*asin(c*x))/((f + g*x)^2*(d - c^2*d*x^2)^(1/2)), x)
```

3.49 $\int \frac{(f+gx)^3(a+b\textbf{ArcSin}(cx))}{(d-c^2dx^2)^{3/2}}\,dx$

Optimal. Leaf size=315

$$-\frac{bg^3x\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}}+\frac{(g(3c^2f^2+g^2)+c^2f(c^2f^2+3g^2)x)(a+b\text{ArcSin}(cx))}{c^4d\sqrt{d-c^2dx^2}}+\frac{g^3(1-c^2x^2)(a+b\text{ArcSin}(cx))}{c^4d\sqrt{d-c^2dx^2}}$$

```
[Out] (g*(3*c^2*f^2+g^2)+c^2*f*(c^2*f^2+3*g^2)*x)*(a+b*arcsin(c*x))/c^4/d/(-c^2*d
*x^2+d)^(1/2)+g^3*(-c^2*x^2+1)*(a+b*arcsin(c*x))/c^4/d/(-c^2*d*x^2+d)^(1/2)
-b*g^3*x*(-c^2*x^2+1)^(1/2)/c^3/d/(-c^2*d*x^2+d)^(1/2)-3/2*f*g^2*(a+b*arcsi
n(c*x))^2*(-c^2*x^2+1)^(1/2)/b/c^3/d/(-c^2*d*x^2+d)^(1/2)+1/2*b*(c*f+g)^3*l
n(-c*x+1)*(-c^2*x^2+1)^(1/2)/c^4/d/(-c^2*d*x^2+d)^(1/2)+1/2*b*(c*f-g)^3*ln(
c*x+1)*(-c^2*x^2+1)^(1/2)/c^4/d/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A]

time = 0.38, antiderivative size = 315, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 10, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.323$, Rules used = {4861, 4859, 651, 4845, 12, 647, 31, 4737, 4767, 8}

$$\frac{(c^2fx(c^2f^2+3g^2)+g(3c^2f^2+g^2))(a+b\text{ArcSin}(cx))}{c^4d\sqrt{d-c^2dx^2}}+\frac{g^3(1-c^2x^2)(a+b\text{ArcSin}(cx))}{c^4d\sqrt{d-c^2dx^2}}-\frac{3fg^2\sqrt{1-c^2x^2}(a+b\text{ArcSin}(cx))^2}{2bc^3d\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x^2}(cf-g)^3\log(cx+1)}{2c^4d\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x^2}(cf+g)^3\log(1-cx)}{2c^4d\sqrt{d-c^2dx^2}}-\frac{bg^3x\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^3*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] -((b*g^3*x*Sqrt[1 - c^2*x^2])/(c^3*d*Sqrt[d - c^2*d*x^2])) + ((g*(3*c^2*f^2
 + g^2) + c^2*f*(c^2*f^2 + 3*g^2)*x)*(a + b*ArcSin[c*x]))/(c^4*d*Sqrt[d - c
^2*d*x^2]) + (g^3*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(c^4*d*Sqrt[d - c^2*d*
x^2]) - (3*f*g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c^3*d*Sqrt[d
 - c^2*d*x^2]) + (b*(c*f + g)^3*Sqrt[1 - c^2*x^2]*Log[1 - c*x])/(2*c^4*d*Sq
rt[d - c^2*d*x^2]) + (b*(c*f - g)^3*Sqrt[1 - c^2*x^2]*Log[1 + c*x])/(2*c^4*
d*Sqrt[d - c^2*d*x^2])
```

Rule 8

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

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

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

Rule 647

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> With[{q = Rt[(-
a)*c, 2]}, Dist[e/2 + c*(d/(2*q)), Int[1/(-q + c*x), x], x] + Dist[e/2 - c*
(d/(2*q)), Int[1/(q + c*x), x], x]] /; FreeQ[{a, c, d, e}, x] && NiceSqrtQ[
(-a)*c]
```

Rule 651

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2)^(3/2), x_Symbol] :> Simp[((-a
)*e + c*d*x)/(a*c*Sqrt[a + c*x^2]), x] /; FreeQ[{a, c, d, e}, x]
```

Rule 4737

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

Rule 4767

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

Rule 4845

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rule 4859

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int \frac{(f+gx)^3\,(a+b\sin^{-1}(cx))}{(d-c^2dx^2)^{3/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)^3(a+b\sin^{-1}(cx))}{(1-c^2x^2)^{3/2}}\,dx}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{(c^2f^3+3fg^2+g(3c^2f^2+g^2)x)(a+b\sin^{-1}(cx))}{c^2(1-c^2x^2)^{3/2}} - \frac{3fg^2(a+b\sin^{-1}(cx))}{c^2\sqrt{1-c^2x^2}} - \right.}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \frac{(c^2f^3+3fg^2+g(3c^2f^2+g^2)x)(a+b\sin^{-1}(cx))}{(1-c^2x^2)^{3/2}}\,dx}{c^2d\sqrt{d-c^2dx^2}} - \frac{\left(3fg^2\sqrt{1-c^2x^2}\right.}{c^2d\sqrt{d-}}$$

$$= \frac{(g(3c^2f^2+g^2)+c^2f(c^2f^2+3g^2)x)(a+b\sin^{-1}(cx))}{c^4d\sqrt{d-c^2dx^2}} + \frac{g^3(1-c^2x^2)(a}{c^4d\sqrt{d-}}$$

$$= -\frac{bg^3x\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} + \frac{(g(3c^2f^2+g^2)+c^2f(c^2f^2+3g^2)x)(a+b\sin^{-1}(cx}{c^4d\sqrt{d-c^2dx^2}}$$

$$= -\frac{bg^3x\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} + \frac{(g(3c^2f^2+g^2)+c^2f(c^2f^2+3g^2)x)(a+b\sin^{-1}(cx}{c^4d\sqrt{d-c^2dx^2}}$$

$$= -\frac{bg^3x\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} + \frac{(g(3c^2f^2+g^2)+c^2f(c^2f^2+3g^2)x)(a+b\sin^{-1}(cx}{c^4d\sqrt{d-c^2dx^2}}$$

Mathematica [A]
time = 0.74, size = 194, normalized size = 0.62

$$\frac{\sqrt{1-c^2x^2}\left(-2bcg^3x+2g^3\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))-\frac{3cfg^2(a+b\text{ArcSin}(cx))^2}{b}+(cf-g)^3\left(-\left((a+b\text{ArcSin}(cx))\cot\left(\frac{1}{4}(\pi+2\text{ArcSin}(cx))\right)\right)+2b\log\left(\sin\left(\frac{1}{4}(\pi+2\text{ArcSin}(cx))\right)\right)\right)+(cf+g)^3\left(2b\log\left(\cos\left(\frac{1}{4}(\pi+2\text{ArcSin}(cx))\right)\right)+(a+b\text{ArcSin}(cx))\tan\left(\frac{1}{4}(\pi+2\text{ArcSin}(cx))\right)\right)\right)}{2c^4d\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^3*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*(-2*b*c*g^3*x + 2*g^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*
x]) - (3*c*f*g^2*(a + b*ArcSin[c*x])^2)/b + (c*f - g)^3*(-((a + b*ArcSin[c*
x])*Cot[(Pi + 2*ArcSin[c*x])/4]) + 2*b*Log[Sin[(Pi + 2*ArcSin[c*x])/4]]) +
(c*f + g)^3*(2*b*Log[Cos[(Pi + 2*ArcSin[c*x])/4]] + (a + b*ArcSin[c*x])*Tan
[(Pi + 2*ArcSin[c*x])/4])))/(2*c^4*d*Sqrt[d - c^2*d*x^2])
```

Maple [C] Result contains complex when optimal does not.
time = 0.81, size = 1158, normalized size = 3.68

method	result
default	$-\frac{a\,g^{3} x^{2}}{c^{2} d \sqrt{-c^{2} d\,x^{2}+d}}+\frac{2 a\,g^{3}}{d\,c^{4} \sqrt{-c^{2} d\,x^{2}+d}}+\frac{3 a f\,g^{2} x}{c^{2} d \sqrt{-c^{2} d\,x^{2}+d}}-\frac{3 a f\,g^{2} \arctan\left(\frac{\sqrt{c^{2} d}\,x}{\sqrt{-c^{2} d\,x^{2}+d}}\right)}{c^{2} d \sqrt{c^{2} d}}+$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x,method=_RETURNVERBOS
E)
```

```
[Out] -a*g^3*x^2/c^2/d/(-c^2*d*x^2+d)^(1/2)+2*a*g^3/d/c^4/(-c^2*d*x^2+d)^(1/2)+3*
a*f*g^2*x/c^2/d/(-c^2*d*x^2+d)^(1/2)-3*a*f*g^2/c^2/d/(c^2*d)^(1/2)*arctan((
c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+3*a*f^2*g/c^2/d/(-c^2*d*x^2+d)^(1/2)+a
*f^3*x/d/(-c^2*d*x^2+d)^(1/2)+3*I*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/
2)/c^3/d^2/(c^2*x^2-1)*f*arcsin(c*x)*g^2-3*b*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2
/(c^2*x^2-1)*arcsin(c*x)*x*f*g^2+3*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1
/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)/c^2/d^2/(c^2*x^2-1)*f^2*g-3*b*(-d*(c^2*x
^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)/c^3/d^2/(c^2
*x^2-1)*f*g^2-3*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^2/d^2/(c^2*x^
2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*f^2*g-3*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*
x^2+1)^(1/2)/c^3/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*f*g^2+b*(-d
*(c^2*x^2-1))^(1/2)*g^3/c^3/d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+3/2*b*(-d*
(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d^2/(c^2*x^2-1)*arcsin(c*x)^2*f*g
^2+I*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c/d^2/(c^2*x^2-1)*f^3*arcs
in(c*x)+b*(-d*(c^2*x^2-1))^(1/2)*g^3/c^2/d^2/(c^2*x^2-1)*arcsin(c*x)*x^2-b*
(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)*arcsin(c*x)*x*f^3-3*b*(-d*(c^2*x^2-1
))^(1/2)/c^2/d^2/(c^2*x^2-1)*arcsin(c*x)*f^2*g-b*(-d*(c^2*x^2-1))^(1/2)*(-c
^2*x^2+1)^(1/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)/c/d^2/(c^2*x^2-1)*f^3+b*(-d*
(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)/c^4/d^
2/(c^2*x^2-1)*g^3-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/d^2/(c^2*x^
2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*f^3-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+
1)^(1/2)/c^4/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*g^3-2*b*(-d*(c^
2*x^2-1))^(1/2)*g^3/c^4/d^2/(c^2*x^2-1)*arcsin(c*x)
```

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

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="ma
xima")
```

```
[Out] -a*g^3*(x^2/(sqrt(-c^2*d*x^2 + d)*c^2*d) - 2/(sqrt(-c^2*d*x^2 + d)*c^4*d))
+ 3*a*f*g^2*(x/(sqrt(-c^2*d*x^2 + d)*c^2*d) - arcsin(c*x)/(c^3*d^(3/2))) +
b*f^3*x*arcsin(c*x)/(sqrt(-c^2*d*x^2 + d)*d) + a*f^3*x/(sqrt(-c^2*d*x^2 + d
)*d) - 1/2*b*f^3*log(x^2 - 1/c^2)/(c*d^(3/2)) + 3*a*f^2*g/(sqrt(-c^2*d*x^2
+ d)*c^2*d) - integrate((b*g^3*x^3 + 3*b*f*g^2*x^2 + 3*b*f^2*g*x)*arctan2(c
*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/((c^2*d*x^2 - d)*sqrt(c*x + 1)*sqrt(-c*x
+ 1)), x)/sqrt(d)
```

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

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="fr
icas")
```

```
[Out] integral((a*g^3*x^3 + 3*a*f*g^2*x^2 + 3*a*f^2*g*x + a*f^3 + (b*g^3*x^3 + 3*
b*f*g^2*x^2 + 3*b*f^2*g*x + b*f^3)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/(c^4*d
^2*x^4 - 2*c^2*d^2*x^2 + d^2), x)
```

Sympy [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Exception raised: TypeError >> Invalid comparison of non-real zoo
```

Giac [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="gi
ac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,sageVARx):;OUTPUT:Warning, integration of abs or sign a
ssumes constant sign by intervals (correct if the argument is real):Check [
abs(t_
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+gx)^3 (a+b\operatorname{asin}(cx))}{(d-c^2dx^2)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)^3*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(3/2),x)
[Out] int(((f + g*x)^3*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(3/2), x)
```

3.50 $\int \frac{(f+gx)^2(a+b\mathbf{ArcSin}(cx))}{(d-c^2dx^2)^{3/2}}\,dx$

Optimal. Leaf size=213

$$\frac{(2fg+(c^2f^2+g^2)x)(a+b\text{ArcSin}(cx))}{c^2d\sqrt{d-c^2dx^2}}-\frac{g^2\sqrt{1-c^2x^2}(a+b\text{ArcSin}(cx))^2}{2bc^3d\sqrt{d-c^2dx^2}}+\frac{b(cf+g)^2\sqrt{1-c^2x^2}\log(1-c$$

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

Rubi [A]
time = 0.29, antiderivative size = 213, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.226$, Rules used = {4861, 4859, 651, 4845, 647, 31, 4737}

$$\frac{(x(c^2f^2+g^2)+2fg)(a+b\text{ArcSin}(cx))}{c^2d\sqrt{d-c^2dx^2}}-\frac{g^2\sqrt{1-c^2x^2}(a+b\text{ArcSin}(cx))^2}{2bc^3d\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x^2}(cf-g)^2\log(cx+1)}{2c^3d\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x^2}(cf+g)^2\log(1-cx)}{2c^3d\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^2*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(3/2),x]
```

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

Rule 31

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

Rule 647

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> With[{q = Rt[(-
a)*c, 2]}, Dist[e/2 + c*(d/(2*q)), Int[1/(-q + c*x), x], x] + Dist[e/2 - c*
(d/(2*q)), Int[1/(q + c*x), x], x]] /; FreeQ[{a, c, d, e}, x] && NiceSqrtQ[
(-a)*c]
```

Rule 651

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2)^(3/2), x_Symbol] :> Simp[((-a
)*e + c*d*x)/(a*c*Sqrt[a + c*x^2]), x] /; FreeQ[{a, c, d, e}, x]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4845

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rule 4859

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int \frac{(f+gx)^2 (a+b\sin^{-1}(cx))}{(d-c^2dx^2)^{3/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)^2(a+b\sin^{-1}(cx))}{(1-c^2x^2)^{3/2}}\,dx}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{(c^2f^2+g^2+2c^2fgx)(a+b\sin^{-1}(cx))}{c^2(1-c^2x^2)^{3/2}} - \frac{g^2(a+b\sin^{-1}(cx))}{c^2\sqrt{1-c^2x^2}}\right)dx}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \frac{(c^2f^2+g^2+2c^2fgx)(a+b\sin^{-1}(cx))}{(1-c^2x^2)^{3/2}}\,dx}{c^2d\sqrt{d-c^2dx^2}} - \frac{\left(g^2\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin}{\sqrt{1-}}}{c^2d\sqrt{d-c^2dx^2}}$$

$$= \frac{(2fg+(c^2f^2+g^2)x)(a+b\sin^{-1}(cx))}{c^2d\sqrt{d-c^2dx^2}} - \frac{g^2\sqrt{1-c^2x^2}(a+b\sin^{-1}(cx))}{2bc^3d\sqrt{d-c^2dx^2}}$$

$$= \frac{(2fg+(c^2f^2+g^2)x)(a+b\sin^{-1}(cx))}{c^2d\sqrt{d-c^2dx^2}} - \frac{g^2\sqrt{1-c^2x^2}(a+b\sin^{-1}(cx))}{2bc^3d\sqrt{d-c^2dx^2}}$$

$$= \frac{(2fg+(c^2f^2+g^2)x)(a+b\sin^{-1}(cx))}{c^2d\sqrt{d-c^2dx^2}} - \frac{g^2\sqrt{1-c^2x^2}(a+b\sin^{-1}(cx))}{2bc^3d\sqrt{d-c^2dx^2}}$$

Mathematica [A]
time = 0.53, size = 156, normalized size = 0.73

$$\frac{\sqrt{1-c^2x^2}\left(-\frac{g^2(a+b\mathrm{ArcSin}(cx))^2}{b}+(-cf+g)^2\left(-\left((a+b\mathrm{ArcSin}(cx))\cot\left(\frac{1}{4}(\pi+2\mathrm{ArcSin}(cx))\right)\right)+2b\log\left(\sin\left(\frac{1}{4}(\pi+2\mathrm{ArcSin}(cx))\right)\right)\right)+(cf+g)^2\left(2b\log\left(\cos\left(\frac{1}{4}(\pi+2\mathrm{ArcSin}(cx))\right)\right)+(a+b\mathrm{ArcSin}(cx))\tan\left(\frac{1}{4}(\pi+2\mathrm{ArcSin}(cx))\right)\right)\right)}{2c^3d\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^2*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*(-((g^2*(a + b*ArcSin[c*x])^2)/b) + (-(c*f) + g)^2*(-((a
 + b*ArcSin[c*x])*Cot[(Pi + 2*ArcSin[c*x])/4]) + 2*b*Log[Sin[(Pi + 2*ArcSin
[c*x])/4]]) + (c*f + g)^2*(2*b*Log[Cos[(Pi + 2*ArcSin[c*x])/4]] + (a + b*Ar
cSin[c*x])*Tan[(Pi + 2*ArcSin[c*x])/4])))/(2*c^3*d*Sqrt[d - c^2*d*x^2])
```

Maple [C] Result contains complex when optimal does not.
time = 0.61, size = 867, normalized size = 4.07

method	result
default	$\frac{a g^2 x}{c^2 d\sqrt{-c^2 d x^2+d}} - \frac{a g^2 \arctan\left(\frac{\sqrt{c^2 d}\, x}{\sqrt{-c^2 d x^2+d}}\right)}{c^2 d\sqrt{c^2 d}} + \frac{2afg}{c^2 d\sqrt{-c^2 d x^2+d}} + \frac{a f^2 x}{d\sqrt{-c^2 d x^2+d}} + \frac{b\sqrt{-d(}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x,method=_RETURNVERBOS
E)
```

```
[Out] a*g^2*x/c^2/d/(-c^2*d*x^2+d)^(1/2)-a*g^2/c^2/d/(c^2*d)^(1/2)*arctan((c^2*d)
^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+2*a*f*g/c^2/d/(-c^2*d*x^2+d)^(1/2)+a*f^2*x/d
/(-c^2*d*x^2+d)^(1/2)+1/2*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d
^2/(c^2*x^2-1)*g^2*arcsin(c*x)^2+I*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1
/2)/c^3/d^2/(c^2*x^2-1)*arcsin(c*x)*g^2+I*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2
-1))^(1/2)/c/d^2/(c^2*x^2-1)*arcsin(c*x)*f^2-2*b*(-d*(c^2*x^2-1))^(1/2)*arc
sin(c*x)/c^2/d^2/(c^2*x^2-1)*(-c^2*x^2+1)*f*g-2*b*(-d*(c^2*x^2-1))^(1/2)*ar
csin(c*x)/d^2/(c^2*x^2-1)*x^2*f*g-b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/d^2/
(c^2*x^2-1)*x*f^2-b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/c^2/d^2/(c^2*x^2-1)*
x*g^2-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/d^2/(c^2*x^2-1)*ln(I*c*
x+(-c^2*x^2+1)^(1/2)-I)*f^2-2*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c
^2/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*f*g-b*(-d*(c^2*x^2-1))^(1
/2)*(-c^2*x^2+1)^(1/2)/c^3/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*g
^2-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/d^2/(c^2*x^2-1)*ln(I*c*x+(
-c^2*x^2+1)^(1/2)+I)*f^2+2*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^2/
d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)*f*g-b*(-d*(c^2*x^2-1))^(1/2)
*(-c^2*x^2+1)^(1/2)/c^3/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)*g^2
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="ma
xima")
```

```
[Out] a*g^2*(x/(sqrt(-c^2*d*x^2 + d)*c^2*d) - arcsin(c*x)/(c^3*d^(3/2))) + b*f^2*
x*arcsin(c*x)/(sqrt(-c^2*d*x^2 + d)*d) + a*f^2*x/(sqrt(-c^2*d*x^2 + d)*d) +
 sqrt(d)*integrate((b*g^2*x^2 + 2*b*f*g*x)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arc
tan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2)
, x) - 1/2*b*f^2*log(x^2 - 1/c^2)/(c*d^(3/2)) + 2*a*f*g/(sqrt(-c^2*d*x^2 +
d)*c^2*d)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="fr
icas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(a*g^2*x^2 + 2*a*f*g*x + a*f^2 + (b*g^2*x^2 +
 2*b*f*g*x + b*f^2)*arcsin(c*x))/(c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+b\operatorname{asin}(cx))(f+gx)^2}{(-d(cx-1)(cx+1))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x)**2/(-d*(c*x - 1)*(c*x + 1))**(3/2), x)
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="gi
ac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,sageVARx):;OUTPUT:Warning, integration of abs or sign a
ssumes constant sign by intervals (correct if the argument is real):Check [
abs(t_
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^2\,(a+b\operatorname{asin}(c\,x))}{(d-c^2\,d\,x^2)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)^2*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int(((f + g*x)^2*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(3/2), x)
```

3.51 $\int \frac{(f+gx)(a+b\text{ArcSin}(cx))}{(d-c^2dx^2)^{3/2}}\,dx$

Optimal. Leaf size=144

$$\frac{(g+c^2fx)\,(a+b\text{ArcSin}(cx))}{c^2d\sqrt{d-c^2dx^2}}+\frac{b(cf+g)\sqrt{1-c^2x^2}\,\log(1-cx)}{2c^2d\sqrt{d-c^2dx^2}}+\frac{b(cf-g)\sqrt{1-c^2x^2}\,\log(1+cx)}{2c^2d\sqrt{d-c^2dx^2}}$$

```
[Out] (c^2*f*x+g)*(a+b*arcsin(c*x))/c^2/d/(-c^2*d*x^2+d)^(1/2)+1/2*b*(c*f+g)*ln(-
c*x+1)*(-c^2*x^2+1)^(1/2)/c^2/d/(-c^2*d*x^2+d)^(1/2)+1/2*b*(c*f-g)*ln(c*x+1
)*(-c^2*x^2+1)^(1/2)/c^2/d/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A]
time = 0.13, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = {4861, 651, 4845, 12, 647, 31}

$$\frac{(c^2fx+g)\,(a+b\text{ArcSin}(cx))}{c^2d\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x^2}\,(cf+g)\log(1-cx)}{2c^2d\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x^2}\,(cf-g)\log(cx+1)}{2c^2d\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] ((g + c^2*f*x)*(a + b*ArcSin[c*x]))/(c^2*d*Sqrt[d - c^2*d*x^2]) + (b*(c*f +
 g)*Sqrt[1 - c^2*x^2]*Log[1 - c*x])/(2*c^2*d*Sqrt[d - c^2*d*x^2]) + (b*(c*f
 - g)*Sqrt[1 - c^2*x^2]*Log[1 + c*x])/(2*c^2*d*Sqrt[d - c^2*d*x^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 647

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> With[{q = Rt[(-
a)*c, 2]}, Dist[e/2 + c*(d/(2*q)), Int[1/(-q + c*x), x], x] + Dist[e/2 - c*
(d/(2*q)), Int[1/(q + c*x), x], x]] /; FreeQ[{a, c, d, e}, x] && NiceSqrtQ[
(-a)*c]
```

Rule 651

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2)^(3/2), x_Symbol] :> Simp[((-a
)*e + c*d*x)/(a*c*Sqrt[a + c*x^2]), x] /; FreeQ[{a, c, d, e}, x]
```

Rule 4845

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{3/2}}\,dx &= \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}\,dx}{d\sqrt{d-c^2dx^2}}\\
&= \frac{\left(g+c^2fx\right)\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}} - \frac{\left(bc\sqrt{1-c^2x^2}\right)\int \frac{g+c^2fx}{c^2\left(1-c^2x^2\right)}\,dx}{d\sqrt{d-c^2dx^2}}\\
&= \frac{\left(g+c^2fx\right)\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}} - \frac{\left(b\sqrt{1-c^2x^2}\right)\int \frac{g+c^2fx}{1-c^2x^2}\,dx}{cd\sqrt{d-c^2dx^2}}\\
&= \frac{\left(g+c^2fx\right)\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}} - \frac{\left(b(cf-g)\sqrt{1-c^2x^2}\right)\int \frac{1}{-c-c^2x}\,dx}{2d\sqrt{d-c^2dx^2}} - \frac{\left(b(\right.}{}\\
&= \frac{\left(g+c^2fx\right)\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}} + \frac{b(cf+g)\sqrt{1-c^2x^2}\log(1-cx)}{2c^2d\sqrt{d-c^2dx^2}} + \frac{b(cf-}{}
\end{aligned}$$

Mathematica [A]
time = 0.37, size = 135, normalized size = 0.94

$$\frac{\sqrt{1-c^2x^2}\left((cf-g)\left(-\left((a+b\text{ArcSin}(cx))\cot\left(\frac{1}{4}(\pi+2\text{ArcSin}(cx))\right)\right)+2b\log\left(\sin\left(\frac{1}{4}(\pi+2\text{ArcSin}(cx))\right)\right)\right)+(cf+g)\left(2b\log\left(\cos\left(\frac{1}{4}(\pi+2\text{ArcSin}(cx))\right)\right)+(a+b\text{ArcSin}(cx))\tan\left(\frac{1}{4}(\pi+2\text{ArcSin}(cx))\right)\right)\right)}{2c^2d\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*((c*f - g)*(-((a + b*ArcSin[c*x])*Cot[(Pi + 2*ArcSin[c*x
])/4]) + 2*b*Log[Sin[(Pi + 2*ArcSin[c*x])/4]]) + (c*f + g)*(2*b*Log[Cos[(Pi
 + 2*ArcSin[c*x])/4]] + (a + b*ArcSin[c*x])*Tan[(Pi + 2*ArcSin[c*x])/4])))/
(2*c^2*d*Sqrt[d - c^2*d*x^2])
```

Maple [C] Result contains complex when optimal does not.
time = 0.49, size = 444, normalized size = 3.08

method	result
default	$a\left(\frac{g}{c^{2}d\sqrt{-c^{2}d\,x^{2}+d}}+\frac{fx}{d\sqrt{-c^{2}d\,x^{2}+d}}\right)+\frac{ib\sqrt{-c^{2}x^{2}+1}\,\sqrt{-d\left(c^{2}x^{2}-1\right)}\,f\arcsin\left(cx\right)}{c\,d^{2}\left(c^{2}x^{2}-1\right)}-\frac{b\sqrt{-d}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x,method=_RETURNVERBOSE)
```

```
[Out] a*(g/c^2/d/(-c^2*d*x^2+d)^(1/2)+f*x/d/(-c^2*d*x^2+d)^(1/2))+I*b*(-c^2*x^2+1
)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c/d^2/(c^2*x^2-1)*f*arcsin(c*x)-b*(-d*(c^2*x
^2-1))^(1/2)/d^2/(c^2*x^2-1)*arcsin(c*x)*x*f-b*(-d*(c^2*x^2-1))^(1/2)/c^2/d
^2/(c^2*x^2-1)*arcsin(c*x)*g-b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*ln
(I*c*x+(-c^2*x^2+1)^(1/2)+I)/c/d^2/(c^2*x^2-1)*f+b*(-c^2*x^2+1)^(1/2)*(-d*(
c^2*x^2-1))^(1/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)/c^2/d^2/(c^2*x^2-1)*g-b*(-
c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^
2+1)^(1/2)-I)*f-b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^
2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*g
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxi
ma")
```

```
[Out] b*f*x*arcsin(c*x)/(sqrt(-c^2*d*x^2 + d)*d) + a*f*x/(sqrt(-c^2*d*x^2 + d)*d)
 - 1/2*b*f*log(x^2 - 1/c^2)/(c*d^(3/2)) + (sqrt(c*x + 1)*sqrt(-c*x + 1)*c^3
*d^2*integrate(x^2/(c^4*d^2*x^4 - c^2*d^2*x^2 + (c^2*d^2*x^2 - d^2)*e^(log(
c*x + 1) + log(-c*x + 1))), x) + arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))
)*b*g/(sqrt(c*x + 1)*sqrt(-c*x + 1)*c^2*d^(3/2)) + a*g/(sqrt(-c^2*d*x^2 + d
)*c^2*d)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="fric
as")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(a*g*x + a*f + (b*g*x + b*f)*arcsin(c*x))/(c^
4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2), x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\,\mathrm{asin}\,(cx))\,(f + gx)}{(-d\,(cx-1)\,(cx+1))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x)/(-d*(c*x - 1)*(c*x + 1))**(3/2), x)
```

Giac [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac
")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,sageVARx):;OUTPUT:Warning, integration of abs or sign a
ssumes constant sign by intervals (correct if the argument is real):Check [
abs(t_
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(f + g\,x)\,\left(a + b\,\mathrm{asin}(c\,x)\right)}{{\left(d - c^2\,d\,x^2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int(((f + g*x)*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(3/2), x)
```

3.52 $\int \frac{a+b\text{ArcSin}(cx)}{(f+gx)\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=654

$$-\frac{\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))\cot\left(\frac{\pi}{4}+\frac{1}{2}\text{ArcSin}(cx)\right)}{2d(cf-g)\sqrt{d-c^2dx^2}}+\frac{ig^2\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))\log\left(1-\frac{ie^{i\text{ArcS}}}{cf-\sqrt{c^2}}\right.}{d\left(c^2f^2-g^2\right)^{3/2}\sqrt{d-c^2dx^2}}$$

```
[Out] -1/2*(a+b*arcsin(c*x))*cot(1/4*Pi+1/2*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/d/(c*
f-g)/(-c^2*d*x^2+d)^(1/2)+b*ln(cos(1/4*Pi+1/2*arcsin(c*x)))*(-c^2*x^2+1)^(1
/2)/d/(c*f+g)/(-c^2*d*x^2+d)^(1/2)+b*ln(sin(1/4*Pi+1/2*arcsin(c*x)))*(-c^2*
x^2+1)^(1/2)/d/(c*f-g)/(-c^2*d*x^2+d)^(1/2)+I*g^2*(a+b*arcsin(c*x))*ln(1-I*
(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))*(-c^2*x^2+1)^(1/2)/
d/(c^2*f^2-g^2)^(3/2)/(-c^2*d*x^2+d)^(1/2)-I*g^2*(a+b*arcsin(c*x))*ln(1-I*(
I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))*(-c^2*x^2+1)^(1/2)/d
/(c^2*f^2-g^2)^(3/2)/(-c^2*d*x^2+d)^(1/2)+b*g^2*polylog(2,I*(I*c*x+(-c^2*x^
2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))*(-c^2*x^2+1)^(1/2)/d/(c^2*f^2-g^2)
^(3/2)/(-c^2*d*x^2+d)^(1/2)-b*g^2*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/
(c*f+(c^2*f^2-g^2)^(1/2)))*(-c^2*x^2+1)^(1/2)/d/(c^2*f^2-g^2)^(3/2)/(-c^2*d
*x^2+d)^(1/2)+1/2*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)*tan(1/4*Pi+1/2*arcsi
n(c*x))/d/(c*f+g)/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A]
time = 0.81, antiderivative size = 654, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 11, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.355$, Rules used = {4861, 4859, 4857, 3399, 4269, 3556, 3404, 2296, 2221, 2317, 2438}

$$\frac{ig^2\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))\log\left(1-\frac{ige^{i\text{ArcSin}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{d\sqrt{d-c^2dx^2}\left(c^2f^2-g^2\right)^{3/2}}-\frac{ig^2\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))\log\left(1-\frac{ige^{i\text{ArcSin}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{d\sqrt{d-c^2dx^2}\left(c^2f^2-g^2\right)^{3/2}}+\frac{\sqrt{1-c^2x^2}\tan\left(\frac{1}{2}\text{ArcSin}(cx)+\frac{\pi}{4}\right)(a+b\text{ArcSin}(cx))}{2d\sqrt{d-c^2dx^2}\,(cf+g)}-\frac{\sqrt{1-c^2x^2}\cot\left(\frac{1}{2}\text{ArcSin}(cx)+\frac{\pi}{4}\right)(a+b\text{ArcSin}(cx))}{2d\sqrt{d-c^2dx^2}\,(cf-g)}+\frac{bg^2\sqrt{1-c^2x^2}\,\text{Li}_2\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{d\sqrt{d-c^2dx^2}\left(c^2f^2-g^2\right)^{3/2}}-\frac{bg^2\sqrt{1-c^2x^2}\,\text{Li}_2\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)}{d\sqrt{d-c^2dx^2}\left(c^2f^2-g^2\right)^{3/2}}+\frac{b\sqrt{1-c^2x^2}\log\left(\sin\left(\frac{1}{2}\text{ArcSin}(cx)+\frac{\pi}{4}\right)\right)}{d\sqrt{d-c^2dx^2}\,(cf-g)}+\frac{b\sqrt{1-c^2x^2}\log\left(\cos\left(\frac{1}{2}\text{ArcSin}(cx)+\frac{\pi}{4}\right)\right)}{d\sqrt{d-c^2dx^2}\,(cf+g)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/((f + g*x)*(d - c^2*d*x^2)^(3/2)),x]
```

```
[Out] -1/2*(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Cot[Pi/4 + ArcSin[c*x]/2])/(d*(
c*f - g)*Sqrt[d - c^2*d*x^2]) + (I*g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]
)*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(d*(c^2*f^2
 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) - (I*g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin
[c*x])*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(d*(c^
2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) + (b*Sqrt[1 - c^2*x^2]*Log[Cos[Pi/4
 + ArcSin[c*x]/2]])/(d*(c*f + g)*Sqrt[d - c^2*d*x^2]) + (b*Sqrt[1 - c^2*x^2
]*Log[Sin[Pi/4 + ArcSin[c*x]/2]])/(d*(c*f - g)*Sqrt[d - c^2*d*x^2]) + (b*g^
2*Sqrt[1 - c^2*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2
- g^2])])/(d*(c^2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) - (b*g^2*Sqrt[1 - c
^2*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(d
```

```
*(c^2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) + (Sqrt[1 - c^2*x^2]*(a + b*Arc
Sin[c*x])*Tan[Pi/4 + ArcSin[c*x]/2])/(2*d*(c*f + g)*Sqrt[d - c^2*d*x^2])
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2296

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[2*(c/q), Int[
(f + g*x)^m*(F^u/(b - q + 2*c*F^u)), x], x] - Dist[2*(c/q), Int[(f + g*x)^m
*(F^u/(b + q + 2*c*F^u)), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3399

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1/2)*(e + Pi*(a/(2*b))) +
 f*(x/2)]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3404

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[(c + d*x)^m*(E^(I*(e + f*x))/(I*b + 2*a*E^(I*(e + f*x)
) - I*b*E^(2*I*(e + f*x)))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3556

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> Simp[-Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 4269

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp
[(-(c + d*x)^m)*(Cot[e + f*x]/f), x] + Dist[d*(m/f), Int[(c + d*x)^(m - 1)*
Cot[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4859

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{(f+gx)\left(d-c^2dx^2\right)^{3/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{a+b\sin^{-1}(cx)}{(f+gx)(1-c^2x^2)^{3/2}}\,dx}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(-\frac{c(a+b\sin^{-1}(cx))}{2(cf+g)(-1+cx)\sqrt{1-c^2x^2}} + \frac{c(a+b\sin^{-1}(cx))}{2(cf-g)(1+cx)\sqrt{1-c^2x^2}} + \frac{}{(-cf+}\right.}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(c\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{(1+cx)\sqrt{1-c^2x^2}}\,dx}{2d(cf-g)\sqrt{d-c^2dx^2}} - \frac{\left(c\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{(-1+cx)\sqrt{1-c^2x^2}}}{2d(cf+g)\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(c\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int \frac{a+bx}{c+c\sin(x)}\,dx, x, \sin^{-1}(cx)\right)}{2d(cf-g)\sqrt{d-c^2dx^2}} - \frac{\left(c\sqrt{1-c^2x^2}\right)\text{Subst}\left(\right.}{2d(cf+}$$

$$= \frac{\sqrt{1-c^2x^2}\,\text{Subst}\left(\int (a+bx)\csc^2\left(\frac{\pi}{4}+\frac{x}{2}\right)\,dx, x, \sin^{-1}(cx)\right)}{4d(cf-g)\sqrt{d-c^2dx^2}} + \frac{\sqrt{1-c^2x^2}\,\text{Su}}{}$$

$$= -\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\cot\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(cx)\right)}{2d(cf-g)\sqrt{d-c^2dx^2}} + \frac{\sqrt{1-c^2x^2}\left(a+b\sin\right.}{2d(cf+}$$

$$= -\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\cot\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(cx)\right)}{2d(cf-g)\sqrt{d-c^2dx^2}} + \frac{ig^2\sqrt{1-c^2x^2}\left(a+b\right.}{d\left(c^2f\right.}$$

$$= -\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\cot\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(cx)\right)}{2d(cf-g)\sqrt{d-c^2dx^2}} + \frac{ig^2\sqrt{1-c^2x^2}\left(a+b\right.}{d\left(c^2f\right.}$$

$$= -\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\cot\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(cx)\right)}{2d(cf-g)\sqrt{d-c^2dx^2}} + \frac{ig^2\sqrt{1-c^2x^2}\left(a+b\right.}{d\left(c^2f\right.}$$

Mathematica [A]
time = 1.38, size = 359, normalized size = 0.55

$$\frac{\sqrt{1-c^2x^2}\left(\frac{-\left((a+b\text{ArcSin}(cx))\cot\left(\frac{1}{4}(\pi+2\text{ArcSin}(cx))\right)\right)+2b\log\left(\sin\left(\frac{1}{4}(\pi+2\text{ArcSin}(cx))\right)\right)}{cf-g}+\frac{2g^2\left(i(a+b\text{ArcSin}(cx))\left(\log\left(1+\frac{ie^{i\text{ArcSin}(cx)}g}{-cf+\sqrt{c^2f^2-g^2}}\right)-\log\left(1-\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)\right)+b\text{PolyLog}\left(2,-\frac{ie^{i\text{ArcSin}(cx)}g}{-cf+\sqrt{c^2f^2-g^2}}\right)-b\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)\right)}{(cf-g)(cf+g)\sqrt{c^2f^2-g^2}}+\frac{2b\log\left(\cos\left(\frac{1}{4}(\pi+2\text{ArcSin}(cx))\right)\right)+(a+b\text{ArcSin}(cx))\tan\left(\frac{1}{4}(\pi+2\text{ArcSin}(cx))\right)}{cf+g}\right)}{2d\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/((f + g*x)*(d - c^2*d*x^2)^(3/2)),x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*((-((a + b*ArcSin[c*x])*Cot[(Pi + 2*ArcSin[c*x])/4]) + 2
*b*Log[Sin[(Pi + 2*ArcSin[c*x])/4]])/(c*f - g) + (2*g^2*(I*(a + b*ArcSin[c*
x])*(Log[1 + (I*E^(I*ArcSin[c*x])*g)/(-(c*f) + Sqrt[c^2*f^2 - g^2])] - Log[
1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]) + b*PolyLog[2, ((
-I)*E^(I*ArcSin[c*x])*g)/(-(c*f) + Sqrt[c^2*f^2 - g^2])] - b*PolyLog[2, (I*
E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]))/((c*f - g)*(c*f + g)*Sq
rt[c^2*f^2 - g^2]) + (2*b*Log[Cos[(Pi + 2*ArcSin[c*x])/4]] + (a + b*ArcSin[
c*x])*Tan[(Pi + 2*ArcSin[c*x])/4])/(c*f + g)))/(2*d*Sqrt[d - c^2*d*x^2])
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 1901 vs. 2(612) = 1224.
time = 0.70, size = 1902, normalized size = 2.91

method	result	size
default	Expression too large to display	1902

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(g*x+f)/(-c^2*d*x^2+d)^(3/2),x,method=_RETURNVERBOSE)
```

```
[Out] -a*g/d/(c^2*f^2-g^2)/(-c^2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/
g^2)^(1/2)+a*f/(c^2*f^2-g^2)/d/(-c^2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2
*f^2-g^2)/g^2)^(1/2)*x*c^2+a*g/d/(c^2*f^2-g^2)/(-d*(c^2*f^2-g^2)/g^2)^(1/2)
*ln((-2*d*(c^2*f^2-g^2)/g^2+2*c^2*d*f/g*(x+f/g)+2*(-d*(c^2*f^2-g^2)/g^2)^(1
/2)*(-c^2*d*(x+f/g)^2+2*c^2*d*f/g*(x+f/g)-d*(c^2*f^2-g^2)/g^2)^(1/2))/(x+f/
g))-I*b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/d^2/(c^2*x^2-1)/(c^2*f^2-g^2)*(-
c^2*x^2+1)^(1/2)*c*f-b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/d^2/(c^2*x^2-1)/(
c^2*f^2-g^2)*x*c^2*f+b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/d^2/(c^2*x^2-1)/(
c^2*f^2-g^2)*g+2*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1
)/(c^2*f^2-g^2)^2*ln(I*c*x+(-c^2*x^2+1)^(1/2))*c^3*f^3-b*(-d*(c^2*x^2-1))^(
1/2)*(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)/(c^2*f^2-g^2)^2*ln(I*c*x+(-c^2*x^2+
1)^(1/2)+I)*c^3*f^3-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^
2-1)/(c^2*f^2-g^2)^2*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*c^3*f^3-b*(-d*(c^2*x^2-
1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)/(c^2*f^2-g^2)^2*ln(I*c*x+(-c^2
*x^2+1)^(1/2)+I)*c^2*f^2*g+b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^2/
(c^2*x^2-1)/(c^2*f^2-g^2)^2*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*c^2*f^2*g+b*(-d*
(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)/(c^2*f^2-g^2)^2*arcsi
n(c*x)*(-c^2*f^2+g^2)^(1/2)*ln((I*c*f+(I*c*x+(-c^2*x^2+1)^(1/2))*g+(-c^2*f^
2+g^2)^(1/2))/(I*c*f+(-c^2*f^2+g^2)^(1/2)))*g^2-b*(-d*(c^2*x^2-1))^(1/2)*(-
c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)/(c^2*f^2-g^2)^2*arcsin(c*x)*(-c^2*f^2+g^2)
^(1/2)*ln((I*c*f+(I*c*x+(-c^2*x^2+1)^(1/2))*g-(-c^2*f^2+g^2)^(1/2))/(I*c*f-
(-c^2*f^2+g^2)^(1/2)))*g^2-I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^
2/(c^2*x^2-1)/(c^2*f^2-g^2)^2*(-c^2*f^2+g^2)^(1/2)*dilog((I*c*f+(I*c*x+(-c^
2*x^2+1)^(1/2))*g+(-c^2*f^2+g^2)^(1/2))/(I*c*f+(-c^2*f^2+g^2)^(1/2)))*g^2+I
*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)/(c^2*f^2-g^2)^
2*(-c^2*f^2+g^2)^(1/2)*dilog((I*c*f+(I*c*x+(-c^2*x^2+1)^(1/2))*g-(-c^2*f^2+
```

```
g^2)^(1/2))/(I*c*f-(-c^2*f^2+g^2)^(1/2)))*g^2-2*b*(-d*(c^2*x^2-1))^(1/2)*(-
c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)/(c^2*f^2-g^2)^2*ln(I*c*x+(-c^2*x^2+1)^(1/2
))*c*f*g^2+b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)/(c^2
*f^2-g^2)^2*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)*c*f*g^2+b*(-d*(c^2*x^2-1))^(1/2)
*(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)/(c^2*f^2-g^2)^2*ln(I*c*x+(-c^2*x^2+1)^(
1/2)-I)*c*f*g^2+b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)
/(c^2*f^2-g^2)^2*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)*g^3-b*(-d*(c^2*x^2-1))^(1/2
)*(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)/(c^2*f^2-g^2)^2*ln(I*c*x+(-c^2*x^2+1)^
(1/2)-I)*g^3
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(g*x+f)/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxi
ma")
```

```
[Out] integrate((b*arcsin(c*x) + a)/((-c^2*d*x^2 + d)^(3/2)*(g*x + f)), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(g*x+f)/(-c^2*d*x^2+d)^(3/2),x, algorithm="fric
as")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(c^4*d^2*g*x^5 + c^4*d^2*
f*x^4 - 2*c^2*d^2*g*x^3 - 2*c^2*d^2*f*x^2 + d^2*g*x + d^2*f), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b \operatorname{asin}{\left(c x \right)}}{\left(- d \left(c x - 1\right) \left(c x + 1\right)\right)^{\frac{3}{2}} \left(f + g x\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(g*x+f)/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c*x))/((-d*(c*x - 1)*(c*x + 1))**(3/2)*(f + g*x)), x)
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(g*x+f)/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac
")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,sageVARx):;OUTPUT:Warning, integration of abs or sign a
ssumes constant sign by intervals (correct if the argument is real):Check [
abs(t_
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a + b\,\mathrm{asin}(c\,x)}{(f + g\,x)\,\left(d - c^2\,d\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/((f + g*x)*(d - c^2*d*x^2)^(3/2)),x)
```

```
[Out] int((a + b*asin(c*x))/((f + g*x)*(d - c^2*d*x^2)^(3/2)), x)
```

3.53 $\int \frac{(f+gx)^4(a+b\mathbf{ArcSin}(cx))}{\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=528

$$-\frac{b(f+gx)^2\left(c^2f^2+g^2+2c^2fgx\right)}{6c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}-\frac{bfg^3x\sqrt{1-c^2x^2}}{3c^3d^2\sqrt{d-c^2dx^2}}-\frac{bg^4\sqrt{1-c^2x^2}\,\mathrm{ArcSin}(cx)^2}{2c^5d^2\sqrt{d-c^2dx^2}}+\frac{(f+gx)\left(g(c^2f^2-3g^2\right.}{}$$

```
[Out] 1/3*(g*x+f)*(g*(c^2*f^2-3*g^2)+2*c^2*f*(c^2*f^2-2*g^2)*x)*(a+b*arcsin(c*x))
/c^4/d^2/(-c^2*d*x^2+d)^(1/2)+1/3*(c^2*f*x+g)*(g*x+f)^3*(a+b*arcsin(c*x))/c
^2/d^2/(-c^2*x^2+1)/(-c^2*d*x^2+d)^(1/2)+1/3*f*g*(2*c^2*f^2-5*g^2)*(-c^2*x^
2+1)*(a+b*arcsin(c*x))/c^4/d^2/(-c^2*d*x^2+d)^(1/2)-1/6*b*(g*x+f)^2*(2*c^2*
f*g*x+c^2*f^2+g^2)/c^3/d^2/(-c^2*x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)-1/3*b*f*
g^3*x*(-c^2*x^2+1)^(1/2)/c^3/d^2/(-c^2*d*x^2+d)^(1/2)-1/2*b*g^4*arcsin(c*x)
^2*(-c^2*x^2+1)^(1/2)/c^5/d^2/(-c^2*d*x^2+d)^(1/2)+g^4*arcsin(c*x)*(a+b*arc
sin(c*x))*(-c^2*x^2+1)^(1/2)/c^5/d^2/(-c^2*d*x^2+d)^(1/2)+1/3*b*(c*f-2*g)*(
c*f+g)^3*ln(-c*x+1)*(-c^2*x^2+1)^(1/2)/c^5/d^2/(-c^2*d*x^2+d)^(1/2)+1/3*b*(
c*f-g)^3*(c*f+2*g)*ln(c*x+1)*(-c^2*x^2+1)^(1/2)/c^5/d^2/(-c^2*d*x^2+d)^(1/2
)
```

Rubi [A]
time = 0.50, antiderivative size = 754, normalized size of antiderivative = 1.43, number of steps used = 13, number of rules used = 10, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.323$, Rules used = {4861, 753, 833, 655, 222, 4845, 788, 647, 31, 4737}

$$\frac{(f+gx)^3\left(c^2fx+g\right)(a+b\mathrm{ArcSin}(cx))}{3c^2d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}+\frac{g^4\sqrt{1-c^2x^2}\,\mathrm{ArcSin}(cx)(a+b\mathrm{ArcSin}(cx))}{c^5d^2\sqrt{d-c^2dx^2}}+\frac{fg\left(1-c^2x^2\right)\left(2c^2f^2-5g^2\right)(a+b\mathrm{ArcSin}(cx))}{3c^4d^2\sqrt{d-c^2dx^2}}+\frac{(f+gx)\left(2c^2fx\left(c^2f^2-2g^2\right)+g\left(c^2f^2-3g^2\right)\right)(a+b\mathrm{ArcSin}(cx))}{3c^4d^2\sqrt{d-c^2dx^2}}-\frac{bg^4\sqrt{1-c^2x^2}\,\mathrm{ArcSin}(cx)^2}{2c^5d^2\sqrt{d-c^2dx^2}}-\frac{bg\sqrt{1-c^2x^2}\,(cf+g)^3\log(1-cx)}{6c^5d^2\sqrt{d-c^2dx^2}}+\frac{bg\sqrt{1-c^2x^2}\,(cf-g)^3\log(cx+1)}{6c^5d^2\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x^2}\,(2cf-3g)(cf+g)^3\log(1-cx)}{6c^5d^2\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x^2}\,(cf-g)^3(2cf+3g)\log(cx+1)}{6c^5d^2\sqrt{d-c^2dx^2}}-\frac{bfgx\sqrt{1-c^2x^2}\left(2c^2f^2-5g^2\right)}{3c^3d^2\sqrt{d-c^2dx^2}}+\frac{2bfgx\sqrt{1-c^2x^2}\left(c^2f^2-2g^2\right)}{3c^3d^2\sqrt{d-c^2dx^2}}-\frac{b(f+gx)^2\left(c^2f^2+2c^2fgx+g^2\right)}{6c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}-\frac{2bfg^3x\sqrt{1-c^2x^2}}{3c^3d^2\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^4*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] -1/6*(b*(f + g*x)^2*(c^2*f^2 + g^2 + 2*c^2*f*g*x))/(c^3*d^2*Sqrt[1 - c^2*x^
2]*Sqrt[d - c^2*d*x^2]) - (2*b*f*g^3*x*Sqrt[1 - c^2*x^2])/(3*c^3*d^2*Sqrt[d
 - c^2*d*x^2]) - (b*f*g*(2*c^2*f^2 - 5*g^2)*x*Sqrt[1 - c^2*x^2])/(3*c^3*d^2
*Sqrt[d - c^2*d*x^2]) + (2*b*f*g*(c^2*f^2 - 2*g^2)*x*Sqrt[1 - c^2*x^2])/(3*
c^3*d^2*Sqrt[d - c^2*d*x^2]) - (b*g^4*Sqrt[1 - c^2*x^2]*ArcSin[c*x]^2)/(2*c
^5*d^2*Sqrt[d - c^2*d*x^2]) + ((f + g*x)*(g*(c^2*f^2 - 3*g^2) + 2*c^2*f*(c^
2*f^2 - 2*g^2)*x)*(a + b*ArcSin[c*x]))/(3*c^4*d^2*Sqrt[d - c^2*d*x^2]) + ((
g + c^2*f*x)*(f + g*x)^3*(a + b*ArcSin[c*x]))/(3*c^2*d^2*(1 - c^2*x^2)*Sqrt
[d - c^2*d*x^2]) + (f*g*(2*c^2*f^2 - 5*g^2)*(1 - c^2*x^2)*(a + b*ArcSin[c*x
]))/(3*c^4*d^2*Sqrt[d - c^2*d*x^2]) + (g^4*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*(a
 + b*ArcSin[c*x]))/(c^5*d^2*Sqrt[d - c^2*d*x^2]) + (b*(2*c*f - 3*g)*(c*f +
g)^3*Sqrt[1 - c^2*x^2]*Log[1 - c*x])/(6*c^5*d^2*Sqrt[d - c^2*d*x^2]) - (b*g
*(c*f + g)^3*Sqrt[1 - c^2*x^2]*Log[1 - c*x])/(6*c^5*d^2*Sqrt[d - c^2*d*x^2]
) + (b*(c*f - g)^3*g*Sqrt[1 - c^2*x^2]*Log[1 + c*x])/(6*c^5*d^2*Sqrt[d - c^
```

```
2*d*x^2]) + (b*(c*f - g)^3*(2*c*f + 3*g)*Sqrt[1 - c^2*x^2]*Log[1 + c*x])/(6
*c^5*d^2*Sqrt[d - c^2*d*x^2])
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 647

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> With[{q = Rt[(-
a)*c, 2]}, Dist[e/2 + c*(d/(2*q)), Int[1/(-q + c*x), x], x] + Dist[e/2 - c*
(d/(2*q)), Int[1/(q + c*x), x], x]] /; FreeQ[{a, c, d, e}, x] && NiceSqrtQ[
(-a)*c]
```

Rule 655

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[e*((
a + c*x^2)^(p + 1)/(2*c*(p + 1))), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rule 753

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(d + e*x)^(m - 1)*(a*e - c*d*x)*((a + c*x^2)^(p + 1)/(2*a*c*(p + 1))), x] +
 Dist[1/((p + 1)*(-2*a*c)), Int[(d + e*x)^(m - 2)*Simp[a*e^2*(m - 1) - c*d^
2*(2*p + 3) - d*c*e*(m + 2*p + 2)*x, x]*(a + c*x^2)^(p + 1), x], x] /; Free
Q[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && I
ntQuadraticQ[a, 0, c, d, e, m, p, x]
```

Rule 788

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2), x_Sym
bol] :> Simp[e*g*(x/c), x] + Dist[1/c, Int[(c*d*f - a*e*g + c*(e*f + d*g)*x
)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g}, x]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*((a*(e*f + d*g
) - (c*d*f - a*e*g)*x)/(2*a*c*(p + 1))), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
```

```
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4845

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int \frac{(f+gx)^4 (a+b\sin^{-1}(cx))}{(d-c^2dx^2)^{5/2}}\,dx = \frac{\sqrt{1-c^2x^2}\ \int \frac{(f+gx)^4(a+b\sin^{-1}(cx))}{(1-c^2x^2)^{5/2}}\,dx}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{(f+gx)\left(g(c^2f^2-3g^2)+2c^2f(c^2f^2-2g^2)\,x\right)(a+b\sin^{-1}(cx))}{3c^4d^2\sqrt{d-c^2dx^2}} + \frac{(g+}{}$$

$$= -\frac{bfg(2c^2f^2-5g^2)\,x\sqrt{1-c^2x^2}}{3c^3d^2\sqrt{d-c^2dx^2}} + \frac{(f+gx)\left(g(c^2f^2-3g^2)+2c^2f(c^2f}{3c^4d^2\sqrt{d-c}}$$

$$= -\frac{b(f+gx)^2\left(c^2f^2+g^2+2c^2fgx\right)}{6c^3d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} - \frac{bfg(2c^2f^2-5g^2)\,x\sqrt{1-c^2x^2}}{3c^3d^2\sqrt{d-c^2dx^2}} +$$

$$= -\frac{b(f+gx)^2\left(c^2f^2+g^2+2c^2fgx\right)}{6c^3d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} - \frac{2bfg^3x\sqrt{1-c^2x^2}}{3c^3d^2\sqrt{d-c^2dx^2}} - \frac{bfg(2c^2f^2 -}{3c^3d^2}$$

$$= -\frac{b(f+gx)^2\left(c^2f^2+g^2+2c^2fgx\right)}{6c^3d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} - \frac{2bfg^3x\sqrt{1-c^2x^2}}{3c^3d^2\sqrt{d-c^2dx^2}} - \frac{bfg(2c^2f^2 -}{3c^3d^2}$$

$$= -\frac{b(f+gx)^2\left(c^2f^2+g^2+2c^2fgx\right)}{6c^3d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} - \frac{2bfg^3x\sqrt{1-c^2x^2}}{3c^3d^2\sqrt{d-c^2dx^2}} - \frac{bfg(2c^2f^2 -}{3c^3d^2}$$

Mathematica [A]
time = 2.14, size = 868, normalized size = 1.64

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^4*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] Sqrt[-(d*(-1 + c^2*x^2))]*((4*a*c^2*f^3*g + 4*a*f*g^3 + a*c^4*f^4*x + 6*a*c
^2*f^2*g^2*x + a*g^4*x)/(3*c^4*d^3*(-1 + c^2*x^2)^2) - (2*a*(-6*f*g^3 + c^4
*f^4*x - 3*c^2*f^2*g^2*x - 2*g^4*x))/(3*c^4*d^3*(-1 + c^2*x^2))) - (a*g^4*A
rcTan[(c*x*Sqrt[-(d*(-1 + c^2*x^2))])/(Sqrt[d]*(-1 + c^2*x^2))])/(c^5*d^(5/
2)) + (b*f^2*g^2*(-2*c*x*ArcSin[c*x] + (-1 + (2*c*x*ArcSin[c*x])/Sqrt[1 - c
^2*x^2])/Sqrt[1 - c^2*x^2] - 2*Sqrt[1 - c^2*x^2]*Log[Sqrt[1 - c^2*x^2]]))/(
c^3*d^2*Sqrt[d*(1 - c^2*x^2)]) + (b*f^4*(4*c*x*ArcSin[c*x] + (-1 + (2*c*x*A
rcSin[c*x])/Sqrt[1 - c^2*x^2])/Sqrt[1 - c^2*x^2] + 4*Sqrt[1 - c^2*x^2]*Log[
Sqrt[1 - c^2*x^2]]))/(6*c*d^2*Sqrt[d*(1 - c^2*x^2)]) + (b*f^3*g*(8*ArcSin[c
*x] + 3*Sqrt[1 - c^2*x^2]*(Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] - L
og[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]) + Cos[3*ArcSin[c*x]]*(Log[Cos[
ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] - Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[
```

```
c*x]/2]]) - 2*Sin[2*ArcSin[c*x]]))/(6*c^2*d*(d*(1 - c^2*x^2))^(3/2)) - (b*f
*g^3*(4*ArcSin[c*x] + 12*ArcSin[c*x]*Cos[2*ArcSin[c*x]] + 5*Cos[3*ArcSin[c*
x]]*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] + 15*Sqrt[1 - c^2*x^2]*(Lo
g[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] - Log[Cos[ArcSin[c*x]/2] + Sin[A
rcSin[c*x]/2]]) - 5*Cos[3*ArcSin[c*x]]*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[
c*x]/2]] + 2*Sin[2*ArcSin[c*x]]))/(6*c^4*d*(d*(1 - c^2*x^2))^(3/2)) + (b*g^
4*(Sqrt[1 - c^2*x^2]*(3*ArcSin[c*x]^2 - 8*Log[Sqrt[1 - c^2*x^2]]) - (1 + (2
*ArcSin[c*x]*Sin[3*ArcSin[c*x]])/Sqrt[1 - c^2*x^2])/Sqrt[1 - c^2*x^2]))/(6*
c^5*d^2*Sqrt[d*(1 - c^2*x^2)])
```

Maple [C] Result contains complex when optimal does not.
time = 1.01, size = 6743, normalized size = 12.77

method	result	size
default	Expression too large to display	6743

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x,method=_RETURNVERBOS
E)
```

```
[Out] result too large to display
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="ma
xima")
```

```
[Out] 1/6*b*c*f^4*(1/(c^4*d^(5/2)*x^2 - c^2*d^(5/2)) + 2*log(c*x + 1)/(c^2*d^(5/2
)) + 2*log(c*x - 1)/(c^2*d^(5/2))) + 1/3*b*f^4*(2*x/(sqrt(-c^2*d*x^2 + d)*d
^2) + x/((-c^2*d*x^2 + d)^(3/2)*d))*arcsin(c*x) + 1/3*(x*(3*x^2/((-c^2*d*x^
2 + d)^(3/2)*c^2*d) - 2/((-c^2*d*x^2 + d)^(3/2)*c^4*d)) - x/(sqrt(-c^2*d*x^
2 + d)*c^4*d^2) + 3*arcsin(c*x)/(c^5*d^(5/2)))*a*g^4 + 1/3*a*f^4*(2*x/(sqrt
(-c^2*d*x^2 + d)*d^2) + x/((-c^2*d*x^2 + d)^(3/2)*d)) + 4/3*a*f*g^3*(3*x^2/
((-c^2*d*x^2 + d)^(3/2)*c^2*d) - 2/((-c^2*d*x^2 + d)^(3/2)*c^4*d)) - 2*a*f^
2*g^2*(x/(sqrt(-c^2*d*x^2 + d)*c^2*d^2) - x/((-c^2*d*x^2 + d)^(3/2)*c^2*d))
 - sqrt(d)*integrate((b*g^4*x^4 + 4*b*f*g^3*x^3 + 6*b*f^2*g^2*x^2 + 4*b*f^3
*g*x)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1
))/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3), x) + 4/3*a*f^3*g/((
-c^2*d*x^2 + d)^(3/2)*c^2*d)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="fr
icas")
```

```
[Out] integral(-(a*g^4*x^4 + 4*a*f*g^3*x^3 + 6*a*f^2*g^2*x^2 + 4*a*f^3*g*x + a*f^
4 + (b*g^4*x^4 + 4*b*f*g^3*x^3 + 6*b*f^2*g^2*x^2 + 4*b*f^3*g*x + b*f^4)*arc
sin(c*x))*sqrt(-c^2*d*x^2 + d)/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x^2
 - d^3), x)
```

Sympy [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**4*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Exception raised: TypeError >> Invalid comparison of non-real zoo
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="gi
ac")
```

```
[Out] integrate((g*x + f)^4*(b*arcsin(c*x) + a)/(-c^2*d*x^2 + d)^(5/2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^4\,(a+b\,\mathrm{asin}(c\,x))}{(d-c^2\,d\,x^2)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)^4*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int(((f + g*x)^4*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(5/2), x)
```

3.54 $\int \frac{(f+gx)^3(a+b\mathbf{ArcSin}(cx))}{(d-c^2dx^2)^{5/2}}\,dx$

Optimal. Leaf size=410

$$-\frac{b(f+gx)\left(c^2f^2+g^2+2c^2fgx\right)}{6c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{2(cf-g)(cf+g)\left(g+c^2fx\right)(a+b\text{ArcSin}(cx))}{3c^4d^2\sqrt{d-c^2dx^2}}+\frac{\left(g+c^2fx\right)(f+gx)^2(a$$

```
[Out] 2/3*(c*f-g)*(c*f+g)*(c^2*f*x+g)*(a+b*arcsin(c*x))/c^4/d^2/(-c^2*d*x^2+d)^(1
/2)+1/3*(c^2*f*x+g)*(g*x+f)^2*(a+b*arcsin(c*x))/c^2/d^2/(-c^2*x^2+1)/(-c^2*
d*x^2+d)^(1/2)-1/6*b*(g*x+f)*(2*c^2*f*g*x+c^2*f^2+g^2)/c^3/d^2/(-c^2*x^2+1)
^(1/2)/(-c^2*d*x^2+d)^(1/2)+1/3*b*(c*f-g)*(c*f+g)^2*ln(-c*x+1)*(-c^2*x^2+1)
^(1/2)/c^4/d^2/(-c^2*d*x^2+d)^(1/2)-1/12*b*g*(c*f+g)^2*ln(-c*x+1)*(-c^2*x^2
+1)^(1/2)/c^4/d^2/(-c^2*d*x^2+d)^(1/2)+1/12*b*(c*f-g)^2*g*ln(c*x+1)*(-c^2*x
^2+1)^(1/2)/c^4/d^2/(-c^2*d*x^2+d)^(1/2)+1/3*b*(c*f-g)^2*(c*f+g)*ln(c*x+1)*
(-c^2*x^2+1)^(1/2)/c^4/d^2/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A]

time = 0.29, antiderivative size = 410, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.226$, Rules used = {4861, 737, 651, 4845, 833, 647, 31}

$$\frac{(f+gx)^2\left(c^2fx+g\right)(a+b\text{ArcSin}(cx))}{3c^2d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}+\frac{2(cf+g)(cf-g)\left(c^2fx+g\right)(a+b\text{ArcSin}(cx))}{3c^4d^2\sqrt{d-c^2dx^2}}+\frac{bg\sqrt{1-c^2x^2}(cf-g)^2\log(cx+1)}{12c^4d^2\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x^2}(cf+g)(cf-g)^2\log(cx+1)}{3c^4d^2\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x^2}(cf+g)^2(cf-g)\log(1-cx)}{3c^4d^2\sqrt{d-c^2dx^2}}-\frac{bg\sqrt{1-c^2x^2}(cf+g)^2\log(1-cx)}{12c^4d^2\sqrt{d-c^2dx^2}}-\frac{b(f+gx)\left(c^2f^2+2c^2fgx+g^2\right)}{6c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^3*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] -1/6*(b*(f + g*x)*(c^2*f^2 + g^2 + 2*c^2*f*g*x))/(c^3*d^2*Sqrt[1 - c^2*x^2]
*Sqrt[d - c^2*d*x^2]) + (2*(c*f - g)*(c*f + g)*(g + c^2*f*x)*(a + b*ArcSin[
c*x]))/(3*c^4*d^2*Sqrt[d - c^2*d*x^2]) + ((g + c^2*f*x)*(f + g*x)^2*(a + b*
ArcSin[c*x]))/(3*c^2*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]) + (b*(c*f - g)*
(c*f + g)^2*Sqrt[1 - c^2*x^2]*Log[1 - c*x])/(3*c^4*d^2*Sqrt[d - c^2*d*x^2])
 - (b*g*(c*f + g)^2*Sqrt[1 - c^2*x^2]*Log[1 - c*x])/(12*c^4*d^2*Sqrt[d - c^
2*d*x^2]) + (b*(c*f - g)^2*g*Sqrt[1 - c^2*x^2]*Log[1 + c*x])/(12*c^4*d^2*Sq
rt[d - c^2*d*x^2]) + (b*(c*f - g)^2*(c*f + g)*Sqrt[1 - c^2*x^2]*Log[1 + c*x
])/(3*c^4*d^2*Sqrt[d - c^2*d*x^2])
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 647

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> With[{q = Rt[(-
a)*c, 2]}, Dist[e/2 + c*(d/(2*q)), Int[1/(-q + c*x), x], x] + Dist[e/2 - c*
```

```
(d/(2*q)), Int[1/(q + c*x), x], x]] /; FreeQ[{a, c, d, e}, x] && NiceSqrtQ[
(-a)*c]
```

Rule 651

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2)^(3/2), x_Symbol] :> Simp[((-a
)*e + c*d*x)/(a*c*Sqrt[a + c*x^2]), x] /; FreeQ[{a, c, d, e}, x]
```

Rule 737

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(d + e*x)^(m - 1)*(a*e - c*d*x)*((a + c*x^2)^(p + 1)/(2*a*c*(p + 1))), x] +
 Dist[(2*p + 3)*((c*d^2 + a*e^2)/(2*a*c*(p + 1))), Int[(d + e*x)^(m - 2)*(a
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0
] && EqQ[m + 2*p + 2, 0] && LtQ[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*((a*(e*f + d*g
) - (c*d*f - a*e*g)*x)/(2*a*c*(p + 1))), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 4845

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int \frac{(f+gx)^3 (a+b\sin^{-1}(cx))}{(d-c^2dx^2)^{5/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)^3(a+b\sin^{-1}(cx))}{(1-c^2x^2)^{5/2}}\,dx}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{2(cf-g)(cf+g)\left(g+c^2fx\right)(a+b\sin^{-1}(cx))}{3c^4d^2\sqrt{d-c^2dx^2}} + \frac{\left(g+c^2fx\right)(f+gx)^2\,(a}{3c^2d^2\left(1-c^2x^2\right)\sqrt{}}$$

$$= \frac{2(cf-g)(cf+g)\left(g+c^2fx\right)(a+b\sin^{-1}(cx))}{3c^4d^2\sqrt{d-c^2dx^2}} + \frac{\left(g+c^2fx\right)(f+gx)^2\,(a}{3c^2d^2\left(1-c^2x^2\right)\sqrt{}}$$

$$= -\frac{b(f+gx)\left(c^2f^2+g^2+2c^2fgx\right)}{6c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{2(cf-g)(cf+g)\left(g+c^2fx\right)(a+b}{3c^4d^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{b(f+gx)\left(c^2f^2+g^2+2c^2fgx\right)}{6c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{2(cf-g)(cf+g)\left(g+c^2fx\right)(a+b}{3c^4d^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{b(f+gx)\left(c^2f^2+g^2+2c^2fgx\right)}{6c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{2(cf-g)(cf+g)\left(g+c^2fx\right)(a+b}{3c^4d^2\sqrt{d-c^2dx^2}}$$

Mathematica [C] Result contains higher order function than in optimal. Order 4 vs. order 3 in optimal.
time = 0.81, size = 366, normalized size = 0.89

$$\frac{\sqrt{d-c^2dx^2}\left(ibcg(3c^2f^2-5g^2)\left(1-c^2x^2\right)^{3/2}F\left(i\sinh^{-1}\left(\sqrt{-c^2}\,x\right)\middle|1\right)-\sqrt{-c^2}\left(-6ac^2f^2g+4ag^3-6ac^4f^3x-6ac^2g^3x^2+4ac^6f^3x^3-6ac^4fg^2x^3+bc^3f^3\sqrt{1-c^2x^2}+3bcfg^2\sqrt{1-c^2x^2}+3bc^3f^2gx\sqrt{1-c^2x^2}+bcg^3x\sqrt{1-c^2x^2}+2b(2g^3+2c^6f^3x^3-3c^2g(f^2+g^2x^2)-3c^4fx(f^2+g^2x^2))\,\mathrm{ArcSin}(cx)-bcf(2c^2f^2-3g^2)\left(1-c^2x^2\right)^{3/2}\log\left(-1+c^2x^2\right)\right)\right)}{6c^4\sqrt{-c^2}\,d^3\left(-1+c^2x^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^3*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(I*b*c*g*(3*c^2*f^2 - 5*g^2)*(1 - c^2*x^2)^(3/2)*Ellip
ticF[I*ArcSinh[Sqrt[-c^2]*x], 1] - Sqrt[-c^2]*(-6*a*c^2*f^2*g + 4*a*g^3 - 6
*a*c^4*f^3*x - 6*a*c^2*g^3*x^2 + 4*a*c^6*f^3*x^3 - 6*a*c^4*f*g^2*x^3 + b*c^
3*f^3*Sqrt[1 - c^2*x^2] + 3*b*c*f*g^2*Sqrt[1 - c^2*x^2] + 3*b*c^3*f^2*g*x*S
qrt[1 - c^2*x^2] + b*c*g^3*x*Sqrt[1 - c^2*x^2] + 2*b*(2*g^3 + 2*c^6*f^3*x^3
 - 3*c^2*g*(f^2 + g^2*x^2) - 3*c^4*f*x*(f^2 + g^2*x^2))*ArcSin[c*x] - b*c*f
*(2*c^2*f^2 - 3*g^2)*(1 - c^2*x^2)^(3/2)*Log[-1 + c^2*x^2])))/(6*c^4*Sqrt[-
c^2]*d^3*(-1 + c^2*x^2)^2)
```

Maple [C] Result contains complex when optimal does not.
time = 0.80, size = 5114, normalized size = 12.47

method	result	size
default	Expression too large to display	5114

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x,method=_RETURNVERBOS
E)
```

```
[Out] result too large to display
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="ma
xima")
```

```
[Out] 1/6*b*c*f^3*(1/(c^4*d^(5/2)*x^2 - c^2*d^(5/2)) + 2*log(c*x + 1)/(c^2*d^(5/2
)) + 2*log(c*x - 1)/(c^2*d^(5/2))) + 1/3*b*f^3*(2*x/(sqrt(-c^2*d*x^2 + d)*d
^2) + x/((-c^2*d*x^2 + d)^(3/2)*d))*arcsin(c*x) + 1/3*a*f^3*(2*x/(sqrt(-c^2
*d*x^2 + d)*d^2) + x/((-c^2*d*x^2 + d)^(3/2)*d)) + 1/3*a*g^3*(3*x^2/((-c^2*
d*x^2 + d)^(3/2)*c^2*d) - 2/((-c^2*d*x^2 + d)^(3/2)*c^4*d)) - a*f*g^2*(x/(s
qrt(-c^2*d*x^2 + d)*c^2*d^2) - x/((-c^2*d*x^2 + d)^(3/2)*c^2*d)) + integrat
e((b*g^3*x^3 + 3*b*f*g^2*x^2 + 3*b*f^2*g*x)*arctan2(c*x, sqrt(c*x + 1)*sqrt
(-c*x + 1))/((c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2)*sqrt(c*x + 1)*sqrt(-c*x +
1)), x)/sqrt(d) + a*f^2*g/((-c^2*d*x^2 + d)^(3/2)*c^2*d)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="fr
icas")
```

```
[Out] integral(-(a*g^3*x^3 + 3*a*f*g^2*x^2 + 3*a*f^2*g*x + a*f^3 + (b*g^3*x^3 + 3
*b*f*g^2*x^2 + 3*b*f^2*g*x + b*f^3)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/(c^6*
d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3), x)
```

Sympy [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Exception raised: TypeError >> Invalid comparison of non-real zoo
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="gi
ac")
```

```
[Out] integrate((g*x + f)^3*(b*arcsin(c*x) + a)/(-c^2*d*x^2 + d)^(5/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^3\,\left(a+b\,\mathrm{asin}(c\,x)\right)}{{\left(d-c^2\,d\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)^3*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int(((f + g*x)^3*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(5/2), x)
```

3.55 $\int \frac{(f+gx)^2(a+b\text{ArcSin}(cx))}{(d-c^2dx^2)^{5/2}}\,dx$

Optimal. Leaf size=271

$$-\frac{bx(2fg+(c^2f^2+g^2)\,x)}{6cd^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}}+\frac{2f(g+c^2fx)\,(a+b\text{ArcSin}(cx))}{3c^2d^2\sqrt{d-c^2dx^2}}+\frac{x(f+gx)^2(a+b\text{ArcSin}(cx))}{3d^2\,(1-c^2x^2)\,\sqrt{d-c^2dx^2}}+\frac{b(2cf-g}{}$$

```
[Out] 2/3*f*(c^2*f*x+g)*(a+b*arcsin(c*x))/c^2/d^2/(-c^2*d*x^2+d)^(1/2)+1/3*x*(g*x
+f)^2*(a+b*arcsin(c*x))/d^2/(-c^2*x^2+1)/(-c^2*d*x^2+d)^(1/2)-1/6*b*x*(2*f*
g+(c^2*f^2+g^2)*x)/c/d^2/(-c^2*x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)+1/6*b*(2*c
*f-g)*(c*f+g)*ln(-c*x+1)*(-c^2*x^2+1)^(1/2)/c^3/d^2/(-c^2*d*x^2+d)^(1/2)+1/
6*b*(c*f-g)*(2*c*f+g)*ln(c*x+1)*(-c^2*x^2+1)^(1/2)/c^3/d^2/(-c^2*d*x^2+d)^(
1/2)
```

Rubi [A]
time = 0.25, antiderivative size = 354, normalized size of antiderivative = 1.31, number of steps used = 10, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.226$, Rules used = {4861, 743, 651, 4845, 833, 647, 31}

$$\frac{x(f+gx)^2(a+b\text{ArcSin}(cx))}{3d^2\,(1-c^2x^2)\,\sqrt{d-c^2dx^2}}+\frac{2f(c^2fx+g)\,(a+b\text{ArcSin}(cx))}{3c^2d^2\sqrt{d-c^2dx^2}}-\frac{b(f+gx)^2}{6cd^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}}+\frac{bf\sqrt{1-c^2x^2}\,(cf+g)\log(1-cx)}{3c^2d^2\sqrt{d-c^2dx^2}}+\frac{bf\sqrt{1-c^2x^2}\,(cf-g)\log(cx+1)}{3c^2d^2\sqrt{d-c^2dx^2}}-\frac{bg\sqrt{1-c^2x^2}\,(cf+g)\log(1-cx)}{6c^3d^2\sqrt{d-c^2dx^2}}+\frac{bg\sqrt{1-c^2x^2}\,(cf-g)\log(cx+1)}{6c^3d^2\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^2*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] -1/6*(b*(f + g*x)^2)/(c*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) + (2*f*(
g + c^2*f*x)*(a + b*ArcSin[c*x]))/(3*c^2*d^2*Sqrt[d - c^2*d*x^2]) + (x*(f +
 g*x)^2*(a + b*ArcSin[c*x]))/(3*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]) + (b
*f*(c*f + g)*Sqrt[1 - c^2*x^2]*Log[1 - c*x])/(3*c^2*d^2*Sqrt[d - c^2*d*x^2]
) - (b*g*(c*f + g)*Sqrt[1 - c^2*x^2]*Log[1 - c*x])/(6*c^3*d^2*Sqrt[d - c^2*
d*x^2]) + (b*f*(c*f - g)*Sqrt[1 - c^2*x^2]*Log[1 + c*x])/(3*c^2*d^2*Sqrt[d
- c^2*d*x^2]) + (b*(c*f - g)*g*Sqrt[1 - c^2*x^2]*Log[1 + c*x])/(6*c^3*d^2*S
qrt[d - c^2*d*x^2])
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 647

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> With[{q = Rt[(-
a)*c, 2]}, Dist[e/2 + c*(d/(2*q)), Int[1/(-q + c*x), x], x] + Dist[e/2 - c*
(d/(2*q)), Int[1/(q + c*x), x], x]] /; FreeQ[{a, c, d, e}, x] && NiceSqrtQ[
(-a)*c]
```

Rule 651

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2)^(3/2), x_Symbol] :> Simp[((-a
)*e + c*d*x)/(a*c*Sqrt[a + c*x^2]), x] /; FreeQ[{a, c, d, e}, x]
```

Rule 743

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(-(d + e*x)^m)*(2*c*x)*((a + c*x^2)^(p + 1)/(4*a*c*(p + 1))), x] - Dist[m*(
(2*c*d)/(4*a*c*(p + 1))), Int[(d + e*x)^(m - 1)*(a + c*x^2)^(p + 1), x], x]
 /; FreeQ[{a, c, d, e, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[m + 2*p +
3, 0] && LtQ[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*((a*(e*f + d*g
) - (c*d*f - a*e*g)*x)/(2*a*c*(p + 1))), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 4845

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int \frac{(f+gx)^2\,(a+b\sin^{-1}(cx))}{(d-c^2dx^2)^{5/2}}\,dx = \frac{\sqrt{1-c^2x^2}\,\int \frac{(f+gx)^2(a+b\sin^{-1}(cx))}{(1-c^2x^2)^{5/2}}\,dx}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{2f(g+c^2fx)\,(a+b\sin^{-1}(cx))}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{x(f+gx)^2\,(a+b\sin^{-1}(cx))}{3d^2\,(1-c^2x^2)\,\sqrt{d-c^2dx^2}} - \frac{(bc\sqrt{}}{}$$

$$= \frac{2f(g+c^2fx)\,(a+b\sin^{-1}(cx))}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{x(f+gx)^2\,(a+b\sin^{-1}(cx))}{3d^2\,(1-c^2x^2)\,\sqrt{d-c^2dx^2}} - \frac{(bc\sqrt{}}{}$$

$$= -\frac{b(f+gx)^2}{6cd^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} + \frac{2f(g+c^2fx)\,(a+b\sin^{-1}(cx))}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{x(f}{3d^2}$$

$$= -\frac{b(f+gx)^2}{6cd^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} + \frac{2f(g+c^2fx)\,(a+b\sin^{-1}(cx))}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{x(f}{3d^2}$$

$$= -\frac{b(f+gx)^2}{6cd^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} + \frac{2f(g+c^2fx)\,(a+b\sin^{-1}(cx))}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{x(f}{3d^2}$$

Mathematica [C] Result contains higher order function than in optimal. Order 4 vs. order 3 in optimal.
time = 0.63, size = 285, normalized size = 1.05

$$\frac{c\sqrt{d-c^2dx^2}\left(2ibc^2fg(1-c^2x^2)^{3/2}F\left(i\sinh^{-1}\left(\sqrt{-c^2}\,x\right)\middle|1\right)-\sqrt{-c^2}\left(-4acfg-6ac^3f^2x+4ac^5f^2x^3-2ac^3g^2x^3+bc^2f^2\sqrt{1-c^2x^2}+bg^2\sqrt{1-c^2x^2}+2bc^2fgx\sqrt{1-c^2x^2}+2bc(-2fg-c^2g^2x^3+c^2f^2x(-3+2c^2x^2))\,\mathrm{ArcSin}(cx)-b(2c^2f^2-g^2)(1-c^2x^2)^{3/2}\log(-1+c^2x^2)\right)\right)}{6(-c^2)^{5/2}d^3(-1+c^2x^2)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^2*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (c*Sqrt[d - c^2*d*x^2]*((2*I)*b*c^2*f*g*(1 - c^2*x^2)^(3/2)*EllipticF[I*Arc
Sinh[Sqrt[-c^2]*x], 1] - Sqrt[-c^2]*(-4*a*c*f*g - 6*a*c^3*f^2*x + 4*a*c^5*f
^2*x^3 - 2*a*c^3*g^2*x^3 + b*c^2*f^2*Sqrt[1 - c^2*x^2] + b*g^2*Sqrt[1 - c^2
*x^2] + 2*b*c^2*f*g*x*Sqrt[1 - c^2*x^2] + 2*b*c*(-2*f*g - c^2*g^2*x^3 + c^2
*f^2*x*(-3 + 2*c^2*x^2))*ArcSin[c*x] - b*(2*c^2*f^2 - g^2)*(1 - c^2*x^2)^(3
/2)*Log[-1 + c^2*x^2])))/(6*(-c^2)^(5/2)*d^3*(-1 + c^2*x^2)^2)
```

Maple [C] Result contains complex when optimal does not.
time = 0.68, size = 3783, normalized size = 13.96

method	result	size
default	Expression too large to display	3783

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x,method=_RETURNVERBOS
E)

[Out] 16/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^2
*x^4*f*g-8/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^
2-4)/c*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*f^2+4/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^
3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)/c^3*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*g^
2+4/3*I*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/c/d^3/(c^2*
x^2-1)*f^2-2/3*I*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/c^
3/d^3/(c^2*x^2-1)*g^2+4/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*
x^4+11*c^2*x^2-4)*c^6*x^8*f*g+2/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6
-10*c^4*x^4+11*c^2*x^2-4)*c^4*(-c^2*x^2+1)*x^5*f^2+2*I*b*(-d*(c^2*x^2-1))^(
1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*(-c^2*x^2+1)*x^2*f*g+a*(g^2*(1
/2*x/c^2/d/(-c^2*d*x^2+d)^(3/2)-1/2/c^2*(1/3*x/d/(-c^2*d*x^2+d)^(3/2)+2/3/d
^2*x/(-c^2*d*x^2+d)^(1/2)))+2/3*f*g/c^2/d/(-c^2*d*x^2+d)^(3/2)+f^2*(1/3*x/d
/(-c^2*d*x^2+d)^(3/2)+2/3/d^2*x/(-c^2*d*x^2+d)^(1/2)))-8/3*b*(-d*(c^2*x^2-1
))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^2*(-c^2*x^2+1)*arcsin(c*
x)*x^4*f*g-2*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^
2-4)*c^3*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^4*f^2-10/3*I*b*(-d*(c^2*x^2-1))^(
1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^2*(-c^2*x^2+1)*x^4*f*g+14/3*
I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c*(-c^2*
x^2+1)^(1/2)*arcsin(c*x)*x^2*f^2-7/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*
x^6-10*c^4*x^4+11*c^2*x^2-4)/c*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^2*g^2+4/3*I
*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*(-c^2
*x^2+1)*x^6*f*g+I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2
*x^2-4)*c*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^4*g^2-2/3*b*(-c^2*x^2+1)^(1/2)*(
-d*(c^2*x^2-1))^(1/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)/c/d^3/(c^2*x^2-1)*f^2+
1/3*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)
-I)/c^3/d^3/(c^2*x^2-1)*g^2+17/3*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10
*c^4*x^4+11*c^2*x^2-4)*c^2*arcsin(c*x)*x^3*f^2-7/3*I*b*(-d*(c^2*x^2-1))^(1/
2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*x^5*f^2-5/3*I*b*(-d*(c^2*x^2
-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*(-c^2*x^2+1)*x^3*g^2+4*b
*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*(-c^2*x^2+1
)*arcsin(c*x)*x^3*g^2-2*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+
11*c^2*x^2-4)*c^4*arcsin(c*x)*x^7*g^2-2*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6
*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*arcsin(c*x)*x^5*f^2+I*b*(-d*(c^2*x^2-1))^
(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*(-c^2*x^2+1)*x*f^2-1/2*b*(-d*
(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c*(-c^2*x^2+1)^(
1/2)*x^2*f^2-1/2*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*
x^2-4)/c*(-c^2*x^2+1)^(1/2)*x^2*g^2-2/3*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1
))^(1/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)/c/d^3/(c^2*x^2-1)*f^2+1/3*b*(-c^2*x
^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)/c^3/d^3/(
c^2*x^2-1)*g^2+2*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*
x^2-4)/c^2*arcsin(c*x)*x*g^2+7*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c
^4*x^4+11*c^2*x^2-4)*c^2*arcsin(c*x)*x^5*g^2-2*I*b*(-d*(c^2*x^2-1))^(1/2)/d
```

```
^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*x^2*f*g+2/3*I*b*(-d*(c^2*x^2-1))^(1/
2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^6*x^7*f^2-6*b*(-d*(c^2*x^2-1))
^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*arcsin(c*x)*x^2*f*g+8/3*I*b*
(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^2*x^3*f^2-
I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)/c^2*x*g^
2-7/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^
2*x^5*g^2+2/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x
^2-4)*c^4*x^7*g^2+8*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c
^2*x^2-4)*c^2*arcsin(c*x)*x^4*f*g-8/3*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x
^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*arcsin(c*x)*x^6*f*g-5/3*I*b*(-d*(c^2*x^2-1)
)^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^2*(-c^2*x^2+1)*x^3*f^2-14
/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*x
^6*f*g+2/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-
4)*c^2*(-c^2*x^2+1)*x^5*g^2-b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*
x^4+11*c^2*x^2-4)*c*(-c^2*x^2+1)^(1/2)*x^3*f*g+I*b*(-d*(c^2*x^2-1))^(1/2)/d
^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)/c^2*(-c^2*x^2+1)*x*g^2+1/3*b*(-c^2*x
^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)/c^2/d^3/(
c^2*x^2-1)*f*g-1/3*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*ln(I*c*x+(-c
^2*x^2+1)^(1/2)-I)/c^2/d^3/(c^2*x^2-1)*f*g-2*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(
3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)/c^2*(-c^2*x^2+1)*arcsin(c*x)*x*g^2-8/3*b
*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)/c^2*(-c^2*x
^2+1)*arcsin(c*x)*f*g+16/3*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x
^4+11*c^2*x^2-4)*(-c^2*x^2+1)*arcsin(c*x)*x^2*f*g+4/3*b*(-d*(c^2*x^2-1))^(1
/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)/c*(-c^2*x^2+1)^(1/2)*x*f*g-2*b*
(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^...
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="ma
xima")
```

```
[Out] 1/6*b*c*f^2*(1/(c^4*d^(5/2)*x^2 - c^2*d^(5/2)) + 2*log(c*x + 1)/(c^2*d^(5/2
)) + 2*log(c*x - 1)/(c^2*d^(5/2))) + 1/3*b*f^2*(2*x/(sqrt(-c^2*d*x^2 + d)*d
^2) + x/((-c^2*d*x^2 + d)^(3/2)*d))*arcsin(c*x) + 1/3*a*f^2*(2*x/(sqrt(-c^2
*d*x^2 + d)*d^2) + x/((-c^2*d*x^2 + d)^(3/2)*d)) - 1/3*a*g^2*(x/(sqrt(-c^2*
d*x^2 + d)*c^2*d^2) - x/((-c^2*d*x^2 + d)^(3/2)*c^2*d)) - sqrt(d)*integrate
((b*g^2*x^2 + 2*b*f*g*x)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x
 + 1)*sqrt(-c*x + 1))/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3),
x) + 2/3*a*f*g/((-c^2*d*x^2 + d)^(3/2)*c^2*d)
```

Fricas [F]

time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="fr
icas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(a*g^2*x^2 + 2*a*f*g*x + a*f^2 + (b*g^2*x^2
+ 2*b*f*g*x + b*f^2)*arcsin(c*x))/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*
x^2 - d^3), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(cx))(f + gx)^2}{(-d(cx-1)(cx+1))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x)**2/(-d*(c*x - 1)*(c*x + 1))**(5/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="gi
ac")
```

```
[Out] integrate((g*x + f)^2*(b*arcsin(c*x) + a)/(-c^2*d*x^2 + d)^(5/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^2\,(a+b\operatorname{asin}(c\,x))}{(d-c^2\,d\,x^2)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)^2*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int(((f + g*x)^2*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(5/2), x)
```

3.56 $\int \frac{(f+gx)(a+b\mathbf{ArcSin}(cx))}{(d-c^2dx^2)^{5/2}}\,dx$

Optimal. Leaf size=228

$$-\frac{b(f+gx)}{6cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{2fx(a+b\text{ArcSin}(cx))}{3d^2\sqrt{d-c^2dx^2}}+\frac{(g+c^2fx)\,(a+b\text{ArcSin}(cx))}{3c^2d^2\,(1-c^2x^2)\,\sqrt{d-c^2dx^2}}-\frac{bg\sqrt{1-c^2x^2}\,\tanh}{6c^2d^2\sqrt{d-c^2d}}$$

```
[Out] 2/3*f*x*(a+b*arcsin(c*x))/d^2/(-c^2*d*x^2+d)^(1/2)+1/3*(c^2*f*x+g)*(a+b*arc
sin(c*x))/c^2/d^2/(-c^2*x^2+1)/(-c^2*d*x^2+d)^(1/2)-1/6*b*(g*x+f)/c/d^2/(-c
^2*x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)-1/6*b*g*arctanh(c*x)*(-c^2*x^2+1)^(1/2
)/c^2/d^2/(-c^2*d*x^2+d)^(1/2)+1/3*b*f*ln(-c^2*x^2+1)*(-c^2*x^2+1)^(1/2)/c/
d^2/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A]
time = 0.14, antiderivative size = 228, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = {4861, 653, 197, 4845, 212, 266}

$$\frac{(c^2fx+g)\,(a+b\text{ArcSin}(cx))}{3c^2d^2\,(1-c^2x^2)\,\sqrt{d-c^2dx^2}}+\frac{2fx(a+b\text{ArcSin}(cx))}{3d^2\sqrt{d-c^2dx^2}}-\frac{b(f+gx)}{6cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{bf\sqrt{1-c^2x^2}\,\log(1-c^2x^2)}{3cd^2\sqrt{d-c^2dx^2}}-\frac{bg\sqrt{1-c^2x^2}\,\tanh^{-1}(cx)}{6c^2d^2\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] -1/6*(b*(f + g*x))/(c*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) + (2*f*x*(
a + b*ArcSin[c*x]))/(3*d^2*Sqrt[d - c^2*d*x^2]) + ((g + c^2*f*x)*(a + b*Arc
Sin[c*x]))/(3*c^2*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]) - (b*g*Sqrt[1 - c^
2*x^2]*ArcTanh[c*x])/(6*c^2*d^2*Sqrt[d - c^2*d*x^2]) + (b*f*Sqrt[1 - c^2*x^
2]*Log[1 - c^2*x^2])/(3*c*d^2*Sqrt[d - c^2*d*x^2])
```

Rule 197

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[x*((a + b*x^n)^(p + 1)
/a), x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 212

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1/(Rt[a, 2]*Rt[-b, 2]))*
ArcTanh[Rt[-b, 2]*(x/Rt[a, 2])], x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 266

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 653

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)/(2*a*c*(p + 1)))*(a + c*x^2)^(p + 1), x] + Dist[d*((2*p + 3)/(2*a
*(p + 1))), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rule 4845

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{5/2}}\,dx &= \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{5/2}}\,dx}{d^2\sqrt{d-c^2dx^2}}\\
&= \frac{2fx(a+b\sin^{-1}(cx))}{3d^2\sqrt{d-c^2dx^2}}+\frac{\left(g+c^2fx\right)\left(a+b\sin^{-1}(cx)\right)}{3c^2d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}-\frac{\left(bc\sqrt{1-c^2x^2}\right)}{d}\\
&= \frac{2fx(a+b\sin^{-1}(cx))}{3d^2\sqrt{d-c^2dx^2}}+\frac{\left(g+c^2fx\right)\left(a+b\sin^{-1}(cx)\right)}{3c^2d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}-\frac{\left(b\sqrt{1-c^2x^2}\right)\int}{3cd^2\sqrt{d-}}\\
&= -\frac{b(f+gx)}{6cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{2fx(a+b\sin^{-1}(cx))}{3d^2\sqrt{d-c^2dx^2}}+\frac{\left(g+c^2fx\right)(a+}{3c^2d^2\left(1-c^2x^2\right)}\\
&= -\frac{b(f+gx)}{6cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{2fx(a+b\sin^{-1}(cx))}{3d^2\sqrt{d-c^2dx^2}}+\frac{\left(g+c^2fx\right)(a+}{3c^2d^2\left(1-c^2x^2\right)}
\end{aligned}
$$

Mathematica [C] Result contains higher order function than in optimal. Order 4 vs. order 3 in optimal.

time = 0.51, size = 208, normalized size = 0.91

$$-\frac{\sqrt{d-c^2dx^2}\left(ibcg(1-c^2x^2)^{3/2}F\left(i\sinh^{-1}\left(\sqrt{-c^2}\,x\right)\middle|1\right)+\sqrt{-c^2}\left(2ag+6ac^2fx-4ac^4fx^3-bcf\sqrt{1-c^2x^2}-bcgx\sqrt{1-c^2x^2}+2b(g+c^2fx(3-2c^2x^2))\operatorname{ArcSin}(cx)+2bcf(1-c^2x^2)^{3/2}\log\left(-1+c^2x^2\right)\right)\right)}{6\left(-c^2\right)^{3/2}d^3\left(-1+c^2x^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] -1/6*(Sqrt[d - c^2*d*x^2]*(I*b*c*g*(1 - c^2*x^2)^(3/2)*EllipticF[I*ArcSinh[
Sqrt[-c^2]*x], 1] + Sqrt[-c^2]*(2*a*g + 6*a*c^2*f*x - 4*a*c^4*f*x^3 - b*c*f
*Sqrt[1 - c^2*x^2] - b*c*g*x*Sqrt[1 - c^2*x^2] + 2*b*(g + c^2*f*x*(3 - 2*c^
2*x^2))*ArcSin[c*x] + 2*b*c*f*(1 - c^2*x^2)^(3/2)*Log[-1 + c^2*x^2])))/((-c
^2)^(3/2)*d^3*(-1 + c^2*x^2)^2)
```

Maple [C] Result contains complex when optimal does not.
time = 0.57, size = 2237, normalized size = 9.81

method	result	size
default	Expression too large to display	2237

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x,method=_RETURNVERBOSE)
```

```
[Out] -3*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*arcsin(
c*x)*x^2*g-4*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-
4)*f*x*arcsin(c*x)+2/3*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+1
1*c^2*x^2-4)/c*(-c^2*x^2+1)^(1/2)*f-I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x
^6-10*c^4*x^4+11*c^2*x^2-4)*x^2*g-I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6
-10*c^4*x^4+11*c^2*x^2-4)*f*x-2*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-1
0*c^4*x^4+11*c^2*x^2-4)*c^3*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^4*f+14/3*I*b*(
-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c*arcsin(c*x)
*(-c^2*x^2+1)^(1/2)*x^2*f-5/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*
c^4*x^4+11*c^2*x^2-4)*c^2*(-c^2*x^2+1)*x^3*f-8/3*I*b*(-d*(c^2*x^2-1))^(1/2)
/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)/c*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*f
+4/3*I*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c/d^3/(c^2*x^2-1)*f*arcs
in(c*x)+2/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2
-4)*c^4*(-c^2*x^2+1)*x^5*f-5/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10
*c^4*x^4+11*c^2*x^2-4)*c^2*(-c^2*x^2+1)*x^4*g+a*(1/3*g/c^2/d/(-c^2*d*x^2+d)
^(3/2)+f*(1/3*x/d/(-c^2*d*x^2+d)^(3/2)+2/3/d^2*x/(-c^2*d*x^2+d)^(1/2)))-4/3
*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^2*arcsi
n(c*x)*(-c^2*x^2+1)*x^4*g+2/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*
c^4*x^4+11*c^2*x^2-4)*c^4*(-c^2*x^2+1)*x^6*g-1/2*b*(-d*(c^2*x^2-1))^(1/2)/d
^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c*(-c^2*x^2+1)^(1/2)*x^2*f-4/3*b*(-d
*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)/c^2*arcsin(c*x)
*(-c^2*x^2+1)*g+2/3*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c
^2*x^2-4)/c*(-c^2*x^2+1)^(1/2)*x*g+I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^
```

```
6-10*c^4*x^4+11*c^2*x^2-4)*(-c^2*x^2+1)*x^2*g+I*b*(-d*(c^2*x^2-1))^(1/2)/d^
3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*(-c^2*x^2+1)*x*f-2/3*b*(-c^2*x^2+1)^(
1/2)*(-d*(c^2*x^2-1))^(1/2)/c/d^3/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I
)*f-1/6*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^2/d^3/(c^2*x^2-1)*ln(
I*c*x+(-c^2*x^2+1)^(1/2)-I)*g+2/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6
-10*c^4*x^4+11*c^2*x^2-4)*c^6*x^8*g+2/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c
^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^6*x^7*f-7/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^
3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*x^6*g-4/3*b*(-d*(c^2*x^2-1))^(1/2
)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*arcsin(c*x)*x^6*g-2*b*(-d*(c^
2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*arcsin(c*x)*x^5
*f+4*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^2*a
rcsin(c*x)*x^4*g+8/3*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*
c^2*x^2-4)*arcsin(c*x)*(-c^2*x^2+1)*x^2*g-1/2*b*(-d*(c^2*x^2-1))^(1/2)/d^3/
(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c*(-c^2*x^2+1)^(1/2)*x^3*g-2/3*b*(-c^2*
x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)/c/d^3/(c
^2*x^2-1)*f+1/6*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*ln(I*c*x+(-c^2*
x^2+1)^(1/2)+I)/c^2/d^3/(c^2*x^2-1)*g+17/3*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*
c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^2*arcsin(c*x)*x^3*f-7/3*I*b*(-d*(c^2*x^2
-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*x^5*f+8/3*I*b*(-d*(c
^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^2*x^4*g+8/3*I*b*
(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^2*x^3*f
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxi
ma")
[Out] 1/6*b*c*f*(1/(c^4*d^(5/2)*x^2 - c^2*d^(5/2)) + 2*log(c*x + 1)/(c^2*d^(5/2))
 + 2*log(c*x - 1)/(c^2*d^(5/2))) + 1/3*b*f*(2*x/(sqrt(-c^2*d*x^2 + d)*d^2)
+ x/((-c^2*d*x^2 + d)^(3/2)*d))*arcsin(c*x) + 1/3*a*f*(2*x/(sqrt(-c^2*d*x^2
 + d)*d^2) + x/((-c^2*d*x^2 + d)^(3/2)*d)) + b*g*integrate(x*arctan2(c*x, s
qrt(c*x + 1)*sqrt(-c*x + 1))/((c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2)*sqrt(c*x
+ 1)*sqrt(-c*x + 1)), x)/sqrt(d) + 1/3*a*g/((-c^2*d*x^2 + d)^(3/2)*c^2*d)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="fric
as")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(a*g*x + a*f + (b*g*x + b*f)*arcsin(c*x))/(c
^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\,\mathrm{asin}\,(cx))\,(f + gx)}{(-d\,(cx - 1)\,(cx + 1))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(5/2),x)
[Out] Integral((a + b*asin(c*x))*(f + g*x)/(-d*(c*x - 1)*(c*x + 1))**(5/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac
")
[Out] integrate((g*x + f)*(b*arcsin(c*x) + a)/(-c^2*d*x^2 + d)^(5/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f + g\,x)\,\left(a + b\,\mathrm{asin}(c\,x)\right)}{{\left(d - c^2\,d\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(5/2),x)
[Out] int(((f + g*x)*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(5/2), x)
```

3.57 $\int \frac{a+b\textbf{ArcSin}(cx)}{(f+gx)\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=1300

$$-\frac{(cf-2g)\sqrt{1-c^2x^2}\,(a+b\mathrm{ArcSin}(cx))\cot\left(\frac{\pi}{4}+\frac{1}{2}\mathrm{ArcSin}(cx)\right)}{4d^2(cf-g)^2\sqrt{d-c^2dx^2}}-\frac{\sqrt{1-c^2x^2}\,(a+b\mathrm{ArcSin}(cx))\cot\left(\frac{\pi}{4}+\frac{1}{2}\mathrm{A}\right.}{12d^2(cf-g)\sqrt{d-c^2dx^2}}$$

```
[Out] -1/4*(c*f-2*g)*(a+b*arcsin(c*x))*cot(1/4*Pi+1/2*arcsin(c*x))*(-c^2*x^2+1)^(
1/2)/d^2/(c*f-g)^2/(-c^2*d*x^2+d)^(1/2)-1/12*(a+b*arcsin(c*x))*cot(1/4*Pi+1
/2*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/d^2/(c*f-g)/(-c^2*d*x^2+d)^(1/2)-1/24*b*
csc(1/4*Pi+1/2*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/d^2/(c*f-g)/(-c^2*d*x^2+d)
^(1/2)-1/24*(a+b*arcsin(c*x))*cot(1/4*Pi+1/2*arcsin(c*x))*csc(1/4*Pi+1/2*ar
csin(c*x))^2*(-c^2*x^2+1)^(1/2)/d^2/(c*f-g)/(-c^2*d*x^2+d)^(1/2)+1/6*b*ln(c
os(1/4*Pi+1/2*arcsin(c*x)))*(-c^2*x^2+1)^(1/2)/d^2/(c*f+g)/(-c^2*d*x^2+d)^(
1/2)+1/2*b*(c*f+2*g)*ln(cos(1/4*Pi+1/2*arcsin(c*x)))*(-c^2*x^2+1)^(1/2)/d^2
/(c*f+g)^2/(-c^2*d*x^2+d)^(1/2)+1/2*b*(c*f-2*g)*ln(sin(1/4*Pi+1/2*arcsin(c*
x)))*(-c^2*x^2+1)^(1/2)/d^2/(c*f-g)^2/(-c^2*d*x^2+d)^(1/2)+1/6*b*ln(sin(1/4
*Pi+1/2*arcsin(c*x)))*(-c^2*x^2+1)^(1/2)/d^2/(c*f-g)/(-c^2*d*x^2+d)^(1/2)+I
*g^4*(a+b*arcsin(c*x))*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^
2)^(1/2)))*(-c^2*x^2+1)^(1/2)/d^2/(c^2*f^2-g^2)^(5/2)/(-c^2*d*x^2+d)^(1/2)-
I*g^4*(a+b*arcsin(c*x))*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g
^2)^(1/2)))*(-c^2*x^2+1)^(1/2)/d^2/(c^2*f^2-g^2)^(5/2)/(-c^2*d*x^2+d)^(1/2)
-b*g^4*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))*
(-c^2*x^2+1)^(1/2)/d^2/(c^2*f^2-g^2)^(5/2)/(-c^2*d*x^2+d)^(1/2)+b*g^4*polyl
og(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))*(-c^2*x^2+1)
^(1/2)/d^2/(c^2*f^2-g^2)^(5/2)/(-c^2*d*x^2+d)^(1/2)-1/24*b*sec(1/4*Pi+1/2*a
rcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/d^2/(c*f+g)/(-c^2*d*x^2+d)^(1/2)+1/12*(a+b
*arcsin(c*x))*(-c^2*x^2+1)^(1/2)*tan(1/4*Pi+1/2*arcsin(c*x))/d^2/(c*f+g)/(-
c^2*d*x^2+d)^(1/2)+1/4*(c*f+2*g)*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)*tan(1
/4*Pi+1/2*arcsin(c*x))/d^2/(c*f+g)^2/(-c^2*d*x^2+d)^(1/2)+1/24*(a+b*arcsin(
c*x))*sec(1/4*Pi+1/2*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)*tan(1/4*Pi+1/2*arcsi
n(c*x))/d^2/(c*f+g)/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A]
time = 1.21, antiderivative size = 1300, normalized size of antiderivative = 1.00, number of steps used = 30, number of rules used = 12, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.387$, Rules used = {4861, 4859, 4857, 3399, 4270, 4269, 3556, 3404, 2296, 2221, 2317, 2438}

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/((f + g*x)*(d - c^2*d*x^2)^(5/2)),x]
```

```
[Out] -1/4*((c*f - 2*g)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Cot[Pi/4 + ArcSin[c
*x]/2])/(d^2*(c*f - g)^2*Sqrt[d - c^2*d*x^2]) - (Sqrt[1 - c^2*x^2]*(a + b*A
rcSin[c*x])*Cot[Pi/4 + ArcSin[c*x]/2])/(12*d^2*(c*f - g)*Sqrt[d - c^2*d*x^2
]) - (b*Sqrt[1 - c^2*x^2]*Csc[Pi/4 + ArcSin[c*x]/2]^2)/(24*d^2*(c*f - g)*Sq
rt[d - c^2*d*x^2]) - (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Cot[Pi/4 + ArcS
in[c*x]/2]*Csc[Pi/4 + ArcSin[c*x]/2]^2)/(24*d^2*(c*f - g)*Sqrt[d - c^2*d*x^
2]) - (I*g^4*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 - (I*E^(I*ArcSin[c
*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(d^2*(c*f - g)^2*(c*f + g)^2*Sqrt[c^2
*f^2 - g^2]*Sqrt[d - c^2*d*x^2]) + (I*g^4*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c
*x])*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(d^2*(c*
f - g)^2*(c*f + g)^2*Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]) + (b*Sqrt[1 -
 c^2*x^2]*Log[Cos[Pi/4 + ArcSin[c*x]/2]])/(6*d^2*(c*f + g)*Sqrt[d - c^2*d*x
^2]) + (b*(c*f + 2*g)*Sqrt[1 - c^2*x^2]*Log[Cos[Pi/4 + ArcSin[c*x]/2]])/(2*
d^2*(c*f + g)^2*Sqrt[d - c^2*d*x^2]) + (b*(c*f - 2*g)*Sqrt[1 - c^2*x^2]*Log
[Sin[Pi/4 + ArcSin[c*x]/2]])/(2*d^2*(c*f - g)^2*Sqrt[d - c^2*d*x^2]) + (b*S
qrt[1 - c^2*x^2]*Log[Sin[Pi/4 + ArcSin[c*x]/2]])/(6*d^2*(c*f - g)*Sqrt[d -
c^2*d*x^2]) - (b*g^4*Sqrt[1 - c^2*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(
c*f - Sqrt[c^2*f^2 - g^2])])/(d^2*(c*f - g)^2*(c*f + g)^2*Sqrt[c^2*f^2 - g^
2]*Sqrt[d - c^2*d*x^2]) + (b*g^4*Sqrt[1 - c^2*x^2]*PolyLog[2, (I*E^(I*ArcSi
n[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(d^2*(c*f - g)^2*(c*f + g)^2*Sqrt[
c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]) - (b*Sqrt[1 - c^2*x^2]*Sec[Pi/4 + ArcSi
n[c*x]/2]^2)/(24*d^2*(c*f + g)*Sqrt[d - c^2*d*x^2]) + (Sqrt[1 - c^2*x^2]*(a
 + b*ArcSin[c*x])*Tan[Pi/4 + ArcSin[c*x]/2])/(12*d^2*(c*f + g)*Sqrt[d - c^2
*d*x^2]) + ((c*f + 2*g)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Tan[Pi/4 + Ar
cSin[c*x]/2])/(4*d^2*(c*f + g)^2*Sqrt[d - c^2*d*x^2]) + (Sqrt[1 - c^2*x^2]*
(a + b*ArcSin[c*x])*Sec[Pi/4 + ArcSin[c*x]/2]^2*Tan[Pi/4 + ArcSin[c*x]/2])/
(24*d^2*(c*f + g)*Sqrt[d - c^2*d*x^2])
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2296

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[2*(c/q), Int[
(f + g*x)^m*(F^u/(b - q + 2*c*F^u)), x], x] - Dist[2*(c/q), Int[(f + g*x)^m
*(F^u/(b + q + 2*c*F^u)), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
```

```
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3399

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1/2)*(e + Pi*(a/(2*b))) +
 f*(x/2)]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3404

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[(c + d*x)^m*(E^(I*(e + f*x))/(I*b + 2*a*E^(I*(e + f*x)
) - I*b*E^(2*I*(e + f*x)))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3556

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> Simp[-Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 4269

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp
[(-(c + d*x)^m)*(Cot[e + f*x]/f), x] + Dist[d*(m/f), Int[(c + d*x)^(m - 1)*
Cot[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4270

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 Simp[(-b^2)*(c + d*x)*Cot[e + f*x]*((b*Csc[e + f*x])^(n - 2)/(f*(n - 1))),
 x] + (Dist[b^2*((n - 2)/(n - 1)), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2),
x], x] - Simp[b^2*d*((b*Csc[e + f*x])^(n - 2)/(f^2*(n - 1)*(n - 2))), x]) /
; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
```

```
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4859

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{(f+gx)\left(d-c^2dx^2\right)^{5/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{a+b\sin^{-1}(cx)}{(f+gx)(1-c^2x^2)^{5/2}}\,dx}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{c(a+b\sin^{-1}(cx))}{4(cf+g)(-1+cx)^2\sqrt{1-c^2x^2}} - \frac{c(cf+2g)(a+b\sin^{-1}(cx))}{4(cf+g)^2(-1+cx)\sqrt{1-c^2x^2}} + \cdots\right.}{d^2 \cdots}$$

$$= \frac{\left(c(cf-2g)\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{(1+cx)\sqrt{1-c^2x^2}}\,dx}{4d^2(cf-g)^2\sqrt{d-c^2dx^2}} + \frac{\left(c\sqrt{1-c^2x^2}\right)\int \frac{a+b\cdots}{(1+cx)^2\cdots}}{4d^2(cf-g)\sqrt{d-\cdots}}$$

$$= \frac{\left(c(cf-2g)\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int \frac{a+bx}{c+c\sin(x)}\,dx, x, \sin^{-1}(cx)\right)}{4d^2(cf-g)^2\sqrt{d-c^2dx^2}} + \frac{\left(c^2\sqrt{1-c^2x\cdots}\right.}{\cdots}$$

$$= \frac{\left((cf-2g)\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int (a+bx)\csc^2\left(\frac{\pi}{4}+\frac{x}{2}\right)\,dx, x, \sin^{-1}(cx)\right)}{8d^2(cf-g)^2\sqrt{d-c^2dx^2}} + \cdots$$

$$= -\frac{(cf-2g)\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))\cot\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(cx)\right)}{4d^2(cf-g)^2\sqrt{d-c^2dx^2}} - \frac{b\sqrt{1-c^2x^2}\cdots}{24d^2(c\cdots}$$

$$= -\frac{(cf-2g)\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))\cot\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(cx)\right)}{4d^2(cf-g)^2\sqrt{d-c^2dx^2}} - \frac{\sqrt{1-c^2x^2}\cdots}{\cdots}$$

$$= -\frac{(cf-2g)\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))\cot\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(cx)\right)}{4d^2(cf-g)^2\sqrt{d-c^2dx^2}} - \frac{\sqrt{1-c^2x^2}\cdots}{\cdots}$$

$$= -\frac{(cf-2g)\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))\cot\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(cx)\right)}{4d^2(cf-g)^2\sqrt{d-c^2dx^2}} - \frac{\sqrt{1-c^2x^2}\cdots}{\cdots}$$

Mathematica [A]
time = 12.60, size = 2078, normalized size = 1.60

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/((f + g*x)*(d - c^2*d*x^2)^(5/2)),x]
```

```
[Out] Sqrt[-(d*(-1 + c^2*x^2))]*((a*g - a*c^2*f*x)/(3*d^3*(-(c^2*f^2) + g^2)*(-1
+ c^2*x^2)^2) + (-3*a*g^3 - 2*a*c^4*f^3*x + 5*a*c^2*f*g^2*x)/(3*d^3*(-(c^2*
```

```
f^2) + g^2)^2*(-1 + c^2*x^2))) + (a*g^4*Log[f + g*x])/(d^(5/2)*(-(c*f) + g)
^2*(c*f + g)^2*Sqrt[-(c^2*f^2) + g^2]) - (a*g^4*Log[d*g + c^2*d*f*x + Sqrt[
d]*Sqrt[-(c^2*f^2) + g^2]*Sqrt[-(d*(-1 + c^2*x^2))]]])/(d^(5/2)*(-(c*f) + g)
^2*(c*f + g)^2*Sqrt[-(c^2*f^2) + g^2]) + (b*((g*(-(c^2*f^2) + 7*g^2)*(1 - c
^2*x^2)^(3/2)*ArcSin[c*x])/(6*(-(c^2*f^2) + g^2)^2*(d*(1 - c^2*x^2))^(3/2))
 + ((4*c*f + 7*g)*(1 - c^2*x^2)^(3/2)*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c
*x]/2]])/(6*(c*f + g)^2*(d*(1 - c^2*x^2))^(3/2)) + ((4*c*f - 7*g)*(1 - c^2*
x^2)^(3/2)*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]])/(6*(c*f - g)^2*(d*
(1 - c^2*x^2))^(3/2)) + (g^4*(1 - c^2*x^2)^(3/2)*((Pi*ArcTan[(g + c*f*Tan[A
rcSin[c*x]/2])/Sqrt[c^2*f^2 - g^2]])/Sqrt[c^2*f^2 - g^2] + (2*(Pi/2 - ArcSi
n[c*x])*ArcTanh[((c*f + g)*Cot[(Pi/2 - ArcSin[c*x])/2])/Sqrt[-(c^2*f^2) + g
^2]] - 2*ArcCos[-((c*f)/g)]*ArcTanh[((-(c*f) + g)*Tan[(Pi/2 - ArcSin[c*x])/
2])/Sqrt[-(c^2*f^2) + g^2]] + (ArcCos[-((c*f)/g)] - (2*I)*(ArcTanh[((c*f +
g)*Cot[(Pi/2 - ArcSin[c*x])/2])/Sqrt[-(c^2*f^2) + g^2]] - ArcTanh[((-(c*f)
+ g)*Tan[(Pi/2 - ArcSin[c*x])/2])/Sqrt[-(c^2*f^2) + g^2]]))*Log[Sqrt[-(c^2*
f^2) + g^2]/(Sqrt[2]*E^((I/2)*(Pi/2 - ArcSin[c*x]))*Sqrt[g]*Sqrt[c*f + c*g*
x])] + (ArcCos[-((c*f)/g)] + (2*I)*(ArcTanh[((c*f + g)*Cot[(Pi/2 - ArcSin[c
*x])/2])/Sqrt[-(c^2*f^2) + g^2]] - ArcTanh[((-(c*f) + g)*Tan[(Pi/2 - ArcSin
[c*x])/2])/Sqrt[-(c^2*f^2) + g^2]]))*Log[(E^((I/2)*(Pi/2 - ArcSin[c*x]))*Sq
rt[-(c^2*f^2) + g^2])/(Sqrt[2]*Sqrt[g]*Sqrt[c*f + c*g*x])] - (ArcCos[-((c*f
)/g)] + (2*I)*ArcTanh[((-(c*f) + g)*Tan[(Pi/2 - ArcSin[c*x])/2])/Sqrt[-(c^2
*f^2) + g^2]])*Log[1 - ((c*f - I*Sqrt[-(c^2*f^2) + g^2])*(c*f + g - Sqrt[-(
c^2*f^2) + g^2]*Tan[(Pi/2 - ArcSin[c*x])/2]))/(g*(c*f + g + Sqrt[-(c^2*f^2)
 + g^2]*Tan[(Pi/2 - ArcSin[c*x])/2]))] + (-ArcCos[-((c*f)/g)] + (2*I)*ArcTa
nh[((-(c*f) + g)*Tan[(Pi/2 - ArcSin[c*x])/2])/Sqrt[-(c^2*f^2) + g^2]])*Log[
1 - ((c*f + I*Sqrt[-(c^2*f^2) + g^2])*(c*f + g - Sqrt[-(c^2*f^2) + g^2]*Tan
[(Pi/2 - ArcSin[c*x])/2]))/(g*(c*f + g + Sqrt[-(c^2*f^2) + g^2]*Tan[(Pi/2 -
 ArcSin[c*x])/2]))] + I*(PolyLog[2, ((c*f - I*Sqrt[-(c^2*f^2) + g^2])*(c*f
+ g - Sqrt[-(c^2*f^2) + g^2]*Tan[(Pi/2 - ArcSin[c*x])/2]))/(g*(c*f + g + Sq
rt[-(c^2*f^2) + g^2]*Tan[(Pi/2 - ArcSin[c*x])/2]))] - PolyLog[2, ((c*f + I*
Sqrt[-(c^2*f^2) + g^2])*(c*f + g - Sqrt[-(c^2*f^2) + g^2]*Tan[(Pi/2 - ArcSi
n[c*x])/2]))/(g*(c*f + g + Sqrt[-(c^2*f^2) + g^2]*Tan[(Pi/2 - ArcSin[c*x])/
2]))]))/Sqrt[-(c^2*f^2) + g^2]))/((-(c*f) + g)^2*(c*f + g)^2*(d*(1 - c^2*x^
2))^(3/2)) + ((1 - c^2*x^2)^(3/2)*(-1 + ArcSin[c*x]))/(12*(c*f + g)*(d*(1 -
 c^2*x^2))^(3/2)*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^2) + ((1 - c^2*x
^2)^(3/2)*ArcSin[c*x]*Sin[ArcSin[c*x]/2])/(6*(c*f + g)*(d*(1 - c^2*x^2))^(3
/2)*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^3) + ((1 - c^2*x^2)^(3/2)*Arc
Sin[c*x]*Sin[ArcSin[c*x]/2])/(6*(c*f - g)*(d*(1 - c^2*x^2))^(3/2)*(Cos[ArcS
in[c*x]/2] + Sin[ArcSin[c*x]/2])^3) + ((1 - c^2*x^2)^(3/2)*(-1 - ArcSin[c*x
]))/(12*(c*f - g)*(d*(1 - c^2*x^2))^(3/2)*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[
c*x]/2])^2) + ((1 - c^2*x^2)^(3/2)*(4*c*f*ArcSin[c*x]*Sin[ArcSin[c*x]/2] -
7*g*ArcSin[c*x]*Sin[ArcSin[c*x]/2]))/(6*(c*f - g)^2*(d*(1 - c^2*x^2))^(3/2)
*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])) + ((1 - c^2*x^2)^(3/2)*(4*c*f*A
rcSin[c*x]*Sin[ArcSin[c*x]/2] + 7*g*ArcSin[c*x]*Sin[ArcSin[c*x]/2]))/(6*(c*
f + g)^2*(d*(1 - c^2*x^2))^(3/2)*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]))
```

))/d

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 8294 vs. 2(1102) = 2204.
time = 0.71, size = 8295, normalized size = 6.38

method	result	size
default	Expression too large to display	8295

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(g*x+f)/(-c^2*d*x^2+d)^(5/2),x,method=_RETURNVERBOSE)
```

```
[Out] result too large to display
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(g*x+f)/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxi
ma")
```

```
[Out] integrate((b*arcsin(c*x) + a)/((-c^2*d*x^2 + d)^(5/2)*(g*x + f)), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(g*x+f)/(-c^2*d*x^2+d)^(5/2),x, algorithm="fric
as")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(c^6*d^3*g*x^7 + c^6*d^3
*f*x^6 - 3*c^4*d^3*g*x^5 - 3*c^4*d^3*f*x^4 + 3*c^2*d^3*g*x^3 + 3*c^2*d^3*f*
x^2 - d^3*g*x - d^3*f), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b\operatorname{asin}(cx)}{(-d(cx-1)(cx+1))^{\frac{5}{2}}(f+gx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(g*x+f)/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Integral((a + b*asin(c*x))/((-d*(c*x - 1)*(c*x + 1))**(5/2)*(f + g*x)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(g*x+f)/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac
")
```

```
[Out] integrate((b*arcsin(c*x) + a)/((-c^2*d*x^2 + d)^(5/2)*(g*x + f)), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\mathrm{asin}(c\,x)}{(f+g\,x)\,\left(d-c^2\,d\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/((f + g*x)*(d - c^2*d*x^2)^(5/2)),x)
```

```
[Out] int((a + b*asin(c*x))/((f + g*x)*(d - c^2*d*x^2)^(5/2)), x)
```

3.58 $\int (f+gx)^3\sqrt{d-c^2dx^2}\,(a+b\mathbf{ArcSin}(cx))^2\,dx$

Optimal. Leaf size=1154

$$\frac{4b^2f^2g\sqrt{d-c^2dx^2}}{3c^2}+\frac{52b^2g^3\sqrt{d-c^2dx^2}}{225c^4}-\frac{1}{4}b^2f^3x\sqrt{d-c^2dx^2}+\frac{3b^2fg^2x\sqrt{d-c^2dx^2}}{64c^2}-\frac{3}{32}b^2fg^2x^3\sqrt{d-c^2dx^2}$$

```
[Out] 2*b*f^2*g*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)+3/8
*b*f*g^2*x^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-2/
3*b*c*f^2*g*x^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-3
/8*b*c*f*g^2*x^4*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+
4/3*b^2*f^2*g*(-c^2*d*x^2+d)^(1/2)/c^2-3/32*b^2*f*g^2*x^3*(-c^2*d*x^2+d)^(1
/2)+26/675*b^2*g^3*(-c^2*x^2+1)*(-c^2*d*x^2+d)^(1/2)/c^4-2/125*b^2*g^3*(-c^
2*x^2+1)^2*(-c^2*d*x^2+d)^(1/2)/c^4-1/15*g^3*x^2*(a+b*arcsin(c*x))^2*(-c^2*
d*x^2+d)^(1/2)/c^2+3/4*f*g^2*x^3*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)+5
2/225*b^2*g^3*(-c^2*d*x^2+d)^(1/2)/c^4-1/4*b^2*f^3*x*(-c^2*d*x^2+d)^(1/2)-2
/15*g^3*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/c^4+1/2*f^3*x*(a+b*arcsin(
c*x))^2*(-c^2*d*x^2+d)^(1/2)+1/5*g^3*x^4*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)
^(1/2)+3/64*b^2*f*g^2*x*(-c^2*d*x^2+d)^(1/2)/c^2+2/9*b^2*f^2*g*(-c^2*x^2+1)
*(-c^2*d*x^2+d)^(1/2)/c^2-3/8*f*g^2*x*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1
/2)/c^2+1/4*b^2*f^3*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)+1
/6*f^3*(a+b*arcsin(c*x))^3*(-c^2*d*x^2+d)^(1/2)/b/c/(-c^2*x^2+1)^(1/2)-f^2*
g*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/c^2+4/15*a*b*g^3*x*
(-c^2*d*x^2+d)^(1/2)/c^3/(-c^2*x^2+1)^(1/2)-3/64*b^2*f*g^2*arcsin(c*x)*(-c^
2*d*x^2+d)^(1/2)/c^3/(-c^2*x^2+1)^(1/2)+4/15*b^2*g^3*x*arcsin(c*x)*(-c^2*d*
x^2+d)^(1/2)/c^3/(-c^2*x^2+1)^(1/2)-1/2*b*c*f^3*x^2*(a+b*arcsin(c*x))*(-c^2
*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+2/45*b*g^3*x^3*(a+b*arcsin(c*x))*(-c^2*d
*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-2/25*b*c*g^3*x^5*(a+b*arcsin(c*x))*(-c^2
*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/8*f*g^2*(a+b*arcsin(c*x))^3*(-c^2*d*x^
2+d)^(1/2)/b/c^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A]
time = 1.02, antiderivative size = 1154, normalized size of antiderivative = 1.00, number of steps used = 37, number of rules used = 16, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.485$, Rules used = {4861, 4847, 4741, 4737, 4723, 327, 222, 4767, 4739, 455, 45, 4783, 4795, 4715, 267, 272}

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (4*b^2*f^2*g*Sqrt[d - c^2*d*x^2])/(3*c^2) + (52*b^2*g^3*Sqrt[d - c^2*d*x^2]
)/(225*c^4) - (b^2*f^3*x*Sqrt[d - c^2*d*x^2])/4 + (3*b^2*f*g^2*x*Sqrt[d - c
^2*d*x^2])/(64*c^2) - (3*b^2*f*g^2*x^3*Sqrt[d - c^2*d*x^2])/32 + (4*a*b*g^3
```

```
*x*Sqrt[d - c^2*d*x^2])/(15*c^3*Sqrt[1 - c^2*x^2]) + (2*b^2*f^2*g*(1 - c^2*
x^2)*Sqrt[d - c^2*d*x^2])/(9*c^2) + (26*b^2*g^3*(1 - c^2*x^2)*Sqrt[d - c^2*
d*x^2])/(675*c^4) - (2*b^2*g^3*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2])/(125*c^
4) + (b^2*f^3*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(4*c*Sqrt[1 - c^2*x^2]) - (3
*b^2*f*g^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(64*c^3*Sqrt[1 - c^2*x^2]) + (4
*b^2*g^3*x*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(15*c^3*Sqrt[1 - c^2*x^2]) + (2
*b*f^2*g*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(c*Sqrt[1 - c^2*x^2]) -
 (b*c*f^3*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(2*Sqrt[1 - c^2*x^2]
) + (3*b*f*g^2*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*c*Sqrt[1 - c
^2*x^2]) - (2*b*c*f^2*g*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*Sqr
t[1 - c^2*x^2]) + (2*b*g^3*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(45
*c*Sqrt[1 - c^2*x^2]) - (3*b*c*f*g^2*x^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[
c*x]))/(8*Sqrt[1 - c^2*x^2]) - (2*b*c*g^3*x^5*Sqrt[d - c^2*d*x^2]*(a + b*Ar
cSin[c*x]))/(25*Sqrt[1 - c^2*x^2]) - (2*g^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcS
in[c*x])^2)/(15*c^4) + (f^3*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/2
- (3*f*g^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(8*c^2) - (g^3*x^2*
Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(15*c^2) + (3*f*g^2*x^3*Sqrt[d -
 c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/4 + (g^3*x^4*Sqrt[d - c^2*d*x^2]*(a + b*
ArcSin[c*x])^2)/5 - (f^2*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[
c*x])^2)/c^2 + (f^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(6*b*c*Sqrt[
1 - c^2*x^2]) + (f*g^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(8*b*c^3*
Sqrt[1 - c^2*x^2])
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 455

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[x*Sqrt[d + e*x^2]*((a + b*ArcSin[c*x])^n/2), x] + (Dist[(1/2
)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[(a + b*ArcSin[c*x])^n/Sqrt[1
```

```
 - c^2*x^2], x], x] - Dist[b*c*(n/2)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]
], Int[x*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x]
&& EqQ[c^2*d + e, 0] && GtQ[n, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4783

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[(f*x)^(m + 1)*Sqrt[d + e*x^2]*((a + b*ArcS
in[c*x])^n/(f*(m + 2))), x] + (Dist[(1/(m + 2))*Simp[Sqrt[d + e*x^2]/Sqrt[1
 - c^2*x^2]], Int[(f*x)^m*((a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x^2]), x], x]
 - Dist[b*c*(n/(f*(m + 2)))*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[(f
*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f
, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && (IGtQ[m, -2] || EqQ[n, 1])
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
```

```
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int (f+gx)^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx=\frac{\sqrt{d-c^2dx^2}\int (f+gx)^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}}$$

$$=\frac{\sqrt{d-c^2dx^2}\int \left(f^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2+3f^2gx\sqrt{\ }\right.}{}$$

$$=\frac{\left(f^3\sqrt{d-c^2dx^2}\right)\int \sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}}+\frac{\left(3\right.}{}$$

$$=\frac{1}{2}f^3x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2+\frac{3}{4}fg^2x^3\sqrt{d-c^2dx^2}$$

$$=\frac{2bf^2gx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{1-c^2x^2}}-\frac{bcf^3x^2\sqrt{d-c^2dx^2}}{2\sqrt{1-}}$$

$$=-\frac{1}{4}b^2f^3x\sqrt{d-c^2dx^2}-\frac{3}{32}b^2fg^2x^3\sqrt{d-c^2dx^2}+\frac{2bf^2gx\sqrt{}}{}$$

$$=-\frac{1}{4}b^2f^3x\sqrt{d-c^2dx^2}+\frac{3b^2fg^2x\sqrt{d-c^2dx^2}}{64c^2}-\frac{3}{32}b^2fg^2x^3$$

$$=\frac{4b^2f^2g\sqrt{d-c^2dx^2}}{3c^2}-\frac{2b^2g^3\sqrt{d-c^2dx^2}}{25c^4}-\frac{1}{4}b^2f^3x\sqrt{d-c^2}$$

$$=\frac{4b^2f^2g\sqrt{d-c^2dx^2}}{3c^2}+\frac{52b^2g^3\sqrt{d-c^2dx^2}}{225c^4}-\frac{1}{4}b^2f^3x\sqrt{d-c}$$

Mathematica [A]
time = 0.79, size = 696, normalized size = 0.60

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*((f^3*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/2 + (
3*f*g^2*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/4 + (g^3*x^4*Sqrt[1 -
```

```
c^2*x^2]*(a + b*ArcSin[c*x])^2)/5 - (f^2*g*(1 - c^2*x^2)^(3/2)*(a + b*ArcSi
n[c*x])^2)/c^2 + (f^3*(a + b*ArcSin[c*x])^3)/(6*b*c) - (2*b*g^3*(15*a*c^5*x
^5 + b*Sqrt[1 - c^2*x^2]*(8 + 4*c^2*x^2 + 3*c^4*x^4) + 15*b*c^5*x^5*ArcSin[
c*x]))/(375*c^4) - (2*b*f^2*g*(b*Sqrt[1 - c^2*x^2]*(-7 + c^2*x^2) + 3*a*c*x
*(-3 + c^2*x^2) + 3*b*c*x*(-3 + c^2*x^2)*ArcSin[c*x]))/(9*c^2) - (b*f^3*(c*
x*(2*a*c*x + b*Sqrt[1 - c^2*x^2]) + b*(-1 + 2*c^2*x^2)*ArcSin[c*x]))/(4*c)
- (3*b*f*g^2*(8*a*c^4*x^4 + b*c*x*Sqrt[1 - c^2*x^2]*(3 + 2*c^2*x^2) + b*(-3
 + 8*c^4*x^4)*ArcSin[c*x]))/(64*c^3) - (f*g^2*(6*b*c*x*Sqrt[1 - c^2*x^2]*(a
 + b*ArcSin[c*x])^2 - 2*(a + b*ArcSin[c*x])^3 - 3*b^2*(c*x*(2*a*c*x + b*Sqr
t[1 - c^2*x^2]) + b*(-1 + 2*c^2*x^2)*ArcSin[c*x])))/(16*b*c^3) - (g^3*(9*c^
2*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2 - 2*b*(b*Sqrt[1 - c^2*x^2]*(2
 + c^2*x^2) + 3*c^3*x^3*(a + b*ArcSin[c*x])) + 18*(Sqrt[1 - c^2*x^2]*(a + b
*ArcSin[c*x])^2 - 2*b*(a*c*x + b*Sqrt[1 - c^2*x^2] + b*c*x*ArcSin[c*x]))))/
(135*c^4)))/Sqrt[1 - c^2*x^2]
```

Maple [C] Result contains complex when optimal does not.
time = 0.88, size = 2754, normalized size = 2.39

method	result	size
default	Expression too large to display	2754

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2),x,method=_RETURNVERB
OSE)
```

```
[Out] -1/5*a^2*g^3*x^2*(-c^2*d*x^2+d)^(3/2)/c^2/d-2/15*a^2*g^3/d/c^4*(-c^2*d*x^2+
d)^(3/2)-3/4*a^2*f*g^2*x*(-c^2*d*x^2+d)^(3/2)/c^2/d+3/8*a^2*f*g^2/c^2*x*(-c
^2*d*x^2+d)^(1/2)+3/8*a^2*f*g^2/c^2*d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/
(-c^2*d*x^2+d)^(1/2))-a^2*f^2*g/c^2/d*(-c^2*d*x^2+d)^(3/2)+1/2*a^2*f^3*x*(-
c^2*d*x^2+d)^(1/2)+1/2*a^2*f^3*d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2
*d*x^2+d)^(1/2))+b^2*(-1/24*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/(
c^2*x^2-1)*arcsin(c*x)^3*f*(4*c^2*f^2+3*g^2)+1/4000*(-d*(c^2*x^2-1))^(1/2)*
(16*c^6*x^6-28*c^4*x^4-16*I*(-c^2*x^2+1)^(1/2)*x^5*c^5+13*c^2*x^2+20*I*(-c^
2*x^2+1)^(1/2)*x^3*c^3-5*I*(-c^2*x^2+1)^(1/2)*x*c-1)*g^3*(25*arcsin(c*x)^2+
10*I*arcsin(c*x)-2)/c^4/(c^2*x^2-1)+3/512*(-d*(c^2*x^2-1))^(1/2)*(-8*I*(-c^
2*x^2+1)^(1/2)*x^4*c^4+8*c^5*x^5+8*I*(-c^2*x^2+1)^(1/2)*x^2*c^2-12*c^3*x^3-
I*(-c^2*x^2+1)^(1/2)+4*c*x)*f*g^2*(4*I*arcsin(c*x)+8*arcsin(c*x)^2-1)/c^3/(
c^2*x^2-1)+1/864*(-d*(c^2*x^2-1))^(1/2)*(4*c^4*x^4-5*c^2*x^2-4*I*(-c^2*x^2+
1)^(1/2)*x^3*c^3+3*I*(-c^2*x^2+1)^(1/2)*x*c+1)*g*(108*arcsin(c*x)^2*c^2*f^2
+72*I*arcsin(c*x)*c^2*f^2+9*arcsin(c*x)^2*g^2+6*I*arcsin(c*x)*g^2-24*c^2*f^
2-2*g^2)/c^4/(c^2*x^2-1)+1/16*(-d*(c^2*x^2-1))^(1/2)*(-2*I*(-c^2*x^2+1)^(1/
2)*x^2*c^2+2*c^3*x^3+I*(-c^2*x^2+1)^(1/2)-2*c*x)*f^3*(2*I*arcsin(c*x)+2*arc
sin(c*x)^2-1)/c/(c^2*x^2-1)-1/16*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^
2+1)^(1/2)*x*c-1)*g*(6*arcsin(c*x)^2*c^2*f^2+12*I*arcsin(c*x)*c^2*f^2+arcsi
n(c*x)^2*g^2+2*I*arcsin(c*x)*g^2-12*c^2*f^2-2*g^2)/c^4/(c^2*x^2-1)-1/16*(-d
```

```
*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(6*arcsin(c*x)^2
*c^2*f^2-12*I*arcsin(c*x)*c^2*f^2+arcsin(c*x)^2*g^2-2*I*arcsin(c*x)*g^2-12*
c^2*f^2-2*g^2)/c^4/(c^2*x^2-1)+1/16*(-d*(c^2*x^2-1))^(1/2)*(2*I*(-c^2*x^2+1
)^(1/2)*x^2*c^2+2*c^3*x^3-I*(-c^2*x^2+1)^(1/2)-2*c*x)*f^3*(-2*I*arcsin(c*x)
+2*arcsin(c*x)^2-1)/c/(c^2*x^2-1)+1/864*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x
^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*g*(10
8*arcsin(c*x)^2*c^2*f^2-72*I*arcsin(c*x)*c^2*f^2+9*arcsin(c*x)^2*g^2-6*I*ar
csin(c*x)*g^2-24*c^2*f^2-2*g^2)/c^4/(c^2*x^2-1)+3/512*(-d*(c^2*x^2-1))^(1/2
)*(8*I*(-c^2*x^2+1)^(1/2)*x^4*c^4+8*c^5*x^5-8*I*(-c^2*x^2+1)^(1/2)*x^2*c^2-
12*c^3*x^3+I*(-c^2*x^2+1)^(1/2)+4*c*x)*f*g^2*(-4*I*arcsin(c*x)+8*arcsin(c*x
)^2-1)/c^3/(c^2*x^2-1)+1/4000*(-d*(c^2*x^2-1))^(1/2)*(16*I*(-c^2*x^2+1)^(1/
2)*x^5*c^5+16*c^6*x^6-20*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-28*c^4*x^4+5*I*(-c^2*
x^2+1)^(1/2)*x*c+13*c^2*x^2-1)*g^3*(25*arcsin(c*x)^2-10*I*arcsin(c*x)-2)/c^
4/(c^2*x^2-1))+2*a*b*(-1/16*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/(
c^2*x^2-1)*arcsin(c*x)^2*f*(4*c^2*f^2+3*g^2)+1/800*(-d*(c^2*x^2-1))^(1/2)*(
16*c^6*x^6-28*c^4*x^4-16*I*(-c^2*x^2+1)^(1/2)*x^5*c^5+13*c^2*x^2+20*I*(-c^2
*x^2+1)^(1/2)*x^3*c^3-5*I*(-c^2*x^2+1)^(1/2)*x*c-1)*g^3*(I+5*arcsin(c*x))/c
^4/(c^2*x^2-1)+3/256*(-d*(c^2*x^2-1))^(1/2)*(-8*I*(-c^2*x^2+1)^(1/2)*x^4*c^
4+8*c^5*x^5+8*I*(-c^2*x^2+1)^(1/2)*x^2*c^2-12*c^3*x^3-I*(-c^2*x^2+1)^(1/2)+
4*c*x)*f*g^2*(I+4*arcsin(c*x))/c^3/(c^2*x^2-1)+1/288*(-d*(c^2*x^2-1))^(1/2)
*(4*c^4*x^4-5*c^2*x^2-4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+3*I*(-c^2*x^2+1)^(1/2)
*x*c+1)*g*(36*arcsin(c*x)*c^2*f^2+12*I*f^2*c^2+3*arcsin(c*x)*g^2+I*g^2)/c^4
/(c^2*x^2-1)+1/16*(-d*(c^2*x^2-1))^(1/2)*(-2*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+2
*c^3*x^3+I*(-c^2*x^2+1)^(1/2)-2*c*x)*f^3*(I+2*arcsin(c*x))/c/(c^2*x^2-1)-1/
16*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*g*(6*arcsin(
c*x)*c^2*f^2+6*I*f^2*c^2+arcsin(c*x)*g^2+I*g^2)/c^4/(c^2*x^2-1)-1/16*(-d*(c
^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(6*arcsin(c*x)*c^2*
f^2-6*I*f^2*c^2+arcsin(c*x)*g^2-I*g^2)/c^4/(c^2*x^2-1)+1/16*(-d*(c^2*x^2-1)
)^(1/2)*(2*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+2*c^3*x^3-I*(-c^2*x^2+1)^(1/2)-2*c*
x)*f^3*(-I+2*arcsin(c*x))/c/(c^2*x^2-1)+1/288*(-d*(c^2*x^2-1))^(1/2)*(4*I*(
-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)
*g*(36*arcsin(c*x)*c^2*f^2-12*I*f^2*c^2+3*arcsin(c*x)*g^2-I*g^2)/c^4/(c^2*x
^2-1)+3/256*(-d*(c^2*x^2-1))^(1/2)*(8*I*(-c^2*x^2+1)^(1/2)*x^4*c^4+8*c^5*x^
5-8*I*(-c^2*x^2+1)^(1/2)*x^2*c^2-12*c^3*x^3+I*(-c^2*x^2+1)^(1/2)+4*c*x)*f*g
^2*(-I+4*arcsin(c*x))/c^3/(c^2*x^2-1)+1/800*(-d*(c^2*x^2-1))^(1/2)*(16*I*(-
c^2*x^2+1)^(1/2)*x^5*c^5+16*c^6*x^6-20*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-28*c^4*
x^4+5*I*(-c^2*x^2+1)^(1/2)*x*c+13*c^2*x^2-1)*g^3*(-I+5*arcsin(c*x))/c^4/(c^
2*x^2-1))
```

Maxima [F]

time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2),x, algorithm="
maxima")
```

```
[Out] 1/2*(sqrt(-c^2*d*x^2 + d)*x + sqrt(d)*arcsin(c*x)/c)*a^2*f^3 - 1/15*a^2*g^3
*(3*(-c^2*d*x^2 + d)^(3/2)*x^2/(c^2*d) + 2*(-c^2*d*x^2 + d)^(3/2)/(c^4*d))
+ 3/8*a^2*f*g^2*(sqrt(-c^2*d*x^2 + d)*x/c^2 - 2*(-c^2*d*x^2 + d)^(3/2)*x/(c
^2*d) + sqrt(d)*arcsin(c*x)/c^3) - (-c^2*d*x^2 + d)^(3/2)*a^2*f^2*g/(c^2*d)
 + sqrt(d)*integrate(((b^2*g^3*x^3 + 3*b^2*f*g^2*x^2 + 3*b^2*f^2*g*x + b^2*
f^3)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*g^3*x^3 + 3*a*b*
f*g^2*x^2 + 3*a*b*f^2*g*x + a*b*f^3)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x +
 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2),x, algorithm="
fricas")
```

```
[Out] integral((a^2*g^3*x^3 + 3*a^2*f*g^2*x^2 + 3*a^2*f^2*g*x + a^2*f^3 + (b^2*g^
3*x^3 + 3*b^2*f*g^2*x^2 + 3*b^2*f^2*g*x + b^2*f^3)*arcsin(c*x)^2 + 2*(a*b*g
^3*x^3 + 3*a*b*f*g^2*x^2 + 3*a*b*f^2*g*x + a*b*f^3)*arcsin(c*x))*sqrt(-c^2*
d*x^2 + d), x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-d\left(cx-1\right)\left(cx+1\right)}\left(a+b\operatorname{asin}\left(cx\right)\right)^{2}\left(f+gx\right)^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*asin(c*x))**2*(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**2*(f + g*x)**3, x)
```

Giac [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2),x, algorithm="
giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (f+g\,x)^3\,(a+b\,\mathrm{asin}(c\,x))^2\,\sqrt{d-c^2\,d\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^3*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2),x)
[Out] int((f + g*x)^3*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2), x)
```

3.59 $\int (f+gx)^2\sqrt{d-c^2dx^2}\,(a+b\mathbf{ArcSin}(cx))^2\,dx$

Optimal. Leaf size=737

$$\frac{8b^2fg\sqrt{d-c^2dx^2}}{9c^2}-\frac{1}{4}b^2f^2x\sqrt{d-c^2dx^2}+\frac{b^2g^2x\sqrt{d-c^2dx^2}}{64c^2}-\frac{1}{32}b^2g^2x^3\sqrt{d-c^2dx^2}+\frac{4b^2fg(1-c^2x^2)\sqrt{d}}{27c^2}$$

```
[Out] 8/9*b^2*f*g*(-c^2*d*x^2+d)^(1/2)/c^2-1/4*b^2*f^2*x*(-c^2*d*x^2+d)^(1/2)+1/6
4*b^2*g^2*x*(-c^2*d*x^2+d)^(1/2)/c^2-1/32*b^2*g^2*x^3*(-c^2*d*x^2+d)^(1/2)+
4/27*b^2*f*g*(-c^2*x^2+1)*(-c^2*d*x^2+d)^(1/2)/c^2+1/2*f^2*x*(a+b*arcsin(c*
x))^2*(-c^2*d*x^2+d)^(1/2)-1/8*g^2*x*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/
2)/c^2+1/4*g^2*x^3*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)-2/3*f*g*(-c^2*x
^2+1)*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/c^2+1/4*b^2*f^2*arcsin(c*x)*
(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-1/64*b^2*g^2*arcsin(c*x)*(-c^2*d*
x^2+d)^(1/2)/c^3/(-c^2*x^2+1)^(1/2)+4/3*b*f*g*x*(a+b*arcsin(c*x))*(-c^2*d*x
^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-1/2*b*c*f^2*x^2*(a+b*arcsin(c*x))*(-c^2*d*
x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/8*b*g^2*x^2*(a+b*arcsin(c*x))*(-c^2*d*x^2
+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-4/9*b*c*f*g*x^3*(a+b*arcsin(c*x))*(-c^2*d*x^
2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-1/8*b*c*g^2*x^4*(a+b*arcsin(c*x))*(-c^2*d*x^2
+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/6*f^2*(a+b*arcsin(c*x))^3*(-c^2*d*x^2+d)^(1/
2)/b/c/(-c^2*x^2+1)^(1/2)+1/24*g^2*(a+b*arcsin(c*x))^3*(-c^2*d*x^2+d)^(1/2)
/b/c^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A]
time = 0.67, antiderivative size = 737, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 13, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.394$, Rules used = {4861, 4847, 4741, 4737, 4723, 327, 222, 4767, 4739, 455, 45, 4783, 4795}

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (8*b^2*f*g*Sqrt[d - c^2*d*x^2])/(9*c^2) - (b^2*f^2*x*Sqrt[d - c^2*d*x^2])/4
 + (b^2*g^2*x*Sqrt[d - c^2*d*x^2])/(64*c^2) - (b^2*g^2*x^3*Sqrt[d - c^2*d*x
^2])/32 + (4*b^2*f*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(27*c^2) + (b^2*f^2
*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(4*c*Sqrt[1 - c^2*x^2]) - (b^2*g^2*Sqrt[d
 - c^2*d*x^2]*ArcSin[c*x])/(64*c^3*Sqrt[1 - c^2*x^2]) + (4*b*f*g*x*Sqrt[d -
 c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*c*Sqrt[1 - c^2*x^2]) - (b*c*f^2*x^2*Sqr
t[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(2*Sqrt[1 - c^2*x^2]) + (b*g^2*x^2*Sq
rt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*c*Sqrt[1 - c^2*x^2]) - (4*b*c*f*g
*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(9*Sqrt[1 - c^2*x^2]) - (b*c*
g^2*x^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*Sqrt[1 - c^2*x^2]) + (f
^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/2 - (g^2*x*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x])^2)/(8*c^2) + (g^2*x^3*Sqrt[d - c^2*d*x^2]*(a + b*Ar
```

```
cSin[c*x])^2)/4 - (2*f*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*
x])^2)/(3*c^2) + (f^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(6*b*c*Sqr
t[1 - c^2*x^2]) + (g^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(24*b*c^3
*Sqrt[1 - c^2*x^2])
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 455

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[x*Sqrt[d + e*x^2]*((a + b*ArcSin[c*x])^n/2), x] + (Dist[(1/2
)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[(a + b*ArcSin[c*x])^n/Sqrt[1
 - c^2*x^2], x], x] - Dist[b*c*(n/2)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]
], Int[x*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x]
&& EqQ[c^2*d + e, 0] && GtQ[n, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4783

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[(f*x)^(m + 1)*Sqrt[d + e*x^2]*((a + b*ArcS
in[c*x])^n/(f*(m + 2))), x] + (Dist[(1/(m + 2))*Simp[Sqrt[d + e*x^2]/Sqrt[1
 - c^2*x^2]], Int[(f*x)^m*((a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x^2]), x], x]
 - Dist[b*c*(n/(f*(m + 2)))*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[(f
*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f
, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && (IGtQ[m, -2] || EqQ[n, 1])
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
```

```
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] && !GtQ[d, 0]
```

Rubi steps

$$\int (f+gx)^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx = \frac{\sqrt{d-c^2dx^2}\int (f+gx)^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\sqrt{d-c^2dx^2}\int \left(f^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2+2fgx\sqrt{1\right.}{\sqrt{}}$$

$$= \frac{\left(f^2\sqrt{d-c^2dx^2}\right)\int \sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}} + \frac{(2}{}$$

$$= \frac{1}{2}f^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2+\frac{1}{4}g^2x^3\sqrt{d-c^2dx^2}\,(a$$

$$= \frac{4bfgx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3c\sqrt{1-c^2x^2}} - \frac{bcf^2x^2\sqrt{d-c^2dx^2}\,(}{2\sqrt{1-c}}$$

$$= -\frac{1}{4}b^2f^2x\sqrt{d-c^2dx^2} - \frac{1}{32}b^2g^2x^3\sqrt{d-c^2dx^2} + \frac{4bfgx\sqrt{d}}{}$$

$$= -\frac{1}{4}b^2f^2x\sqrt{d-c^2dx^2} + \frac{b^2g^2x\sqrt{d-c^2dx^2}}{64c^2} - \frac{1}{32}b^2g^2x^3\sqrt{d}$$

$$= \frac{8b^2fg\sqrt{d-c^2dx^2}}{9c^2} - \frac{1}{4}b^2f^2x\sqrt{d-c^2dx^2} + \frac{b^2g^2x\sqrt{d-c^2d}}{64c^2}$$

Mathematica [A]
time = 0.65, size = 441, normalized size = 0.60

$$\frac{\sqrt{d-c^2dx^2}\left(\frac{1}{2}f^2x\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^2+\frac{1}{4}g^2x^3\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^2-\frac{2fg(1-c^2x^2)^{3/2}(a+b\text{ArcSin}(cx))^2}{3c^2}+\frac{f^2(a+b\text{ArcSin}(cx))^3}{6bc}-\frac{4bfg\left(b\sqrt{1-c^2x^2}\,(-7+c^2x^2)+3acx(-3+c^2x^2)+3bcx(-3+c^2x^2)\text{ArcSin}(cx)\right)}{27c^2}-\frac{bf^2\left(cx\left(2acx+b\sqrt{1-c^2x^2}\right)+b(-1+2c^2x^2)\text{ArcSin}(cx)\right)}{4c}-\frac{bg^2\left(8ac^4x^4+bcx\sqrt{1-c^2x^2}\,(3+2c^2x^2)+b(-3+8c^4x^4)\text{ArcSin}(cx)\right)}{64c^3}-\frac{g^2\left(6bcx\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^2-2(a+b\text{ArcSin}(cx))^3-3b^2\left(cx\left(2acx+b\sqrt{1-c^2x^2}\right)+b(-1+2c^2x^2)\text{ArcSin}(cx)\right)\right)}{48bc^3}\right)}{\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*((f^2*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/2 + (
g^2*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/4 - (2*f*g*(1 - c^2*x^2)^(
3/2)*(a + b*ArcSin[c*x])^2)/(3*c^2) + (f^2*(a + b*ArcSin[c*x])^3)/(6*b*c) -
 (4*b*f*g*(b*Sqrt[1 - c^2*x^2]*(-7 + c^2*x^2) + 3*a*c*x*(-3 + c^2*x^2) + 3*
b*c*x*(-3 + c^2*x^2)*ArcSin[c*x]))/(27*c^2) - (b*f^2*(c*x*(2*a*c*x + b*Sqrt
[1 - c^2*x^2]) + b*(-1 + 2*c^2*x^2)*ArcSin[c*x]))/(4*c) - (b*g^2*(8*a*c^4*x
^4 + b*c*x*Sqrt[1 - c^2*x^2]*(3 + 2*c^2*x^2) + b*(-3 + 8*c^4*x^4)*ArcSin[c*
x]))/(64*c^3) - (g^2*(6*b*c*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2 - 2*(
a + b*ArcSin[c*x])^3 - 3*b^2*(c*x*(2*a*c*x + b*Sqrt[1 - c^2*x^2]) + b*(-1 +
 2*c^2*x^2)*ArcSin[c*x]))))/(48*b*c^3)))/Sqrt[1 - c^2*x^2]
```

Maple [C] Result contains complex when optimal does not.
time = 0.72, size = 1870, normalized size = 2.54

method	result	size
default	Expression too large to display	1870

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2),x,method=_RETURNVERB
OSE)
```

```
[Out] -1/4*a^2*g^2*x*(-c^2*d*x^2+d)^(3/2)/c^2/d+1/8*a^2*g^2/c^2*x*(-c^2*d*x^2+d)^
(1/2)+1/8*a^2*g^2/c^2*d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)
^(1/2))-2/3*a^2*f*g/c^2/d*(-c^2*d*x^2+d)^(3/2)+1/2*a^2*f^2*x*(-c^2*d*x^2+d)
^(1/2)+1/2*a^2*f^2*d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1
/2))+b^2*(-1/24*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/(c^2*x^2-1)*a
rcsin(c*x)^3*(4*c^2*f^2+g^2)+1/512*(-d*(c^2*x^2-1))^(1/2)*(-8*I*(-c^2*x^2+1
)^(1/2)*x^4*c^4+8*c^5*x^5+8*I*(-c^2*x^2+1)^(1/2)*x^2*c^2-12*c^3*x^3-I*(-c^2
*x^2+1)^(1/2)+4*c*x)*g^2*(4*I*arcsin(c*x)+8*arcsin(c*x)^2-1)/c^3/(c^2*x^2-1
)+1/108*(-d*(c^2*x^2-1))^(1/2)*(4*c^4*x^4-5*c^2*x^2-4*I*(-c^2*x^2+1)^(1/2)*
x^3*c^3+3*I*(-c^2*x^2+1)^(1/2)*x*c+1)*f*g*(6*I*arcsin(c*x)+9*arcsin(c*x)^2-
2)/c^2/(c^2*x^2-1)+1/16*(-d*(c^2*x^2-1))^(1/2)*(-2*I*(-c^2*x^2+1)^(1/2)*x^2
*c^2+2*c^3*x^3+I*(-c^2*x^2+1)^(1/2)-2*c*x)*f^2*(2*I*arcsin(c*x)+2*arcsin(c*
x)^2-1)/c/(c^2*x^2-1)-1/4*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1
/2)*x*c-1)*f*g*(arcsin(c*x)^2-2+2*I*arcsin(c*x))/c^2/(c^2*x^2-1)-1/4*(-d*(c
^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*f*g*(arcsin(c*x)^2-2-
2*I*arcsin(c*x))/c^2/(c^2*x^2-1)+1/16*(-d*(c^2*x^2-1))^(1/2)*(2*I*(-c^2*x^2
+1)^(1/2)*x^2*c^2+2*c^3*x^3-I*(-c^2*x^2+1)^(1/2)-2*c*x)*f^2*(-2*I*arcsin(c*
x)+2*arcsin(c*x)^2-1)/c/(c^2*x^2-1)+1/108*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2
*x^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*f*g
*(-6*I*arcsin(c*x)+9*arcsin(c*x)^2-2)/c^2/(c^2*x^2-1)+1/512*(-d*(c^2*x^2-1)
)^(1/2)*(8*I*(-c^2*x^2+1)^(1/2)*x^4*c^4+8*c^5*x^5-8*I*(-c^2*x^2+1)^(1/2)*x^
```

```
2*c^2-12*c^3*x^3+I*(-c^2*x^2+1)^(1/2)+4*c*x)*g^2*(-4*I*arcsin(c*x)+8*arcsin
(c*x)^2-1)/c^3/(c^2*x^2-1))+2*a*b*(-1/16*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1
)^(1/2)/c^3/(c^2*x^2-1)*arcsin(c*x)^2*(4*c^2*f^2+g^2)+1/256*(-d*(c^2*x^2-1)
)^(1/2)*(-8*I*(-c^2*x^2+1)^(1/2)*x^4*c^4+8*c^5*x^5+8*I*(-c^2*x^2+1)^(1/2)*x
^2*c^2-12*c^3*x^3-I*(-c^2*x^2+1)^(1/2)+4*c*x)*g^2*(I+4*arcsin(c*x))/c^3/(c^
2*x^2-1)+1/36*(-d*(c^2*x^2-1))^(1/2)*(4*c^4*x^4-5*c^2*x^2-4*I*(-c^2*x^2+1)^
(1/2)*x^3*c^3+3*I*(-c^2*x^2+1)^(1/2)*x*c+1)*f*g*(I+3*arcsin(c*x))/c^2/(c^2*
x^2-1)+1/16*(-d*(c^2*x^2-1))^(1/2)*(-2*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+2*c^3*x
^3+I*(-c^2*x^2+1)^(1/2)-2*c*x)*f^2*(I+2*arcsin(c*x))/c/(c^2*x^2-1)-1/4*(-d*
(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*f*g*(arcsin(c*x)+I)
/c^2/(c^2*x^2-1)-1/4*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x
^2-1)*f*g*(arcsin(c*x)-I)/c^2/(c^2*x^2-1)+1/16*(-d*(c^2*x^2-1))^(1/2)*(2*I*
(-c^2*x^2+1)^(1/2)*x^2*c^2+2*c^3*x^3-I*(-c^2*x^2+1)^(1/2)-2*c*x)*f^2*(-I+2*
arcsin(c*x))/c/(c^2*x^2-1)+1/36*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1
/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*f*g*(-I+3*arc
sin(c*x))/c^2/(c^2*x^2-1)+1/256*(-d*(c^2*x^2-1))^(1/2)*(8*I*(-c^2*x^2+1)^(1
/2)*x^4*c^4+8*c^5*x^5-8*I*(-c^2*x^2+1)^(1/2)*x^2*c^2-12*c^3*x^3+I*(-c^2*x^2
+1)^(1/2)+4*c*x)*g^2*(-I+4*arcsin(c*x))/c^3/(c^2*x^2-1))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2),x, algorithm="
maxima")
```

```
[Out] 1/2*(sqrt(-c^2*d*x^2 + d)*x + sqrt(d)*arcsin(c*x)/c)*a^2*f^2 + 1/8*a^2*g^2*
(sqrt(-c^2*d*x^2 + d)*x/c^2 - 2*(-c^2*d*x^2 + d)^(3/2)*x/(c^2*d) + sqrt(d)*
arcsin(c*x)/c^3) - 2/3*(-c^2*d*x^2 + d)^(3/2)*a^2*f*g/(c^2*d) + sqrt(d)*int
egrate(((b^2*g^2*x^2 + 2*b^2*f*g*x + b^2*f^2)*arctan2(c*x, sqrt(c*x + 1)*sq
rt(-c*x + 1))^2 + 2*(a*b*g^2*x^2 + 2*a*b*f*g*x + a*b*f^2)*arctan2(c*x, sqrt
(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2),x, algorithm="
fricas")
```

```
[Out] integral((a^2*g^2*x^2 + 2*a^2*f*g*x + a^2*f^2 + (b^2*g^2*x^2 + 2*b^2*f*g*x
+ b^2*f^2)*arcsin(c*x)^2 + 2*(a*b*g^2*x^2 + 2*a*b*f*g*x + a*b*f^2)*arcsin(c
*x))*sqrt(-c^2*d*x^2 + d), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-d\left(cx-1\right)\left(cx+1\right)}\left(a+b\operatorname{asin}\left(cx\right)\right)^{2}\left(f+gx\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*asin(c*x))**2*(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**2*(f + g*x)**2, x)
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2),x, algorithm="
giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(f+g\,x\right)}^2\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,\sqrt{d-c^2\,d\,x^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int((f + g*x)^2*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2), x)
```

3.60 $\int (f+gx)\sqrt{d-c^2dx^2}\,(a+b\,\textbf{ArcSin}(cx))^2\,dx$

Optimal. Leaf size=396

$$\frac{4b^2g\sqrt{d-c^2dx^2}}{9c^2}-\frac{1}{4}b^2fx\sqrt{d-c^2dx^2}+\frac{2b^2g(1-c^2x^2)\sqrt{d-c^2dx^2}}{27c^2}+\frac{b^2f\sqrt{d-c^2dx^2}\,\mathrm{ArcSin}(cx)}{4c\sqrt{1-c^2x^2}}+\frac{2bgx\sqrt{d}}{}$$

```
[Out] 4/9*b^2*g*(-c^2*d*x^2+d)^(1/2)/c^2-1/4*b^2*f*x*(-c^2*d*x^2+d)^(1/2)+2/27*b^
2*g*(-c^2*x^2+1)*(-c^2*d*x^2+d)^(1/2)/c^2+1/2*f*x*(a+b*arcsin(c*x))^2*(-c^2
*d*x^2+d)^(1/2)-1/3*g*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)
/c^2+1/4*b^2*f*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)+2/3*b*
g*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-1/2*b*c*f*x
^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-2/9*b*c*g*x^3*
(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/6*f*(a+b*arcsin
(c*x))^3*(-c^2*d*x^2+d)^(1/2)/b/c/(-c^2*x^2+1)^(1/2)
```

Rubi [A]
time = 0.33, antiderivative size = 396, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 11, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.355$, Rules used = {4861, 4847, 4741, 4737, 4723, 327, 222, 4767, 4739, 455, 45}

$$-\frac{bcfx^2\sqrt{d-c^2dx^2}\,(a+b\mathrm{ArcSin}(cx))}{2\sqrt{1-c^2x^2}}+\frac{1}{2}fx\sqrt{d-c^2dx^2}\,(a+b\mathrm{ArcSin}(cx))^2+\frac{f\sqrt{d-c^2dx^2}\,(a+b\mathrm{ArcSin}(cx))^3}{6bc\sqrt{1-c^2x^2}}+\frac{2bgx\sqrt{d-c^2dx^2}\,(a+b\mathrm{ArcSin}(cx))}{3c\sqrt{1-c^2x^2}}-\frac{g(1-c^2x^2)\sqrt{d-c^2dx^2}\,(a+b\mathrm{ArcSin}(cx))^2}{3c^2}-\frac{2bcgx^3\sqrt{d-c^2dx^2}\,(a+b\mathrm{ArcSin}(cx))}{9\sqrt{1-c^2x^2}}+\frac{b^2f\mathrm{ArcSin}(cx)\sqrt{d-c^2dx^2}}{4c\sqrt{1-c^2x^2}}-\frac{1}{4}b^2fx\sqrt{d-c^2dx^2}+\frac{4b^2g\sqrt{d-c^2dx^2}}{9c^2}+\frac{2b^2g(1-c^2x^2)\sqrt{d-c^2dx^2}}{27c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (4*b^2*g*Sqrt[d - c^2*d*x^2])/(9*c^2) - (b^2*f*x*Sqrt[d - c^2*d*x^2])/4 + (
2*b^2*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(27*c^2) + (b^2*f*Sqrt[d - c^2*d
*x^2]*ArcSin[c*x])/(4*c*Sqrt[1 - c^2*x^2]) + (2*b*g*x*Sqrt[d - c^2*d*x^2]*(
a + b*ArcSin[c*x]))/(3*c*Sqrt[1 - c^2*x^2]) - (b*c*f*x^2*Sqrt[d - c^2*d*x^2
]*(a + b*ArcSin[c*x]))/(2*Sqrt[1 - c^2*x^2]) - (2*b*c*g*x^3*Sqrt[d - c^2*d*
x^2]*(a + b*ArcSin[c*x]))/(9*Sqrt[1 - c^2*x^2]) + (f*x*Sqrt[d - c^2*d*x^2]*
(a + b*ArcSin[c*x])^2)/2 - (g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcS
in[c*x])^2)/(3*c^2) + (f*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(6*b*c*
Sqrt[1 - c^2*x^2])
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 455

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[x*Sqrt[d + e*x^2]*((a + b*ArcSin[c*x])^n/2), x] + (Dist[(1/2
)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[(a + b*ArcSin[c*x])^n/Sqrt[1
 - c^2*x^2], x], x] - Dist[b*c*(n/2)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]
], Int[x*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x]
&& EqQ[c^2*d + e, 0] && GtQ[n, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int (f+gx)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx = \frac{\sqrt{d-c^2dx^2}\int (f+gx)\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\sqrt{d-c^2dx^2}\int \left(f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2+gx\sqrt{1-\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(f\sqrt{d-c^2dx^2}\right)\int \sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}} + \frac{\left(g\right.}{}$$

$$= \frac{1}{2}fx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2 - \frac{g(1-c^2x^2)\sqrt{d-c^2}}{3}$$

$$= \frac{2bgx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3c\sqrt{1-c^2x^2}} - \frac{bcfx^2\sqrt{d-c^2dx^2}\,(a}{2\sqrt{1-c^2}}$$

$$= -\frac{1}{4}b^2fx\sqrt{d-c^2dx^2} + \frac{2bgx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3c\sqrt{1-c^2x^2}}$$

$$= -\frac{1}{4}b^2fx\sqrt{d-c^2dx^2} + \frac{b^2f\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{4c\sqrt{1-c^2x^2}} + \frac{2bgx}{}$$

$$= \frac{4b^2g\sqrt{d-c^2dx^2}}{9c^2} - \frac{1}{4}b^2fx\sqrt{d-c^2dx^2} + \frac{2b^2g(1-c^2x^2)}{27c^2}$$

Mathematica [A]
time = 0.20, size = 224, normalized size = 0.57

$$\frac{\sqrt{d-c^2dx^2}\left(54bc^2fx\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^2-36bg(1-c^2x^2)^{3/2}(a+b\text{ArcSin}(cx))^2+18cf(a+b\text{ArcSin}(cx))^3-27b^2cf\left(cx\left(2acx+b\sqrt{1-c^2x^2}\right)+b(-1+2c^2x^2)\text{ArcSin}(cx)\right)+8b^2g\left(-b\sqrt{1-c^2x^2}\,(-7+c^2x^2)+9cx(a+b\text{ArcSin}(cx))-3c^3x^3(a+b\text{ArcSin}(cx))\right)\right)}{108bc^2\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(54*b*c^2*f*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2
- 36*b*g*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2 + 18*c*f*(a + b*ArcSin[c
*x])^3 - 27*b^2*c*f*(c*x*(2*a*c*x + b*Sqrt[1 - c^2*x^2]) + b*(-1 + 2*c^2*x^
2)*ArcSin[c*x]) + 8*b^2*g*(-(b*Sqrt[1 - c^2*x^2]*(-7 + c^2*x^2)) + 9*c*x*(a
 + b*ArcSin[c*x]) - 3*c^3*x^3*(a + b*ArcSin[c*x]))))/(108*b*c^2*Sqrt[1 - c^
2*x^2])
```

Maple [C] Result contains complex when optimal does not.
time = 0.50, size = 1236, normalized size = 3.12

method	result
default	$-\frac{a^{2} g \left(-c^{2} d \,x^{2}+d \right)^{\frac{3}{2}}}{3 c^{2} d}+\frac{a^{2} f x \sqrt{-c^{2} d \,x^{2}+d}}{2}+\frac{a^{2} f d \arctan\left(\frac{\sqrt{c^{2} d}\, x}{\sqrt{-c^{2} d \,x^{2}+d}}\right)}{2 \sqrt{c^{2} d}}+b^{2} \left(-\frac{\sqrt{-d \left(c^{2} x^{2}-1\right)}\, \sqrt{-}}{6 c \left(c^{2} x\right.}\right.$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2),x,method=_RETURNVERBOS
E)
```

```
[Out] -1/3*a^2*g/c^2/d*(-c^2*d*x^2+d)^(3/2)+1/2*a^2*f*x*(-c^2*d*x^2+d)^(1/2)+1/2*
a^2*f*d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+b^2*(-1/
6*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcsin(c*x)^3*f+1
/216*(-d*(c^2*x^2-1))^(1/2)*(4*c^4*x^4-5*c^2*x^2-4*I*(-c^2*x^2+1)^(1/2)*x^3
*c^3+3*I*(-c^2*x^2+1)^(1/2)*x*c+1)*g*(6*I*arcsin(c*x)+9*arcsin(c*x)^2-2)/c^
2/(c^2*x^2-1)+1/16*(-d*(c^2*x^2-1))^(1/2)*(-2*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+
2*c^3*x^3+I*(-c^2*x^2+1)^(1/2)-2*c*x)*f*(2*I*arcsin(c*x)+2*arcsin(c*x)^2-1)
/c/(c^2*x^2-1)-1/8*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c
-1)*g*(arcsin(c*x)^2-2+2*I*arcsin(c*x))/c^2/(c^2*x^2-1)-1/8*(-d*(c^2*x^2-1)
)^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(arcsin(c*x)^2-2-2*I*arcsin(
c*x))/c^2/(c^2*x^2-1)+1/16*(-d*(c^2*x^2-1))^(1/2)*(2*I*(-c^2*x^2+1)^(1/2)*x
^2*c^2+2*c^3*x^3-I*(-c^2*x^2+1)^(1/2)-2*c*x)*f*(-2*I*arcsin(c*x)+2*arcsin(c
*x)^2-1)/c/(c^2*x^2-1)+1/216*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)
*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*g*(-6*I*arcsin(c
*x)+9*arcsin(c*x)^2-2)/c^2/(c^2*x^2-1))+2*a*b*(-1/4*(-d*(c^2*x^2-1))^(1/2)*
(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcsin(c*x)^2*f+1/72*(-d*(c^2*x^2-1))^(1/2
)*(4*c^4*x^4-5*c^2*x^2-4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+3*I*(-c^2*x^2+1)^(1/2
)*x*c+1)*g*(I+3*arcsin(c*x))/c^2/(c^2*x^2-1)+1/16*(-d*(c^2*x^2-1))^(1/2)*(-
2*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+2*c^3*x^3+I*(-c^2*x^2+1)^(1/2)-2*c*x)*f*(I+2
*arcsin(c*x))/c/(c^2*x^2-1)-1/8*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2
+1)^(1/2)*x*c-1)*g*(arcsin(c*x)+I)/c^2/(c^2*x^2-1)-1/8*(-d*(c^2*x^2-1))^(1/
2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(arcsin(c*x)-I)/c^2/(c^2*x^2-1)+1
/16*(-d*(c^2*x^2-1))^(1/2)*(2*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+2*c^3*x^3-I*(-c^
2*x^2+1)^(1/2)-2*c*x)*f*(-I+2*arcsin(c*x))/c/(c^2*x^2-1)+1/72*(-d*(c^2*x^2-
1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/2)*
x*c-5*c^2*x^2+1)*g*(-I+3*arcsin(c*x))/c^2/(c^2*x^2-1))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2),x, algorithm="ma
xima")
```

```
[Out] 1/2*(sqrt(-c^2*d*x^2 + d)*x + sqrt(d)*arcsin(c*x)/c)*a^2*f - 1/3*(-c^2*d*x^
2 + d)^(3/2)*a^2*g/(c^2*d) + sqrt(d)*integrate(((b^2*g*x + b^2*f)*arctan2(c
*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*g*x + a*b*f)*arctan2(c*x, sqrt
(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2),x, algorithm="fr
icas")
[Out] integral(sqrt(-c^2*d*x^2 + d)*(a^2*g*x + a^2*f + (b^2*g*x + b^2*f)*arcsin(c
*x)^2 + 2*(a*b*g*x + a*b*f)*arcsin(c*x)), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-d\left(cx-1\right)\left(cx+1\right)}\left(a+b\operatorname{asin}\left(cx\right)\right)^{2}\left(f+gx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))**2*(-c**2*d*x**2+d)**(1/2),x)
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**2*(f + g*x), x)
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2),x, algorithm="gi
ac")
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \left(f+g\,x\right)\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,\sqrt{d-c^2\,d\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2),x)
[Out] int((f + g*x)*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2), x)
```

3.61 $\int \frac{\sqrt{d-c^2dx^2}\,(a+b\mathbf{ArcSin}(cx))^2}{f+gx}\,dx$

Optimal. Leaf size=1442

$$\frac{a^2\sqrt{d-c^2dx^2}}{g}-\frac{2b^2\sqrt{d-c^2dx^2}}{g}-\frac{2abcx\sqrt{d-c^2dx^2}}{g\sqrt{1-c^2x^2}}+\frac{2ab\sqrt{d-c^2dx^2}\,\mathrm{ArcSin}(cx)}{g}-\frac{2b^2cx\sqrt{d-c^2dx^2}\,\mathrm{ArcS}}{g\sqrt{1-c^2x^2}}$$

```
[Out] a^2*(-c^2*d*x^2+d)^(1/2)/g-2*b^2*(-c^2*d*x^2+d)^(1/2)/g+2*a*b*arcsin(c*x)*(
-c^2*d*x^2+d)^(1/2)/g+b^2*arcsin(c*x)^2*(-c^2*d*x^2+d)^(1/2)/g-2*a*b*c*x*(-
c^2*d*x^2+d)^(1/2)/g/(-c^2*x^2+1)^(1/2)-2*b^2*c*x*arcsin(c*x)*(-c^2*d*x^2+d
)^(1/2)/g/(-c^2*x^2+1)^(1/2)+1/3*c*x*(a+b*arcsin(c*x))^3*(-c^2*d*x^2+d)^(1/
2)/b/g/(-c^2*x^2+1)^(1/2)-1/3*(1-c^2*f^2/g^2)*(a+b*arcsin(c*x))^3*(-c^2*d*x
^2+d)^(1/2)/b/c/(g*x+f)/(-c^2*x^2+1)^(1/2)-a^2*arctan((c^2*f*x+g)/(c^2*f^2-
g^2)^(1/2)/(-c^2*x^2+1)^(1/2))*(c^2*f^2-g^2)^(1/2)*(-c^2*d*x^2+d)^(1/2)/g^2
/(-c^2*x^2+1)^(1/2)-2*I*b^2*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(
c^2*f^2-g^2)^(1/2)))*(c^2*f^2-g^2)^(1/2)*(-c^2*d*x^2+d)^(1/2)/g^2/(-c^2*x^2
+1)^(1/2)-I*b^2*arcsin(c*x)^2*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2
*f^2-g^2)^(1/2)))*(c^2*f^2-g^2)^(1/2)*(-c^2*d*x^2+d)^(1/2)/g^2/(-c^2*x^2+1)
^(1/2)+2*I*a*b*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^
2-g^2)^(1/2)))*(c^2*f^2-g^2)^(1/2)*(-c^2*d*x^2+d)^(1/2)/g^2/(-c^2*x^2+1)^(1
/2)+2*I*b^2*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/
2)))*(c^2*f^2-g^2)^(1/2)*(-c^2*d*x^2+d)^(1/2)/g^2/(-c^2*x^2+1)^(1/2)+2*a*b*
polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))*(c^2*f^
2-g^2)^(1/2)*(-c^2*d*x^2+d)^(1/2)/g^2/(-c^2*x^2+1)^(1/2)+2*b^2*arcsin(c*x)*
polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))*(c^2*f^
2-g^2)^(1/2)*(-c^2*d*x^2+d)^(1/2)/g^2/(-c^2*x^2+1)^(1/2)-2*a*b*polylog(2,I*
(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))*(c^2*f^2-g^2)^(1/2)
*(-c^2*d*x^2+d)^(1/2)/g^2/(-c^2*x^2+1)^(1/2)-2*b^2*arcsin(c*x)*polylog(2,I*
(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))*(c^2*f^2-g^2)^(1/2)
*(-c^2*d*x^2+d)^(1/2)/g^2/(-c^2*x^2+1)^(1/2)+I*b^2*arcsin(c*x)^2*ln(1-I*(I*
c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))*(c^2*f^2-g^2)^(1/2)*(-
c^2*d*x^2+d)^(1/2)/g^2/(-c^2*x^2+1)^(1/2)-2*I*a*b*arcsin(c*x)*ln(1-I*(I*c*x
+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))*(c^2*f^2-g^2)^(1/2)*(-c^2
*d*x^2+d)^(1/2)/g^2/(-c^2*x^2+1)^(1/2)+1/3*(a+b*arcsin(c*x))^3*(-c^2*x^2+1)
^(1/2)*(-c^2*d*x^2+d)^(1/2)/b/c/(g*x+f)
```

Rubi [A]
time = 2.03, antiderivative size = 1442, normalized size of antiderivative = 1.00, number of steps used = 38, number of rules used = 23, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.697$, Rules used = {4861, 4849, 697, 4841, 4883, 1668, 12, 739, 210, 4881, 4767, 8, 4857, 3404, 2296, 2221, 2317, 2438, 4715, 267, 2611, 2320, 6724}

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(f + g*x),x]
```

```
[Out] (a^2*Sqrt[d - c^2*d*x^2])/g - (2*b^2*Sqrt[d - c^2*d*x^2])/g - (2*a*b*c*x*Sq
rt[d - c^2*d*x^2])/(g*Sqrt[1 - c^2*x^2]) + (2*a*b*Sqrt[d - c^2*d*x^2]*ArcSi
n[c*x])/g - (2*b^2*c*x*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(g*Sqrt[1 - c^2*x^2
]) + (b^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2)/g + (c*x*Sqrt[d - c^2*d*x^2]*(
a + b*ArcSin[c*x])^3)/(3*b*g*Sqrt[1 - c^2*x^2]) - ((1 - (c^2*f^2)/g^2)*Sqrt
[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c*(f + g*x)*Sqrt[1 - c^2*x^2])
+ (Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c*(f +
 g*x)) - (a^2*Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]*ArcTan[(g + c^2*f*x)/
(Sqrt[c^2*f^2 - g^2]*Sqrt[1 - c^2*x^2])])/(g^2*Sqrt[1 - c^2*x^2]) + ((2*I)*
a*b*Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*Arc
Sin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) + (I*b^2
*Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcS
in[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) - ((2*I)*
a*b*Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*Arc
Sin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) - (I*b^2
*Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcS
in[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) + (2*a*b*
Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/
(c*f - Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) + (2*b^2*Sqrt[c^2*f^2
 - g^2]*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/
(c*f - Sqrt[c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) - (2*a*b*Sqrt[c^2*f^2
 - g^2]*Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[
c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) - (2*b^2*Sqrt[c^2*f^2 - g^2]*Sqrt
[d - c^2*d*x^2]*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[
c^2*f^2 - g^2])])/(g^2*Sqrt[1 - c^2*x^2]) + ((2*I)*b^2*Sqrt[c^2*f^2 - g^2]*
Sqrt[d - c^2*d*x^2]*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2
- g^2])])/(g^2*Sqrt[1 - c^2*x^2]) - ((2*I)*b^2*Sqrt[c^2*f^2 - g^2]*Sqrt[d -
 c^2*d*x^2]*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]
)/(g^2*Sqrt[1 - c^2*x^2])
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
```

```
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 697

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[2*c*d - b*e, 0] &
& IGtQ[p, 0] &&  !(EqQ[m, 3] && NeQ[p, 1])
```

Rule 739

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 1668

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :
> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[f*(d + e*x)
^(m + q - 1)*((a + c*x^2)^(p + 1)/(c*e^(q - 1)*(m + q + 2*p + 1))), x] + Di
st[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + c*x^2)^p*ExpandToSum[c
*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1)*(d + e*x)^q - f*(d + e*x)
^(q - 2)*(a*e^2*(m + q - 1) - c*d^2*(m + q + 2*p + 1) - 2*c*d*e*(m + q + p)
*x), x], x], x] /; GtQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, c, d,
 e, m, p}, x] && PolyQ[Pq, x] && NeQ[c*d^2 + a*e^2, 0] &&  !(EqQ[d, 0] && T
rue) &&  !(IGtQ[m, 0] && RationalQ[a, c, d, e] && (IntegerQ[p] || ILtQ[p +
1/2, 0]))
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2296

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[2*(c/q), Int[
```

```
(f + g*x)^m*(F^u/(b - q + 2*c*F^u)), x], x] - Dist[2*(c/q), Int[(f + g*x)^m
*(F^u/(b + q + 2*c*F^u)), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 3404

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[(c + d*x)^m*(E^(I*(e + f*x))/(I*b + 2*a*E^(I*(e + f*x)
) - I*b*E^(2*I*(e + f*x)))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4841

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.) + (g_.)*(x_) + (h_.)*(x
_)^2)^(p_.))/((d_) + (e_.)*(x_))^2, x_Symbol] :> With[{u = IntHide[(f + g*x
 + h*x^2)^p/(d + e*x)^2, x]}, Dist[(a + b*ArcSin[c*x])^n, u, x] - Dist[b*c*
n, Int[SimplifyIntegrand[u*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*x^2]),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, h}, x] && IGtQ[n, 0] && IGtQ[p,
 0] && EqQ[e*g - 2*d*h, 0]
```

Rule 4849

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_)*Sqrt[
(d_) + (e_.)*(x_)^2], x_Symbol] :> Simp[(f + g*x)^m*(d + e*x^2)*((a + b*Arc
Sin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1))), x] - Dist[1/(b*c*Sqrt[d]*(n + 1))
, Int[(d*g*m + 2*e*f*x + e*g*(m + 2)*x^2)*(f + g*x)^(m - 1)*(a + b*ArcSin[c
*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0
] && ILtQ[m, 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4881

```
Int[ArcSin[(c_.)*(x_)]^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p_), x_Symbol] :
> With[{u = ExpandIntegrand[(d + e*x^2)^p*ArcSin[c*x]^n, RFx, x]}, Int[u, x
] /; SumQ[u]] /; FreeQ[{c, d, e}, x] && RationalFunctionQ[RFx, x] && IGtQ[n
```

```
, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 4883

```
Int[(ArcSin[(c_.)*(x_)]*(b_.) + (a_))^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p
_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p, RFx*(a + b*ArcSin[c*x])
^n, x], x] /; FreeQ[{a, b, c, d, e}, x] && RationalFunctionQ[RFx, x] && IGt
Q[n, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\sqrt{d-c^2dx^2}\,(a+b\sin^{-1}(cx))^2}{f+gx}\,dx = \frac{\sqrt{d-c^2dx^2}\int \frac{\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))^2}{f+gx}\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}\,(a+b\sin^{-1}(cx))^3}{3bc(f+gx)} - \frac{\sqrt{d-c^2dx^2}\int \frac{(-g-2c^2f x}{}}{3bc\sqrt{1-}}$$

$$= \frac{cx\sqrt{d-c^2dx^2}\,(a+b\sin^{-1}(cx))^3}{3bg\sqrt{1-c^2x^2}} - \frac{\left(1-\frac{c^2f^2}{g^2}\right)\sqrt{d-c^2dx^2}\,(a+b\sin}{3bc(f+gx)\sqrt{1-c^2x^2}}$$

$$= \frac{cx\sqrt{d-c^2dx^2}\,(a+b\sin^{-1}(cx))^3}{3bg\sqrt{1-c^2x^2}} - \frac{\left(1-\frac{c^2f^2}{g^2}\right)\sqrt{d-c^2dx^2}\,(a+b\sin}{3bc(f+gx)\sqrt{1-c^2x^2}}$$

$$= \frac{cx\sqrt{d-c^2dx^2}\,(a+b\sin^{-1}(cx))^3}{3bg\sqrt{1-c^2x^2}} - \frac{\left(1-\frac{c^2f^2}{g^2}\right)\sqrt{d-c^2dx^2}\,(a+b\sin}{3bc(f+gx)\sqrt{1-}}$$

$$= \frac{a^2\sqrt{d-c^2dx^2}}{g} + \frac{cx\sqrt{d-c^2dx^2}\,(a+b\sin^{-1}(cx))^3}{3bg\sqrt{1-c^2x^2}} - \frac{\left(1-\frac{c^2f^2}{g^2}\right)\sqrt{d}}{3bc(f}$$

$$= \frac{a^2\sqrt{d-c^2dx^2}}{g} + \frac{cx\sqrt{d-c^2dx^2}\,(a+b\sin^{-1}(cx))^3}{3bg\sqrt{1-c^2x^2}} - \frac{\left(1-\frac{c^2f^2}{g^2}\right)\sqrt{d}}{3bc(f}$$

$$= \frac{a^2\sqrt{d-c^2dx^2}}{g} + \frac{2ab\sqrt{d-c^2dx^2}\,\sin^{-1}(cx)}{g} + \frac{b^2\sqrt{d-c^2dx^2}\,\sin^{-1}(}{g}$$

$$= \frac{a^2\sqrt{d-c^2dx^2}}{g} - \frac{2abcx\sqrt{d-c^2dx^2}}{g\sqrt{1-c^2x^2}} + \frac{2ab\sqrt{d-c^2dx^2}\,\sin^{-1}(cx)}{g} -$$

$$= \frac{a^2\sqrt{d-c^2dx^2}}{g} - \frac{2b^2\sqrt{d-c^2dx^2}}{g} - \frac{2abcx\sqrt{d-c^2dx^2}}{g\sqrt{1-c^2x^2}} + \frac{2ab\sqrt{d-}}{}$$

$$= \frac{a^2\sqrt{d-c^2dx^2}}{g} - \frac{2b^2\sqrt{d-c^2dx^2}}{g} - \frac{2abcx\sqrt{d-c^2dx^2}}{g\sqrt{1-c^2x^2}} + \frac{2ab\sqrt{d-}}{}$$

$$= \frac{a^2\sqrt{d-c^2dx^2}}{g} - \frac{2b^2\sqrt{d-c^2dx^2}}{g} - \frac{2abcx\sqrt{d-c^2dx^2}}{g\sqrt{1-c^2x^2}} + \frac{2ab\sqrt{d-}}{}$$

$$= \frac{a^2\sqrt{d-c^2dx^2}}{} - \frac{2b^2\sqrt{d-c^2dx^2}}{} - \frac{2abcx\sqrt{d-c^2dx^2}}{} + 2ab\sqrt{d-}$$

Mathematica [A]
time = 0.97, size = 516, normalized size = 0.36

$$\frac{\sqrt{d-c^2dx^2}\left((c^2f^2-g^2)\,(a+b\text{ArcSin}(cx))^3+c^2gx(f+gx)(a+b\text{ArcSin}(cx))^3+g^2(1-c^2x^2)\,(a+b\text{ArcSin}(cx))^3+3bc(f+gx)\left(g\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^2-2bg\left(acx+b\sqrt{1-c^2x^2}+bcx\text{ArcSin}(cx)\right)+i\sqrt{c^2f^2-g^2}\left((a+b\text{ArcSin}(cx))^2\log\left(1+\frac{ie^{i\text{ArcSin}(cx)}g}{-cf+\sqrt{c^2f^2-g^2}}\right)-(a+b\text{ArcSin}(cx))^2\log\left(1-\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)-2ib(a+b\text{ArcSin}(cx))\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)+2ib(a+b\text{ArcSin}(cx))\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)+2b^2\text{PolyLog}\left(3,\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)-2b^2\text{PolyLog}\left(3,\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)\right)\right)\right)}{3bcg^2(f+gx)\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(f + g*x),x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*((c^2*f^2 - g^2)*(a + b*ArcSin[c*x])^3 + c^2*g*x*(f +
g*x)*(a + b*ArcSin[c*x])^3 + g^2*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^3 + 3*b*
c*(f + g*x)*(g*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2 - 2*b*g*(a*c*x + b*S
qrt[1 - c^2*x^2] + b*c*x*ArcSin[c*x]) + I*Sqrt[c^2*f^2 - g^2]*((a + b*ArcSi
n[c*x])^2*Log[1 + (I*E^(I*ArcSin[c*x])*g)/(-(c*f) + Sqrt[c^2*f^2 - g^2])] -
 (a + b*ArcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2
- g^2])] - (2*I)*b*(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(
c*f - Sqrt[c^2*f^2 - g^2])] + (2*I)*b*(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(
I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])] + 2*b^2*PolyLog[3, (I*E^(I*A
rcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])] - 2*b^2*PolyLog[3, (I*E^(I*ArcS
in[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]))))/(3*b*c*g^2*(f + g*x)*Sqrt[1 -
c^2*x^2])
```

Maple [F]
time = 0.01, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin(cx))^2\sqrt{-c^2d\,x^2+d}}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/(g*x+f),x)
```

```
[Out] int((a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/(g*x+f),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/(g*x+f),x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(g-c*f>0)', see `assume?` for more d
etails)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/(g*x+f),x, algorithm="fr
icas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)
/(g*x + f), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-d(cx-1)(cx+1)}\,(a+b\operatorname{asin}(cx))^2}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2*(-c**2*d*x**2+d)**(1/2)/(g*x+f),x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**2/(f + g*x), x)
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/(g*x+f),x, algorithm="gi
ac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,sageVARx):;OUTPUT:sym2poly/r2sym(const gen & e,const in
dex_m & i,const vecteur & l) Error: Bad Argument Value
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\operatorname{asin}(c\,x))^2\,\sqrt{d-c^2\,d\,x^2}}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2))/(f + g*x),x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2))/(f + g*x), x)
```

3.62 $\int (f+gx)^3 \left(d-c^2dx^2\right)^{3/2} (a+b\mathbf{ArcSin}(cx))^2\,dx$

Optimal. Leaf size=1685

$$\frac{16b^2df^2g\sqrt{d-c^2dx^2}}{25c^2}+\frac{304b^2dg^3\sqrt{d-c^2dx^2}}{3675c^4}-\frac{15}{64}b^2df^3x\sqrt{d-c^2dx^2}-\frac{7b^2dfg^2x\sqrt{d-c^2dx^2}}{384c^2}-\frac{43}{576}b^2dfg^2x$$

```
[Out] 7/384*b^2*d*f*g^2*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/c^3/(-c^2*x^2+1)^(1/2)+4
/35*b^2*d*g^3*x*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/c^3/(-c^2*x^2+1)^(1/2)-3/8
*b*c*d*f^3*x^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+2/
105*b*d*g^3*x^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)
-16/175*b*c*d*g^3*x^5*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(
1/2)+2/49*b*c^3*d*g^3*x^7*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+
1)^(1/2)+1/16*d*f*g^2*(a+b*arcsin(c*x))^3*(-c^2*d*x^2+d)^(1/2)/b/c^3/(-c^2*
x^2+1)^(1/2)+4/35*a*b*d*g^3*x*(-c^2*d*x^2+d)^(1/2)/c^3/(-c^2*x^2+1)^(1/2)+3
04/3675*b^2*d*g^3*(-c^2*d*x^2+d)^(1/2)/c^4-15/64*b^2*d*f^3*x*(-c^2*d*x^2+d)
^(1/2)-2/35*d*g^3*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/c^4+3/8*d*f^3*x*
(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)+3/35*d*g^3*x^4*(a+b*arcsin(c*x))^2
*(-c^2*d*x^2+d)^(1/2)+16/25*b^2*d*f^2*g*(-c^2*d*x^2+d)^(1/2)/c^2-43/576*b^2
*d*f*g^2*x^3*(-c^2*d*x^2+d)^(1/2)+152/11025*b^2*d*g^3*(-c^2*x^2+1)*(-c^2*d*
x^2+d)^(1/2)/c^4-1/32*b^2*d*f^3*x*(-c^2*x^2+1)*(-c^2*d*x^2+d)^(1/2)+38/6125
*b^2*d*g^3*(-c^2*x^2+1)^2*(-c^2*d*x^2+d)^(1/2)/c^4-2/343*b^2*d*g^3*(-c^2*x^
2+1)^3*(-c^2*d*x^2+d)^(1/2)/c^4-1/35*d*g^3*x^2*(a+b*arcsin(c*x))^2*(-c^2*d*
x^2+d)^(1/2)/c^2+3/8*d*f*g^2*x^3*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)+6
/5*b*d*f^2*g*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)+
3/16*b*d*f*g^2*x^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1
/2)-4/5*b*c*d*f^2*g*x^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)
^(1/2)-7/16*b*c*d*f*g^2*x^4*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^
2+1)^(1/2)+6/25*b*c^3*d*f^2*g*x^5*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-
c^2*x^2+1)^(1/2)+1/6*b*c^3*d*f*g^2*x^6*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/
2)/(-c^2*x^2+1)^(1/2)+1/4*d*f^3*x*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2*(-c^2*d*
x^2+d)^(1/2)+1/7*d*g^3*x^4*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^
(1/2)-7/384*b^2*d*f*g^2*x*(-c^2*d*x^2+d)^(1/2)/c^2+1/36*b^2*c^2*d*f*g^2*x^5
*(-c^2*d*x^2+d)^(1/2)+8/75*b^2*d*f^2*g*(-c^2*x^2+1)*(-c^2*d*x^2+d)^(1/2)/c^
2+6/125*b^2*d*f^2*g*(-c^2*x^2+1)^2*(-c^2*d*x^2+d)^(1/2)/c^2+1/8*b*d*f^3*(-c
^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c-3/16*d*f*g^2*x*(a+
b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/c^2+1/2*d*f*g^2*x^3*(-c^2*x^2+1)*(a+b
*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)-3/5*d*f^2*g*(-c^2*x^2+1)^2*(a+b*arcsin
(c*x))^2*(-c^2*d*x^2+d)^(1/2)/c^2+9/64*b^2*d*f^3*arcsin(c*x)*(-c^2*d*x^2+d)
^(1/2)/c/(-c^2*x^2+1)^(1/2)+1/8*d*f^3*(a+b*arcsin(c*x))^3*(-c^2*d*x^2+d)^(1
/2)/b/c/(-c^2*x^2+1)^(1/2)
```

Rubi [A]

time = 1.56, antiderivative size = 1685, normalized size of antiderivative = 1.00, number of steps used = 56, number of rules used = 27, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.818$, Rules used = {4861, 4847, 4743, 4741, 4737, 4723, 327, 222, 4767, 201, 200, 4739, 12, 1261, 712, 4787, 4783, 4795, 14, 4777, 470, 4715, 267, 272, 45, 457, 78}

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (16*b^2*d*f^2*g*Sqrt[d - c^2*d*x^2])/(25*c^2) + (304*b^2*d*g^3*Sqrt[d - c^2
*d*x^2])/(3675*c^4) - (15*b^2*d*f^3*x*Sqrt[d - c^2*d*x^2])/64 - (7*b^2*d*f*
g^2*x*Sqrt[d - c^2*d*x^2])/(384*c^2) - (43*b^2*d*f*g^2*x^3*Sqrt[d - c^2*d*x
^2])/576 + (b^2*c^2*d*f*g^2*x^5*Sqrt[d - c^2*d*x^2])/36 + (4*a*b*d*g^3*x*Sq
rt[d - c^2*d*x^2])/(35*c^3*Sqrt[1 - c^2*x^2]) + (8*b^2*d*f^2*g*(1 - c^2*x^2
)*Sqrt[d - c^2*d*x^2])/(75*c^2) + (152*b^2*d*g^3*(1 - c^2*x^2)*Sqrt[d - c^2
*d*x^2])/(11025*c^4) - (b^2*d*f^3*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/32 +
 (6*b^2*d*f^2*g*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2])/(125*c^2) + (38*b^2*d*
g^3*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2])/(6125*c^4) - (2*b^2*d*g^3*(1 - c^2
*x^2)^3*Sqrt[d - c^2*d*x^2])/(343*c^4) + (9*b^2*d*f^3*Sqrt[d - c^2*d*x^2]*A
rcSin[c*x])/(64*c*Sqrt[1 - c^2*x^2]) + (7*b^2*d*f*g^2*Sqrt[d - c^2*d*x^2]*A
rcSin[c*x])/(384*c^3*Sqrt[1 - c^2*x^2]) + (4*b^2*d*g^3*x*Sqrt[d - c^2*d*x^2
]*ArcSin[c*x])/(35*c^3*Sqrt[1 - c^2*x^2]) + (6*b*d*f^2*g*x*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x]))/(5*c*Sqrt[1 - c^2*x^2]) - (3*b*c*d*f^3*x^2*Sqrt[d
- c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*Sqrt[1 - c^2*x^2]) + (3*b*d*f*g^2*x^2*
Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(16*c*Sqrt[1 - c^2*x^2]) - (4*b*c*
d*f^2*g*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(5*Sqrt[1 - c^2*x^2])
+ (2*b*d*g^3*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(105*c*Sqrt[1 - c
^2*x^2]) - (7*b*c*d*f*g^2*x^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(16*
Sqrt[1 - c^2*x^2]) + (6*b*c^3*d*f^2*g*x^5*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin
[c*x]))/(25*Sqrt[1 - c^2*x^2]) - (16*b*c*d*g^3*x^5*Sqrt[d - c^2*d*x^2]*(a +
 b*ArcSin[c*x]))/(175*Sqrt[1 - c^2*x^2]) + (b*c^3*d*f*g^2*x^6*Sqrt[d - c^2*
d*x^2]*(a + b*ArcSin[c*x]))/(6*Sqrt[1 - c^2*x^2]) + (2*b*c^3*d*g^3*x^7*Sqrt
[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(49*Sqrt[1 - c^2*x^2]) + (b*d*f^3*(1 -
 c^2*x^2)^(3/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*c) - (2*d*g^3*S
qrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(35*c^4) + (3*d*f^3*x*Sqrt[d - c^
2*d*x^2]*(a + b*ArcSin[c*x])^2)/8 - (3*d*f*g^2*x*Sqrt[d - c^2*d*x^2]*(a + b
*ArcSin[c*x])^2)/(16*c^2) - (d*g^3*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*
x])^2)/(35*c^2) + (3*d*f*g^2*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)
/8 + (3*d*g^3*x^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/35 + (d*f^3*x*
(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/4 + (d*f*g^2*x^3*(
1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/2 + (d*g^3*x^4*(1 -
 c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/7 - (3*d*f^2*g*(1 - c^
2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(5*c^2) + (d*f^3*Sqrt[d
 - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(8*b*c*Sqrt[1 - c^2*x^2]) + (d*f*g^2*S
qrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(16*b*c^3*Sqrt[1 - c^2*x^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 200

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 201

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[x*((a + b*x^n)^p/(n*p
+ 1)), x] + Dist[a*n*(p/(n*p + 1)), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
```

```
NeQ[p, -1]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 457

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p
*(c + d*x)^q, x], x, x^n], x] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[
b*c - a*d, 0] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 470

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_)), x_Symbol] :> Simp[d*(e*x)^(m + 1)*((a + b*x^n)^(p + 1)/(b*e*(m + n*(p
+ 1) + 1))), x] - Dist[(a*d*(m + 1) - b*c*(m + n*(p + 1) + 1))/(b*(m + n*(p
 + 1) + 1)), Int[(e*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, d, e, m,
n, p}, x] && NeQ[b*c - a*d, 0] && NeQ[m + n*(p + 1) + 1, 0]
```

Rule 712

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 1261

```
Int[(x_)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(
p_.), x_Symbol] :> Dist[1/2, Subst[Int[(d + e*x)^q*(a + b*x + c*x^2)^p, x],
 x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[x*Sqrt[d + e*x^2]*((a + b*ArcSin[c*x])^n/2), x] + (Dist[(1/2
)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[(a + b*ArcSin[c*x])^n/Sqrt[1
 - c^2*x^2], x], x] - Dist[b*c*(n/2)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]
], Int[x*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x]
&& EqQ[c^2*d + e, 0] && GtQ[n, 0]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[x*(d + e*x^2)^p*((a + b*ArcSin[c*x])^n/(2*p + 1)), x] + (D
ist[2*d*(p/(2*p + 1)), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[b*c*(n/(2*p + 1))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[x*(1 -
c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c,
d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
```

```
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rule 4783

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[(f*x)^(m + 1)*Sqrt[d + e*x^2]*((a + b*ArcS
in[c*x])^n/(f*(m + 2))), x] + (Dist[(1/(m + 2))*Simp[Sqrt[d + e*x^2]/Sqrt[1
 - c^2*x^2]], Int[(f*x)^m*((a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x^2]), x], x]
 - Dist[b*c*(n/(f*(m + 2)))*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[(f
*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f
, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && (IGtQ[m, -2] || EqQ[n, 1])
```

Rule 4787

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[(f*x)^(m + 1)*(d + e*x^2)^p*((a + b*ArcS
in[c*x])^n/(f*(m + 2*p + 1))), x] + (Dist[2*d*(p/(m + 2*p + 1)), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[b*c*(n/(f*(m + 2
*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)^(m + 1)*(1 - c^2*x
^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0] &&  !LtQ[m, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
```

```
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int (f+gx)^3 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx = \frac{\left(d\sqrt{d-c^2dx^2}\right)\int (f+gx)^3 \left(1-c^2x^2\right)^{3/2} \left(a+b\sin^{-1}(cx\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d\sqrt{d-c^2dx^2}\right)\int \left(f^3(1-c^2x^2)^{3/2} \left(a+b\sin^{-1}(cx)\right)^2 + \right.}{}$$

$$= \frac{\left(df^3\sqrt{d-c^2dx^2}\right)\int \left(1-c^2x^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{1}{4}df^3x\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2 + \frac{1}{2}dfg^2$$

$$= \frac{6bdf^2gx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{5c\sqrt{1-c^2x^2}} - \frac{4bcdf^2gx^3\sqrt{d-}}{5\sqrt{}}$$

$$= -\frac{1}{32}b^2df^3x\left(1-c^2x^2\right)\sqrt{d-c^2dx^2} + \frac{6bdf^2gx\sqrt{d-c^2dx}}{5c\sqrt{1-}}$$

$$= -\frac{15}{64}b^2df^3x\sqrt{d-c^2dx^2} - \frac{3}{64}b^2dfg^2x^3\sqrt{d-c^2dx^2} + \frac{1}{36}$$

$$= -\frac{15}{64}b^2df^3x\sqrt{d-c^2dx^2} + \frac{3b^2dfg^2x\sqrt{d-c^2dx^2}}{128c^2} - \frac{43}{576}b$$

$$= \frac{16b^2df^2g\sqrt{d-c^2dx^2}}{25c^2} - \frac{62b^2dg^3\sqrt{d-c^2dx^2}}{1225c^4} - \frac{15}{64}b^2df^3$$

$$= \frac{16b^2df^2g\sqrt{d-c^2dx^2}}{25c^2} + \frac{304b^2dg^3\sqrt{d-c^2dx^2}}{3675c^4} - \frac{15}{64}b^2df$$

Mathematica [A]
time = 1.70, size = 872, normalized size = 0.52

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (d*Sqrt[d - c^2*d*x^2]*(3087000*a^3*c*f*(2*c^2*f^2 + g^2) - 88200*a^2*b*Sqr
t[1 - c^2*x^2]*(32*g^3 + c^2*g*(336*f^2 + 105*f*g*x + 16*g^2*x^2) + 4*c^6*x
^3*(35*f^3 + 84*f^2*g*x + 70*f*g^2*x^2 + 20*g^3*x^3) - 2*c^4*x*(175*f^3 + 3
```

```
36*f^2*g*x + 245*f*g^2*x^2 + 64*g^3*x^3)) + 840*a*b^2*c*x*(6720*g^3 + 35*c^
2*g*(2016*f^2 + 315*f*g*x + 32*g^2*x^2) - 21*c^4*x*(1750*f^3 + 2240*f^2*g*x
 + 1225*f*g^2*x^2 + 256*g^3*x^3) + 2*c^6*x^3*(3675*f^3 + 7056*f^2*g*x + 490
0*f*g^2*x^2 + 1200*g^3*x^3)) + b^3*Sqrt[1 - c^2*x^2]*(4785152*g^3 + c^2*g*(
39250176*f^2 - 900375*f*g*x - 429824*g^2*x^2) + 4*c^6*x^3*(385875*f^3 + 592
704*f^2*g*x + 343000*f*g^2*x^2 + 72000*g^3*x^3) - 2*c^4*x*(6559875*f^3 + 50
05056*f^2*g*x + 1843625*f*g^2*x^2 + 278784*g^3*x^3)) + 105*b*(88200*a^2*c*f
*(2*c^2*f^2 + g^2) - 1680*a*b*Sqrt[1 - c^2*x^2]*(32*g^3 + c^2*g*(336*f^2 +
105*f*g*x + 16*g^2*x^2) + 4*c^6*x^3*(35*f^3 + 84*f^2*g*x + 70*f*g^2*x^2 + 2
0*g^3*x^3) - 2*c^4*x*(175*f^3 + 336*f^2*g*x + 245*f*g^2*x^2 + 64*g^3*x^3))
+ b^2*c*(35*g^2*(245*f + 1536*g*x) + 70*c^2*(1785*f^3 + 8064*f^2*g*x + 1260
*f*g^2*x^2 + 128*g^3*x^3) - 168*c^4*x^2*(1750*f^3 + 2240*f^2*g*x + 1225*f*g
^2*x^2 + 256*g^3*x^3) + 16*c^6*x^4*(3675*f^3 + 7056*f^2*g*x + 4900*f*g^2*x^
2 + 1200*g^3*x^3)))*ArcSin[c*x] - 88200*b^2*(-105*a*c*f*(2*c^2*f^2 + g^2) +
 b*Sqrt[1 - c^2*x^2]*(32*g^3 + c^2*g*(336*f^2 + 105*f*g*x + 16*g^2*x^2) + 4
*c^6*x^3*(35*f^3 + 84*f^2*g*x + 70*f*g^2*x^2 + 20*g^3*x^3) - 2*c^4*x*(175*f
^3 + 336*f^2*g*x + 245*f*g^2*x^2 + 64*g^3*x^3)))*ArcSin[c*x]^2 + 3087000*b^
3*c*f*(2*c^2*f^2 + g^2)*ArcSin[c*x]^3))/(49392000*b*c^4*Sqrt[1 - c^2*x^2])
```

Maple [C] Result contains complex when optimal does not.
time = 0.93, size = 4216, normalized size = 2.50

method	result	size
default	Expression too large to display	4216

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x,method=_RETURNVERB
OSE)
```

```
[Out] -1/7*a^2*g^3*x^2*(-c^2*d*x^2+d)^(5/2)/c^2/d-2/35*a^2*g^3/d/c^4*(-c^2*d*x^2+
d)^(5/2)-1/2*a^2*f*g^2*x*(-c^2*d*x^2+d)^(5/2)/c^2/d+1/8*a^2*f*g^2/c^2*x*(-c
^2*d*x^2+d)^(3/2)+3/16*a^2*f*g^2/c^2*d*x*(-c^2*d*x^2+d)^(1/2)+3/16*a^2*f*g^
2/c^2*d^2/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-3/5*a^
2*f^2*g/c^2/d*(-c^2*d*x^2+d)^(5/2)+1/4*a^2*f^3*x*(-c^2*d*x^2+d)^(3/2)+3/8*a
^2*f^3*d*x*(-c^2*d*x^2+d)^(1/2)+3/8*a^2*f^3*d^2/(c^2*d)^(1/2)*arctan((c^2*d
)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+b^2*(-1/16*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2
+1)^(1/2)/c^3/(c^2*x^2-1)*arcsin(c*x)^3*f*(2*c^2*f^2+g^2)*d-1/43904*(-d*(c^
2*x^2-1))^(1/2)*(64*c^8*x^8-144*c^6*x^6-64*I*(-c^2*x^2+1)^(1/2)*x^7*c^7+104
*c^4*x^4+112*I*(-c^2*x^2+1)^(1/2)*x^5*c^5-25*c^2*x^2-56*I*(-c^2*x^2+1)^(1/2
)*x^3*c^3+7*I*(-c^2*x^2+1)^(1/2)*x*c+1)*g^3*(49*arcsin(c*x)^2+14*I*arcsin(c
*x)-2)*d/c^4/(c^2*x^2-1)-1/2304*(-d*(c^2*x^2-1))^(1/2)*(-32*I*(-c^2*x^2+1)^
(1/2)*x^6*c^6+32*c^7*x^7+48*I*(-c^2*x^2+1)^(1/2)*x^4*c^4-64*c^5*x^5-18*I*(-
c^2*x^2+1)^(1/2)*x^2*c^2+38*c^3*x^3+I*(-c^2*x^2+1)^(1/2)-6*c*x)*f*g^2*(6*I*
arcsin(c*x)+18*arcsin(c*x)^2-1)*d/c^3/(c^2*x^2-1)-1/16000*(-d*(c^2*x^2-1))^
(1/2)*(16*c^6*x^6-28*c^4*x^4-16*I*(-c^2*x^2+1)^(1/2)*x^5*c^5+13*c^2*x^2+20*
```

I*(-c^2*x^2+1)^(1/2)*x^3*c^3-5*I*(-c^2*x^2+1)^(1/2)*x*c-1)*g*(300*arcsin(c*x)^2*c^2*f^2+120*I*arcsin(c*x)*c^2*f^2-25*arcsin(c*x)^2*g^2-10*I*arcsin(c*x)*g^2-24*c^2*f^2+2*g^2)*d/c^4/(c^2*x^2-1)-1/1024*(-d*(c^2*x^2-1))^(1/2)*(-8*I*(-c^2*x^2+1)^(1/2)*x^4*c^4+8*c^5*x^5+8*I*(-c^2*x^2+1)^(1/2)*x^2*c^2-12*c^3*x^3-I*(-c^2*x^2+1)^(1/2)+4*c*x)*f*(8*I*arcsin(c*x)*c^2*f^2+16*arcsin(c*x)^2*c^2*f^2-12*I*arcsin(c*x)*g^2-24*arcsin(c*x)^2*g^2-2*c^2*f^2+3*g^2)*d/c^3/(c^2*x^2-1)-3/128*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*g*(8*arcsin(c*x)^2*c^2*f^2+16*I*arcsin(c*x)*c^2*f^2+arcsin(c*x)^2*g^2+2*I*arcsin(c*x)*g^2-16*c^2*f^2-2*g^2)*d/c^4/(c^2*x^2-1)-3/128*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(8*arcsin(c*x)^2*c^2*f^2-16*I*arcsin(c*x)*c^2*f^2+arcsin(c*x)^2*g^2-2*I*arcsin(c*x)*g^2-16*c^2*f^2-2*g^2)*d/c^4/(c^2*x^2-1)+1/256*(-d*(c^2*x^2-1))^(1/2)*(2*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+2*c^3*x^3-I*(-c^2*x^2+1)^(1/2)-2*c*x)*f*(-32*I*arcsin(c*x)*c^2*f^2+32*arcsin(c*x)^2*c^2*f^2-6*I*arcsin(c*x)*g^2+6*arcsin(c*x)^2*g^2-16*c^2*f^2-3*g^2)*d/c^3/(c^2*x^2-1)+1/1152*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*g*(108*arcsin(c*x)^2*c^2*f^2-72*I*arcsin(c*x)*c^2*f^2+9*arcsin(c*x)^2*g^2-6*I*arcsin(c*x)*g^2-24*c^2*f^2-2*g^2)*d/c^4/(c^2*x^2-1)-1/2304*(-d*(c^2*x^2-1))^(1/2)*(32*I*(-c^2*x^2+1)^(1/2)*x^6*c^6+32*c^7*x^7-48*I*(-c^2*x^2+1)^(1/2)*x^4*c^4-64*c^5*x^5+18*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+38*c^3*x^3-I*(-c^2*x^2+1)^(1/2)-6*c*x)*f*g^2*(-6*I*arcsin(c*x)+18*arcsin(c*x)^2-1)*d/c^3/(c^2*x^2-1)-1/43904*(-d*(c^2*x^2-1))^(1/2)*(64*I*(-c^2*x^2+1)^(1/2)*x^7*c^7+64*c^8*x^8-112*I*(-c^2*x^2+1)^(1/2)*x^5*c^5-144*c^6*x^6+56*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+104*c^4*x^4-7*I*(-c^2*x^2+1)^(1/2)*x*c-25*c^2*x^2+1)*g^3*(49*arcsin(c*x)^2-14*I*arcsin(c*x)-2)*d/c^4/(c^2*x^2-1)-1/36000*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(1980*I*arcsin(c*x)*c^2*f^2+4050*arcsin(c*x)^2*c^2*f^2+210*I*arcsin(c*x)*g^2+225*arcsin(c*x)^2*g^2-804*c^2*f^2-58*g^2)*cos(4*arcsin(c*x))*d/c^4/(c^2*x^2-1)-1/72000*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2-c*x*(-c^2*x^2+1)^(1/2)-I)*g*(5040*I*arcsin(c*x)*c^2*f^2+5400*arcsin(c*x)^2*c^2*f^2+330*I*arcsin(c*x)*g^2+675*arcsin(c*x)^2*g^2-1392*c^2*f^2-134*g^2)*sin(4*arcsin(c*x))*d/c^4/(c^2*x^2-1)-1/1024*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2-c*x*(-c^2*x^2+1)^(1/2)-I)*f*(136*I*arcsin(c*x)*c^2*f^2+112*arcsin(c*x)^2*c^2*f^2+12*I*arcsin(c*x)*g^2+48*arcsin(c*x)^2*g^2-62*c^2*f^2-15*g^2)*cos(3*arcsin(c*x))*d/c^3/(c^2*x^2-1)+3/1024*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*f*(40*I*arcsin(c*x)*c^2*f^2+48*arcsin(c*x)^2*c^2*f^2+12*I*arcsin(c*x)*g^2-22*c^2*f^2-3*g^2)*sin(3*arcsin(c*x))*d/c^3/(c^2*x^2-1))+2*a*b*(-3/32*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/(c^2*x^2-1)*arcsin(c*x)^2*f*(2*c^2*f^2+g^2)*d-1/6272*(-d*(c^2*x^2-1))^(1/2)*(64*c^8*x^8-144*c^6*x^6-64*I*(-c^2*x^2+1)^(1/2)*x^7*c^7+104*c^4*x^4+112*I*(-c^2*x^2+1)^(1/2)*x^5*c^5-25*c^2*x^2-56*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+7*I*(-c^2*x^2+1)^(1/2)*x*c+1)*g^3*(I+7*arcsin(c*x))*d/c^4/(c^2*x^2-1)-1/768*(-d*(c^2*x^2-1))^(1/2)*(-32*I*(-c^2*x^2+1)^(1/2)*x^6*c^6+32*c^7*x^7+48*I*(-c^2*x^2+1)^(1/2)*x^4*c^4-64*c^5*x^5-18*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+38*c^3*x^3+I*(-c^2*x^2+1)^(1/2)-6*c*x)*f*g^2*(I+6*arcsin(c*x))*d/c^3/(c^2*x^2-1)-1/3200*(-d*(c^2*x^2-1))^(1/2)*(16*c^6*x^6-28*c^4*x^4-16*I*(-c^2*x^2+1)^(1/2)*x^5*c^5+13*c^2

```
*x^2+20*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-5*I*(-c^2*x^2+1)^(1/2)*x*c-1)*g*(12*I*
f^2*c^2+60*arcsin(c*x)*c^2*f^2-I*g^2-5*arcsin(c*x)*g^2)*d/c^4/(c^2*x^2-1)-1
/512*(-d*(c^2*x^2-1))^(1/2)*(-8*I*(-c^2*x^2+1)^(1/2)*x^4*c^4+8*c^5*x^5+8*I*
(-c^2*x^2+1)^(1/2)*x^2*c^2-12*c^3*x^3-I*(-c^2*x^2+1)^(1/2)+4*c*x)*f*(2*I*f^
2*c^2+8*arcsin(c*x)*c^2*f^2-3*I*g^2-12*arcsin(c*x)*g^2)*d/c^3/(c^2*x^2-1)-3
/128*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^...
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="
maxima")
```

```
[Out] 1/8*(2*(-c^2*d*x^2 + d)^(3/2)*x + 3*sqrt(-c^2*d*x^2 + d)*d*x + 3*d^(3/2)*ar
csin(c*x)/c)*a^2*f^3 - 1/35*(5*(-c^2*d*x^2 + d)^(5/2)*x^2/(c^2*d) + 2*(-c^2
*d*x^2 + d)^(5/2)/(c^4*d))*a^2*g^3 + 1/16*a^2*f*g^2*(2*(-c^2*d*x^2 + d)^(3/
2)*x/c^2 - 8*(-c^2*d*x^2 + d)^(5/2)*x/(c^2*d) + 3*sqrt(-c^2*d*x^2 + d)*d*x/
c^2 + 3*d^(3/2)*arcsin(c*x)/c^3) - 3/5*(-c^2*d*x^2 + d)^(5/2)*a^2*f^2*g/(c^
2*d) + sqrt(d)*integrate(-((b^2*c^2*d*g^3*x^5 + 3*b^2*c^2*d*f*g^2*x^4 - 3*b
^2*d*f^2*g*x - b^2*d*f^3 + (3*b^2*c^2*d*f^2*g - b^2*d*g^3)*x^3 + (b^2*c^2*d
*f^3 - 3*b^2*d*f*g^2)*x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2
*(a*b*c^2*d*g^3*x^5 + 3*a*b*c^2*d*f*g^2*x^4 - 3*a*b*d*f^2*g*x - a*b*d*f^3 +
 (3*a*b*c^2*d*f^2*g - a*b*d*g^3)*x^3 + (a*b*c^2*d*f^3 - 3*a*b*d*f*g^2)*x^2)
*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1),
x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="
fricas")
```

```
[Out] integral(-(a^2*c^2*d*g^3*x^5 + 3*a^2*c^2*d*f*g^2*x^4 - 3*a^2*d*f^2*g*x - a^
2*d*f^3 + (3*a^2*c^2*d*f^2*g - a^2*d*g^3)*x^3 + (a^2*c^2*d*f^3 - 3*a^2*d*f*
g^2)*x^2 + (b^2*c^2*d*g^3*x^5 + 3*b^2*c^2*d*f*g^2*x^4 - 3*b^2*d*f^2*g*x - b
^2*d*f^3 + (3*b^2*c^2*d*f^2*g - b^2*d*g^3)*x^3 + (b^2*c^2*d*f^3 - 3*b^2*d*f
*g^2)*x^2)*arcsin(c*x)^2 + 2*(a*b*c^2*d*g^3*x^5 + 3*a*b*c^2*d*f*g^2*x^4 - 3
*a*b*d*f^2*g*x - a*b*d*f^3 + (3*a*b*c^2*d*f^2*g - a*b*d*g^3)*x^3 + (a*b*c^2
*d*f^3 - 3*a*b*d*f*g^2)*x^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-d(cx-1)\left(cx+1\right)\right)^{\frac{3}{2}}\left(a+b\operatorname{asin}\left(cx\right)\right)^{2}\left(f+gx\right)^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))**2*(f + g*x)**3,
 x)
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="
giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(f+g\,x\right)}^3\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(d-c^2\,d\,x^2\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^3*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int((f + g*x)^3*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2), x)
```

3.63 $\int (f+gx)^2 (d-c^2dx^2)^{3/2} (a+b\textbf{ArcSin}(cx))^2 \, dx$

Optimal. Leaf size=1108

$$\frac{32b^2dfg\sqrt{d-c^2dx^2}}{75c^2} - \frac{15}{64}b^2df^2x\sqrt{d-c^2dx^2} - \frac{7b^2dg^2x\sqrt{d-c^2dx^2}}{1152c^2} - \frac{43b^2dg^2x^3\sqrt{d-c^2dx^2}}{1728} + \frac{1}{108}b^2c^2dg^2x$$

```
[Out] -3/8*b*c*d*f^2*x^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2
)+1/16*b*d*g^2*x^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1
/2)-7/48*b*c*d*g^2*x^4*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^
(1/2)+1/18*b*c^3*d*g^2*x^6*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2
+1)^(1/2)-15/64*b^2*d*f^2*x*(-c^2*d*x^2+d)^(1/2)-43/1728*b^2*d*g^2*x^3*(-c^
2*d*x^2+d)^(1/2)+3/8*d*f^2*x*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)+1/8*d
*g^2*x^3*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)+4/5*b*d*f*g*x*(a+b*arcsin
(c*x))*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-8/15*b*c*d*f*g*x^3*(a+b*ar
csin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+4/25*b*c^3*d*f*g*x^5*(a+
b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+32/75*b^2*d*f*g*(-c^
2*d*x^2+d)^(1/2)/c^2-7/1152*b^2*d*g^2*x*(-c^2*d*x^2+d)^(1/2)/c^2+1/108*b^2*
c^2*d*g^2*x^5*(-c^2*d*x^2+d)^(1/2)-1/32*b^2*d*f^2*x*(-c^2*x^2+1)*(-c^2*d*x^
2+d)^(1/2)-1/16*d*g^2*x*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/c^2+1/4*d*
f^2*x*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)+1/6*d*g^2*x^3*(
-c^2*x^2+1)*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)+16/225*b^2*d*f*g*(-c^2
*x^2+1)*(-c^2*d*x^2+d)^(1/2)/c^2+4/125*b^2*d*f*g*(-c^2*x^2+1)^2*(-c^2*d*x^2
+d)^(1/2)/c^2+1/8*b*d*f^2*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))*(-c^2*d*x^2+
d)^(1/2)/c-2/5*d*f*g*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2
)/c^2+9/64*b^2*d*f^2*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)+
7/1152*b^2*d*g^2*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/c^3/(-c^2*x^2+1)^(1/2)+1/
8*d*f^2*(a+b*arcsin(c*x))^3*(-c^2*d*x^2+d)^(1/2)/b/c/(-c^2*x^2+1)^(1/2)+1/4
8*d*g^2*(a+b*arcsin(c*x))^3*(-c^2*d*x^2+d)^(1/2)/b/c^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A]
time = 0.95, antiderivative size = 1108, normalized size of antiderivative = 1.00, number of steps used = 36, number of rules used = 21, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.636$, Rules used = {4861, 4847, 4743, 4741, 4737, 4723, 327, 222, 4767, 201, 200, 4739, 12, 1261, 712, 4787, 4783, 4795, 14, 4777, 470}

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (32*b^2*d*f*g*Sqrt[d - c^2*d*x^2])/(75*c^2) - (15*b^2*d*f^2*x*Sqrt[d - c^2*
d*x^2])/64 - (7*b^2*d*g^2*x*Sqrt[d - c^2*d*x^2])/(1152*c^2) - (43*b^2*d*g^2
*x^3*Sqrt[d - c^2*d*x^2])/1728 + (b^2*c^2*d*g^2*x^5*Sqrt[d - c^2*d*x^2])/10
8 + (16*b^2*d*f*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(225*c^2) - (b^2*d*f^2
```

```
*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/32 + (4*b^2*d*f*g*(1 - c^2*x^2)^2*Sqr
t[d - c^2*d*x^2])/(125*c^2) + (9*b^2*d*f^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])
/(64*c*Sqrt[1 - c^2*x^2]) + (7*b^2*d*g^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(
1152*c^3*Sqrt[1 - c^2*x^2]) + (4*b*d*f*g*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSi
n[c*x]))/(5*c*Sqrt[1 - c^2*x^2]) - (3*b*c*d*f^2*x^2*Sqrt[d - c^2*d*x^2]*(a
+ b*ArcSin[c*x]))/(8*Sqrt[1 - c^2*x^2]) + (b*d*g^2*x^2*Sqrt[d - c^2*d*x^2]*
(a + b*ArcSin[c*x]))/(16*c*Sqrt[1 - c^2*x^2]) - (8*b*c*d*f*g*x^3*Sqrt[d - c
^2*d*x^2]*(a + b*ArcSin[c*x]))/(15*Sqrt[1 - c^2*x^2]) - (7*b*c*d*g^2*x^4*Sq
rt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(48*Sqrt[1 - c^2*x^2]) + (4*b*c^3*d*
f*g*x^5*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(25*Sqrt[1 - c^2*x^2]) + (
b*c^3*d*g^2*x^6*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(18*Sqrt[1 - c^2*x
^2]) + (b*d*f^2*(1 - c^2*x^2)^(3/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])
)/(8*c) + (3*d*f^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/8 - (d*g^2*
x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(16*c^2) + (d*g^2*x^3*Sqrt[d -
 c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/8 + (d*f^2*x*(1 - c^2*x^2)*Sqrt[d - c^2*
d*x^2]*(a + b*ArcSin[c*x])^2)/4 + (d*g^2*x^3*(1 - c^2*x^2)*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x])^2)/6 - (2*d*f*g*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2]
*(a + b*ArcSin[c*x])^2)/(5*c^2) + (d*f^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[
c*x])^3)/(8*b*c*Sqrt[1 - c^2*x^2]) + (d*g^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcS
in[c*x])^3)/(48*b*c^3*Sqrt[1 - c^2*x^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 200

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 201

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[x*((a + b*x^n)^p/(n*p
+ 1)), x] + Dist[a*n*(p/(n*p + 1)), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 470

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_)), x_Symbol] :> Simp[d*(e*x)^(m + 1)*((a + b*x^n)^(p + 1)/(b*e*(m + n*(p
+ 1) + 1))), x] - Dist[(a*d*(m + 1) - b*c*(m + n*(p + 1) + 1))/(b*(m + n*(p
 + 1) + 1)), Int[(e*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, d, e, m,
n, p}, x] && NeQ[b*c - a*d, 0] && NeQ[m + n*(p + 1) + 1, 0]
```

Rule 712

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 1261

```
Int[(x_)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(
p_.), x_Symbol] :> Dist[1/2, Subst[Int[(d + e*x)^q*(a + b*x + c*x^2)^p, x],
 x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[x*Sqrt[d + e*x^2]*((a + b*ArcSin[c*x])^n/2), x] + (Dist[(1/2
)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[(a + b*ArcSin[c*x])^n/Sqrt[1
 - c^2*x^2], x], x] - Dist[b*c*(n/2)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]
], Int[x*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x]
&& EqQ[c^2*d + e, 0] && GtQ[n, 0]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[x*(d + e*x^2)^p*((a + b*ArcSin[c*x])^n/(2*p + 1)), x] + (D
ist[2*d*(p/(2*p + 1)), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[b*c*(n/(2*p + 1))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[x*(1 -
c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c,
d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rule 4783

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[(f*x)^(m + 1)*Sqrt[d + e*x^2]*((a + b*ArcS
in[c*x])^n/(f*(m + 2))), x] + (Dist[(1/(m + 2))*Simp[Sqrt[d + e*x^2]/Sqrt[1
```

```
 - c^2*x^2]], Int[(f*x)^m*((a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x^2]), x], x]
 - Dist[b*c*(n/(f*(m + 2)))*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[(f
*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f
, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && (IGtQ[m, -2] || EqQ[n, 1])
```

Rule 4787

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[(f*x)^(m + 1)*(d + e*x^2)^p*((a + b*ArcS
in[c*x])^n/(f*(m + 2*p + 1))), x] + (Dist[2*d*(p/(m + 2*p + 1)), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[b*c*(n/(f*(m + 2
*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)^(m + 1)*(1 - c^2*x
^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0] &&  !LtQ[m, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int (f+gx)^2 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx = \frac{\left(d\sqrt{d-c^2dx^2}\right)\int (f+gx)^2 \left(1-c^2x^2\right)^{3/2} \left(a+b\sin^{-1}(cx\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d\sqrt{d-c^2dx^2}\right)\int \left(f^2(1-c^2x^2)^{3/2} \left(a+b\sin^{-1}(cx)\right)^2 + \right.}{}$$

$$= \frac{\left(df^2\sqrt{d-c^2dx^2}\right)\int (1-c^2x^2)^{3/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{1}{4}df^2x\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2 + \frac{1}{6}dg^2x$$

$$= \frac{4bdfgx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{5c\sqrt{1-c^2x^2}} - \frac{8bcdfgx^3\sqrt{d-c^2}}{15\sqrt{}}$$

$$= -\frac{1}{32}b^2df^2x\left(1-c^2x^2\right)\sqrt{d-c^2dx^2} + \frac{4bdfgx\sqrt{d-c^2dx^2}}{5c\sqrt{1-}}$$

$$= -\frac{15}{64}b^2df^2x\sqrt{d-c^2dx^2} - \frac{1}{64}b^2dg^2x^3\sqrt{d-c^2dx^2} + \frac{1}{108}$$

$$= -\frac{15}{64}b^2df^2x\sqrt{d-c^2dx^2} + \frac{b^2dg^2x\sqrt{d-c^2dx^2}}{128c^2} - \frac{43b^2dg}{}$$

$$= \frac{32b^2dfg\sqrt{d-c^2dx^2}}{75c^2} - \frac{15}{64}b^2df^2x\sqrt{d-c^2dx^2} - \frac{7b^2dg^2x}{1}$$

$$= \frac{32b^2dfg\sqrt{d-c^2dx^2}}{75c^2} - \frac{15}{64}b^2df^2x\sqrt{d-c^2dx^2} - \frac{7b^2dg^2x}{1}$$

Mathematica [A]
time = 0.72, size = 616, normalized size = 0.56

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (d*Sqrt[d - c^2*d*x^2]*(9000*a^3*(6*c^2*f^2 + g^2) + 120*a*b^2*c^2*x*(450*c
^2*f^2*x*(-5 + c^2*x^2) + 192*f*g*(15 - 10*c^2*x^2 + 3*c^4*x^4) + 25*g^2*x*
(9 - 21*c^2*x^2 + 8*c^4*x^4)) - 1800*a^2*b*c*Sqrt[1 - c^2*x^2]*(96*f*g*(-1
```

```
+ c^2*x^2)^2 + 30*c^2*f^2*x*(-5 + 2*c^2*x^2) + 5*g^2*x*(3 - 14*c^2*x^2 + 8*
c^4*x^4)) + b^3*c*Sqrt[1 - c^2*x^2]*(6750*c^2*f^2*x*(-17 + 2*c^2*x^2) + 153
6*f*g*(149 - 38*c^2*x^2 + 9*c^4*x^4) + 125*g^2*x*(-21 - 86*c^2*x^2 + 32*c^4
*x^4)) + 15*b*(1800*a^2*(6*c^2*f^2 + g^2) + b^2*(175*g^2 + 90*c^2*(85*f^2 +
 256*f*g*x + 20*g^2*x^2) - 120*c^4*x^2*(150*f^2 + 128*f*g*x + 35*g^2*x^2) +
 16*c^6*x^4*(225*f^2 + 288*f*g*x + 100*g^2*x^2)) - 240*a*b*c*Sqrt[1 - c^2*x
^2]*(96*f*g*(-1 + c^2*x^2)^2 + 30*c^2*f^2*x*(-5 + 2*c^2*x^2) + 5*g^2*x*(3 -
 14*c^2*x^2 + 8*c^4*x^4)))*ArcSin[c*x] + 1800*b^2*(15*a*(6*c^2*f^2 + g^2) -
 b*c*Sqrt[1 - c^2*x^2]*(96*f*g*(-1 + c^2*x^2)^2 + 30*c^2*f^2*x*(-5 + 2*c^2*
x^2) + 5*g^2*x*(3 - 14*c^2*x^2 + 8*c^4*x^4)))*ArcSin[c*x]^2 + 9000*b^3*(6*c
^2*f^2 + g^2)*ArcSin[c*x]^3))/(432000*b*c^3*Sqrt[1 - c^2*x^2])
```

Maple [C] Result contains complex when optimal does not.
time = 0.82, size = 3063, normalized size = 2.76

method	result	size
default	Expression too large to display	3063

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x,method=_RETURNVERB
OSE)
```

```
[Out] -1/6*a^2*g^2*x*(-c^2*d*x^2+d)^(5/2)/c^2/d+1/24*a^2*g^2/c^2*x*(-c^2*d*x^2+d)
^(3/2)+1/16*a^2*g^2/c^2*d*x*(-c^2*d*x^2+d)^(1/2)+1/16*a^2*g^2/c^2*d^2/(c^2*
d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-2/5*a^2*f*g/c^2/d*(-c
^2*d*x^2+d)^(5/2)+1/4*a^2*f^2*x*(-c^2*d*x^2+d)^(3/2)+3/8*a^2*f^2*d*x*(-c^2*
d*x^2+d)^(1/2)+3/8*a^2*f^2*d^2/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d
*x^2+d)^(1/2))+b^2*(-1/48*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/(c^
2*x^2-1)*arcsin(c*x)^3*(6*c^2*f^2+g^2)*d-1/6912*(-d*(c^2*x^2-1))^(1/2)*(-32
*I*(-c^2*x^2+1)^(1/2)*x^6*c^6+32*c^7*x^7+48*I*(-c^2*x^2+1)^(1/2)*x^4*c^4-64
*c^5*x^5-18*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+38*c^3*x^3+I*(-c^2*x^2+1)^(1/2)-6*
c*x)*g^2*(6*I*arcsin(c*x)+18*arcsin(c*x)^2-1)*d/c^3/(c^2*x^2-1)-1/2000*(-d*
(c^2*x^2-1))^(1/2)*(16*c^6*x^6-28*c^4*x^4-16*I*(-c^2*x^2+1)^(1/2)*x^5*c^5+1
3*c^2*x^2+20*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-5*I*(-c^2*x^2+1)^(1/2)*x*c-1)*f*g
*(25*arcsin(c*x)^2+10*I*arcsin(c*x)-2)*d/c^2/(c^2*x^2-1)-1/1024*(-d*(c^2*x^
2-1))^(1/2)*(-8*I*(-c^2*x^2+1)^(1/2)*x^4*c^4+8*c^5*x^5+8*I*(-c^2*x^2+1)^(1/
2)*x^2*c^2-12*c^3*x^3-I*(-c^2*x^2+1)^(1/2)+4*c*x)*(16*arcsin(c*x)^2*c^2*f^2
+8*I*arcsin(c*x)*c^2*f^2-8*arcsin(c*x)^2*g^2-4*I*arcsin(c*x)*g^2-2*c^2*f^2+
g^2)*d/c^3/(c^2*x^2-1)-1/8*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(
1/2)*x*c-1)*f*g*(arcsin(c*x)^2-2+2*I*arcsin(c*x))*d/c^2/(c^2*x^2-1)-1/8*(-d
*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*f*g*(arcsin(c*x)^2
-2-2*I*arcsin(c*x))*d/c^2/(c^2*x^2-1)+1/256*(-d*(c^2*x^2-1))^(1/2)*(2*I*(-c
^2*x^2+1)^(1/2)*x^2*c^2+2*c^3*x^3-I*(-c^2*x^2+1)^(1/2)-2*c*x)*(-32*I*arcsin
(c*x)*c^2*f^2+32*arcsin(c*x)^2*c^2*f^2-2*I*arcsin(c*x)*g^2+2*arcsin(c*x)^2*
g^2-16*c^2*f^2-g^2)*d/c^3/(c^2*x^2-1)+1/144*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c
```

```
^2*x^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*f
*g*(-6*I*arcsin(c*x)+9*arcsin(c*x)^2-2)*d/c^2/(c^2*x^2-1)-1/6912*(-d*(c^2*x
^2-1))^(1/2)*(32*I*(-c^2*x^2+1)^(1/2)*x^6*c^6+32*c^7*x^7-48*I*(-c^2*x^2+1)^
(1/2)*x^4*c^4-64*c^5*x^5+18*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+38*c^3*x^3-I*(-c^2
*x^2+1)^(1/2)-6*c*x)*g^2*(-6*I*arcsin(c*x)+18*arcsin(c*x)^2-1)*d/c^3/(c^2*x
^2-1)-1/9000*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*f*
g*(330*I*arcsin(c*x)+675*arcsin(c*x)^2-134)*cos(4*arcsin(c*x))*d/c^2/(c^2*x
^2-1)-1/4500*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2-c*x*(-c^2*x^2+1)^(1/2)-I)*f*
g*(210*I*arcsin(c*x)+225*arcsin(c*x)^2-58)*sin(4*arcsin(c*x))*d/c^2/(c^2*x^
2-1)-1/1024*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2-c*x*(-c^2*x^2+1)^(1/2)-I)*(13
6*I*arcsin(c*x)*c^2*f^2+112*arcsin(c*x)^2*c^2*f^2+4*I*arcsin(c*x)*g^2+16*ar
csin(c*x)^2*g^2-62*c^2*f^2-5*g^2)*cos(3*arcsin(c*x))*d/c^3/(c^2*x^2-1)+3/10
24*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(40*I*arcsin
(c*x)*c^2*f^2+48*arcsin(c*x)^2*c^2*f^2+4*I*arcsin(c*x)*g^2-22*c^2*f^2-g^2)*
sin(3*arcsin(c*x))*d/c^3/(c^2*x^2-1))+2*a*b*(-1/32*(-d*(c^2*x^2-1))^(1/2)*(
-c^2*x^2+1)^(1/2)/c^3/(c^2*x^2-1)*arcsin(c*x)^2*(6*c^2*f^2+g^2)*d-1/2304*(-
d*(c^2*x^2-1))^(1/2)*(-32*I*(-c^2*x^2+1)^(1/2)*x^6*c^6+32*c^7*x^7+48*I*(-c^
2*x^2+1)^(1/2)*x^4*c^4-64*c^5*x^5-18*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+38*c^3*x^
3+I*(-c^2*x^2+1)^(1/2)-6*c*x)*g^2*(I+6*arcsin(c*x))*d/c^3/(c^2*x^2-1)-1/400
*(-d*(c^2*x^2-1))^(1/2)*(16*c^6*x^6-28*c^4*x^4-16*I*(-c^2*x^2+1)^(1/2)*x^5*
c^5+13*c^2*x^2+20*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-5*I*(-c^2*x^2+1)^(1/2)*x*c-1
)*f*g*(I+5*arcsin(c*x))*d/c^2/(c^2*x^2-1)-1/512*(-d*(c^2*x^2-1))^(1/2)*(-8*
I*(-c^2*x^2+1)^(1/2)*x^4*c^4+8*c^5*x^5+8*I*(-c^2*x^2+1)^(1/2)*x^2*c^2-12*c^
3*x^3-I*(-c^2*x^2+1)^(1/2)+4*c*x)*(8*arcsin(c*x)*c^2*f^2+2*I*f^2*c^2-4*arcs
in(c*x)*g^2-I*g^2)*d/c^3/(c^2*x^2-1)-1/8*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*
(-c^2*x^2+1)^(1/2)*x*c-1)*f*g*(arcsin(c*x)+I)*d/c^2/(c^2*x^2-1)-1/8*(-d*(c^
2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*f*g*(arcsin(c*x)-I)*d/
c^2/(c^2*x^2-1)+1/256*(-d*(c^2*x^2-1))^(1/2)*(2*I*(-c^2*x^2+1)^(1/2)*x^2*c^
2+2*c^3*x^3-I*(-c^2*x^2+1)^(1/2)-2*c*x)*(-16*I*f^2*c^2+32*arcsin(c*x)*c^2*f
^2-I*g^2+2*arcsin(c*x)*g^2)*d/c^3/(c^2*x^2-1)+1/48*(-d*(c^2*x^2-1))^(1/2)*(
4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x
^2+1)*f*g*(-I+3*arcsin(c*x))*d/c^2/(c^2*x^2-1)-1/2304*(-d*(c^2*x^2-1))^(1/2
)*(32*I*(-c^2*x^2+1)^(1/2)*x^6*c^6+32*c^7*x^7-48*I*(-c^2*x^2+1)^(1/2)*x^4*c
^4-64*c^5*x^5+18*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+38*c^3*x^3-I*(-c^2*x^2+1)^(1/
2)-6*c*x)*g^2*(-I+6*arcsin(c*x))*d/c^3/(c^2*x^2-1)-1/600*(-d*(c^2*x^2-1))^(
1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*f*g*(11*I+45*arcsin(c*x))*cos(4*a
rcsin(c*x))*d/c^2/(c^2*x^2-1)-1/300*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2-c*x*(
-c^2*x^2+1)^(1/2)-I)*f*g*(7*I+15*arcsin(c*x))*sin(4*arcsin(c*x))*d/c^2/(c^2
*x^2-1)-1/512*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2-c*x*(-c^2*x^2+1)^(1/2)-I)*(
34*I*f^2*c^2+56*arcsin(c*x)*c^2*f^2+I*g^2+8*arcsin(c*x)*g^2)*cos(3*arcsin(c
*x))*d/c^3/(c^2*x^2-1)+3/512*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x
*c+c^2*x^2-1)*(10*I*f^2*c^2+24*arcsin(c*x)*c^2*f^2+I*g^2)*sin(3*arcsin(c*x)
)*d/c^3/(c^2*x^2-1))
```

Maxima [F]

time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="
maxima")
```

```
[Out] 1/8*(2*(-c^2*d*x^2 + d)^(3/2)*x + 3*sqrt(-c^2*d*x^2 + d)*d*x + 3*d^(3/2)*ar
csin(c*x)/c)*a^2*f^2 + 1/48*a^2*g^2*(2*(-c^2*d*x^2 + d)^(3/2)*x/c^2 - 8*(-c
^2*d*x^2 + d)^(5/2)*x/(c^2*d) + 3*sqrt(-c^2*d*x^2 + d)*d*x/c^2 + 3*d^(3/2)*
arcsin(c*x)/c^3) - 2/5*(-c^2*d*x^2 + d)^(5/2)*a^2*f*g/(c^2*d) + sqrt(d)*int
egrate(-((b^2*c^2*d*g^2*x^4 + 2*b^2*c^2*d*f*g*x^3 - 2*b^2*d*f*g*x - b^2*d*f
^2 + (b^2*c^2*d*f^2 - b^2*d*g^2)*x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x
+ 1))^2 + 2*(a*b*c^2*d*g^2*x^4 + 2*a*b*c^2*d*f*g*x^3 - 2*a*b*d*f*g*x - a*b*
d*f^2 + (a*b*c^2*d*f^2 - a*b*d*g^2)*x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c
*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="
fricas")
```

```
[Out] integral(-(a^2*c^2*d*g^2*x^4 + 2*a^2*c^2*d*f*g*x^3 - 2*a^2*d*f*g*x - a^2*d*
f^2 + (a^2*c^2*d*f^2 - a^2*d*g^2)*x^2 + (b^2*c^2*d*g^2*x^4 + 2*b^2*c^2*d*f*
g*x^3 - 2*b^2*d*f*g*x - b^2*d*f^2 + (b^2*c^2*d*f^2 - b^2*d*g^2)*x^2)*arcsin
(c*x)^2 + 2*(a*b*c^2*d*g^2*x^4 + 2*a*b*c^2*d*f*g*x^3 - 2*a*b*d*f*g*x - a*b*
d*f^2 + (a*b*c^2*d*f^2 - a*b*d*g^2)*x^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d),
 x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int\left(-d(cx-1)\,(cx+1)\right)^{\frac{3}{2}}\left(a+b\operatorname{asin}(cx)\right)^{2}(f+gx)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))**2*(f + g*x)**2,
 x)
```

Giac [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="
giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int (f+g\,x)^2\,\left(a+b\,\mathrm{asin}(c\,x)\right)^2\,\left(d-c^2\,d\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int((f + g*x)^2*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2), x)
```

3.64 $\int (f+gx)\left(d-c^2dx^2\right)^{3/2}(a+b\mathbf{ArcSin}(cx))^2\,dx$

Optimal. Leaf size=621

$$\frac{16b^2dg\sqrt{d-c^2dx^2}}{75c^2}-\frac{15}{64}b^2dfx\sqrt{d-c^2dx^2}+\frac{8b^2dg(1-c^2x^2)\sqrt{d-c^2dx^2}}{225c^2}-\frac{1}{32}b^2dfx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}$$

```
[Out] 16/75*b^2*d*g*(-c^2*d*x^2+d)^(1/2)/c^2-15/64*b^2*d*f*x*(-c^2*d*x^2+d)^(1/2)
+8/225*b^2*d*g*(-c^2*x^2+1)*(-c^2*d*x^2+d)^(1/2)/c^2-1/32*b^2*d*f*x*(-c^2*x
^2+1)*(-c^2*d*x^2+d)^(1/2)+2/125*b^2*d*g*(-c^2*x^2+1)^2*(-c^2*d*x^2+d)^(1/2
)/c^2+1/8*b*d*f*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c
+3/8*d*f*x*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)+1/4*d*f*x*(-c^2*x^2+1)*
(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)-1/5*d*g*(-c^2*x^2+1)^2*(a+b*arcsin
(c*x))^2*(-c^2*d*x^2+d)^(1/2)/c^2+9/64*b^2*d*f*arcsin(c*x)*(-c^2*d*x^2+d)^(
1/2)/c/(-c^2*x^2+1)^(1/2)+2/5*b*d*g*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2
)/c/(-c^2*x^2+1)^(1/2)-3/8*b*c*d*f*x^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/
2)/(-c^2*x^2+1)^(1/2)-4/15*b*c*d*g*x^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/
2)/(-c^2*x^2+1)^(1/2)+2/25*b*c^3*d*g*x^5*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(
1/2)/(-c^2*x^2+1)^(1/2)+1/8*d*f*(a+b*arcsin(c*x))^3*(-c^2*d*x^2+d)^(1/2)/b/
c/(-c^2*x^2+1)^(1/2)
```

Rubi [A]
time = 0.46, antiderivative size = 621, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 15, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.484$, Rules used = {4861, 4847, 4743, 4741, 4737, 4723, 327, 222, 4767, 201, 200, 4739, 12, 1261, 712}

$$-\frac{3bcdfx^2\sqrt{d-c^2dx^2}(a+b\text{ArcSin}(cx))}{8\sqrt{1-c^2x^2}}+\frac{3}{8}dfx\sqrt{d-c^2dx^2}(a+b\text{ArcSin}(cx))^2+\frac{1}{4}dfx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}(a+b\text{ArcSin}(cx))^2+\frac{df\sqrt{d-c^2dx^2}(a+b\text{ArcSin}(cx))^3}{8bc\sqrt{1-c^2x^2}}+\frac{bdf(1-c^2x^2)^{3/2}\sqrt{d-c^2dx^2}(a+b\text{ArcSin}(cx))}{8c}+\frac{2bdgx\sqrt{d-c^2dx^2}(a+b\text{ArcSin}(cx))}{5c\sqrt{1-c^2x^2}}-\frac{dg(1-c^2x^2)^2\sqrt{d-c^2dx^2}(a+b\text{ArcSin}(cx))^2}{5c^2}-\frac{4bcdgx^3\sqrt{d-c^2dx^2}(a+b\text{ArcSin}(cx))}{15\sqrt{1-c^2x^2}}+\frac{2bc^3dgx^5\sqrt{d-c^2dx^2}(a+b\text{ArcSin}(cx))}{25\sqrt{1-c^2x^2}}+\frac{9b^2df\text{ArcSin}(cx)\sqrt{d-c^2dx^2}}{64c\sqrt{1-c^2x^2}}-\frac{15}{64}b^2dfx\sqrt{d-c^2dx^2}-\frac{1}{32}b^2dfx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}+\frac{2b^2dg(1-c^2x^2)^2\sqrt{d-c^2dx^2}}{125c^2}+\frac{16b^2dg\sqrt{d-c^2dx^2}}{75c^2}+\frac{8b^2dg(1-c^2x^2)\sqrt{d-c^2dx^2}}{225c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (16*b^2*d*g*Sqrt[d - c^2*d*x^2])/(75*c^2) - (15*b^2*d*f*x*Sqrt[d - c^2*d*x^
2])/64 + (8*b^2*d*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(225*c^2) - (b^2*d*f
*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/32 + (2*b^2*d*g*(1 - c^2*x^2)^2*Sqrt[
d - c^2*d*x^2])/(125*c^2) + (9*b^2*d*f*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(64
*c*Sqrt[1 - c^2*x^2]) + (2*b*d*g*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))
/(5*c*Sqrt[1 - c^2*x^2]) - (3*b*c*d*f*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin
[c*x]))/(8*Sqrt[1 - c^2*x^2]) - (4*b*c*d*g*x^3*Sqrt[d - c^2*d*x^2]*(a + b*A
rcSin[c*x]))/(15*Sqrt[1 - c^2*x^2]) + (2*b*c^3*d*g*x^5*Sqrt[d - c^2*d*x^2]*
(a + b*ArcSin[c*x]))/(25*Sqrt[1 - c^2*x^2]) + (b*d*f*(1 - c^2*x^2)^(3/2)*Sq
rt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*c) + (3*d*f*x*Sqrt[d - c^2*d*x^2]
*(a + b*ArcSin[c*x])^2)/8 + (d*f*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b
*ArcSin[c*x])^2)/4 - (d*g*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin
```

```
[c*x])^2)/(5*c^2) + (d*f*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(8*b*c*
Sqrt[1 - c^2*x^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 200

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 201

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[x*((a + b*x^n)^p/(n*p
+ 1)), x] + Dist[a*n*(p/(n*p + 1)), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 712

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 1261

```
Int[(x_)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(
p_.), x_Symbol] :> Dist[1/2, Subst[Int[(d + e*x)^q*(a + b*x + c*x^2)^p, x],
 x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[x*Sqrt[d + e*x^2]*((a + b*ArcSin[c*x])^n/2), x] + (Dist[(1/2
)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[(a + b*ArcSin[c*x])^n/Sqrt[1
 - c^2*x^2], x], x] - Dist[b*c*(n/2)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]
], Int[x*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x]
&& EqQ[c^2*d + e, 0] && GtQ[n, 0]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[x*(d + e*x^2)^p*((a + b*ArcSin[c*x])^n/(2*p + 1)), x] + (D
ist[2*d*(p/(2*p + 1)), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[b*c*(n/(2*p + 1))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[x*(1 -
c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c,
d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int (f+gx)\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx = \frac{\left(d\sqrt{d-c^2dx^2}\right)\int (f+gx)\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d\sqrt{d-c^2dx^2}\right)\int \left(f\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2+\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(df\sqrt{d-c^2dx^2}\right)\int \left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{1}{4}dfx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2 - \frac{dg(1-}{}$$

$$= \frac{2bdgx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{5c\sqrt{1-c^2x^2}} - \frac{4bcdgx^3\sqrt{d-c^2d}}{15\sqrt{1}}$$

$$= -\frac{1}{32}b^2dfx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2} + \frac{2bdgx\sqrt{d-c^2dx^2}\,(}{5c\sqrt{1-}}$$

$$= -\frac{15}{64}b^2dfx\sqrt{d-c^2dx^2} - \frac{1}{32}b^2dfx\left(1-c^2x^2\right)\sqrt{d-c^2dx}$$

$$= -\frac{15}{64}b^2dfx\sqrt{d-c^2dx^2} - \frac{1}{32}b^2dfx\left(1-c^2x^2\right)\sqrt{d-c^2dx}$$

$$= \frac{16b^2dg\sqrt{d-c^2dx^2}}{75c^2} - \frac{15}{64}b^2dfx\sqrt{d-c^2dx^2} + \frac{8b^2dg(1-}{}$$

Mathematica [A]
time = 0.45, size = 395, normalized size = 0.64

$$\frac{d\sqrt{d-c^2dx^2}\left(9000a^3cf-1800a^2b\sqrt{1-c^2x^2}\left(8g(-1+c^2x^2)^2+5c^2fx(-5+2c^2x^2)\right)+120ab^2cx(75c^2fx(-5+c^2x^2)+16g(15-10c^2x^2+3c^4x^4))+b^3\sqrt{1-c^2x^2}\,(1125c^2fx(-17+2c^2x^2)+128g(149-38c^2x^2+9c^4x^4))+15b\left(1800a^2cf-240ab\sqrt{1-c^2x^2}\left(8g(-1+c^2x^2)^2+5c^2fx(-5+2c^2x^2)\right)+b^2c(128gx(15-10c^2x^2+3c^4x^4)+75f(17-40c^2x^2+8c^4x^4))\right)\mathrm{ArcSin}(cx)+1800b^2\left(15acf+b\sqrt{1-c^2x^2}\left(5c^2fx(5-2c^2x^2)-8g(-1+c^2x^2)^2\right)\right)\mathrm{ArcSin}(cx)^2+9000b^3cf\,\mathrm{ArcSin}(cx)^3\right)}{72000bc^2\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (d*Sqrt[d - c^2*d*x^2]*(9000*a^3*c*f - 1800*a^2*b*Sqrt[1 - c^2*x^2]*(8*g*(-
1 + c^2*x^2)^2 + 5*c^2*f*x*(-5 + 2*c^2*x^2)) + 120*a*b^2*c*x*(75*c^2*f*x*(-
5 + c^2*x^2) + 16*g*(15 - 10*c^2*x^2 + 3*c^4*x^4)) + b^3*Sqrt[1 - c^2*x^2]*
(1125*c^2*f*x*(-17 + 2*c^2*x^2) + 128*g*(149 - 38*c^2*x^2 + 9*c^4*x^4)) + 1
5*b*(1800*a^2*c*f - 240*a*b*Sqrt[1 - c^2*x^2]*(8*g*(-1 + c^2*x^2)^2 + 5*c^2
*f*x*(-5 + 2*c^2*x^2)) + b^2*c*(128*g*x*(15 - 10*c^2*x^2 + 3*c^4*x^4) + 75*
```

```
f*(17 - 40*c^2*x^2 + 8*c^4*x^4)))*ArcSin[c*x] + 1800*b^2*(15*a*c*f + b*Sqrt
[1 - c^2*x^2]*(5*c^2*f*x*(5 - 2*c^2*x^2) - 8*g*(-1 + c^2*x^2)^2))*ArcSin[c*
x]^2 + 9000*b^3*c*f*ArcSin[c*x]^3))/(72000*b*c^2*Sqrt[1 - c^2*x^2])
```

Maple [C] Result contains complex when optimal does not.
time = 0.51, size = 2021, normalized size = 3.25

method	result	size
default	Expression too large to display	2021

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x,method=_RETURNVERBOS
E)
```

```
[Out] -1/5*a^2*g/c^2/d*(-c^2*d*x^2+d)^(5/2)+1/4*a^2*f*x*(-c^2*d*x^2+d)^(3/2)+3/8*
a^2*f*d*x*(-c^2*d*x^2+d)^(1/2)+3/8*a^2*f*d^2/(c^2*d)^(1/2)*arctan((c^2*d)^(
1/2)*x/(-c^2*d*x^2+d)^(1/2))+b^2*(-1/8*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^
(1/2)/c/(c^2*x^2-1)*arcsin(c*x)^3*f*d-1/4000*(-d*(c^2*x^2-1))^(1/2)*(16*c^6
*x^6-28*c^4*x^4-16*I*(-c^2*x^2+1)^(1/2)*x^5*c^5+13*c^2*x^2+20*I*(-c^2*x^2+1
)^(1/2)*x^3*c^3-5*I*(-c^2*x^2+1)^(1/2)*x*c-1)*g*(25*arcsin(c*x)^2+10*I*arcs
in(c*x)-2)*d/c^2/(c^2*x^2-1)-1/512*(-d*(c^2*x^2-1))^(1/2)*(-8*I*(-c^2*x^2+1
)^(1/2)*x^4*c^4+8*c^5*x^5+8*I*(-c^2*x^2+1)^(1/2)*x^2*c^2-12*c^3*x^3-I*(-c^2
*x^2+1)^(1/2)+4*c*x)*f*(4*I*arcsin(c*x)+8*arcsin(c*x)^2-1)*d/c/(c^2*x^2-1)-
1/16*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*g*(arcsin(
c*x)^2-2+2*I*arcsin(c*x))*d/c^2/(c^2*x^2-1)-1/16*(-d*(c^2*x^2-1))^(1/2)*(I*
(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(arcsin(c*x)^2-2-2*I*arcsin(c*x))*d/c^2
/(c^2*x^2-1)+1/16*(-d*(c^2*x^2-1))^(1/2)*(2*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+2*
c^3*x^3-I*(-c^2*x^2+1)^(1/2)-2*c*x)*f*(-2*I*arcsin(c*x)+2*arcsin(c*x)^2-1)*
d/c/(c^2*x^2-1)+1/288*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^
3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*g*(-6*I*arcsin(c*x)+9*a
rcsin(c*x)^2-2)*d/c^2/(c^2*x^2-1)-1/18000*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x
^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(330*I*arcsin(c*x)+675*arcsin(c*x)^2-134)*cos(
4*arcsin(c*x))*d/c^2/(c^2*x^2-1)-1/9000*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2-c
*x*(-c^2*x^2+1)^(1/2)-I)*g*(210*I*arcsin(c*x)+225*arcsin(c*x)^2-58)*sin(4*a
rcsin(c*x))*d/c^2/(c^2*x^2-1)-1/512*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2-c*x*(
-c^2*x^2+1)^(1/2)-I)*f*(68*I*arcsin(c*x)+56*arcsin(c*x)^2-31)*cos(3*arcsin(
c*x))*d/c/(c^2*x^2-1)+3/512*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*
c+c^2*x^2-1)*f*(20*I*arcsin(c*x)+24*arcsin(c*x)^2-11)*sin(3*arcsin(c*x))*d/
c/(c^2*x^2-1))+2*a*b*(-3/16*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/(c^
2*x^2-1)*arcsin(c*x)^2*f*d-1/800*(-d*(c^2*x^2-1))^(1/2)*(16*c^6*x^6-28*c^4*
x^4-16*I*(-c^2*x^2+1)^(1/2)*x^5*c^5+13*c^2*x^2+20*I*(-c^2*x^2+1)^(1/2)*x^3*
c^3-5*I*(-c^2*x^2+1)^(1/2)*x*c-1)*g*(I+5*arcsin(c*x))*d/c^2/(c^2*x^2-1)-1/2
56*(-d*(c^2*x^2-1))^(1/2)*(-8*I*(-c^2*x^2+1)^(1/2)*x^4*c^4+8*c^5*x^5+8*I*(-
c^2*x^2+1)^(1/2)*x^2*c^2-12*c^3*x^3-I*(-c^2*x^2+1)^(1/2)+4*c*x)*f*(I+4*arcs
in(c*x))*d/c/(c^2*x^2-1)-1/16*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1
```

```
)^(1/2)*x*c-1)*g*(arcsin(c*x)+I)*d/c^2/(c^2*x^2-1)-1/16*(-d*(c^2*x^2-1))^(1
/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(arcsin(c*x)-I)*d/c^2/(c^2*x^2-1
)+1/16*(-d*(c^2*x^2-1))^(1/2)*(2*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+2*c^3*x^3-I*(
-c^2*x^2+1)^(1/2)-2*c*x)*f*(-I+2*arcsin(c*x))*d/c/(c^2*x^2-1)+1/96*(-d*(c^2
*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(
1/2)*x*c-5*c^2*x^2+1)*g*(-I+3*arcsin(c*x))*d/c^2/(c^2*x^2-1)-1/1200*(-d*(c^
2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(11*I+45*arcsin(c*x)
)*cos(4*arcsin(c*x))*d/c^2/(c^2*x^2-1)-1/600*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*
c^2-c*x*(-c^2*x^2+1)^(1/2)-I)*g*(7*I+15*arcsin(c*x))*sin(4*arcsin(c*x))*d/c
^2/(c^2*x^2-1)-1/256*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2-c*x*(-c^2*x^2+1)^(1/
2)-I)*f*(17*I+28*arcsin(c*x))*cos(3*arcsin(c*x))*d/c/(c^2*x^2-1)+3/256*(-d*
(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*f*(5*I+12*arcsin(c*
x))*sin(3*arcsin(c*x))*d/c/(c^2*x^2-1))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="ma
xima")
[Out] 1/8*(2*(-c^2*d*x^2 + d)^(3/2)*x + 3*sqrt(-c^2*d*x^2 + d)*d*x + 3*d^(3/2)*ar
csin(c*x)/c)*a^2*f - 1/5*(-c^2*d*x^2 + d)^(5/2)*a^2*g/(c^2*d) + sqrt(d)*int
egrate(-((b^2*c^2*d*g*x^3 + b^2*c^2*d*f*x^2 - b^2*d*g*x - b^2*d*f)*arctan2(
c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c^2*d*g*x^3 + a*b*c^2*d*f*x^2
 - a*b*d*g*x - a*b*d*f)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*
x + 1)*sqrt(-c*x + 1), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="fr
icas")
[Out] integral(-(a^2*c^2*d*g*x^3 + a^2*c^2*d*f*x^2 - a^2*d*g*x - a^2*d*f + (b^2*c
^2*d*g*x^3 + b^2*c^2*d*f*x^2 - b^2*d*g*x - b^2*d*f)*arcsin(c*x)^2 + 2*(a*b*
c^2*d*g*x^3 + a*b*c^2*d*f*x^2 - a*b*d*g*x - a*b*d*f)*arcsin(c*x))*sqrt(-c^2
*d*x^2 + d), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-d(cx-1)\left(cx+1\right)\right)^{\frac{3}{2}}\left(a+b\operatorname{asin}\left(cx\right)\right)^{2}\left(f+gx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))**2*(f + g*x), x)
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="gi
ac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (f+g\,x)\,\left(a+b\,\mathrm{asin}(c\,x)\right)^2\,\left(d-c^2\,d\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int((f + g*x)*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2), x)
```

3.65 $\int \frac{\left(d-c^2dx^2\right)^{3/2}(a+b\mathbf{ArcSin}(cx))^2}{f+gx}\,dx$

Optimal. Leaf size=1992

$$-\frac{4b^2d\sqrt{d-c^2dx^2}}{9g}-\frac{a^2d(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3}+\frac{2b^2d(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3}-\frac{b^2c^2dfx\sqrt{d-c}}{4g^2}$$

```
[Out] 2*I*a*b*d*(c^2*f^2-g^2)^(3/2)*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))
*g/(c*f+(c^2*f^2-g^2)^(1/2)))*(-c^2*d*x^2+d)^(1/2)/g^4/(-c^2*x^2+1)^(1/2)+2
*a*b*c*d*(c*f-g)*(c*f+g)*x*(-c^2*d*x^2+d)^(1/2)/g^3/(-c^2*x^2+1)^(1/2)+2*b^
2*c*d*(c*f-g)*(c*f+g)*x*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/g^3/(-c^2*x^2+1)^(
1/2)-1/3*c*d*(c*f-g)*(c*f+g)*x*(a+b*arcsin(c*x))^3*(-c^2*d*x^2+d)^(1/2)/b/g
^3/(-c^2*x^2+1)^(1/2)-1/3*d*(c*f-g)*(c*f+g)*(a+b*arcsin(c*x))^3*(-c^2*x^2+1
)^(1/2)*(-c^2*d*x^2+d)^(1/2)/b/c/g^2/(g*x+f)-2*I*a*b*d*(c^2*f^2-g^2)^(3/2)*
arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))*
(-c^2*d*x^2+d)^(1/2)/g^4/(-c^2*x^2+1)^(1/2)-2*a*b*d*(c*f-g)*(c*f+g)*arcsin(
c*x)*(-c^2*d*x^2+d)^(1/2)/g^3+1/4*b^2*c*d*f*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2
)/g^2/(-c^2*x^2+1)^(1/2)-2/3*b*c*d*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)
/g/(-c^2*x^2+1)^(1/2)+2/9*b*c^3*d*x^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2
)/g/(-c^2*x^2+1)^(1/2)+1/6*c*d*f*(a+b*arcsin(c*x))^3*(-c^2*d*x^2+d)^(1/2)/b
/g^2/(-c^2*x^2+1)^(1/2)-2*a*b*d*(c^2*f^2-g^2)^(3/2)*polylog(2,I*(I*c*x+(-c^
2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))*(-c^2*d*x^2+d)^(1/2)/g^4/(-c^2
*x^2+1)^(1/2)-2*b^2*d*(c^2*f^2-g^2)^(3/2)*arcsin(c*x)*polylog(2,I*(I*c*x+(-
c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))*(-c^2*d*x^2+d)^(1/2)/g^4/(-c
^2*x^2+1)^(1/2)+2*a*b*d*(c^2*f^2-g^2)^(3/2)*polylog(2,I*(I*c*x+(-c^2*x^2+1)
^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))*(-c^2*d*x^2+d)^(1/2)/g^4/(-c^2*x^2+1)^
(1/2)+2*I*b^2*d*(c^2*f^2-g^2)^(3/2)*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2))*
g/(c*f+(c^2*f^2-g^2)^(1/2)))*(-c^2*d*x^2+d)^(1/2)/g^4/(-c^2*x^2+1)^(1/2)+2*
b^2*d*(c^2*f^2-g^2)^(3/2)*arcsin(c*x)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)
)*g/(c*f+(c^2*f^2-g^2)^(1/2)))*(-c^2*d*x^2+d)^(1/2)/g^4/(-c^2*x^2+1)^(1/2)-
2*I*b^2*d*(c^2*f^2-g^2)^(3/2)*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f
-(c^2*f^2-g^2)^(1/2)))*(-c^2*d*x^2+d)^(1/2)/g^4/(-c^2*x^2+1)^(1/2)-2/27*b^2
*d*(-c^2*x^2+1)*(-c^2*d*x^2+d)^(1/2)/g+1/3*d*(-c^2*x^2+1)*(a+b*arcsin(c*x))
^2*(-c^2*d*x^2+d)^(1/2)/g-4/9*b^2*d*(-c^2*d*x^2+d)^(1/2)/g-1/2*b*c^3*d*f*x^
2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/g^2/(-c^2*x^2+1)^(1/2)-1/3*d*(c^2*
f^2-g^2)^2*(a+b*arcsin(c*x))^3*(-c^2*d*x^2+d)^(1/2)/b/c/g^4/(g*x+f)/(-c^2*x
^2+1)^(1/2)+I*b^2*d*(c^2*f^2-g^2)^(3/2)*arcsin(c*x)^2*ln(1-I*(I*c*x+(-c^2*x
^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))*(-c^2*d*x^2+d)^(1/2)/g^4/(-c^2*x^
2+1)^(1/2)-I*b^2*d*(c^2*f^2-g^2)^(3/2)*arcsin(c*x)^2*ln(1-I*(I*c*x+(-c^2*x^
2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))*(-c^2*d*x^2+d)^(1/2)/g^4/(-c^2*x^2
+1)^(1/2)+2*b^2*d*(c*f-g)*(c*f+g)*(-c^2*d*x^2+d)^(1/2)/g^3-a^2*d*(c*f-g)*(c
*f+g)*(-c^2*d*x^2+d)^(1/2)/g^3+1/2*c^2*d*f*x*(a+b*arcsin(c*x))^2*(-c^2*d*x^
```

2+d)^(1/2)/g^2+a^2*d*(c^2*f^2-g^2)^(3/2)*arctan((c^2*f*x+g)/(c^2*f^2-g^2)^(
1/2)/(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/g^4/(-c^2*x^2+1)^(1/2)-b^2*d*
(c*f-g)*(c*f+g)*arcsin(c*x)^2*(-c^2*d*x^2+d)^(1/2)/g^3-1/4*b^2*c^2*d*f*x*(-
c^2*d*x^2+d)^(1/2)/g^2

Rubi [A]
time = 2.64, antiderivative size = 1992, normalized size of antiderivative = 1.00, number of steps used = 50, number of rules used = 32, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.970$, Rules used = {4861, 4851, 4741, 4737, 4723, 327, 222, 4767, 4739, 455, 45, 4849, 697, 4841, 4883, 1668, 12, 739, 210, 4881, 8, 4857, 3404, 2296, 2221, 2317, 2438, 4715, 267, 2611, 2320, 6724}

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/(f + g*x),x]
```

```
[Out] (-4*b^2*d*Sqrt[d - c^2*d*x^2])/(9*g) - (a^2*d*(c*f - g)*(c*f + g)*Sqrt[d -
c^2*d*x^2])/g^3 + (2*b^2*d*(c*f - g)*(c*f + g)*Sqrt[d - c^2*d*x^2])/g^3 - (
b^2*c^2*d*f*x*Sqrt[d - c^2*d*x^2])/(4*g^2) + (2*a*b*c*d*(c*f - g)*(c*f + g)
*x*Sqrt[d - c^2*d*x^2])/(g^3*Sqrt[1 - c^2*x^2]) - (2*b^2*d*(1 - c^2*x^2)*Sq
rt[d - c^2*d*x^2])/(27*g) - (2*a*b*d*(c*f - g)*(c*f + g)*Sqrt[d - c^2*d*x^2
]*ArcSin[c*x])/g^3 + (b^2*c*d*f*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(4*g^2*Sqr
t[1 - c^2*x^2]) + (2*b^2*c*d*(c*f - g)*(c*f + g)*x*Sqrt[d - c^2*d*x^2]*ArcS
in[c*x])/(g^3*Sqrt[1 - c^2*x^2]) - (b^2*d*(c*f - g)*(c*f + g)*Sqrt[d - c^2*
d*x^2]*ArcSin[c*x]^2)/g^3 - (2*b*c*d*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*
x]))/(3*g*Sqrt[1 - c^2*x^2]) - (b*c^3*d*f*x^2*Sqrt[d - c^2*d*x^2]*(a + b*Ar
cSin[c*x]))/(2*g^2*Sqrt[1 - c^2*x^2]) + (2*b*c^3*d*x^3*Sqrt[d - c^2*d*x^2]*
(a + b*ArcSin[c*x]))/(9*g*Sqrt[1 - c^2*x^2]) + (c^2*d*f*x*Sqrt[d - c^2*d*x^
2]*(a + b*ArcSin[c*x])^2)/(2*g^2) + (d*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a
 + b*ArcSin[c*x])^2)/(3*g) + (c*d*f*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])
^3)/(6*b*g^2*Sqrt[1 - c^2*x^2]) - (c*d*(c*f - g)*(c*f + g)*x*Sqrt[d - c^2*d
*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*g^3*Sqrt[1 - c^2*x^2]) - (d*(c^2*f^2 - g^
2)^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c*g^4*(f + g*x)*Sqrt[1
 - c^2*x^2]) - (d*(c*f - g)*(c*f + g)*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]
*(a + b*ArcSin[c*x])^3)/(3*b*c*g^2*(f + g*x)) + (a^2*d*(c^2*f^2 - g^2)^(3/2
)*Sqrt[d - c^2*d*x^2]*ArcTan[(g + c^2*f*x)/(Sqrt[c^2*f^2 - g^2]*Sqrt[1 - c^
2*x^2])])/(g^4*Sqrt[1 - c^2*x^2]) - ((2*I)*a*b*d*(c^2*f^2 - g^2)^(3/2)*Sqrt
[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2
*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) - (I*b^2*d*(c^2*f^2 - g^2)^(3/2)*Sqr
t[d - c^2*d*x^2]*ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[
c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) + ((2*I)*a*b*d*(c^2*f^2 - g^2)^(3
/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f +
Sqrt[c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) + (I*b^2*d*(c^2*f^2 - g^2)^(
3/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f
```

```
 + Sqrt[c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) - (2*a*b*d*(c^2*f^2 - g^2
)^(3/2)*Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[
c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) - (2*b^2*d*(c^2*f^2 - g^2)^(3/2)*
Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - S
qrt[c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) + (2*a*b*d*(c^2*f^2 - g^2)^(3
/2)*Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*
f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) + (2*b^2*d*(c^2*f^2 - g^2)^(3/2)*Sqrt
[d - c^2*d*x^2]*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[
c^2*f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) - ((2*I)*b^2*d*(c^2*f^2 - g^2)^(3
/2)*Sqrt[d - c^2*d*x^2]*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*
f^2 - g^2])])/(g^4*Sqrt[1 - c^2*x^2]) + ((2*I)*b^2*d*(c^2*f^2 - g^2)^(3/2)*
Sqrt[d - c^2*d*x^2]*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2
- g^2])])/(g^4*Sqrt[1 - c^2*x^2])
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 455

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 697

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[2*c*d - b*e, 0] &
& IGtQ[p, 0] &&  !(EqQ[m, 3] && NeQ[p, 1])
```

Rule 739

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 1668

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :
> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[f*(d + e*x)
^(m + q - 1)*((a + c*x^2)^(p + 1)/(c*e^(q - 1)*(m + q + 2*p + 1))), x] + Di
st[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + c*x^2)^p*ExpandToSum[c
*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1)*(d + e*x)^q - f*(d + e*x)
^(q - 2)*(a*e^2*(m + q - 1) - c*d^2*(m + q + 2*p + 1) - 2*c*d*e*(m + q + p)
*x), x], x], x] /; GtQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, c, d,
 e, m, p}, x] && PolyQ[Pq, x] && NeQ[c*d^2 + a*e^2, 0] &&  !(EqQ[d, 0] && T
rue) &&  !(IGtQ[m, 0] && RationalQ[a, c, d, e] && (IntegerQ[p] || ILtQ[p +
1/2, 0]))
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
```

```
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2296

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[2*(c/q), Int[
(f + g*x)^m*(F^u/(b - q + 2*c*F^u)), x], x] - Dist[2*(c/q), Int[(f + g*x)^m
*(F^u/(b + q + 2*c*F^u)), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 3404

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[(c + d*x)^m*(E^(I*(e + f*x))/(I*b + 2*a*E^(I*(e + f*x)
) - I*b*E^(2*I*(e + f*x)))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[x*Sqrt[d + e*x^2]*((a + b*ArcSin[c*x])^n/2), x] + (Dist[(1/2
)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[(a + b*ArcSin[c*x])^n/Sqrt[1
 - c^2*x^2], x], x] - Dist[b*c*(n/2)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]
], Int[x*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x]
&& EqQ[c^2*d + e, 0] && GtQ[n, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4841

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.) + (g_.)*(x_) + (h_.)*(x
_)^2)^(p_.))/((d_) + (e_.)*(x_))^2, x_Symbol] :> With[{u = IntHide[(f + g*x
```

```
 + h*x^2)^p/(d + e*x)^2, x]}, Dist[(a + b*ArcSin[c*x])^n, u, x] - Dist[b*c*
n, Int[SimplifyIntegrand[u*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*x^2]),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, h}, x] && IGtQ[n, 0] && IGtQ[p,
 0] && EqQ[e*g - 2*d*h, 0]
```

Rule 4849

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_)*Sqrt[
(d_) + (e_.)*(x_)^2], x_Symbol] :> Simp[(f + g*x)^m*(d + e*x^2)*((a + b*Arc
Sin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1))), x] - Dist[1/(b*c*Sqrt[d]*(n + 1))
, Int[(d*g*m + 2*e*f*x + e*g*(m + 2)*x^2)*(f + g*x)^(m - 1)*(a + b*ArcSin[c
*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0
] && ILtQ[m, 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4851

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[Sqrt[d + e*x^2]*(a
 + b*ArcSin[c*x])^n, (f + g*x)^m*(d + e*x^2)^(p - 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && IGtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4881

```
Int[ArcSin[(c_.)*(x_)]^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p_), x_Symbol] :
> With[{u = ExpandIntegrand[(d + e*x^2)^p*ArcSin[c*x]^n, RFx, x]}, Int[u, x
] /; SumQ[u]] /; FreeQ[{c, d, e}, x] && RationalFunctionQ[RFx, x] && IGtQ[n
, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 4883

```
Int[(ArcSin[(c_.)*(x_)]*(b_.) + (a_))^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p
_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p, RFx*(a + b*ArcSin[c*x])
^n, x], x] /; FreeQ[{a, b, c, d, e}, x] && RationalFunctionQ[RFx, x] && IGt
Q[n, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(d-c^2dx^2)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{f+gx}\,dx = \frac{\left(d\sqrt{d-c^2dx^2}\right)\int \frac{(1-c^2x^2)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{f+gx}\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d\sqrt{d-c^2dx^2}\right)\int \left(\frac{c^2f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{g^2} - \frac{c^2x\sqrt{1-c^2x^2}}{g}\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d\left(1-\frac{c^2f^2}{g^2}\right)\sqrt{d-c^2dx^2}\right)\int \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{f+gx}\,dx}{\sqrt{1-c^2x^2}} + \frac{\left(c^2d\right.}{}$$

$$= \frac{c^2dfx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2g^2} + \frac{d(1-c^2x^2)\sqrt{d-c^2dx^2}\,(a}{3g}$$

$$= -\frac{2bcdx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3g\sqrt{1-c^2x^2}} - \frac{bc^3dfx^2\sqrt{d-c^2dx^2}\,(a+}{2g^2\sqrt{1-c^2x^2}}$$

$$= -\frac{b^2c^2dfx\sqrt{d-c^2dx^2}}{4g^2} - \frac{2bcdx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3g\sqrt{1-c^2x^2}} - \frac{bc}{}$$

$$= -\frac{b^2c^2dfx\sqrt{d-c^2dx^2}}{4g^2} + \frac{b^2cdf\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{4g^2\sqrt{1-c^2x^2}} - \frac{2bcdx\sqrt{d}}{}$$

$$= -\frac{4b^2d\sqrt{d-c^2dx^2}}{9g} - \frac{a^2d(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3} - \frac{b^2c^2dfx}{}$$

$$= -\frac{4b^2d\sqrt{d-c^2dx^2}}{9g} - \frac{a^2d(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3} - \frac{b^2c^2dfx}{}$$

$$= -\frac{4b^2d\sqrt{d-c^2dx^2}}{9g} - \frac{a^2d(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3} - \frac{b^2c^2dfx}{}$$

$$= -\frac{4b^2d\sqrt{d-c^2dx^2}}{9g} - \frac{a^2d(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3} - \frac{b^2c^2dfx}{}$$

$$= -\frac{4b^2d\sqrt{d-c^2dx^2}}{9g} - \frac{a^2d(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3} + \frac{2b^2d(c}{}$$

$$= -\frac{4b^2d\sqrt{d-c^2dx^2}}{9g} - \frac{a^2d(cf-g)(cf+g)\sqrt{d-c^2dx^2}}{g^3} + \frac{2b^2d(c}{}$$

Mathematica [**A**]
time = 1.72, size = 740, normalized size = 0.37

$$\frac{d\sqrt{d-c^2dx^2}\left(54c^2fx\sqrt{1-c^2x^2}(a+b\text{ArcSin}(cx))^2+36g(1-c^2x^2)^{3/2}(a+b\text{ArcSin}(cx))^2+\frac{18cf(a+b\text{ArcSin}(cx))^3}{b}+\frac{36(c^2f^2-g^2)(-1+c^2x^2)(a+b\text{ArcSin}(cx))^3}{bc(f+gx)}-27bcf\left(cx\left(2acx+b\sqrt{1-c^2x^2}\right)+b(-1+2c^2x^2)\text{ArcSin}(cx)\right)-8bg\left(-b\sqrt{1-c^2x^2}(-7+c^2x^2)+9cx(a+b\text{ArcSin}(cx))-3c^3x^3(a+b\text{ArcSin}(cx))\right)-\frac{36(c^2f^2-g^2)\left((c^2f^2-g^2)(a+b\text{ArcSin}(cx))^3+c^2gx(f+gx)(a+b\text{ArcSin}(cx))^3+3bc(f+gx)\left(g\sqrt{1-c^2x^2}(a+b\text{ArcSin}(cx))^2-2bg\left(acx+b\sqrt{1-c^2x^2}+bcx\text{ArcSin}(cx)\right)+i\sqrt{c^2f^2-g^2}\left((a+b\text{ArcSin}(cx))^2\log\left(1+\frac{ie^{i\text{ArcSin}(cx)}g}{-cf+\sqrt{c^2f^2-g^2}}\right)-(a+b\text{ArcSin}(cx))^2\log\left(1-\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)-2ib(a+b\text{ArcSin}(cx))\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)+2ib(a+b\text{ArcSin}(cx))\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)+2b^2\text{PolyLog}\left(3,\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)-2b^2\text{PolyLog}\left(3,\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)\right)\right)\right)}{bcg^2(f+gx)}\right)}{108g^2\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/(f + g*x),x]
```

```
[Out] (d*Sqrt[d - c^2*d*x^2]*(54*c^2*f*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2
+ 36*g*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2 + (18*c*f*(a + b*ArcSin[c*
x])^3)/b + (36*(c^2*f^2 - g^2)*(-1 + c^2*x^2)*(a + b*ArcSin[c*x])^3)/(b*c*(
f + g*x)) - 27*b*c*f*(c*x*(2*a*c*x + b*Sqrt[1 - c^2*x^2]) + b*(-1 + 2*c^2*x
^2)*ArcSin[c*x]) - 8*b*g*(-(b*Sqrt[1 - c^2*x^2]*(-7 + c^2*x^2)) + 9*c*x*(a
+ b*ArcSin[c*x]) - 3*c^3*x^3*(a + b*ArcSin[c*x])) - (36*(c^2*f^2 - g^2)*((c
^2*f^2 - g^2)*(a + b*ArcSin[c*x])^3 + c^2*g*x*(f + g*x)*(a + b*ArcSin[c*x])
^3 + 3*b*c*(f + g*x)*(g*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2 - 2*b*g*(a*
c*x + b*Sqrt[1 - c^2*x^2] + b*c*x*ArcSin[c*x]) + I*Sqrt[c^2*f^2 - g^2]*((a
+ b*ArcSin[c*x])^2*Log[1 + (I*E^(I*ArcSin[c*x])*g)/(-(c*f) + Sqrt[c^2*f^2 -
 g^2])] - (a + b*ArcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt
[c^2*f^2 - g^2])] - (2*I)*b*(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c
*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])] + (2*I)*b*(a + b*ArcSin[c*x])*PolyLog[
2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])] + 2*b^2*PolyLog[3,
(I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])] - 2*b^2*PolyLog[3, (I*
E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]))))/(b*c*g^2*(f + g*x)))
/(108*g^2*Sqrt[1 - c^2*x^2])
```

Maple [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^{2} d\,x^{2}+d\right)^{\frac{3}{2}} \left(a +b \arcsin \left(c x \right)\right)^{2}}{g x +f}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/(g*x+f),x)
```

```
[Out] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/(g*x+f),x)
```

Maxima [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/(g*x+f),x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(g-c*f>0)', see `assume?` for more d
etails)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/(g*x+f),x, algorithm="fr
icas")
```

```
[Out] integral(-(a^2*c^2*d*x^2 - a^2*d + (b^2*c^2*d*x^2 - b^2*d)*arcsin(c*x)^2 +
2*(a*b*c^2*d*x^2 - a*b*d)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/(g*x + f), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(-d(cx-1)(cx+1))^{\frac{3}{2}}(a+b\operatorname{asin}(cx))^2}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))**2/(g*x+f),x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))**2/(f + g*x), x)
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/(g*x+f),x, algorithm="gi
ac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,sageVARx):;OUTPUT:sym2poly/r2sym(const gen & e,const in
dex_m & i,const vecteur & l) Error: Bad Argument Value
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\operatorname{asin}(c\,x))^2\,(d-c^2\,d\,x^2)^{3/2}}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2))/(f + g*x),x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2))/(f + g*x), x)
```

3.66 $\int (f+gx)^3 \left(d-c^2dx^2\right)^{5/2} (a+b\mathbf{ArcSin}(cx))^2\,dx$

Optimal. Leaf size=2290

result too large to display

```
[Out] 4/63*a*b*d^2*g^3*x*(-c^2*d*x^2+d)^(1/2)/c^3/(-c^2*x^2+1)^(1/2)+359/12288*b^
2*d^2*f*g^2*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/c^3/(-c^2*x^2+1)^(1/2)+4/63*b^
2*d^2*g^3*x*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/c^3/(-c^2*x^2+1)^(1/2)-5/16*b*
c*d^2*f^3*x^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+2/1
89*b*d^2*g^3*x^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2
)-2/21*b*c*d^2*g^3*x^5*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^
(1/2)+38/441*b*c^3*d^2*g^3*x^7*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2
*x^2+1)^(1/2)-2/81*b*c^5*d^2*g^3*x^9*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)
/(-c^2*x^2+1)^(1/2)+5/128*d^2*f*g^2*(a+b*arcsin(c*x))^3*(-c^2*d*x^2+d)^(1/2
)/b/c^3/(-c^2*x^2+1)^(1/2)+5/16*d^2*f^3*x*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d
)^(1/2)+1/21*d^2*g^3*x^4*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)+160/3969*
b^2*d^2*g^3*(-c^2*d*x^2+d)^(1/2)/c^4-245/1152*b^2*d^2*f^3*x*(-c^2*d*x^2+d)^
(1/2)-2/63*d^2*g^3*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/c^4+6/7*b*d^2*f
^2*g*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)+15/128*b
*d^2*f*g^2*x^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-
6/7*b*c*d^2*f^2*g*x^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(
1/2)-59/128*b*c*d^2*f*g^2*x^4*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*
x^2+1)^(1/2)+18/35*b*c^3*d^2*f^2*g*x^5*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/
2)/(-c^2*x^2+1)^(1/2)+96/245*b^2*d^2*f^2*g*(-c^2*d*x^2+d)^(1/2)/c^2-1079/18
432*b^2*d^2*f*g^2*x^3*(-c^2*d*x^2+d)^(1/2)+80/11907*b^2*d^2*g^3*(-c^2*x^2+1
)*(-c^2*d*x^2+d)^(1/2)/c^4-65/1728*b^2*d^2*f^3*x*(-c^2*x^2+1)*(-c^2*d*x^2+d
)^(1/2)+4/1323*b^2*d^2*g^3*(-c^2*x^2+1)^2*(-c^2*d*x^2+d)^(1/2)/c^4-1/108*b^
2*d^2*f^3*x*(-c^2*x^2+1)^2*(-c^2*d*x^2+d)^(1/2)+50/27783*b^2*d^2*g^3*(-c^2*
x^2+1)^3*(-c^2*d*x^2+d)^(1/2)/c^4-2/729*b^2*d^2*g^3*(-c^2*x^2+1)^4*(-c^2*d*
x^2+d)^(1/2)/c^4-1/63*d^2*g^3*x^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/
c^2+15/64*d^2*f*g^2*x^3*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)+5/24*d^2*f
^3*x*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)+5/63*d^2*g^3*x^4
*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)+1/6*d^2*f^3*x*(-c^2*
x^2+1)^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)+1/9*d^2*g^3*x^4*(-c^2*x^2
+1)^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)+17/48*b*c^3*d^2*f*g^2*x^6*(a
+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-6/49*b*c^5*d^2*f^2*
g*x^7*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-3/32*b*c^5*
d^2*f*g^2*x^8*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+5/4
8*d^2*f^3*(a+b*arcsin(c*x))^3*(-c^2*d*x^2+d)^(1/2)/b/c/(-c^2*x^2+1)^(1/2)-3
59/12288*b^2*d^2*f*g^2*x*(-c^2*d*x^2+d)^(1/2)/c^2+209/4608*b^2*c^2*d^2*f*g^
2*x^5*(-c^2*d*x^2+d)^(1/2)-3/256*b^2*c^4*d^2*f*g^2*x^7*(-c^2*d*x^2+d)^(1/2)
+16/245*b^2*d^2*f^2*g*(-c^2*x^2+1)*(-c^2*d*x^2+d)^(1/2)/c^2+36/1225*b^2*d^2
*f^2*g*(-c^2*x^2+1)^2*(-c^2*d*x^2+d)^(1/2)/c^2+6/343*b^2*d^2*f^2*g*(-c^2*x^
2+1)^3*(-c^2*d*x^2+d)^(1/2)/c^2+5/48*b*d^2*f^3*(-c^2*x^2+1)^(3/2)*(a+b*arcs
```

```
in(c*x))*(-c^2*d*x^2+d)^(1/2)/c+1/18*b*d^2*f^3*(-c^2*x^2+1)^(5/2)*(a+b*arcs
in(c*x))*(-c^2*d*x^2+d)^(1/2)/c-15/128*d^2*f*g^2*x*(a+b*arcsin(c*x))^2*(-c^
2*d*x^2+d)^(1/2)/c^2+5/16*d^2*f*g^2*x^3*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2*(-
c^2*d*x^2+d)^(1/2)+3/8*d^2*f*g^2*x^3*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))^2*(-c
^2*d*x^2+d)^(1/2)-3/7*d^2*f^2*g*(-c^2*x^2+1)^3*(a+b*arcsin(c*x))^2*(-c^2*d*
x^2+d)^(1/2)/c^2+115/1152*b^2*d^2*f^3*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/c/(-
c^2*x^2+1)^(1/2)
```

Rubi [A]
time = 2.18, antiderivative size = 2290, normalized size of antiderivative = 1.00, number of steps used = 77, number of rules used = 32, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} =$ 0.970, Rules used = {4861, 4847, 4743, 4741, 4737, 4723, 327, 222, 4767, 201, 200, 4739, 12, 1813, 1864, 4787, 4783, 4795, 14, 4777, 470, 272, 45, 1281, 4715, 267, 457, 78, 276, 1265, 911, 1167}

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2,x]

[Out] (96*b^2*d^2*f^2*g*Sqrt[d - c^2*d*x^2])/(245*c^2) + (160*b^2*d^2*g^3*Sqrt[d
 - c^2*d*x^2])/(3969*c^4) - (245*b^2*d^2*f^3*x*Sqrt[d - c^2*d*x^2])/1152 - (
359*b^2*d^2*f*g^2*x*Sqrt[d - c^2*d*x^2])/(12288*c^2) - (1079*b^2*d^2*f*g^2*
x^3*Sqrt[d - c^2*d*x^2])/18432 + (209*b^2*c^2*d^2*f*g^2*x^5*Sqrt[d - c^2*d*
x^2])/4608 - (3*b^2*c^4*d^2*f*g^2*x^7*Sqrt[d - c^2*d*x^2])/256 + (4*a*b*d^2
*g^3*x*Sqrt[d - c^2*d*x^2])/(63*c^3*Sqrt[1 - c^2*x^2]) + (16*b^2*d^2*f^2*g*
(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(245*c^2) + (80*b^2*d^2*g^3*(1 - c^2*x^2
)*Sqrt[d - c^2*d*x^2])/(11907*c^4) - (65*b^2*d^2*f^3*x*(1 - c^2*x^2)*Sqrt[d
 - c^2*d*x^2])/1728 + (36*b^2*d^2*f^2*g*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2]
)/(1225*c^2) + (4*b^2*d^2*g^3*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2])/(1323*c^
4) - (b^2*d^2*f^3*x*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2])/108 + (6*b^2*d^2*f
^2*g*(1 - c^2*x^2)^3*Sqrt[d - c^2*d*x^2])/(343*c^2) + (50*b^2*d^2*g^3*(1 -
c^2*x^2)^3*Sqrt[d - c^2*d*x^2])/(27783*c^4) - (2*b^2*d^2*g^3*(1 - c^2*x^2)^
4*Sqrt[d - c^2*d*x^2])/(729*c^4) + (115*b^2*d^2*f^3*Sqrt[d - c^2*d*x^2]*Arc
Sin[c*x])/(1152*c*Sqrt[1 - c^2*x^2]) + (359*b^2*d^2*f*g^2*Sqrt[d - c^2*d*x^
2]*ArcSin[c*x])/(12288*c^3*Sqrt[1 - c^2*x^2]) + (4*b^2*d^2*g^3*x*Sqrt[d - c
^2*d*x^2]*ArcSin[c*x])/(63*c^3*Sqrt[1 - c^2*x^2]) + (6*b*d^2*f^2*g*x*Sqrt[d
 - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(7*c*Sqrt[1 - c^2*x^2]) - (5*b*c*d^2*f^3
*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(16*Sqrt[1 - c^2*x^2]) + (15*
b*d^2*f*g^2*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(128*c*Sqrt[1 - c^
2*x^2]) - (6*b*c*d^2*f^2*g*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(7*
Sqrt[1 - c^2*x^2]) + (2*b*d^2*g^3*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x
]))/(189*c*Sqrt[1 - c^2*x^2]) - (59*b*c*d^2*f*g^2*x^4*Sqrt[d - c^2*d*x^2]*(
a + b*ArcSin[c*x]))/(128*Sqrt[1 - c^2*x^2]) + (18*b*c^3*d^2*f^2*g*x^5*Sqrt[
d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(35*Sqrt[1 - c^2*x^2]) - (2*b*c*d^2*g^3
```

```
*x^5*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(21*Sqrt[1 - c^2*x^2]) + (17*
b*c^3*d^2*f*g^2*x^6*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(48*Sqrt[1 - c
^2*x^2]) - (6*b*c^5*d^2*f^2*g*x^7*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/
(49*Sqrt[1 - c^2*x^2]) + (38*b*c^3*d^2*g^3*x^7*Sqrt[d - c^2*d*x^2]*(a + b*A
rcSin[c*x]))/(441*Sqrt[1 - c^2*x^2]) - (3*b*c^5*d^2*f*g^2*x^8*Sqrt[d - c^2*
d*x^2]*(a + b*ArcSin[c*x]))/(32*Sqrt[1 - c^2*x^2]) - (2*b*c^5*d^2*g^3*x^9*S
qrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(81*Sqrt[1 - c^2*x^2]) + (5*b*d^2*f
^3*(1 - c^2*x^2)^(3/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(48*c) + (b
*d^2*f^3*(1 - c^2*x^2)^(5/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(18*c
) - (2*d^2*g^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(63*c^4) + (5*d^2
*f^3*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/16 - (15*d^2*f*g^2*x*Sqrt
[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(128*c^2) - (d^2*g^3*x^2*Sqrt[d - c^
2*d*x^2]*(a + b*ArcSin[c*x])^2)/(63*c^2) + (15*d^2*f*g^2*x^3*Sqrt[d - c^2*d
*x^2]*(a + b*ArcSin[c*x])^2)/64 + (d^2*g^3*x^4*Sqrt[d - c^2*d*x^2]*(a + b*A
rcSin[c*x])^2)/21 + (5*d^2*f^3*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*A
rcSin[c*x])^2)/24 + (5*d^2*f*g^2*x^3*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a +
 b*ArcSin[c*x])^2)/16 + (5*d^2*g^3*x^4*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a
 + b*ArcSin[c*x])^2)/63 + (d^2*f^3*x*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2]*(a
 + b*ArcSin[c*x])^2)/6 + (3*d^2*f*g^2*x^3*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^
2]*(a + b*ArcSin[c*x])^2)/8 + (d^2*g^3*x^4*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x])^2)/9 - (3*d^2*f^2*g*(1 - c^2*x^2)^3*Sqrt[d - c^2*d*
x^2]*(a + b*ArcSin[c*x])^2)/(7*c^2) + (5*d^2*f^3*Sqrt[d - c^2*d*x^2]*(a + b
*ArcSin[c*x])^3)/(48*b*c*Sqrt[1 - c^2*x^2]) + (5*d^2*f*g^2*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x])^3)/(128*b*c^3*Sqrt[1 - c^2*x^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
```

```
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 200

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 201

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[x*((a + b*x^n)^p/(n*p
+ 1)), x] + Dist[a*n*(p/(n*p + 1)), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 276

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
```

```
x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 457

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p
*(c + d*x)^q, x], x, x^n], x] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[
b*c - a*d, 0] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 470

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_)), x_Symbol] :> Simp[d*(e*x)^(m + 1)*((a + b*x^n)^(p + 1)/(b*e*(m + n*(p
+ 1) + 1))), x] - Dist[(a*d*(m + 1) - b*c*(m + n*(p + 1) + 1))/(b*(m + n*(p
 + 1) + 1)), Int[(e*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, d, e, m,
n, p}, x] && NeQ[b*c - a*d, 0] && NeQ[m + n*(p + 1) + 1, 0]
```

Rule 911

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_.) + (b_.)*(x_)
 + (c_.)*(x_)^2)^(p_.), x_Symbol] :> With[{q = Denominator[m]}, Dist[q/e, S
ubst[Int[x^(q*(m + 1) - 1)*((e*f - d*g)/e + g*(x^q/e))^n*((c*d^2 - b*d*e +
a*e^2)/e^2 - (2*c*d - b*e)*(x^q/e^2) + c*(x^(2*q)/e^2))^p, x], x, (d + e*x)
^(1/q)], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ
[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegersQ[n, p] && Fra
ctionQ[m]
```

Rule 1167

```
Int[((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.),
 x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^q*(a + b*x^2 + c*x^4)^p, x],
x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e
 + a*e^2, 0] && IGtQ[p, 0] && IGtQ[q, -2]
```

Rule 1265

```
Int[(x_)^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_
)^4)^(p_.), x_Symbol] :> Dist[1/2, Subst[Int[x^((m - 1)/2)*(d + e*x)^q*(a +
 b*x + c*x^2)^p, x], x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x] && Inte
gerQ[(m - 1)/2]
```

Rule 1281

```
Int[((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (
c_.)*(x_)^4)^(p_.), x_Symbol] :> Simp[c^p*(f*x)^(m + 4*p - 1)*((d + e*x^2)^
```

```
(q + 1)/(e*f^(4*p - 1)*(m + 4*p + 2*q + 1))), x] + Dist[1/(e*(m + 4*p + 2*q
 + 1)), Int[(f*x)^m*(d + e*x^2)^q*ExpandToSum[e*(m + 4*p + 2*q + 1)*((a + b
*x^2 + c*x^4)^p - c^p*x^(4*p)) - d*c^p*(m + 4*p - 1)*x^(4*p - 2), x], x], x
] /; FreeQ[{a, b, c, d, e, f, m, q}, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[p, 0
] &&  !IntegerQ[q] && NeQ[m + 4*p + 2*q + 1, 0]
```

Rule 1813

```
Int[(Pq_)*(x_)^(m_.)*((a_) + (b_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/2, Su
bst[Int[x^((m - 1)/2)*SubstFor[x^2, Pq, x]*(a + b*x)^p, x], x, x^2], x] /;
FreeQ[{a, b, p}, x] && PolyQ[Pq, x^2] && IntegerQ[(m - 1)/2]
```

Rule 1864

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_.), x_Symbol] :> Int[ExpandIntegrand
[Pq*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, n}, x] && PolyQ[Pq, x] && (IGtQ[p
, 0] || EqQ[n, 1])
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[x*Sqrt[d + e*x^2]*((a + b*ArcSin[c*x])^n/2), x] + (Dist[(1/2
)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[(a + b*ArcSin[c*x])^n/Sqrt[1
 - c^2*x^2], x], x] - Dist[b*c*(n/2)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]
], Int[x*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x]
&& EqQ[c^2*d + e, 0] && GtQ[n, 0]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[x*(d + e*x^2)^p*((a + b*ArcSin[c*x])^n/(2*p + 1)), x] + (D
ist[2*d*(p/(2*p + 1)), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[b*c*(n/(2*p + 1))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[x*(1 -
c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c,
d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rule 4783

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[(f*x)^(m + 1)*Sqrt[d + e*x^2]*((a + b*ArcS
in[c*x])^n/(f*(m + 2))), x] + (Dist[(1/(m + 2))*Simp[Sqrt[d + e*x^2]/Sqrt[1
 - c^2*x^2]], Int[(f*x)^m*((a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x^2]), x], x]
 - Dist[b*c*(n/(f*(m + 2)))*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[(f
*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f
, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && (IGtQ[m, -2] || EqQ[n, 1])
```

Rule 4787

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[(f*x)^(m + 1)*(d + e*x^2)^p*((a + b*ArcS
```

```
in[c*x])^n/(f*(m + 2*p + 1))), x] + (Dist[2*d*(p/(m + 2*p + 1)), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[b*c*(n/(f*(m + 2
*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)^(m + 1)*(1 - c^2*x
^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0] &&  !LtQ[m, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int (f+gx)^3 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right)^2\,dx = \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int (f+gx)^3 \left(1-c^2x^2\right)^{5/2} \left(a+b\sin^{-1}(c\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int \left(f^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2 +\right.}{}$$

$$= \frac{\left(d^2f^3\sqrt{d-c^2dx^2}\right)\int \left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{1}{6}d^2f^3x\left(1-c^2x^2\right)^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2 + \frac{3}{8}d^2$$

$$= \frac{6bd^2f^2gx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{7c\sqrt{1-c^2x^2}} - \frac{6bcd^2f^2gx^3\sqrt{d}}{}$$

$$= -\frac{1}{108}b^2d^2f^3x\left(1-c^2x^2\right)^2\sqrt{d-c^2dx^2} + \frac{6bd^2f^2gx\sqrt{d-}}{7c}$$

$$= -\frac{3}{256}b^2c^4d^2fg^2x^7\sqrt{d-c^2dx^2} - \frac{65b^2d^2f^3x\left(1-c^2x^2\right)\sqrt{}}{1728}$$

$$= -\frac{245b^2d^2f^3x\sqrt{d-c^2dx^2}}{1152} - \frac{15}{512}b^2d^2fg^2x^3\sqrt{d-c^2dx^2}$$

$$= \frac{96b^2d^2f^2g\sqrt{d-c^2dx^2}}{245c^2} - \frac{245b^2d^2f^3x\sqrt{d-c^2dx^2}}{1152} + \frac{15b}{}$$

$$= \frac{96b^2d^2f^2g\sqrt{d-c^2dx^2}}{245c^2} - \frac{134b^2d^2g^3\sqrt{d-c^2dx^2}}{3969c^4} - \frac{245b}{}$$

$$= \frac{96b^2d^2f^2g\sqrt{d-c^2dx^2}}{245c^2} + \frac{160b^2d^2g^3\sqrt{d-c^2dx^2}}{3969c^4} - \frac{245b}{}$$

Mathematica [A]
time = 1.28, size = 1114, normalized size = 0.49

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (d^2*Sqrt[d - c^2*d*x^2]*(333396000*a^3*(8*c^3*f^3 + 3*c*f*g^2) + 3175200*a
^2*b*Sqrt[1 - c^2*x^2]*(-256*g^3 - c^2*g*(3456*f^2 + 945*f*g*x + 128*g^2*x^
2) + 16*c^8*x^5*(84*f^3 + 216*f^2*g*x + 189*f*g^2*x^2 + 56*g^3*x^3) - 8*c^6
*x^3*(546*f^3 + 1296*f^2*g*x + 1071*f*g^2*x^2 + 304*g^3*x^3) + 6*c^4*x*(924
*f^3 + 1728*f^2*g*x + 1239*f*g^2*x^2 + 320*g^3*x^3)) - 10080*a*b^2*c*x*(-16
1280*g^3 - 105*c^2*g*(20736*f^2 + 2835*f*g*x + 256*g^2*x^2) + 945*c^4*x*(18
48*f^3 + 2304*f^2*g*x + 1239*f*g^2*x^2 + 256*g^3*x^3) - 72*c^6*x^3*(9555*f^
3 + 18144*f^2*g*x + 12495*f*g^2*x^2 + 3040*g^3*x^3) + 20*c^8*x^5*(7056*f^3
+ 15552*f^2*g*x + 11907*f*g^2*x^2 + 3136*g^3*x^3)) - b^3*Sqrt[1 - c^2*x^2]*
(-1257472000*g^3 + c^2*g*(-12905422848*f^2 + 748057275*f*g*x + 184115200*g^
2*x^2) + 400*c^8*x^5*(592704*f^3 + 1119744*f^2*g*x + 750141*f*g^2*x^2 + 175
616*g^3*x^3) - 8*c^6*x^3*(179663400*f^3 + 262020096*f^2*g*x + 145166175*f*g
^2*x^2 + 29363200*g^3*x^3) + 6*c^4*x*(1107615600*f^3 + 753463296*f^2*g*x +
249815475*f*g^2*x^2 + 34304000*g^3*x^3)) + 315*b*(3175200*a^2*(8*c^3*f^3 +
3*c*f*g^2) + 20160*a*b*Sqrt[1 - c^2*x^2]*(-256*g^3 - c^2*g*(3456*f^2 + 945*
f*g*x + 128*g^2*x^2) + 16*c^8*x^5*(84*f^3 + 216*f^2*g*x + 189*f*g^2*x^2 + 5
6*g^3*x^3) - 8*c^6*x^3*(546*f^3 + 1296*f^2*g*x + 1071*f*g^2*x^2 + 304*g^3*x
^3) + 6*c^4*x*(924*f^3 + 1728*f^2*g*x + 1239*f*g^2*x^2 + 320*g^3*x^3)) + b^
2*c*(315*g^2*(7539*f + 16384*g*x) - 30240*c^4*x^2*(1848*f^3 + 2304*f^2*g*x
+ 1239*f*g^2*x^2 + 256*g^3*x^3) + 3360*c^2*(6279*f^3 + 20736*f^2*g*x + 2835
*f*g^2*x^2 + 256*g^3*x^3) + 2304*c^6*x^4*(9555*f^3 + 18144*f^2*g*x + 12495*
f*g^2*x^2 + 3040*g^3*x^3) - 640*c^8*x^6*(7056*f^3 + 15552*f^2*g*x + 11907*f
*g^2*x^2 + 3136*g^3*x^3)))*ArcSin[c*x] + 3175200*b^2*(315*a*(8*c^3*f^3 + 3*
c*f*g^2) + b*Sqrt[1 - c^2*x^2]*(-256*g^3 - c^2*g*(3456*f^2 + 945*f*g*x + 12
8*g^2*x^2) + 16*c^8*x^5*(84*f^3 + 216*f^2*g*x + 189*f*g^2*x^2 + 56*g^3*x^3)
 - 8*c^6*x^3*(546*f^3 + 1296*f^2*g*x + 1071*f*g^2*x^2 + 304*g^3*x^3) + 6*c^
4*x*(924*f^3 + 1728*f^2*g*x + 1239*f*g^2*x^2 + 320*g^3*x^3)))*ArcSin[c*x]^2
 + 333396000*b^3*c*f*(8*c^2*f^2 + 3*g^2)*ArcSin[c*x]^3))/(25604812800*b*c^4
*Sqrt[1 - c^2*x^2])
```

Maple [C] Result contains complex when optimal does not.
time = 1.02, size = 6031, normalized size = 2.63

method	result	size
default	Expression too large to display	6031

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x,method=_RETURNVERB
OSE)
```

```
[Out] result too large to display
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="
maxima")
```

```
[Out] 1/48*(8*(-c^2*d*x^2 + d)^(5/2)*x + 10*(-c^2*d*x^2 + d)^(3/2)*d*x + 15*sqrt(
-c^2*d*x^2 + d)*d^2*x + 15*d^(5/2)*arcsin(c*x)/c)*a^2*f^3 + 1/128*(8*(-c^2*
d*x^2 + d)^(5/2)*x/c^2 - 48*(-c^2*d*x^2 + d)^(7/2)*x/(c^2*d) + 10*(-c^2*d*x
^2 + d)^(3/2)*d*x/c^2 + 15*sqrt(-c^2*d*x^2 + d)*d^2*x/c^2 + 15*d^(5/2)*arcs
in(c*x)/c^3)*a^2*f*g^2 - 1/63*(7*(-c^2*d*x^2 + d)^(7/2)*x^2/(c^2*d) + 2*(-c
^2*d*x^2 + d)^(7/2)/(c^4*d))*a^2*g^3 - 3/7*(-c^2*d*x^2 + d)^(7/2)*a^2*f^2*g
/(c^2*d) + sqrt(d)*integrate(((b^2*c^4*d^2*g^3*x^7 + 3*b^2*c^4*d^2*f*g^2*x^
6 + 3*b^2*d^2*f^2*g*x + b^2*d^2*f^3 + (3*b^2*c^4*d^2*f^2*g - 2*b^2*c^2*d^2*
g^3)*x^5 + (b^2*c^4*d^2*f^3 - 6*b^2*c^2*d^2*f*g^2)*x^4 - (6*b^2*c^2*d^2*f^2
*g - b^2*d^2*g^3)*x^3 - (2*b^2*c^2*d^2*f^3 - 3*b^2*d^2*f*g^2)*x^2)*arctan2(
c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c^4*d^2*g^3*x^7 + 3*a*b*c^4*d
^2*f*g^2*x^6 + 3*a*b*d^2*f^2*g*x + a*b*d^2*f^3 + (3*a*b*c^4*d^2*f^2*g - 2*a
*b*c^2*d^2*g^3)*x^5 + (a*b*c^4*d^2*f^3 - 6*a*b*c^2*d^2*f*g^2)*x^4 - (6*a*b*
c^2*d^2*f^2*g - a*b*d^2*g^3)*x^3 - (2*a*b*c^2*d^2*f^3 - 3*a*b*d^2*f*g^2)*x^
2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)
, x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="
fricas")
```

```
[Out] integral((a^2*c^4*d^2*g^3*x^7 + 3*a^2*c^4*d^2*f*g^2*x^6 + 3*a^2*d^2*f^2*g*x
 + a^2*d^2*f^3 + (3*a^2*c^4*d^2*f^2*g - 2*a^2*c^2*d^2*g^3)*x^5 + (a^2*c^4*d
^2*f^3 - 6*a^2*c^2*d^2*f*g^2)*x^4 - (6*a^2*c^2*d^2*f^2*g - a^2*d^2*g^3)*x^3
 - (2*a^2*c^2*d^2*f^3 - 3*a^2*d^2*f*g^2)*x^2 + (b^2*c^4*d^2*g^3*x^7 + 3*b^2
*c^4*d^2*f*g^2*x^6 + 3*b^2*d^2*f^2*g*x + b^2*d^2*f^3 + (3*b^2*c^4*d^2*f^2*g
 - 2*b^2*c^2*d^2*g^3)*x^5 + (b^2*c^4*d^2*f^3 - 6*b^2*c^2*d^2*f*g^2)*x^4 - (
6*b^2*c^2*d^2*f^2*g - b^2*d^2*g^3)*x^3 - (2*b^2*c^2*d^2*f^3 - 3*b^2*d^2*f*g
^2)*x^2)*arcsin(c*x)^2 + 2*(a*b*c^4*d^2*g^3*x^7 + 3*a*b*c^4*d^2*f*g^2*x^6 +
 3*a*b*d^2*f^2*g*x + a*b*d^2*f^3 + (3*a*b*c^4*d^2*f^2*g - 2*a*b*c^2*d^2*g^3
)*x^5 + (a*b*c^4*d^2*f^3 - 6*a*b*c^2*d^2*f*g^2)*x^4 - (6*a*b*c^2*d^2*f^2*g
- a*b*d^2*g^3)*x^3 - (2*a*b*c^2*d^2*f^3 - 3*a*b*d^2*f*g^2)*x^2)*arcsin(c*x)
)*sqrt(-c^2*d*x^2 + d), x)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: SystemError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Exception raised: SystemError >> excessive stack use: stack is 3876 deep
```

Giac [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="
giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int (f+g\,x)^3\,(a+b\,\mathrm{asin}(c\,x))^2\,\left(d-c^2\,d\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^3*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int((f + g*x)^3*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2), x)
```

3.67 $\int (f+gx)^2 \left(d-c^2dx^2\right)^{5/2} (a+b\mathbf{ArcSin}(cx))^2 \, dx$

Optimal. Leaf size=1533

$$\frac{64b^2d^2fg\sqrt{d-c^2dx^2}}{245c^2}-\frac{245b^2d^2f^2x\sqrt{d-c^2dx^2}}{1152}-\frac{359b^2d^2g^2x\sqrt{d-c^2dx^2}}{36864c^2}-\frac{1079b^2d^2g^2x^3\sqrt{d-c^2dx^2}}{55296}+\frac{209}{}$$

```
[Out] -5/16*b*c*d^2*f^2*x^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(
1/2)+5/128*b*d^2*g^2*x^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2
+1)^(1/2)-59/384*b*c*d^2*g^2*x^4*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c
^2*x^2+1)^(1/2)+17/144*b*c^3*d^2*g^2*x^6*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(
1/2)/(-c^2*x^2+1)^(1/2)-1/32*b*c^5*d^2*g^2*x^8*(a+b*arcsin(c*x))*(-c^2*d*x^
2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-245/1152*b^2*d^2*f^2*x*(-c^2*d*x^2+d)^(1/2)-1
079/55296*b^2*d^2*g^2*x^3*(-c^2*d*x^2+d)^(1/2)+5/16*d^2*f^2*x*(a+b*arcsin(c
*x))^2*(-c^2*d*x^2+d)^(1/2)+5/64*d^2*g^2*x^3*(a+b*arcsin(c*x))^2*(-c^2*d*x^
2+d)^(1/2)+1/6*d^2*f^2*x*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^
(1/2)+1/8*d^2*g^2*x^3*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/
2)+64/245*b^2*d^2*f*g*(-c^2*d*x^2+d)^(1/2)/c^2-359/36864*b^2*d^2*g^2*x*(-c^
2*d*x^2+d)^(1/2)/c^2+209/13824*b^2*c^2*d^2*g^2*x^5*(-c^2*d*x^2+d)^(1/2)-1/2
56*b^2*c^4*d^2*g^2*x^7*(-c^2*d*x^2+d)^(1/2)-65/1728*b^2*d^2*f^2*x*(-c^2*x^2
+1)*(-c^2*d*x^2+d)^(1/2)-1/108*b^2*d^2*f^2*x*(-c^2*x^2+1)^2*(-c^2*d*x^2+d)^
(1/2)-5/128*d^2*g^2*x*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/c^2+5/24*d^2
*f^2*x*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)+5/48*d^2*g^2*x
^3*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)+4/7*b*d^2*f*g*x*(a
+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-4/7*b*c*d^2*f*g*x
^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+12/35*b*c^3*d^
2*f*g*x^5*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-4/49*b*
c^5*d^2*f*g*x^7*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+3
2/735*b^2*d^2*f*g*(-c^2*x^2+1)*(-c^2*d*x^2+d)^(1/2)/c^2+24/1225*b^2*d^2*f*g
*(-c^2*x^2+1)^2*(-c^2*d*x^2+d)^(1/2)/c^2+4/343*b^2*d^2*f*g*(-c^2*x^2+1)^3*(
-c^2*d*x^2+d)^(1/2)/c^2+5/48*b*d^2*f^2*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))
*(-c^2*d*x^2+d)^(1/2)/c+1/18*b*d^2*f^2*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))
*(-c^2*d*x^2+d)^(1/2)/c-2/7*d^2*f*g*(-c^2*x^2+1)^3*(a+b*arcsin(c*x))^2*(-c^
2*d*x^2+d)^(1/2)/c^2+115/1152*b^2*d^2*f^2*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/
c/(-c^2*x^2+1)^(1/2)+359/36864*b^2*d^2*g^2*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)
/c^3/(-c^2*x^2+1)^(1/2)+5/48*d^2*f^2*(a+b*arcsin(c*x))^3*(-c^2*d*x^2+d)^(1/
2)/b/c/(-c^2*x^2+1)^(1/2)+5/384*d^2*g^2*(a+b*arcsin(c*x))^3*(-c^2*d*x^2+d)^
(1/2)/b/c^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A]

time = 1.39, antiderivative size = 1533, normalized size of antiderivative = 1.00, number of steps used = 50, number of rules used = 24, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.727$, Rules used = {4861, 4847, 4743, 4741, 4737, 4723, 327, 222, 4767, 201, 200, 4739, 12, 1813, 1864, 4787, 4783, 4795, 14, 4777, 470, 272, 45, 1281}

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (64*b^2*d^2*f*g*Sqrt[d - c^2*d*x^2])/(245*c^2) - (245*b^2*d^2*f^2*x*Sqrt[d
- c^2*d*x^2])/1152 - (359*b^2*d^2*g^2*x*Sqrt[d - c^2*d*x^2])/(36864*c^2) -
(1079*b^2*d^2*g^2*x^3*Sqrt[d - c^2*d*x^2])/55296 + (209*b^2*c^2*d^2*g^2*x^5
*Sqrt[d - c^2*d*x^2])/13824 - (b^2*c^4*d^2*g^2*x^7*Sqrt[d - c^2*d*x^2])/256
 + (32*b^2*d^2*f*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(735*c^2) - (65*b^2*d
^2*f^2*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/1728 + (24*b^2*d^2*f*g*(1 - c^2
*x^2)^2*Sqrt[d - c^2*d*x^2])/(1225*c^2) - (b^2*d^2*f^2*x*(1 - c^2*x^2)^2*Sq
rt[d - c^2*d*x^2])/108 + (4*b^2*d^2*f*g*(1 - c^2*x^2)^3*Sqrt[d - c^2*d*x^2]
)/(343*c^2) + (115*b^2*d^2*f^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(1152*c*Sqr
t[1 - c^2*x^2]) + (359*b^2*d^2*g^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(36864*
c^3*Sqrt[1 - c^2*x^2]) + (4*b*d^2*f*g*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c
*x]))/(7*c*Sqrt[1 - c^2*x^2]) - (5*b*c*d^2*f^2*x^2*Sqrt[d - c^2*d*x^2]*(a +
 b*ArcSin[c*x]))/(16*Sqrt[1 - c^2*x^2]) + (5*b*d^2*g^2*x^2*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x]))/(128*c*Sqrt[1 - c^2*x^2]) - (4*b*c*d^2*f*g*x^3*Sqr
t[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(7*Sqrt[1 - c^2*x^2]) - (59*b*c*d^2*g
^2*x^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(384*Sqrt[1 - c^2*x^2]) + (
12*b*c^3*d^2*f*g*x^5*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(35*Sqrt[1 -
c^2*x^2]) + (17*b*c^3*d^2*g^2*x^6*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/
(144*Sqrt[1 - c^2*x^2]) - (4*b*c^5*d^2*f*g*x^7*Sqrt[d - c^2*d*x^2]*(a + b*A
rcSin[c*x]))/(49*Sqrt[1 - c^2*x^2]) - (b*c^5*d^2*g^2*x^8*Sqrt[d - c^2*d*x^2
]*(a + b*ArcSin[c*x]))/(32*Sqrt[1 - c^2*x^2]) + (5*b*d^2*f^2*(1 - c^2*x^2)^
(3/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(48*c) + (b*d^2*f^2*(1 - c^2
*x^2)^(5/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(18*c) + (5*d^2*f^2*x*
Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/16 - (5*d^2*g^2*x*Sqrt[d - c^2*d
*x^2]*(a + b*ArcSin[c*x])^2)/(128*c^2) + (5*d^2*g^2*x^3*Sqrt[d - c^2*d*x^2]
*(a + b*ArcSin[c*x])^2)/64 + (5*d^2*f^2*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]
*(a + b*ArcSin[c*x])^2)/24 + (5*d^2*g^2*x^3*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^
2]*(a + b*ArcSin[c*x])^2)/48 + (d^2*f^2*x*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^
2]*(a + b*ArcSin[c*x])^2)/6 + (d^2*g^2*x^3*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x])^2)/8 - (2*d^2*f*g*(1 - c^2*x^2)^3*Sqrt[d - c^2*d*x^
2]*(a + b*ArcSin[c*x])^2)/(7*c^2) + (5*d^2*f^2*Sqrt[d - c^2*d*x^2]*(a + b*A
rcSin[c*x])^3)/(48*b*c*Sqrt[1 - c^2*x^2]) + (5*d^2*g^2*Sqrt[d - c^2*d*x^2]*
(a + b*ArcSin[c*x])^3)/(384*b*c^3*Sqrt[1 - c^2*x^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 200

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 201

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[x*((a + b*x^n)^p/(n*p
+ 1)), x] + Dist[a*n*(p/(n*p + 1)), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 470

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_)), x_Symbol] :> Simp[d*(e*x)^(m + 1)*((a + b*x^n)^(p + 1)/(b*e*(m + n*(p
+ 1) + 1))), x] - Dist[(a*d*(m + 1) - b*c*(m + n*(p + 1) + 1))/(b*(m + n*(p
 + 1) + 1)), Int[(e*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, d, e, m,
n, p}, x] && NeQ[b*c - a*d, 0] && NeQ[m + n*(p + 1) + 1, 0]
```

Rule 1281

```
Int[((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (
c_.)*(x_)^4)^(p_.), x_Symbol] :> Simp[c^p*(f*x)^(m + 4*p - 1)*((d + e*x^2)^
(q + 1)/(e*f^(4*p - 1)*(m + 4*p + 2*q + 1))), x] + Dist[1/(e*(m + 4*p + 2*q
 + 1)), Int[(f*x)^m*(d + e*x^2)^q*ExpandToSum[e*(m + 4*p + 2*q + 1)*((a + b
*x^2 + c*x^4)^p - c^p*x^(4*p)) - d*c^p*(m + 4*p - 1)*x^(4*p - 2), x], x], x
] /; FreeQ[{a, b, c, d, e, f, m, q}, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[p, 0
] &&  !IntegerQ[q] && NeQ[m + 4*p + 2*q + 1, 0]
```

Rule 1813

```
Int[(Pq_)*(x_)^(m_.)*((a_) + (b_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/2, Su
bst[Int[x^((m - 1)/2)*SubstFor[x^2, Pq, x]*(a + b*x)^p, x], x, x^2], x] /;
FreeQ[{a, b, p}, x] && PolyQ[Pq, x^2] && IntegerQ[(m - 1)/2]
```

Rule 1864

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_.), x_Symbol] :> Int[ExpandIntegrand
[Pq*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, n}, x] && PolyQ[Pq, x] && (IGtQ[p
, 0] || EqQ[n, 1])
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
```

```
Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[x*Sqrt[d + e*x^2]*((a + b*ArcSin[c*x])^n/2), x] + (Dist[(1/2
)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[(a + b*ArcSin[c*x])^n/Sqrt[1
 - c^2*x^2], x], x] - Dist[b*c*(n/2)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]
], Int[x*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x]
&& EqQ[c^2*d + e, 0] && GtQ[n, 0]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[x*(d + e*x^2)^p*((a + b*ArcSin[c*x])^n/(2*p + 1)), x] + (D
ist[2*d*(p/(2*p + 1)), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[b*c*(n/(2*p + 1))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[x*(1 -
c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c,
d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4777

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rule 4783

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[(f*x)^(m + 1)*Sqrt[d + e*x^2]*((a + b*ArcS
in[c*x])^n/(f*(m + 2))), x] + (Dist[(1/(m + 2))*Simp[Sqrt[d + e*x^2]/Sqrt[1
 - c^2*x^2]], Int[(f*x)^m*((a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x^2]), x], x]
 - Dist[b*c*(n/(f*(m + 2)))*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[(f
*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f
```

```
, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && (IGtQ[m, -2] || EqQ[n, 1])
```

Rule 4787

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[(f*x)^(m + 1)*(d + e*x^2)^p*((a + b*ArcS
in[c*x])^n/(f*(m + 2*p + 1))), x] + (Dist[2*d*(p/(m + 2*p + 1)), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[b*c*(n/(f*(m + 2
*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)^(m + 1)*(1 - c^2*x
^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0] &&  !LtQ[m, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int (f+gx)^2 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx = \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int (f+gx)^2 \left(1-c^2x^2\right)^{5/2} (a+b\sin^{-1}(c}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int \left(f^2(1-c^2x^2)^{5/2} \left(a+b\sin^{-1}(cx)\right)^2 +\right.}{}$$

$$= \frac{\left(d^2f^2\sqrt{d-c^2dx^2}\right)\int (1-c^2x^2)^{5/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{1}{6}d^2f^2x\left(1-c^2x^2\right)^2 \sqrt{d-c^2dx^2} \left(a+b\sin^{-1}(cx)\right)^2 + \frac{1}{8}d^2$$

$$= \frac{4bd^2fgx\sqrt{d-c^2dx^2}\,(a+b\sin^{-1}(cx))}{7c\sqrt{1-c^2x^2}} - \frac{4bcd^2fgx^3\sqrt{d-}}{7}$$

$$= -\frac{1}{108}b^2d^2f^2x\left(1-c^2x^2\right)^2 \sqrt{d-c^2dx^2} + \frac{4bd^2fgx\sqrt{d-c}}{7c\sqrt{}}$$

$$= -\frac{1}{256}b^2c^4d^2g^2x^7\sqrt{d-c^2dx^2} - \frac{65b^2d^2f^2x(1-c^2x^2)\sqrt{d}}{1728}$$

$$= -\frac{245b^2d^2f^2x\sqrt{d-c^2dx^2}}{1152} - \frac{5}{512}b^2d^2g^2x^3\sqrt{d-c^2dx^2} +$$

$$= \frac{64b^2d^2fg\sqrt{d-c^2dx^2}}{245c^2} - \frac{245b^2d^2f^2x\sqrt{d-c^2dx^2}}{1152} + \frac{5b^2d}{}$$

$$= \frac{64b^2d^2fg\sqrt{d-c^2dx^2}}{245c^2} - \frac{245b^2d^2f^2x\sqrt{d-c^2dx^2}}{1152} - \frac{359b}{}$$

$$= \frac{64b^2d^2fg\sqrt{d-c^2dx^2}}{245c^2} - \frac{245b^2d^2f^2x\sqrt{d-c^2dx^2}}{1152} - \frac{359b}{}$$

Mathematica [A]
time = 0.97, size = 742, normalized size = 0.48

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (d^2*Sqrt[d - c^2*d*x^2]*(12348000*a^3*(8*c^2*f^2 + g^2) - 3360*a*b^2*c^2*x
*(1960*c^2*f^2*x*(99 - 39*c^2*x^2 + 8*c^4*x^4) + 4608*f*g*(-35 + 35*c^2*x^2
 - 21*c^4*x^4 + 5*c^6*x^6) + 245*g^2*x*(-45 + 177*c^2*x^2 - 136*c^4*x^4 + 3
6*c^6*x^6)) + 352800*a^2*b*c*Sqrt[1 - c^2*x^2]*(768*f*g*(-1 + c^2*x^2)^3 +
56*c^2*f^2*x*(33 - 26*c^2*x^2 + 8*c^4*x^4) + 7*g^2*x*(-15 + 118*c^2*x^2 - 1
36*c^4*x^4 + 48*c^6*x^6)) - b^3*c*Sqrt[1 - c^2*x^2]*(274400*c^2*f^2*x*(897
- 194*c^2*x^2 + 32*c^4*x^4) + 147456*f*g*(-2161 + 757*c^2*x^2 - 351*c^4*x^4
 + 75*c^6*x^6) + 8575*g^2*x*(1077 + 2158*c^2*x^2 - 1672*c^4*x^4 + 432*c^6*x
^6)) + 105*b*(352800*a^2*(8*c^2*f^2 + g^2) + b^2*(87955*g^2 + 1120*c^2*(209
3*f^2 + 4608*f*g*x + 315*g^2*x^2) - 3360*c^4*x^2*(1848*f^2 + 1536*f*g*x + 4
13*g^2*x^2) - 640*c^8*x^6*(784*f^2 + 1152*f*g*x + 441*g^2*x^2) + 1792*c^6*x
^4*(1365*f^2 + 1728*f*g*x + 595*g^2*x^2)) + 6720*a*b*c*Sqrt[1 - c^2*x^2]*(7
68*f*g*(-1 + c^2*x^2)^3 + 56*c^2*f^2*x*(33 - 26*c^2*x^2 + 8*c^4*x^4) + 7*g^
2*x*(-15 + 118*c^2*x^2 - 136*c^4*x^4 + 48*c^6*x^6)))*ArcSin[c*x] + 352800*b
^2*(105*a*(8*c^2*f^2 + g^2) + b*c*Sqrt[1 - c^2*x^2]*(768*f*g*(-1 + c^2*x^2)
^3 + 56*c^2*f^2*x*(33 - 26*c^2*x^2 + 8*c^4*x^4) + 7*g^2*x*(-15 + 118*c^2*x^
2 - 136*c^4*x^4 + 48*c^6*x^6)))*ArcSin[c*x]^2 + 12348000*b^3*(8*c^2*f^2 + g
^2)*ArcSin[c*x]^3))/(948326400*b*c^3*Sqrt[1 - c^2*x^2])
```

Maple [C] Result contains complex when optimal does not.
time = 0.75, size = 4214, normalized size = 2.75

method	result	size
default	Expression too large to display	4214

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x,method=_RETURNVERB
OSE)
```

```
[Out] -1/8*a^2*g^2*x*(-c^2*d*x^2+d)^(7/2)/c^2/d+1/48*a^2*g^2/c^2*x*(-c^2*d*x^2+d)
^(5/2)+5/192*a^2*g^2/c^2*d*x*(-c^2*d*x^2+d)^(3/2)+5/128*a^2*g^2/c^2*d^2*x*(
-c^2*d*x^2+d)^(1/2)+5/128*a^2*g^2/c^2*d^3/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2
)*x/(-c^2*d*x^2+d)^(1/2))-2/7*a^2*f*g/c^2/d*(-c^2*d*x^2+d)^(7/2)+1/6*a^2*f^
2*x*(-c^2*d*x^2+d)^(5/2)+5/24*a^2*f^2*d*x*(-c^2*d*x^2+d)^(3/2)+5/16*a^2*f^2
*d^2*x*(-c^2*d*x^2+d)^(1/2)+5/16*a^2*f^2*d^3/(c^2*d)^(1/2)*arctan((c^2*d)^(
1/2)*x/(-c^2*d*x^2+d)^(1/2))+b^2*(-5/384*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1
)^(1/2)/c^3/(c^2*x^2-1)*arcsin(c*x)^3*(8*c^2*f^2+g^2)*d^2+1/21952*(-d*(c^2*
x^2-1))^(1/2)*(64*c^8*x^8-144*c^6*x^6-64*I*(-c^2*x^2+1)^(1/2)*x^7*c^7+104*c
^4*x^4+112*I*(-c^2*x^2+1)^(1/2)*x^5*c^5-25*c^2*x^2-56*I*(-c^2*x^2+1)^(1/2)*
x^3*c^3+7*I*(-c^2*x^2+1)^(1/2)*x*c+1)*f*g*(49*arcsin(c*x)^2+14*I*arcsin(c*x
)-2)*d^2/c^2/(c^2*x^2-1)+1/256*(-d*(c^2*x^2-1))^(1/2)*(2*I*(-c^2*x^2+1)^(1/
2)*x^2*c^2+2*c^3*x^3-I*(-c^2*x^2+1)^(1/2)-2*c*x)*(30*arcsin(c*x)^2*c^2*f^2+
2*arcsin(c*x)^2*g^2-15*c^2*f^2-30*I*arcsin(c*x)*c^2*f^2-g^2-2*I*arcsin(c*x)
*g^2)*d^2/c^3/(c^2*x^2-1)-5/64*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+
1)^(1/2)*x*c-1)*f*g*(arcsin(c*x)^2-2+2*I*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)-5
```

/64*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*f*g*(arcsin
(c*x)^2-2-2*I*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)-1/2400*(-d*(c^2*x^2-1))^(1/2
)*(I*x^2*c^2-c*x*(-c^2*x^2+1)^(1/2)-I)*f*g*(90*I*arcsin(c*x)+75*arcsin(c*x)
^2-22)*sin(4*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)+1/192*(-d*(c^2*x^2-1))^(1/2)*
(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*
x^2+1)*f*g*(-6*I*arcsin(c*x)+9*arcsin(c*x)^2-2)*d^2/c^2/(c^2*x^2-1)+1/6912*
(-d*(c^2*x^2-1))^(1/2)*(-32*I*(-c^2*x^2+1)^(1/2)*x^6*c^6+32*c^7*x^7+48*I*(-
c^2*x^2+1)^(1/2)*x^4*c^4-64*c^5*x^5-18*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+38*c^3*
x^3+I*(-c^2*x^2+1)^(1/2)-6*c*x)*(18*arcsin(c*x)^2*c^2*f^2+6*I*arcsin(c*x)*c
^2*f^2-18*arcsin(c*x)^2*g^2-6*I*arcsin(c*x)*g^2-c^2*f^2+g^2)*d^2/c^3/(c^2*x
^2-1)-1/55296*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2-c*x*(-c^2*x^2+1)^(1/2)-I)*(
696*I*arcsin(c*x)*c^2*f^2+1152*arcsin(c*x)^2*c^2*f^2-156*I*arcsin(c*x)*g^2-
72*arcsin(c*x)^2*g^2-154*c^2*f^2+19*g^2)*cos(5*arcsin(c*x))*d^2/c^3/(c^2*x^
2-1)-1/68600*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*f*
g*(385*I*arcsin(c*x)+1225*arcsin(c*x)^2-92)*cos(6*arcsin(c*x))*d^2/c^2/(c^2
x^2-1)-3/274400(-d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2-c*x*(-c^2*x^2+1)^(1/2)-I
)*f*g*(630*I*arcsin(c*x)+1225*arcsin(c*x)^2-106)*sin(6*arcsin(c*x))*d^2/c^2
/(c^2*x^2-1)-3/2048*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2-c*x*(-c^2*x^2+1)^(1/2
)-I)*(88*I*arcsin(c*x)*c^2*f^2+64*arcsin(c*x)^2*c^2*f^2+4*I*arcsin(c*x)*g^2
+8*arcsin(c*x)^2*g^2-38*c^2*f^2-3*g^2)*cos(3*arcsin(c*x))*d^2/c^3/(c^2*x^2-
1)+5/55296*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(120
*I*arcsin(c*x)*c^2*f^2+288*arcsin(c*x)^2*c^2*f^2-12*I*arcsin(c*x)*g^2-72*ar
csin(c*x)^2*g^2-34*c^2*f^2+7*g^2)*sin(5*arcsin(c*x))*d^2/c^3/(c^2*x^2-1)-1/
1200*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*f*g*(30*I*
arcsin(c*x)+75*arcsin(c*x)^2-14)*cos(4*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)+1/6
5536*(-d*(c^2*x^2-1))^(1/2)*(-128*I*(-c^2*x^2+1)^(1/2)*x^8*c^8+128*c^9*x^9+
256*I*(-c^2*x^2+1)^(1/2)*x^6*c^6-320*c^7*x^7-160*I*(-c^2*x^2+1)^(1/2)*x^4*c
^4+272*c^5*x^5+32*I*(-c^2*x^2+1)^(1/2)*x^2*c^2-88*c^3*x^3-I*(-c^2*x^2+1)^(1
/2)+8*c*x)*g^2*(8*I*arcsin(c*x)+32*arcsin(c*x)^2-1)*d^2/c^3/(c^2*x^2-1)+1/6
5536*(-d*(c^2*x^2-1))^(1/2)*(128*I*(-c^2*x^2+1)^(1/2)*x^8*c^8+128*c^9*x^9-2
56*I*(-c^2*x^2+1)^(1/2)*x^6*c^6-320*c^7*x^7+160*I*(-c^2*x^2+1)^(1/2)*x^4*c^
4+272*c^5*x^5-32*I*(-c^2*x^2+1)^(1/2)*x^2*c^2-88*c^3*x^3+I*(-c^2*x^2+1)^(1/
2)+8*c*x)*g^2*(-8*I*arcsin(c*x)+32*arcsin(c*x)^2-1)*d^2/c^3/(c^2*x^2-1)+1/2
048*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(216*I*arcs
in(c*x)*c^2*f^2+288*arcsin(c*x)^2*c^2*f^2+20*I*arcsin(c*x)*g^2+8*arcsin(c*x
)^2*g^2-126*c^2*f^2-7*g^2)*sin(3*arcsin(c*x))*d^2/c^3/(c^2*x^2-1))+2*a*b*(-
5/256*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/(c^2*x^2-1)*arcsin(c*x)
^2*(8*c^2*f^2+g^2)*d^2+1/16384*(-d*(c^2*x^2-1))^(1/2)*(-128*I*(-c^2*x^2+1)^
(1/2)*x^8*c^8+128*c^9*x^9+256*I*(-c^2*x^2+1)^(1/2)*x^6*c^6-320*c^7*x^7-160*
I*(-c^2*x^2+1)^(1/2)*x^4*c^4+272*c^5*x^5+32*I*(-c^2*x^2+1)^(1/2)*x^2*c^2-88
*c^3*x^3-I*(-c^2*x^2+1)^(1/2)+8*c*x)*g^2*(I+8*arcsin(c*x))*d^2/c^3/(c^2*x^2
-1)+1/3136*(-d*(c^2*x^2-1))^(1/2)*(64*c^8*x^8-144*c^6*x^6-64*I*(-c^2*x^2+1)
^(1/2)*x^7*c^7+104*c^4*x^4+112*I*(-c^2*x^2+1)^(1/2)*x^5*c^5-25*c^2*x^2-56*I
*(-c^2*x^2+1)^(1/2)*x^3*c^3+7*I*(-c^2*x^2+1)^(1/2)*x*c+1)*f*g*(I+7*arcsin(c
*x))*d^2/c^2/(c^2*x^2-1)-3/1024*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2-c*x*(-c^2

```
*x^2+1)^(1/2)-I)*(22*I*f^2*c^2+32*arcsin(c*x)*c^2*f^2+I*g^2+4*arcsin(c*x)*g
^2)*cos(3*arcsin(c*x))*d^2/c^3/(c^2*x^2-1)-5/64*(-d*(c^2*x^2-1))^(1/2)*(c^2
*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*f*g*(arcsin(c*x)+I)*d^2/c^2/(c^2*x^2-1)-5/
64*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*f*g*(arcsin(
c*x)-I)*d^2/c^2/(c^2*x^2-1)+1/2304*(-d*(c^2*x^2-1))^(1/2)*(-32*I*(-c^2*x^2+
1)^(1/2)*x^6*c^6+32*c^7*x^7+48*I*(-c^2*x^2+1)^(...
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="
maxima")
```

```
[Out] 1/48*(8*(-c^2*d*x^2 + d)^(5/2)*x + 10*(-c^2*d*x^2 + d)^(3/2)*d*x + 15*sqrt(
-c^2*d*x^2 + d)*d^2*x + 15*d^(5/2)*arcsin(c*x)/c)*a^2*f^2 + 1/384*(8*(-c^2*
d*x^2 + d)^(5/2)*x/c^2 - 48*(-c^2*d*x^2 + d)^(7/2)*x/(c^2*d) + 10*(-c^2*d*x
^2 + d)^(3/2)*d*x/c^2 + 15*sqrt(-c^2*d*x^2 + d)*d^2*x/c^2 + 15*d^(5/2)*arcs
in(c*x)/c^3)*a^2*g^2 - 2/7*(-c^2*d*x^2 + d)^(7/2)*a^2*f*g/(c^2*d) + sqrt(d)
*integrate(((b^2*c^4*d^2*g^2*x^6 + 2*b^2*c^4*d^2*f*g*x^5 - 4*b^2*c^2*d^2*f*
g*x^3 + 2*b^2*d^2*f*g*x + b^2*d^2*f^2 + (b^2*c^4*d^2*f^2 - 2*b^2*c^2*d^2*g^
2)*x^4 - (2*b^2*c^2*d^2*f^2 - b^2*d^2*g^2)*x^2)*arctan2(c*x, sqrt(c*x + 1)*
sqrt(-c*x + 1))^2 + 2*(a*b*c^4*d^2*g^2*x^6 + 2*a*b*c^4*d^2*f*g*x^5 - 4*a*b*
c^2*d^2*f*g*x^3 + 2*a*b*d^2*f*g*x + a*b*d^2*f^2 + (a*b*c^4*d^2*f^2 - 2*a*b*
c^2*d^2*g^2)*x^4 - (2*a*b*c^2*d^2*f^2 - a*b*d^2*g^2)*x^2)*arctan2(c*x, sqrt
(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="
fricas")
```

```
[Out] integral((a^2*c^4*d^2*g^2*x^6 + 2*a^2*c^4*d^2*f*g*x^5 - 4*a^2*c^2*d^2*f*g*x
^3 + 2*a^2*d^2*f*g*x + a^2*d^2*f^2 + (a^2*c^4*d^2*f^2 - 2*a^2*c^2*d^2*g^2)*
x^4 - (2*a^2*c^2*d^2*f^2 - a^2*d^2*g^2)*x^2 + (b^2*c^4*d^2*g^2*x^6 + 2*b^2*
c^4*d^2*f*g*x^5 - 4*b^2*c^2*d^2*f*g*x^3 + 2*b^2*d^2*f*g*x + b^2*d^2*f^2 + (
b^2*c^4*d^2*f^2 - 2*b^2*c^2*d^2*g^2)*x^4 - (2*b^2*c^2*d^2*f^2 - b^2*d^2*g^2
)*x^2)*arcsin(c*x)^2 + 2*(a*b*c^4*d^2*g^2*x^6 + 2*a*b*c^4*d^2*f*g*x^5 - 4*a
*b*c^2*d^2*f*g*x^3 + 2*a*b*d^2*f*g*x + a*b*d^2*f^2 + (a*b*c^4*d^2*f^2 - 2*a
```

```
*b*c^2*d^2*g^2)*x^4 - (2*a*b*c^2*d^2*f^2 - a*b*d^2*g^2)*x^2)*arcsin(c*x))*s
qrt(-c^2*d*x^2 + d), x)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: SystemError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Exception raised: SystemError >> excessive stack use: stack is 3060 deep
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="
giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (f+g\,x)^2\,(a+b\,\mathrm{asin}(c\,x))^2\,\left(d-c^2\,d\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int((f + g*x)^2*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2), x)
```

3.68 $\int (f+gx)\left(d-c^2dx^2\right)^{5/2}(a+b\mathbf{ArcSin}(cx))^2\,dx$

Optimal. Leaf size=878

$$\frac{32b^2d^2g\sqrt{d-c^2dx^2}}{245c^2}-\frac{245b^2d^2fx\sqrt{d-c^2dx^2}}{1152}+\frac{16b^2d^2g(1-c^2x^2)\sqrt{d-c^2dx^2}}{735c^2}-\frac{65b^2d^2fx(1-c^2x^2)\sqrt{d-}}{1728}$$

```
[Out] 32/245*b^2*d^2*g*(-c^2*d*x^2+d)^(1/2)/c^2-245/1152*b^2*d^2*f*x*(-c^2*d*x^2+
d)^(1/2)+16/735*b^2*d^2*g*(-c^2*x^2+1)*(-c^2*d*x^2+d)^(1/2)/c^2-65/1728*b^2
*d^2*f*x*(-c^2*x^2+1)*(-c^2*d*x^2+d)^(1/2)+12/1225*b^2*d^2*g*(-c^2*x^2+1)^2
*(-c^2*d*x^2+d)^(1/2)/c^2-1/108*b^2*d^2*f*x*(-c^2*x^2+1)^2*(-c^2*d*x^2+d)^(
1/2)+2/343*b^2*d^2*g*(-c^2*x^2+1)^3*(-c^2*d*x^2+d)^(1/2)/c^2+5/48*b*d^2*f*(
-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c+1/18*b*d^2*f*(-c
^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c+5/16*d^2*f*x*(a+b*
arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)+5/24*d^2*f*x*(-c^2*x^2+1)*(a+b*arcsin(c
*x))^2*(-c^2*d*x^2+d)^(1/2)+1/6*d^2*f*x*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))^2*
(-c^2*d*x^2+d)^(1/2)-1/7*d^2*g*(-c^2*x^2+1)^3*(a+b*arcsin(c*x))^2*(-c^2*d*x
^2+d)^(1/2)/c^2+115/1152*b^2*d^2*f*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/c/(-c^2
*x^2+1)^(1/2)+2/7*b*d^2*g*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*
x^2+1)^(1/2)-5/16*b*c*d^2*f*x^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^
2*x^2+1)^(1/2)-2/7*b*c*d^2*g*x^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c
^2*x^2+1)^(1/2)+6/35*b*c^3*d^2*g*x^5*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)
/(-c^2*x^2+1)^(1/2)-2/49*b*c^5*d^2*g*x^7*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(
1/2)/(-c^2*x^2+1)^(1/2)+5/48*d^2*f*(a+b*arcsin(c*x))^3*(-c^2*d*x^2+d)^(1/2)
/b/c/(-c^2*x^2+1)^(1/2)
```

Rubi [A]
time = 0.61, antiderivative size = 878, normalized size of antiderivative = 1.00, number of steps used = 25, number of rules used = 15, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.484$, Rules used = {4861, 4847, 4743, 4741, 4737, 4723, 327, 222, 4767, 201, 200, 4739, 12, 1813, 1864}

[illegible]

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (32*b^2*d^2*g*Sqrt[d - c^2*d*x^2])/(245*c^2) - (245*b^2*d^2*f*x*Sqrt[d - c^
2*d*x^2])/1152 + (16*b^2*d^2*g*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(735*c^2)
 - (65*b^2*d^2*f*x*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/1728 + (12*b^2*d^2*g*
(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2])/(1225*c^2) - (b^2*d^2*f*x*(1 - c^2*x^2
)^2*Sqrt[d - c^2*d*x^2])/108 + (2*b^2*d^2*g*(1 - c^2*x^2)^3*Sqrt[d - c^2*d*
x^2])/(343*c^2) + (115*b^2*d^2*f*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(1152*c*S
qrt[1 - c^2*x^2]) + (2*b*d^2*g*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(
7*c*Sqrt[1 - c^2*x^2]) - (5*b*c*d^2*f*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin
```

```
[c*x]))/(16*Sqrt[1 - c^2*x^2]) - (2*b*c*d^2*g*x^3*Sqrt[d - c^2*d*x^2]*(a +
b*ArcSin[c*x]))/(7*Sqrt[1 - c^2*x^2]) + (6*b*c^3*d^2*g*x^5*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x]))/(35*Sqrt[1 - c^2*x^2]) - (2*b*c^5*d^2*g*x^7*Sqrt[d
 - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(49*Sqrt[1 - c^2*x^2]) + (5*b*d^2*f*(1 -
 c^2*x^2)^(3/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(48*c) + (b*d^2*f*
(1 - c^2*x^2)^(5/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(18*c) + (5*d^
2*f*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/16 + (5*d^2*f*x*(1 - c^2*x
^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/24 + (d^2*f*x*(1 - c^2*x^2)^
2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/6 - (d^2*g*(1 - c^2*x^2)^3*Sqr
t[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(7*c^2) + (5*d^2*f*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x])^3)/(48*b*c*Sqrt[1 - c^2*x^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 200

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 201

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[x*((a + b*x^n)^p/(n*p
+ 1)), x] + Dist[a*n*(p/(n*p + 1)), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 1813

```
Int[(Pq_)*(x_)^(m_.)*((a_) + (b_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/2, Su
bst[Int[x^((m - 1)/2)*SubstFor[x^2, Pq, x]*(a + b*x)^p, x], x, x^2], x] /;
```

```
FreeQ[{a, b, p}, x] && PolyQ[Pq, x^2] && IntegerQ[(m - 1)/2]
```

Rule 1864

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_.), x_Symbol] :> Int[ExpandIntegrand
[Pq*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, n}, x] && PolyQ[Pq, x] && (IGtQ[p
, 0] || EqQ[n, 1])
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[x*Sqrt[d + e*x^2]*((a + b*ArcSin[c*x])^n/2), x] + (Dist[(1/2
)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[(a + b*ArcSin[c*x])^n/Sqrt[1
 - c^2*x^2], x], x] - Dist[b*c*(n/2)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]
], Int[x*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x]
&& EqQ[c^2*d + e, 0] && GtQ[n, 0]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[x*(d + e*x^2)^p*((a + b*ArcSin[c*x])^n/(2*p + 1)), x] + (D
ist[2*d*(p/(2*p + 1)), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[b*c*(n/(2*p + 1))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[x*(1 -
c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c,
d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int (f+gx)\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx = \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int (f+gx)\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(c\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int \left(f\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2+\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d^2f\sqrt{d-c^2dx^2}\right)\int \left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{1}{6}d^2fx\left(1-c^2x^2\right)^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2 - \frac{d^2g(}{}$$

$$= \frac{2bd^2gx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{7c\sqrt{1-c^2x^2}} - \frac{2bcd^2gx^3\sqrt{d-c}}{7\sqrt{}}$$

$$= -\frac{1}{108}b^2d^2fx\left(1-c^2x^2\right)^2\sqrt{d-c^2dx^2} + \frac{2bd^2gx\sqrt{d-c^2}}{7c\sqrt{}}$$

$$= -\frac{65b^2d^2fx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}{1728} - \frac{1}{108}b^2d^2fx\left(1-c^2\right.$$

$$= -\frac{245b^2d^2fx\sqrt{d-c^2dx^2}}{1152} - \frac{65b^2d^2fx\left(1-c^2x^2\right)\sqrt{d-c^2}}{1728}$$

$$= \frac{32b^2d^2g\sqrt{d-c^2dx^2}}{245c^2} - \frac{245b^2d^2fx\sqrt{d-c^2dx^2}}{1152} + \frac{16b^2d}{}$$

Mathematica [A]
time = 0.64, size = 470, normalized size = 0.54

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (d^2*Sqrt[d - c^2*d*x^2]*(3087000*a^3*c*f + 88200*a^2*b*Sqrt[1 - c^2*x^2]*(
48*g*(-1 + c^2*x^2)^3 + 7*c^2*f*x*(33 - 26*c^2*x^2 + 8*c^4*x^4)) - 840*a*b^
2*c*x*(245*c^2*f*x*(99 - 39*c^2*x^2 + 8*c^4*x^4) + 288*g*(-35 + 35*c^2*x^2
- 21*c^4*x^4 + 5*c^6*x^6)) + b^3*Sqrt[1 - c^2*x^2]*(-8575*c^2*f*x*(897 - 19
4*c^2*x^2 + 32*c^4*x^4) - 2304*g*(-2161 + 757*c^2*x^2 - 351*c^4*x^4 + 75*c^
6*x^6)) + 105*b*(88200*a^2*c*f + 1680*a*b*Sqrt[1 - c^2*x^2]*(48*g*(-1 + c^2
```

```
*x^2)^3 + 7*c^2*f*x*(33 - 26*c^2*x^2 + 8*c^4*x^4)) + b^2*c*(-2304*g*x*(-35
+ 35*c^2*x^2 - 21*c^4*x^4 + 5*c^6*x^6) - 245*f*(-299 + 792*c^2*x^2 - 312*c^
4*x^4 + 64*c^6*x^6)))*ArcSin[c*x] + 88200*b^2*(105*a*c*f + b*Sqrt[1 - c^2*x
^2]*(48*g*(-1 + c^2*x^2)^3 + 7*c^2*f*x*(33 - 26*c^2*x^2 + 8*c^4*x^4)))*ArcS
in[c*x]^2 + 3087000*b^3*c*f*ArcSin[c*x]^3))/(29635200*b*c^2*Sqrt[1 - c^2*x^
2])
```

Maple [C] Result contains complex when optimal does not.
time = 0.56, size = 2852, normalized size = 3.25

method	result	size
default	Expression too large to display	2852

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x,method=_RETURNVERBOS
E)
```

```
[Out] -1/7*a^2*g/c^2/d*(-c^2*d*x^2+d)^(7/2)+1/6*a^2*f*x*(-c^2*d*x^2+d)^(5/2)+5/24
*a^2*f*d*x*(-c^2*d*x^2+d)^(3/2)+5/16*a^2*f*d^2*x*(-c^2*d*x^2+d)^(1/2)+5/16*
a^2*f*d^3/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+b^2*(-
5/48*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcsin(c*x)^3*
f*d^2+1/43904*(-d*(c^2*x^2-1))^(1/2)*(64*c^8*x^8-144*c^6*x^6-64*I*(-c^2*x^2
+1)^(1/2)*x^7*c^7+104*c^4*x^4+112*I*(-c^2*x^2+1)^(1/2)*x^5*c^5-25*c^2*x^2-5
6*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+7*I*(-c^2*x^2+1)^(1/2)*x*c+1)*g*(49*arcsin(c
*x)^2+14*I*arcsin(c*x)-2)*d^2/c^2/(c^2*x^2-1)+1/6912*(-d*(c^2*x^2-1))^(1/2)
*(-32*I*(-c^2*x^2+1)^(1/2)*x^6*c^6+32*c^7*x^7+48*I*(-c^2*x^2+1)^(1/2)*x^4*c
^4-64*c^5*x^5-18*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+38*c^3*x^3+I*(-c^2*x^2+1)^(1/
2)-6*c*x)*f*(6*I*arcsin(c*x)+18*arcsin(c*x)^2-1)*d^2/c/(c^2*x^2-1)-5/128*(-
d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*g*(arcsin(c*x)^2-
2+2*I*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)-5/128*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^
2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(arcsin(c*x)^2-2-2*I*arcsin(c*x))*d^2/c^2/(
c^2*x^2-1)+15/256*(-d*(c^2*x^2-1))^(1/2)*(2*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+2*
c^3*x^3-I*(-c^2*x^2+1)^(1/2)-2*c*x)*f*(-2*I*arcsin(c*x)+2*arcsin(c*x)^2-1)*
d^2/c/(c^2*x^2-1)+1/384*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*
c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*g*(-6*I*arcsin(c*x)+9
*arcsin(c*x)^2-2)*d^2/c^2/(c^2*x^2-1)-1/137200*(-d*(c^2*x^2-1))^(1/2)*(I*(-
c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(385*I*arcsin(c*x)+1225*arcsin(c*x)^2-92)
*cos(6*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)-3/548800*(-d*(c^2*x^2-1))^(1/2)*(I*
x^2*c^2-c*x*(-c^2*x^2+1)^(1/2)-I)*g*(630*I*arcsin(c*x)+1225*arcsin(c*x)^2-1
06)*sin(6*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)-1/27648*(-d*(c^2*x^2-1))^(1/2)*(
I*x^2*c^2-c*x*(-c^2*x^2+1)^(1/2)-I)*f*(348*I*arcsin(c*x)+576*arcsin(c*x)^2-
77)*cos(5*arcsin(c*x))*d^2/c/(c^2*x^2-1)+5/27648*(-d*(c^2*x^2-1))^(1/2)*(I*
(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*f*(60*I*arcsin(c*x)+144*arcsin(c*x)^2-17)
*sin(5*arcsin(c*x))*d^2/c/(c^2*x^2-1)-1/2400*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^
2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(30*I*arcsin(c*x)+75*arcsin(c*x)^2-14)*cos(
```

```
4*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)-1/4800*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2
-c*x*(-c^2*x^2+1)^(1/2)-I)*g*(90*I*arcsin(c*x)+75*arcsin(c*x)^2-22)*sin(4*a
rcsin(c*x))*d^2/c^2/(c^2*x^2-1)-3/1024*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2-c*
x*(-c^2*x^2+1)^(1/2)-I)*f*(44*I*arcsin(c*x)+32*arcsin(c*x)^2-19)*cos(3*arcs
in(c*x))*d^2/c/(c^2*x^2-1)+9/1024*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1
/2)*x*c+c^2*x^2-1)*f*(12*I*arcsin(c*x)+16*arcsin(c*x)^2-7)*sin(3*arcsin(c*x
))*d^2/c/(c^2*x^2-1))+2*a*b*(-5/32*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2
)/c/(c^2*x^2-1)*arcsin(c*x)^2*f*d^2+1/6272*(-d*(c^2*x^2-1))^(1/2)*(64*c^8*x
^8-144*c^6*x^6-64*I*(-c^2*x^2+1)^(1/2)*x^7*c^7+104*c^4*x^4+112*I*(-c^2*x^2+
1)^(1/2)*x^5*c^5-25*c^2*x^2-56*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+7*I*(-c^2*x^2+1
)^(1/2)*x*c+1)*g*(I+7*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)+1/2304*(-d*(c^2*x^2-
1))^(1/2)*(-32*I*(-c^2*x^2+1)^(1/2)*x^6*c^6+32*c^7*x^7+48*I*(-c^2*x^2+1)^(1
/2)*x^4*c^4-64*c^5*x^5-18*I*(-c^2*x^2+1)^(1/2)*x^2*c^2+38*c^3*x^3+I*(-c^2*x
^2+1)^(1/2)-6*c*x)*f*(I+6*arcsin(c*x))*d^2/c/(c^2*x^2-1)-5/128*(-d*(c^2*x^2
-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*g*(arcsin(c*x)+I)*d^2/c^2/(
c^2*x^2-1)-5/128*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1
)*g*(arcsin(c*x)-I)*d^2/c^2/(c^2*x^2-1)+15/256*(-d*(c^2*x^2-1))^(1/2)*(2*I*
(-c^2*x^2+1)^(1/2)*x^2*c^2+2*c^3*x^3-I*(-c^2*x^2+1)^(1/2)-2*c*x)*f*(-I+2*ar
csin(c*x))*d^2/c/(c^2*x^2-1)+1/128*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)
^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*g*(-I+3*ar
csin(c*x))*d^2/c^2/(c^2*x^2-1)-1/7840*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1
)^(1/2)*x*c+c^2*x^2-1)*g*(11*I+70*arcsin(c*x))*cos(6*arcsin(c*x))*d^2/c^2/(
c^2*x^2-1)-3/15680*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2-c*x*(-c^2*x^2+1)^(1/2)
-I)*g*(9*I+35*arcsin(c*x))*sin(6*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)-1/4608*(-
d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2-c*x*(-c^2*x^2+1)^(1/2)-I)*f*(29*I+96*arcsin
(c*x))*cos(5*arcsin(c*x))*d^2/c/(c^2*x^2-1)+5/4608*(-d*(c^2*x^2-1))^(1/2)*(
I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*f*(5*I+24*arcsin(c*x))*sin(5*arcsin(c*x
))*d^2/c/(c^2*x^2-1)-1/160*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c
+c^2*x^2-1)*g*(I+5*arcsin(c*x))*cos(4*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)-1/32
0*(-d*(c^2*x^2-1))^(1/2)*(I*x^2*c^2-c*x*(-c^2*x^2+1)^(1/2)-I)*g*(3*I+5*arcs
in(c*x))*sin(4*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)-3/512*(-d*(c^2*x^2-1))^(1/2
)*(I*x^2*c^2-c*x*(-c^2*x^2+1)^(1/2)-I)*f*(11*I+16*arcsin(c*x))*cos(3*arcsin
(c*x))*d^2/c/(c^2*x^2-1)+9/512*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)
*x*c+c^2*x^2-1)*f*(3*I+8*arcsin(c*x))*sin(3*arcsin(c*x))*d^2/c/(c^2*x^2-1))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="ma
xima")
```

```
[Out] 1/48*(8*(-c^2*d*x^2 + d)^(5/2)*x + 10*(-c^2*d*x^2 + d)^(3/2)*d*x + 15*sqrt(
-c^2*d*x^2 + d)*d^2*x + 15*d^(5/2)*arcsin(c*x)/c)*a^2*f - 1/7*(-c^2*d*x^2 +
```

```
d)^(7/2)*a^2*g/(c^2*d) + sqrt(d)*integrate(((b^2*c^4*d^2*g*x^5 + b^2*c^4*d
^2*f*x^4 - 2*b^2*c^2*d^2*g*x^3 - 2*b^2*c^2*d^2*f*x^2 + b^2*d^2*g*x + b^2*d^
2*f)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c^4*d^2*g*x^5 +
a*b*c^4*d^2*f*x^4 - 2*a*b*c^2*d^2*g*x^3 - 2*a*b*c^2*d^2*f*x^2 + a*b*d^2*g*x
 + a*b*d^2*f)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqr
t(-c*x + 1), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="fr
icas")
```

```
[Out] integral((a^2*c^4*d^2*g*x^5 + a^2*c^4*d^2*f*x^4 - 2*a^2*c^2*d^2*g*x^3 - 2*a
^2*c^2*d^2*f*x^2 + a^2*d^2*g*x + a^2*d^2*f + (b^2*c^4*d^2*g*x^5 + b^2*c^4*d
^2*f*x^4 - 2*b^2*c^2*d^2*g*x^3 - 2*b^2*c^2*d^2*f*x^2 + b^2*d^2*g*x + b^2*d^
2*f)*arcsin(c*x)^2 + 2*(a*b*c^4*d^2*g*x^5 + a*b*c^4*d^2*f*x^4 - 2*a*b*c^2*d
^2*g*x^3 - 2*a*b*c^2*d^2*f*x^2 + a*b*d^2*g*x + a*b*d^2*f)*arcsin(c*x))*sqrt
(-c^2*d*x^2 + d), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Timed out
```

Giac [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="gi
ac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (f+g\,x)\,\left(a+b\,\mathrm{asin}(c\,x)\right)^2\,\left(d-c^2\,d\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2),x)
[Out] int((f + g*x)*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2), x)
```

3.69 $\int \frac{\left(d-c^2dx^2\right)^{5/2}(a+b\mathbf{ArcSin}(cx))^2}{f+gx}\,dx$

Optimal. Leaf size=2989

result too large to display

```
[Out] 2*I*a*b*d^2*(c^2*f^2-g^2)^(5/2)*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2
))*g/(c*f-(c^2*f^2-g^2)^(1/2)))*(-c^2*d*x^2+d)^(1/2)/g^6/(-c^2*x^2+1)^(1/2)
+1/2*b*c^3*d^2*f*(c^2*f^2-2*g^2)*x^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)
/g^4/(-c^2*x^2+1)^(1/2)-2*I*a*b*d^2*(c^2*f^2-g^2)^(5/2)*arcsin(c*x)*ln(1-I*
(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))*(-c^2*d*x^2+d)^(1/2
)/g^6/(-c^2*x^2+1)^(1/2)+4/9*b^2*d^2*(c^2*f^2-2*g^2)*(-c^2*d*x^2+d)^(1/2)/g
^3-2*b^2*d^2*(c^2*f^2-g^2)^2*(-c^2*d*x^2+d)^(1/2)/g^5+26/675*b^2*d^2*(-c^2*
x^2+1)*(-c^2*d*x^2+d)^(1/2)/g-2/125*b^2*d^2*(-c^2*x^2+1)^2*(-c^2*d*x^2+d)^(
1/2)/g+a^2*d^2*(c^2*f^2-g^2)^2*(-c^2*d*x^2+d)^(1/2)/g^5+52/225*b^2*d^2*(-c^
2*d*x^2+d)^(1/2)/g-2/15*d^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/g+2/27
*b^2*d^2*(c^2*f^2-2*g^2)*(-c^2*x^2+1)*(-c^2*d*x^2+d)^(1/2)/g^3-1/15*c^2*d^2
*x^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/g+1/5*c^4*d^2*x^4*(a+b*arcsin
(c*x))^2*(-c^2*d*x^2+d)^(1/2)/g-1/3*d^2*(c^2*f^2-2*g^2)*(-c^2*x^2+1)*(a+b*a
rcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/g^3+b^2*d^2*(c^2*f^2-g^2)^2*arcsin(c*x)^
2*(-c^2*d*x^2+d)^(1/2)/g^5-2*a*b*c*d^2*(c^2*f^2-g^2)^2*x*(-c^2*d*x^2+d)^(1/
2)/g^5/(-c^2*x^2+1)^(1/2)-1/4*b^2*c*d^2*f*(c^2*f^2-2*g^2)*arcsin(c*x)*(-c^2
*d*x^2+d)^(1/2)/g^4/(-c^2*x^2+1)^(1/2)-2*b^2*c*d^2*(c^2*f^2-g^2)^2*x*arcsin
(c*x)*(-c^2*d*x^2+d)^(1/2)/g^5/(-c^2*x^2+1)^(1/2)+2/3*b*c*d^2*(c^2*f^2-2*g^
2)*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/g^3/(-c^2*x^2+1)^(1/2)-1/8*b*c^
3*d^2*f*x^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/g^2/(-c^2*x^2+1)^(1/2)-2
/9*b*c^3*d^2*(c^2*f^2-2*g^2)*x^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/g^3
/(-c^2*x^2+1)^(1/2)+1/8*b*c^5*d^2*f*x^4*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1
/2)/g^2/(-c^2*x^2+1)^(1/2)-1/6*c*d^2*f*(c^2*f^2-2*g^2)*(a+b*arcsin(c*x))^3*
(-c^2*d*x^2+d)^(1/2)/b/g^4/(-c^2*x^2+1)^(1/2)+1/3*c*d^2*(c^2*f^2-g^2)^2*x*(
a+b*arcsin(c*x))^3*(-c^2*d*x^2+d)^(1/2)/b/g^5/(-c^2*x^2+1)^(1/2)+1/3*d^2*(c
^2*f^2-g^2)^3*(a+b*arcsin(c*x))^3*(-c^2*d*x^2+d)^(1/2)/b/c/g^6/(g*x+f)/(-c^
2*x^2+1)^(1/2)+I*b^2*d^2*(c^2*f^2-g^2)^(5/2)*arcsin(c*x)^2*ln(1-I*(I*c*x+(-
c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))*(-c^2*d*x^2+d)^(1/2)/g^6/(-c
^2*x^2+1)^(1/2)+1/3*d^2*(c^2*f^2-g^2)^2*(a+b*arcsin(c*x))^3*(-c^2*x^2+1)^(1
/2)*(-c^2*d*x^2+d)^(1/2)/b/c/g^4/(g*x+f)-I*b^2*d^2*(c^2*f^2-g^2)^(5/2)*arcs
in(c*x)^2*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))*(-
c^2*d*x^2+d)^(1/2)/g^6/(-c^2*x^2+1)^(1/2)-a^2*d^2*(c^2*f^2-g^2)^(5/2)*arcta
n((c^2*f*x+g)/(c^2*f^2-g^2)^(1/2)/(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/
g^6/(-c^2*x^2+1)^(1/2)-1/64*b^2*c^2*d^2*f*x*(-c^2*d*x^2+d)^(1/2)/g^2+1/32*b
^2*c^4*d^2*f*x^3*(-c^2*d*x^2+d)^(1/2)/g^2+2*a*b*d^2*(c^2*f^2-g^2)^2*arcsin(
c*x)*(-c^2*d*x^2+d)^(1/2)/g^5+1/8*c^2*d^2*f*x*(a+b*arcsin(c*x))^2*(-c^2*d*x
^2+d)^(1/2)/g^2-1/4*c^4*d^2*f*x^3*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/
g^2+1/4*b^2*c^2*d^2*f*(c^2*f^2-2*g^2)*x*(-c^2*d*x^2+d)^(1/2)/g^4-1/2*c^2*d^
2*f*(c^2*f^2-2*g^2)*x*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/g^4+4/15*a*b
```

```
*c*d^2*x*(-c^2*d*x^2+d)^(1/2)/g/(-c^2*x^2+1)^(1/2)+1/64*b^2*c*d^2*f*arcsin(
c*x)*(-c^2*d*x^2+d)^(1/2)/g^2/(-c^2*x^2+1)^(1/2)+4/15*b^2*c*d^2*x*arcsin(c*
x)*(-c^2*d*x^2+d)^(1/2)/g/(-c^2*x^2+1)^(1/2)+2/45*b*c^3*d^2*x^3*(a+b*arcsin
(c*x))*(-c^2*d*x^2+d)^(1/2)/g/(-c^2*x^2+1)^(1/2)-2/25*b*c^5*d^2*x^5*(a+b*ar
csin(c*x))*(-c^2*d*x^2+d)^(1/2)/g/(-c^2*x^2+1)^(1/2)-1/24*c*d^2*f*(a+b*arcs
in(c*x))^3*(-c^2*d*x^2+d)^(1/2)/b/g^2/(-c^2*x^2+1)^(1/2)+2*a*b*d^2*(c^2*f^2
-g^2)^(5/2)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/
2)))*(-c^2*d*x^2+d)^(1/2)/g^6/(-c^2*x^2+1)^(1/2)+2*b^2*d^2*(c^2*f^2-g^2)^(5
/2)*arcsin(c*x)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)
^(1/2)))*(-c^2*d*x^2+d)^(1/2)/g^6/(-c^2*x^2+1)^(1/2)-2*a*b*d^2*(c^2*f^2-g^2
)^(5/2)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))
*(-c^2*d*x^2+d)^(1/2)/g^6/(-c^2*x^2+1)^(1/2)-2*b^2*d^2*(c^2*f^2-g^2)^(5/2)*
arcsin(c*x)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/
2)))*(-c^2*d*x^2+d)^(1/2)/g^6/(-c^2*x^2+1)^(1/2)-2*I*b^2*d^2*(c^2*f^2-g^2)^
(5/2)*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))*(
-c^2*d*x^2+d)^(1/2)/g^6/(-c^2*x^2+1)^(1/2)+2*I*b^2*d^2*(c^2*f^2-g^2)^(5/2)*
polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))*(-c^2*d
*x^2+d)^(1/2)/g^6/(-c^2*x^2+1)^(1/2)
```

Rubi [A]

time = 3.36, antiderivative size = 2989, normalized size of antiderivative = 1.00, number of steps used = 74, number of rules used = 35, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 1.061$, Rules used = {4861, 4851, 4741, 4737, 4723, 327, 222, 4767, 4739, 455, 45, 4783, 4795, 4715, 267, 272, 4849, 697, 4841, 4883, 1668, 12, 739, 210, 4881, 8, 4857, 3404, 2296, 2221, 2317, 2438, 2611, 2320, 6724}

Too large to display

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2)/(f + g*x),x]
```

```
[Out] (52*b^2*d^2*Sqrt[d - c^2*d*x^2])/(225*g) + (4*b^2*d^2*(c^2*f^2 - 2*g^2)*Sqr
t[d - c^2*d*x^2])/(9*g^3) + (a^2*d^2*(c^2*f^2 - g^2)^2*Sqrt[d - c^2*d*x^2])
/g^5 - (2*b^2*d^2*(c^2*f^2 - g^2)^2*Sqrt[d - c^2*d*x^2])/g^5 - (b^2*c^2*d^2
*f*x*Sqrt[d - c^2*d*x^2])/(64*g^2) + (b^2*c^2*d^2*f*(c^2*f^2 - 2*g^2)*x*Sqr
t[d - c^2*d*x^2])/(4*g^4) + (b^2*c^4*d^2*f*x^3*Sqrt[d - c^2*d*x^2])/(32*g^2
) + (4*a*b*c*d^2*x*Sqrt[d - c^2*d*x^2])/(15*g*Sqrt[1 - c^2*x^2]) - (2*a*b*c
*d^2*(c^2*f^2 - g^2)^2*x*Sqrt[d - c^2*d*x^2])/(g^5*Sqrt[1 - c^2*x^2]) + (26
*b^2*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(675*g) + (2*b^2*d^2*(c^2*f^2 -
 2*g^2)*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(27*g^3) - (2*b^2*d^2*(1 - c^2*x
^2)^2*Sqrt[d - c^2*d*x^2])/(125*g) + (2*a*b*d^2*(c^2*f^2 - g^2)^2*Sqrt[d -
c^2*d*x^2]*ArcSin[c*x])/g^5 + (b^2*c*d^2*f*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])
/(64*g^2*Sqrt[1 - c^2*x^2]) - (b^2*c*d^2*f*(c^2*f^2 - 2*g^2)*Sqrt[d - c^2*d
*x^2]*ArcSin[c*x])/(4*g^4*Sqrt[1 - c^2*x^2]) + (4*b^2*c*d^2*x*Sqrt[d - c^2*
d*x^2]*ArcSin[c*x])/(15*g*Sqrt[1 - c^2*x^2]) - (2*b^2*c*d^2*(c^2*f^2 - g^2)
```

^2*x*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(g^5*Sqrt[1 - c^2*x^2]) + (b^2*d^2*(c
^2*f^2 - g^2)^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2)/g^5 + (2*b*c*d^2*(c^2*f^
2 - 2*g^2)*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*g^3*Sqrt[1 - c^2*x
^2]) - (b*c^3*d^2*f*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*g^2*Sqr
t[1 - c^2*x^2]) + (b*c^3*d^2*f*(c^2*f^2 - 2*g^2)*x^2*Sqrt[d - c^2*d*x^2]*(a
 + b*ArcSin[c*x]))/(2*g^4*Sqrt[1 - c^2*x^2]) + (2*b*c^3*d^2*x^3*Sqrt[d - c^
2*d*x^2]*(a + b*ArcSin[c*x]))/(45*g*Sqrt[1 - c^2*x^2]) - (2*b*c^3*d^2*(c^2*
f^2 - 2*g^2)*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(9*g^3*Sqrt[1 - c
^2*x^2]) + (b*c^5*d^2*f*x^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*g^2
*Sqrt[1 - c^2*x^2]) - (2*b*c^5*d^2*x^5*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*
x]))/(25*g*Sqrt[1 - c^2*x^2]) - (2*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*
x])^2)/(15*g) + (c^2*d^2*f*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(8*
g^2) - (c^2*d^2*f*(c^2*f^2 - 2*g^2)*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x
])^2)/(2*g^4) - (c^2*d^2*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(15
*g) - (c^4*d^2*f*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(4*g^2) + (
c^4*d^2*x^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(5*g) - (d^2*(c^2*f^
2 - 2*g^2)*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(3*g^3)
 - (c*d^2*f*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(24*b*g^2*Sqrt[1 - c
^2*x^2]) - (c*d^2*f*(c^2*f^2 - 2*g^2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x
])^3)/(6*b*g^4*Sqrt[1 - c^2*x^2]) + (c*d^2*(c^2*f^2 - g^2)^2*x*Sqrt[d - c^2
*d*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*g^5*Sqrt[1 - c^2*x^2]) + (d^2*(c^2*f^2
 - g^2)^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c*g^6*(f + g*x)*Sq
rt[1 - c^2*x^2]) + (d^2*(c^2*f^2 - g^2)^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*
x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c*g^4*(f + g*x)) - (a^2*d^2*(c^2*f^2 - g^2
)^(5/2)*Sqrt[d - c^2*d*x^2]*ArcTan[(g + c^2*f*x)/(Sqrt[c^2*f^2 - g^2]*Sqrt[
1 - c^2*x^2])])/(g^6*Sqrt[1 - c^2*x^2]) + ((2*I)*a*b*d^2*(c^2*f^2 - g^2)^(5
/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f -
Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) + (I*b^2*d^2*(c^2*f^2 - g^2)
^(5/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c
*f - Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) - ((2*I)*a*b*d^2*(c^2*f
^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x]
)*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) - (I*b^2*d^2*(c^
2*f^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcSin
[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) + (2*a*b*d^
2*(c^2*f^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])
*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) + (2*b^2*d^2*(c^2
*f^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin
[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) - (2*a*b*d^
2*(c^2*f^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*PolyLog[2, (I*E^(I*ArcSin[c*x])
*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) - (2*b^2*d^2*(c^2
*f^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin
[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) + ((2*I)*b^
2*d^2*(c^2*f^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*PolyLog[3, (I*E^(I*ArcSin[c
*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2]) - ((2*I)*b^2*
d^2*(c^2*f^2 - g^2)^(5/2)*Sqrt[d - c^2*d*x^2]*PolyLog[3, (I*E^(I*ArcSin[c*x

```
])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(g^6*Sqrt[1 - c^2*x^2])
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
```

```
+ 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 455

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 697

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[2*c*d - b*e, 0] &
& IGtQ[p, 0] &&  !(EqQ[m, 3] && NeQ[p, 1])
```

Rule 739

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 1668

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :
> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[f*(d + e*x)
^(m + q - 1)*((a + c*x^2)^(p + 1)/(c*e^(q - 1)*(m + q + 2*p + 1))), x] + Di
st[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + c*x^2)^p*ExpandToSum[c
*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1)*(d + e*x)^q - f*(d + e*x)
^(q - 2)*(a*e^2*(m + q - 1) - c*d^2*(m + q + 2*p + 1) - 2*c*d*e*(m + q + p)
*x), x], x], x] /; GtQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, c, d,
 e, m, p}, x] && PolyQ[Pq, x] && NeQ[c*d^2 + a*e^2, 0] &&  !(EqQ[d, 0] && T
rue) &&  !(IGtQ[m, 0] && RationalQ[a, c, d, e] && (IntegerQ[p] || ILtQ[p +
1/2, 0]))
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2296

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[2*(c/q), Int[
```

```
(f + g*x)^m*(F^u/(b - q + 2*c*F^u)), x], x] - Dist[2*(c/q), Int[(f + g*x)^m
*(F^u/(b + q + 2*c*F^u)), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 3404

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[(c + d*x)^m*(E^(I*(e + f*x))/(I*b + 2*a*E^(I*(e + f*x)
) - I*b*E^(2*I*(e + f*x)))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[x*Sqrt[d + e*x^2]*((a + b*ArcSin[c*x])^n/2), x] + (Dist[(1/2
)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[(a + b*ArcSin[c*x])^n/Sqrt[1
 - c^2*x^2], x], x] - Dist[b*c*(n/2)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]
], Int[x*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x]
&& EqQ[c^2*d + e, 0] && GtQ[n, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4783

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[(f*x)^(m + 1)*Sqrt[d + e*x^2]*((a + b*ArcS
in[c*x])^n/(f*(m + 2))), x] + (Dist[(1/(m + 2))*Simp[Sqrt[d + e*x^2]/Sqrt[1
 - c^2*x^2]], Int[(f*x)^m*((a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x^2]), x], x]
 - Dist[b*c*(n/(f*(m + 2)))*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[(f
*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f
, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && (IGtQ[m, -2] || EqQ[n, 1])
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4841

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.) + (g_.)*(x_) + (h_.)*(x
_)^2)^(p_.))/((d_) + (e_.)*(x_))^2, x_Symbol] :> With[{u = IntHide[(f + g*x
 + h*x^2)^p/(d + e*x)^2, x]}, Dist[(a + b*ArcSin[c*x])^n, u, x] - Dist[b*c*
n, Int[SimplifyIntegrand[u*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*x^2]),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, h}, x] && IGtQ[n, 0] && IGtQ[p,
 0] && EqQ[e*g - 2*d*h, 0]
```

Rule 4849

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_)*Sqrt[
(d_) + (e_.)*(x_)^2], x_Symbol] :> Simp[(f + g*x)^m*(d + e*x^2)*((a + b*Arc
Sin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1))), x] - Dist[1/(b*c*Sqrt[d]*(n + 1))
, Int[(d*g*m + 2*e*f*x + e*g*(m + 2)*x^2)*(f + g*x)^(m - 1)*(a + b*ArcSin[c
*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0
] && ILtQ[m, 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4851

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[Sqrt[d + e*x^2]*(a
 + b*ArcSin[c*x])^n, (f + g*x)^m*(d + e*x^2)^(p - 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && IGtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rule 4881

```
Int[ArcSin[(c_.)*(x_)]^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p_), x_Symbol] :
> With[{u = ExpandIntegrand[(d + e*x^2)^p*ArcSin[c*x]^n, RFx, x]}, Int[u, x
] /; SumQ[u]] /; FreeQ[{c, d, e}, x] && RationalFunctionQ[RFx, x] && IGtQ[n
, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 4883

```
Int[(ArcSin[(c_.)*(x_)]*(b_.) + (a_))^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p
_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p, RFx*(a + b*ArcSin[c*x])
^n, x], x] /; FreeQ[{a, b, c, d, e}, x] && RationalFunctionQ[RFx, x] && IGt
Q[n, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(d-c^2dx^2)^{5/2}\,(a+b\sin^{-1}(cx))^2}{f+gx}\,dx = \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int \frac{(1-c^2x^2)^{5/2}(a+b\sin^{-1}(cx))^2}{f+gx}\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int \left(-\frac{c^2f(c^2f^2-2g^2)\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))^2}{g^4} + \frac{c^2(\cdots}{\cdots}\right.}{\cdots}$$

$$= -\frac{\left(c^4d^2f\sqrt{d-c^2dx^2}\right)\int x^2\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))^2\,dx}{g^2\sqrt{1-c^2x^2}} + \frac{\left(\cdots\right.}{\cdots}$$

$$= -\frac{c^2d^2f(c^2f^2-2g^2)\,x\sqrt{d-c^2dx^2}\,(a+b\sin^{-1}(cx))^2}{2g^4} - \frac{c^4d^2fx^3\sqrt{\cdots}}{\cdots}$$

$$= \frac{2bcd^2(c^2f^2-2g^2)\,x\sqrt{d-c^2dx^2}\,(a+b\sin^{-1}(cx))}{3g^3\sqrt{1-c^2x^2}} + \frac{bc^3d^2f(c^2f^2-\cdots}{\cdots}$$

$$= \frac{b^2c^2d^2f(c^2f^2-2g^2)\,x\sqrt{d-c^2dx^2}}{4g^4} + \frac{b^2c^4d^2fx^3\sqrt{d-c^2dx^2}}{32g^2} + \frac{2b\cdots}{\cdots}$$

$$= -\frac{b^2c^2d^2fx\sqrt{d-c^2dx^2}}{64g^2} + \frac{b^2c^2d^2f(c^2f^2-2g^2)\,x\sqrt{d-c^2dx^2}}{4g^4} + \frac{b\cdots}{\cdots}$$

$$= -\frac{2b^2d^2\sqrt{d-c^2dx^2}}{25g} + \frac{4b^2d^2(c^2f^2-2g^2)\sqrt{d-c^2dx^2}}{9g^3} + \frac{a^2d^2(c^2\cdots}{\cdots}$$

$$= \frac{52b^2d^2\sqrt{d-c^2dx^2}}{225g} + \frac{4b^2d^2(c^2f^2-2g^2)\sqrt{d-c^2dx^2}}{9g^3} + \frac{a^2d^2(c^2f\cdots}{\cdots}$$

$$= \frac{52b^2d^2\sqrt{d-c^2dx^2}}{225g} + \frac{4b^2d^2(c^2f^2-2g^2)\sqrt{d-c^2dx^2}}{9g^3} + \frac{a^2d^2(c^2f\cdots}{\cdots}$$

$$= \frac{52b^2d^2\sqrt{d-c^2dx^2}}{225g} + \frac{4b^2d^2(c^2f^2-2g^2)\sqrt{d-c^2dx^2}}{9g^3} + \frac{a^2d^2(c^2f\cdots}{\cdots}$$

$$= \frac{52b^2d^2\sqrt{d-c^2dx^2}}{225g} + \frac{4b^2d^2(c^2f^2-2g^2)\sqrt{d-c^2dx^2}}{9g^3} + \frac{a^2d^2(c^2f\cdots}{\cdots}$$

$$= \frac{52b^2d^2\sqrt{d-c^2dx^2}}{225g} + \frac{4b^2d^2(c^2f^2-2g^2)\sqrt{d-c^2dx^2}}{9g^3} + \frac{a^2d^2(c^2f\cdots}{\cdots}$$

Mathematica [A]
time = 3.09, size = 1277, normalized size = 0.43

Antiderivative was successfully verified.

```
[In] Integrate[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2)/(f + g*x),x]
```

```
[Out] (d^2*Sqrt[d - c^2*d*x^2]*(-1/2*(c^2*f*(c^2*f^2 - 2*g^2)*x*Sqrt[1 - c^2*x^2]
*(a + b*ArcSin[c*x])^2)/g^4 - (c^4*f*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*
x])^2)/(4*g^2) + (c^4*x^4*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(5*g) -
((c^2*f^2 - 2*g^2)*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/(3*g^3) - (c*
f*(c^2*f^2 - 2*g^2)*(a + b*ArcSin[c*x])^3)/(6*b*g^4) - ((-(c^2*f^2) + g^2)^
2*(-1 + c^2*x^2)*(a + b*ArcSin[c*x])^3)/(3*b*c*g^4*(f + g*x)) + (b*c*f*(c^2
*f^2 - 2*g^2)*(c*x*(2*a*c*x + b*Sqrt[1 - c^2*x^2]) + b*(-1 + 2*c^2*x^2)*Arc
Sin[c*x]))/(4*g^4) + (b*c*f*(8*a*c^4*x^4 + b*c*x*Sqrt[1 - c^2*x^2]*(3 + 2*c
^2*x^2) + b*(-3 + 8*c^4*x^4)*ArcSin[c*x]))/(64*g^2) + (2*b*(c^2*f^2 - 2*g^2
)*(-(b*Sqrt[1 - c^2*x^2]*(-7 + c^2*x^2)) + 9*c*x*(a + b*ArcSin[c*x]) - 3*c^
3*x^3*(a + b*ArcSin[c*x])))/(27*g^3) - (2*b*(b*Sqrt[1 - c^2*x^2]*(8 + 4*c^2
*x^2 + 3*c^4*x^4) + 15*c^5*x^5*(a + b*ArcSin[c*x])))/(375*g) + (c*f*(6*b*c*
x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2 - 2*(a + b*ArcSin[c*x])^3 - 3*b^2
*(c*x*(2*a*c*x + b*Sqrt[1 - c^2*x^2]) + b*(-1 + 2*c^2*x^2)*ArcSin[c*x])))/(
48*b*g^2) - (9*c^2*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2 - 2*b*(b*Sqr
t[1 - c^2*x^2]*(2 + c^2*x^2) + 3*c^3*x^3*(a + b*ArcSin[c*x])) + 18*(Sqrt[1
- c^2*x^2]*(a + b*ArcSin[c*x])^2 - 2*b*(a*c*x + b*Sqrt[1 - c^2*x^2] + b*c*x
*ArcSin[c*x])))/(135*g) + ((-(c^2*f^2) + g^2)^2*((c^2*f^2 - g^2)*(a + b*Arc
Sin[c*x])^3 + c^2*g*x*(f + g*x)*(a + b*ArcSin[c*x])^3 + 3*b*c*(f + g*x)*(g*
Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2 - 2*b*g*(a*c*x + b*Sqrt[1 - c^2*x^2
] + b*c*x*ArcSin[c*x]) + I*Sqrt[c^2*f^2 - g^2]*((a + b*ArcSin[c*x])^2*Log[1
 + (I*E^(I*ArcSin[c*x])*g)/(-(c*f) + Sqrt[c^2*f^2 - g^2])] - (a + b*ArcSin[
c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])] - (2*I
)*b*(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*
f^2 - g^2])] + (2*I)*b*(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])*
g)/(c*f + Sqrt[c^2*f^2 - g^2])] + 2*b^2*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/
(c*f - Sqrt[c^2*f^2 - g^2])] - 2*b^2*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*
f + Sqrt[c^2*f^2 - g^2])]))))/(3*b*c*g^6*(f + g*x))))/Sqrt[1 - c^2*x^2]
```

Maple [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^{2} d\,x^{2}+d\right)^{\frac{5}{2}} \left(a +b \arcsin \left(c x \right)\right)^{2}}{g x +f}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/(g*x+f),x)
```

```
[Out] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/(g*x+f),x)
```

Maxima [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/(g*x+f),x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(g-c*f>0)', see `assume?` for more d
etails)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/(g*x+f),x, algorithm="fr
icas")
```

```
[Out] integral((a^2*c^4*d^2*x^4 - 2*a^2*c^2*d^2*x^2 + a^2*d^2 + (b^2*c^4*d^2*x^4
- 2*b^2*c^2*d^2*x^2 + b^2*d^2)*arcsin(c*x)^2 + 2*(a*b*c^4*d^2*x^4 - 2*a*b*c
^2*d^2*x^2 + a*b*d^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/(g*x + f), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))**2/(g*x+f),x)
```

```
[Out] Timed out
```

Giac [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/(g*x+f),x, algorithm="gi
ac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,sageVARx):;OUTPUT:sym2poly/r2sym(const gen & e,const in
dex_m & i,const vecteur & l) Error: Bad Argument Value
```

Mupad [**F**]

time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))^2\,(d-c^2\,d\,x^2)^{5/2}}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2))/(f + g*x),x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2))/(f + g*x), x)
```

3.70 $\int \frac{(f+gx)^3(a+b\mathbf{ArcSin}(cx))^2}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=692

$$\frac{6b^2f^2g(1-c^2x^2)}{c^2\sqrt{d-c^2dx^2}}+\frac{14b^2g^3(1-c^2x^2)}{9c^4\sqrt{d-c^2dx^2}}+\frac{3b^2fg^2x(1-c^2x^2)}{4c^2\sqrt{d-c^2dx^2}}-\frac{2b^2g^3(1-c^2x^2)^2}{27c^4\sqrt{d-c^2dx^2}}-\frac{3b^2fg^2\sqrt{1-c^2x^2}\,\mathrm{ArcSin}(cx}{4c^3\sqrt{d-c^2dx^2}}$$

```
[Out] 6*b^2*f^2*g*(-c^2*x^2+1)/c^2/(-c^2*d*x^2+d)^(1/2)+14/9*b^2*g^3*(-c^2*x^2+1)
/c^4/(-c^2*d*x^2+d)^(1/2)+3/4*b^2*f*g^2*x*(-c^2*x^2+1)/c^2/(-c^2*d*x^2+d)^(
1/2)-2/27*b^2*g^3*(-c^2*x^2+1)^2/c^4/(-c^2*d*x^2+d)^(1/2)-3*f^2*g*(-c^2*x^2
+1)*(a+b*arcsin(c*x))^2/c^2/(-c^2*d*x^2+d)^(1/2)-2/3*g^3*(-c^2*x^2+1)*(a+b*
arcsin(c*x))^2/c^4/(-c^2*d*x^2+d)^(1/2)-3/2*f*g^2*x*(-c^2*x^2+1)*(a+b*arcsi
n(c*x))^2/c^2/(-c^2*d*x^2+d)^(1/2)-1/3*g^3*x^2*(-c^2*x^2+1)*(a+b*arcsin(c*x
))^2/c^2/(-c^2*d*x^2+d)^(1/2)-3/4*b^2*f*g^2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)/
c^3/(-c^2*d*x^2+d)^(1/2)+6*b*f^2*g*x*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c
/(-c^2*d*x^2+d)^(1/2)+4/3*b*g^3*x*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3/
(-c^2*d*x^2+d)^(1/2)+3/2*b*f*g^2*x^2*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c
/(-c^2*d*x^2+d)^(1/2)+2/9*b*g^3*x^3*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c/
(-c^2*d*x^2+d)^(1/2)+1/3*f^3*(a+b*arcsin(c*x))^3*(-c^2*x^2+1)^(1/2)/b/c/(-c
^2*d*x^2+d)^(1/2)+1/2*f*g^2*(a+b*arcsin(c*x))^3*(-c^2*x^2+1)^(1/2)/b/c^3/(-
c^2*d*x^2+d)^(1/2)
```

Rubi [A]

time = 0.46, antiderivative size = 692, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 10, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.303$, Rules used = {4861, 4857, 3398, 3377, 2718, 3392, 32, 2715, 8, 2713}

$$\frac{f^3\sqrt{1-c^2x^2}(a+b\mathrm{ArcSin}(cx))^3}{3bc\sqrt{d-c^2dx^2}}-\frac{3f^2g(1-c^2x^2)(a+b\mathrm{ArcSin}(cx))^2}{c^2\sqrt{d-c^2dx^2}}+\frac{6bf^2gx\sqrt{1-c^2x^2}(a+b\mathrm{ArcSin}(cx))}{c\sqrt{d-c^2dx^2}}-\frac{3fg^2x(1-c^2x^2)(a+b\mathrm{ArcSin}(cx))^2}{2c^2\sqrt{d-c^2dx^2}}+\frac{3bfg^2x^2\sqrt{1-c^2x^2}(a+b\mathrm{ArcSin}(cx))}{2c\sqrt{d-c^2dx^2}}-\frac{g^3x^2(1-c^2x^2)(a+b\mathrm{ArcSin}(cx))^2}{3c^2\sqrt{d-c^2dx^2}}+\frac{2bg^3x^3\sqrt{1-c^2x^2}(a+b\mathrm{ArcSin}(cx))}{9c\sqrt{d-c^2dx^2}}-\frac{2g^3(1-c^2x^2)(a+b\mathrm{ArcSin}(cx))^2}{3c^4\sqrt{d-c^2dx^2}}+\frac{fg^2\sqrt{1-c^2x^2}(a+b\mathrm{ArcSin}(cx))^3}{2bc^3\sqrt{d-c^2dx^2}}+\frac{4bg^3x\sqrt{1-c^2x^2}(a+b\mathrm{ArcSin}(cx))}{3c^3\sqrt{d-c^2dx^2}}-\frac{3b^2fg^2\sqrt{1-c^2x^2}\mathrm{ArcSin}(cx)}{4c^3\sqrt{d-c^2dx^2}}+\frac{6b^2f^2g(1-c^2x^2)}{c^2\sqrt{d-c^2dx^2}}+\frac{3b^2fg^2x(1-c^2x^2)}{4c^2\sqrt{d-c^2dx^2}}-\frac{2b^2g^3(1-c^2x^2)^2}{27c^4\sqrt{d-c^2dx^2}}+\frac{14b^2g^3(1-c^2x^2)}{9c^4\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^3*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (6*b^2*f^2*g*(1 - c^2*x^2))/(c^2*Sqrt[d - c^2*d*x^2]) + (14*b^2*g^3*(1 - c^
2*x^2))/(9*c^4*Sqrt[d - c^2*d*x^2]) + (3*b^2*f*g^2*x*(1 - c^2*x^2))/(4*c^2*
Sqrt[d - c^2*d*x^2]) - (2*b^2*g^3*(1 - c^2*x^2)^2)/(27*c^4*Sqrt[d - c^2*d*x
^2]) - (3*b^2*f*g^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x])/(4*c^3*Sqrt[d - c^2*d*x^
2]) + (6*b*f^2*g*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(c*Sqrt[d - c^2*d
*x^2]) + (4*b*g^3*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(3*c^3*Sqrt[d -
c^2*d*x^2]) + (3*b*f*g^2*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(2*c*Sq
rt[d - c^2*d*x^2]) + (2*b*g^3*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(9
*c*Sqrt[d - c^2*d*x^2]) - (3*f^2*g*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(c^
2*Sqrt[d - c^2*d*x^2]) - (2*g^3*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(3*c^4
*Sqrt[d - c^2*d*x^2]) - (3*f*g^2*x*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(2*
c^2*Sqrt[d - c^2*d*x^2]) - (g^3*x^2*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(3
```

```
*c^2*Sqrt[d - c^2*d*x^2]) + (f^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3)/(
3*b*c*Sqrt[d - c^2*d*x^2]) + (f*g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3
)/(2*b*c^3*Sqrt[d - c^2*d*x^2])
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2713

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> Dist[-d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
&& IGtQ[(n - 1)/2, 0]
```

Rule 2715

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(-b)*Cos[c + d*
x]*((b*Sin[c + d*x])^(n - 1)/(d*n)), x] + Dist[b^2*((n - 1)/n), Int[(b*Sin[
c + d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2
*n]
```

Rule 2718

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> Simp[-Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3377

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
-(c + d*x)^m)*(Cos[e + f*x]/f), x] + Dist[d*(m/f), Int[(c + d*x)^(m - 1)*Co
s[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3392

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[d*m*(c + d*x)^(m - 1)*((b*Sin[e + f*x])^n/(f^2*n^2)), x] + (Dist
[b^2*((n - 1)/n), Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[d
^2*m*((m - 1)/(f^2*n^2)), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[b*(c + d*x)^m*Cos[e + f*x]*((b*Sin[e + f*x])^(n - 1)/(f*n)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3398

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int \frac{(f+gx)^3 \left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)^3(a+b\sin^{-1}(cx))^2}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\,\text{Subst}\left(\int (a+bx)^2(cf+g\sin(x))^3\,dx, x, \sin^{-1}(cx)\right)}{c^4\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\,\text{Subst}\left(\int \left(c^3f^3(a+bx)^2+3c^2f^2g(a+bx)^2\sin(x)+3cfg^2(a\right.\right.}{c^4\sqrt{d-c^2dx^2}}$$

$$= \frac{f^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{d-c^2dx^2}} + \frac{\left(3f^2g\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int (a+bx)^{\cdot}\right.}{c^2\sqrt{d-c^2dx^2}}$$

$$= \frac{3bfg^2x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c\sqrt{d-c^2dx^2}} + \frac{2bg^3x^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(c\right.}{9c\sqrt{d-c^2dx^2}}$$

$$= \frac{3b^2fg^2x(1-c^2x^2)}{4c^2\sqrt{d-c^2dx^2}} + \frac{6bf^2gx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{d-c^2dx^2}} + \frac{3bfg^2x^2\sqrt{1}}{2}$$

$$= \frac{6b^2f^2g(1-c^2x^2)}{c^2\sqrt{d-c^2dx^2}} + \frac{2b^2g^3(1-c^2x^2)}{9c^4\sqrt{d-c^2dx^2}} + \frac{3b^2fg^2x(1-c^2x^2)}{4c^2\sqrt{d-c^2dx^2}} - \frac{2b^2g^3(1-}{27c^4\sqrt{d-}}$$

$$= \frac{6b^2f^2g(1-c^2x^2)}{c^2\sqrt{d-c^2dx^2}} + \frac{14b^2g^3(1-c^2x^2)}{9c^4\sqrt{d-c^2dx^2}} + \frac{3b^2fg^2x(1-c^2x^2)}{4c^2\sqrt{d-c^2dx^2}} - \frac{2b^2g^3(1-}{27c^4\sqrt{d-}}$$

Mathematica [A]
time = 0.90, size = 582, normalized size = 0.84

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^3*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (-36*a^2*d*(1 - c^2*x^2)^(3/2)*(4*g^3 + c^2*g*(18*f^2 + 9*f*g*x + 2*g^2*x^2
)) - 216*a*b*c^3*d*f^3*(-1 + c^2*x^2)*ArcSin[c*x]^2 - 72*b^2*c^3*d*f^3*(-1
+ c^2*x^2)*ArcSin[c*x]^3 - 1296*a*b*c^2*d*f^2*g*(-1 + c^2*x^2)*(c*x - Sqrt[
1 - c^2*x^2]*ArcSin[c*x]) - 48*a*b*d*g^3*(-1 + c^2*x^2)*(6*c*x + c^3*x^3 -
3*Sqrt[1 - c^2*x^2]*(2 + c^2*x^2)*ArcSin[c*x]) + 648*b^2*c^2*d*f^2*g*(1 - c
^2*x^2)*(2*c*x*ArcSin[c*x] - Sqrt[1 - c^2*x^2]*(-2 + ArcSin[c*x]^2)) - 108*
a^2*c*Sqrt[d]*f*(2*c^2*f^2 + 3*g^2)*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]*A
rcTan[(c*x*Sqrt[d - c^2*d*x^2])/(Sqrt[d]*(-1 + c^2*x^2))] + 162*a*b*c*d*f*g
^2*(-1 + c^2*x^2)*(-2*ArcSin[c*x]^2 + Cos[2*ArcSin[c*x]] + 2*ArcSin[c*x]*Si
n[2*ArcSin[c*x]]) + 27*b^2*c*d*f*g^2*(1 - c^2*x^2)*(4*ArcSin[c*x]^3 - 6*Arc
Sin[c*x]*Cos[2*ArcSin[c*x]] + (3 - 6*ArcSin[c*x]^2)*Sin[2*ArcSin[c*x]]) - 2
```

```
*b^2*d*g^3*(1 - c^2*x^2)*(81*Sqrt[1 - c^2*x^2]*(-2 + ArcSin[c*x]^2) - (-2 +
 9*ArcSin[c*x]^2)*Cos[3*ArcSin[c*x]] + 6*ArcSin[c*x]*(-27*c*x + Sin[3*ArcSi
n[c*x]])))/(216*c^4*d*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2])
```

Maple [C] Result contains complex when optimal does not.
time = 0.86, size = 1651, normalized size = 2.39

method	result	size
default	Expression too large to display	1651

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x,method=_RETURNVERB
OSE)
```

```
[Out] -1/3*a^2*g^3*x^2/c^2/d*(-c^2*d*x^2+d)^(1/2)-2/3*a^2*g^3/d/c^4*(-c^2*d*x^2+d
)^(1/2)-3/2*a^2*f*g^2*x/c^2/d*(-c^2*d*x^2+d)^(1/2)+3/2*a^2*f*g^2/c^2/(c^2*d
)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-3*a^2*f^2*g/c^2/d*(-c^
2*d*x^2+d)^(1/2)+a^2*f^3/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d
)^(1/2))+b^2*(-1/6*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d/(c^2*x^2
-1)*arcsin(c*x)^3*f*(2*c^2*f^2+3*g^2)+1/432*(-d*(c^2*x^2-1))^(1/2)*(2*c^2*x
^2-2*I*(-c^2*x^2+1)^(1/2)*x*c-1)*g^3*(6*I*arcsin(c*x)+9*arcsin(c*x)^2-2)/c^
4/d/(c^2*x^2-1)-3/8*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*
c-1)*g*(4*arcsin(c*x)^2*c^2*f^2+8*I*arcsin(c*x)*c^2*f^2+arcsin(c*x)^2*g^2+2
*I*arcsin(c*x)*g^2-8*c^2*f^2-2*g^2)/c^4/d/(c^2*x^2-1)-3/8*(-d*(c^2*x^2-1))^
(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(4*arcsin(c*x)^2*c^2*f^2-8*I*a
rcsin(c*x)*c^2*f^2+arcsin(c*x)^2*g^2-2*I*arcsin(c*x)*g^2-8*c^2*f^2-2*g^2)/c
^4/d/(c^2*x^2-1)+1/432*(-d*(c^2*x^2-1))^(1/2)*(2*I*(-c^2*x^2+1)^(1/2)*x*c+2
*c^2*x^2-1)*g^3*(-6*I*arcsin(c*x)+9*arcsin(c*x)^2-2)/c^4/d/(c^2*x^2-1)+3/8*
(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d/(c^2*x^2-1)*g^2*f*arcsin(c*
x)+3/16*(-d*(c^2*x^2-1))^(1/2)/c^2/d/(c^2*x^2-1)*g^2*f*(2*arcsin(c*x)^2-1)*
x-1/216*(-d*(c^2*x^2-1))^(1/2)/c^4/d/(c^2*x^2-1)*g^3*(9*arcsin(c*x)^2-2)*co
s(4*arcsin(c*x))+1/36*(-d*(c^2*x^2-1))^(1/2)/c^4/d/(c^2*x^2-1)*arcsin(c*x)*
g^3*sin(4*arcsin(c*x))+3/8*(-d*(c^2*x^2-1))^(1/2)/c^3/d/(c^2*x^2-1)*g^2*f*a
rcsin(c*x)*cos(3*arcsin(c*x))+3/16*(-d*(c^2*x^2-1))^(1/2)/c^3/d/(c^2*x^2-1)
*g^2*f*(2*arcsin(c*x)^2-1)*sin(3*arcsin(c*x)))+2*a*b*(-1/4*(-d*(c^2*x^2-1))
^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d/(c^2*x^2-1)*arcsin(c*x)^2*f*(2*c^2*f^2+3*g^
2)+1/144*(-d*(c^2*x^2-1))^(1/2)*(2*c^2*x^2-2*I*(-c^2*x^2+1)^(1/2)*x*c-1)*g^
3*(I+3*arcsin(c*x))/c^4/d/(c^2*x^2-1)-3/8*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I
*(-c^2*x^2+1)^(1/2)*x*c-1)*g*(4*arcsin(c*x)*c^2*f^2+4*I*f^2*c^2+arcsin(c*x)
*g^2+I*g^2)/c^4/d/(c^2*x^2-1)-3/8*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1
/2)*x*c+c^2*x^2-1)*g*(4*arcsin(c*x)*c^2*f^2-4*I*f^2*c^2+arcsin(c*x)*g^2-I*g
^2)/c^4/d/(c^2*x^2-1)+1/144*(-d*(c^2*x^2-1))^(1/2)*(2*I*(-c^2*x^2+1)^(1/2)*
x*c+2*c^2*x^2-1)*g^3*(-I+3*arcsin(c*x))/c^4/d/(c^2*x^2-1)+3/16*(-d*(c^2*x^2
-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d/(c^2*x^2-1)*f*g^2+3/8*(-d*(c^2*x^2-1))^
(1/2)/c^2/d/(c^2*x^2-1)*f*g^2*arcsin(c*x)*x-1/24*(-d*(c^2*x^2-1))^(1/2)/c^4
```

```
/d/(c^2*x^2-1)*arcsin(c*x)*g^3*cos(4*arcsin(c*x))+1/72*(-d*(c^2*x^2-1))^(1/
2)/c^4/d/(c^2*x^2-1)*g^3*sin(4*arcsin(c*x))+3/16*(-d*(c^2*x^2-1))^(1/2)/c^3
/d/(c^2*x^2-1)*f*g^2*cos(3*arcsin(c*x))+3/8*(-d*(c^2*x^2-1))^(1/2)/c^3/d/(c
^2*x^2-1)*f*g^2*arcsin(c*x)*sin(3*arcsin(c*x)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="
maxima")
```

```
[Out] -1/3*a^2*g^3*(sqrt(-c^2*d*x^2 + d)*x^2/(c^2*d) + 2*sqrt(-c^2*d*x^2 + d)/(c^
4*d)) - 3/2*a^2*f*g^2*(sqrt(-c^2*d*x^2 + d)*x/(c^2*d) - arcsin(c*x)/(c^3*sq
rt(d))) + a*b*f^3*arcsin(c*x)^2/(c*sqrt(d)) + 6*a*b*f^2*g*x/(c*sqrt(d)) + a
^2*f^3*arcsin(c*x)/(c*sqrt(d)) - 6*sqrt(-c^2*d*x^2 + d)*a*b*f^2*g*arcsin(c*
x)/(c^2*d) - 3*sqrt(-c^2*d*x^2 + d)*a^2*f^2*g/(c^2*d) - sqrt(d)*integrate((
(b^2*g^3*x^3 + 3*b^2*f*g^2*x^2 + 3*b^2*f^2*g*x + b^2*f^3)*arctan2(c*x, sqrt
(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*g^3*x^3 + 3*a*b*f*g^2*x^2)*arctan2(c*x
, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c^2*d*x^2 -
d), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="
fricas")
```

```
[Out] integral(-(a^2*g^3*x^3 + 3*a^2*f*g^2*x^2 + 3*a^2*f^2*g*x + a^2*f^3 + (b^2*g
^3*x^3 + 3*b^2*f*g^2*x^2 + 3*b^2*f^2*g*x + b^2*f^3)*arcsin(c*x)^2 + 2*(a*b*
g^3*x^3 + 3*a*b*f*g^2*x^2 + 3*a*b*f^2*g*x + a*b*f^3)*arcsin(c*x))*sqrt(-c^2
*d*x^2 + d)/(c^2*d*x^2 - d), x)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Exception raised: TypeError >> Invalid comparison of non-real zoo
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="
giac")
[Out] integrate((g*x + f)^3*(b*arcsin(c*x) + a)^2/sqrt(-c^2*d*x^2 + d), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^3\,(a+b\,\mathrm{asin}(c\,x))^2}{\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)^3*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(1/2),x)
[Out] int(((f + g*x)^3*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(1/2), x)
```

3.71 $\int \frac{(f+gx)^2(a+b\mathbf{ArcSin}(cx))^2}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=410

$$\frac{4b^2fg(1-c^2x^2)}{c^2\sqrt{d-c^2dx^2}}+\frac{b^2g^2x(1-c^2x^2)}{4c^2\sqrt{d-c^2dx^2}}-\frac{b^2g^2\sqrt{1-c^2x^2}\,\text{ArcSin}(cx)}{4c^3\sqrt{d-c^2dx^2}}+\frac{4bfgx\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{c\sqrt{d-c^2dx^2}}+bg^2x^2$$

```
[Out] 4*b^2*f*g*(-c^2*x^2+1)/c^2/(-c^2*d*x^2+d)^(1/2)+1/4*b^2*g^2*x*(-c^2*x^2+1)/
c^2/(-c^2*d*x^2+d)^(1/2)-2*f*g*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2/c^2/(-c^2*d
*x^2+d)^(1/2)-1/2*g^2*x*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2/c^2/(-c^2*d*x^2+d)
^(1/2)-1/4*b^2*g^2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)/c^3/(-c^2*d*x^2+d)^(1/2)+
4*b*f*g*x*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c/(-c^2*d*x^2+d)^(1/2)+1/2*b
*g^2*x^2*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c/(-c^2*d*x^2+d)^(1/2)+1/3*f^
2*(a+b*arcsin(c*x))^3*(-c^2*x^2+1)^(1/2)/b/c/(-c^2*d*x^2+d)^(1/2)+1/6*g^2*(
a+b*arcsin(c*x))^3*(-c^2*x^2+1)^(1/2)/b/c^3/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A]
time = 0.35, antiderivative size = 410, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 9, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {4861, 4857, 3398, 3377, 2718, 3392, 32, 2715, 8}

$$\frac{f^2\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^3}{3bc\sqrt{d-c^2dx^2}}-\frac{2fg(1-c^2x^2)\,(a+b\text{ArcSin}(cx))^2}{c^2\sqrt{d-c^2dx^2}}+\frac{4bfgx\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{c\sqrt{d-c^2dx^2}}-\frac{g^2x(1-c^2x^2)\,(a+b\text{ArcSin}(cx))^2}{2c^2\sqrt{d-c^2dx^2}}+\frac{bg^2x^2\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{2c\sqrt{d-c^2dx^2}}+\frac{g^2\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^3}{6bc^3\sqrt{d-c^2dx^2}}-\frac{b^2g^2\sqrt{1-c^2x^2}\,\text{ArcSin}(cx)}{4c^3\sqrt{d-c^2dx^2}}+\frac{4b^2fg(1-c^2x^2)}{c^2\sqrt{d-c^2dx^2}}+\frac{b^2g^2x(1-c^2x^2)}{4c^2\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^2*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (4*b^2*f*g*(1 - c^2*x^2))/(c^2*Sqrt[d - c^2*d*x^2]) + (b^2*g^2*x*(1 - c^2*x
^2))/(4*c^2*Sqrt[d - c^2*d*x^2]) - (b^2*g^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x])/
(4*c^3*Sqrt[d - c^2*d*x^2]) + (4*b*f*g*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*
x]))/(c*Sqrt[d - c^2*d*x^2]) + (b*g^2*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c
*x]))/(2*c*Sqrt[d - c^2*d*x^2]) - (2*f*g*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^
2)/(c^2*Sqrt[d - c^2*d*x^2]) - (g^2*x*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/
(2*c^2*Sqrt[d - c^2*d*x^2]) + (f^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3)
/(3*b*c*Sqrt[d - c^2*d*x^2]) + (g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3
)/(6*b*c^3*Sqrt[d - c^2*d*x^2])
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2715

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(-b)*Cos[c + d*
x]*((b*Sin[c + d*x])^(n - 1)/(d*n)), x] + Dist[b^2*((n - 1)/n), Int[(b*Sin[
c + d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2
*n]
```

Rule 2718

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> Simp[-Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3377

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
-(c + d*x)^m)*(Cos[e + f*x]/f), x] + Dist[d*(m/f), Int[(c + d*x)^(m - 1)*Co
s[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3392

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[d*m*(c + d*x)^(m - 1)*((b*Sin[e + f*x])^n/(f^2*n^2)), x] + (Dist
[b^2*((n - 1)/n), Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[d
^2*m*((m - 1)/(f^2*n^2)), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[b*(c + d*x)^m*Cos[e + f*x]*((b*Sin[e + f*x])^(n - 1)/(f*n)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3398

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
```

```
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int \frac{(f+gx)^2 \left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\,\mathrm{Subst}\left(\int (a+bx)^2(cf+g\sin(x))^2\,dx, x, \sin^{-1}(cx)\right)}{c^3\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\,\mathrm{Subst}\left(\int \left(c^2f^2(a+bx)^2+2cfg(a+bx)^2\sin(x)+g^2(a+bx)\right.\right.}{c^3\sqrt{d-c^2dx^2}}$$

$$= \frac{f^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{d-c^2dx^2}} + \frac{\left(2fg\sqrt{1-c^2x^2}\right)\mathrm{Subst}\left(\int (a+bx)^2\right.}{c^2\sqrt{d-c^2dx^2}}$$

$$= \frac{bg^2x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c\sqrt{d-c^2dx^2}} - \frac{2fg(1-c^2x^2)\left(a+b\sin^{-1}(cx)\right)^2}{c^2\sqrt{d-c^2dx^2}} -$$

$$= \frac{b^2g^2x(1-c^2x^2)}{4c^2\sqrt{d-c^2dx^2}} + \frac{4bfgx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{d-c^2dx^2}} + \frac{bg^2x^2\sqrt{1-c^2x}}{2c\sqrt{d}}$$

$$= \frac{4b^2fg(1-c^2x^2)}{c^2\sqrt{d-c^2dx^2}} + \frac{b^2g^2x(1-c^2x^2)}{4c^2\sqrt{d-c^2dx^2}} - \frac{b^2g^2\sqrt{1-c^2x^2}\,\sin^{-1}(cx)}{4c^3\sqrt{d-c^2dx^2}} + \frac{4bfg}{}$$

Mathematica [A]
time = 0.89, size = 400, normalized size = 0.98

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^2*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (-4*b^2*Sqrt[d]*(2*c^2*f^2 + g^2)*(-1 + c^2*x^2)*ArcSin[c*x]^3 - 12*a^2*(2*
c^2*f^2 + g^2)*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]*ArcTan[(c*x*Sqrt[d - c
^2*d*x^2])/(Sqrt[d]*(-1 + c^2*x^2))] + 6*b*Sqrt[d]*g*(-1 + c^2*x^2)*ArcSin[
c*x]*(16*c*f*(-(b*c*x) + a*Sqrt[1 - c^2*x^2]) + b*g*Cos[2*ArcSin[c*x]] + 2*
a*g*Sin[2*ArcSin[c*x]]) + 3*Sqrt[d]*g*(-1 + c^2*x^2)*(4*c*(-8*a*b*c*f*x - 8
*b^2*f*Sqrt[1 - c^2*x^2] + a^2*(4*f + g*x)*Sqrt[1 - c^2*x^2]) + 2*a*b*g*Cos
[2*ArcSin[c*x]] - b^2*g*Sin[2*ArcSin[c*x]]) + 6*b*Sqrt[d]*(-1 + c^2*x^2)*Ar
cSin[c*x]^2*(-2*a*(2*c^2*f^2 + g^2) + 8*b*c*f*g*Sqrt[1 - c^2*x^2] + b*g^2*S
in[2*ArcSin[c*x]]))/(24*c^3*Sqrt[d]*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2])
```

Maple [C] Result contains complex when optimal does not.
time = 0.63, size = 936, normalized size = 2.28

method	result
default	$-\frac{a^2g^2x\sqrt{-c^2d\,x^2+d}}{2c^2d}+\frac{a^2g^2\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2d\,x^2+d}}\right)}{2c^2\sqrt{c^2d}}-\frac{2a^2fg\sqrt{-c^2d\,x^2+d}}{c^2d}+\frac{a^2f^2\arctan\left(\frac{\sqrt{c^2d}}{\sqrt{-c^2d\,x}}\right.}{\sqrt{c^2d}}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x,method=_RETURNVERB
OSE)
```

```
[Out] -1/2*a^2*g^2*x/c^2/d*(-c^2*d*x^2+d)^(1/2)+1/2*a^2*g^2/c^2/(c^2*d)^(1/2)*arc
tan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-2*a^2*f*g/c^2/d*(-c^2*d*x^2+d)^(1
/2)+a^2*f^2/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+b^2*
(-1/6*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d/(c^2*x^2-1)*arcsin(c*
x)^3*(2*c^2*f^2+g^2)-(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x
*c-1)*f*g*(arcsin(c*x)^2-2+2*I*arcsin(c*x))/c^2/d/(c^2*x^2-1)-(-d*(c^2*x^2-
1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*f*g*(arcsin(c*x)^2-2-2*I*arc
sin(c*x))/c^2/d/(c^2*x^2-1)+1/8*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c
^3/d/(c^2*x^2-1)*arcsin(c*x)*g^2+1/16*(-d*(c^2*x^2-1))^(1/2)/c^2/d/(c^2*x^2
-1)*g^2*(2*arcsin(c*x)^2-1)*x+1/8*(-d*(c^2*x^2-1))^(1/2)/c^3/d/(c^2*x^2-1)*
arcsin(c*x)*g^2*cos(3*arcsin(c*x))+1/16*(-d*(c^2*x^2-1))^(1/2)/c^3/d/(c^2*x
^2-1)*g^2*(2*arcsin(c*x)^2-1)*sin(3*arcsin(c*x)))+2*a*b*(-1/4*(-d*(c^2*x^2-
1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d/(c^2*x^2-1)*arcsin(c*x)^2*(2*c^2*f^2+g^2
)-(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*f*g*(arcsin(c
*x)+I)/c^2/d/(c^2*x^2-1)-(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c
^2*x^2-1)*f*g*(arcsin(c*x)-I)/c^2/d/(c^2*x^2-1)+1/16*(-d*(c^2*x^2-1))^(1/2)
*(-c^2*x^2+1)^(1/2)/c^3/d/(c^2*x^2-1)*g^2+1/8*(-d*(c^2*x^2-1))^(1/2)/c^2/d/
(c^2*x^2-1)*g^2*arcsin(c*x)*x+1/16*(-d*(c^2*x^2-1))^(1/2)/c^3/d/(c^2*x^2-1)
*g^2*cos(3*arcsin(c*x))+1/8*(-d*(c^2*x^2-1))^(1/2)/c^3/d/(c^2*x^2-1)*g^2*ar
csin(c*x)*sin(3*arcsin(c*x)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="
maxima")
```

```
[Out] -1/2*a^2*g^2*(sqrt(-c^2*d*x^2 + d)*x/(c^2*d) - arcsin(c*x)/(c^3*sqrt(d))) +
 a*b*f^2*arcsin(c*x)^2/(c*sqrt(d)) + 4*a*b*f*g*x/(c*sqrt(d)) + a^2*f^2*arcs
```

```
in(c*x)/(c*sqrt(d)) - 4*sqrt(-c^2*d*x^2 + d)*a*b*f*g*arcsin(c*x)/(c^2*d) -
2*sqrt(-c^2*d*x^2 + d)*a^2*f*g/(c^2*d) - sqrt(d)*integrate((2*a*b*g^2*x^2*a
rctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + (b^2*g^2*x^2 + 2*b^2*f*g*x + b^
2*f^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2)*sqrt(c*x + 1)*sqrt(-c*
x + 1)/(c^2*d*x^2 - d), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="
fricas")
```

```
[Out] integral(-(a^2*g^2*x^2 + 2*a^2*f*g*x + a^2*f^2 + (b^2*g^2*x^2 + 2*b^2*f*g*x
 + b^2*f^2)*arcsin(c*x)^2 + 2*(a*b*g^2*x^2 + 2*a*b*f*g*x + a*b*f^2)*arcsin(
c*x))*sqrt(-c^2*d*x^2 + d)/(c^2*d*x^2 - d), x)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Exception raised: TypeError >> Invalid comparison of non-real zoo
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="
giac")
```

```
[Out] integrate((g*x + f)^2*(b*arcsin(c*x) + a)^2/sqrt(-c^2*d*x^2 + d), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^2\,\left(a+b\,\mathrm{asin}(c\,x)\right)^2}{\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)^2*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int(((f + g*x)^2*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(1/2), x)
```

3.72 $\int \frac{(f+gx)(a+b\text{ArcSin}(cx))^2}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=171

$$\frac{2b^2g(1-c^2x^2)}{c^2\sqrt{d-c^2dx^2}}+\frac{2bgx\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{c\sqrt{d-c^2dx^2}}-\frac{g(1-c^2x^2)\,(a+b\text{ArcSin}(cx))^2}{c^2\sqrt{d-c^2dx^2}}+\frac{f\sqrt{1-c^2x^2}\,(a+b\text{A}}{3bc\sqrt{d-c^2d}}$$

```
[Out] 2*b^2*g*(-c^2*x^2+1)/c^2/(-c^2*d*x^2+d)^(1/2)-g*(-c^2*x^2+1)*(a+b*arcsin(c*
x))^2/c^2/(-c^2*d*x^2+d)^(1/2)+2*b*g*x*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)
/c/(-c^2*d*x^2+d)^(1/2)+1/3*f*(a+b*arcsin(c*x))^3*(-c^2*x^2+1)^(1/2)/b/c/(-
c^2*d*x^2+d)^(1/2)
```

Rubi [A]
time = 0.25, antiderivative size = 207, normalized size of antiderivative = 1.21, number of steps used = 8, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.194$, Rules used = {4861, 4847, 4737, 4767, 4715, 267}

$$\frac{f\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^3}{3bc\sqrt{d-c^2dx^2}}-\frac{g(1-c^2x^2)\,(a+b\text{ArcSin}(cx))^2}{c^2\sqrt{d-c^2dx^2}}+\frac{2abgx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}}+\frac{2b^2gx\sqrt{1-c^2x^2}\,\text{ArcSin}(cx)}{c\sqrt{d-c^2dx^2}}+\frac{2b^2g(1-c^2x^2)}{c^2\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (2*a*b*g*x*Sqrt[1 - c^2*x^2])/(c*Sqrt[d - c^2*d*x^2]) + (2*b^2*g*(1 - c^2*x
^2))/(c^2*Sqrt[d - c^2*d*x^2]) + (2*b^2*g*x*Sqrt[1 - c^2*x^2]*ArcSin[c*x])/
(c*Sqrt[d - c^2*d*x^2]) - (g*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(c^2*Sqrt
[d - c^2*d*x^2]) + (f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c*Sqrt[
d - c^2*d*x^2])
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
```

```
+ e, 0] && NeQ[n, -1]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{f\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}+\frac{gx\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\right)dx}{\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(f\sqrt{1-c^2x^2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}} + \frac{\left(g\sqrt{1-c^2x^2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,d}{\sqrt{d-c^2dx^2}}$$

$$= -\frac{g(1-c^2x^2)\left(a+b\sin^{-1}(cx)\right)^2}{c^2\sqrt{d-c^2dx^2}} + \frac{f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{d-c^2dx^2}} + \frac{(2}{}$$

$$= \frac{2abgx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}} - \frac{g(1-c^2x^2)\left(a+b\sin^{-1}(cx)\right)^2}{c^2\sqrt{d-c^2dx^2}} + \frac{f\sqrt{1-c^2x^2}\,(a+}{3bc\sqrt{d-}}$$

$$= \frac{2abgx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}} + \frac{2b^2gx\sqrt{1-c^2x^2}\,\sin^{-1}(cx)}{c\sqrt{d-c^2dx^2}} - \frac{g(1-c^2x^2)\,(a+b\,\text{si}}{c^2\sqrt{d-c^2dx}}$$

$$= \frac{2abgx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}} + \frac{2b^2g(1-c^2x^2)}{c^2\sqrt{d-c^2dx^2}} + \frac{2b^2gx\sqrt{1-c^2x^2}\,\sin^{-1}(cx)}{c\sqrt{d-c^2dx^2}} - \frac{g(}{}$$

Mathematica [A]
time = 0.39, size = 291, normalized size = 1.70

$$\frac{3\sqrt{d}\,g(-1+c^2x^2)\left(-2abcx+a^2\sqrt{1-c^2x^2}-2b^2\sqrt{1-c^2x^2}\right)-6b\sqrt{d}\,g(-1+c^2x^2)\left(bcx-a\sqrt{1-c^2x^2}\right)\text{ArcSin}(cx)+3b\sqrt{d}\,(-1+c^2x^2)\left(-acf+bg\sqrt{1-c^2x^2}\right)\text{ArcSin}(cx)^2-b^2c\sqrt{d}\,f(-1+c^2x^2)\,\text{ArcSin}(cx)^3-3a^2cf\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}\,\text{ArcTan}\left(\frac{cx\sqrt{d-c^2dx^2}}{\sqrt{d}\,(-1+c^2x^2)}\right)}{3c^2\sqrt{d}\,\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (3*Sqrt[d]*g*(-1 + c^2*x^2)*(-2*a*b*c*x + a^2*Sqrt[1 - c^2*x^2] - 2*b^2*Sqr
t[1 - c^2*x^2]) - 6*b*Sqrt[d]*g*(-1 + c^2*x^2)*(b*c*x - a*Sqrt[1 - c^2*x^2]
)*ArcSin[c*x] + 3*b*Sqrt[d]*(-1 + c^2*x^2)*(-(a*c*f) + b*g*Sqrt[1 - c^2*x^2
])*ArcSin[c*x]^2 - b^2*c*Sqrt[d]*f*(-1 + c^2*x^2)*ArcSin[c*x]^3 - 3*a^2*c*f
*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]*ArcTan[(c*x*Sqrt[d - c^2*d*x^2])/(Sq
rt[d]*(-1 + c^2*x^2))])/(3*c^2*Sqrt[d]*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2
])
```

Maple [C] Result contains complex when optimal does not.
time = 0.54, size = 460, normalized size = 2.69

method	result

default	$-\frac{a^{2} g \sqrt{-c^{2} d\,x^{2}+d}}{c^{2} d}+\frac{a^{2} f \arctan\left(\frac{\sqrt{c^{2} d}\,x}{\sqrt{-c^{2} d\,x^{2}+d}}\right)}{\sqrt{c^{2} d}}+b^{2}\left(-\frac{\sqrt{-d\left(c^{2} x^{2}-1\right)}\,\sqrt{-c^{2} x^{2}+1}\,\arcsin(cx)^{3}}{3 c d\left(c^{2} x^{2}-1\right)}\right.$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x,method=_RETURNVERBOS
E)
```

```
[Out] -a^2*g/c^2/d*(-c^2*d*x^2+d)^(1/2)+a^2*f/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*
x/(-c^2*d*x^2+d)^(1/2))+b^2*(-1/3*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)
/c/d/(c^2*x^2-1)*arcsin(c*x)^3*f-1/2*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^
2*x^2+1)^(1/2)*x*c-1)*g*(arcsin(c*x)^2-2+2*I*arcsin(c*x))/c^2/d/(c^2*x^2-1)
-1/2*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(arcsin(
c*x)^2-2-2*I*arcsin(c*x))/c^2/d/(c^2*x^2-1))+2*a*b*(-1/2*(-d*(c^2*x^2-1))^(
1/2)*(-c^2*x^2+1)^(1/2)/c/d/(c^2*x^2-1)*arcsin(c*x)^2*f-1/2*(-d*(c^2*x^2-1)
)^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*g*(arcsin(c*x)+I)/c^2/d/(c^2*x
^2-1)-1/2*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*g*(ar
csin(c*x)-I)/c^2/d/(c^2*x^2-1))
```

Maxima [A]
time = 0.50, size = 184, normalized size = 1.08

$$\frac{b^{2} f \arcsin\left(cx\right)^{3}}{3\,c\sqrt{d}}+2\,b^{2} g\left(\frac{x\arcsin\left(cx\right)}{c\sqrt{d}}+\frac{\sqrt{-c^{2}x^{2}+1}}{c^{2}\sqrt{d}}\right)+\frac{abf\arcsin\left(cx\right)^{2}}{c\sqrt{d}}+\frac{2\,abgx}{c\sqrt{d}}+\frac{a^{2}f\arcsin\left(cx\right)}{c\sqrt{d}}-\frac{\sqrt{-c^{2}dx^{2}+d}\,b^{2}g\arcsin\left(cx\right)^{2}}{c^{2}d}-\frac{2\sqrt{-c^{2}dx^{2}+d}\,abg\arcsin\left(cx\right)}{c^{2}d}-\frac{\sqrt{-c^{2}dx^{2}+d}\,a^{2}g}{c^{2}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="ma
xima")
```

```
[Out] 1/3*b^2*f*arcsin(c*x)^3/(c*sqrt(d)) + 2*b^2*g*(x*arcsin(c*x)/(c*sqrt(d)) +
sqrt(-c^2*x^2 + 1)/(c^2*sqrt(d))) + a*b*f*arcsin(c*x)^2/(c*sqrt(d)) + 2*a*b
*g*x/(c*sqrt(d)) + a^2*f*arcsin(c*x)/(c*sqrt(d)) - sqrt(-c^2*d*x^2 + d)*b^2
*g*arcsin(c*x)^2/(c^2*d) - 2*sqrt(-c^2*d*x^2 + d)*a*b*g*arcsin(c*x)/(c^2*d)
 - sqrt(-c^2*d*x^2 + d)*a^2*g/(c^2*d)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="fr
icas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(a^2*g*x + a^2*f + (b^2*g*x + b^2*f)*arcsin(
c*x)^2 + 2*(a*b*g*x + a*b*f)*arcsin(c*x))/(c^2*d*x^2 - d), x)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Exception raised: TypeError >> Invalid comparison of non-real zoo
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="gi
ac")
```

```
[Out] integrate((g*x + f)*(b*arcsin(c*x) + a)^2/sqrt(-c^2*d*x^2 + d), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(f+g\,x)\,\left(a+b\,\mathrm{asin}(c\,x)\right)^2}{\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int(((f + g*x)*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(1/2), x)
```

3.73 $\int \frac{(a+b\mathbf{ArcSin}(cx))^2}{(f+gx)\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=589

$$-\frac{i\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^2\log\left(1-\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{c^2f^2-g^2}\,\sqrt{d-c^2dx^2}}+\frac{i\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^2\log\left(1-\frac{ie}{cf+}\right.}{\sqrt{c^2f^2-g^2}\,\sqrt{d-c^2dx^2}}$$

```
[Out] -I*(a+b*arcsin(c*x))^2*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^
2)^(1/2)))*(-c^2*x^2+1)^(1/2)/(c^2*f^2-g^2)^(1/2)/(-c^2*d*x^2+d)^(1/2)+I*(a
+b*arcsin(c*x))^2*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1
/2)))*(-c^2*x^2+1)^(1/2)/(c^2*f^2-g^2)^(1/2)/(-c^2*d*x^2+d)^(1/2)-2*b*(a+b*
arcsin(c*x))*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1
/2)))*(-c^2*x^2+1)^(1/2)/(c^2*f^2-g^2)^(1/2)/(-c^2*d*x^2+d)^(1/2)+2*b*(a+b*
arcsin(c*x))*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1
/2)))*(-c^2*x^2+1)^(1/2)/(c^2*f^2-g^2)^(1/2)/(-c^2*d*x^2+d)^(1/2)-2*I*b^2*p
olylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))*(-c^2*x^
2+1)^(1/2)/(c^2*f^2-g^2)^(1/2)/(-c^2*d*x^2+d)^(1/2)+2*I*b^2*polylog(3,I*(I*
c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))*(-c^2*x^2+1)^(1/2)/(c^
2*f^2-g^2)^(1/2)/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A]

time = 0.67, antiderivative size = 589, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.242$, Rules used = {4861, 4857, 3404, 2296, 2221, 2611, 2320, 6724}

$$-\frac{2b\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))\text{Li}_2\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{d-c^2dx^2}\,\sqrt{c^2f^2-g^2}}+\frac{2b\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))\text{Li}_2\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)}{\sqrt{d-c^2dx^2}\,\sqrt{c^2f^2-g^2}}-\frac{i\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^2\log\left(1-\frac{ige^{i\text{ArcSin}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{d-c^2dx^2}\,\sqrt{c^2f^2-g^2}}+\frac{i\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^2\log\left(1-\frac{ige^{i\text{ArcSin}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{\sqrt{d-c^2dx^2}\,\sqrt{c^2f^2-g^2}}-\frac{2ib^2\sqrt{1-c^2x^2}\,\text{Li}_3\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{d-c^2dx^2}\,\sqrt{c^2f^2-g^2}}+\frac{2ib^2\sqrt{1-c^2x^2}\,\text{Li}_3\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)}{\sqrt{d-c^2dx^2}\,\sqrt{c^2f^2-g^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/((f + g*x)*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] ((-I)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*
g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2])
+ (I*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*g
)/(c*f + Sqrt[c^2*f^2 - g^2])])/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]) -
 (2*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])
*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2])
 + (2*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x
])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2
]) - ((2*I)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f -
 Sqrt[c^2*f^2 - g^2])])/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2]) + ((2*I)*
b^2*Sqrt[1 - c^2*x^2]*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^
2 - g^2])])/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2])
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2296

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[2*(c/q), Int[
(f + g*x)^m*(F^u/(b - q + 2*c*F^u)), x], x] - Dist[2*(c/q), Int[(f + g*x)^m
*(F^u/(b + q + 2*c*F^u)), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 3404

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[(c + d*x)^m*(E^(I*(e + f*x))/(I*b + 2*a*E^(I*(e + f*x)
) - I*b*E^(2*I*(e + f*x)))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(f+gx)\sqrt{d-c^2dx^2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(f+gx)\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\,\text{Subst}\left(\int \frac{(a+bx)^2}{cf+g\sin(x)}\,dx, x, \sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(2\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int \frac{e^{ix}(a+bx)^2}{2ce^{ix}f+ig-ie^{2ix}g}\,dx, x, \sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}$$

$$= -\frac{\left(2ig\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int \frac{e^{ix}(a+bx)^2}{2cf-2ie^{ix}g-2\sqrt{c^2f^2-g^2}}\,dx, x, \sin^{-1}(cx)\right)}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}} + \frac{\left(2\right.}{}$$

$$= -\frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}} + \frac{i\sqrt{1-c^2x^2}\,(}{}$$

$$= -\frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}} + \frac{i\sqrt{1-c^2x^2}\,(}{}$$

$$= -\frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}} + \frac{i\sqrt{1-c^2x^2}\,(}{}$$

$$= -\frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}} + \frac{i\sqrt{1-c^2x^2}\,(}{}$$

<u>Mathematica</u> [A]
time = 0.25, size = 357, normalized size = 0.61

$$-\frac{i\sqrt{1-c^2x^2}\left((a+b\text{ArcSin}(cx))^2\log\left(1+\frac{ie^{i\text{ArcSin}(cx)}g}{-cf+\sqrt{c^2f^2-g^2}}\right)-(a+b\text{ArcSin}(cx))^2\log\left(1-\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)-2ib(a+b\text{ArcSin}(cx))\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)+2ib(a+b\text{ArcSin}(cx))\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)+2b^2\text{PolyLog}\left(3,\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)-2b^2\text{PolyLog}\left(3,\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)\right)}{\sqrt{c^2f^2-g^2}\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/((f + g*x)*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] ((-I)*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^2*Log[1 + (I*E^(I*ArcSin[c*x])
*g)/(-(c*f) + Sqrt[c^2*f^2 - g^2])] - (a + b*ArcSin[c*x])^2*Log[1 - (I*E^(I
*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])] - (2*I)*b*(a + b*ArcSin[c*x])
*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])] + (2*I)*b*
```

```
(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2
- g^2])] + 2*b^2*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g
^2])] - 2*b^2*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2]
)]))/(Sqrt[c^2*f^2 - g^2]*Sqrt[d - c^2*d*x^2])
```

Maple [F]
time = 0.66, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin(cx))^2}{(gx+f)\sqrt{-c^2d\,x^2+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(g*x+f)/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2/(g*x+f)/(-c^2*d*x^2+d)^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(g*x+f)/(-c^2*d*x^2+d)^(1/2),x, algorithm="ma
xima")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/(sqrt(-c^2*d*x^2 + d)*(g*x + f)), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(g*x+f)/(-c^2*d*x^2+d)^(1/2),x, algorithm="fr
icas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2
)/(c^2*d*g*x^3 + c^2*d*f*x^2 - d*g*x - d*f), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+b\,\mathrm{asin}(cx))^2}{\sqrt{-d(cx-1)(cx+1)}\,(f+gx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(g*x+f)/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2/(sqrt(-d*(c*x - 1)*(c*x + 1))*(f + g*x)), x)
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(g*x+f)/(-c^2*d*x^2+d)^(1/2),x, algorithm="gi
ac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,sageVARx):;OUTPUT:Warning, integration of abs or sign a
ssumes constant sign by intervals (correct if the argument is real):Check [
abs(t_
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))^2}{(f+g\,x)\,\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/((f + g*x)*(d - c^2*d*x^2)^(1/2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/((f + g*x)*(d - c^2*d*x^2)^(1/2)), x)
```

3.74 $\int \frac{(a+b\textbf{ArcSin}(cx))^2}{(f+gx)^2\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=1113

$$\frac{ic\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^2}{(c^2f^2-g^2)\,\sqrt{d-c^2dx^2}}+\frac{g(1-c^2x^2)\,(a+b\text{ArcSin}(cx))^2}{(c^2f^2-g^2)\,(f+gx)\sqrt{d-c^2dx^2}}-\frac{2bc\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))\log\Big(}{(c^2f^2-g^2)\,\sqrt{d-c^2}}$$

```
[Out] g*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2/(c^2*f^2-g^2)/(g*x+f)/(-c^2*d*x^2+d)^(1/
2)+I*c*(a+b*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/(c^2*f^2-g^2)/(-c^2*d*x^2+d)^
(1/2)-2*b*c*(a+b*arcsin(c*x))*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2
*f^2-g^2)^(1/2)))*(-c^2*x^2+1)^(1/2)/(c^2*f^2-g^2)/(-c^2*d*x^2+d)^(1/2)-I*c
^2*f*(a+b*arcsin(c*x))^2*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-
g^2)^(1/2)))*(-c^2*x^2+1)^(1/2)/(c^2*f^2-g^2)^(3/2)/(-c^2*d*x^2+d)^(1/2)-2*
b*c*(a+b*arcsin(c*x))*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2
)^(1/2)))*(-c^2*x^2+1)^(1/2)/(c^2*f^2-g^2)/(-c^2*d*x^2+d)^(1/2)+I*c^2*f*(a+
b*arcsin(c*x))^2*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/
2)))*(-c^2*x^2+1)^(1/2)/(c^2*f^2-g^2)^(3/2)/(-c^2*d*x^2+d)^(1/2)+2*I*b^2*c*
polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))*(-c^2*x
^2+1)^(1/2)/(c^2*f^2-g^2)/(-c^2*d*x^2+d)^(1/2)-2*b*c^2*f*(a+b*arcsin(c*x))*
polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))*(-c^2*x
^2+1)^(1/2)/(c^2*f^2-g^2)^(3/2)/(-c^2*d*x^2+d)^(1/2)+2*I*b^2*c*polylog(2,I*
(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))*(-c^2*x^2+1)^(1/2)/
(c^2*f^2-g^2)/(-c^2*d*x^2+d)^(1/2)+2*b*c^2*f*(a+b*arcsin(c*x))*polylog(2,I*
(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))*(-c^2*x^2+1)^(1/2)/
(c^2*f^2-g^2)^(3/2)/(-c^2*d*x^2+d)^(1/2)-2*I*b^2*c^2*f*polylog(3,I*(I*c*x+(
-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))*(-c^2*x^2+1)^(1/2)/(c^2*f^2
-g^2)^(3/2)/(-c^2*d*x^2+d)^(1/2)+2*I*b^2*c^2*f*polylog(3,I*(I*c*x+(-c^2*x^2
+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))*(-c^2*x^2+1)^(1/2)/(c^2*f^2-g^2)^(3
/2)/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A]

time = 1.01, antiderivative size = 1113, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 12, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.364$, Rules used = {4861, 4857, 3405, 3404, 2296, 2221, 2611, 2320, 6724, 4615, 2317, 2438}

[illegible]

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/((f + g*x)^2*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] (I*c*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/((c^2*f^2 - g^2)*Sqrt[d - c^2
*d*x^2]) + (g*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/((c^2*f^2 - g^2)*(f + g*
```

```
x)*Sqrt[d - c^2*d*x^2]) - (2*b*c*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[
1 - (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)*
Sqrt[d - c^2*d*x^2]) - (I*c^2*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2*Log
[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)
^(3/2)*Sqrt[d - c^2*d*x^2]) - (2*b*c*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*
Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g
^2)*Sqrt[d - c^2*d*x^2]) + (I*c^2*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2
*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 -
g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) + ((2*I)*b^2*c*Sqrt[1 - c^2*x^2]*PolyLog[2,
 (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)*Sqr
t[d - c^2*d*x^2]) - (2*b*c^2*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*PolyLo
g[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)
^(3/2)*Sqrt[d - c^2*d*x^2]) + ((2*I)*b^2*c*Sqrt[1 - c^2*x^2]*PolyLog[2, (I*
E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)*Sqrt[d
 - c^2*d*x^2]) + (2*b*c^2*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*PolyLog[2,
 (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)^(3/
2)*Sqrt[d - c^2*d*x^2]) - ((2*I)*b^2*c^2*f*Sqrt[1 - c^2*x^2]*PolyLog[3, (I*
E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)^(3/2)*S
qrt[d - c^2*d*x^2]) + ((2*I)*b^2*c^2*f*Sqrt[1 - c^2*x^2]*PolyLog[3, (I*E^(I
*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/((c^2*f^2 - g^2)^(3/2)*Sqrt[
d - c^2*d*x^2])
```

<u>Rule 2221</u>

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

<u>Rule 2296</u>

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[2*(c/q), Int[
(f + g*x)^m*(F^u/(b - q + 2*c*F^u)), x], x] - Dist[2*(c/q), Int[(f + g*x)^m
*(F^u/(b + q + 2*c*F^u)), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

<u>Rule 2317</u>

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

<u>Rule 2320</u>

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
```

```
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

<u>Rule 2438</u>

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

<u>Rule 2611</u>

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

<u>Rule 3404</u>

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[(c + d*x)^m*(E^(I*(e + f*x))/(I*b + 2*a*E^(I*(e + f*x)
) - I*b*E^(2*I*(e + f*x)))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

<u>Rule 3405</u>

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[b*(c + d*x)^m*(Cos[e + f*x]/(f*(a^2 - b^2)*(a + b*Sin[e + f
*x]))), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[b*d*(m/(f*(a^2 - b^2))), Int[(c + d*x)^(m - 1)*(Cos[e + f*x]/(a
+ b*Sin[e + f*x])), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

<u>Rule 4615</u>

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Int[(e + f*x)^m*(E^(I*(c + d*x))/(a - Rt[a^2 - b^2, 2] - I*b*E^(
I*(c + d*x)))), x] + Int[(e + f*x)^m*(E^(I*(c + d*x))/(a + Rt[a^2 - b^2, 2]
 - I*b*E^(I*(c + d*x)))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0]
 && PosQ[a^2 - b^2]
```

<u>Rule 4857</u>

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
```

```
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\sin^{-1}(cx))^2}{(f+gx)^2\sqrt{d-c^2dx^2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(a+b\sin^{-1}(cx))^2}{(f+gx)^2\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(c\sqrt{1-c^2x^2}\right)\mathrm{Subst}\left(\int \frac{(a+bx)^2}{(cf+g\sin(x))^2}\,dx, x, \sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}$$

$$= \frac{g(1-c^2x^2)\,(a+b\sin^{-1}(cx))^2}{(c^2f^2-g^2)\,(f+gx)\sqrt{d-c^2dx^2}} + \frac{\left(c^2f\sqrt{1-c^2x^2}\right)\mathrm{Subst}\left(\int \frac{(a+bx)^2}{cf+g\sin(x)}\,dx,\right.}{(c^2f^2-g^2)\sqrt{d-c^2dx^2}}$$

$$= \frac{ic\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))^2}{(c^2f^2-g^2)\sqrt{d-c^2dx^2}} + \frac{g(1-c^2x^2)\,(a+b\sin^{-1}(cx))^2}{(c^2f^2-g^2)\,(f+gx)\sqrt{d-c^2dx^2}} + \frac{\left(2c^2f\right.}{}$$

$$= \frac{ic\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))^2}{(c^2f^2-g^2)\sqrt{d-c^2dx^2}} + \frac{g(1-c^2x^2)\,(a+b\sin^{-1}(cx))^2}{(c^2f^2-g^2)\,(f+gx)\sqrt{d-c^2dx^2}} - \frac{2bc\sqrt{1}}{}$$

$$= \frac{ic\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))^2}{(c^2f^2-g^2)\sqrt{d-c^2dx^2}} + \frac{g(1-c^2x^2)\,(a+b\sin^{-1}(cx))^2}{(c^2f^2-g^2)\,(f+gx)\sqrt{d-c^2dx^2}} - \frac{2bc\sqrt{1}}{}$$

$$= \frac{ic\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))^2}{(c^2f^2-g^2)\sqrt{d-c^2dx^2}} + \frac{g(1-c^2x^2)\,(a+b\sin^{-1}(cx))^2}{(c^2f^2-g^2)\,(f+gx)\sqrt{d-c^2dx^2}} - \frac{2bc\sqrt{1}}{}$$

$$= \frac{ic\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))^2}{(c^2f^2-g^2)\sqrt{d-c^2dx^2}} + \frac{g(1-c^2x^2)\,(a+b\sin^{-1}(cx))^2}{(c^2f^2-g^2)\,(f+gx)\sqrt{d-c^2dx^2}} - \frac{2bc\sqrt{1}}{}$$

$$= \frac{ic\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))^2}{(c^2f^2-g^2)\sqrt{d-c^2dx^2}} + \frac{g(1-c^2x^2)\,(a+b\sin^{-1}(cx))^2}{(c^2f^2-g^2)\,(f+gx)\sqrt{d-c^2dx^2}} - \frac{2bc\sqrt{1}}{}$$

Mathematica [A]
time = 0.50, size = 651, normalized size = 0.58

$$\frac{c\sqrt{1-c^2x^2}\left(i(a+b\mathrm{ArcSin}(cx))^2+\frac{g\sqrt{1-c^2x^2}(a+b\mathrm{ArcSin}(cx))^2}{cf+cgx}-2b(a+b\mathrm{ArcSin}(cx))\log\left(1+\frac{ie^{i\mathrm{ArcSin}(cx)}g}{-cf+\sqrt{c^2f^2-g^2}}\right)-2b(a+b\mathrm{ArcSin}(cx))\log\left(1-\frac{ie^{i\mathrm{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)+2ib^2\mathrm{PolyLog}\left(2,\frac{ie^{i\mathrm{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)+2ib^2\mathrm{PolyLog}\left(2,\frac{ie^{i\mathrm{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)-\frac{icf\left((a+b\mathrm{ArcSin}(cx))^2\log\left(1+\frac{ie^{i\mathrm{ArcSin}(cx)}g}{-cf+\sqrt{c^2f^2-g^2}}\right)-2ib(a+b\mathrm{ArcSin}(cx))\mathrm{PolyLog}\left(2,\frac{ie^{i\mathrm{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)+2b^2\mathrm{PolyLog}\left(3,\frac{ie^{i\mathrm{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)\right)}{\sqrt{c^2f^2-g^2}}+\frac{cf\left(2b(a+b\mathrm{ArcSin}(cx))\mathrm{PolyLog}\left(2,\frac{ie^{i\mathrm{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)+i\left((a+b\mathrm{ArcSin}(cx))^2\log\left(1-\frac{ie^{i\mathrm{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)+2b^2\mathrm{PolyLog}\left(3,\frac{ie^{i\mathrm{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)\right)\right)}{\sqrt{c^2f^2-g^2}}\right)}{(c^2f^2-g^2)\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/((f + g*x)^2*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] (c*Sqrt[1 - c^2*x^2]*(I*(a + b*ArcSin[c*x])^2 + (g*Sqrt[1 - c^2*x^2]*(a + b
*ArcSin[c*x])^2)/(c*f + c*g*x) - 2*b*(a + b*ArcSin[c*x])*Log[1 + (I*E^(I*Ar
cSin[c*x])*g)/(-(c*f) + Sqrt[c^2*f^2 - g^2])] - 2*b*(a + b*ArcSin[c*x])*Log
[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])] + (2*I)*b^2*PolyL
og[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])] + (2*I)*b^2*Poly
Log[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])] - (I*c*f*((a +
b*ArcSin[c*x])^2*Log[1 + (I*E^(I*ArcSin[c*x])*g)/(-(c*f) + Sqrt[c^2*f^2 - g
^2])] - (2*I)*b*(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f
 - Sqrt[c^2*f^2 - g^2])] + 2*b^2*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f -
Sqrt[c^2*f^2 - g^2])]))/Sqrt[c^2*f^2 - g^2] + (c*f*(2*b*(a + b*ArcSin[c*x])
*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])] + I*((a +
b*ArcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2]
)] + 2*b^2*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])
))/Sqrt[c^2*f^2 - g^2]))/((c^2*f^2 - g^2)*Sqrt[d - c^2*d*x^2])
```

Maple [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\arcsin\left(cx\right)\right)^{2}}{\left(gx+f\right)^{2}\sqrt{-c^{2}d\,x^{2}+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(g*x+f)^2/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2/(g*x+f)^2/(-c^2*d*x^2+d)^(1/2),x)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(g*x+f)^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="
maxima")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/(sqrt(-c^2*d*x^2 + d)*(g*x + f)^2), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(g*x+f)^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="
fricas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2
)/(c^2*d*g^2*x^4 + 2*c^2*d*f*g*x^3 - 2*d*f*g*x - d*f^2 + (c^2*d*f^2 - d*g^2
)*x^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\operatorname{asin}(cx))^2}{\sqrt{-d(cx-1)(cx+1)}\,(f+gx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(g*x+f)**2/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2/(sqrt(-d*(c*x - 1)*(c*x + 1))*(f + g*x)**2),
x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(g*x+f)^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="
giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/(sqrt(-c^2*d*x^2 + d)*(g*x + f)^2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\operatorname{asin}(c\,x))^2}{(f+g\,x)^2\,\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/((f + g*x)^2*(d - c^2*d*x^2)^(1/2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/((f + g*x)^2*(d - c^2*d*x^2)^(1/2)), x)
```

3.75 $\int \frac{(f+gx)^3(a+b\mathbf{ArcSin}(cx))^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=738

$$-\frac{2abg^3x\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}}-\frac{2b^2g^3(1-c^2x^2)}{c^4d\sqrt{d-c^2dx^2}}-\frac{2b^2g^3x\sqrt{1-c^2x^2}\,\text{ArcSin}(cx)}{c^3d\sqrt{d-c^2dx^2}}+\frac{g(3c^2f^2+g^2)\,(a+b\text{ArcSin}(cx))^2}{c^4d\sqrt{d-c^2dx^2}}+$$

```
[Out] -2*b^2*g^3*(-c^2*x^2+1)/c^4/d/(-c^2*d*x^2+d)^(1/2)+g*(3*c^2*f^2+g^2)*(a+b*a
rcsin(c*x))^2/c^4/d/(-c^2*d*x^2+d)^(1/2)+f*(f^2+3*g^2/c^2)*x*(a+b*arcsin(c*
x))^2/d/(-c^2*d*x^2+d)^(1/2)+g^3*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2/c^4/d/(-c
^2*d*x^2+d)^(1/2)-2*a*b*g^3*x*(-c^2*x^2+1)^(1/2)/c^3/d/(-c^2*d*x^2+d)^(1/2)
-2*b^2*g^3*x*arcsin(c*x)*(-c^2*x^2+1)^(1/2)/c^3/d/(-c^2*d*x^2+d)^(1/2)-I*f*
(c^2*f^2+3*g^2)*(a+b*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/c^3/d/(-c^2*d*x^2+d)
^(1/2)-f*g^2*(a+b*arcsin(c*x))^3*(-c^2*x^2+1)^(1/2)/b/c^3/d/(-c^2*d*x^2+d)^
(1/2)+4*I*b*g*(3*c^2*f^2+g^2)*(a+b*arcsin(c*x))*arctan(I*c*x+(-c^2*x^2+1)^(
1/2))*(-c^2*x^2+1)^(1/2)/c^4/d/(-c^2*d*x^2+d)^(1/2)+2*b*f*(c^2*f^2+3*g^2)*(
a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/c^3/
d/(-c^2*d*x^2+d)^(1/2)-2*I*b^2*g*(3*c^2*f^2+g^2)*polylog(2,-I*(I*c*x+(-c^2*
x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/c^4/d/(-c^2*d*x^2+d)^(1/2)+2*I*b^2*g*(3*c
^2*f^2+g^2)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/c^4/
d/(-c^2*d*x^2+d)^(1/2)-I*b^2*f*(c^2*f^2+3*g^2)*polylog(2,-(I*c*x+(-c^2*x^2+
1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/c^3/d/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A]
time = 0.79, antiderivative size = 738, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 15, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.454$, Rules used = {4861, 4859, 4847, 4745, 4765, 3800, 2221, 2317, 2438, 4767, 4749, 4266, 4737, 4715, 267}

$$\frac{4ibg\sqrt{1-c^2x^2}\,(3c^2f^2+g^2)\,\text{ArcTan}\left(e^{i\text{ArcSin}(cx)}\right)(a+b\text{ArcSin}(cx))}{c^4d\sqrt{d-c^2dx^2}}+\frac{fx\left(\frac{3g^2}{c^2}+f^2\right)(a+b\text{ArcSin}(cx))^2}{d\sqrt{d-c^2dx^2}}+\frac{g(3c^2f^2+g^2)\,(a+b\text{ArcSin}(cx))^2}{c^4d\sqrt{d-c^2dx^2}}+\frac{g^3(1-c^2x^2)\,(a+b\text{ArcSin}(cx))^2}{c^4d\sqrt{d-c^2dx^2}}-\frac{if\sqrt{1-c^2x^2}\,(c^2f^2+3g^2)\,(a+b\text{ArcSin}(cx))^2}{c^3d\sqrt{d-c^2dx^2}}+\frac{2bf\sqrt{1-c^2x^2}\,(c^2f^2+3g^2)\log\left(1+e^{2i\text{ArcSin}(cx)}\right)(a+b\text{ArcSin}(cx))}{c^3d\sqrt{d-c^2dx^2}}-\frac{fg^2\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^3}{bc^3d\sqrt{d-c^2dx^2}}-\frac{2abg^3x\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}}-\frac{2ib^2g\sqrt{1-c^2x^2}\,(3c^2f^2+g^2)\,\text{Li}_2\left(-ie^{i\text{ArcSin}(cx)}\right)}{c^4d\sqrt{d-c^2dx^2}}+\frac{2ib^2g\sqrt{1-c^2x^2}\,(3c^2f^2+g^2)\,\text{Li}_2\left(ie^{i\text{ArcSin}(cx)}\right)}{c^4d\sqrt{d-c^2dx^2}}-\frac{ib^2f\sqrt{1-c^2x^2}\,(c^2f^2+3g^2)\,\text{Li}_2\left(-e^{2i\text{ArcSin}(cx)}\right)}{c^3d\sqrt{d-c^2dx^2}}-\frac{2b^2g^3x\sqrt{1-c^2x^2}\,\text{ArcSin}(cx)}{c^3d\sqrt{d-c^2dx^2}}-\frac{2b^2g^3(1-c^2x^2)}{c^4d\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^3*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (-2*a*b*g^3*x*Sqrt[1 - c^2*x^2])/(c^3*d*Sqrt[d - c^2*d*x^2]) - (2*b^2*g^3*(
1 - c^2*x^2))/(c^4*d*Sqrt[d - c^2*d*x^2]) - (2*b^2*g^3*x*Sqrt[1 - c^2*x^2]*
ArcSin[c*x])/(c^3*d*Sqrt[d - c^2*d*x^2]) + (g*(3*c^2*f^2 + g^2)*(a + b*ArcS
in[c*x])^2)/(c^4*d*Sqrt[d - c^2*d*x^2]) + (f*(f^2 + (3*g^2)/c^2)*x*(a + b*A
rcSin[c*x])^2)/(d*Sqrt[d - c^2*d*x^2]) - (I*f*(c^2*f^2 + 3*g^2)*Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^2)/(c^3*d*Sqrt[d - c^2*d*x^2]) + (g^3*(1 - c^2*x
^2)*(a + b*ArcSin[c*x])^2)/(c^4*d*Sqrt[d - c^2*d*x^2]) - (f*g^2*Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^3)/(b*c^3*d*Sqrt[d - c^2*d*x^2]) + ((4*I)*b*g*(3
*c^2*f^2 + g^2)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*
```

```
x])])/(c^4*d*Sqrt[d - c^2*d*x^2]) + (2*b*f*(c^2*f^2 + 3*g^2)*Sqrt[1 - c^2*x
^2]*(a + b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(c^3*d*Sqrt[d - c^2
*d*x^2]) - ((2*I)*b^2*g*(3*c^2*f^2 + g^2)*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)
*E^(I*ArcSin[c*x])])/(c^4*d*Sqrt[d - c^2*d*x^2]) + ((2*I)*b^2*g*(3*c^2*f^2
+ g^2)*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c^4*d*Sqrt[d - c
^2*d*x^2]) - (I*b^2*f*(c^2*f^2 + 3*g^2)*Sqrt[1 - c^2*x^2]*PolyLog[2, -E^((2
*I)*ArcSin[c*x])])/(c^3*d*Sqrt[d - c^2*d*x^2])
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3800

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[I
*((c + d*x)^(m + 1)/(d*(m + 1))), x] - Dist[2*I, Int[(c + d*x)^m*(E^(2*I*(e
 + f*x))/(1 + E^(2*I*(e + f*x)))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4266

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[-2*(c + d*x)^m*(ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))]/f), x] + (-Di
st[d*(m/f), Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[d*(m/f), Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4745

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[x*((a + b*ArcSin[c*x])^n/(d*Sqrt[d + e*x^2])), x] - Dist[b
*c*(n/d)*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[x*((a + b*ArcSin[c*x]
)^(n - 1)/(1 - c^2*x^2)), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
+ e, 0] && GtQ[n, 0]
```

Rule 4749

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4765

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Dist[-e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
```

```
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4859

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int \frac{(f+gx)^3\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)^3\left(a+b\sin^{-1}(cx)\right)^2}{(1-c^2x^2)^{3/2}}\,dx}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{\left(c^2f^3+3fg^2+g\left(3c^2f^2+g^2\right)x\right)\left(a+b\sin^{-1}(cx)\right)^2}{c^2(1-c^2x^2)^{3/2}} - \frac{3fg^2\left(a+b\sin^{-1}(cx)\right)^2}{c^2\sqrt{1-c^2x^2}}\right.}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \frac{\left(c^2f^3+3fg^2+g\left(3c^2f^2+g^2\right)x\right)\left(a+b\sin^{-1}(cx)\right)^2}{(1-c^2x^2)^{3/2}}\,dx}{c^2d\sqrt{d-c^2dx^2}} - \frac{\left(3fg^2\sqrt{1-c^2\right.}{c^2d}$$

$$= \frac{g^3(1-c^2x^2)\left(a+b\sin^{-1}(cx)\right)^2}{c^4d\sqrt{d-c^2dx^2}} - \frac{fg^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{bc^3d\sqrt{d-c^2dx^2}} +$$

$$= -\frac{2abg^3x\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} + \frac{g^3(1-c^2x^2)\left(a+b\sin^{-1}(cx)\right)^2}{c^4d\sqrt{d-c^2dx^2}} - \frac{fg^2\sqrt{1-c^2}}{bc^3d}$$

$$= -\frac{2abg^3x\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} - \frac{2b^2g^3x\sqrt{1-c^2x^2}\sin^{-1}(cx)}{c^3d\sqrt{d-c^2dx^2}} + \frac{g(3c^2f^2+g^2)(}{c^4d\sqrt{d}}$$

$$= -\frac{2abg^3x\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} - \frac{2b^2g^3(1-c^2x^2)}{c^4d\sqrt{d-c^2dx^2}} - \frac{2b^2g^3x\sqrt{1-c^2x^2}\sin^{-1}(cx}{c^3d\sqrt{d-c^2dx^2}}$$

$$= -\frac{2abg^3x\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} - \frac{2b^2g^3(1-c^2x^2)}{c^4d\sqrt{d-c^2dx^2}} - \frac{2b^2g^3x\sqrt{1-c^2x^2}\sin^{-1}(cx}{c^3d\sqrt{d-c^2dx^2}}$$

$$= -\frac{2abg^3x\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} - \frac{2b^2g^3(1-c^2x^2)}{c^4d\sqrt{d-c^2dx^2}} - \frac{2b^2g^3x\sqrt{1-c^2x^2}\sin^{-1}(cx}{c^3d\sqrt{d-c^2dx^2}}$$

$$= -\frac{2abg^3x\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} - \frac{2b^2g^3(1-c^2x^2)}{c^4d\sqrt{d-c^2dx^2}} - \frac{2b^2g^3x\sqrt{1-c^2x^2}\sin^{-1}(cx}{c^3d\sqrt{d-c^2dx^2}}$$

$$= -\frac{2abg^3x\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} - \frac{2b^2g^3(1-c^2x^2)}{c^4d\sqrt{d-c^2dx^2}} - \frac{2b^2g^3x\sqrt{1-c^2x^2}\sin^{-1}(cx}{c^3d\sqrt{d-c^2dx^2}}$$

Mathematica [A]
time = 2.36, size = 325, normalized size = 0.44

$$\frac{\sqrt{1-c^2x^2}\left(2g^3\sqrt{1-c^2x^2}(a+b\text{ArcSin}(cx))^2-\frac{2cfg^2(a+b\text{ArcSin}(cx))^3}{b}-4bg^3\left(acx+b\sqrt{1-c^2x^2}+bcx\text{ArcSin}(cx)\right)+(cf-g)^3\left(-(a+b\text{ArcSin}(cx))^2\cot\left(\frac{1}{4}(\pi+2\text{ArcSin}(cx))\right)+i\left((a+b\text{ArcSin}(cx))\left(a+b\text{ArcSin}(cx)-4ib\log\left(1+ie^{-i\text{ArcSin}(cx)}\right)\right)+4b^2\text{PolyLog}\left(2,-ie^{-i\text{ArcSin}(cx)}\right)\right)\right)-(cf+g)^3\left(i\left((a+b\text{ArcSin}(cx))\left(a+b\text{ArcSin}(cx)+4ib\log\left(1+ie^{i\text{ArcSin}(cx)}\right)\right)+4b^2\text{PolyLog}\left(2,-ie^{i\text{ArcSin}(cx)}\right)\right)-(a+b\text{ArcSin}(cx))^2\tan\left(\frac{1}{4}(\pi+2\text{ArcSin}(cx))\right)\right)\right)}{2c^4d\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^3*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*(2*g^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2 - (2*c*f*
g^2*(a + b*ArcSin[c*x])^3)/b - 4*b*g^3*(a*c*x + b*Sqrt[1 - c^2*x^2] + b*c*x
*ArcSin[c*x]) + (c*f - g)^3*(-((a + b*ArcSin[c*x])^2*Cot[(Pi + 2*ArcSin[c*x
])/4]) + I*((a + b*ArcSin[c*x])*(a + b*ArcSin[c*x] - (4*I)*b*Log[1 + I/E^(I
*ArcSin[c*x])]) + 4*b^2*PolyLog[2, (-I)/E^(I*ArcSin[c*x])])) - (c*f + g)^3*
(I*((a + b*ArcSin[c*x])*(a + b*ArcSin[c*x] + (4*I)*b*Log[1 + I*E^(I*ArcSin[
c*x])]) + 4*b^2*PolyLog[2, (-I)*E^(I*ArcSin[c*x])]) - (a + b*ArcSin[c*x])^2
*Tan[(Pi + 2*ArcSin[c*x])/4])))/(2*c^4*d*Sqrt[d - c^2*d*x^2])
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 2662 vs. 2(731) = 1462.
time = 1.00, size = 2663, normalized size = 3.61

method	result	size
default	Expression too large to display	2663

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x,method=_RETURNVERB
OSE)
```

```
[Out] 6*I*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^2/d^2/(c^2*x^2-1)*f^2*g
*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/c^3/d
^2/(c^2*x^2-1)*arcsin(c*x)^2*(-c^2*x^2+1)^(1/2)*f*g^2+2*b^2*(-d*(c^2*x^2-1)
)^(1/2)*(-c^2*x^2+1)^(1/2)/c^4/d^2/(c^2*x^2-1)*g^3*arcsin(c*x)*ln(1-I*(I*c*
x+(-c^2*x^2+1)^(1/2)))-3*b^2*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^2-1)*arc
sin(c*x)^2*x*f*g^2+I*b^2*(-d*(c^2*x^2-1))^(1/2)/c/d^2/(c^2*x^2-1)*arcsin(c*
x)^2*(-c^2*x^2+1)^(1/2)*f^3-2*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)
/c/d^2/(c^2*x^2-1)*f^3*arcsin(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)-2*I*b
^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^4/d^2/(c^2*x^2-1)*g^3*dilog(
1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-2*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(
1/2)/c^4/d^2/(c^2*x^2-1)*g^3*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))
+b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d^2/(c^2*x^2-1)*arcsin(c
*x)^3*f*g^2+2*a^2*g^3/d/c^4/(-c^2*d*x^2+d)^(1/2)-4*a*b*(-d*(c^2*x^2-1))^(1/
2)*g^3/c^4/d^2/(c^2*x^2-1)*arcsin(c*x)-2*a*b*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^
2*x^2-1)*arcsin(c*x)*x*f^3+a^2*f^3*x/d/(-c^2*d*x^2+d)^(1/2)-6*I*b^2*(-d*(c^
2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^2/d^2/(c^2*x^2-1)*f^2*g*dilog(1-I*(I*c
*x+(-c^2*x^2+1)^(1/2)))-6*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^2
/d^2/(c^2*x^2-1)*f^2*g*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+3*I*b
^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d^2/(c^2*x^2-1)*f*g^2*poly
log(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)+6*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2
+1)^(1/2)/c^2/d^2/(c^2*x^2-1)*f^2*g*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^
(1/2)))+3*a^2*f^2*g/c^2/d/(-c^2*d*x^2+d)^(1/2)-a^2*g^3*x^2/c^2/d/(-c^2*d*x^
2+d)^(1/2)+2*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3/c^4/d^2/(c^2*x^2-1)+6*I*a*b*(-c
^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^3/d^2/(c^2*x^2-1)*f*arcsin(c*x)*g^
2+b^2*(-d*(c^2*x^2-1))^(1/2)*g^3/c^2/d^2/(c^2*x^2-1)*arcsin(c*x)^2*x^2-3*b^
```

```
2*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^2-1)*arcsin(c*x)^2*f^2*g-3*a^2*f*g^
2/c^2/d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+3*a^2*f*
g^2*x/c^2/d/(-c^2*d*x^2+d)^(1/2)-6*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^
(1/2)/c^3/d^2/(c^2*x^2-1)*f*g^2*arcsin(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))
^2)+2*a*b*(-d*(c^2*x^2-1))^(1/2)*g^3/c^2/d^2/(c^2*x^2-1)*arcsin(c*x)*x^2-6*
a*b*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^2-1)*arcsin(c*x)*f^2*g-2*a*b*(-d*
(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)/c/d^2/
(c^2*x^2-1)*f^3+2*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*ln(I*c*x+(-
c^2*x^2+1)^(1/2)+I)/c^4/d^2/(c^2*x^2-1)*g^3-2*a*b*(-d*(c^2*x^2-1))^(1/2)*(-
c^2*x^2+1)^(1/2)/c/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*f^3-2*a*b
*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^4/d^2/(c^2*x^2-1)*ln(I*c*x+(-c
^2*x^2+1)^(1/2)-I)*g^3-6*a*b*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^2-1)*arc
sin(c*x)*x*f*g^2+6*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*ln(I*c*x+(
-c^2*x^2+1)^(1/2)+I)/c^2/d^2/(c^2*x^2-1)*f^2*g-6*a*b*(-d*(c^2*x^2-1))^(1/2)
*(-c^2*x^2+1)^(1/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)/c^3/d^2/(c^2*x^2-1)*f*g^
2-6*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^2/d^2/(c^2*x^2-1)*ln(I*
c*x+(-c^2*x^2+1)^(1/2)-I)*f^2*g-6*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(
1/2)/c^3/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*f*g^2+3*a*b*(-d*(c^
2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d^2/(c^2*x^2-1)*arcsin(c*x)^2*f*g^2+
2*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c/d^2/(c^2*x^2-1)*f^3*arc
sin(c*x)+2*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3/c^3/d^2/(c^2*x^2-1)*arcsin(c*x)*(
-c^2*x^2+1)^(1/2)*x+I*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/d^2/(
c^2*x^2-1)*f^3*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)+2*I*b^2*(-d*(c^2*x^
2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^4/d^2/(c^2*x^2-1)*g^3*dilog(1+I*(I*c*x+(-c
^2*x^2+1)^(1/2)))+2*a*b*(-d*(c^2*x^2-1))^(1/2)*g^3/c^3/d^2/(c^2*x^2-1)*(-c^
2*x^2+1)^(1/2)*x-2*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3/c^2/d^2/(c^2*x^2-1)*x^2-2
*b^2*(-d*(c^2*x^2-1))^(1/2)*g^3/c^4/d^2/(c^2*x^2-1)*arcsin(c*x)^2-b^2*(-d*(
c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)*arcsin(c*x)^2*x*f^3
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="
maxima")
```

```
[Out] -a^2*g^3*(x^2/(sqrt(-c^2*d*x^2 + d)*c^2*d) - 2/(sqrt(-c^2*d*x^2 + d)*c^4*d)
) + 3*a^2*f*g^2*(x/(sqrt(-c^2*d*x^2 + d)*c^2*d) - arcsin(c*x)/(c^3*d^(3/2))
) + 2*a*b*f^3*x*arcsin(c*x)/(sqrt(-c^2*d*x^2 + d)*d) + a^2*f^3*x/(sqrt(-c^2
*d*x^2 + d)*d) - a*b*f^3*log(x^2 - 1/c^2)/(c*d^(3/2)) + 3*a^2*f^2*g/(sqrt(-
c^2*d*x^2 + d)*c^2*d) - sqrt(d)*integrate(((b^2*g^3*x^3 + 3*b^2*f*g^2*x^2 +
 3*b^2*f^2*g*x + b^2*f^3)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*
(a*b*g^3*x^3 + 3*a*b*f*g^2*x^2 + 3*a*b*f^2*g*x)*arctan2(c*x, sqrt(c*x + 1)*
sqrt(-c*x + 1)))/((c^2*d^2*x^2 - d^2)*sqrt(c*x + 1)*sqrt(-c*x + 1)), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="
fricas")
```

```
[Out] integral((a^2*g^3*x^3 + 3*a^2*f*g^2*x^2 + 3*a^2*f^2*g*x + a^2*f^3 + (b^2*g^
3*x^3 + 3*b^2*f*g^2*x^2 + 3*b^2*f^2*g*x + b^2*f^3)*arcsin(c*x)^2 + 2*(a*b*g
^3*x^3 + 3*a*b*f*g^2*x^2 + 3*a*b*f^2*g*x + a*b*f^3)*arcsin(c*x))*sqrt(-c^2*
d*x^2 + d)/(c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2), x)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Exception raised: TypeError >> Invalid comparison of non-real zoo
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="
giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,sageVARx):;OUTPUT:Warning, integration of abs or sign a
ssumes constant sign by intervals (correct if the argument is real):Check [
abs(t_
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(f+g\,x\right)}^3\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{{\left(d-c^2\,d\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)^3*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int(((f + g*x)^3*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(3/2), x)
```

3.76 $\int \frac{(f+gx)^2(a+b\mathbf{ArcSin}(cx))^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=513

$$\frac{2fg(a+b\text{ArcSin}(cx))^2}{c^2d\sqrt{d-c^2dx^2}}+\frac{(c^2f^2+g^2)\,x(a+b\text{ArcSin}(cx))^2}{c^2d\sqrt{d-c^2dx^2}}-\frac{i(c^2f^2+g^2)\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^2}{c^3d\sqrt{d-c^2dx^2}}-\frac{g^2}{}$$

```
[Out] 2*f*g*(a+b*arcsin(c*x))^2/c^2/d/(-c^2*d*x^2+d)^(1/2)+(c^2*f^2+g^2)*x*(a+b*a
rcsin(c*x))^2/c^2/d/(-c^2*d*x^2+d)^(1/2)-I*(c^2*f^2+g^2)*(a+b*arcsin(c*x))^
2*(-c^2*x^2+1)^(1/2)/c^3/d/(-c^2*d*x^2+d)^(1/2)-1/3*g^2*(a+b*arcsin(c*x))^3
*(-c^2*x^2+1)^(1/2)/b/c^3/d/(-c^2*d*x^2+d)^(1/2)+8*I*b*f*g*(a+b*arcsin(c*x)
)*arctan(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/c^2/d/(-c^2*d*x^2+d)^
(1/2)+2*b*(c^2*f^2+g^2)*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2
)*(-c^2*x^2+1)^(1/2)/c^3/d/(-c^2*d*x^2+d)^(1/2)-4*I*b^2*f*g*polylog(2,-I*(I
*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/c^2/d/(-c^2*d*x^2+d)^(1/2)+4*I
*b^2*f*g*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/c^2/d/(
-c^2*d*x^2+d)^(1/2)-I*b^2*(c^2*f^2+g^2)*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2
))^2)*(-c^2*x^2+1)^(1/2)/c^3/d/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A]

time = 0.69, antiderivative size = 513, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 13, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.394$, Rules used = {4861, 4859, 4847, 4745, 4765, 3800, 2221, 2317, 2438, 4767, 4749, 4266, 4737}

$$\frac{8ibfg\sqrt{1-c^2x^2}\,\text{ArcTan}\left(e^{i\text{ArcSin}(cx)}\right)(a+b\text{ArcSin}(cx))}{c^2d\sqrt{d-c^2dx^2}}+\frac{x(c^2f^2+g^2)(a+b\text{ArcSin}(cx))^2}{c^2d\sqrt{d-c^2dx^2}}+\frac{2fg(a+b\text{ArcSin}(cx))^2}{c^2d\sqrt{d-c^2dx^2}}-\frac{i\sqrt{1-c^2x^2}\,(c^2f^2+g^2)(a+b\text{ArcSin}(cx))^2}{c^3d\sqrt{d-c^2dx^2}}+\frac{2b\sqrt{1-c^2x^2}\,(c^2f^2+g^2)\log\left(1+e^{2i\text{ArcSin}(cx)}\right)(a+b\text{ArcSin}(cx))}{c^3d\sqrt{d-c^2dx^2}}-\frac{g^2\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^3}{3bc^3d\sqrt{d-c^2dx^2}}-\frac{4ib^2fg\sqrt{1-c^2x^2}\,\text{Li}_2\left(-ie^{i\text{ArcSin}(cx)}\right)}{c^2d\sqrt{d-c^2dx^2}}+\frac{4ib^2fg\sqrt{1-c^2x^2}\,\text{Li}_2\left(ie^{i\text{ArcSin}(cx)}\right)}{c^2d\sqrt{d-c^2dx^2}}-\frac{ib^2\sqrt{1-c^2x^2}\,(c^2f^2+g^2)\,\text{Li}_2\left(-e^{2i\text{ArcSin}(cx)}\right)}{c^3d\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^2*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (2*f*g*(a + b*ArcSin[c*x])^2)/(c^2*d*Sqrt[d - c^2*d*x^2]) + ((c^2*f^2 + g^2
)*x*(a + b*ArcSin[c*x])^2)/(c^2*d*Sqrt[d - c^2*d*x^2]) - (I*(c^2*f^2 + g^2)
*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(c^3*d*Sqrt[d - c^2*d*x^2]) - (g^
2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c^3*d*Sqrt[d - c^2*d*x^2])
 + ((8*I)*b*f*g*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x
])])/(c^2*d*Sqrt[d - c^2*d*x^2]) + (2*b*(c^2*f^2 + g^2)*Sqrt[1 - c^2*x^2]*(
a + b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(c^3*d*Sqrt[d - c^2*d*x^
2]) - ((4*I)*b^2*f*g*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/
(c^2*d*Sqrt[d - c^2*d*x^2]) + ((4*I)*b^2*f*g*Sqrt[1 - c^2*x^2]*PolyLog[2, I
*E^(I*ArcSin[c*x])])/(c^2*d*Sqrt[d - c^2*d*x^2]) - (I*b^2*(c^2*f^2 + g^2)*S
qrt[1 - c^2*x^2]*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(c^3*d*Sqrt[d - c^2*d*
x^2])
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3800

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[I
*((c + d*x)^(m + 1)/(d*(m + 1))), x] - Dist[2*I, Int[(c + d*x)^m*(E^(2*I*(e
 + f*x))/(1 + E^(2*I*(e + f*x)))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4266

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[-2*(c + d*x)^m*(ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))]/f), x] + (-Di
st[d*(m/f), Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[d*(m/f), Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4745

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[x*((a + b*ArcSin[c*x])^n/(d*Sqrt[d + e*x^2])), x] - Dist[b
*c*(n/d)*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[x*((a + b*ArcSin[c*x]
)^(n - 1)/(1 - c^2*x^2)), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
+ e, 0] && GtQ[n, 0]
```

Rule 4749

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4765

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Dist[-e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4859

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{(d-c^2dx^2)^{3/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{(1-c^2x^2)^{3/2}}dx}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{(c^2f^2+g^2+2c^2fgx)\left(a+b\sin^{-1}(cx)\right)^2}{c^2(1-c^2x^2)^{3/2}} - \frac{g^2\left(a+b\sin^{-1}(cx)\right)^2}{c^2\sqrt{1-c^2x^2}}\right)dx}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \frac{(c^2f^2+g^2+2c^2fgx)\left(a+b\sin^{-1}(cx)\right)^2}{(1-c^2x^2)^{3/2}}dx}{c^2d\sqrt{d-c^2dx^2}} - \frac{\left(g^2\sqrt{1-c^2x^2}\right)\int \frac{(a+b\text{s}}{\sqrt{1}}}{c^2d\sqrt{d-c^2dx}}$$

$$= -\frac{g^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc^3d\sqrt{d-c^2dx^2}} + \frac{\sqrt{1-c^2x^2}\int \left(\frac{c^2f^2\left(1+\frac{g^2}{c^2f^2}\right)\left(a+b\sin^{-}\right.}{(1-c^2x^2)^{3/2}}\right.}{c^2d\sqrt{d-}}$$

$$= -\frac{g^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc^3d\sqrt{d-c^2dx^2}} + \frac{\left(2fg\sqrt{1-c^2x^2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{(1-c^2x^2)^{3/2}}}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{2fg(a+b\sin^{-1}(cx))^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{(c^2f^2+g^2)\,x(a+b\sin^{-1}(cx))^2}{c^2d\sqrt{d-c^2dx^2}} - \frac{g^2\sqrt{1-c^2x^2}}{3bc^3d}$$

$$= \frac{2fg(a+b\sin^{-1}(cx))^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{(c^2f^2+g^2)\,x(a+b\sin^{-1}(cx))^2}{c^2d\sqrt{d-c^2dx^2}} - \frac{g^2\sqrt{1-c^2x^2}}{3bc^3d}$$

$$= \frac{2fg(a+b\sin^{-1}(cx))^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{(c^2f^2+g^2)\,x(a+b\sin^{-1}(cx))^2}{c^2d\sqrt{d-c^2dx^2}} - \frac{i(c^2f^2+g^2)}{}$$

$$= \frac{2fg(a+b\sin^{-1}(cx))^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{(c^2f^2+g^2)\,x(a+b\sin^{-1}(cx))^2}{c^2d\sqrt{d-c^2dx^2}} - \frac{i(c^2f^2+g^2)}{}$$

$$= \frac{2fg(a+b\sin^{-1}(cx))^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{(c^2f^2+g^2)\,x(a+b\sin^{-1}(cx))^2}{c^2d\sqrt{d-c^2dx^2}} - \frac{i(c^2f^2+g^2)}{}$$

$$= \frac{2fg(a+b\sin^{-1}(cx))^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{(c^2f^2+g^2)\,x(a+b\sin^{-1}(cx))^2}{c^2d\sqrt{d-c^2dx^2}} - \frac{i(c^2f^2+g^2)}{}$$

<u>Mathematica</u> [A]
time = 1.34, size = 259, normalized size = 0.50

$$\frac{\sqrt{1-c^2x^2}\left(-\frac{2g^2(a+b\text{ArcSin}(cx))^3}{b}+3(-cf+g)^2\left(-(a+b\text{ArcSin}(cx))^2\cot\left(\frac{1}{4}(\pi+2\text{ArcSin}(cx))\right)+i\left((a+b\text{ArcSin}(cx))\left(a+b\text{ArcSin}(cx)-4ib\log\left(1+ie^{-i\text{ArcSin}(cx)}\right)\right)+4b^2\text{PolyLog}\left(2,-ie^{-i\text{ArcSin}(cx)}\right)\right)\right)-3(cf+g)^2\left(i\left((a+b\text{ArcSin}(cx))\left(a+b\text{ArcSin}(cx)+4ib\log\left(1+ie^{i\text{ArcSin}(cx)}\right)\right)+4b^2\text{PolyLog}\left(2,-ie^{i\text{ArcSin}(cx)}\right)\right)-(a+b\text{ArcSin}(cx))^2\tan\left(\frac{1}{4}(\pi+2\text{ArcSin}(cx))\right)\right)\right)}{6c^3d\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^2*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*((-2*g^2*(a + b*ArcSin[c*x])^3)/b + 3*(-(c*f) + g)^2*(-(
(a + b*ArcSin[c*x])^2*Cot[(Pi + 2*ArcSin[c*x])/4]) + I*((a + b*ArcSin[c*x])
*(a + b*ArcSin[c*x] - (4*I)*b*Log[1 + I/E^(I*ArcSin[c*x])]) + 4*b^2*PolyLog
[2, (-I)/E^(I*ArcSin[c*x])])) - 3*(c*f + g)^2*(I*((a + b*ArcSin[c*x])*(a +
b*ArcSin[c*x] + (4*I)*b*Log[1 + I*E^(I*ArcSin[c*x])]) + 4*b^2*PolyLog[2, (-
I)*E^(I*ArcSin[c*x])]) - (a + b*ArcSin[c*x])^2*Tan[(Pi + 2*ArcSin[c*x])/4])
))/(6*c^3*d*Sqrt[d - c^2*d*x^2])
```

Maple [**B**] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 1860 vs. 2(516) = 1032.
time = 0.70, size = 1861, normalized size = 3.63

method	result	size
default	Expression too large to display	1861

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x,method=_RETURNVERB
OSE)
```

```
[Out] a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d^2/(c^2*x^2-1)*g^2*arcsi
n(c*x)^2-4*a*b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/d^2/(c^2*x^2-1)*x^2*f*g-2
*a*b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/c^2/d^2/(c^2*x^2-1)*x*g^2-2*a*b*(-d
*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2
+1)^(1/2)-I)*f^2-2*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d^2/(c
^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*g^2-2*a*b*(-d*(c^2*x^2-1))^(1/2)*(
-c^2*x^2+1)^(1/2)/c/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)*f^2-2*b^
2*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)^2/c^2/d^2/(c^2*x^2-1)*(-c^2*x^2+1)*f*g
+a^2*f^2*x/d/(-c^2*d*x^2+d)^(1/2)+I*b^2*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)^
2/c/d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*f^2+I*b^2*(-d*(c^2*x^2-1))^(1/2)*arc
sin(c*x)^2/c^3/d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*g^2-2*b^2*(-d*(c^2*x^2-1)
)^(1/2)*(-c^2*x^2+1)^(1/2)/c/d^2/(c^2*x^2-1)*f^2*arcsin(c*x)*ln(1+(I*c*x+(-
c^2*x^2+1)^(1/2))^2)+I*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/d^2/
(c^2*x^2-1)*f^2*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)-2*b^2*(-d*(c^2*x^2
-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d^2/(c^2*x^2-1)*g^2*arcsin(c*x)*ln(1+(I*c
*x+(-c^2*x^2+1)^(1/2))^2)-4*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c
^2/d^2/(c^2*x^2-1)*f*g*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+4*b^2
*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^2/d^2/(c^2*x^2-1)*f*g*arcsin(c
*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+4*I*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2
*x^2+1)^(1/2)/c^2/d^2/(c^2*x^2-1)*f*g*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))
-4*I*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^2/d^2/(c^2*x^2-1)*f*g*
dilog(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+2*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x
^2-1))^(1/2)/c/d^2/(c^2*x^2-1)*arcsin(c*x)*f^2+2*I*a*b*(-c^2*x^2+1)^(1/2)*(
-d*(c^2*x^2-1))^(1/2)/c^3/d^2/(c^2*x^2-1)*arcsin(c*x)*g^2-4*a*b*(-d*(c^2*x^
2-1))^(1/2)*arcsin(c*x)/c^2/d^2/(c^2*x^2-1)*(-c^2*x^2+1)*f*g-4*a*b*(-d*(c^2
*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^2/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)
```

```
^(1/2)-I)*f*g+4*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^2/d^2/(c^2*
x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)*f*g-a^2*g^2/c^2/d/(c^2*d)^(1/2)*arcta
n((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+2*a^2*f*g/c^2/d/(-c^2*d*x^2+d)^(1/2
)+a^2*g^2*x/c^2/d/(-c^2*d*x^2+d)^(1/2)-b^2*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*
x)^2/d^2/(c^2*x^2-1)*x*f^2+I*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/
c^3/d^2/(c^2*x^2-1)*g^2*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)+1/3*b^2*(-
d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d^2/(c^2*x^2-1)*g^2*arcsin(c*x)
^3-2*b^2*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)^2/d^2/(c^2*x^2-1)*x^2*f*g-b^2*(
-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)^2/c^2/d^2/(c^2*x^2-1)*x*g^2-2*a*b*(-d*(c^
2*x^2-1))^(1/2)*arcsin(c*x)/d^2/(c^2*x^2-1)*x*f^2-2*a*b*(-d*(c^2*x^2-1))^(1
/2)*(-c^2*x^2+1)^(1/2)/c^3/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)*g
^2
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="
maxima")
```

```
[Out] a^2*g^2*(x/(sqrt(-c^2*d*x^2 + d)*c^2*d) - arcsin(c*x)/(c^3*d^(3/2))) + 2*a*
b*f^2*x*arcsin(c*x)/(sqrt(-c^2*d*x^2 + d)*d) + a^2*f^2*x/(sqrt(-c^2*d*x^2 +
 d)*d) - a*b*f^2*log(x^2 - 1/c^2)/(c*d^(3/2)) - sqrt(d)*integrate(((b^2*g^2
*x^2 + 2*b^2*f*g*x + b^2*f^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2
+ 2*(a*b*g^2*x^2 + 2*a*b*f*g*x)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))
/((c^2*d^2*x^2 - d^2)*sqrt(c*x + 1)*sqrt(-c*x + 1)), x) + 2*a^2*f*g/(sqrt(-
c^2*d*x^2 + d)*c^2*d)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="
fricas")
```

```
[Out] integral((a^2*g^2*x^2 + 2*a^2*f*g*x + a^2*f^2 + (b^2*g^2*x^2 + 2*b^2*f*g*x
+ b^2*f^2)*arcsin(c*x)^2 + 2*(a*b*g^2*x^2 + 2*a*b*f*g*x + a*b*f^2)*arcsin(c
*x))*sqrt(-c^2*d*x^2 + d)/(c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\operatorname{asin}\left(cx\right)\right)^{2}\left(f+gx\right)^{2}}{\left(-d\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2*(f + g*x)**2/(-d*(c*x - 1)*(c*x + 1))**(3/2),
 x)
```

Giac [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="
giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,sageVARx):;OUTPUT:Warning, integration of abs or sign a
ssumes constant sign by intervals (correct if the argument is real):Check [
abs(t_
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^2\,(a+b\,\mathrm{asin}(c\,x))^2}{(d-c^2\,d\,x^2)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)^2*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int(((f + g*x)^2*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(3/2), x)
```

3.77 $\int \frac{(f+gx)(a+b\text{ArcSin}(cx))^2}{(d-c^2dx^2)^{3/2}}\,dx$

Optimal. Leaf size=410

$$\frac{g(a+b\text{ArcSin}(cx))^2}{c^2d\sqrt{d-c^2dx^2}}+\frac{fx(a+b\text{ArcSin}(cx))^2}{d\sqrt{d-c^2dx^2}}-\frac{if\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^2}{cd\sqrt{d-c^2dx^2}}+\frac{4ibg\sqrt{1-c^2x^2}\,(a+b\text{ArcS}}{c^2d\sqrt{d-}}$$

```
[Out] g*(a+b*arcsin(c*x))^2/c^2/d/(-c^2*d*x^2+d)^(1/2)+f*x*(a+b*arcsin(c*x))^2/d/
(-c^2*d*x^2+d)^(1/2)-I*f*(a+b*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/c/d/(-c^2*d
*x^2+d)^(1/2)+4*I*b*g*(a+b*arcsin(c*x))*arctan(I*c*x+(-c^2*x^2+1)^(1/2))*(-
c^2*x^2+1)^(1/2)/c^2/d/(-c^2*d*x^2+d)^(1/2)+2*b*f*(a+b*arcsin(c*x))*ln(1+(I
*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/c/d/(-c^2*d*x^2+d)^(1/2)-2*I
*b^2*g*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/c^2/d/(-
c^2*d*x^2+d)^(1/2)+2*I*b^2*g*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*
x^2+1)^(1/2)/c^2/d/(-c^2*d*x^2+d)^(1/2)-I*b^2*f*polylog(2,-(I*c*x+(-c^2*x^2
+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/c/d/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A]
time = 0.41, antiderivative size = 410, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 11, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.355$, Rules used = {4861, 4847, 4745, 4765, 3800, 2221, 2317, 2438, 4767, 4749, 4266}

$$\frac{4ibg\sqrt{1-c^2x^2}\,\text{ArcTan}\left(e^{i\text{ArcSin}(cx)}\right)(a+b\text{ArcSin}(cx))}{c^2d\sqrt{d-c^2dx^2}}+\frac{fx(a+b\text{ArcSin}(cx))^2}{d\sqrt{d-c^2dx^2}}-\frac{if\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^2}{cd\sqrt{d-c^2dx^2}}+\frac{2bf\sqrt{1-c^2x^2}\,\log\left(1+e^{2i\text{ArcSin}(cx)}\right)(a+b\text{ArcSin}(cx))}{cd\sqrt{d-c^2dx^2}}+\frac{g(a+b\text{ArcSin}(cx))^2}{c^2d\sqrt{d-c^2dx^2}}-\frac{ib^2f\sqrt{1-c^2x^2}\,\text{Li}_2\left(-e^{2i\text{ArcSin}(cx)}\right)}{cd\sqrt{d-c^2dx^2}}-\frac{2ib^2g\sqrt{1-c^2x^2}\,\text{Li}_2\left(-ie^{i\text{ArcSin}(cx)}\right)}{c^2d\sqrt{d-c^2dx^2}}+\frac{2ib^2g\sqrt{1-c^2x^2}\,\text{Li}_2\left(ie^{i\text{ArcSin}(cx)}\right)}{c^2d\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (g*(a + b*ArcSin[c*x])^2)/(c^2*d*Sqrt[d - c^2*d*x^2]) + (f*x*(a + b*ArcSin[
c*x])^2)/(d*Sqrt[d - c^2*d*x^2]) - (I*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x
])^2)/(c*d*Sqrt[d - c^2*d*x^2]) + ((4*I)*b*g*Sqrt[1 - c^2*x^2]*(a + b*ArcSi
n[c*x])*ArcTan[E^(I*ArcSin[c*x])])/(c^2*d*Sqrt[d - c^2*d*x^2]) + (2*b*f*Sqr
t[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(c*d*Sqr
t[d - c^2*d*x^2]) - ((2*I)*b^2*g*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)*E^(I*Arc
Sin[c*x])])/(c^2*d*Sqrt[d - c^2*d*x^2]) + ((2*I)*b^2*g*Sqrt[1 - c^2*x^2]*Po
lyLog[2, I*E^(I*ArcSin[c*x])])/(c^2*d*Sqrt[d - c^2*d*x^2]) - (I*b^2*f*Sqrt[
1 - c^2*x^2]*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(c*d*Sqrt[d - c^2*d*x^2])
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3800

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[I
*((c + d*x)^(m + 1)/(d*(m + 1))), x] - Dist[2*I, Int[(c + d*x)^m*(E^(2*I*(e
 + f*x))/(1 + E^(2*I*(e + f*x)))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4266

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[-2*(c + d*x)^m*(ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))]/f), x] + (-Di
st[d*(m/f), Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[d*(m/f), Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4745

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[x*((a + b*ArcSin[c*x])^n/(d*Sqrt[d + e*x^2])), x] - Dist[b
*c*(n/d)*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[x*((a + b*ArcSin[c*x]
)^(n - 1)/(1 - c^2*x^2)), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
+ e, 0] && GtQ[n, 0]
```

Rule 4749

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4765

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Dist[-e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)^2}{(d-c^2dx^2)^{3/2}}\,dx &= \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)^2}{(1-c^2x^2)^{3/2}}\,dx}{d\sqrt{d-c^2dx^2}} \\
&= \frac{\sqrt{1-c^2x^2}\int \left(\frac{f\left(a+b\sin^{-1}(cx)\right)^2}{(1-c^2x^2)^{3/2}}+\frac{gx\left(a+b\sin^{-1}(cx)\right)^2}{(1-c^2x^2)^{3/2}}\right)dx}{d\sqrt{d-c^2dx^2}} \\
&= \frac{\left(f\sqrt{1-c^2x^2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(1-c^2x^2)^{3/2}}\,dx}{d\sqrt{d-c^2dx^2}} + \frac{\left(g\sqrt{1-c^2x^2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{(1-c^2x^2)^{3/2}}\,d\ldots}{d\sqrt{d-c^2dx^2}} \\
&= \frac{g(a+b\sin^{-1}(cx))^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{fx(a+b\sin^{-1}(cx))^2}{d\sqrt{d-c^2dx^2}} - \frac{\left(2bcf\sqrt{1-c^2x^2}\right)\int \frac{x(a\ldots}{\ldots}}{d\sqrt{d-c^2dx^2\ldots}} \\
&= \frac{g(a+b\sin^{-1}(cx))^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{fx(a+b\sin^{-1}(cx))^2}{d\sqrt{d-c^2dx^2}} - \frac{\left(2bf\sqrt{1-c^2x^2}\right)\text{Subst}(\ldots}{cd\ldots} \\
&= \frac{g(a+b\sin^{-1}(cx))^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{fx(a+b\sin^{-1}(cx))^2}{d\sqrt{d-c^2dx^2}} - \frac{if\sqrt{1-c^2x^2}\,(a+b\sin^{-1}\ldots}{cd\sqrt{d-c^2dx^2}} \\
&= \frac{g(a+b\sin^{-1}(cx))^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{fx(a+b\sin^{-1}(cx))^2}{d\sqrt{d-c^2dx^2}} - \frac{if\sqrt{1-c^2x^2}\,(a+b\sin^{-1}\ldots}{cd\sqrt{d-c^2dx^2}} \\
&= \frac{g(a+b\sin^{-1}(cx))^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{fx(a+b\sin^{-1}(cx))^2}{d\sqrt{d-c^2dx^2}} - \frac{if\sqrt{1-c^2x^2}\,(a+b\sin^{-1}\ldots}{cd\sqrt{d-c^2dx^2}} \\
&= \frac{g(a+b\sin^{-1}(cx))^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{fx(a+b\sin^{-1}(cx))^2}{d\sqrt{d-c^2dx^2}} - \frac{if\sqrt{1-c^2x^2}\,(a+b\sin^{-1}\ldots}{cd\sqrt{d-c^2dx^2}}
\end{aligned}
$$

Mathematica [A]
time = 0.91, size = 237, normalized size = 0.58

$$
\frac{\sqrt{1-c^2x^2}\left((cf-g)\left(-(a+b\text{ArcSin}(cx))^2\cot\left(\frac{1}{4}(\pi+2\text{ArcSin}(cx))\right)+i\left((a+b\text{ArcSin}(cx))\left(a+b\text{ArcSin}(cx)-4ib\log\left(1+ie^{-i\text{ArcSin}(cx)}\right)\right)+4b^2\text{PolyLog}\left(2,-ie^{-i\text{ArcSin}(cx)}\right)\right)\right)-(cf+g)\left(i\left((a+b\text{ArcSin}(cx))\left(a+b\text{ArcSin}(cx)+4ib\log\left(1+ie^{i\text{ArcSin}(cx)}\right)\right)+4b^2\text{PolyLog}\left(2,-ie^{i\text{ArcSin}(cx)}\right)\right)-(a+b\text{ArcSin}(cx))^2\tan\left(\frac{1}{4}(\pi+2\text{ArcSin}(cx))\right)\right)\right)}{2c^2d\sqrt{d-c^2dx^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*((c*f - g)*(-((a + b*ArcSin[c*x])^2*Cot[(Pi + 2*ArcSin[c
*x])/4]) + I*((a + b*ArcSin[c*x])*(a + b*ArcSin[c*x] - (4*I)*b*Log[1 + I/E^
(I*ArcSin[c*x])]) + 4*b^2*PolyLog[2, (-I)/E^(I*ArcSin[c*x])])) - (c*f + g)*
(I*((a + b*ArcSin[c*x])*(a + b*ArcSin[c*x] + (4*I)*b*Log[1 + I*E^(I*ArcSin[
c*x])]) + 4*b^2*PolyLog[2, (-I)*E^(I*ArcSin[c*x])]) - (a + b*ArcSin[c*x])^2
*Tan[(Pi + 2*ArcSin[c*x])/4])))/(2*c^2*d*Sqrt[d - c^2*d*x^2])
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 1045 vs. $2(419) = 838$.
time = 0.61, size = 1046, normalized size = 2.55

method	result
default	$a^{2}\left(\frac{g}{c^{2} d \sqrt{-c^{2} d\,x^{2}+d}}+\frac{f x}{d \sqrt{-c^{2} d\,x^{2}+d}}\right)+\frac{2 i b^{2} \sqrt{-c^{2} x^{2}+1}\,\sqrt{-d\left(c^{2} x^{2}-1\right)}\,g\,\mathrm{dilog}\left(1+i\left(icx+\sqrt{-c\right.\right.}}{c^{2} d^{2}\left(c^{2} x^{2}-1\right)}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x,method=_RETURNVERBOS
E)
```

```
[Out] a^2*(g/c^2/d/(-c^2*d*x^2+d)^(1/2)+f*x/d/(-c^2*d*x^2+d)^(1/2))-2*I*b^2*(-c^2
*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^2-1)*g*dilog(1-I*(I*c*x
+(-c^2*x^2+1)^(1/2)))-b^2*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)*arcsin(c*x
)^2*x*f-b^2*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^2-1)*arcsin(c*x)^2*g-2*b^
2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c/d^2/(c^2*x^2-1)*f*arcsin(c*x)
*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)+2*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2
-1))^(1/2)/c/d^2/(c^2*x^2-1)*f*arcsin(c*x)-2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^
2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^2-1)*g*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1
)^(1/2)))+2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^2-
1)*g*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+I*b^2*(-d*(c^2*x^2-1))^
(1/2)/c/d^2/(c^2*x^2-1)*arcsin(c*x)^2*(-c^2*x^2+1)^(1/2)*f+I*b^2*(-c^2*x^2+
1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c/d^2/(c^2*x^2-1)*f*polylog(2,-(I*c*x+(-c^2
*x^2+1)^(1/2))^2)+2*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2
/(c^2*x^2-1)*g*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-2*a*b*(-d*(c^2*x^2-1))
^(1/2)/d^2/(c^2*x^2-1)*arcsin(c*x)*x*f-2*a*b*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2
/(c^2*x^2-1)*arcsin(c*x)*g-2*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*
ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)/c/d^2/(c^2*x^2-1)*f+2*a*b*(-c^2*x^2+1)^(1/2)
*(-d*(c^2*x^2-1))^(1/2)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)/c^2/d^2/(c^2*x^2-1)*
g-2*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c/d^2/(c^2*x^2-1)*ln(I*c*
x+(-c^2*x^2+1)^(1/2)-I)*f-2*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c
^2/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)*g
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="ma
xima")
```

```
[Out] 2*a*b*f*x*arcsin(c*x)/(sqrt(-c^2*d*x^2 + d)*d) + a^2*f*x/(sqrt(-c^2*d*x^2 +
 d)*d) - sqrt(d)*integrate((2*a*b*g*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x
+ 1)) + (b^2*g*x + b^2*f)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2)/((c
^2*d^2*x^2 - d^2)*sqrt(c*x + 1)*sqrt(-c*x + 1)), x) - a*b*f*log(x^2 - 1/c^2
)/(c*d^(3/2)) + a^2*g/(sqrt(-c^2*d*x^2 + d)*c^2*d)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="fr
icas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(a^2*g*x + a^2*f + (b^2*g*x + b^2*f)*arcsin(c
*x)^2 + 2*(a*b*g*x + a*b*f)*arcsin(c*x))/(c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2
), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(cx))^2 (f + gx)}{(-d(cx - 1)(cx + 1))^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2*(f + g*x)/(-d*(c*x - 1)*(c*x + 1))**(3/2), x)
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="gi
ac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,sageVARx):;OUTPUT:Warning, integration of abs or sign a
ssumes constant sign by intervals (correct if the argument is real):Check [
abs(t_
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f + g\,x)\,(a + b\,\mathrm{asin}(c\,x))^2}{(d - c^2\,d\,x^2)^{3/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(3/2),x)
[Out] int(((f + g*x)*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(3/2), x)
```

3.78 $\int \frac{(a+b\mathbf{ArcSin}(cx))^2}{(f+gx)\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=1137

$$-\frac{i\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^2}{2d(cf-g)\sqrt{d-c^2dx^2}}+\frac{i\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^2}{2d(cf+g)\sqrt{d-c^2dx^2}}-\frac{\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^2\cot\left(\frac{\pi}{4}\right.}{2d(cf-g)\sqrt{d-c^2dx^2}}$$

```
[Out] -1/2*I*(a+b*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/d/(c*f-g)/(-c^2*d*x^2+d)^(1/2
)+1/2*I*(a+b*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/d/(c*f+g)/(-c^2*d*x^2+d)^(1/
2)-1/2*(a+b*arcsin(c*x))^2*cot(1/4*Pi+1/2*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/d
/(c*f-g)/(-c^2*d*x^2+d)^(1/2)+2*b*(a+b*arcsin(c*x))*ln(1-I/(I*c*x+(-c^2*x^2
+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/d/(c*f+g)/(-c^2*d*x^2+d)^(1/2)+2*b*(a+b*arcs
in(c*x))*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/d/(c*f-g)/(-
c^2*d*x^2+d)^(1/2)+I*g^2*(a+b*arcsin(c*x))^2*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/
2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))*(-c^2*x^2+1)^(1/2)/d/(c^2*f^2-g^2)^(3/2)/(
-c^2*d*x^2+d)^(1/2)-I*g^2*(a+b*arcsin(c*x))^2*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1
/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))*(-c^2*x^2+1)^(1/2)/d/(c^2*f^2-g^2)^(3/2)/
(-c^2*d*x^2+d)^(1/2)+2*I*b^2*polylog(2,I/(I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*
x^2+1)^(1/2)/d/(c*f+g)/(-c^2*d*x^2+d)^(1/2)-2*I*b^2*polylog(2,I*(I*c*x+(-c^
2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/d/(c*f-g)/(-c^2*d*x^2+d)^(1/2)+2*b*g^2*
(a+b*arcsin(c*x))*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^
2)^(1/2)))*(-c^2*x^2+1)^(1/2)/d/(c^2*f^2-g^2)^(3/2)/(-c^2*d*x^2+d)^(1/2)-2*
b*g^2*(a+b*arcsin(c*x))*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*
f^2-g^2)^(1/2)))*(-c^2*x^2+1)^(1/2)/d/(c^2*f^2-g^2)^(3/2)/(-c^2*d*x^2+d)^(1
/2)+2*I*b^2*g^2*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)
^(1/2)))*(-c^2*x^2+1)^(1/2)/d/(c^2*f^2-g^2)^(3/2)/(-c^2*d*x^2+d)^(1/2)-2*I*
b^2*g^2*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))
*(-c^2*x^2+1)^(1/2)/d/(c^2*f^2-g^2)^(3/2)/(-c^2*d*x^2+d)^(1/2)+1/2*(a+b*arc
sin(c*x))^2*(-c^2*x^2+1)^(1/2)*tan(1/4*Pi+1/2*arcsin(c*x))/d/(c*f+g)/(-c^2*
d*x^2+d)^(1/2)
```

Rubi [A]

time = 1.46, antiderivative size = 1137, normalized size of antiderivative = 1.00, number of steps used = 28, number of rules used = 14, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.424$, Rules used = {4861, 4859, 4857, 3399, 4269, 3798, 2221, 2317, 2438, 3404, 2296, 2611, 2320, 6724}

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/((f + g*x)*(d - c^2*d*x^2)^(3/2)),x]
```

```
[Out] ((-1/2*I)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(d*(c*f - g)*Sqrt[d - c^
2*d*x^2]) + ((I/2)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(d*(c*f + g)*Sq
rt[d - c^2*d*x^2]) - (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2*Cot[Pi/4 + Ar
cSin[c*x]/2])/(2*d*(c*f - g)*Sqrt[d - c^2*d*x^2]) + (2*b*Sqrt[1 - c^2*x^2]*
(a + b*ArcSin[c*x])*Log[1 - I/E^(I*ArcSin[c*x])])/(d*(c*f + g)*Sqrt[d - c^2
*d*x^2]) + (2*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 - I*E^(I*ArcSin
[c*x])])/(d*(c*f - g)*Sqrt[d - c^2*d*x^2]) + (I*g^2*Sqrt[1 - c^2*x^2]*(a +
b*ArcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2]
)])/(d*(c^2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) - (I*g^2*Sqrt[1 - c^2*x^2
]*(a + b*ArcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2
 - g^2])])/(d*(c^2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) + ((2*I)*b^2*Sqrt[
1 - c^2*x^2]*PolyLog[2, I/E^(I*ArcSin[c*x])])/(d*(c*f + g)*Sqrt[d - c^2*d*x
^2]) - ((2*I)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])])/(d*(c*
f - g)*Sqrt[d - c^2*d*x^2]) + (2*b*g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]
)*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(d*(c^2*
f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) - (2*b*g^2*Sqrt[1 - c^2*x^2]*(a + b*A
rcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]
)/(d*(c^2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) + ((2*I)*b^2*g^2*Sqrt[1 - c
^2*x^2]*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(d
*(c^2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) - ((2*I)*b^2*g^2*Sqrt[1 - c^2*x
^2]*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/(d*(c^
2*f^2 - g^2)^(3/2)*Sqrt[d - c^2*d*x^2]) + (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[
c*x])^2*Tan[Pi/4 + ArcSin[c*x]/2])/(2*d*(c*f + g)*Sqrt[d - c^2*d*x^2])
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2296

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[2*(c/q), Int[
(f + g*x)^m*(F^u/(b - q + 2*c*F^u)), x], x] - Dist[2*(c/q), Int[(f + g*x)^m
*(F^u/(b + q + 2*c*F^u)), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 3399

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1/2)*(e + Pi*(a/(2*b))) +
 f*(x/2)]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3404

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[(c + d*x)^m*(E^(I*(e + f*x))/(I*b + 2*a*E^(I*(e + f*x)
) - I*b*E^(2*I*(e + f*x)))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3798

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[I*((c + d*x)^(m + 1)/(d*(m + 1))), x] - Dist[2*I, Int[(c + d*x)^m
*E^(2*I*k*Pi)*(E^(2*I*(e + f*x))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x)))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4269

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp
[(-(c + d*x)^m)*(Cot[e + f*x]/f), x] + Dist[d*(m/f), Int[(c + d*x)^(m - 1)*
```

```
Cot[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4859

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\sin^{-1}(cx))^2}{(f+gx)(d-c^2dx^2)^{3/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(a+b\sin^{-1}(cx))^2}{(f+gx)(1-c^2x^2)^{3/2}}\,dx}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(-\frac{c(a+b\sin^{-1}(cx))^2}{2(cf+g)(-1+cx)\sqrt{1-c^2x^2}} + \frac{c(a+b\sin^{-1}(cx))^2}{2(cf-g)(1+cx)\sqrt{1-c^2x^2}} + \frac{\cdots}{(-cf \cdots}\right.}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(c\sqrt{1-c^2x^2}\right)\int \frac{(a+b\sin^{-1}(cx))^2}{(1+cx)\sqrt{1-c^2x^2}}\,dx}{2d(cf-g)\sqrt{d-c^2dx^2}} - \frac{\left(c\sqrt{1-c^2x^2}\right)\int \frac{(a+b\sin^{-1}(cx))^2}{(-1+cx)\sqrt{1-c^2 \cdots}}}{2d(cf+g)\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(c\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int \frac{(a+bx)^2}{c+c\sin(x)}\,dx, x, \sin^{-1}(cx)\right)}{2d(cf-g)\sqrt{d-c^2dx^2}} - \frac{\left(c\sqrt{1-c^2x^2}\right)\text{Subst} \cdots}{2d(cf \cdots}$$

$$= \frac{\sqrt{1-c^2x^2}\,\text{Subst}\left(\int (a+bx)^2\csc^2\left(\frac{\pi}{4}+\frac{x}{2}\right)\,dx, x, \sin^{-1}(cx)\right)}{4d(cf-g)\sqrt{d-c^2dx^2}} + \frac{\sqrt{1-c^2x^2}\,\cdots}{\cdots}$$

$$= -\frac{\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))^2\cot\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(cx)\right)}{2d(cf-g)\sqrt{d-c^2dx^2}} + \frac{\sqrt{1-c^2x^2}\,(a+b \cdots}{2d(c \cdots}$$

$$= -\frac{i\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))^2}{2d(cf-g)\sqrt{d-c^2dx^2}} + \frac{i\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))^2}{2d(cf+g)\sqrt{d-c^2dx^2}} - \frac{\sqrt{1-\cdots}}{\cdots}$$

$$= -\frac{i\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))^2}{2d(cf-g)\sqrt{d-c^2dx^2}} + \frac{i\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))^2}{2d(cf+g)\sqrt{d-c^2dx^2}} - \frac{\sqrt{1-\cdots}}{\cdots}$$

$$= -\frac{i\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))^2}{2d(cf-g)\sqrt{d-c^2dx^2}} + \frac{i\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))^2}{2d(cf+g)\sqrt{d-c^2dx^2}} - \frac{\sqrt{1-\cdots}}{\cdots}$$

$$= -\frac{i\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))^2}{2d(cf-g)\sqrt{d-c^2dx^2}} + \frac{i\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx))^2}{2d(cf+g)\sqrt{d-c^2dx^2}} - \frac{\sqrt{1-\cdots}}{\cdots}$$

<u>**Mathematica**</u> [A]
time = 3.41, size = 597, normalized size = 0.53

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/((f + g*x)*(d - c^2*d*x^2)^(3/2)),x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*((-((a + b*ArcSin[c*x])*((-I)*a + a*Cot[(Pi + 2*ArcSin[c
*x])/4] + b*ArcSin[c*x]*(-I + Cot[(Pi + 2*ArcSin[c*x])/4]) - 4*b*Log[1 + I/
E^(I*ArcSin[c*x])])) + (4*I)*b^2*PolyLog[2, (-I)/E^(I*ArcSin[c*x])])/(c*f -
 g) + ((2*I)*g^2*((a + b*ArcSin[c*x])^2*Log[1 + (I*E^(I*ArcSin[c*x])*g)/(-(
c*f) + Sqrt[c^2*f^2 - g^2])] - (a + b*ArcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin
[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])] - (2*I)*b*(a + b*ArcSin[c*x])*PolyLo
g[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])] + (2*I)*b*(a + b*
ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])
] + 2*b^2*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])] -
 2*b^2*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]))/((
c*f - g)*(c*f + g)*Sqrt[c^2*f^2 - g^2]) + ((-4*I)*b^2*PolyLog[2, (-I)*E^(I*
ArcSin[c*x])] + (a + b*ArcSin[c*x])*((-I)*a + 4*b*Log[1 + I*E^(I*ArcSin[c*x
])] + a*Tan[(Pi + 2*ArcSin[c*x])/4] + b*ArcSin[c*x]*(-I + Tan[(Pi + 2*ArcSi
n[c*x])/4])))/(c*f + g)))/(2*d*Sqrt[d - c^2*d*x^2])
```

Maple [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin(cx))^2}{(gx+f)\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(g*x+f)/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2/(g*x+f)/(-c^2*d*x^2+d)^(3/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(g*x+f)/(-c^2*d*x^2+d)^(3/2),x, algorithm="ma
xima")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/((-c^2*d*x^2 + d)^(3/2)*(g*x + f)), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(g*x+f)/(-c^2*d*x^2+d)^(3/2),x, algorithm="fr
icas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)
/(c^4*d^2*g*x^5 + c^4*d^2*f*x^4 - 2*c^2*d^2*g*x^3 - 2*c^2*d^2*f*x^2 + d^2*g
*x + d^2*f), x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\operatorname{asin}{(cx)})^2}{(-d(cx-1)(cx+1))^{\frac{3}{2}}(f+gx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(g*x+f)/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2/((-d*(c*x - 1)*(c*x + 1))**(3/2)*(f + g*x)),
x)
```

Giac [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(g*x+f)/(-c^2*d*x^2+d)^(3/2),x, algorithm="gi
ac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,sageVARx):;OUTPUT:Warning, integration of abs or sign a
ssumes constant sign by intervals (correct if the argument is real):Check [
abs(t_
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\operatorname{asin}(c\,x))^2}{(f+g\,x)\,(d-c^2\,d\,x^2)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/((f + g*x)*(d - c^2*d*x^2)^(3/2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/((f + g*x)*(d - c^2*d*x^2)^(3/2)), x)
```

3.79 $\int \frac{(f+gx)^3(a+b\text{ArcSin}(cx))^2}{(d-c^2dx^2)^{5/2}} dx$

Optimal. Leaf size=1589

$$-\frac{i(cf-g)^3\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^2}{12c^4d^2\sqrt{d-c^2dx^2}}+\frac{i(cf-2g)(cf+g)^2\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))^2}{4c^4d^2\sqrt{d-c^2dx^2}}+\frac{i(cf+g)^3\sqrt{}}{}$$

```
[Out] -1/4*I*(c*f-g)^2*(c*f+2*g)*(a+b*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/c^4/d^2/(
-c^2*d*x^2+d)^(1/2)+I*b^2*(c*f-2*g)*(c*f+g)^2*polylog(2,I/(I*c*x+(-c^2*x^2+
1)^(1/2)))*(-c^2*x^2+1)^(1/2)/c^4/d^2/(-c^2*d*x^2+d)^(1/2)+1/12*I*(c*f+g)^3
*(a+b*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/c^4/d^2/(-c^2*d*x^2+d)^(1/2)+1/3*I*
b^2*(c*f+g)^3*polylog(2,I/(I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/c^
4/d^2/(-c^2*d*x^2+d)^(1/2)-1/6*b^2*(c*f-g)^3*cot(1/4*Pi+1/2*arcsin(c*x))*(-
c^2*x^2+1)^(1/2)/c^4/d^2/(-c^2*d*x^2+d)^(1/2)-1/12*(c*f-g)^3*(a+b*arcsin(c*
x))^2*cot(1/4*Pi+1/2*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^4/d^2/(-c^2*d*x^2+d)
^(1/2)-1/4*(c*f-g)^2*(c*f+2*g)*(a+b*arcsin(c*x))^2*cot(1/4*Pi+1/2*arcsin(c*
x))*(-c^2*x^2+1)^(1/2)/c^4/d^2/(-c^2*d*x^2+d)^(1/2)-1/12*b*(c*f-g)^3*(a+b*a
rcsin(c*x))*csc(1/4*Pi+1/2*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/c^4/d^2/(-c^2*
d*x^2+d)^(1/2)-1/24*(c*f-g)^3*(a+b*arcsin(c*x))^2*cot(1/4*Pi+1/2*arcsin(c*x
))*csc(1/4*Pi+1/2*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/c^4/d^2/(-c^2*d*x^2+d)^
(1/2)+b*(c*f-2*g)*(c*f+g)^2*(a+b*arcsin(c*x))*ln(1-I/(I*c*x+(-c^2*x^2+1)^(1
/2)))*(-c^2*x^2+1)^(1/2)/c^4/d^2/(-c^2*d*x^2+d)^(1/2)+1/3*b*(c*f+g)^3*(a+b*
arcsin(c*x))*ln(1-I/(I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/c^4/d^2/
(-c^2*d*x^2+d)^(1/2)+1/3*b*(c*f-g)^3*(a+b*arcsin(c*x))*ln(1-I*(I*c*x+(-c^2*
x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/c^4/d^2/(-c^2*d*x^2+d)^(1/2)+b*(c*f-g)^2*
(c*f+2*g)*(a+b*arcsin(c*x))*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+1)
^(1/2)/c^4/d^2/(-c^2*d*x^2+d)^(1/2)-I*b^2*(c*f-g)^2*(c*f+2*g)*polylog(2,I*(
I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/c^4/d^2/(-c^2*d*x^2+d)^(1/2)-
1/3*I*b^2*(c*f-g)^3*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1
/2)/c^4/d^2/(-c^2*d*x^2+d)^(1/2)+1/4*I*(c*f-2*g)*(c*f+g)^2*(a+b*arcsin(c*x)
)^2*(-c^2*x^2+1)^(1/2)/c^4/d^2/(-c^2*d*x^2+d)^(1/2)-1/12*I*(c*f-g)^3*(a+b*a
rcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/c^4/d^2/(-c^2*d*x^2+d)^(1/2)-1/12*b*(c*f+g
)^3*(a+b*arcsin(c*x))*sec(1/4*Pi+1/2*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/c^4/
d^2/(-c^2*d*x^2+d)^(1/2)+1/6*b^2*(c*f+g)^3*(-c^2*x^2+1)^(1/2)*tan(1/4*Pi+1/
2*arcsin(c*x))/c^4/d^2/(-c^2*d*x^2+d)^(1/2)+1/4*(c*f-2*g)*(c*f+g)^2*(a+b*ar
csin(c*x))^2*(-c^2*x^2+1)^(1/2)*tan(1/4*Pi+1/2*arcsin(c*x))/c^4/d^2/(-c^2*d
*x^2+d)^(1/2)+1/12*(c*f+g)^3*(a+b*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)*tan(1/4
*Pi+1/2*arcsin(c*x))/c^4/d^2/(-c^2*d*x^2+d)^(1/2)+1/24*(c*f+g)^3*(a+b*arcsi
n(c*x))^2*sec(1/4*Pi+1/2*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)*tan(1/4*Pi+1/2*a
rcsin(c*x))/c^4/d^2/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A]

time = 1.39, antiderivative size = 1589, normalized size of antiderivative = 1.00, number of steps used = 37, number of rules used = 12, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.364$, Rules used = {4861, 4859, 4857, 3399, 4271, 3852, 8, 4269, 3798, 2221, 2317, 2438}

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^3*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] ((-1/12*I)*(c*f - g)^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(c^4*d^2*Sq
rt[d - c^2*d*x^2]) + ((I/4)*(c*f - 2*g)*(c*f + g)^2*Sqrt[1 - c^2*x^2]*(a +
b*ArcSin[c*x])^2)/(c^4*d^2*Sqrt[d - c^2*d*x^2]) + ((I/12)*(c*f + g)^3*Sqrt[
1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(c^4*d^2*Sqrt[d - c^2*d*x^2]) - ((I/4)*
(c*f - g)^2*(c*f + 2*g)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(c^4*d^2*S
qrt[d - c^2*d*x^2]) - (b^2*(c*f - g)^3*Sqrt[1 - c^2*x^2]*Cot[Pi/4 + ArcSin[
c*x]/2])/(6*c^4*d^2*Sqrt[d - c^2*d*x^2]) - ((c*f - g)^3*Sqrt[1 - c^2*x^2]*(
a + b*ArcSin[c*x])^2*Cot[Pi/4 + ArcSin[c*x]/2])/(12*c^4*d^2*Sqrt[d - c^2*d*
x^2]) - ((c*f - g)^2*(c*f + 2*g)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2*Co
t[Pi/4 + ArcSin[c*x]/2])/(4*c^4*d^2*Sqrt[d - c^2*d*x^2]) - (b*(c*f - g)^3*S
qrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Csc[Pi/4 + ArcSin[c*x]/2]^2)/(12*c^4*d
^2*Sqrt[d - c^2*d*x^2]) - ((c*f - g)^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]
)^2*Cot[Pi/4 + ArcSin[c*x]/2]*Csc[Pi/4 + ArcSin[c*x]/2]^2)/(24*c^4*d^2*Sqrt
[d - c^2*d*x^2]) + (b*(c*f - 2*g)*(c*f + g)^2*Sqrt[1 - c^2*x^2]*(a + b*ArcS
in[c*x])*Log[1 - I/E^(I*ArcSin[c*x])])/(c^4*d^2*Sqrt[d - c^2*d*x^2]) + (b*(
c*f + g)^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 - I/E^(I*ArcSin[c*x]
)])/(3*c^4*d^2*Sqrt[d - c^2*d*x^2]) + (b*(c*f - g)^3*Sqrt[1 - c^2*x^2]*(a +
 b*ArcSin[c*x])*Log[1 - I*E^(I*ArcSin[c*x])])/(3*c^4*d^2*Sqrt[d - c^2*d*x^2
]) + (b*(c*f - g)^2*(c*f + 2*g)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1
 - I*E^(I*ArcSin[c*x])])/(c^4*d^2*Sqrt[d - c^2*d*x^2]) + (I*b^2*(c*f - 2*g)
*(c*f + g)^2*Sqrt[1 - c^2*x^2]*PolyLog[2, I/E^(I*ArcSin[c*x])])/(c^4*d^2*Sq
rt[d - c^2*d*x^2]) + ((I/3)*b^2*(c*f + g)^3*Sqrt[1 - c^2*x^2]*PolyLog[2, I/
E^(I*ArcSin[c*x])])/(c^4*d^2*Sqrt[d - c^2*d*x^2]) - ((I/3)*b^2*(c*f - g)^3*
Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c^4*d^2*Sqrt[d - c^2*d*
x^2]) - (I*b^2*(c*f - g)^2*(c*f + 2*g)*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*
ArcSin[c*x])])/(c^4*d^2*Sqrt[d - c^2*d*x^2]) - (b*(c*f + g)^3*Sqrt[1 - c^2*
x^2]*(a + b*ArcSin[c*x])*Sec[Pi/4 + ArcSin[c*x]/2]^2)/(12*c^4*d^2*Sqrt[d -
c^2*d*x^2]) + (b^2*(c*f + g)^3*Sqrt[1 - c^2*x^2]*Tan[Pi/4 + ArcSin[c*x]/2])
/(6*c^4*d^2*Sqrt[d - c^2*d*x^2]) + ((c*f - 2*g)*(c*f + g)^2*Sqrt[1 - c^2*x^
2]*(a + b*ArcSin[c*x])^2*Tan[Pi/4 + ArcSin[c*x]/2])/(4*c^4*d^2*Sqrt[d - c^2
*d*x^2]) + ((c*f + g)^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2*Tan[Pi/4 +
ArcSin[c*x]/2])/(12*c^4*d^2*Sqrt[d - c^2*d*x^2]) + ((c*f + g)^3*Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^2*Sec[Pi/4 + ArcSin[c*x]/2]^2*Tan[Pi/4 + ArcSin[
c*x]/2])/(24*c^4*d^2*Sqrt[d - c^2*d*x^2])
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3399

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1/2)*(e + Pi*(a/(2*b))) +
 f*(x/2)]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3798

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[I*((c + d*x)^(m + 1)/(d*(m + 1))), x] - Dist[2*I, Int[(c + d*x)^m
*E^(2*I*k*Pi)*(E^(2*I*(e + f*x))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x)))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 3852

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> Dist[-d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 4269

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp
[(-(c + d*x)^m)*(Cot[e + f*x]/f), x] + Dist[d*(m/f), Int[(c + d*x)^(m - 1)*
Cot[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4271

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> Simp[(-b^2)*(c + d*x)^m*Cot[e + f*x]*((b*Csc[e + f*x])^(n - 2)/(f*(n
- 1))), x] + (Dist[b^2*d^2*m*((m - 1)/(f^2*(n - 1)*(n - 2))), Int[(c + d*x)
^(m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[b^2*((n - 2)/(n - 1)), Int
[(c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[b^2*d*m*(c + d*x)^(m -
 1)*((b*Csc[e + f*x])^(n - 2)/(f^2*(n - 1)*(n - 2))), x]) /; FreeQ[{b, c, d
, e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4859

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int \frac{(f+gx)^3\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)^3\left(a+b\sin^{-1}(cx)\right)^2}{(1-c^2x^2)^{5/2}}\,dx}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int\left(\frac{(cf+g)^3\left(a+b\sin^{-1}(cx)\right)^2}{4c^3(-1+cx)^2\sqrt{1-c^2x^2}} - \frac{(cf-2g)(cf+g)^2\left(a+b\sin^{-1}(cx)\right)^2}{4c^3(-1+cx)\sqrt{1-c^2x^2}} + \frac{(cf \ldots}{4c^3 \ldots}\right.}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{\left((cf-g)^3\sqrt{1-c^2x^2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(1+cx)^2\sqrt{1-c^2x^2}}\,dx}{4c^3d^2\sqrt{d-c^2dx^2}} - \frac{\left((cf-2g)(cf+g)^2 \ldots\right.}{4c \ldots}$$

$$= \frac{\left((cf-g)^3\sqrt{1-c^2x^2}\right)\operatorname{Subst}\left(\int \frac{(a+bx)^2}{(c+c\sin(x))^2}\,dx, x, \sin^{-1}(cx)\right)}{4c^2d^2\sqrt{d-c^2dx^2}} - \frac{\left((cf - \ldots\right.}{}$$

$$= \frac{\left((cf-g)^3\sqrt{1-c^2x^2}\right)\operatorname{Subst}\left(\int (a+bx)^2\csc^4\left(\frac{\pi}{4}+\frac{x}{2}\right)\,dx, x, \sin^{-1}(cx)\right) \ldots}{16c^4d^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{(cf-g)^2(cf+2g)\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\cot\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(cx)\right) \ldots}{4c^4d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{i(cf-2g)(cf+g)^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{4c^4d^2\sqrt{d-c^2dx^2}} - \frac{i(cf-g)^2(cf+2g \ldots}{4c^4 \ldots}$$

$$= -\frac{i(cf-g)^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{12c^4d^2\sqrt{d-c^2dx^2}} + \frac{i(cf-2g)(cf+g)^2\sqrt{1-c \ldots}}{4c^4d^2\sqrt{d- \ldots}}$$

$$= -\frac{i(cf-g)^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{12c^4d^2\sqrt{d-c^2dx^2}} + \frac{i(cf-2g)(cf+g)^2\sqrt{1-c \ldots}}{4c^4d^2\sqrt{d- \ldots}}$$

$$= -\frac{i(cf-g)^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{12c^4d^2\sqrt{d-c^2dx^2}} + \frac{i(cf-2g)(cf+g)^2\sqrt{1-c \ldots}}{4c^4d^2\sqrt{d- \ldots}}$$

$$= -\frac{i(cf-g)^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{12c^4d^2\sqrt{d-c^2dx^2}} + \frac{i(cf-2g)(cf+g)^2\sqrt{1-c \ldots}}{4c^4d^2\sqrt{d- \ldots}}$$

Mathematica [A]
time = 6.16, size = 715, normalized size = 0.45

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^3*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*(((c*f - g)^2*(c*f + 2*g)*(I*b*((a + b*ArcSin[c*x])^2/b
- 4*(I*(a + b*ArcSin[c*x])*Log[1 + E^((I/2)*(Pi - 2*ArcSin[c*x]))] - b*Poly
Log[2, -E^((I/2)*(Pi - 2*ArcSin[c*x]))])) - (a + b*ArcSin[c*x])^2*Tan[Pi/4
- ArcSin[c*x]/2]))/(4*c^4) - ((c*f - g)^3*(2*b*(a + b*ArcSin[c*x])*Sec[Pi/4
 - ArcSin[c*x]/2]^2 + 4*b^2*Tan[Pi/4 - ArcSin[c*x]/2] + (a + b*ArcSin[c*x])
^2*Sec[Pi/4 - ArcSin[c*x]/2]^2*Tan[Pi/4 - ArcSin[c*x]/2] - 2*(I*b*((a + b*A
rcSin[c*x])^2/b - 4*(I*(a + b*ArcSin[c*x])*Log[1 + E^((I/2)*(Pi - 2*ArcSin[
c*x]))] - b*PolyLog[2, -E^((I/2)*(Pi - 2*ArcSin[c*x]))])) - (a + b*ArcSin[c
*x])^2*Tan[Pi/4 - ArcSin[c*x]/2])))/(24*c^4) - ((c*f - 2*g)*(c*f + g)^2*(I*
b*((a + b*ArcSin[c*x])^2/b + 4*(I*(a + b*ArcSin[c*x])*Log[1 + E^((I/2)*(Pi
+ 2*ArcSin[c*x]))] + b*PolyLog[2, -E^((I/2)*(Pi + 2*ArcSin[c*x]))])) - (a +
 b*ArcSin[c*x])^2*Tan[Pi/4 + ArcSin[c*x]/2]))/(4*c^4) - ((c*f + g)^3*(2*b*(
a + b*ArcSin[c*x])*Sec[Pi/4 + ArcSin[c*x]/2]^2 - 4*b^2*Tan[Pi/4 + ArcSin[c*
x]/2] - (a + b*ArcSin[c*x])^2*Sec[Pi/4 + ArcSin[c*x]/2]^2*Tan[Pi/4 + ArcSin
[c*x]/2] + 2*(I*b*((a + b*ArcSin[c*x])^2/b + 4*(I*(a + b*ArcSin[c*x])*Log[1
 + E^((I/2)*(Pi + 2*ArcSin[c*x]))] + b*PolyLog[2, -E^((I/2)*(Pi + 2*ArcSin[
c*x]))])) - (a + b*ArcSin[c*x])^2*Tan[Pi/4 + ArcSin[c*x]/2])))/(24*c^4)))/(
d^2*Sqrt[d - c^2*d*x^2])
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 13139 vs. $2(1473) = 2946$.
time = 1.00, size = 13140, normalized size = 8.27

method	result	size
default	Expression too large to display	13140

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x,method=_RETURNVERB
OSE)
```

```
[Out] result too large to display
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="
maxima")
```

```
[Out] 1/3*a*b*c*f^3*(1/(c^4*d^(5/2)*x^2 - c^2*d^(5/2)) + 2*log(c*x + 1)/(c^2*d^(5
/2)) + 2*log(c*x - 1)/(c^2*d^(5/2))) + 2/3*a*b*f^3*(2*x/(sqrt(-c^2*d*x^2 +
d)*d^2) + x/((-c^2*d*x^2 + d)^(3/2)*d))*arcsin(c*x) + 1/3*a^2*f^3*(2*x/(sqr
t(-c^2*d*x^2 + d)*d^2) + x/((-c^2*d*x^2 + d)^(3/2)*d)) + 1/3*a^2*g^3*(3*x^2
```

```
/((-c^2*d*x^2 + d)^(3/2)*c^2*d) - 2/((-c^2*d*x^2 + d)^(3/2)*c^4*d)) - a^2*f
*g^2*(x/(sqrt(-c^2*d*x^2 + d)*c^2*d^2) - x/((-c^2*d*x^2 + d)^(3/2)*c^2*d))
+ sqrt(d)*integrate(((b^2*g^3*x^3 + 3*b^2*f*g^2*x^2 + 3*b^2*f^2*g*x + b^2*f
^3)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*g^3*x^3 + 3*a*b*f
*g^2*x^2 + 3*a*b*f^2*g*x)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))/((c^4
*d^3*x^4 - 2*c^2*d^3*x^2 + d^3)*sqrt(c*x + 1)*sqrt(-c*x + 1)), x) + a^2*f^2
*g/((-c^2*d*x^2 + d)^(3/2)*c^2*d)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="
fricas")
```

```
[Out] integral(-(a^2*g^3*x^3 + 3*a^2*f*g^2*x^2 + 3*a^2*f^2*g*x + a^2*f^3 + (b^2*g
^3*x^3 + 3*b^2*f*g^2*x^2 + 3*b^2*f^2*g*x + b^2*f^3)*arcsin(c*x)^2 + 2*(a*b*
g^3*x^3 + 3*a*b*f*g^2*x^2 + 3*a*b*f^2*g*x + a*b*f^3)*arcsin(c*x))*sqrt(-c^2
*d*x^2 + d)/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3), x)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Exception raised: TypeError >> Invalid comparison of non-real zoo
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="
giac")
```

```
[Out] integrate((g*x + f)^3*(b*arcsin(c*x) + a)^2/(-c^2*d*x^2 + d)^(5/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(f+g\,x\right)}^3\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{{\left(d-c^2\,d\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)^3*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(5/2),x)
[Out] int(((f + g*x)^3*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(5/2), x)
```

3.80 $\int \frac{(f+gx)^2(a+b\mathbf{ArcSin}(cx))^2}{(d-c^2dx^2)^{5/2}}\,dx$

Optimal. Leaf size=1025

$$\frac{2b^2fg}{3c^2d^2\sqrt{d-c^2dx^2}}+\frac{b^2f^2x}{3d^2\sqrt{d-c^2dx^2}}+\frac{b^2g^2x}{3c^2d^2\sqrt{d-c^2dx^2}}-\frac{b^2g^2\sqrt{1-c^2x^2}\,\mathrm{ArcSin}(cx)}{3c^3d^2\sqrt{d-c^2dx^2}}-\frac{bf^2(a+b\mathrm{ArcSin}(}{3cd^2\sqrt{1-c^2x^2}\,\sqrt{d-}}$$

```
[Out] 2/3*b^2*f*g/c^2/d^2/(-c^2*d*x^2+d)^(1/2)+1/3*b^2*f^2*x/d^2/(-c^2*d*x^2+d)^(
1/2)+1/3*b^2*g^2*x/c^2/d^2/(-c^2*d*x^2+d)^(1/2)+2/3*f^2*x*(a+b*arcsin(c*x))
^2/d^2/(-c^2*d*x^2+d)^(1/2)+2/3*f*g*(a+b*arcsin(c*x))^2/c^2/d^2/(-c^2*x^2+1
)/(-c^2*d*x^2+d)^(1/2)+1/3*f^2*x*(a+b*arcsin(c*x))^2/d^2/(-c^2*x^2+1)/(-c^2
*d*x^2+d)^(1/2)+1/3*g^2*x^3*(a+b*arcsin(c*x))^2/d^2/(-c^2*x^2+1)/(-c^2*d*x^
2+d)^(1/2)-1/3*b*f^2*(a+b*arcsin(c*x))/c/d^2/(-c^2*x^2+1)^(1/2)/(-c^2*d*x^2
+d)^(1/2)-2/3*b*f*g*x*(a+b*arcsin(c*x))/c/d^2/(-c^2*x^2+1)^(1/2)/(-c^2*d*x^
2+d)^(1/2)-1/3*b*g^2*x^2*(a+b*arcsin(c*x))/c/d^2/(-c^2*x^2+1)^(1/2)/(-c^2*d
*x^2+d)^(1/2)-1/3*b^2*g^2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)/c^3/d^2/(-c^2*d*x^
2+d)^(1/2)-2/3*I*f^2*(a+b*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/c/d^2/(-c^2*d*x
^2+d)^(1/2)+1/3*I*g^2*(a+b*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/c^3/d^2/(-c^2*
d*x^2+d)^(1/2)+4/3*I*b*f*g*(a+b*arcsin(c*x))*arctan(I*c*x+(-c^2*x^2+1)^(1/2
))*(-c^2*x^2+1)^(1/2)/c^2/d^2/(-c^2*d*x^2+d)^(1/2)+4/3*b*f^2*(a+b*arcsin(c*
x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/c/d^2/(-c^2*d*x^2
+d)^(1/2)-2/3*b*g^2*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-
c^2*x^2+1)^(1/2)/c^3/d^2/(-c^2*d*x^2+d)^(1/2)+2/3*I*b^2*f*g*polylog(2,I*(I*
c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/c^2/d^2/(-c^2*d*x^2+d)^(1/2)+1/
3*I*b^2*g^2*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/c^3
/d^2/(-c^2*d*x^2+d)^(1/2)-2/3*I*b^2*f*g*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1
/2)))*(-c^2*x^2+1)^(1/2)/c^2/d^2/(-c^2*d*x^2+d)^(1/2)-2/3*I*b^2*f^2*polylog
(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/c/d^2/(-c^2*d*x^2+d)^(
1/2)
```

Rubi [A]
time = 0.87, antiderivative size = 1025, normalized size of antiderivative = 1.00, number of steps used = 30, number of rules used = 18, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.546$, Rules used = {4861, 4847, 4747, 4745, 4765, 3800, 2221, 2317, 2438, 4767, 197, 4749, 4266, 267, 4771, 4791, 294, 222}

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^2*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (2*b^2*f*g)/(3*c^2*d^2*Sqrt[d - c^2*d*x^2]) + (b^2*f^2*x)/(3*d^2*Sqrt[d - c
^2*d*x^2]) + (b^2*g^2*x)/(3*c^2*d^2*Sqrt[d - c^2*d*x^2]) - (b^2*g^2*Sqrt[1
- c^2*x^2]*ArcSin[c*x])/(3*c^3*d^2*Sqrt[d - c^2*d*x^2]) - (b*f^2*(a + b*Arc
```

```
Sin[c*x]))/(3*c*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) - (2*b*f*g*x*(a
+ b*ArcSin[c*x]))/(3*c*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) - (b*g^2*
x^2*(a + b*ArcSin[c*x]))/(3*c*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) +
(2*f^2*x*(a + b*ArcSin[c*x])^2)/(3*d^2*Sqrt[d - c^2*d*x^2]) + (2*f*g*(a + b
*ArcSin[c*x])^2)/(3*c^2*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]) + (f^2*x*(a
+ b*ArcSin[c*x])^2)/(3*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]) + (g^2*x^3*(a
 + b*ArcSin[c*x])^2)/(3*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]) - (((2*I)/3)
*f^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(c*d^2*Sqrt[d - c^2*d*x^2]) +
 ((I/3)*g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(c^3*d^2*Sqrt[d - c^2*
d*x^2]) + (((4*I)/3)*b*f*g*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcTan[E^(
I*ArcSin[c*x])])/(c^2*d^2*Sqrt[d - c^2*d*x^2]) + (4*b*f^2*Sqrt[1 - c^2*x^2]
*(a + b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(3*c*d^2*Sqrt[d - c^2*
d*x^2]) - (2*b*g^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 + E^((2*I)*A
rcSin[c*x])])/(3*c^3*d^2*Sqrt[d - c^2*d*x^2]) - (((2*I)/3)*b^2*f*g*Sqrt[1 -
 c^2*x^2]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(c^2*d^2*Sqrt[d - c^2*d*x^2])
 + (((2*I)/3)*b^2*f*g*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c
^2*d^2*Sqrt[d - c^2*d*x^2]) - (((2*I)/3)*b^2*f^2*Sqrt[1 - c^2*x^2]*PolyLog[
2, -E^((2*I)*ArcSin[c*x])])/(c*d^2*Sqrt[d - c^2*d*x^2]) + ((I/3)*b^2*g^2*Sq
rt[1 - c^2*x^2]*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(c^3*d^2*Sqrt[d - c^2*d
*x^2])
```

Rule 197

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[x*((a + b*x^n)^(p + 1)
/a), x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 294

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(
n - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*n*(p + 1))), x] - Dist[c^n
*((m - n + 1)/(b*n*(p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3800

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[I
*((c + d*x)^(m + 1)/(d*(m + 1))), x] - Dist[2*I, Int[(c + d*x)^m*(E^(2*I*(e
 + f*x))/(1 + E^(2*I*(e + f*x)))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4266

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[-2*(c + d*x)^m*(ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))]/f), x] + (-Di
st[d*(m/f), Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[d*(m/f), Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4745

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[x*((a + b*ArcSin[c*x])^n/(d*Sqrt[d + e*x^2])), x] - Dist[b
*c*(n/d)*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[x*((a + b*ArcSin[c*x]
)^(n - 1)/(1 - c^2*x^2)), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
+ e, 0] && GtQ[n, 0]
```

Rule 4747

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> Simp[(-x)*(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*d*(p + 1
))), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*Arc
Sin[c*x])^n, x], x] + Dist[b*c*(n/(2*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*
```

```
x^2)^p], Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x])
 /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && LtQ[p, -
1] && NeQ[p, -3/2]
```

Rule 4749

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4765

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Dist[-e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4771

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*x)^(m + 1)*(d + e*x^2)^(p + 1)*((a + b
*ArcSin[c*x])^n/(d*f*(m + 1))), x] - Dist[b*c*(n/(f*(m + 1)))*Simp[(d + e*x
^2)^p/(1 - c^2*x^2)^p], Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*Ar
cSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d, e, f, m, p}, x] && EqQ[c^2
*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] && NeQ[m, -1]
```

Rule 4791

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(2*e*(p + 1))), x] + (-Dist[f^2*((m - 1)/(2*e*(p + 1))),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
b*f*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)^(m - 1
)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a,
 b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && LtQ[p, -1] && IGtQ
[m, 1]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] &&  !GtQ[d, 0]
```

Rubi steps

$$\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{(d-c^2dx^2)^{5/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{(1-c^2x^2)^{5/2}}\,dx}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{f^2\left(a+b\sin^{-1}(cx)\right)^2}{(1-c^2x^2)^{5/2}} + \frac{2fgx\left(a+b\sin^{-1}(cx)\right)^2}{(1-c^2x^2)^{5/2}} + \frac{g^2x^2\left(a+b\sin^{-1}(cx)\right)^2}{(1-c^2x^2)^{5/2}} \cdots\right.}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(f^2\sqrt{1-c^2x^2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(1-c^2x^2)^{5/2}}\,dx}{d^2\sqrt{d-c^2dx^2}} + \frac{\left(2fg\sqrt{1-c^2x^2}\right)\int \frac{x(a+b\sin^{-1}(c \cdots}{(1-c^2x^2)^{5/ \cdots}}{d^2\sqrt{d-c^2dx^2}} \cdots$$

$$= \frac{2fg\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d^2(1-c^2x^2)\sqrt{d-c^2dx^2}} + \frac{f^2x\left(a+b\sin^{-1}(cx)\right)^2}{3d^2(1-c^2x^2)\sqrt{d-c^2dx^2}} + \frac{g^2x^3 \cdots}{3d^2(1 \cdots} \cdots$$

$$= -\frac{bf^2\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{2bfgx\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{b \cdots}{3cd^2 \cdots} \cdots$$

$$= \frac{2b^2fg}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{b^2f^2x}{3d^2\sqrt{d-c^2dx^2}} + \frac{b^2g^2x}{3c^2d^2\sqrt{d-c^2dx^2}} - \frac{bf^2 \cdots}{3cd^2\sqrt{1 \cdots}} \cdots$$

$$= \frac{2b^2fg}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{b^2f^2x}{3d^2\sqrt{d-c^2dx^2}} + \frac{b^2g^2x}{3c^2d^2\sqrt{d-c^2dx^2}} - \frac{b^2g^2\sqrt{1 \cdots}}{3c^3 \cdots} \cdots$$

$$= \frac{2b^2fg}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{b^2f^2x}{3d^2\sqrt{d-c^2dx^2}} + \frac{b^2g^2x}{3c^2d^2\sqrt{d-c^2dx^2}} - \frac{b^2g^2\sqrt{1 \cdots}}{3c^3 \cdots} \cdots$$

$$= \frac{2b^2fg}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{b^2f^2x}{3d^2\sqrt{d-c^2dx^2}} + \frac{b^2g^2x}{3c^2d^2\sqrt{d-c^2dx^2}} - \frac{b^2g^2\sqrt{1 \cdots}}{3c^3 \cdots} \cdots$$

$$= \frac{2b^2fg}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{b^2f^2x}{3d^2\sqrt{d-c^2dx^2}} + \frac{b^2g^2x}{3c^2d^2\sqrt{d-c^2dx^2}} - \frac{b^2g^2\sqrt{1 \cdots}}{3c^3 \cdots} \cdots$$

Mathematica [A]
time = 4.73, size = 618, normalized size = 0.60

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^2*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] -1/24*(Sqrt[1 - c^2*x^2]*(-6*(c^2*f^2 - g^2)*(-((a + b*ArcSin[c*x])^2*Cot[(
Pi + 2*ArcSin[c*x])/4]) + I*((a + b*ArcSin[c*x])*(a + b*ArcSin[c*x] - (4*I)
*b*Log[1 + I/E^(I*ArcSin[c*x])]) + 4*b^2*PolyLog[2, (-I)/E^(I*ArcSin[c*x])]
```

```
)) + (-(c*f) + g)^2*(4*b^2*Cot[(Pi + 2*ArcSin[c*x])/4] + 2*(a + b*ArcSin[c*
x])^2*Cot[(Pi + 2*ArcSin[c*x])/4] + 2*b*(a + b*ArcSin[c*x])*Csc[(Pi + 2*Arc
Sin[c*x])/4]^2 + (a + b*ArcSin[c*x])^2*Cot[(Pi + 2*ArcSin[c*x])/4]*Csc[(Pi
+ 2*ArcSin[c*x])/4]^2 - (2*I)*((a + b*ArcSin[c*x])*(a + b*ArcSin[c*x] - (4*
I)*b*Log[1 + I/E^(I*ArcSin[c*x])]) + 4*b^2*PolyLog[2, (-I)/E^(I*ArcSin[c*x]
)])) + 6*(c^2*f^2 - g^2)*(I*((a + b*ArcSin[c*x])*(a + b*ArcSin[c*x] + (4*I)
*b*Log[1 + I*E^(I*ArcSin[c*x])]) + 4*b^2*PolyLog[2, (-I)*E^(I*ArcSin[c*x])]
) - (a + b*ArcSin[c*x])^2*Tan[(Pi + 2*ArcSin[c*x])/4]) + (c*f + g)^2*((2*I)
*((a + b*ArcSin[c*x])*(a + b*ArcSin[c*x] + (4*I)*b*Log[1 + I*E^(I*ArcSin[c*
x])]) + 4*b^2*PolyLog[2, (-I)*E^(I*ArcSin[c*x])]) + 2*b*(a + b*ArcSin[c*x])
*Sec[(Pi + 2*ArcSin[c*x])/4]^2 - 4*b^2*Tan[(Pi + 2*ArcSin[c*x])/4] - 2*(a +
 b*ArcSin[c*x])^2*Tan[(Pi + 2*ArcSin[c*x])/4] - (a + b*ArcSin[c*x])^2*Sec[(
Pi + 2*ArcSin[c*x])/4]^2*Tan[(Pi + 2*ArcSin[c*x])/4])))/(c^3*d^2*Sqrt[d - c
^2*d*x^2])
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 9719 vs. 2(974) = 1948.
time = 0.73, size = 9720, normalized size = 9.48

method	result	size
default	Expression too large to display	9720

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x,method=_RETURNVERB
OSE)
```

```
[Out] result too large to display
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="
maxima")
```

```
[Out] 1/3*a*b*c*f^2*(1/(c^4*d^(5/2)*x^2 - c^2*d^(5/2)) + 2*log(c*x + 1)/(c^2*d^(5
/2)) + 2*log(c*x - 1)/(c^2*d^(5/2))) + 2/3*a*b*f^2*(2*x/(sqrt(-c^2*d*x^2 +
d)*d^2) + x/((-c^2*d*x^2 + d)^(3/2)*d))*arcsin(c*x) + 1/3*a^2*f^2*(2*x/(sqr
t(-c^2*d*x^2 + d)*d^2) + x/((-c^2*d*x^2 + d)^(3/2)*d)) - 1/3*a^2*g^2*(x/(sq
rt(-c^2*d*x^2 + d)*c^2*d^2) - x/((-c^2*d*x^2 + d)^(3/2)*c^2*d)) + sqrt(d)*i
ntegrate(((b^2*g^2*x^2 + 2*b^2*f*g*x + b^2*f^2)*arctan2(c*x, sqrt(c*x + 1)*
sqrt(-c*x + 1))^2 + 2*(a*b*g^2*x^2 + 2*a*b*f*g*x)*arctan2(c*x, sqrt(c*x + 1
)*sqrt(-c*x + 1)))/((c^4*d^3*x^4 - 2*c^2*d^3*x^2 + d^3)*sqrt(c*x + 1)*sqrt(
-c*x + 1)), x) + 2/3*a^2*f*g/((-c^2*d*x^2 + d)^(3/2)*c^2*d)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="
fricas")
```

```
[Out] integral(-(a^2*g^2*x^2 + 2*a^2*f*g*x + a^2*f^2 + (b^2*g^2*x^2 + 2*b^2*f*g*x
 + b^2*f^2)*arcsin(c*x)^2 + 2*(a*b*g^2*x^2 + 2*a*b*f*g*x + a*b*f^2)*arcsin(
c*x))*sqrt(-c^2*d*x^2 + d)/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d
^3), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(cx))^2 (f + gx)^2}{(-d(cx - 1)(cx + 1))^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2*(f + g*x)**2/(-d*(c*x - 1)*(c*x + 1))**(5/2),
 x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="
giac")
```

```
[Out] integrate((g*x + f)^2*(b*arcsin(c*x) + a)^2/(-c^2*d*x^2 + d)^(5/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f + g\,x)^2\,(a + b\,\mathrm{asin}(c\,x))^2}{(d - c^2\,d\,x^2)^{5/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)^2*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int(((f + g*x)^2*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(5/2), x)
```

3.81 $\int \frac{(f+gx)(a+b\text{ArcSin}(cx))^2}{(d-c^2dx^2)^{5/2}}\,dx$

Optimal. Leaf size=641

$$\frac{b^2 g}{3c^2d^2\sqrt{d-c^2dx^2}}+\frac{b^2 fx}{3d^2\sqrt{d-c^2dx^2}}-\frac{bf(a+b\text{ArcSin}(cx))}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}-\frac{bgx(a+b\text{ArcSin}(cx))}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{2fx(a+\ldots}{3d^2\sqrt{\ldots}}$$

```
[Out] 1/3*b^2*g/c^2/d^2/(-c^2*d*x^2+d)^(1/2)+1/3*b^2*f*x/d^2/(-c^2*d*x^2+d)^(1/2)
+2/3*f*x*(a+b*arcsin(c*x))^2/d^2/(-c^2*d*x^2+d)^(1/2)+1/3*g*(a+b*arcsin(c*x
))^2/c^2/d^2/(-c^2*x^2+1)/(-c^2*d*x^2+d)^(1/2)+1/3*f*x*(a+b*arcsin(c*x))^2/
d^2/(-c^2*x^2+1)/(-c^2*d*x^2+d)^(1/2)-1/3*b*f*(a+b*arcsin(c*x))/c/d^2/(-c^2
*x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)-1/3*b*g*x*(a+b*arcsin(c*x))/c/d^2/(-c^2*
x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)-2/3*I*f*(a+b*arcsin(c*x))^2*(-c^2*x^2+1)^
(1/2)/c/d^2/(-c^2*d*x^2+d)^(1/2)+2/3*I*b*g*(a+b*arcsin(c*x))*arctan(I*c*x+(
-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/c^2/d^2/(-c^2*d*x^2+d)^(1/2)+4/3*b*f*
(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/c/d
^2/(-c^2*d*x^2+d)^(1/2)-1/3*I*b^2*g*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2))
)*(-c^2*x^2+1)^(1/2)/c^2/d^2/(-c^2*d*x^2+d)^(1/2)+1/3*I*b^2*g*polylog(2,I*(
I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/c^2/d^2/(-c^2*d*x^2+d)^(1/2)-
2/3*I*b^2*f*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/c/d
^2/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A]
time = 0.52, antiderivative size = 641, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 14, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.452$, Rules used = {4861, 4847, 4747, 4745, 4765, 3800, 2221, 2317, 2438, 4767, 197, 4749, 4266, 267}

$$\frac{2ibg\sqrt{1-c^2x^2}\,\text{ArcTan}\left(e^{i\text{ArcSin}(cx)}\right)(a+b\text{ArcSin}(cx))}{3c^2d^2\sqrt{d-c^2dx^2}}-\frac{bf(a+b\text{ArcSin}(cx))}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{2fx(a+b\text{ArcSin}(cx))^2}{3d^2\sqrt{d-c^2dx^2}}-\frac{2if\sqrt{1-c^2x^2}(a+b\text{ArcSin}(cx))^2}{3cd^2\sqrt{d-c^2dx^2}}+\frac{fx(a+b\text{ArcSin}(cx))^2}{3d^2(1-c^2x^2)\sqrt{d-c^2dx^2}}+\frac{4bf\sqrt{1-c^2x^2}\log\left(1+e^{2i\text{ArcSin}(cx)}\right)(a+b\text{ArcSin}(cx))}{3cd^2\sqrt{d-c^2dx^2}}-\frac{bgx(a+b\text{ArcSin}(cx))}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{g(a+b\text{ArcSin}(cx))^2}{3c^2d^2(1-c^2x^2)\sqrt{d-c^2dx^2}}-\frac{2ib^2f\sqrt{1-c^2x^2}\,\text{Li}_2\left(-e^{2i\text{ArcSin}(cx)}\right)}{3cd^2\sqrt{d-c^2dx^2}}-\frac{ib^2g\sqrt{1-c^2x^2}\,\text{Li}_2\left(-ie^{i\text{ArcSin}(cx)}\right)}{3c^2d^2\sqrt{d-c^2dx^2}}+\frac{ib^2g\sqrt{1-c^2x^2}\,\text{Li}_2\left(ie^{i\text{ArcSin}(cx)}\right)}{3c^2d^2\sqrt{d-c^2dx^2}}+\frac{b^2fx}{3d^2\sqrt{d-c^2dx^2}}+\frac{b^2g}{3c^2d^2\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (b^2*g)/(3*c^2*d^2*Sqrt[d - c^2*d*x^2]) + (b^2*f*x)/(3*d^2*Sqrt[d - c^2*d*x
^2]) - (b*f*(a + b*ArcSin[c*x]))/(3*c*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*
x^2]) - (b*g*x*(a + b*ArcSin[c*x]))/(3*c*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2
*d*x^2]) + (2*f*x*(a + b*ArcSin[c*x])^2)/(3*d^2*Sqrt[d - c^2*d*x^2]) + (g*(
a + b*ArcSin[c*x])^2)/(3*c^2*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]) + (f*x*
(a + b*ArcSin[c*x])^2)/(3*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]) - (((2*I)/
3)*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(c*d^2*Sqrt[d - c^2*d*x^2]) +
 (((2*I)/3)*b*g*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*
x])])/(c^2*d^2*Sqrt[d - c^2*d*x^2]) + (4*b*f*Sqrt[1 - c^2*x^2]*(a + b*ArcSi
n[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(3*c*d^2*Sqrt[d - c^2*d*x^2]) - ((I
/3)*b^2*g*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(c^2*d^2*Sq
```

```
rt[d - c^2*d*x^2]) + ((I/3)*b^2*g*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSi
n[c*x])])/(c^2*d^2*Sqrt[d - c^2*d*x^2]) - (((2*I)/3)*b^2*f*Sqrt[1 - c^2*x^2
]*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(c*d^2*Sqrt[d - c^2*d*x^2])
```

Rule 197

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[x*((a + b*x^n)^(p + 1)
/a), x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3800

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[I
*((c + d*x)^(m + 1)/(d*(m + 1))), x] - Dist[2*I, Int[(c + d*x)^m*(E^(2*I*(e
 + f*x))/(1 + E^(2*I*(e + f*x)))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4266

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[-2*(c + d*x)^m*(ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))]/f), x] + (-Di
st[d*(m/f), Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[d*(m/f), Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
```

```
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4745

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[x*((a + b*ArcSin[c*x])^n/(d*Sqrt[d + e*x^2])), x] - Dist[b
*c*(n/d)*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[x*((a + b*ArcSin[c*x]
)^(n - 1)/(1 - c^2*x^2)), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
+ e, 0] && GtQ[n, 0]
```

Rule 4747

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> Simp[(-x)*(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*d*(p + 1
))), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*Arc
Sin[c*x])^n, x], x] + Dist[b*c*(n/(2*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*
x^2)^p], Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x])
 /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && LtQ[p, -
1] && NeQ[p, -3/2]
```

Rule 4749

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4765

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Dist[-e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
```

```
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4861

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Dist[Simp[(d + e*x^2)^p/(1 - c^2*x^2)^
p], Int[(f + g*x)^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[
{a, b, c, d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && Integer
Q[p - 1/2] && !GtQ[d, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\,dx}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{f\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}+\frac{gx\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\right)dx}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(f\sqrt{1-c^2x^2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\,dx}{d^2\sqrt{d-c^2dx^2}} + \frac{\left(g\sqrt{1-c^2x^2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\,d}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{g\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}} + \frac{fx\left(a+b\sin^{-1}(cx)\right)^2}{3d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}} + \frac{\left(2f\sqrt{1\right.}{}$$

$$= -\frac{bf\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{bgx\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{2fx(}{3d}$$

$$= \frac{b^2g}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{b^2fx}{3d^2\sqrt{d-c^2dx^2}} - \frac{bf\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} -$$

$$= \frac{b^2g}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{b^2fx}{3d^2\sqrt{d-c^2dx^2}} - \frac{bf\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} -$$

$$= \frac{b^2g}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{b^2fx}{3d^2\sqrt{d-c^2dx^2}} - \frac{bf\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} -$$

$$= \frac{b^2g}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{b^2fx}{3d^2\sqrt{d-c^2dx^2}} - \frac{bf\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} -$$

$$= \frac{b^2g}{3c^2d^2\sqrt{d-c^2dx^2}} + \frac{b^2fx}{3d^2\sqrt{d-c^2dx^2}} - \frac{bf\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} -$$

Mathematica [A]
time = 4.53, size = 591, normalized size = 0.92

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] -1/24*(Sqrt[1 - c^2*x^2]*(6*c*f*((a + b*ArcSin[c*x])^2*Cot[(Pi + 2*ArcSin[c
*x])/4] - I*((a + b*ArcSin[c*x])*(a + b*ArcSin[c*x] - (4*I)*b*Log[1 + I/E^(
I*ArcSin[c*x])]) + 4*b^2*PolyLog[2, (-I)/E^(I*ArcSin[c*x])])) + (c*f - g)*(
4*b^2*Cot[(Pi + 2*ArcSin[c*x])/4] + 2*(a + b*ArcSin[c*x])^2*Cot[(Pi + 2*Arc
Sin[c*x])/4] + 2*b*(a + b*ArcSin[c*x])*Csc[(Pi + 2*ArcSin[c*x])/4]^2 + (a +
 b*ArcSin[c*x])^2*Cot[(Pi + 2*ArcSin[c*x])/4]*Csc[(Pi + 2*ArcSin[c*x])/4]^2
 - (2*I)*((a + b*ArcSin[c*x])*(a + b*ArcSin[c*x] - (4*I)*b*Log[1 + I/E^(I*A
rcSin[c*x])]) + 4*b^2*PolyLog[2, (-I)/E^(I*ArcSin[c*x])])) - 6*c*f*((-I)*((
a + b*ArcSin[c*x])*(a + b*ArcSin[c*x] + (4*I)*b*Log[1 + I*E^(I*ArcSin[c*x])
]) + 4*b^2*PolyLog[2, (-I)*E^(I*ArcSin[c*x])]) + (a + b*ArcSin[c*x])^2*Tan[
(Pi + 2*ArcSin[c*x])/4]) + (c*f + g)*((2*I)*((a + b*ArcSin[c*x])*(a + b*Arc
Sin[c*x] + (4*I)*b*Log[1 + I*E^(I*ArcSin[c*x])]) + 4*b^2*PolyLog[2, (-I)*E^
(I*ArcSin[c*x])]) + 2*b*(a + b*ArcSin[c*x])*Sec[(Pi + 2*ArcSin[c*x])/4]^2 -
 4*b^2*Tan[(Pi + 2*ArcSin[c*x])/4] - 2*(a + b*ArcSin[c*x])^2*Tan[(Pi + 2*Ar
cSin[c*x])/4] - (a + b*ArcSin[c*x])^2*Sec[(Pi + 2*ArcSin[c*x])/4]^2*Tan[(Pi
 + 2*ArcSin[c*x])/4])))/(c^2*d^2*Sqrt[d - c^2*d*x^2])
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 5893 vs. 2(610) = 1220.
time = 0.69, size = 5894, normalized size = 9.20

method	result	size
default	Expression too large to display	5894

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x,method=_RETURNVERBOS
E)
```

```
[Out] result too large to display
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="ma
xima")
```

```
[Out] 1/3*a*b*c*f*(1/(c^4*d^(5/2)*x^2 - c^2*d^(5/2)) + 2*log(c*x + 1)/(c^2*d^(5/2
)) + 2*log(c*x - 1)/(c^2*d^(5/2))) + 2/3*a*b*f*(2*x/(sqrt(-c^2*d*x^2 + d)*d
^2) + x/((-c^2*d*x^2 + d)^(3/2)*d))*arcsin(c*x) + 1/3*a^2*f*(2*x/(sqrt(-c^2
*d*x^2 + d)*d^2) + x/((-c^2*d*x^2 + d)^(3/2)*d)) + sqrt(d)*integrate((2*a*b
*g*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + (b^2*g*x + b^2*f)*arctan2
(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2)/((c^4*d^3*x^4 - 2*c^2*d^3*x^2 + d^3)
*sqrt(c*x + 1)*sqrt(-c*x + 1)), x) + 1/3*a^2*g/((-c^2*d*x^2 + d)^(3/2)*c^2*
d)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="fr
icas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(a^2*g*x + a^2*f + (b^2*g*x + b^2*f)*arcsin(
c*x)^2 + 2*(a*b*g*x + a*b*f)*arcsin(c*x))/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*
c^2*d^3*x^2 - d^3), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\operatorname{asin}{(cx)})^2 (f + gx)}{(-d(cx-1)(cx+1))^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2*(f + g*x)/(-d*(c*x - 1)*(c*x + 1))**(5/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="gi
ac")
```

```
[Out] integrate((g*x + f)*(b*arcsin(c*x) + a)^2/(-c^2*d*x^2 + d)^(5/2), x)
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)\,\left(a+b\,\mathrm{asin}(c\,x)\right)^2}{\left(d-c^2\,d\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(5/2),x)
[Out] int(((f + g*x)*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(5/2), x)
```

3.82 $\int \frac{(a+b\text{ArcSin}(cx))^n \log(h(f+gx)^m)}{\sqrt{1-c^2x^2}}\,dx$

Optimal. Leaf size=38

$$\text{Int}\left(\frac{(a+b\text{ArcSin}(cx))^n \log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}},x\right)$$

```
[Out] Unintegrable((a+b*arcsin(c*x))^n*ln(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x)
```

Rubi [A]
time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(a+b\text{ArcSin}(cx))^n \log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[((a + b*ArcSin[c*x])^n*Log[h*(f + g*x)^m])/Sqrt[1 - c^2*x^2],x]
[Out] Defer[Int][((a + b*ArcSin[c*x])^n*Log[h*(f + g*x)^m])/Sqrt[1 - c^2*x^2], x]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^n \log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}}\,dx = \int \frac{\left(a+b\sin^{-1}(cx)\right)^n \log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}}\,dx$$

Mathematica [A]
time = 0.11, size = 0, normalized size = 0.00

$$\int \frac{(a+b\text{ArcSin}(cx))^n \log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[((a + b*ArcSin[c*x])^n*Log[h*(f + g*x)^m])/Sqrt[1 - c^2*x^2],x]
[Out] Integrate[((a + b*ArcSin[c*x])^n*Log[h*(f + g*x)^m])/Sqrt[1 - c^2*x^2], x]
```

Maple [A]
time = 1.97, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin(cx))^n \ln\left(h(gx+f)^m\right)}{\sqrt{-c^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^n*ln(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^n*ln(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x)
```

Maxima [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^n*log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algori
thm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(n>0)', see `assume?` for more detai
ls)Is n
```

Fricas [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^n*log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algori
thm="fricas")
```

```
[Out] integral(-sqrt(-c^2*x^2 + 1)*(b*arcsin(c*x) + a)^n*log((g*x + f)^m*h)/(c^2*
x^2 - 1), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**n*ln(h*(g*x+f)**m)/(-c**2*x**2+1)**(1/2),x)
```

```
[Out] Timed out
```

Giac [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^n*log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algori
thm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^n*log((g*x + f)^m*h)/sqrt(-c^2*x^2 + 1), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\ln\left(h\,{\left(f+g\,x\right)}^m\right)\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^n}{\sqrt{1-c^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(h*(f + g*x)^m)*(a + b*asin(c*x))^n)/(1 - c^2*x^2)^(1/2),x)
```

```
[Out] int((log(h*(f + g*x)^m)*(a + b*asin(c*x))^n)/(1 - c^2*x^2)^(1/2), x)
```

3.83 $\int \frac{(a+b\text{ArcSin}(cx))^3\log(h(f+gx)^m)}{\sqrt{1-c^2x^2}}\,dx$

Optimal. Leaf size=634

$$\frac{im(a+b\text{ArcSin}(cx))^5}{20b^2c}-\frac{m(a+b\text{ArcSin}(cx))^4\log\left(1-\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{4bc}-\frac{m(a+b\text{ArcSin}(cx))^4\log\left(1-\frac{}{cf}\right.}{4bc}$$

```
[Out] 1/20*I*m*(a+b*arcsin(c*x))^5/b^2/c+1/4*(a+b*arcsin(c*x))^4*ln(h*(g*x+f)^m)/
b/c-1/4*m*(a+b*arcsin(c*x))^4*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2
*f^2-g^2)^(1/2)))/b/c-1/4*m*(a+b*arcsin(c*x))^4*ln(1-I*(I*c*x+(-c^2*x^2+1)^
(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))/b/c+I*m*(a+b*arcsin(c*x))^3*polylog(2,I
*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))/c+I*m*(a+b*arcsin(
c*x))^3*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))
/c-3*b*m*(a+b*arcsin(c*x))^2*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-
(c^2*f^2-g^2)^(1/2)))/c-3*b*m*(a+b*arcsin(c*x))^2*polylog(3,I*(I*c*x+(-c^2*
x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))/c-6*I*b^2*m*(a+b*arcsin(c*x))*po
lylog(4,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))/c-6*I*b^2
*m*(a+b*arcsin(c*x))*polylog(4,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2
-g^2)^(1/2)))/c+6*b^3*m*polylog(5,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*
f^2-g^2)^(1/2)))/c+6*b^3*m*polylog(5,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c
^2*f^2-g^2)^(1/2)))/c
```

Rubi [A]
time = 0.60, antiderivative size = 634, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 9, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.257$, Rules used = {4737, 4863, 4825, 4615, 2221, 2611, 6744, 2320, 6724}

$$-\frac{6ib^2m(a+b\text{ArcSin}(cx))\text{Li}_4\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{c}-\frac{6ib^2m(a+b\text{ArcSin}(cx))\text{Li}_4\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)}{c}+\frac{im(a+b\text{ArcSin}(cx))^5}{20b^2c}+\frac{im(a+b\text{ArcSin}(cx))^3\text{Li}_2\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{c}+\frac{im(a+b\text{ArcSin}(cx))^3\text{Li}_2\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)}{c}-\frac{3bm(a+b\text{ArcSin}(cx))^2\text{Li}_3\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{c}-\frac{3bm(a+b\text{ArcSin}(cx))^2\text{Li}_3\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)}{c}-\frac{m(a+b\text{ArcSin}(cx))^4\log\left(1-\frac{ige^{i\text{ArcSin}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{4bc}-\frac{m(a+b\text{ArcSin}(cx))^4\log\left(1-\frac{ige^{i\text{ArcSin}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{4bc}+\frac{(a+b\text{ArcSin}(cx))^4\log\left(h(f+gx)^m\right)}{4bc}+\frac{6b^3m\text{Li}_5\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{c}+\frac{6b^3m\text{Li}_5\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*ArcSin[c*x])^3*Log[h*(f + g*x)^m])/Sqrt[1 - c^2*x^2],x]
```

```
[Out] ((I/20)*m*(a + b*ArcSin[c*x])^5)/(b^2*c) - (m*(a + b*ArcSin[c*x])^4*Log[1 -
 (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(4*b*c) - (m*(a + b*
ArcSin[c*x])^4*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]
)/(4*b*c) + ((a + b*ArcSin[c*x])^4*Log[h*(f + g*x)^m])/(4*b*c) + (I*m*(a +
b*ArcSin[c*x])^3*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g
^2])])/c + (I*m*(a + b*ArcSin[c*x])^3*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c
*f + Sqrt[c^2*f^2 - g^2])])/c - (3*b*m*(a + b*ArcSin[c*x])^2*PolyLog[3, (I*
E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/c - (3*b*m*(a + b*ArcSin
[c*x])^2*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/c
 - ((6*I)*b^2*m*(a + b*ArcSin[c*x])*PolyLog[4, (I*E^(I*ArcSin[c*x])*g)/(c*f
 - Sqrt[c^2*f^2 - g^2])])/c - ((6*I)*b^2*m*(a + b*ArcSin[c*x])*PolyLog[4, (
```

```
I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/c + (6*b^3*m*PolyLog[5
, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/c + (6*b^3*m*PolyLo
g[5, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/c
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 4615

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Int[(e + f*x)^m*(E^(I*(c + d*x))/(a - Rt[a^2 - b^2, 2] - I*b*E^(
I*(c + d*x)))), x] + Int[(e + f*x)^m*(E^(I*(c + d*x))/(a + Rt[a^2 - b^2, 2]
 - I*b*E^(I*(c + d*x)))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0]
 && PosQ[a^2 - b^2]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[(a + b*x)^n*(Cos[x]/(c*d + e*Sin[x])), x], x, ArcSin[c*x]] /;
```

```
FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4863

```
Int[(Log[(h_.)*((f_.) + (g_.)*(x_))^(m_.)]*((a_.) + ArcSin[(c_.)*(x_)]*(b_.
))^(n_.))/Sqrt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Simp[Log[h*(f + g*x)^m]*(
(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1))), x] - Dist[g*(m/(b*c*Sqr
t[d]*(n + 1))), Int[(a + b*ArcSin[c*x])^(n + 1)/(f + g*x), x], x] /; FreeQ[
{a, b, c, d, e, f, g, h, m}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && IGtQ[n
, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6744

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[(e + f*x)^m*(PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p]/(b*c*p*Log[F])), x] - Dist[f*(m/(b*c*p*Log[F])), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+b\sin^{-1}(cx))^3\log(h(f+gx)^m)}{\sqrt{1-c^2x^2}}\,dx = \frac{(a+b\sin^{-1}(cx))^4\log(h(f+gx)^m)}{4bc} - \frac{(gm)\int \frac{(a+b\sin^{-1}(cx))^4}{f+gx}\,dx}{4bc}$$

$$= \frac{(a+b\sin^{-1}(cx))^4\log(h(f+gx)^m)}{4bc} - \frac{(gm)\text{Subst}\left(\int \frac{(a+bx)^4\cos(}{cf+g\sin(x)}\right.}{4bc}$$

$$= \frac{im(a+b\sin^{-1}(cx))^5}{20b^2c} + \frac{(a+b\sin^{-1}(cx))^4\log(h(f+gx)^m)}{4bc} -$$

$$= \frac{im(a+b\sin^{-1}(cx))^5}{20b^2c} - \frac{m(a+b\sin^{-1}(cx))^4\log\left(1-\frac{ie^{i\sin^{-1}}}{cf-\sqrt{c^2f}}\right.}{4bc}$$

$$= \frac{im(a+b\sin^{-1}(cx))^5}{20b^2c} - \frac{m(a+b\sin^{-1}(cx))^4\log\left(1-\frac{ie^{i\sin^{-1}}}{cf-\sqrt{c^2f}}\right.}{4bc}$$

$$= \frac{im(a+b\sin^{-1}(cx))^5}{20b^2c} - \frac{m(a+b\sin^{-1}(cx))^4\log\left(1-\frac{ie^{i\sin^{-1}}}{cf-\sqrt{c^2f}}\right.}{4bc}$$

$$= \frac{im(a+b\sin^{-1}(cx))^5}{20b^2c} - \frac{m(a+b\sin^{-1}(cx))^4\log\left(1-\frac{ie^{i\sin^{-1}}}{cf-\sqrt{c^2f}}\right.}{4bc}$$

$$= \frac{im(a+b\sin^{-1}(cx))^5}{20b^2c} - \frac{m(a+b\sin^{-1}(cx))^4\log\left(1-\frac{ie^{i\sin^{-1}}}{cf-\sqrt{c^2f}}\right.}{4bc}$$

$$= \frac{im(a+b\sin^{-1}(cx))^5}{20b^2c} - \frac{m(a+b\sin^{-1}(cx))^4\log\left(1-\frac{ie^{i\sin^{-1}}}{cf-\sqrt{c^2f}}\right.}{4bc}$$

Mathematica [F]
time = 135.82, size = 0, normalized size = 0.00

$$\int \frac{(a+b\text{ArcSin}(cx))^3\log(h(f+gx)^m)}{\sqrt{1-c^2x^2}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[((a + b*ArcSin[c*x])^3*Log[h*(f + g*x)^m])/Sqrt[1 - c^2*x^2],x]
[Out] Integrate[((a + b*ArcSin[c*x])^3*Log[h*(f + g*x)^m])/Sqrt[1 - c^2*x^2], x]
```

Maple [F]
time = 3.23, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin(cx))^3 \ln(h(gx+f)^m)}{\sqrt{-c^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^3*ln(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x)
[Out] int((a+b*arcsin(c*x))^3*ln(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^3*log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algori
thm="maxima")
[Out] (b^3*c*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^3/(sqrt(c*x + 1
)*sqrt(-c*x + 1)), x)*log(h) + 3*a*b^2*c*integrate(arctan2(c*x, sqrt(c*x +
1)*sqrt(-c*x + 1))^2/(sqrt(c*x + 1)*sqrt(-c*x + 1)), x)*log(h) + 3*a^2*b*c*
integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(sqrt(c*x + 1)*sqrt(-c
*x + 1)), x)*log(h) + b^3*c*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x
+ 1))^3*log((g*x + f)^m)/(sqrt(c*x + 1)*sqrt(-c*x + 1)), x) + 3*a*b^2*c*int
egrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2*log((g*x + f)^m)/(sqrt(
c*x + 1)*sqrt(-c*x + 1)), x) + 3*a^2*b*c*integrate(arctan2(c*x, sqrt(c*x +
1)*sqrt(-c*x + 1))*log((g*x + f)^m)/(sqrt(c*x + 1)*sqrt(-c*x + 1)), x) + a^
3*c*integrate(log((g*x + f)^m)/(sqrt(c*x + 1)*sqrt(-c*x + 1)), x) + a^3*arc
tan2(c*x, sqrt(-c^2*x^2 + 1))*log(h))/c
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^3*log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algori
thm="fricas")
[Out] integral(-(b^3*arcsin(c*x)^3 + 3*a*b^2*arcsin(c*x)^2 + 3*a^2*b*arcsin(c*x)
+ a^3)*sqrt(-c^2*x^2 + 1)*log((g*x + f)^m*h)/(c^2*x^2 - 1), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+b\operatorname{asin}(cx))^3 \log(h(f+gx)^m)}{\sqrt{-(cx-1)(cx+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**3*ln(h*(g*x+f)**m)/(-c**2*x**2+1)**(1/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**3*log(h*(f + g*x)**m)/sqrt(-(c*x - 1)*(c*x + 1)
), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^3*log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algori
thm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^3*log((g*x + f)^m*h)/sqrt(-c^2*x^2 + 1), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(h\,{\left(f+g\,x\right)}^m\right)\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^3}{\sqrt{1-c^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(h*(f + g*x)^m)*(a + b*asin(c*x))^3)/(1 - c^2*x^2)^(1/2),x)
```

```
[Out] int((log(h*(f + g*x)^m)*(a + b*asin(c*x))^3)/(1 - c^2*x^2)^(1/2), x)
```

3.84 $\int \frac{(a+b\text{ArcSin}(cx))^2\log(h(f+gx)^m)}{\sqrt{1-c^2x^2}}\,dx$

Optimal. Leaf size=514

$$\frac{im(a+b\text{ArcSin}(cx))^4}{12b^2c}-\frac{m(a+b\text{ArcSin}(cx))^3\log\left(1-\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{3bc}-\frac{m(a+b\text{ArcSin}(cx))^3\log\left(1-\frac{}{cf}\right.}{3bc}$$

```
[Out] 1/12*I*m*(a+b*arcsin(c*x))^4/b^2/c+1/3*(a+b*arcsin(c*x))^3*ln(h*(g*x+f)^m)/
b/c-1/3*m*(a+b*arcsin(c*x))^3*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2
*f^2-g^2)^(1/2)))/b/c-1/3*m*(a+b*arcsin(c*x))^3*ln(1-I*(I*c*x+(-c^2*x^2+1)^
(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))/b/c+I*m*(a+b*arcsin(c*x))^2*polylog(2,I
*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))/c+I*m*(a+b*arcsin(
c*x))^2*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))
/c-2*b*m*(a+b*arcsin(c*x))*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c
^2*f^2-g^2)^(1/2)))/c-2*b*m*(a+b*arcsin(c*x))*polylog(3,I*(I*c*x+(-c^2*x^2+
1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))/c-2*I*b^2*m*polylog(4,I*(I*c*x+(-c^2
*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))/c-2*I*b^2*m*polylog(4,I*(I*c*x+
(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))/c
```

Rubi [A]

time = 0.52, antiderivative size = 514, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 9, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.257$, Rules used = {4737, 4863, 4825, 4615, 2221, 2611, 6744, 2320, 6724}

$$\frac{im(a+b\text{ArcSin}(cx))^4}{12b^2c}+\frac{im(a+b\text{ArcSin}(cx))^2\text{Li}_2\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{c}+\frac{im(a+b\text{ArcSin}(cx))^2\text{Li}_2\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)}{c}-\frac{2bm(a+b\text{ArcSin}(cx))\text{Li}_3\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{c}-\frac{2bm(a+b\text{ArcSin}(cx))\text{Li}_3\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)}{c}-\frac{m(a+b\text{ArcSin}(cx))^3\log\left(1-\frac{ige^{i\text{ArcSin}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{3bc}-\frac{m(a+b\text{ArcSin}(cx))^3\log\left(1-\frac{ige^{i\text{ArcSin}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{3bc}+\frac{(a+b\text{ArcSin}(cx))^3\log\left(h(f+gx)^m\right)}{3bc}-\frac{2ib^2m\text{Li}_4\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{c}-\frac{2ib^2m\text{Li}_4\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*ArcSin[c*x])^2*Log[h*(f + g*x)^m])/Sqrt[1 - c^2*x^2],x]
```

```
[Out] ((I/12)*m*(a + b*ArcSin[c*x])^4)/(b^2*c) - (m*(a + b*ArcSin[c*x])^3*Log[1 -
 (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(3*b*c) - (m*(a + b*
ArcSin[c*x])^3*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]
)/(3*b*c) + ((a + b*ArcSin[c*x])^3*Log[h*(f + g*x)^m])/(3*b*c) + (I*m*(a +
b*ArcSin[c*x])^2*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g
^2])])/c + (I*m*(a + b*ArcSin[c*x])^2*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c
*f + Sqrt[c^2*f^2 - g^2])])/c - (2*b*m*(a + b*ArcSin[c*x])*PolyLog[3, (I*E^
(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/c - (2*b*m*(a + b*ArcSin[c
*x])*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/c - (
(2*I)*b^2*m*PolyLog[4, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])]
)/c - ((2*I)*b^2*m*PolyLog[4, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 -
 g^2])])/c
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 4615

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Int[(e + f*x)^m*(E^(I*(c + d*x))/(a - Rt[a^2 - b^2, 2] - I*b*E^(
I*(c + d*x)))), x] + Int[(e + f*x)^m*(E^(I*(c + d*x))/(a + Rt[a^2 - b^2, 2]
 - I*b*E^(I*(c + d*x)))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0]
 && PosQ[a^2 - b^2]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[(a + b*x)^n*(Cos[x]/(c*d + e*Sin[x])), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4863

```
Int[(Log[(h_.)*((f_.) + (g_.)*(x_))^(m_.)]*((a_.) + ArcSin[(c_.)*(x_)]*(b_.
))^(n_.))/Sqrt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Simp[Log[h*(f + g*x)^m]*(
(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1))), x] - Dist[g*(m/(b*c*Sqr
t[d]*(n + 1))), Int[(a + b*ArcSin[c*x])^(n + 1)/(f + g*x), x], x] /; FreeQ[
{a, b, c, d, e, f, g, h, m}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && IGtQ[n
, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6744

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[(e + f*x)^m*(PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p]/(b*c*p*Log[F])), x] - Dist[f*(m/(b*c*p*Log[F])), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+b\sin^{-1}(cx))^2\log(h(f+gx)^m)}{\sqrt{1-c^2x^2}}\,dx = \frac{(a+b\sin^{-1}(cx))^3\log(h(f+gx)^m)}{3bc} - \frac{(gm)\int\frac{(a+b\sin^{-1}(cx))^3}{f+gx}\,dx}{3bc}$$

$$= \frac{(a+b\sin^{-1}(cx))^3\log(h(f+gx)^m)}{3bc} - \frac{(gm)\mathrm{Subst}\left(\int\frac{(a+bx)^3\cos(}{cf+g\sin(x)}\right.}{3bc}$$

$$= \frac{im(a+b\sin^{-1}(cx))^4}{12b^2c} + \frac{(a+b\sin^{-1}(cx))^3\log(h(f+gx)^m)}{3bc} -$$

$$= \frac{im(a+b\sin^{-1}(cx))^4}{12b^2c} - \frac{m(a+b\sin^{-1}(cx))^3\log\left(1-\frac{ie^{i\sin^{-1}}}{cf-\sqrt{c^2f}}\right.}{3bc}$$

$$= \frac{im(a+b\sin^{-1}(cx))^4}{12b^2c} - \frac{m(a+b\sin^{-1}(cx))^3\log\left(1-\frac{ie^{i\sin^{-1}}}{cf-\sqrt{c^2f}}\right.}{3bc}$$

$$= \frac{im(a+b\sin^{-1}(cx))^4}{12b^2c} - \frac{m(a+b\sin^{-1}(cx))^3\log\left(1-\frac{ie^{i\sin^{-1}}}{cf-\sqrt{c^2f}}\right.}{3bc}$$

$$= \frac{im(a+b\sin^{-1}(cx))^4}{12b^2c} - \frac{m(a+b\sin^{-1}(cx))^3\log\left(1-\frac{ie^{i\sin^{-1}}}{cf-\sqrt{c^2f}}\right.}{3bc}$$

$$= \frac{im(a+b\sin^{-1}(cx))^4}{12b^2c} - \frac{m(a+b\sin^{-1}(cx))^3\log\left(1-\frac{ie^{i\sin^{-1}}}{cf-\sqrt{c^2f}}\right.}{3bc}$$

Mathematica [B] Both result and optimal contain complex but leaf count is larger than twice the leaf count of optimal. 10642 vs. 2(514) = 1028.
time = 121.19, size = 10642, normalized size = 20.70

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((a + b*ArcSin[c*x])^2*Log[h*(f + g*x)^m])/Sqrt[1 - c^2*x^2],x]
[Out] Result too large to show
```

Maple [F]
time = 3.04, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin(cx))^2\ln(h(gx+f)^m)}{\sqrt{-c^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2*ln(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2*ln(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2*log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algori
thm="maxima")
```

```
[Out] (b^2*c*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2/(sqrt(c*x + 1
)*sqrt(-c*x + 1)), x)*log(h) + 2*a*b*c*integrate(arctan2(c*x, sqrt(c*x + 1)
*sqrt(-c*x + 1))/(sqrt(c*x + 1)*sqrt(-c*x + 1)), x)*log(h) + b^2*c*integrat
e(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2*log((g*x + f)^m)/(sqrt(c*x +
 1)*sqrt(-c*x + 1)), x) + 2*a*b*c*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt
(-c*x + 1))*log((g*x + f)^m)/(sqrt(c*x + 1)*sqrt(-c*x + 1)), x) + a^2*c*int
egrate(log((g*x + f)^m)/(sqrt(c*x + 1)*sqrt(-c*x + 1)), x) + a^2*arctan2(c*
x, sqrt(-c^2*x^2 + 1))*log(h))/c
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2*log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algori
thm="fricas")
```

```
[Out] integral(-sqrt(-c^2*x^2 + 1)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*
log((g*x + f)^m*h)/(c^2*x^2 - 1), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(cx))^2 \log(h(f + gx)^m)}{\sqrt{-(cx - 1)(cx + 1)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2*ln(h*(g*x+f)**m)/(-c**2*x**2+1)**(1/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2*log(h*(f + g*x)**m)/sqrt(-(c*x - 1)*(c*x + 1)
), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2*log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algori
thm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2*log((g*x + f)^m*h)/sqrt(-c^2*x^2 + 1), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(h\,{\left(f+g\,x\right)}^m\right)\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{\sqrt{1-c^2\,x^2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(h*(f + g*x)^m)*(a + b*asin(c*x))^2)/(1 - c^2*x^2)^(1/2),x)
```

```
[Out] int((log(h*(f + g*x)^m)*(a + b*asin(c*x))^2)/(1 - c^2*x^2)^(1/2), x)
```

3.85 $\int \frac{(a+b\text{ArcSin}(cx))\log(h(f+gx)^m)}{\sqrt{1-c^2x^2}}\,dx$

Optimal. Leaf size=390

$$\frac{im(a+b\text{ArcSin}(cx))^3}{6b^2c}-\frac{m(a+b\text{ArcSin}(cx))^2\log\left(1-\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{2bc}-\frac{m(a+b\text{ArcSin}(cx))^2\log\left(1-\frac{}{cf}\right.}{2bc}$$

```
[Out] 1/6*I*m*(a+b*arcsin(c*x))^3/b^2/c+1/2*(a+b*arcsin(c*x))^2*ln(h*(g*x+f)^m)/b
/c-1/2*m*(a+b*arcsin(c*x))^2*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*
f^2-g^2)^(1/2)))/b/c-1/2*m*(a+b*arcsin(c*x))^2*ln(1-I*(I*c*x+(-c^2*x^2+1)^(
1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))/b/c+I*m*(a+b*arcsin(c*x))*polylog(2,I*(I
*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))/c+I*m*(a+b*arcsin(c*x
))*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))/c-b*
m*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))/c-b*m
*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))/c
```

Rubi [A]
time = 0.42, antiderivative size = 390, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.242$, Rules used = {4737, 4863, 4825, 4615, 2221, 2611, 2320, 6724}

$$\frac{im(a+b\text{ArcSin}(cx))^3}{6b^2c}+\frac{im(a+b\text{ArcSin}(cx))\text{Li}_2\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{c}+\frac{im(a+b\text{ArcSin}(cx))\text{Li}_2\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)}{c}-\frac{m(a+b\text{ArcSin}(cx))^2\log\left(1-\frac{ige^{i\text{ArcSin}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{2bc}-\frac{m(a+b\text{ArcSin}(cx))^2\log\left(1-\frac{ige^{i\text{ArcSin}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{2bc}+\frac{(a+b\text{ArcSin}(cx))^2\log\left(h(f+gx)^m\right)}{2bc}-\frac{bm\text{Li}_3\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{c}-\frac{bm\text{Li}_3\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*ArcSin[c*x])*Log[h*(f + g*x)^m])/Sqrt[1 - c^2*x^2],x]
```

```
[Out] ((I/6)*m*(a + b*ArcSin[c*x])^3)/(b^2*c) - (m*(a + b*ArcSin[c*x])^2*Log[1 -
(I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/(2*b*c) - (m*(a + b*A
rcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])
/(2*b*c) + ((a + b*ArcSin[c*x])^2*Log[h*(f + g*x)^m])/(2*b*c) + (I*m*(a + b
*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2]
)])/c + (I*m*(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f +
Sqrt[c^2*f^2 - g^2])])/c - (b*m*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f - S
qrt[c^2*f^2 - g^2])])/c - (b*m*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sq
rt[c^2*f^2 - g^2])])/c
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 4615

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Int[(e + f*x)^m*(E^(I*(c + d*x))/(a - Rt[a^2 - b^2, 2] - I*b*E^(
I*(c + d*x)))), x] + Int[(e + f*x)^m*(E^(I*(c + d*x))/(a + Rt[a^2 - b^2, 2]
 - I*b*E^(I*(c + d*x)))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0]
 && PosQ[a^2 - b^2]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[(a + b*x)^n*(Cos[x]/(c*d + e*Sin[x])), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4863

```
Int[(Log[(h_.)*((f_.) + (g_.)*(x_))^(m_.)]*((a_.) + ArcSin[(c_.)*(x_)]*(b_.
))^(n_.))/Sqrt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Simp[Log[h*(f + g*x)^m]*(
(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1))), x] - Dist[g*(m/(b*c*Sqr
t[d]*(n + 1))), Int[(a + b*ArcSin[c*x])^(n + 1)/(f + g*x), x], x] /; FreeQ[
{a, b, c, d, e, f, g, h, m}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && IGtQ[n
, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\sin^{-1}(cx))\log(h(f+gx)^m)}{\sqrt{1-c^2x^2}}\,dx = \frac{(a+b\sin^{-1}(cx))^2\log(h(f+gx)^m)}{2bc} - \frac{(gm)\int\frac{(a+b\sin^{-1}(cx))^2}{f+gx}\,dx}{2bc}$$

$$= \frac{(a+b\sin^{-1}(cx))^2\log(h(f+gx)^m)}{2bc} - \frac{(gm)\text{Subst}\left(\int\frac{(a+bx)^2\cos(x)}{cf+g\sin(x)}\right.}{2bc}$$

$$= \frac{im(a+b\sin^{-1}(cx))^3}{6b^2c} + \frac{(a+b\sin^{-1}(cx))^2\log(h(f+gx)^m)}{2bc} - \frac{(g}{}$$

$$= \frac{im(a+b\sin^{-1}(cx))^3}{6b^2c} - \frac{m(a+b\sin^{-1}(cx))^2\log\left(1-\frac{ie^{i\sin^{-1}(cx}}{cf-\sqrt{c^2f^2-}}\right.}{2bc}$$

$$= \frac{im(a+b\sin^{-1}(cx))^3}{6b^2c} - \frac{m(a+b\sin^{-1}(cx))^2\log\left(1-\frac{ie^{i\sin^{-1}(cx}}{cf-\sqrt{c^2f^2-}}\right.}{2bc}$$

$$= \frac{im(a+b\sin^{-1}(cx))^3}{6b^2c} - \frac{m(a+b\sin^{-1}(cx))^2\log\left(1-\frac{ie^{i\sin^{-1}(cx}}{cf-\sqrt{c^2f^2-}}\right.}{2bc}$$

$$= \frac{im(a+b\sin^{-1}(cx))^3}{6b^2c} - \frac{m(a+b\sin^{-1}(cx))^2\log\left(1-\frac{ie^{i\sin^{-1}(cx}}{cf-\sqrt{c^2f^2-}}\right.}{2bc}$$

Mathematica [B] Both result and optimal contain complex but leaf count is larger than twice the leaf count of optimal. 2724 vs. $2(390) = 780$.
time = 8.43, size = 2724, normalized size = 6.98

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((a + b*ArcSin[c*x])*Log[h*(f + g*x)^m])/Sqrt[1 - c^2*x^2],x]
```

```
[Out] (m*ArcSin[c*x]*(2*a + b*ArcSin[c*x])*Log[f + g*x])/(2*c) + (a*ArcSin[c*x]*(
-(m*Log[f + g*x]) + Log[h*(f + g*x)^m]))/c + (b*f*(-(m*Log[f + g*x]) + Log[
```

```
h*(f + g*x)^m])*((-I)*ArcSin[c*x]*(Log[1 + (I*E^(I*ArcSin[c*x])*g)/(-(c*f)
+ Sqrt[c^2*f^2 - g^2])] - Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f
^2 - g^2])]) - PolyLog[2, ((-I)*E^(I*ArcSin[c*x])*g)/(-(c*f) + Sqrt[c^2*f^2
 - g^2])] + PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])]
))/Sqrt[c^2*f^2 - g^2] + (a*g*m*(-1/2*(((3*I)/2)*Pi*ArcSin[c*x] - (I/2)*Arc
Sin[c*x]^2 + 2*Pi*Log[1 + E^((-I)*ArcSin[c*x])] - Pi*Log[1 + I*E^(I*ArcSin[
c*x])] + 2*ArcSin[c*x]*Log[1 + I*E^(I*ArcSin[c*x])] - 2*Pi*Log[Cos[ArcSin[c
*x]/2]] + Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] - (2*I)*PolyLog[2, (-I)*E^(I
*ArcSin[c*x])])/(c*(-c^(-1) - f/g)*g) + ((I/2)*Pi*ArcSin[c*x] - (I/2)*ArcSi
n[c*x]^2 + 2*Pi*Log[1 + E^((-I)*ArcSin[c*x])] + Pi*Log[1 - I*E^(I*ArcSin[c*
x])] + 2*ArcSin[c*x]*Log[1 - I*E^(I*ArcSin[c*x])] - 2*Pi*Log[Cos[ArcSin[c*x
]/2]] - Pi*Log[Sin[(Pi + 2*ArcSin[c*x])/4]] - (2*I)*PolyLog[2, I*E^(I*ArcSi
n[c*x])])/(2*c*(c^(-1) - f/g)*g) + (((-1/2*I)*ArcSin[c*x]^2)/g + (ArcSin[c*
x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/g + (ArcSi
n[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/g - (I
*PolyLog[2, ((-I)*E^(I*ArcSin[c*x])*g)/(-(c*f) + Sqrt[c^2*f^2 - g^2])])/g -
 (I*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/g)/(c^
2*(-c^(-1) - f/g)*(c^(-1) - f/g))))/c - a*c*g*m*(-1/2*(((3*I)/2)*Pi*ArcSin[
c*x] - (I/2)*ArcSin[c*x]^2 + 2*Pi*Log[1 + E^((-I)*ArcSin[c*x])] - Pi*Log[1
+ I*E^(I*ArcSin[c*x])] + 2*ArcSin[c*x]*Log[1 + I*E^(I*ArcSin[c*x])] - 2*Pi*
Log[Cos[ArcSin[c*x]/2]] + Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] - (2*I)*Poly
Log[2, (-I)*E^(I*ArcSin[c*x])])/(c^3*(-c^(-1) - f/g)*g) + ((I/2)*Pi*ArcSin[
c*x] - (I/2)*ArcSin[c*x]^2 + 2*Pi*Log[1 + E^((-I)*ArcSin[c*x])] + Pi*Log[1
- I*E^(I*ArcSin[c*x])] + 2*ArcSin[c*x]*Log[1 - I*E^(I*ArcSin[c*x])] - 2*Pi*
Log[Cos[ArcSin[c*x]/2]] - Pi*Log[Sin[(Pi + 2*ArcSin[c*x])/4]] - (2*I)*PolyL
og[2, I*E^(I*ArcSin[c*x])])/(2*c^3*(c^(-1) - f/g)*g) + (f^2*(((-1/2*I)*ArcS
in[c*x]^2)/g + (ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2
*f^2 - g^2])])/g + (ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt
[c^2*f^2 - g^2])])/g - (I*PolyLog[2, ((-I)*E^(I*ArcSin[c*x])*g)/(-(c*f) + S
qrt[c^2*f^2 - g^2])])/g - (I*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt
[c^2*f^2 - g^2])])/g))/(c^2*(-c^(-1) - f/g)*(c^(-1) - f/g)*g^2)) + (b*(-(m*
Log[f + g*x]) + Log[h*(f + g*x)^m])*(ArcSin[c*x]^2 - 2*c*f*((Pi*ArcTan[(g +
 c*f*Tan[ArcSin[c*x]/2])/Sqrt[c^2*f^2 - g^2]])/Sqrt[c^2*f^2 - g^2] + (2*Arc
Cos[-((c*f)/g)]*ArcTanh[((c*f - g)*Cot[(Pi + 2*ArcSin[c*x])/4])/Sqrt[-(c^2*
f^2) + g^2]] + (Pi - 2*ArcSin[c*x])*ArcTanh[((c*f + g)*Tan[(Pi + 2*ArcSin[c
*x])/4])/Sqrt[-(c^2*f^2) + g^2]] + (ArcCos[-((c*f)/g)] + (2*I)*(ArcTanh[((c
*f - g)*Cot[(Pi + 2*ArcSin[c*x])/4])/Sqrt[-(c^2*f^2) + g^2]] + ArcTanh[((c*
f + g)*Tan[(Pi + 2*ArcSin[c*x])/4])/Sqrt[-(c^2*f^2) + g^2]]))*Log[((1/2 + I
/2)*Sqrt[-(c^2*f^2) + g^2])/(E^((I/2)*ArcSin[c*x])*Sqrt[g]*Sqrt[c*f + c*g*x
])] + (ArcCos[-((c*f)/g)] - (2*I)*ArcTanh[((c*f - g)*Cot[(Pi + 2*ArcSin[c*x
])/4])/Sqrt[-(c^2*f^2) + g^2]] - (2*I)*ArcTanh[((c*f + g)*Tan[(Pi + 2*ArcSi
n[c*x])/4])/Sqrt[-(c^2*f^2) + g^2]])*Log[((1/2 - I/2)*E^((I/2)*ArcSin[c*x])
*Sqrt[-(c^2*f^2) + g^2])/(Sqrt[g]*Sqrt[c*f + c*g*x])] - (ArcCos[-((c*f)/g)]
 + (2*I)*ArcTanh[((c*f - g)*Cot[(Pi + 2*ArcSin[c*x])/4])/Sqrt[-(c^2*f^2) +
g^2]])*Log[((c*f + g)*(-(c*f) + g - I*Sqrt[-(c^2*f^2) + g^2])*(1 + I*Cot[(P
```

```
i + 2*ArcSin[c*x])/4]))/(g*(c*f + g + Sqrt[-(c^2*f^2) + g^2]*Cot[(Pi + 2*Ar
cSin[c*x])/4]))] - (ArcCos[-((c*f)/g)] - (2*I)*ArcTanh[((c*f - g)*Cot[(Pi +
 2*ArcSin[c*x])/4])/Sqrt[-(c^2*f^2) + g^2]])*Log[((c*f + g)*(I*c*f - I*g +
Sqrt[-(c^2*f^2) + g^2])*(I + Cot[(Pi + 2*ArcSin[c*x])/4]))/(g*(c*f + g + Sq
rt[-(c^2*f^2) + g^2]*Cot[(Pi + 2*ArcSin[c*x])/4]))] + I*(PolyLog[2, ((c*f -
 I*Sqrt[-(c^2*f^2) + g^2])*(c*f + g - Sqrt[-(c^2*f^2) + g^2]*Cot[(Pi + 2*Ar
cSin[c*x])/4]))/(g*(c*f + g + Sqrt[-(c^2*f^2) + g^2]*Cot[(Pi + 2*ArcSin[c*x
])/4]))] - PolyLog[2, ((c*f + I*Sqrt[-(c^2*f^2) + g^2])*(c*f + g - Sqrt[-(c
^2*f^2) + g^2]*Cot[(Pi + 2*ArcSin[c*x])/4]))/(g*(c*f + g + Sqrt[-(c^2*f^2)
+ g^2]*Cot[(Pi + 2*ArcSin[c*x])/4]))]))/Sqrt[-(c^2*f^2) + g^2])))/(2*c) - (
b*g*m*(((-1/3*I)*ArcSin[c*x]^3)/g + (ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcSin[c
*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/g + (ArcSin[c*x]^2*Log[1 - (I*E^(I*Ar
cSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/g - ((2*I)*ArcSin[c*x]*PolyLog[
2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/g - ((2*I)*ArcSin[
c*x]*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/g + (
2*PolyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/g + (2*P
olyLog[3, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/g))/(2*c)
```

Maple [F]
time = 2.58, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin(cx))\ln\left(h(gx+f)^{m}\right)}{\sqrt{-c^{2}x^{2}+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))*ln(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] int((a+b*arcsin(c*x))*ln(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algorith
m="maxima")
```

```
[Out] (b*c*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(sqrt(c*x + 1)*sq
rt(-c*x + 1)), x)*log(h) + b*c*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c
*x + 1))*log((g*x + f)^m)/(sqrt(c*x + 1)*sqrt(-c*x + 1)), x) + a*c*integrat
e(log((g*x + f)^m)/(sqrt(c*x + 1)*sqrt(-c*x + 1)), x) + a*arctan2(c*x, sqrt
(-c^2*x^2 + 1))*log(h))/c
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algorith
m="fricas")
```

```
[Out] integral(-sqrt(-c^2*x^2 + 1)*(b*arcsin(c*x) + a)*log((g*x + f)^m*h)/(c^2*x^
2 - 1), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(cx)) \log \left(h(f + gx)^m\right)}{\sqrt{-(cx - 1)(cx + 1)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))*ln(h*(g*x+f)**m)/(-c**2*x**2+1)**(1/2),x)
```

```
[Out] Integral((a + b*asin(c*x))*log(h*(f + g*x)**m)/sqrt(-(c*x - 1)*(c*x + 1)),
x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algorith
m="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)*log((g*x + f)^m*h)/sqrt(-c^2*x^2 + 1), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(h\,{(f+g\,x)}^m\right)\,\left(a+b\,\mathrm{asin}(c\,x)\right)}{\sqrt{1-c^2\,x^2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(h*(f + g*x)^m)*(a + b*asin(c*x)))/(1 - c^2*x^2)^(1/2),x)
```

```
[Out] int((log(h*(f + g*x)^m)*(a + b*asin(c*x)))/(1 - c^2*x^2)^(1/2), x)
```

3.86 $\int \frac{\log(h(f+gx)^m)}{\sqrt{1-c^2x^2}}\,dx$

Optimal. Leaf size=237

$$\frac{im\text{ArcSin}(cx)^2}{2c}-\frac{m\text{ArcSin}(cx)\log\left(1-\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{c}-\frac{m\text{ArcSin}(cx)\log\left(1-\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)}{c}+\frac{\text{ArcS}}{}$$

```
[Out] 1/2*I*m*arcsin(c*x)^2/c+arcsin(c*x)*ln(h*(g*x+f)^m)/c-m*arcsin(c*x)*ln(1-I*
(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))/c-m*arcsin(c*x)*ln(
1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))/c+I*m*polylog(2
,I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f-(c^2*f^2-g^2)^(1/2)))/c+I*m*polylog(2,
I*(I*c*x+(-c^2*x^2+1)^(1/2))*g/(c*f+(c^2*f^2-g^2)^(1/2)))/c
```

Rubi [A]
time = 0.23, antiderivative size = 237, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.280$, Rules used = {222, 2451, 4825, 4615, 2221, 2317, 2438}

$$\frac{im\text{Li}_2\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{c}+\frac{im\text{Li}_2\left(\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)}{c}-\frac{m\text{ArcSin}(cx)\log\left(1-\frac{ige^{i\text{ArcSin}(cx)}}{cf-\sqrt{c^2f^2-g^2}}\right)}{c}-\frac{m\text{ArcSin}(cx)\log\left(1-\frac{ige^{i\text{ArcSin}(cx)}}{\sqrt{c^2f^2-g^2}+cf}\right)}{c}+\frac{\text{ArcSin}(cx)\log\left(h(f+gx)^m\right)}{c}+\frac{im\text{ArcSin}(cx)^2}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[Log[h*(f + g*x)^m]/Sqrt[1 - c^2*x^2],x]
```

```
[Out] ((I/2)*m*ArcSin[c*x]^2)/c - (m*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*g)/
(c*f - Sqrt[c^2*f^2 - g^2])])/c - (m*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x
])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/c + (ArcSin[c*x]*Log[h*(f + g*x)^m])/c
+ (I*m*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 - g^2])])/c +
 (I*m*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 - g^2])])/c
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2451

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 4615

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Int[(e + f*x)^m*(E^(I*(c + d*x))/(a - Rt[a^2 - b^2, 2] - I*b*E^(
I*(c + d*x)))), x] + Int[(e + f*x)^m*(E^(I*(c + d*x))/(a + Rt[a^2 - b^2, 2]
 - I*b*E^(I*(c + d*x)))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0]
 && PosQ[a^2 - b^2]
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[(a + b*x)^n*(Cos[x]/(c*d + e*Sin[x])), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{\log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}}\,dx = \frac{\sin^{-1}(cx)\log\left(h(f+gx)^m\right)}{c} - (gm)\int \frac{\sin^{-1}(cx)}{cf+cgx}\,dx$$

$$= \frac{\sin^{-1}(cx)\log\left(h(f+gx)^m\right)}{c} - (gm)\text{Subst}\left(\int \frac{x\cos(x)}{c^2f+cg\sin(x)}\,dx, x, \sin^{-1}(cx)\right)$$

$$= \frac{im\sin^{-1}(cx)^2}{2c} + \frac{\sin^{-1}(cx)\log\left(h(f+gx)^m\right)}{c} - (gm)\text{Subst}\left(\int \frac{e^{ix}x}{c^2f-ice^{ix}g-c\sqrt{c}\cdots}\right.$$

$$= \frac{im\sin^{-1}(cx)^2}{2c} - \frac{m\sin^{-1}(cx)\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{c} - \frac{m\sin^{-1}(cx)\log\left(1-\cdots\right.}{c}$$

$$= \frac{im\sin^{-1}(cx)^2}{2c} - \frac{m\sin^{-1}(cx)\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{c} - \frac{m\sin^{-1}(cx)\log\left(1-\cdots\right.}{c}$$

$$= \frac{im\sin^{-1}(cx)^2}{2c} - \frac{m\sin^{-1}(cx)\log\left(1-\frac{ie^{i\sin^{-1}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{c} - \frac{m\sin^{-1}(cx)\log\left(1-\cdots\right.}{c}$$

Mathematica [A]
time = 0.02, size = 246, normalized size = 1.04

$$\frac{im\text{ArcSin}(cx)^2}{2c} - \frac{m\text{ArcSin}(cx)\log\left(1-\frac{ice^{i\text{ArcSin}(cx)}g}{c^2f-c\sqrt{c^2f^2-g^2}}\right)}{c} - \frac{m\text{ArcSin}(cx)\log\left(1-\frac{ice^{i\text{ArcSin}(cx)}g}{c^2f+c\sqrt{c^2f^2-g^2}}\right)}{c} + \frac{\text{ArcSin}(cx)\log\left(h(f+gx)^m\right)}{c} + \frac{im\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(cx)}g}{cf-\sqrt{c^2f^2-g^2}}\right)}{c} + \frac{im\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(cx)}g}{cf+\sqrt{c^2f^2-g^2}}\right)}{c}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[h*(f + g*x)^m]/Sqrt[1 - c^2*x^2],x]
```

```
[Out] ((I/2)*m*ArcSin[c*x]^2)/c - (m*ArcSin[c*x]*Log[1 - (I*c*E^(I*ArcSin[c*x])*g
)/(c^2*f - c*Sqrt[c^2*f^2 - g^2])])/c - (m*ArcSin[c*x]*Log[1 - (I*c*E^(I*Ar
cSin[c*x])*g)/(c^2*f + c*Sqrt[c^2*f^2 - g^2])])/c + (ArcSin[c*x]*Log[h*(f +
 g*x)^m])/c + (I*m*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f - Sqrt[c^2*f^2 -
 g^2])])/c + (I*m*PolyLog[2, (I*E^(I*ArcSin[c*x])*g)/(c*f + Sqrt[c^2*f^2 -
g^2])])/c
```

Maple [F]
time = 0.07, size = 0, normalized size = 0.00

$$\int \frac{\ln\left(h(gx+f)^m\right)}{\sqrt{-c^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x)
[Out] int(ln(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algorithm="maxima")
[Out] integrate(log((g*x + f)^m*h)/sqrt(-c^2*x^2 + 1), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algorithm="fricas")
[Out] integral(-sqrt(-c^2*x^2 + 1)*log((g*x + f)^m*h)/(c^2*x^2 - 1), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log \left(h(f+gx)^m\right)}{\sqrt{-\left(cx-1\right)\left(cx+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(h*(g*x+f)**m)/(-c**2*x**2+1)**(1/2),x)
[Out] Integral(log(h*(f + g*x)**m)/sqrt(-(c*x - 1)*(c*x + 1)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(h*(g*x+f)^m)/(-c^2*x^2+1)^(1/2),x, algorithm="giac")
[Out] integrate(log((g*x + f)^m*h)/sqrt(-c^2*x^2 + 1), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(h\,{\left(f+g\,x\right)}^m\right)}{\sqrt{1-c^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(h*(f + g*x)^m)/(1 - c^2*x^2)^(1/2),x)
[Out] int(log(h*(f + g*x)^m)/(1 - c^2*x^2)^(1/2), x)
```

3.87 $\int \frac{\log(h(f+gx)^m)}{\sqrt{1-c^2x^2}\,(a+b\mathbf{ArcSin}(cx))}\,dx$

Optimal. Leaf size=38

$$\text{Int}\left(\frac{\log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))},x\right)$$

```
[Out] Unintegrable(ln(h*(g*x+f)^m)/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x)
```

Rubi [A]
time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{\log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}\,dx$$

Verification is not applicable to the result.

```
[In] Int[Log[h*(f + g*x)^m]/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])),x]
[Out] Defer[Int][Log[h*(f + g*x)^m]/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{\log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}\,dx=\int \frac{\log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Mathematica [A]
time = 0.14, size = 0, normalized size = 0.00

$$\int \frac{\log\left(h(f+gx)^m\right)}{\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[Log[h*(f + g*x)^m]/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])),x]
[Out] Integrate[Log[h*(f + g*x)^m]/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])), x]
```

Maple [A]
time = 1.94, size = 0, normalized size = 0.00

$$\int \frac{\ln\left(h(gx+f)^m\right)}{(a+b\arcsin(cx))\sqrt{-c^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(h*(g*x+f)^m)/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] int(ln(h*(g*x+f)^m)/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(h*(g*x+f)^m)/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorith
m="maxima")
```

```
[Out] integrate(log((g*x + f)^m*h)/(sqrt(-c^2*x^2 + 1)*(b*arcsin(c*x) + a)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(h*(g*x+f)^m)/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorith
m="fricas")
```

```
[Out] integral(-sqrt(-c^2*x^2 + 1)*log((g*x + f)^m*h)/(a*c^2*x^2 + (b*c^2*x^2 - b
)*arcsin(c*x) - a), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(h(f+gx)^m\right)}{\sqrt{-(cx-1)(cx+1)}\,\left(a+b\operatorname{asin}(cx)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(h*(g*x+f)**m)/(a+b*asin(c*x))/(-c**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(log(h*(f + g*x)**m)/(sqrt(-(c*x - 1)*(c*x + 1))*(a + b*asin(c*x)))
, x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(h*(g*x+f)^m)/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorith
m="giac")
```

```
[Out] integrate(log((g*x + f)^m*h)/(sqrt(-c^2*x^2 + 1)*(b*arcsin(c*x) + a)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\ln \left(h\,{\left(f+g\,x\right)}^m\right)}{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\sqrt{1-c^2\,x^2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(h*(f + g*x)^m)/((a + b*asin(c*x))*(1 - c^2*x^2)^(1/2)),x)
```

```
[Out] int(log(h*(f + g*x)^m)/((a + b*asin(c*x))*(1 - c^2*x^2)^(1/2)), x)
```

3.88 $\int (d+ex)^3(f+gx)(a+b\mathbf{ArcSin}(cx))\,dx$

Optimal. Leaf size=351

$$\frac{be(4e^2g+25c^2d(ef+dg))\,x^2\sqrt{1-c^2x^2}}{75c^3}+\frac{be^2(ef+3dg)x^3\sqrt{1-c^2x^2}}{16c}+\frac{be^3gx^4\sqrt{1-c^2x^2}}{25c}+\frac{b(32(75c^4d^3f+}{}$$

```
[Out] -1/32*b*(8*c^2*d^2*(d*g+3*e*f)+3*e^2*(3*d*g+e*f))*arcsin(c*x)/c^4+d^3*f*x*(
a+b*arcsin(c*x))+1/2*d^2*(d*g+3*e*f)*x^2*(a+b*arcsin(c*x))+d*e*(d*g+e*f)*x^
3*(a+b*arcsin(c*x))+1/4*e^2*(3*d*g+e*f)*x^4*(a+b*arcsin(c*x))+1/5*e^3*g*x^5
*(a+b*arcsin(c*x))+1/75*b*e*(4*e^2*g+25*c^2*d*(d*g+e*f))*x^2*(-c^2*x^2+1)^(
1/2)/c^3+1/16*b*e^2*(3*d*g+e*f)*x^3*(-c^2*x^2+1)^(1/2)/c+1/25*b*e^3*g*x^4*(
-c^2*x^2+1)^(1/2)/c+1/2400*b*(2400*c^4*d^3*f+256*e^3*g+1600*c^2*d*e*(d*g+e*
f)+75*c^2*(8*c^2*d^2*(d*g+3*e*f)+3*e^2*(3*d*g+e*f))*x)*(-c^2*x^2+1)^(1/2)/c
^5
```

Rubi [A]
time = 0.68, antiderivative size = 351, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.190, Rules used = {4833, 1823, 794, 222}

$$d^3fx(a+b\text{ArcSin}(cx))+\frac{1}{2}d^2x^2(dg+3ef)(a+b\text{ArcSin}(cx))+\frac{1}{4}e^2x^4(3dg+ef)(a+b\text{ArcSin}(cx))+dex^3(dg+ef)(a+b\text{ArcSin}(cx))+\frac{1}{5}e^3gx^5(a+b\text{ArcSin}(cx))-\frac{b\text{ArcSin}(cx)\left(8c^2d^2(dg+3ef)+3e^2(3dg+ef)\right)}{32c^4}+\frac{be^2x^3\sqrt{1-c^2x^2}\,(3dg+ef)}{16c}+\frac{be^3gx^4\sqrt{1-c^2x^2}}{25c}+\frac{bex^2\sqrt{1-c^2x^2}\,(25c^2d(dg+ef)+4e^2g)}{75c^3}+\frac{b\sqrt{1-c^2x^2}\,(75c^2x(8c^2d^2(dg+3ef)+3e^2(3dg+ef))+32(75c^4d^3f+50c^2de(dg+ef)+8e^3g))}{2400c^5}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^3*(f + g*x)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*e*(4*e^2*g + 25*c^2*d*(e*f + d*g))*x^2*Sqrt[1 - c^2*x^2])/(75*c^3) + (b*
e^2*(e*f + 3*d*g)*x^3*Sqrt[1 - c^2*x^2])/(16*c) + (b*e^3*g*x^4*Sqrt[1 - c^2
*x^2])/(25*c) + (b*(32*(75*c^4*d^3*f + 8*e^3*g + 50*c^2*d*e*(e*f + d*g)) +
75*c^2*(8*c^2*d^2*(3*e*f + d*g) + 3*e^2*(e*f + 3*d*g))*x)*Sqrt[1 - c^2*x^2]
)/(2400*c^5) - (b*(8*c^2*d^2*(3*e*f + d*g) + 3*e^2*(e*f + 3*d*g))*ArcSin[c*
x])/(32*c^4) + d^3*f*x*(a + b*ArcSin[c*x]) + (d^2*(3*e*f + d*g)*x^2*(a + b*
ArcSin[c*x]))/2 + d*e*(e*f + d*g)*x^3*(a + b*ArcSin[c*x]) + (e^2*(e*f + 3*d
*g)*x^4*(a + b*ArcSin[c*x]))/4 + (e^3*g*x^5*(a + b*ArcSin[c*x]))/5
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*((a + c*x^2)^(p
+ 1)/(2*c*(p + 1)*(2*p + 3))), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
```

```
Q[p, -1]
```

Rule 1823

```
Int[(Pq_)*((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2)^(p_), x_Symbol] :> With[
{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[f*(c*x)^(m + q - 1
)*((a + b*x^2)^(p + 1)/(b*c^(q - 1)*(m + q + 2*p + 1))), x] + Dist[1/(b*(m
+ q + 2*p + 1)), Int[(c*x)^m*(a + b*x^2)^p*ExpandToSum[b*(m + q + 2*p + 1)*
Pq - b*f*(m + q + 2*p + 1)*x^q - a*f*(m + q - 1)*x^(q - 2), x], x], x] /; G
tQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, m, p}, x] && PolyQ[
Pq, x] && ( !IGtQ[m, 0] || IGtQ[p + 1/2, -1])
```

Rule 4833

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_), x_Symbol] :> With[{u = IntHid
e[ExpandExpression[Px, x], x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, I
nt[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[{a, b, c}, x
] && PolynomialQ[Px, x]
```

Rubi steps

$$\int (d+ex)^3(f+gx)\left(a+b\sin^{-1}(cx)\right)\,dx = d^3fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d^2(3ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)+c$$

$$=\frac{be^3gx^4\sqrt{1-c^2x^2}}{25c}+d^3fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d^2(3ef+dg)x^2$$

$$=\frac{be^2(ef+3dg)x^3\sqrt{1-c^2x^2}}{16c}+\frac{be^3gx^4\sqrt{1-c^2x^2}}{25c}+d^3fx\left(a+b\right.$$

$$=\frac{be\left(4e^2g+25c^2d(ef+dg)\right)x^2\sqrt{1-c^2x^2}}{75c^3}+\frac{be^2(ef+3dg)x^3\sqrt{}}{16c}$$

$$=\frac{be\left(4e^2g+25c^2d(ef+dg)\right)x^2\sqrt{1-c^2x^2}}{75c^3}+\frac{be^2(ef+3dg)x^3\sqrt{}}{16c}$$

$$=\frac{be\left(4e^2g+25c^2d(ef+dg)\right)x^2\sqrt{1-c^2x^2}}{75c^3}+\frac{be^2(ef+3dg)x^3\sqrt{}}{16c}$$

Mathematica [A]
time = 0.27, size = 305, normalized size = 0.87

$$\frac{120ac^5x(10d^3(2f+gx)+10d^2ex(3f+2gx)+5de^2x^2(4f+3gx)+e^3x^3(5f+4gx))+b\sqrt{1-c^2x^2}\left(256e^3g+2c^4(300d^3(4f+gx)+100d^2ex(9f+4gx)+25de^2x^2(16f+9gx)+3e^3x^3(25f+16gx))+c^2e(1600d^2g+25de(64f+27gx)+e^2x(225f+128gx))\right)+15bc\left(-40c^2d^2(3ef+dg)-15e^2(ef+3dg)+8c^4x(10d^3(2f+gx)+10d^2ex(3f+2gx)+5de^2x^2(4f+3gx)+e^3x^3(5f+4gx))\right)\mathrm{ArcSin}(cx)}{2400c^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^3*(f + g*x)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (120*a*c^5*x*(10*d^3*(2*f + g*x) + 10*d^2*e*x*(3*f + 2*g*x) + 5*d*e^2*x^2*(
4*f + 3*g*x) + e^3*x^3*(5*f + 4*g*x)) + b*Sqrt[1 - c^2*x^2]*(256*e^3*g + 2*
c^4*(300*d^3*(4*f + g*x) + 100*d^2*e*x*(9*f + 4*g*x) + 25*d*e^2*x^2*(16*f +
 9*g*x) + 3*e^3*x^3*(25*f + 16*g*x)) + c^2*e*(1600*d^2*g + 25*d*e*(64*f + 2
7*g*x) + e^2*x*(225*f + 128*g*x))) + 15*b*c*(-40*c^2*d^2*(3*e*f + d*g) - 15
*e^2*(e*f + 3*d*g) + 8*c^4*x*(10*d^3*(2*f + g*x) + 10*d^2*e*x*(3*f + 2*g*x)
 + 5*d*e^2*x^2*(4*f + 3*g*x) + e^3*x^3*(5*f + 4*g*x)))*ArcSin[c*x])/(2400*c
^5)
```

Maple [A]
time = 0.12, size = 490, normalized size = 1.40

method	result
derivativedivides	$\frac{a\left(\frac{e^3 g\, c^5 x^5}{5}+\frac{\left(3cd\, e^2 g+c\, e^3 f\right) c^4 x^4}{4}+\frac{\left(3c^2 d^2 eg+3c^2 d\, e^2 f\right) c^3 x^3}{3}+\frac{\left(c^3 d^3 g+3c^3 d^2 ef\right) c^2 x^2}{2}+d^3 c^5 f x\right)}{c^4}+\frac{b\left(\frac{\arcsin(cx) e^3 g\, c^5 x^5}{5}+\frac{3\,\mathrm{arc}}{}\right.}{}$
default	$\frac{a\left(\frac{e^3 g\, c^5 x^5}{5}+\frac{\left(3cd\, e^2 g+c\, e^3 f\right) c^4 x^4}{4}+\frac{\left(3c^2 d^2 eg+3c^2 d\, e^2 f\right) c^3 x^3}{3}+\frac{\left(c^3 d^3 g+3c^3 d^2 ef\right) c^2 x^2}{2}+d^3 c^5 f x\right)}{c^4}+\frac{b\left(\frac{\arcsin(cx) e^3 g\, c^5 x^5}{5}+\frac{3\,\mathrm{arc}}{}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^3*(g*x+f)*(a+b*arcsin(c*x)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(a/c^4*(1/5*e^3*g*c^5*x^5+1/4*(3*c*d*e^2*g+c*e^3*f)*c^4*x^4+1/3*(3*c^2*
d^2*e*g+3*c^2*d*e^2*f)*c^3*x^3+1/2*(c^3*d^3*g+3*c^3*d^2*e*f)*c^2*x^2+d^3*c^
5*f*x)+b/c^4*(1/5*arcsin(c*x)*e^3*g*c^5*x^5+3/4*arcsin(c*x)*c^5*d*e^2*g*x^4
+1/4*arcsin(c*x)*c^5*e^3*f*x^4+arcsin(c*x)*c^5*d^2*e*g*x^3+arcsin(c*x)*c^5*
d*e^2*f*x^3+1/2*arcsin(c*x)*c^5*d^3*g*x^2+3/2*arcsin(c*x)*c^5*d^2*e*f*x^2+a
rcsin(c*x)*d^3*c^5*f*x-1/5*e^3*g*(-1/5*c^4*x^4*(-c^2*x^2+1)^(1/2)-4/15*c^2*
x^2*(-c^2*x^2+1)^(1/2)-8/15*(-c^2*x^2+1)^(1/2))-1/20*(15*c*d*e^2*g+5*c*e^3*
f)*(-1/4*c^3*x^3*(-c^2*x^2+1)^(1/2)-3/8*c*x*(-c^2*x^2+1)^(1/2)+3/8*arcsin(c
*x))-1/20*(20*c^2*d^2*e*g+20*c^2*d*e^2*f)*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-
2/3*(-c^2*x^2+1)^(1/2))-1/20*(10*c^3*d^3*g+30*c^3*d^2*e*f)*(-1/2*c*x*(-c^2*
x^2+1)^(1/2)+1/2*arcsin(c*x))+d^3*c^4*f*(-c^2*x^2+1)^(1/2)))
```

Maxima [A]
time = 0.49, size = 524, normalized size = 1.49

$$\frac{1}{5}\,agx^5e^3+\frac{3}{4}\,adgx^4e^2+ad^2gx^3e+\frac{1}{2}\,ad^3gx^2+\frac{1}{4}\,afx^4e^3+adfx^3e^2+\frac{3}{2}\,ad^2fx^2e+\frac{1}{4}\left(2\,x^2\arcsin\left(cx\right)+c\left(\frac{\sqrt{-c^2x^2+1}\,x}{c^2}-\frac{\arcsin\left(cx\right)}{c^3}\right)\right)bd^3g+ad^3fx+\frac{3}{4}\left(2\,x^2\arcsin\left(cx\right)+c\left(\frac{\sqrt{-c^2x^2+1}\,x}{c^2}-\frac{\arcsin\left(cx\right)}{c^3}\right)\right)bd^2fe+\frac{1}{3}\left(3\,x^3\arcsin\left(cx\right)+c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2}+\frac{2\,\sqrt{-c^2x^2+1}}{c^4}\right)\right)bd^2ge+\frac{\left(cx\arcsin\left(cx\right)+\sqrt{-c^2x^2+1}\right)bd^3f}{c}+\frac{1}{3}\left(3\,x^3\arcsin\left(cx\right)+c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2}+\frac{2\,\sqrt{-c^2x^2+1}}{c^4}\right)\right)bdfe^2+\frac{3}{32}\left(8\,x^4\arcsin\left(cx\right)+\left(\frac{2\,\sqrt{-c^2x^2+1}\,x^3}{c^2}+\frac{3\,\sqrt{-c^2x^2+1}\,x}{c^4}-\frac{3\,\arcsin\left(cx\right)}{c^5}\right)c\right)bdge^2+\frac{1}{32}\left(8\,x^4\arcsin\left(cx\right)+\left(\frac{2\,\sqrt{-c^2x^2+1}\,x^3}{c^2}+\frac{3\,\sqrt{-c^2x^2+1}\,x}{c^4}-\frac{3\,\arcsin\left(cx\right)}{c^5}\right)c\right)bfe^3+\frac{1}{75}\left(15\,x^5\arcsin\left(cx\right)+\left(\frac{3\,\sqrt{-c^2x^2+1}\,x^4}{c^2}+\frac{4\,\sqrt{-c^2x^2+1}\,x^2}{c^4}+\frac{8\,\sqrt{-c^2x^2+1}}{c^6}\right)c\right)bge^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/5*a*g*x^5*e^3 + 3/4*a*d*g*x^4*e^2 + a*d^2*g*x^3*e + 1/2*a*d^3*g*x^2 + 1/4
*a*f*x^4*e^3 + a*d*f*x^3*e^2 + 3/2*a*d^2*f*x^2*e + 1/4*(2*x^2*arcsin(c*x) +
 c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c*x)/c^3))*b*d^3*g + a*d^3*f*x + 3/4*
(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c*x)/c^3))*b*d^2*
f*e + 1/3*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*
x^2 + 1)/c^4))*b*d^2*g*e + (c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*b*d^3*f/c
 + 1/3*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2
 + 1)/c^4))*b*d*f*e^2 + 3/32*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3
/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c*x)/c^5)*c)*b*d*g*e^2 + 1/32*
(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x
/c^4 - 3*arcsin(c*x)/c^5)*c)*b*f*e^3 + 1/75*(15*x^5*arcsin(c*x) + (3*sqrt(-
c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/
c^6)*c)*b*g*e^3
```

Fricas [**A**]
time = 1.95, size = 421, normalized size = 1.20

$$\frac{1200\,ac^{5}d^{3}gx^{2} + 2400\,ac^{5}d^{3}fx + 15\,{\left(80\,bc^{5}d^{3}gx^{2} + 160\,bc^{5}d^{3}fx - 40\,bc^{3}d^{3}g + {\left(32\,bc^{5}gx^{5} + 40\,bc^{5}fx^{4} - 15\,bcf\right)}e^{3} + 5\,{\left(24\,bc^{5}dgx^{4} + 32\,bc^{5}dfx^{3} - 9\,bcdg\right)}e^{2} + 40\,{\left(4\,bc^{5}d^{2}gx^{3} + 6\,bc^{5}d^{2}fx^{2} - 3\,bc^{3}d^{2}f\right)}e\right)}\arcsin\left(cx\right) + 120\,{\left(4\,ac^{5}gx^{5} + 5\,ac^{5}fx^{4}\right)}e^{3} + 600\,{\left(3\,ac^{5}dgx^{4} + 4\,ac^{5}dfx^{3}\right)}e^{2} + 1200\,{\left(2\,ac^{5}d^{2}gx^{3} + 3\,ac^{5}d^{2}fx^{2}\right)}e + {\left(600\,bc^{4}d^{3}gx + 2400\,bc^{4}d^{3}f + {\left(96\,bc^{4}gx^{4} + 150\,bc^{4}fx^{3} + 128\,bc^{2}gx^{2} + 225\,bc^{2}fx + 256\,bg\right)}e^{3} + 25\,{\left(18\,bc^{4}dgx^{3} + 32\,bc^{4}dfx^{2} + 27\,bc^{2}dgx + 64\,bc^{2}df\right)}e^{2} + 200\,{\left(4\,bc^{4}d^{2}gx^{2} + 9\,bc^{4}d^{2}fx + 8\,bc^{2}d^{2}g\right)}e\right)}\sqrt{-c^{2}x^{2} + 1}}{2400\,c^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/2400*(1200*a*c^5*d^3*g*x^2 + 2400*a*c^5*d^3*f*x + 15*(80*b*c^5*d^3*g*x^2
+ 160*b*c^5*d^3*f*x - 40*b*c^3*d^3*g + (32*b*c^5*g*x^5 + 40*b*c^5*f*x^4 - 1
5*b*c*f)*e^3 + 5*(24*b*c^5*d*g*x^4 + 32*b*c^5*d*f*x^3 - 9*b*c*d*g)*e^2 + 40
*(4*b*c^5*d^2*g*x^3 + 6*b*c^5*d^2*f*x^2 - 3*b*c^3*d^2*f)*e)*arcsin(c*x) + 1
20*(4*a*c^5*g*x^5 + 5*a*c^5*f*x^4)*e^3 + 600*(3*a*c^5*d*g*x^4 + 4*a*c^5*d*f
*x^3)*e^2 + 1200*(2*a*c^5*d^2*g*x^3 + 3*a*c^5*d^2*f*x^2)*e + (600*b*c^4*d^3
*g*x + 2400*b*c^4*d^3*f + (96*b*c^4*g*x^4 + 150*b*c^4*f*x^3 + 128*b*c^2*g*x
^2 + 225*b*c^2*f*x + 256*b*g)*e^3 + 25*(18*b*c^4*d*g*x^3 + 32*b*c^4*d*f*x^2
 + 27*b*c^2*d*g*x + 64*b*c^2*d*f)*e^2 + 200*(4*b*c^4*d^2*g*x^2 + 9*b*c^4*d^
2*f*x + 8*b*c^2*d^2*g)*e)*sqrt(-c^2*x^2 + 1))/c^5
```

Sympy [**B**] Leaf count of result is larger than twice the leaf count of optimal. 770 vs. $2(338) = 676$.
time = 0.51, size = 770, normalized size = 2.19

$$\begin{cases} ad^{3}fx + \frac{ad^{3}gx^{2}}{2} + \frac{3ad^{2}efx^{2}}{2} + ad^{2}egx^{3} + ade^{2}fx^{3} + \frac{3ade^{2}gx^{4}}{4} + \frac{ae^{3}fx^{4}}{4} + \frac{ae^{3}gx^{5}}{5} + bd^{3}fx\operatorname{asin}{\left(cx \right)} + \frac{bd^{3}gx^{2}\operatorname{asin}{\left(cx \right)}}{2} + \frac{3bd^{2}efx^{2}\operatorname{asin}{\left(cx \right)}}{2} + bd^{2}egx^{3}\operatorname{asin}{\left(cx \right)} + bde^{2}fx^{3}\operatorname{asin}{\left(cx \right)} + \frac{3bde^{2}gx^{4}\operatorname{asin}{\left(cx \right)}}{4} + \frac{be^{3}fx^{4}\operatorname{asin}{\left(cx \right)}}{4} + \frac{be^{3}gx^{5}\operatorname{asin}{\left(cx \right)}}{5} + \frac{bd^{3}f\sqrt{-c^{2}x^{2}+1}}{c} + \frac{bd^{3}gx\sqrt{-c^{2}x^{2}+1}}{4c} + \frac{3bd^{2}efx\sqrt{-c^{2}x^{2}+1}}{4c} + \frac{bd^{2}egx^{2}\sqrt{-c^{2}x^{2}+1}}{3c} + \frac{bde^{2}fx^{2}\sqrt{-c^{2}x^{2}+1}}{3c} + \frac{3bde^{2}gx^{3}\sqrt{-c^{2}x^{2}+1}}{16c} + \frac{be^{3}fx^{3}\sqrt{-c^{2}x^{2}+1}}{16c} + \frac{be^{3}gx^{4}\sqrt{-c^{2}x^{2}+1}}{25c} - \frac{bd^{3}g\operatorname{asin}{\left(cx \right)}}{4c^{2}} - \frac{3bd^{2}ef\operatorname{asin}{\left(cx \right)}}{4c^{2}} + \frac{2bd^{2}eg\sqrt{-c^{2}x^{2}+1}}{3c^{3}} + \frac{2bde^{2}f\sqrt{-c^{2}x^{2}+1}}{3c^{3}} + \frac{9bde^{2}gx\sqrt{-c^{2}x^{2}+1}}{32c^{3}} + \frac{3be^{3}fx\sqrt{-c^{2}x^{2}+1}}{32c^{3}} + \frac{4be^{3}gx^{2}\sqrt{-c^{2}x^{2}+1}}{75c^{3}} - \frac{9bde^{2}g\operatorname{asin}{\left(cx \right)}}{32c^{4}} - \frac{3be^{3}f\operatorname{asin}{\left(cx \right)}}{32c^{4}} + \frac{8be^{3}g\sqrt{-c^{2}x^{2}+1}}{75c^{5}} & \text{for}\: c \neq 0 \\ a\left(d^{3}fx + \frac{d^{3}gx^{2}}{2} + \frac{3d^{2}efx^{2}}{2} + d^{2}egx^{3} + de^{2}fx^{3} + \frac{3de^{2}gx^{4}}{4} + \frac{e^{3}fx^{4}}{4} + \frac{e^{3}gx^{5}}{5}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**3*(g*x+f)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d**3*f*x + a*d**3*g*x**2/2 + 3*a*d**2*e*f*x**2/2 + a*d**2*e*g*
x**3 + a*d*e**2*f*x**3 + 3*a*d*e**2*g*x**4/4 + a*e**3*f*x**4/4 + a*e**3*g*x
```

```
**5/5 + b*d**3*f*x*asin(c*x) + b*d**3*g*x**2*asin(c*x)/2 + 3*b*d**2*e*f*x**
2*asin(c*x)/2 + b*d**2*e*g*x**3*asin(c*x) + b*d*e**2*f*x**3*asin(c*x) + 3*b
*d*e**2*g*x**4*asin(c*x)/4 + b*e**3*f*x**4*asin(c*x)/4 + b*e**3*g*x**5*asin
(c*x)/5 + b*d**3*f*sqrt(-c**2*x**2 + 1)/c + b*d**3*g*x*sqrt(-c**2*x**2 + 1)
/(4*c) + 3*b*d**2*e*f*x*sqrt(-c**2*x**2 + 1)/(4*c) + b*d**2*e*g*x**2*sqrt(-
c**2*x**2 + 1)/(3*c) + b*d*e**2*f*x**2*sqrt(-c**2*x**2 + 1)/(3*c) + 3*b*d*e
**2*g*x**3*sqrt(-c**2*x**2 + 1)/(16*c) + b*e**3*f*x**3*sqrt(-c**2*x**2 + 1)
/(16*c) + b*e**3*g*x**4*sqrt(-c**2*x**2 + 1)/(25*c) - b*d**3*g*asin(c*x)/(4
*c**2) - 3*b*d**2*e*f*asin(c*x)/(4*c**2) + 2*b*d**2*e*g*sqrt(-c**2*x**2 + 1
)/(3*c**3) + 2*b*d*e**2*f*sqrt(-c**2*x**2 + 1)/(3*c**3) + 9*b*d*e**2*g*x*sq
rt(-c**2*x**2 + 1)/(32*c**3) + 3*b*e**3*f*x*sqrt(-c**2*x**2 + 1)/(32*c**3)
+ 4*b*e**3*g*x**2*sqrt(-c**2*x**2 + 1)/(75*c**3) - 9*b*d*e**2*g*asin(c*x)/(
32*c**4) - 3*b*e**3*f*asin(c*x)/(32*c**4) + 8*b*e**3*g*sqrt(-c**2*x**2 + 1)
/(75*c**5), Ne(c, 0)), (a*(d**3*f*x + d**3*g*x**2/2 + 3*d**2*e*f*x**2/2 + d
**2*e*g*x**3 + d*e**2*f*x**3 + 3*d*e**2*g*x**4/4 + e**3*f*x**4/4 + e**3*g*x
**5/5), True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 784 vs. 2(324) = 648.
time = 0.43, size = 784, normalized size = 2.23

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/5*a*e^3*g*x^5 + 1/4*a*e^3*f*x^4 + 3/4*a*d*e^2*g*x^4 + a*d*e^2*f*x^3 + a*d
^2*e*g*x^3 + b*d^3*f*x*arcsin(c*x) + a*d^3*f*x + (c^2*x^2 - 1)*b*d*e^2*f*x*
arcsin(c*x)/c^2 + (c^2*x^2 - 1)*b*d^2*e*g*x*arcsin(c*x)/c^2 + 3/4*sqrt(-c^2
*x^2 + 1)*b*d^2*e*f*x/c + 1/4*sqrt(-c^2*x^2 + 1)*b*d^3*g*x/c + 3/2*(c^2*x^2
 - 1)*b*d^2*e*f*arcsin(c*x)/c^2 + 1/2*(c^2*x^2 - 1)*b*d^3*g*arcsin(c*x)/c^2
 + b*d*e^2*f*x*arcsin(c*x)/c^2 + b*d^2*e*g*x*arcsin(c*x)/c^2 + 1/5*(c^2*x^2
 - 1)^2*b*e^3*g*x*arcsin(c*x)/c^4 + sqrt(-c^2*x^2 + 1)*b*d^3*f/c - 1/16*(-c
^2*x^2 + 1)^(3/2)*b*e^3*f*x/c^3 - 3/16*(-c^2*x^2 + 1)^(3/2)*b*d*e^2*g*x/c^3
 + 3/2*(c^2*x^2 - 1)*a*d^2*e*f/c^2 + 1/2*(c^2*x^2 - 1)*a*d^3*g/c^2 + 3/4*b*
d^2*e*f*arcsin(c*x)/c^2 + 1/4*(c^2*x^2 - 1)^2*b*e^3*f*arcsin(c*x)/c^4 + 1/4
*b*d^3*g*arcsin(c*x)/c^2 + 3/4*(c^2*x^2 - 1)^2*b*d*e^2*g*arcsin(c*x)/c^4 +
2/5*(c^2*x^2 - 1)*b*e^3*g*x*arcsin(c*x)/c^4 - 1/3*(-c^2*x^2 + 1)^(3/2)*b*d*
e^2*f/c^3 - 1/3*(-c^2*x^2 + 1)^(3/2)*b*d^2*e*g/c^3 + 5/32*sqrt(-c^2*x^2 + 1
)*b*e^3*f*x/c^3 + 15/32*sqrt(-c^2*x^2 + 1)*b*d*e^2*g*x/c^3 + 1/2*(c^2*x^2 -
 1)*b*e^3*f*arcsin(c*x)/c^4 + 3/2*(c^2*x^2 - 1)*b*d*e^2*g*arcsin(c*x)/c^4 +
 1/5*b*e^3*g*x*arcsin(c*x)/c^4 + sqrt(-c^2*x^2 + 1)*b*d*e^2*f/c^3 + sqrt(-c
^2*x^2 + 1)*b*d^2*e*g/c^3 + 1/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*e^3*g
/c^5 + 5/32*b*e^3*f*arcsin(c*x)/c^4 + 15/32*b*d*e^2*g*arcsin(c*x)/c^4 - 2/1
5*(-c^2*x^2 + 1)^(3/2)*b*e^3*g/c^5 + 1/5*sqrt(-c^2*x^2 + 1)*b*e^3*g/c^5
```

Mupad [**F**]

time = 0.00, size = -1, normalized size = -0.00

$$\int (f+g\,x)\,\left(a+b\,\mathrm{asin}(c\,x)\right)\,{\left(d+e\,x\right)}^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(a + b*asin(c*x))*(d + e*x)^3,x)
[Out] int((f + g*x)*(a + b*asin(c*x))*(d + e*x)^3, x)
```

3.89 $\int (d+ex)^2(f+gx)(a+b\text{ArcSin}(cx))\,dx$

Optimal. Leaf size=248

$$\frac{be(ef+2dg)x^2\sqrt{1-c^2x^2}}{9c}+\frac{be^2gx^3\sqrt{1-c^2x^2}}{16c}+\frac{b(32(9c^2d^2f+2e(ef+2dg))+9(3e^2g+8c^2d(2ef+dg))\,x}{288c^3}$$

```
[Out] -1/32*b*(3*e^2*g+8*c^2*d*(d*g+2*e*f))*arcsin(c*x)/c^4+d^2*f*x*(a+b*arcsin(c
*x))+1/2*d*(d*g+2*e*f)*x^2*(a+b*arcsin(c*x))+1/3*e*(2*d*g+e*f)*x^3*(a+b*arc
sin(c*x))+1/4*e^2*g*x^4*(a+b*arcsin(c*x))+1/9*b*e*(2*d*g+e*f)*x^2*(-c^2*x^2
+1)^(1/2)/c+1/16*b*e^2*g*x^3*(-c^2*x^2+1)^(1/2)/c+1/288*b*(288*c^2*d^2*f+64
*e*(2*d*g+e*f)+9*(3*e^2*g+8*c^2*d*(d*g+2*e*f))*x)*(-c^2*x^2+1)^(1/2)/c^3
```

Rubi [A]
time = 0.37, antiderivative size = 248, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.238$, Rules used = {4833, 12, 1823, 794, 222}

$$d^2fx(a+b\text{ArcSin}(cx))+\frac{1}{3}ex^3(2dg+ef)(a+b\text{ArcSin}(cx))+\frac{1}{2}dx^2(dg+2ef)(a+b\text{ArcSin}(cx))+\frac{1}{4}e^2gx^4(a+b\text{ArcSin}(cx))-\frac{b\text{ArcSin}(cx)\,(8c^2d(dg+2ef)+3e^2g)}{32c^4}+\frac{bex^2\sqrt{1-c^2x^2}\,(2dg+ef)}{9c}+\frac{be^2gx^3\sqrt{1-c^2x^2}}{16c}+\frac{b\sqrt{1-c^2x^2}\,(32(9c^2d^2f+2e(2dg+ef))+9x(8c^2d(dg+2ef)+3e^2g))}{288c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^2*(f + g*x)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*e*(e*f + 2*d*g)*x^2*Sqrt[1 - c^2*x^2])/(9*c) + (b*e^2*g*x^3*Sqrt[1 - c^2
*x^2])/(16*c) + (b*(32*(9*c^2*d^2*f + 2*e*(e*f + 2*d*g)) + 9*(3*e^2*g + 8*c
^2*d*(2*e*f + d*g))*x)*Sqrt[1 - c^2*x^2])/(288*c^3) - (b*(3*e^2*g + 8*c^2*d
*(2*e*f + d*g))*ArcSin[c*x])/(32*c^4) + d^2*f*x*(a + b*ArcSin[c*x]) + (d*(2
*e*f + d*g)*x^2*(a + b*ArcSin[c*x]))/2 + (e*(e*f + 2*d*g)*x^3*(a + b*ArcSin
[c*x]))/3 + (e^2*g*x^4*(a + b*ArcSin[c*x]))/4
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*((a + c*x^2)^(p
+ 1)/(2*c*(p + 1)*(2*p + 3))), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
```

```
Q[p, -1]
```

Rule 1823

```
Int[(Pq_)*((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2)^(p_), x_Symbol] :> With[
{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[f*(c*x)^(m + q - 1
)*((a + b*x^2)^(p + 1)/(b*c^(q - 1)*(m + q + 2*p + 1))), x] + Dist[1/(b*(m
+ q + 2*p + 1)), Int[(c*x)^m*(a + b*x^2)^p*ExpandToSum[b*(m + q + 2*p + 1)*
Pq - b*f*(m + q + 2*p + 1)*x^q - a*f*(m + q - 1)*x^(q - 2), x], x], x] /; G
tQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, m, p}, x] && PolyQ[
Pq, x] && ( !IGtQ[m, 0] || IGtQ[p + 1/2, -1])
```

Rule 4833

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_), x_Symbol] :> With[{u = IntHid
e[ExpandExpression[Px, x], x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, I
nt[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[{a, b, c}, x
] && PolynomialQ[Px, x]
```

Rubi steps

$$\int (d+ex)^2(f+gx)\left(a+b\sin^{-1}(cx)\right)\,dx = d^2fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d(2ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}$$

$$= d^2fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d(2ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}$$

$$= \frac{be^2gx^3\sqrt{1-c^2x^2}}{16c}+d^2fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d(2ef+dg)x^2$$

$$= \frac{be(ef+2dg)x^2\sqrt{1-c^2x^2}}{9c}+\frac{be^2gx^3\sqrt{1-c^2x^2}}{16c}+d^2fx\left(a+b\right.$$

$$= \frac{be(ef+2dg)x^2\sqrt{1-c^2x^2}}{9c}+\frac{be^2gx^3\sqrt{1-c^2x^2}}{16c}+\frac{b(32(9c^2d^2}{}$$

$$= \frac{be(ef+2dg)x^2\sqrt{1-c^2x^2}}{9c}+\frac{be^2gx^3\sqrt{1-c^2x^2}}{16c}+\frac{b(32(9c^2d^2}{}$$

Mathematica [A]
time = 0.20, size = 211, normalized size = 0.85

$$\frac{24ac^4x(6d^2(2f+gx)+4dex(3f+2gx)+e^2x^2(4f+3gx))+bc\sqrt{1-c^2x^2}\left(e(64ef+128dg+27egx)+2c^2(36d^2(4f+gx)+8dex(9f+4gx)+e^2x^2(16f+9gx))\right)+3b(-9e^2g-24c^2d(2ef+dg)+8c^4x(6d^2(2f+gx)+4dex(3f+2gx)+e^2x^2(4f+3gx)))\,\mathrm{ArcSin}(cx)}{288c^4}$$

Antiderivative was successfully verified.

[In] Integrate[(d + e*x)^2*(f + g*x)*(a + b*ArcSin[c*x]),x]

[Out] (24*a*c^4*x*(6*d^2*(2*f + g*x) + 4*d*e*x*(3*f + 2*g*x) + e^2*x^2*(4*f + 3*g*x)) + b*c*Sqrt[1 - c^2*x^2]*(e*(64*e*f + 128*d*g + 27*e*g*x) + 2*c^2*(36*d^2*(4*f + g*x) + 8*d*e*x*(9*f + 4*g*x) + e^2*x^2*(16*f + 9*g*x))) + 3*b*(-9*e^2*g - 24*c^2*d*(2*e*f + d*g) + 8*c^4*x*(6*d^2*(2*f + g*x) + 4*d*e*x*(3*f + 2*g*x) + e^2*x^2*(4*f + 3*g*x)))*ArcSin[c*x])/(288*c^4)

Maple [A]

time = 0.12, size = 338, normalized size = 1.36

method	result
derivativedivides	$\frac{a\left(\frac{e^2 g c^4 x^4}{4}+\frac{\left(2cdeg+c e^2 f\right)c^3 x^3}{3}+\frac{\left(c^2 d^2 g+2c^2 def\right)c^2 x^2}{2}+d^2 c^4 fx\right)}{c^3}+\frac{b\left(\frac{\arcsin(cx)e^2 g\, c^4 x^4}{4}+\frac{2\arcsin(cx)c^4 deg\, x^3}{3}+\frac{\arcsin(cx)c^4 e}{3}\right.}{}$
default	$\frac{a\left(\frac{e^2 g c^4 x^4}{4}+\frac{\left(2cdeg+c e^2 f\right)c^3 x^3}{3}+\frac{\left(c^2 d^2 g+2c^2 def\right)c^2 x^2}{2}+d^2 c^4 fx\right)}{c^3}+\frac{b\left(\frac{\arcsin(cx)e^2 g\, c^4 x^4}{4}+\frac{2\arcsin(cx)c^4 deg\, x^3}{3}+\frac{\arcsin(cx)c^4 e}{3}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((e*x+d)^2*(g*x+f)*(a+b*arcsin(c*x)),x,method=_RETURNVERBOSE)

[Out] 1/c*(a/c^3*(1/4*e^2*g*c^4*x^4+1/3*(2*c*d*e*g+c*e^2*f)*c^3*x^3+1/2*(c^2*d^2*g+2*c^2*d*e*f)*c^2*x^2+d^2*c^4*f*x)+b/c^3*(1/4*arcsin(c*x)*e^2*g*c^4*x^4+2/3*arcsin(c*x)*c^4*d*e*g*x^3+1/3*arcsin(c*x)*c^4*e^2*f*x^3+1/2*arcsin(c*x)*c^4*d^2*g*x^2+arcsin(c*x)*c^4*d*e*f*x^2+arcsin(c*x)*d^2*c^4*f*x-1/4*e^2*g*(-1/4*c^3*x^3*(-c^2*x^2+1)^(1/2)-3/8*c*x*(-c^2*x^2+1)^(1/2)+3/8*arcsin(c*x))-1/12*(8*c*d*e*g+4*c*e^2*f)*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-c^2*x^2+1)^(1/2))-1/12*(6*c^2*d^2*g+12*c^2*d*e*f)*(-1/2*c*x*(-c^2*x^2+1)^(1/2)+1/2*arcsin(c*x))+d^2*c^3*f*(-c^2*x^2+1)^(1/2)))

Maxima [A]

time = 0.48, size = 353, normalized size = 1.42

$$\frac{1}{4}agx^4e^2+\frac{2}{3}adgx^3e+\frac{1}{2}ad^2gx^2+\frac{1}{3}afx^3e^2+adfx^2e+\frac{1}{4}\left(2x^2\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}\,x}{c^2}-\frac{\arcsin(cx)}{c^3}\right)\right)bd^2g+ad^2fx+\frac{1}{2}\left(2x^2\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}\,x}{c^2}-\frac{\arcsin(cx)}{c^3}\right)\right)bdfe+\frac{2}{9}\left(3x^3\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2}+\frac{2\sqrt{-c^2x^2+1}}{c^4}\right)\right)bdge+\frac{\left(cx\arcsin(cx)+\sqrt{-c^2x^2+1}\right)bd^2f}{c}+\frac{1}{9}\left(3x^3\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2}+\frac{2\sqrt{-c^2x^2+1}}{c^4}\right)\right)bfe^2+\frac{1}{32}\left(8x^4\arcsin(cx)+\left(\frac{2\sqrt{-c^2x^2+1}\,x^3}{c^2}+\frac{3\sqrt{-c^2x^2+1}\,x}{c^4}-\frac{3\arcsin(cx)}{c^5}\right)c\right)bge^2$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((e*x+d)^2*(g*x+f)*(a+b*arcsin(c*x)),x, algorithm="maxima")

[Out] 1/4*a*g*x^4*e^2 + 2/3*a*d*g*x^3*e + 1/2*a*d^2*g*x^2 + 1/3*a*f*x^3*e^2 + a*d*f*x^2*e + 1/4*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c*x)/c^3))*b*d^2*g + a*d^2*f*x + 1/2*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 +

```
1)*x/c^2 - arcsin(c*x)/c^3))*b*d*f*e + 2/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^
2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*d*g*e + (c*x*arcsin(c*x)
+ sqrt(-c^2*x^2 + 1))*b*d^2*f/c + 1/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2
 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*f*e^2 + 1/32*(8*x^4*arcsin(c*x
) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c
*x)/c^5)*c)*b*g*e^2
```

Fricas [A]
time = 1.54, size = 287, normalized size = 1.16

$$\frac{144 ac^4d^2gx^2 + 288 ac^4d^2fx + 3 (48 bc^4d^2gx^2 + 96 bc^4d^2fx - 24 bc^2d^2g + (24 bc^4gx^4 + 32 bc^4fx^3 - 9 bg)e^2 + 16 (4 bc^4dgx^3 + 6 bc^4dfx^2 - 3 bc^2df)e) \arcsin (cx) + 24 (3 ac^4gx^4 + 4 ac^4fx^3)e^2 + 96 (2 ac^4dgx^3 + 3 ac^4dfx^2)e + (72 bc^3d^2gx + 288 bc^3d^2f + (18 bc^3gx^3 + 32 bc^3fx^2 + 27 bcgx + 64 bcf)e^2 + 16 (4 bc^3dgx^2 + 9 bc^3dfx + 8 bcdg)e)\sqrt{-c^2x^2 + 1}}{288 c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/288*(144*a*c^4*d^2*g*x^2 + 288*a*c^4*d^2*f*x + 3*(48*b*c^4*d^2*g*x^2 + 96
*b*c^4*d^2*f*x - 24*b*c^2*d^2*g + (24*b*c^4*g*x^4 + 32*b*c^4*f*x^3 - 9*b*g)
*e^2 + 16*(4*b*c^4*d*g*x^3 + 6*b*c^4*d*f*x^2 - 3*b*c^2*d*f)*e)*arcsin(c*x)
+ 24*(3*a*c^4*g*x^4 + 4*a*c^4*f*x^3)*e^2 + 96*(2*a*c^4*d*g*x^3 + 3*a*c^4*d*
f*x^2)*e + (72*b*c^3*d^2*g*x + 288*b*c^3*d^2*f + (18*b*c^3*g*x^3 + 32*b*c^3
*f*x^2 + 27*b*c*g*x + 64*b*c*f)*e^2 + 16*(4*b*c^3*d*g*x^2 + 9*b*c^3*d*f*x +
 8*b*c*d*g)*e)*sqrt(-c^2*x^2 + 1))/c^4
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 502 vs. $2(235) = 470$.
time = 0.35, size = 502, normalized size = 2.02

$$\begin{cases} ad^2fx + \frac{ad^2gx^2}{2} + adefx^2 + \frac{2adegx^3}{3} + \frac{ae^2fx^3}{3} + \frac{ae^2gx^4}{4} + bd^2fx \operatorname{asin}(cx) + \frac{bd^2gx^2 \operatorname{asin}(cx)}{2} + bdefx^2 \operatorname{asin}(cx) + \frac{2bdegx^3 \operatorname{asin}(cx)}{3} + \frac{be^2fx^3 \operatorname{asin}(cx)}{3} + \frac{be^2gx^4 \operatorname{asin}(cx)}{4} + \frac{bd^2f\sqrt{-c^2x^2+1}}{c} + \frac{bd^2gx\sqrt{-c^2x^2+1}}{4c} + \frac{bdefx\sqrt{-c^2x^2+1}}{2c} + \frac{2bdegx^2\sqrt{-c^2x^2+1}}{9c} + \frac{be^2fx^2\sqrt{-c^2x^2+1}}{9c} + \frac{be^2gx^3\sqrt{-c^2x^2+1}}{16c} - \frac{bd^2g \operatorname{asin}(cx)}{4c^2} - \frac{bdef \operatorname{asin}(cx)}{2c^2} + \frac{4bdeg\sqrt{-c^2x^2+1}}{9c^3} + \frac{2be^2f\sqrt{-c^2x^2+1}}{9c^3} + \frac{3be^2gx\sqrt{-c^2x^2+1}}{32c^3} - \frac{3be^2g \operatorname{asin}(cx)}{32c^4} & \text{for}\: c \neq 0 \\ a\left(d^2fx + \frac{d^2gx^2}{2} + defx^2 + \frac{2degx^3}{3} + \frac{e^2fx^3}{3} + \frac{e^2gx^4}{4}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**2*(g*x+f)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d**2*f*x + a*d**2*g*x**2/2 + a*d*e*f*x**2 + 2*a*d*e*g*x**3/3 +
 a*e**2*f*x**3/3 + a*e**2*g*x**4/4 + b*d**2*f*x*asin(c*x) + b*d**2*g*x**2*a
sin(c*x)/2 + b*d*e*f*x**2*asin(c*x) + 2*b*d*e*g*x**3*asin(c*x)/3 + b*e**2*f
*x**3*asin(c*x)/3 + b*e**2*g*x**4*asin(c*x)/4 + b*d**2*f*sqrt(-c**2*x**2 +
1)/c + b*d**2*g*x*sqrt(-c**2*x**2 + 1)/(4*c) + b*d*e*f*x*sqrt(-c**2*x**2 +
1)/(2*c) + 2*b*d*e*g*x**2*sqrt(-c**2*x**2 + 1)/(9*c) + b*e**2*f*x**2*sqrt(-
c**2*x**2 + 1)/(9*c) + b*e**2*g*x**3*sqrt(-c**2*x**2 + 1)/(16*c) - b*d**2*g
*asin(c*x)/(4*c**2) - b*d*e*f*asin(c*x)/(2*c**2) + 4*b*d*e*g*sqrt(-c**2*x**
2 + 1)/(9*c**3) + 2*b*e**2*f*sqrt(-c**2*x**2 + 1)/(9*c**3) + 3*b*e**2*g*x*s
qrt(-c**2*x**2 + 1)/(32*c**3) - 3*b*e**2*g*asin(c*x)/(32*c**4), Ne(c, 0)),
(a*(d**2*f*x + d**2*g*x**2/2 + d*e*f*x**2 + 2*d*e*g*x**3/3 + e**2*f*x**3/3
+ e**2*g*x**4/4), True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 491 vs. 2(225) = 450.
time = 0.41, size = 491, normalized size = 1.98

$$\frac{1}{4}ae^2gx^4 + \frac{1}{3}ae^2fx^3 + \frac{2}{3}adegx^3 + bd^2fx\arcsin(cx) + ad^2fx + \frac{(c^2x^2-1)be^2fx\arcsin(cx)}{3c^2} + \frac{2(c^2x^2-1)bdegx\arcsin(cx)}{3c^2} + \frac{\sqrt{-c^2x^2+1}\,bdefx}{2c} + \frac{\sqrt{-c^2x^2+1}\,bd^2gx}{4c} + \frac{(c^2x^2-1)bdef\arcsin(cx)}{c^2} + \frac{(c^2x^2-1)bd^2g\arcsin(cx)}{2c^2} + \frac{be^2fx\arcsin(cx)}{3c^2} + \frac{2bdegx\arcsin(cx)}{3c^2} + \frac{\sqrt{-c^2x^2+1}\,bd^2f}{c} - \frac{(-c^2x^2+1)^{\frac{3}{2}}be^2gx}{16c^3} + \frac{(c^2x^2-1)adef}{c^2} + \frac{(c^2x^2-1)ad^2g}{2c^2} + \frac{bdef\arcsin(cx)}{2c^2} + \frac{bd^2g\arcsin(cx)}{4c^2} + \frac{(c^2x^2-1)^2be^2g\arcsin(cx)}{4c^4} - \frac{(-c^2x^2+1)^{\frac{3}{2}}be^2f}{9c^3} - \frac{2(-c^2x^2+1)^{\frac{3}{2}}bdeg}{9c^3} + \frac{5\sqrt{-c^2x^2+1}\,be^2gx}{32c^3} + \frac{(c^2x^2-1)be^2g\arcsin(cx)}{2c^4} + \frac{\sqrt{-c^2x^2+1}\,be^2f}{3c^3} + \frac{2\sqrt{-c^2x^2+1}\,bdeg}{3c^3} + \frac{5be^2g\arcsin(cx)}{32c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/4*a*e^2*g*x^4 + 1/3*a*e^2*f*x^3 + 2/3*a*d*e*g*x^3 + b*d^2*f*x*arcsin(c*x)
 + a*d^2*f*x + 1/3*(c^2*x^2 - 1)*b*e^2*f*x*arcsin(c*x)/c^2 + 2/3*(c^2*x^2 -
 1)*b*d*e*g*x*arcsin(c*x)/c^2 + 1/2*sqrt(-c^2*x^2 + 1)*b*d*e*f*x/c + 1/4*sq
rt(-c^2*x^2 + 1)*b*d^2*g*x/c + (c^2*x^2 - 1)*b*d*e*f*arcsin(c*x)/c^2 + 1/2*
(c^2*x^2 - 1)*b*d^2*g*arcsin(c*x)/c^2 + 1/3*b*e^2*f*x*arcsin(c*x)/c^2 + 2/3
*b*d*e*g*x*arcsin(c*x)/c^2 + sqrt(-c^2*x^2 + 1)*b*d^2*f/c - 1/16*(-c^2*x^2
+ 1)^(3/2)*b*e^2*g*x/c^3 + (c^2*x^2 - 1)*a*d*e*f/c^2 + 1/2*(c^2*x^2 - 1)*a*
d^2*g/c^2 + 1/2*b*d*e*f*arcsin(c*x)/c^2 + 1/4*b*d^2*g*arcsin(c*x)/c^2 + 1/4
*(c^2*x^2 - 1)^2*b*e^2*g*arcsin(c*x)/c^4 - 1/9*(-c^2*x^2 + 1)^(3/2)*b*e^2*f
/c^3 - 2/9*(-c^2*x^2 + 1)^(3/2)*b*d*e*g/c^3 + 5/32*sqrt(-c^2*x^2 + 1)*b*e^2
*g*x/c^3 + 1/2*(c^2*x^2 - 1)*b*e^2*g*arcsin(c*x)/c^4 + 1/3*sqrt(-c^2*x^2 +
1)*b*e^2*f/c^3 + 2/3*sqrt(-c^2*x^2 + 1)*b*d*e*g/c^3 + 5/32*b*e^2*g*arcsin(c
*x)/c^4
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (f+g\,x)\,\left(a+b\,\mathrm{asin}(c\,x)\right)\,{\left(d+e\,x\right)}^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(a + b*asin(c*x))*(d + e*x)^2,x)
```

```
[Out] int((f + g*x)*(a + b*asin(c*x))*(d + e*x)^2, x)
```

3.90 $\int (d+ex)(f+gx)(a+b\mathbf{ArcSin}(cx))\,dx$

Optimal. Leaf size=148

$$\frac{begx^2\sqrt{1-c^2x^2}}{9c}+\frac{b(4(9c^2df+2eg)+9c^2(ef+dg)x)\sqrt{1-c^2x^2}}{36c^3}-\frac{b(ef+dg)\text{ArcSin}(cx)}{4c^2}+dfx(a+b\text{ArcSin}$$

```
[Out] -1/4*b*(d*g+e*f)*arcsin(c*x)/c^2+d*f*x*(a+b*arcsin(c*x))+1/2*(d*g+e*f)*x^2*
(a+b*arcsin(c*x))+1/3*e*g*x^3*(a+b*arcsin(c*x))+1/9*b*e*g*x^2*(-c^2*x^2+1)^
(1/2)/c+1/36*b*(36*c^2*d*f+8*e*g+9*c^2*(d*g+e*f)*x)*(-c^2*x^2+1)^(1/2)/c^3
```

Rubi [A]
time = 0.14, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$, Rules used = {4833, 12, 1823, 794, 222}

$$\frac{1}{2}x^2(dg+ef)(a+b\text{ArcSin}(cx))+dfx(a+b\text{ArcSin}(cx))+\frac{1}{3}egx^3(a+b\text{ArcSin}(cx))-\frac{b\text{ArcSin}(cx)(dg+ef)}{4c^2}+\frac{begx^2\sqrt{1-c^2x^2}}{9c}+\frac{b\sqrt{1-c^2x^2}\,(9c^2x(dg+ef)+4(9c^2df+2eg))}{36c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)*(f + g*x)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*e*g*x^2*Sqrt[1 - c^2*x^2])/(9*c) + (b*(4*(9*c^2*d*f + 2*e*g) + 9*c^2*(e*
f + d*g)*x)*Sqrt[1 - c^2*x^2])/(36*c^3) - (b*(e*f + d*g)*ArcSin[c*x])/(4*c^
2) + d*f*x*(a + b*ArcSin[c*x]) + ((e*f + d*g)*x^2*(a + b*ArcSin[c*x]))/2 +
(e*g*x^3*(a + b*ArcSin[c*x]))/3
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*((a + c*x^2)^(p
+ 1)/(2*c*(p + 1)*(2*p + 3))), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 1823

```
Int[(Pq_)*((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2)^(p_), x_Symbol] :> With[
{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[f*(c*x)^(m + q - 1
```

```
)*((a + b*x^2)^(p + 1)/(b*c^(q - 1)*(m + q + 2*p + 1))), x] + Dist[1/(b*(m
+ q + 2*p + 1)), Int[(c*x)^m*(a + b*x^2)^p*ExpandToSum[b*(m + q + 2*p + 1)*
Pq - b*f*(m + q + 2*p + 1)*x^q - a*f*(m + q - 1)*x^(q - 2), x], x], x] /; G
tQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, m, p}, x] && PolyQ[
Pq, x] && ( !IGtQ[m, 0] || IGtQ[p + 1/2, -1])
```

Rule 4833

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_), x_Symbol] :> With[{u = IntHid
e[ExpandExpression[Px, x], x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, I
nt[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[{a, b, c}, x
] && PolynomialQ[Px, x]
```

Rubi steps

$$\int (d+ex)(f+gx)\left(a+b\sin^{-1}(cx)\right)\,dx = dfx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}(ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}egx^3(\ldots$$

$$= dfx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}(ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}egx^3(\ldots$$

$$= \frac{begx^2\sqrt{1-c^2x^2}}{9c}+dfx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}(ef+dg)x^2\left(a+b\,\mathrm{s}\ldots\right.$$

$$= \frac{begx^2\sqrt{1-c^2x^2}}{9c}+\frac{b(4(9c^2df+2eg)+9c^2(ef+dg)x)\sqrt{1-c^2x\ldots}}{36c^3}$$

$$= \frac{begx^2\sqrt{1-c^2x^2}}{9c}+\frac{b(4(9c^2df+2eg)+9c^2(ef+dg)x)\sqrt{1-c^2x\ldots}}{36c^3}$$

Mathematica [A]
time = 0.13, size = 138, normalized size = 0.93

$$\frac{6ac^3x(3d(2f+gx)+ex(3f+2gx))+b\sqrt{1-c^2x^2}\,(8eg+c^2(9d(4f+gx)+ex(9f+4gx)))+3bc(12c^2dfx+4c^2egx^3+3dg(-1+2c^2x^2)+ef(-3+6c^2x^2))\,\mathrm{ArcSin}(cx)}{36c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)*(f + g*x)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (6*a*c^3*x*(3*d*(2*f + g*x) + e*x*(3*f + 2*g*x)) + b*Sqrt[1 - c^2*x^2]*(8*e
*g + c^2*(9*d*(4*f + g*x) + e*x*(9*f + 4*g*x))) + 3*b*c*(12*c^2*d*f*x + 4*c
^2*e*g*x^3 + 3*d*g*(-1 + 2*c^2*x^2) + e*f*(-3 + 6*c^2*x^2))*ArcSin[c*x])/(3
6*c^3)
```

Maple [A]
time = 0.01, size = 198, normalized size = 1.34

method	result
derivativedivides	$\frac{a\left(\frac{eg\,c^3x^3}{3}+\frac{(cdg+cef)c^2x^2}{2}+d\,c^3fx\right)}{c^2}+\frac{b\left(\frac{\arcsin(cx)eg\,c^3x^3}{3}+\frac{\arcsin(cx)c^3dg\,x^2}{2}+\frac{\arcsin(cx)c^3ef\,x^2}{2}+\arcsin(cx)d\,c^3fx-\frac{eg\left(-\frac{c^2}{}\right.}{}\right.}{}$
default	$\frac{a\left(\frac{eg\,c^3x^3}{3}+\frac{(cdg+cef)c^2x^2}{2}+d\,c^3fx\right)}{c^2}+\frac{b\left(\frac{\arcsin(cx)eg\,c^3x^3}{3}+\frac{\arcsin(cx)c^3dg\,x^2}{2}+\frac{\arcsin(cx)c^3ef\,x^2}{2}+\arcsin(cx)d\,c^3fx-\frac{eg\left(-\frac{c^2}{}\right.}{}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(g*x+f)*(a+b*arcsin(c*x)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(a/c^2*(1/3*e*g*c^3*x^3+1/2*(c*d*g+c*e*f)*c^2*x^2+d*c^3*f*x)+b/c^2*(1/3
*arcsin(c*x)*e*g*c^3*x^3+1/2*arcsin(c*x)*c^3*d*g*x^2+1/2*arcsin(c*x)*c^3*e*
f*x^2+arcsin(c*x)*d*c^3*f*x-1/3*e*g*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-
c^2*x^2+1)^(1/2))-1/6*(3*c*d*g+3*c*e*f)*(-1/2*c*x*(-c^2*x^2+1)^(1/2)+1/2*ar
csin(c*x))+d*c^2*f*(-c^2*x^2+1)^(1/2)))
```

Maxima [A]
time = 0.47, size = 203, normalized size = 1.37

$$\frac{1}{3}agx^3e+\frac{1}{2}adgx^2+\frac{1}{2}afx^2e+\frac{1}{4}\left(2x^2\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}\,x}{c^2}-\frac{\arcsin(cx)}{c^3}\right)\right)bdg+adfx+\frac{1}{4}\left(2x^2\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}\,x}{c^2}-\frac{\arcsin(cx)}{c^3}\right)\right)bfe+\frac{1}{9}\left(3x^3\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2}+\frac{2\sqrt{-c^2x^2+1}}{c^4}\right)\right)bge+\frac{\left(cx\arcsin(cx)+\sqrt{-c^2x^2+1}\right)bdf}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/3*a*g*x^3*e + 1/2*a*d*g*x^2 + 1/2*a*f*x^2*e + 1/4*(2*x^2*arcsin(c*x) + c*
(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c*x)/c^3))*b*d*g + a*d*f*x + 1/4*(2*x^2*
arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c*x)/c^3))*b*f*e + 1/9*(
3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^
4))*b*g*e + (c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*b*d*f/c
```

Fricas [A]
time = 1.94, size = 170, normalized size = 1.15

$$\frac{18\,ac^3dgx^2+36\,ac^3dfx+3\,(6\,bc^3dgx^2+12\,bc^3dfx-3\,bcdg+(4\,bc^3gx^3+6\,bc^3fx^2-3\,bcf)e)\arcsin(cx)+6\,(2\,ac^3gx^3+3\,ac^3fx^2)e+(9\,bc^2dgx+36\,bc^2df+(4\,bc^2gx^2+9\,bc^2fx+8\,bg)e)\sqrt{-c^2x^2+1}}{36\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/36*(18*a*c^3*d*g*x^2 + 36*a*c^3*d*f*x + 3*(6*b*c^3*d*g*x^2 + 12*b*c^3*d*f
*x - 3*b*c*d*g + (4*b*c^3*g*x^3 + 6*b*c^3*f*x^2 - 3*b*c*f)*e)*arcsin(c*x) +
```

```
 6*(2*a*c^3*g*x^3 + 3*a*c^3*f*x^2)*e + (9*b*c^2*d*g*x + 36*b*c^2*d*f + (4*b
*c^2*g*x^2 + 9*b*c^2*f*x + 8*b*g)*e)*sqrt(-c^2*x^2 + 1))/c^3
```

Sympy [A]
time = 0.21, size = 267, normalized size = 1.80

$$\begin{cases} adfx + \frac{adgx^2}{2} + \frac{aefx^2}{2} + \frac{aegx^3}{3} + bdfx\operatorname{asin}(cx) + \frac{bdgx^2\operatorname{asin}(cx)}{2} + \frac{befx^2\operatorname{asin}(cx)}{2} + \frac{begx^3\operatorname{asin}(cx)}{3} + \frac{bdf\sqrt{-c^2x^2+1}}{c} + \frac{bdgx\sqrt{-c^2x^2+1}}{4c} + \frac{befx\sqrt{-c^2x^2+1}}{4c} + \frac{begx^2\sqrt{-c^2x^2+1}}{9c} - \frac{bdg\operatorname{asin}(cx)}{4c^2} - \frac{bef\operatorname{asin}(cx)}{4c^2} + \frac{2beg\sqrt{-c^2x^2+1}}{9c^3} & \text{for}\ c \neq 0 \\ a\left(dfx + \frac{dgx^2}{2} + \frac{efx^2}{2} + \frac{egx^3}{3}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d*f*x + a*d*g*x**2/2 + a*e*f*x**2/2 + a*e*g*x**3/3 + b*d*f*x*a
sin(c*x) + b*d*g*x**2*asin(c*x)/2 + b*e*f*x**2*asin(c*x)/2 + b*e*g*x**3*asi
n(c*x)/3 + b*d*f*sqrt(-c**2*x**2 + 1)/c + b*d*g*x*sqrt(-c**2*x**2 + 1)/(4*c
) + b*e*f*x*sqrt(-c**2*x**2 + 1)/(4*c) + b*e*g*x**2*sqrt(-c**2*x**2 + 1)/(9
*c) - b*d*g*asin(c*x)/(4*c**2) - b*e*f*asin(c*x)/(4*c**2) + 2*b*e*g*sqrt(-c
**2*x**2 + 1)/(9*c**3), Ne(c, 0)), (a*(d*f*x + d*g*x**2/2 + e*f*x**2/2 + e*
g*x**3/3), True))
```

Giac [A]
time = 0.41, size = 259, normalized size = 1.75

$$\frac{1}{3}aegx^3 + bdfx\arcsin(cx) + adfx + \frac{(c^2x^2-1)begx\arcsin(cx)}{3c^2} + \frac{\sqrt{-c^2x^2+1}\,befx}{4c} + \frac{\sqrt{-c^2x^2+1}\,bdgx}{4c} + \frac{(c^2x^2-1)bef\arcsin(cx)}{2c^2} + \frac{(c^2x^2-1)bdg\arcsin(cx)}{2c^2} + \frac{begx\arcsin(cx)}{3c^2} + \frac{\sqrt{-c^2x^2+1}\,bdf}{c} + \frac{(c^2x^2-1)aef}{2c^2} + \frac{(c^2x^2-1)adg}{2c^2} + \frac{bef\arcsin(cx)}{4c^2} + \frac{bdg\arcsin(cx)}{4c^2} - \frac{(-c^2x^2+1)^{\frac{3}{2}}beg}{9c^3} + \frac{\sqrt{-c^2x^2+1}\,beg}{3c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/3*a*e*g*x^3 + b*d*f*x*arcsin(c*x) + a*d*f*x + 1/3*(c^2*x^2 - 1)*b*e*g*x*a
rcsin(c*x)/c^2 + 1/4*sqrt(-c^2*x^2 + 1)*b*e*f*x/c + 1/4*sqrt(-c^2*x^2 + 1)*
b*d*g*x/c + 1/2*(c^2*x^2 - 1)*b*e*f*arcsin(c*x)/c^2 + 1/2*(c^2*x^2 - 1)*b*d
*g*arcsin(c*x)/c^2 + 1/3*b*e*g*x*arcsin(c*x)/c^2 + sqrt(-c^2*x^2 + 1)*b*d*f
/c + 1/2*(c^2*x^2 - 1)*a*e*f/c^2 + 1/2*(c^2*x^2 - 1)*a*d*g/c^2 + 1/4*b*e*f*
arcsin(c*x)/c^2 + 1/4*b*d*g*arcsin(c*x)/c^2 - 1/9*(-c^2*x^2 + 1)^(3/2)*b*e*
g/c^3 + 1/3*sqrt(-c^2*x^2 + 1)*b*e*g/c^3
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\begin{cases} \frac{a\,x^2\,(d\,g+e\,f)}{2} + a\,d\,f\,x + b\,e\,g\left(\frac{\sqrt{\frac{1}{c^2}-x^2}\,\left(\frac{2}{c^2}+x^2\right)}{9} + \frac{x^3\operatorname{asin}(c\,x)}{3}\right) + \frac{a\,e\,g\,x^3}{3} + \frac{b\,d\,f\left(\sqrt{1-c^2\,x^2}+c\,x\operatorname{asin}(c\,x)\right)}{c} + \frac{b\,d\,g\left(\frac{\operatorname{asin}(c\,x)\,\left(2\,c^2\,x^2-1\right)}{4}+\frac{c\,x\,\sqrt{1-c^2\,x^2}}{4}\right)}{c^2} + \frac{b\,e\,f\left(\frac{\operatorname{asin}(c\,x)\,\left(2\,c^2\,x^2-1\right)}{4}+\frac{c\,x\,\sqrt{1-c^2\,x^2}}{4}\right)}{c^2} & \text{if}\ \ 0<c \\ \int (f+g\,x)\,\left(a+b\operatorname{asin}(c\,x)\right)\,\left(d+e\,x\right)\,dx & \text{if}\ \ \neg 0<c \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(a + b*asin(c*x))*(d + e*x),x)
```

```
[Out] piecewise(0 < c, (a*x^2*(d*g + e*f))/2 + a*d*f*x + b*e*g*(((1/c^2 - x^2)^(1
/2)*(2/c^2 + x^2))/9 + (x^3*asin(c*x))/3) + (a*e*g*x^3)/3 + (b*d*f*((- c^2*
```

```
x^2 + 1)^(1/2) + c*x*asin(c*x)))/c + (b*d*g*((asin(c*x)*(2*c^2*x^2 - 1))/4
+ (c*x*(- c^2*x^2 + 1)^(1/2))/4))/c^2 + (b*e*f*((asin(c*x)*(2*c^2*x^2 - 1))
/4 + (c*x*(- c^2*x^2 + 1)^(1/2))/4))/c^2, ~0 < c, int((f + g*x)*(a + b*asin
(c*x))*(d + e*x), x))
```

3.91 $\int \frac{(f+gx)(a+b\text{ArcSin}(cx))}{d+ex}\,dx$

Optimal. Leaf size=344

$$\frac{bg\sqrt{1-c^2x^2}}{ce}-\frac{ib(ef-dg)\text{ArcSin}(cx)^2}{2e^2}+\frac{gx(a+b\text{ArcSin}(cx))}{e}+\frac{b(ef-dg)\text{ArcSin}(cx)\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-}\right.}{e^2}$$

```
[Out] -1/2*I*b*(-d*g+e*f)*arcsin(c*x)^2/e^2+g*x*(a+b*arcsin(c*x))/e-b*(-d*g+e*f)*
arcsin(c*x)*ln(e*x+d)/e^2+(-d*g+e*f)*(a+b*arcsin(c*x))*ln(e*x+d)/e^2+b*(-d*
g+e*f)*arcsin(c*x)*ln(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d-(c^2*d^2-e^2)^(
1/2)))/e^2+b*(-d*g+e*f)*arcsin(c*x)*ln(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*
d+(c^2*d^2-e^2)^(1/2)))/e^2-I*b*(-d*g+e*f)*polylog(2,I*e*(I*c*x+(-c^2*x^2+1
)^(1/2))/(c*d-(c^2*d^2-e^2)^(1/2)))/e^2-I*b*(-d*g+e*f)*polylog(2,I*e*(I*c*x
+(-c^2*x^2+1)^(1/2))/(c*d+(c^2*d^2-e^2)^(1/2)))/e^2+b*g*(-c^2*x^2+1)^(1/2)/
c/e
```

Rubi [A]
time = 0.48, antiderivative size = 344, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 12, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.571$, Rules used = {45, 4837, 12, 6874, 267, 222, 2451, 4825, 4615, 2221, 2317, 2438}

$$\frac{(ef-dg)\log(d+ex)(a+b\text{ArcSin}(cx))}{e^2}+\frac{gx(a+b\text{ArcSin}(cx))}{e}-\frac{ib(ef-dg)\text{Li}_2\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^2}-\frac{ib(ef-dg)\text{Li}_2\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)}{e^2}+\frac{b\text{ArcSin}(cx)(ef-dg)\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^2}+\frac{b\text{ArcSin}(cx)(ef-dg)\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e^2}-\frac{ib\text{ArcSin}(cx)^2(ef-dg)}{2e^2}-\frac{b\text{ArcSin}(cx)(ef-dg)\log(d+ex)}{e^2}+\frac{bg\sqrt{1-c^2x^2}}{ce}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x]))/(d + e*x),x]
```

```
[Out] (b*g*Sqrt[1 - c^2*x^2])/(c*e) - ((I/2)*b*(e*f - d*g)*ArcSin[c*x]^2)/e^2 + (
g*x*(a + b*ArcSin[c*x]))/e + (b*(e*f - d*g)*ArcSin[c*x]*Log[1 - (I*e*E^(I*A
rcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^2 + (b*(e*f - d*g)*ArcSin[c*x]
*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^2 - (b*(e*
f - d*g)*ArcSin[c*x]*Log[d + e*x])/e^2 + ((e*f - d*g)*(a + b*ArcSin[c*x])*L
og[d + e*x])/e^2 - (I*b*(e*f - d*g)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d
 - Sqrt[c^2*d^2 - e^2])])/e^2 - (I*b*(e*f - d*g)*PolyLog[2, (I*e*E^(I*ArcSi
n[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^2
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
```

```
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2451

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 4615

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Int[(e + f*x)^m*(E^(I*(c + d*x))/(a - Rt[a^2 - b^2, 2] - I*b*E^(
I*(c + d*x)))), x] + Int[(e + f*x)^m*(E^(I*(c + d*x))/(a + Rt[a^2 - b^2, 2]
 - I*b*E^(I*(c + d*x)))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0]
```

```
&& PosQ[a^2 - b^2]
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[(a + b*x)^n*(Cos[x]/(c*d + e*Sin[x])), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4837

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(f+gx)\,(a+b\sin^{-1}(cx))}{d+ex}\,dx = \frac{gx(a+b\sin^{-1}(cx))}{e} + \frac{(ef-dg)\,(a+b\sin^{-1}(cx))\log(d+ex)}{e^2} - (bc)\int$$

$$= \frac{gx(a+b\sin^{-1}(cx))}{e} + \frac{(ef-dg)\,(a+b\sin^{-1}(cx))\log(d+ex)}{e^2} - \frac{(bc)\int}{}$$

$$= \frac{gx(a+b\sin^{-1}(cx))}{e} + \frac{(ef-dg)\,(a+b\sin^{-1}(cx))\log(d+ex)}{e^2} - \frac{(bc)\int}{}$$

$$= \frac{gx(a+b\sin^{-1}(cx))}{e} + \frac{(ef-dg)\,(a+b\sin^{-1}(cx))\log(d+ex)}{e^2} - \frac{(bcg)\int}{}$$

$$= \frac{bg\sqrt{1-c^2x^2}}{ce} + \frac{gx(a+b\sin^{-1}(cx))}{e} - \frac{b(ef-dg)\sin^{-1}(cx)\log(d+ex)}{e^2}$$

$$= \frac{bg\sqrt{1-c^2x^2}}{ce} + \frac{gx(a+b\sin^{-1}(cx))}{e} - \frac{b(ef-dg)\sin^{-1}(cx)\log(d+ex)}{e^2}$$

$$= \frac{bg\sqrt{1-c^2x^2}}{ce} - \frac{ib(ef-dg)\sin^{-1}(cx)^2}{2e^2} + \frac{gx(a+b\sin^{-1}(cx))}{e} - \frac{b(ef-}{}$$

$$= \frac{bg\sqrt{1-c^2x^2}}{ce} - \frac{ib(ef-dg)\sin^{-1}(cx)^2}{2e^2} + \frac{gx(a+b\sin^{-1}(cx))}{e} + \frac{b(ef-}{}$$

$$= \frac{bg\sqrt{1-c^2x^2}}{ce} - \frac{ib(ef-dg)\sin^{-1}(cx)^2}{2e^2} + \frac{gx(a+b\sin^{-1}(cx))}{e} + \frac{b(ef-}{}$$

$$= \frac{bg\sqrt{1-c^2x^2}}{ce} - \frac{ib(ef-dg)\sin^{-1}(cx)^2}{2e^2} + \frac{gx(a+b\sin^{-1}(cx))}{e} + \frac{b(ef-}{}$$

Mathematica [A]

time = 0.87, size = 602, normalized size = 1.75

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x]))/(d + e*x),x]
```

```
[Out] (8*a*c*e*g*x + 8*a*c*(e*f - d*g)*Log[d + e*x] + b*g*(8*e*Sqrt[1 - c^2*x^2]
+ 8*c*e*x*ArcSin[c*x] - c*d*(I*(Pi - 2*ArcSin[c*x])^2 - (32*I)*ArcSin[Sqrt[
1 + (c*d)/e]/Sqrt[2]]*ArcTan[((c*d - e)*Cot[(Pi + 2*ArcSin[c*x])/4])/Sqrt[c
```

```
^2*d^2 - e^2]] - 4*(Pi + 4*ArcSin[Sqrt[1 + (c*d)/e]/Sqrt[2]] - 2*ArcSin[c*x
])*Log[1 - (I*(-(c*d) + Sqrt[c^2*d^2 - e^2]))/(e*E^(I*ArcSin[c*x]))] - 4*(P
i - 4*ArcSin[Sqrt[1 + (c*d)/e]/Sqrt[2]] - 2*ArcSin[c*x])*Log[1 + (I*(c*d +
Sqrt[c^2*d^2 - e^2]))/(e*E^(I*ArcSin[c*x]))] + 4*(Pi - 2*ArcSin[c*x])*Log[c
*(d + e*x)] + 8*ArcSin[c*x]*Log[c*(d + e*x)] + (8*I)*(PolyLog[2, (I*(-(c*d)
 + Sqrt[c^2*d^2 - e^2]))/(e*E^(I*ArcSin[c*x]))] + PolyLog[2, ((-I)*(c*d + S
qrt[c^2*d^2 - e^2]))/(e*E^(I*ArcSin[c*x]))]))) - (4*I)*b*c*e*f*(ArcSin[c*x]
*(ArcSin[c*x] + (2*I)*(Log[1 + (I*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d
^2 - e^2])] + Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])
) + 2*PolyLog[2, ((-I)*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])]
 + 2*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]))/(8*c
*e^2)
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 1592 vs. 2(357) = 714.
time = 1.32, size = 1593, normalized size = 4.63

method	result	size
derivativedivides	Expression too large to display	1593
default	Expression too large to display	1593

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))/(e*x+d),x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(a*g/e*c*x-a*c/e^2*ln(c*e*x+c*d)*d*g+a*c/e*ln(c*e*x+c*d)*f-b*c^3/e^2*d^
3*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*
d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+b*c^3/e*d^2*f*arcsin(c*x)/(c^
2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*
d*c-(-c^2*d^2+e^2)^(1/2)))+b*c^3/e*d^2*f*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*
c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^
(1/2)))+I*b*c*e*f/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(
-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+b*g/e*(-c^2*x^2+1)^(1/2)
-I*b*c^3/e*f/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*
d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*d^2+b*arcsin(c*x)*g/e*c*x-1/2
*I*b*c*arcsin(c*x)^2/e*f-I*b*c*d*g/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^
2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-b*c*e*f
*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2
+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+I*b*c^3/e^2*d^3*g/(c^2*d^2-e^2)*
dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^
2*d^2+e^2)^(1/2)))-I*b*c*d*g/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+
1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-b*c^3/e^2*d^3
*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d
^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+I*b*c^3/e^2*d^3*g/(c^2*d^2-e^2
)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-
c^2*d^2+e^2)^(1/2)))+b*c*d*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(
```

```
-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-b*c*
e*f*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*
d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+I*b*c*e*f/(c^2*d^2-e^2)*dilog
((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2
+e^2)^(1/2)))+b*c*d*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^
2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+1/2*I*b*c*a
rcsin(c*x)^2/e^2*d*g-I*b*c^3/e*f/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*
x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*d^2)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d),x, algorithm="maxima")
[Out] a*f*e^(-1)*log(x*e + d) - (d*e^(-2)*log(x*e + d) - x*e^(-1))*a*g + integrat
e((b*g*x + b*f)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(x*e + d), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d),x, algorithm="fricas")
[Out] integral((a*g*x + a*f + (b*g*x + b*f)*arcsin(c*x))/(x*e + d), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(cx))(f + gx)}{d + ex}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))/(e*x+d),x)
[Out] Integral((a + b*asin(c*x))*(f + g*x)/(d + e*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)*(b*arcsin(c*x) + a)/(e*x + d), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f + g\,x)\,\left(a + b\,\mathrm{asin}(c\,x)\right)}{d + e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(a + b*asin(c*x)))/(d + e*x),x)
```

```
[Out] int(((f + g*x)*(a + b*asin(c*x)))/(d + e*x), x)
```

3.92 $\int \frac{(f+gx)(a+b\mathbf{ArcSin}(cx))}{(d+ex)^2}\,dx$

Optimal. Leaf size=358

$$-\frac{ibg\text{ArcSin}(cx)^2}{2e^2}-\frac{(ef-dg)(a+b\text{ArcSin}(cx))}{e^2(d+ex)}+\frac{bc(ef-dg)\text{ArcTan}\left(\frac{e+c^2dx}{\sqrt{c^2d^2-e^2}\sqrt{1-c^2x^2}}\right)}{e^2\sqrt{c^2d^2-e^2}}+\frac{bg\text{ArcSi}}{}$$

```
[Out] -1/2*I*b*g*arcsin(c*x)^2/e^2-(-d*g+e*f)*(a+b*arcsin(c*x))/e^2/(e*x+d)-b*g*a
rcsin(c*x)*ln(e*x+d)/e^2+g*(a+b*arcsin(c*x))*ln(e*x+d)/e^2+b*g*arcsin(c*x)*
ln(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d-(c^2*d^2-e^2)^(1/2)))/e^2+b*g*arcs
in(c*x)*ln(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d+(c^2*d^2-e^2)^(1/2)))/e^2-
I*b*g*polylog(2,I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d-(c^2*d^2-e^2)^(1/2)))/e
^2-I*b*g*polylog(2,I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d+(c^2*d^2-e^2)^(1/2))
)/e^2+b*c*(-d*g+e*f)*arctan((c^2*d*x+e)/(c^2*d^2-e^2)^(1/2)/(-c^2*x^2+1)^(1
/2))/e^2/(c^2*d^2-e^2)^(1/2)
```

Rubi [A]
time = 0.68, antiderivative size = 358, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 13, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.619$, Rules used = {45, 4837, 12, 6874, 739, 210, 222, 2451, 4825, 4615, 2221, 2317, 2438}

$$-\frac{(ef-dg)(a+b\text{ArcSin}(cx))}{e^2(d+ex)}+\frac{g\log(d+ex)(a+b\text{ArcSin}(cx))}{e^2}-\frac{ibg\text{Li}_2\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^2}-\frac{ibg\text{Li}_2\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)}{e^2}+\frac{bg\text{ArcSin}(cx)\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^2}+\frac{bg\text{ArcSin}(cx)\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e^2}-\frac{bg\text{ArcSin}(cx)\log(d+ex)}{e^2}-\frac{ibg\text{ArcSin}(cx)^2}{2e^2}+\frac{bc(ef-dg)\text{ArcTan}\left(\frac{c^2dx+e}{\sqrt{1-c^2x^2}\sqrt{c^2d^2-e^2}}\right)}{e^2\sqrt{c^2d^2-e^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x]))/(d + e*x)^2,x]
```

```
[Out] ((-1/2*I)*b*g*ArcSin[c*x]^2)/e^2 - ((e*f - d*g)*(a + b*ArcSin[c*x]))/(e^2*(
d + e*x)) + (b*c*(e*f - d*g)*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt
[1 - c^2*x^2])])/(e^2*Sqrt[c^2*d^2 - e^2]) + (b*g*ArcSin[c*x]*Log[1 - (I*e*
E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^2 + (b*g*ArcSin[c*x]*Log
[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^2 - (b*g*ArcSi
n[c*x]*Log[d + e*x])/e^2 + (g*(a + b*ArcSin[c*x])*Log[d + e*x])/e^2 - (I*b*
g*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^2 - (I
*b*g*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^2
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
```

```
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 739

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2451

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 4615

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Int[(e + f*x)^m*(E^(I*(c + d*x))/(a - Rt[a^2 - b^2, 2] - I*b*E^(
I*(c + d*x)))), x] + Int[(e + f*x)^m*(E^(I*(c + d*x))/(a + Rt[a^2 - b^2, 2]
 - I*b*E^(I*(c + d*x)))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0]
 && PosQ[a^2 - b^2]
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[(a + b*x)^n*(Cos[x]/(c*d + e*Sin[x])), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4837

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{(d+ex)^2}\,dx = -\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{e^2(d+ex)} + \frac{g(a+b\sin^{-1}(cx))\log(d+ex)}{e^2} - (bc)\int \cdots$$

$$= -\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{e^2(d+ex)} + \frac{g(a+b\sin^{-1}(cx))\log(d+ex)}{e^2} - \frac{(bc)\int \cdots}{\cdots}$$

$$= -\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{e^2(d+ex)} + \frac{g(a+b\sin^{-1}(cx))\log(d+ex)}{e^2} - \frac{(bc)\int \left(\cdots\right.}{\cdots}$$

$$= -\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{e^2(d+ex)} + \frac{g(a+b\sin^{-1}(cx))\log(d+ex)}{e^2} - \frac{(bcg)\int \cdots}{\cdots}$$

$$= -\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{e^2(d+ex)} - \frac{bg\sin^{-1}(cx)\log(d+ex)}{e^2} + \frac{g(a+b\sin^{-1}(\cdots}{\cdots}$$

$$= -\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{e^2(d+ex)} + \frac{bc(ef-dg)\tan^{-1}\left(\frac{e+c^2dx}{\sqrt{c^2d^2-e^2}\sqrt{1-c^2x\cdots}}\right.}{e^2\sqrt{c^2d^2-e^2}}$$

$$= -\frac{ibg\sin^{-1}(cx)^2}{2e^2} - \frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{e^2(d+ex)} + \frac{bc(ef-dg)\tan^{-1}\left(\frac{\cdots}{\sqrt{c^{\cdots}}}\right.}{e^2\sqrt{c^2d^{\cdots}}}$$

$$= -\frac{ibg\sin^{-1}(cx)^2}{2e^2} - \frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{e^2(d+ex)} + \frac{bc(ef-dg)\tan^{-1}\left(\frac{\cdots}{\sqrt{c^{\cdots}}}\right.}{e^2\sqrt{c^2d^{\cdots}}}$$

$$= -\frac{ibg\sin^{-1}(cx)^2}{2e^2} - \frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{e^2(d+ex)} + \frac{bc(ef-dg)\tan^{-1}\left(\frac{\cdots}{\sqrt{c^{\cdots}}}\right.}{e^2\sqrt{c^2d^{\cdots}}}$$

$$= -\frac{ibg\sin^{-1}(cx)^2}{2e^2} - \frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{e^2(d+ex)} + \frac{bc(ef-dg)\tan^{-1}\left(\frac{\cdots}{\sqrt{c^{\cdots}}}\right.}{e^2\sqrt{c^2d^{\cdots}}}$$

Mathematica [C] Result contains higher order function than in optimal. Order 6 vs. order 4 in optimal.
time = 1.22, size = 438, normalized size = 1.22

$$\frac{\frac{2a(-ef+dg)}{d+ex} - 2bf\left(\frac{c\sqrt{\frac{e\left(-\sqrt{\frac{1}{c^2}}+x\right)}{d+ex}}\sqrt{\frac{e\left(\sqrt{\frac{1}{c^2}}+x\right)}{d+ex}}F_1\left(1;\frac{1}{2},\frac{1}{2};2;\frac{d-\sqrt{\frac{1}{c^2}}e}{d+ex},\frac{d+\sqrt{\frac{1}{c^2}}e}{d+ex}\right)}{\sqrt{1-c^2x^2}} + \frac{e\text{ArcSin}(cx)}{d+ex}\right) + 2ag\log(d+ex) + bg\left(\frac{2d\text{ArcSin}(cx)}{d+ex} - i\text{ArcSin}(cx)^2 - \frac{2cd\text{ArcTan}\left(\frac{e+c^2dx}{\sqrt{c^2d^2-e^2}\sqrt{1-c^2x^2}}\right)}{\sqrt{c^2d^2-e^2}} + 2\text{ArcSin}(cx)\log\left(1+\frac{iee^{i\text{ArcSin}(cx)}}{-cd+\sqrt{c^2d^2-e^2}}\right) + 2\text{ArcSin}(cx)\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right) - 2i\text{PolyLog}\left(2,-\frac{iee^{i\text{ArcSin}(cx)}}{-cd+\sqrt{c^2d^2-e^2}}\right) - 2i\text{PolyLog}\left(2,\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)\right)}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x]))/(d + e*x)^2,x]
```

```
[Out] ((2*a*(-(e*f) + d*g))/(d + e*x) - 2*b*f*((c*Sqrt[(e*(-Sqrt[c^(-2)] + x))/(d
 + e*x)]*Sqrt[(e*(Sqrt[c^(-2)] + x))/(d + e*x)]*AppellF1[1, 1/2, 1/2, 2, (d
 - Sqrt[c^(-2)]*e)/(d + e*x), (d + Sqrt[c^(-2)]*e)/(d + e*x)])/Sqrt[1 - c^2
*x^2] + (e*ArcSin[c*x])/(d + e*x)) + 2*a*g*Log[d + e*x] + b*g*((2*d*ArcSin[
c*x])/(d + e*x) - I*ArcSin[c*x]^2 - (2*c*d*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d
^2 - e^2]*Sqrt[1 - c^2*x^2])])/Sqrt[c^2*d^2 - e^2] + 2*ArcSin[c*x]*Log[1 +
(I*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] + 2*ArcSin[c*x]*Log
[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])] - (2*I)*PolyLog[2
, ((-I)*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] - (2*I)*PolyLo
g[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]))/(2*e^2)
```

Maple [**B**] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 1005 vs. $2(367) = 734$.
time = 1.69, size = 1006, normalized size = 2.81

method	result
derivativedivides	$\frac{\frac{a c^2 d g}{e^2(cex+dc)} - \frac{a c^2 f}{e(cex+dc)} + \frac{acg\ln(cex+dc)}{e^2} - \frac{i b c^3 d^2 g \,\mathrm{dilog}\left(\frac{idc+e\left(icx+\sqrt{-c^2x^2+1}\right)-\sqrt{-c^2d^2+e^2}}{idc-\sqrt{-c^2d^2+e^2}}\right)}{e^2\left(c^2d^2-e^2\right)} + \frac{b c^2 \arcsin}{e^2(cex}}{}$
default	$\frac{\frac{a c^2 d g}{e^2(cex+dc)} - \frac{a c^2 f}{e(cex+dc)} + \frac{acg\ln(cex+dc)}{e^2} - \frac{i b c^3 d^2 g \,\mathrm{dilog}\left(\frac{idc+e\left(icx+\sqrt{-c^2x^2+1}\right)-\sqrt{-c^2d^2+e^2}}{idc-\sqrt{-c^2d^2+e^2}}\right)}{e^2\left(c^2d^2-e^2\right)} + \frac{b c^2 \arcsin}{e^2(cex}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(a*c^2/e^2/(c*e*x+c*d)*d*g-a*c^2/e/(c*e*x+c*d)*f+a*c*g/e^2*ln(c*e*x+c*d
)+I*b*c*g/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2
+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+b*c^2*arcsin(c*x)/e^2/(c*e*x+c*d
)*d*g-b*c^2*arcsin(c*x)/e/(c*e*x+c*d)*f+I*b*c*g/(c^2*d^2-e^2)*dilog((I*d*c+
e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1
/2)))+2*I*b*c^2/e^2*d*g/(c^2*d^2-e^2)^(1/2)*arctanh(1/2*(2*I*e*(I*c*x+(-c^2
*x^2+1)^(1/2))-2*d*c)/(c^2*d^2-e^2)^(1/2))-I*b*c^3/e^2*d^2*g/(c^2*d^2-e^2)*
dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^
2*d^2+e^2)^(1/2)))-b*c*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2
*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-b*c*g*ar
csin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^
2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+b*c^3/e^2*d^2*g*arcsin(c*x)/(c^2*d^
2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-
```

```
(-c^2*d^2+e^2)^(1/2)))+b*c^3/e^2*d^2*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+
e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1
/2)))-2*I*b*c^2/e*f/(c^2*d^2-e^2)^(1/2)*arctanh(1/2*(2*I*e*(I*c*x+(-c^2*x^2
+1)^(1/2))-2*d*c)/(c^2*d^2-e^2)^(1/2))-I*b*c^3/e^2*d^2*g/(c^2*d^2-e^2)*dilo
g((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^
2+e^2)^(1/2)))-1/2*I*b*c*g*arcsin(c*x)^2/e^2)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c*d-%e>0)', see `assume?` for more
details
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] integral((a*g*x + a*f + (b*g*x + b*f)*arcsin(c*x))/(x^2*e^2 + 2*d*x*e + d^2
), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(cx))(f + gx)}{(d + ex)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))/(e*x+d)**2,x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x)/(d + e*x)**2, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] integrate((g*x + f)*(b*arcsin(c*x) + a)/(e*x + d)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)\,\left(a+b\,\mathrm{asin}(c\,x)\right)}{{\left(d+e\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(a + b*asin(c*x)))/(d + e*x)^2,x)
```

```
[Out] int(((f + g*x)*(a + b*asin(c*x)))/(d + e*x)^2, x)
```

3.93 $\int \frac{(f+gx)(a+b\text{ArcSin}(cx))}{(d+ex)^3}\,dx$

Optimal. Leaf size=202

$$\frac{bc(ef-dg)\sqrt{1-c^2x^2}}{2e\left(c^2d^2-e^2\right)(d+ex)}+\frac{bg^2\text{ArcSin}(cx)}{2e^2(ef-dg)}-\frac{(f+gx)^2(a+b\text{ArcSin}(cx))}{2(ef-dg)(d+ex)^2}-\frac{bc(2e^2g-c^2d(ef+dg))\,\text{ArcTan}\Big(\frac{-}{\sqrt{}}}{2e^2\left(c^2d^2-e^2\right)^3}$$

```
[Out] 1/2*b*g^2*arcsin(c*x)/e^2/(-d*g+e*f)-1/2*(g*x+f)^2*(a+b*arcsin(c*x))/(-d*g+
e*f)/(e*x+d)^2-1/2*b*c*(2*e^2*g-c^2*d*(d*g+e*f))*arctan((c^2*d*x+e)/(c^2*d^
2-e^2)^(1/2)/(-c^2*x^2+1)^(1/2))/e^2/(c^2*d^2-e^2)^(3/2)+1/2*b*c*(-d*g+e*f)
*(-c^2*x^2+1)^(1/2)/e/(c^2*d^2-e^2)/(e*x+d)
```

Rubi [A]
time = 0.26, antiderivative size = 202, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 8, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.381$, Rules used = {37, 4837, 12, 1665, 858, 222, 739, 210}

$$-\frac{(f+gx)^2(a+b\text{ArcSin}(cx))}{2(d+ex)^2(ef-dg)}+\frac{bg^2\text{ArcSin}(cx)}{2e^2(ef-dg)}-\frac{bc\text{ArcTan}\left(\frac{c^2dx+e}{\sqrt{1-c^2x^2}\sqrt{c^2d^2-e^2}}\right)(2e^2g-c^2d(dg+ef))}{2e^2\left(c^2d^2-e^2\right)^{3/2}}+\frac{bc\sqrt{1-c^2x^2}(ef-dg)}{2e\left(c^2d^2-e^2\right)(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x]))/(d + e*x)^3,x]
```

```
[Out] (b*c*(e*f - d*g)*Sqrt[1 - c^2*x^2])/(2*e*(c^2*d^2 - e^2)*(d + e*x)) + (b*g^
2*ArcSin[c*x])/(2*e^2*(e*f - d*g)) - ((f + g*x)^2*(a + b*ArcSin[c*x]))/(2*(
e*f - d*g)*(d + e*x)^2) - (b*c*(2*e^2*g - c^2*d*(e*f + d*g))*ArcTan[(e + c^
2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(2*e^2*(c^2*d^2 - e^2)^(3/
2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
```

```
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 739

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 858

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rule 1665

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :>
 With[{Q = PolynomialQuotient[Pq, d + e*x, x], R = PolynomialRemainder[Pq,
d + e*x, x]}, Simp[(e*R*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*
d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)
*(a + c*x^2)^p*ExpandToSum[(m + 1)*(c*d^2 + a*e^2)*Q + c*d*R*(m + 1) - c*e*
R*(m + 2*p + 3)*x, x], x], x]] /; FreeQ[{a, c, d, e, p}, x] && PolyQ[Pq, x]
 && NeQ[c*d^2 + a*e^2, 0] && LtQ[m, -1]
```

Rule 4837

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rubi steps

$$\int \frac{(f+gx)(a+b\sin^{-1}(cx))}{(d+ex)^3}\,dx = -\frac{(f+gx)^2(a+b\sin^{-1}(cx))}{2(ef-dg)(d+ex)^2} - (bc)\int -\frac{(f+gx)^2}{2(ef-dg)(d+ex)^2\sqrt{1-c^2x^2}}$$

$$= -\frac{(f+gx)^2(a+b\sin^{-1}(cx))}{2(ef-dg)(d+ex)^2} + \frac{(bc)\int \frac{(f+gx)^2}{(d+ex)^2\sqrt{1-c^2x^2}}\,dx}{2(ef-dg)}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{2e(c^2d^2-e^2)(d+ex)} - \frac{(f+gx)^2(a+b\sin^{-1}(cx))}{2(ef-dg)(d+ex)^2} + \frac{(bc)\int \frac{c^2df^2-g(2ef-}{(d+ex)}}{2(c^2d^2-e}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{2e(c^2d^2-e^2)(d+ex)} - \frac{(f+gx)^2(a+b\sin^{-1}(cx))}{2(ef-dg)(d+ex)^2} + \frac{(bcg^2)\int \frac{1}{\sqrt{1-c^2}}}{2e^2(ef-dg}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{2e(c^2d^2-e^2)(d+ex)} + \frac{bg^2\sin^{-1}(cx)}{2e^2(ef-dg)} - \frac{(f+gx)^2(a+b\sin^{-1}(cx))}{2(ef-dg)(d+ex)^2} +$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{2e(c^2d^2-e^2)(d+ex)} + \frac{bg^2\sin^{-1}(cx)}{2e^2(ef-dg)} - \frac{(f+gx)^2(a+b\sin^{-1}(cx))}{2(ef-dg)(d+ex)^2} -$$

Mathematica [A]
time = 0.35, size = 263, normalized size = 1.30

$$\frac{\frac{a(-ef+dg)}{(d+ex)^2} - \frac{2ag}{d+ex} - \frac{bce(ef-dg)\sqrt{1-c^2x^2}}{(-c^2d^2+e^2)(d+ex)} - \frac{b(dg+e(f+2gx))\text{ArcSin}(cx)}{(d+ex)^2} + \frac{bc(-2e^2g+c^2d(ef+dg))\log(d+ex)}{(cd-e)(cd+e)\sqrt{-c^2d^2+e^2}} + \frac{bc(-2e^2g+c^2d(ef+dg))\log\left(e+c^2dx+\sqrt{-c^2d^2+e^2}\sqrt{1-c^2x^2}\right)}{(-cd+e)(cd+e)\sqrt{-c^2d^2+e^2}}}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x]))/(d + e*x)^3,x]
```

```
[Out] ((a*(-(e*f) + d*g))/(d + e*x)^2 - (2*a*g)/(d + e*x) - (b*c*e*(e*f - d*g)*Sq
rt[1 - c^2*x^2])/((-(c^2*d^2) + e^2)*(d + e*x)) - (b*(d*g + e*(f + 2*g*x))*
ArcSin[c*x])/(d + e*x)^2 + (b*c*(-2*e^2*g + c^2*d*(e*f + d*g))*Log[d + e*x]
)/((c*d - e)*(c*d + e)*Sqrt[-(c^2*d^2) + e^2]) + (b*c*(-2*e^2*g + c^2*d*(e*
f + d*g))*Log[e + c^2*d*x + Sqrt[-(c^2*d^2) + e^2]*Sqrt[1 - c^2*x^2]])/((-(
c*d) + e)*(c*d + e)*Sqrt[-(c^2*d^2) + e^2]))/(2*e^2)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 799 vs. 2(186) = 372.
time = 0.13, size = 800, normalized size = 3.96

method	result

derivativedivides	$\frac{a\,c^{2}\left(\frac{c(dg-ef)}{2e^{2}(cex+dc)^{2}}-\frac{g}{e^{2}(cex+dc)}\right)+\frac{b\,c^{3}\arcsin(cx)dg}{2e^{2}(cex+dc)^{2}}-\frac{b\,c^{3}\arcsin(cx)f}{2e(cex+dc)^{2}}-\frac{b\,c^{2}\arcsin(cx)g}{e^{2}(cex+dc)}-\frac{b\,c^{3}\sqrt{-\left(cx+\frac{dc}{e}\right)^{2}+\frac{2dc(c}{}}}{2e^{2}\left(c^{2}d^{2}-e^{2}\right)(c}}{}$
default	$\frac{a\,c^{2}\left(\frac{c(dg-ef)}{2e^{2}(cex+dc)^{2}}-\frac{g}{e^{2}(cex+dc)}\right)+\frac{b\,c^{3}\arcsin(cx)dg}{2e^{2}(cex+dc)^{2}}-\frac{b\,c^{3}\arcsin(cx)f}{2e(cex+dc)^{2}}-\frac{b\,c^{2}\arcsin(cx)g}{e^{2}(cex+dc)}-\frac{b\,c^{3}\sqrt{-\left(cx+\frac{dc}{e}\right)^{2}+\frac{2dc(c}{}}}{2e^{2}\left(c^{2}d^{2}-e^{2}\right)(c}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(a*c^2*(1/2*c*(d*g-e*f)/e^2/(c*e*x+c*d)^2-g/e^2/(c*e*x+c*d))+1/2*b*c^3*
arcsin(c*x)/e^2/(c*e*x+c*d)^2*d*g-1/2*b*c^3*arcsin(c*x)/e/(c*e*x+c*d)^2*f-b
*c^2*arcsin(c*x)*g/e^2/(c*e*x+c*d)-1/2*b*c^3/e^2/(c^2*d^2-e^2)/(c*x+d*c/e)*
(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*d*g+1/2*b*c^3/
e/(c^2*d^2-e^2)/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^
2)/e^2)^(1/2)*f+1/2*b*c^4/e^3*d^2/(c^2*d^2-e^2)/(-(c^2*d^2-e^2)/e^2)^(1/2)*
ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(
-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*g
-1/2*b*c^4/e^2*d/(c^2*d^2-e^2)/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e
^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*
d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*f-b*c^2/e^3*g/(-(c
^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^
2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2
)^(1/2))/(c*x+d*c/e)))
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c*d-%e>0)', see `assume?` for more
details
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 557 vs. $2(185) = 370$.
time = 8.86, size = 1145, normalized size = 5.67

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] [-1/4*(2*a*c^4*d^5*g - 4*a*c^2*d^3*g*e^2 + 2*a*d*g*e^4 + (b*c^3*d^4*g - 2*b
*c*g*x^2*e^4 + (b*c^3*d*f*x^2 - 4*b*c*d*g*x)*e^3 + (b*c^3*d^2*g*x^2 + 2*b*c
^3*d^2*f*x - 2*b*c*d^2*g)*e^2 + (2*b*c^3*d^3*g*x + b*c^3*d^3*f)*e)*sqrt(-c^
2*d^2 + e^2)*log((2*c^4*d^2*x^2 + 2*c^2*d*x*e - c^2*d^2 - 2*sqrt(-c^2*d^2 +
 e^2)*(c^2*d*x + e)*sqrt(-c^2*x^2 + 1) - (c^2*x^2 - 2)*e^2)/(x^2*e^2 + 2*d*
x*e + d^2)) + 2*(b*c^4*d^5*g - 2*b*c^2*d^3*g*e^2 + b*d*g*e^4 + (2*b*g*x + b
*f)*e^5 - 2*(2*b*c^2*d^2*g*x + b*c^2*d^2*f)*e^3 + (2*b*c^4*d^4*g*x + b*c^4*
d^4*f)*e)*arcsin(c*x) + 2*(2*a*g*x + a*f)*e^5 - 4*(2*a*c^2*d^2*g*x + a*c^2*
d^2*f)*e^3 + 2*(2*a*c^4*d^4*g*x + a*c^4*d^4*f)*e + 2*(b*c^3*d^4*g*e + b*c*f
*x*e^5 - (b*c*d*g*x - b*c*d*f)*e^4 - (b*c^3*d^2*f*x + b*c*d^2*g)*e^3 + (b*c
^3*d^3*g*x - b*c^3*d^3*f)*e^2)*sqrt(-c^2*x^2 + 1))/(2*c^4*d^5*x*e^3 + c^4*d
^6*e^2 - 4*c^2*d^3*x*e^5 + x^2*e^8 + 2*d*x*e^7 - (2*c^2*d^2*x^2 - d^2)*e^6
+ (c^4*d^4*x^2 - 2*c^2*d^4)*e^4), -1/2*(a*c^4*d^5*g - 2*a*c^2*d^3*g*e^2 + a
*d*g*e^4 - (b*c^3*d^4*g - 2*b*c*g*x^2*e^4 + (b*c^3*d*f*x^2 - 4*b*c*d*g*x)*e
^3 + (b*c^3*d^2*g*x^2 + 2*b*c^3*d^2*f*x - 2*b*c*d^2*g)*e^2 + (2*b*c^3*d^3*g
*x + b*c^3*d^3*f)*e)*sqrt(c^2*d^2 - e^2)*arctan(-sqrt(c^2*d^2 - e^2)*(c^2*d
*x + e)*sqrt(-c^2*x^2 + 1)/(c^4*d^2*x^2 - c^2*d^2 - (c^2*x^2 - 1)*e^2)) + (
b*c^4*d^5*g - 2*b*c^2*d^3*g*e^2 + b*d*g*e^4 + (2*b*g*x + b*f)*e^5 - 2*(2*b*
c^2*d^2*g*x + b*c^2*d^2*f)*e^3 + (2*b*c^4*d^4*g*x + b*c^4*d^4*f)*e)*arcsin(
c*x) + (2*a*g*x + a*f)*e^5 - 2*(2*a*c^2*d^2*g*x + a*c^2*d^2*f)*e^3 + (2*a*c
^4*d^4*g*x + a*c^4*d^4*f)*e + (b*c^3*d^4*g*e + b*c*f*x*e^5 - (b*c*d*g*x - b
*c*d*f)*e^4 - (b*c^3*d^2*f*x + b*c*d^2*g)*e^3 + (b*c^3*d^3*g*x - b*c^3*d^3*
f)*e^2)*sqrt(-c^2*x^2 + 1))/(2*c^4*d^5*x*e^3 + c^4*d^6*e^2 - 4*c^2*d^3*x*e^
5 + x^2*e^8 + 2*d*x*e^7 - (2*c^2*d^2*x^2 - d^2)*e^6 + (c^4*d^4*x^2 - 2*c^2*
d^4)*e^4)]
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(cx))(f + gx)}{(d + ex)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))/(e*x+d)**3,x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x)/(d + e*x)**3, x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^3,x, algorithm="giac")
[Out] integrate((g*x + f)*(b*arcsin(c*x) + a)/(e*x + d)^3, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)\,\left(a+b\,\mathrm{asin}(c\,x)\right)}{(d+e\,x)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(a + b*asin(c*x)))/(d + e*x)^3,x)
[Out] int(((f + g*x)*(a + b*asin(c*x)))/(d + e*x)^3, x)
```

3.94 $\int \frac{(f+gx)(a+b\text{ArcSin}(cx))}{(d+ex)^4}\,dx$

Optimal. Leaf size=257

$$\frac{bc(ef-dg)\sqrt{1-c^2x^2}}{6e\left(c^2d^2-e^2\right)(d+ex)^2}+\frac{bc(c^2df-eg)\sqrt{1-c^2x^2}}{2\left(c^2d^2-e^2\right)^2(d+ex)}-\frac{(ef-dg)(a+b\text{ArcSin}(cx))}{3e^2(d+ex)^3}-\frac{g(a+b\text{ArcSin}(cx))}{2e^2(d+ex)^2}+\frac{bc^3(}{}$$

```
[Out] -1/3*(-d*g+e*f)*(a+b*arcsin(c*x))/e^2/(e*x+d)^3-1/2*g*(a+b*arcsin(c*x))/e^2
/(e*x+d)^2+1/6*b*c^3*(e^2*(-4*d*g+e*f)+c^2*d^2*(d*g+2*e*f))*arctan((c^2*d*x
+e)/(c^2*d^2-e^2)^(1/2)/(-c^2*x^2+1)^(1/2))/e^2/(c^2*d^2-e^2)^(5/2)+1/6*b*c
*(-d*g+e*f)*(-c^2*x^2+1)^(1/2)/e/(c^2*d^2-e^2)/(e*x+d)^2+1/2*b*c*(c^2*d*f-e
*g)*(-c^2*x^2+1)^(1/2)/(c^2*d^2-e^2)^2/(e*x+d)
```

Rubi [A]
time = 0.30, antiderivative size = 257, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$, Rules used = {45, 4837, 12, 849, 821, 739, 210}

$$-\frac{(ef-dg)(a+b\text{ArcSin}(cx))}{3e^2(d+ex)^3}-\frac{g(a+b\text{ArcSin}(cx))}{2e^2(d+ex)^2}+\frac{bc^3\text{ArcTan}\left(\frac{c^2dx+e}{\sqrt{1-c^2x^2}\sqrt{c^2d^2-e^2}}\right)\left(c^2d^2(dg+2ef)+e^2(ef-4dg)\right)}{6e^2\left(c^2d^2-e^2\right)^{5/2}}+\frac{bc\sqrt{1-c^2x^2}\,(c^2df-eg)}{2\left(c^2d^2-e^2\right)^2(d+ex)}+\frac{bc\sqrt{1-c^2x^2}\,(ef-dg)}{6e\left(c^2d^2-e^2\right)(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x]))/(d + e*x)^4,x]
```

```
[Out] (b*c*(e*f - d*g)*Sqrt[1 - c^2*x^2])/(6*e*(c^2*d^2 - e^2)*(d + e*x)^2) + (b*
c*(c^2*d*f - e*g)*Sqrt[1 - c^2*x^2])/(2*(c^2*d^2 - e^2)^2*(d + e*x)) - ((e*
f - d*g)*(a + b*ArcSin[c*x]))/(3*e^2*(d + e*x)^3) - (g*(a + b*ArcSin[c*x]))
/(2*e^2*(d + e*x)^2) + (b*c^3*(e^2*(e*f - 4*d*g) + c^2*d^2*(2*e*f + d*g))*A
rcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(6*e^2*(c^2*d
^2 - e^2)^(5/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 739

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(-(e*f - d*g))*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1
)/(2*(p + 1)*(c*d^2 + a*e^2))), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2),
Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m,
p}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 849

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(e*f - d*g)*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1)/(
(m + 1)*(c*d^2 + a*e^2))), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 4837

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rubi steps

$$\int \frac{(f+gx)(a+b\sin^{-1}(cx))}{(d+ex)^4}dx = -\frac{(ef-dg)(a+b\sin^{-1}(cx))}{3e^2(d+ex)^3} - \frac{g(a+b\sin^{-1}(cx))}{2e^2(d+ex)^2} - (bc)\int \frac{-2ef-dg}{6e^2(d+ex)^3}$$

$$= -\frac{(ef-dg)(a+b\sin^{-1}(cx))}{3e^2(d+ex)^3} - \frac{g(a+b\sin^{-1}(cx))}{2e^2(d+ex)^2} - \frac{(bc)\int \frac{-2ef-dg-3eg}{(d+ex)^3\sqrt{1-c}}}{6e^2}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{6e(c^2d^2-e^2)(d+ex)^2} - \frac{(ef-dg)(a+b\sin^{-1}(cx))}{3e^2(d+ex)^3} - \frac{g(a+b\sin^{-1}(cx}{2e^2(d+ex)^2}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{6e(c^2d^2-e^2)(d+ex)^2} + \frac{bc(c^2df-eg)\sqrt{1-c^2x^2}}{2(c^2d^2-e^2)^2(d+ex)} - \frac{(ef-dg)(a+b\,\mathrm{si}}{3e^2(d+ex}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{6e(c^2d^2-e^2)(d+ex)^2} + \frac{bc(c^2df-eg)\sqrt{1-c^2x^2}}{2(c^2d^2-e^2)^2(d+ex)} - \frac{(ef-dg)(a+b\,\mathrm{si}}{3e^2(d+ex}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{6e(c^2d^2-e^2)(d+ex)^2} + \frac{bc(c^2df-eg)\sqrt{1-c^2x^2}}{2(c^2d^2-e^2)^2(d+ex)} - \frac{(ef-dg)(a+b\,\mathrm{si}}{3e^2(d+ex}$$

Mathematica [A]
time = 0.48, size = 321, normalized size = 1.25

$$\frac{\frac{a(-2ef+2dg)}{(d+ex)^3} - \frac{3ag}{(d+ex)^2} + \frac{bce\sqrt{1-c^2x^2}\,(c^2d(4def-d^2g+3e^2fx)-e^2(2dg+e(f+3gx)))}{(-c^2d^2+e^2)^2(d+ex)^2} - \frac{b(2ef+dg+3egx)\mathrm{ArcSin}(cx)}{(d+ex)^3} + \frac{bc^3(e^2(ef-4dg)+c^2d^2(2ef+dg))\log(d+ex)}{(-cd+e)^2(cd+e)^2\sqrt{-c^2d^2+e^2}} - \frac{bc^3(e^2(ef-4dg)+c^2d^2(2ef+dg))\log\left(e+c^2dx+\sqrt{-c^2d^2+e^2}\sqrt{1-c^2x^2}\right)}{(-cd+e)^2(cd+e)^2\sqrt{-c^2d^2+e^2}}}{6e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x]))/(d + e*x)^4,x]
```

```
[Out] ((a*(-2*e*f + 2*d*g))/(d + e*x)^3 - (3*a*g)/(d + e*x)^2 + (b*c*e*Sqrt[1 - c
^2*x^2]*(c^2*d*(4*d*e*f - d^2*g + 3*e^2*f*x) - e^2*(2*d*g + e*(f + 3*g*x)))
)/((-(c^2*d^2) + e^2)^2*(d + e*x)^2) - (b*(2*e*f + d*g + 3*e*g*x)*ArcSin[c*
x])/(d + e*x)^3 + (b*c^3*(e^2*(e*f - 4*d*g) + c^2*d^2*(2*e*f + d*g))*Log[d
+ e*x])/((-(c*d) + e)^2*(c*d + e)^2*Sqrt[-(c^2*d^2) + e^2]) - (b*c^3*(e^2*(
e*f - 4*d*g) + c^2*d^2*(2*e*f + d*g))*Log[e + c^2*d*x + Sqrt[-(c^2*d^2) + e
^2]*Sqrt[1 - c^2*x^2]])/((-(c*d) + e)^2*(c*d + e)^2*Sqrt[-(c^2*d^2) + e^2])
)/(6*e^2)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 1257 vs. $2(237) = 474$.
time = 0.13, size = 1258, normalized size = 4.89 Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^4,x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(a*c^3*(1/3*c*(d*g-e*f)/e^2/(c*e*x+c*d)^3-1/2*g/e^2/(c*e*x+c*d)^2)+1/3*
b*c^4*arcsin(c*x)/e^2/(c*e*x+c*d)^3*d*g-1/3*b*c^4*arcsin(c*x)/e/(c*e*x+c*d)
^3*f-1/2*b*c^3*arcsin(c*x)*g/e^2/(c*e*x+c*d)^2-1/6*b*c^4/e^3/(c^2*d^2-e^2)/
(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*
d*g+1/6*b*c^4/e^2/(c^2*d^2-e^2)/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+
d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f-1/2*b*c^5/e^2*d^2/(c^2*d^2-e^2)^2/(c*x+d*
c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*g+1/2*b*c
^5/e*d/(c^2*d^2-e^2)^2/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2
*d^2-e^2)/e^2)^(1/2)*f+1/2*b*c^6/e^3*d^3/(c^2*d^2-e^2)^2/(-(c^2*d^2-e^2)/e^
2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2
)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+
d*c/e))*g-1/2*b*c^6/e^2*d^2/(c^2*d^2-e^2)^2/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((
-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*
x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*f-2/3
*b*c^4/e^3/(c^2*d^2-e^2)/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^
2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*
(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*d*g+1/6*b*c^4/e^2/(c^2*d
^2-e^2)/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*
c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*
d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*f+1/2*b*c^3/e^2*g/(c^2*d^2-e^2)/(c*x+d*c/
e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] -1/6*(3*x*e + d)*a*g/(x^3*e^5 + 3*d*x^2*e^4 + 3*d^2*x*e^3 + d^3*e^2) - 1/3*
a*f/(x^3*e^4 + 3*d*x^2*e^3 + 3*d^2*x*e^2 + d^3*e) - 1/6*((3*b*g*x*e + b*d*g
 + 2*b*f*e)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + 6*(x^3*e^5 + 3*d*x
^2*e^4 + 3*d^2*x*e^3 + d^3*e^2)*integrate(1/6*(3*b*c*g*x*e + b*c*d*g + 2*b*
c*f*e)*e^(1/2*log(c*x + 1) + 1/2*log(-c*x + 1))/(c^4*x^7*e^5 + 3*c^4*d*x^6*
e^4 - 3*c^2*d^2*x^3*e^3 - c^2*d^3*x^2*e^2 + (3*c^4*d^2*e^3 - c^2*e^5)*x^5 +
 (c^4*d^3*e^2 - 3*c^2*d*e^4)*x^4 + (c^2*x^5*e^5 + 3*c^2*d*x^4*e^4 + (3*c^2*
d^2*e^3 - e^5)*x^3 - 3*d^2*x*e^3 - d^3*e^2 + (c^2*d^3*e^2 - 3*d*e^4)*x^2)*e
^(log(c*x + 1) + log(-c*x + 1))), x))/(x^3*e^5 + 3*d*x^2*e^4 + 3*d^2*x*e^3
+ d^3*e^2)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 929 vs. 2(240) = 480.
time = 38.35, size = 1887, normalized size = 7.34

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] [-1/12*(2*a*c^6*d^7*g - 6*a*c^4*d^5*g*e^2 + 6*a*c^2*d^3*g*e^4 - 2*a*d*g*e^6
 + (b*c^5*d^6*g + b*c^3*f*x^3*e^6 - (4*b*c^3*d*g*x^3 - 3*b*c^3*d*f*x^2)*e^5
 + (2*b*c^5*d^2*f*x^3 - 12*b*c^3*d^2*g*x^2 + 3*b*c^3*d^2*f*x)*e^4 + (b*c^5*
d^3*g*x^3 + 6*b*c^5*d^3*f*x^2 - 12*b*c^3*d^3*g*x + b*c^3*d^3*f)*e^3 + (3*b*
c^5*d^4*g*x^2 + 6*b*c^5*d^4*f*x - 4*b*c^3*d^4*g)*e^2 + (3*b*c^5*d^5*g*x + 2
*b*c^5*d^5*f)*e)*sqrt(-c^2*d^2 + e^2)*log((2*c^4*d^2*x^2 + 2*c^2*d*x*e - c^
2*d^2 - 2*sqrt(-c^2*d^2 + e^2)*(c^2*d*x + e)*sqrt(-c^2*x^2 + 1) - (c^2*x^2
- 2)*e^2)/(x^2*e^2 + 2*d*x*e + d^2)) + 2*(b*c^6*d^7*g - 3*b*c^4*d^5*g*e^2 +
 3*b*c^2*d^3*g*e^4 - b*d*g*e^6 - (3*b*g*x + 2*b*f)*e^7 + 3*(3*b*c^2*d^2*g*x
 + 2*b*c^2*d^2*f)*e^5 - 3*(3*b*c^4*d^4*g*x + 2*b*c^4*d^4*f)*e^3 + (3*b*c^6*
d^6*g*x + 2*b*c^6*d^6*f)*e)*arcsin(c*x) - 2*(3*a*g*x + 2*a*f)*e^7 + 6*(3*a*
c^2*d^2*g*x + 2*a*c^2*d^2*f)*e^5 - 6*(3*a*c^4*d^4*g*x + 2*a*c^4*d^4*f)*e^3
+ 2*(3*a*c^6*d^6*g*x + 2*a*c^6*d^6*f)*e + 2*(b*c^5*d^6*g*e - (3*b*c*g*x^2 +
 b*c*f*x)*e^7 + (3*b*c^3*d*f*x^2 - 5*b*c*d*g*x - b*c*d*f)*e^6 + (3*b*c^3*d^
2*g*x^2 + 8*b*c^3*d^2*f*x - 2*b*c*d^2*g)*e^5 - (3*b*c^5*d^3*f*x^2 - 4*b*c^3
*d^3*g*x - 5*b*c^3*d^3*f)*e^4 - (7*b*c^5*d^4*f*x - b*c^3*d^4*g)*e^3 + (b*c^
5*d^5*g*x - 4*b*c^5*d^5*f)*e^2)*sqrt(-c^2*x^2 + 1))/(3*c^6*d^8*x*e^3 + c^6*
d^9*e^2 - x^3*e^11 - 3*d*x^2*e^10 + 3*(c^2*d^2*x^3 - d^2*x)*e^9 + (9*c^2*d^
3*x^2 - d^3)*e^8 - 3*(c^4*d^4*x^3 - 3*c^2*d^4*x)*e^7 - 3*(3*c^4*d^5*x^2 - c
^2*d^5)*e^6 + (c^6*d^6*x^3 - 9*c^4*d^6*x)*e^5 + 3*(c^6*d^7*x^2 - c^4*d^7)*e
^4), -1/6*(a*c^6*d^7*g - 3*a*c^4*d^5*g*e^2 + 3*a*c^2*d^3*g*e^4 - a*d*g*e^6
- (b*c^5*d^6*g + b*c^3*f*x^3*e^6 - (4*b*c^3*d*g*x^3 - 3*b*c^3*d*f*x^2)*e^5
+ (2*b*c^5*d^2*f*x^3 - 12*b*c^3*d^2*g*x^2 + 3*b*c^3*d^2*f*x)*e^4 + (b*c^5*d
^3*g*x^3 + 6*b*c^5*d^3*f*x^2 - 12*b*c^3*d^3*g*x + b*c^3*d^3*f)*e^3 + (3*b*c
^5*d^4*g*x^2 + 6*b*c^5*d^4*f*x - 4*b*c^3*d^4*g)*e^2 + (3*b*c^5*d^5*g*x + 2*
b*c^5*d^5*f)*e)*sqrt(c^2*d^2 - e^2)*arctan(-sqrt(c^2*d^2 - e^2)*(c^2*d*x +
e)*sqrt(-c^2*x^2 + 1)/(c^4*d^2*x^2 - c^2*d^2 - (c^2*x^2 - 1)*e^2)) + (b*c^6
*d^7*g - 3*b*c^4*d^5*g*e^2 + 3*b*c^2*d^3*g*e^4 - b*d*g*e^6 - (3*b*g*x + 2*b
*f)*e^7 + 3*(3*b*c^2*d^2*g*x + 2*b*c^2*d^2*f)*e^5 - 3*(3*b*c^4*d^4*g*x + 2*
b*c^4*d^4*f)*e^3 + (3*b*c^6*d^6*g*x + 2*b*c^6*d^6*f)*e)*arcsin(c*x) - (3*a*
g*x + 2*a*f)*e^7 + 3*(3*a*c^2*d^2*g*x + 2*a*c^2*d^2*f)*e^5 - 3*(3*a*c^4*d^4
*g*x + 2*a*c^4*d^4*f)*e^3 + (3*a*c^6*d^6*g*x + 2*a*c^6*d^6*f)*e + (b*c^5*d^
6*g*e - (3*b*c*g*x^2 + b*c*f*x)*e^7 + (3*b*c^3*d*f*x^2 - 5*b*c*d*g*x - b*c*
d*f)*e^6 + (3*b*c^3*d^2*g*x^2 + 8*b*c^3*d^2*f*x - 2*b*c*d^2*g)*e^5 - (3*b*c
^5*d^3*f*x^2 - 4*b*c^3*d^3*g*x - 5*b*c^3*d^3*f)*e^4 - (7*b*c^5*d^4*f*x - b*
c^3*d^4*g)*e^3 + (b*c^5*d^5*g*x - 4*b*c^5*d^5*f)*e^2)*sqrt(-c^2*x^2 + 1))/(
3*c^6*d^8*x*e^3 + c^6*d^9*e^2 - x^3*e^11 - 3*d*x^2*e^10 + 3*(c^2*d^2*x^3 -
d^2*x)*e^9 + (9*c^2*d^3*x^2 - d^3)*e^8 - 3*(c^4*d^4*x^3 - 3*c^2*d^4*x)*e^7
- 3*(3*c^4*d^5*x^2 - c^2*d^5)*e^6 + (c^6*d^6*x^3 - 9*c^4*d^6*x)*e^5 + 3*(c^
6*d^7*x^2 - c^4*d^7)*e^4)]
```

Sympy [**F**]

time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(cx))(f + gx)}{(d + ex)^4} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))/(e*x+d)**4,x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x)/(d + e*x)**4, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] integrate((g*x + f)*(b*arcsin(c*x) + a)/(e*x + d)^4, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f + g\,x)\,(a + b\,\mathrm{asin}(c\,x))}{(d + e\,x)^4} \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(a + b*asin(c*x)))/(d + e*x)^4,x)
```

```
[Out] int(((f + g*x)*(a + b*asin(c*x)))/(d + e*x)^4, x)
```

3.95 $\int \frac{(f+gx)(a+b\text{ArcSin}(cx))}{(d+ex)^5}\,dx$

Optimal. Leaf size=360

$$\frac{bc(ef-dg)\sqrt{1-c^2x^2}}{12e\left(c^2d^2-e^2\right)(d+ex)^3}-\frac{bc\left(4e^2g-c^2d(5ef-dg)\right)\sqrt{1-c^2x^2}}{24e\left(c^2d^2-e^2\right)^2(d+ex)^2}+\frac{bc^3\left(4e^2(ef-4dg)+c^2d^2(11ef+dg)\right)\sqrt{1}}{24e\left(c^2d^2-e^2\right)^3(d+ex)}$$

```
[Out] -1/4*(-d*g+e*f)*(a+b*arcsin(c*x))/e^2/(e*x+d)^4-1/3*g*(a+b*arcsin(c*x))/e^2
/(e*x+d)^3-1/24*b*c^3*(4*e^4*g-c^2*d*e^2*(-13*d*g+9*e*f)-2*c^4*d^3*(d*g+3*e
*f))*arctan((c^2*d*x+e)/(c^2*d^2-e^2)^(1/2)/(-c^2*x^2+1)^(1/2))/e^2/(c^2*d^
2-e^2)^(7/2)+1/12*b*c*(-d*g+e*f)*(-c^2*x^2+1)^(1/2)/e/(c^2*d^2-e^2)/(e*x+d)
^3-1/24*b*c*(4*e^2*g-c^2*d*(-d*g+5*e*f))*(-c^2*x^2+1)^(1/2)/e/(c^2*d^2-e^2)
^2/(e*x+d)^2+1/24*b*c^3*(4*e^2*(-4*d*g+e*f)+c^2*d^2*(d*g+11*e*f))*(-c^2*x^2
+1)^(1/2)/e/(c^2*d^2-e^2)^3/(e*x+d)
```

Rubi [A]
time = 0.48, antiderivative size = 360, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$, Rules used = {45, 4837, 12, 849, 821, 739, 210}

$$-\frac{(ef-dg)(a+b\text{ArcSin}(cx))}{4e^2(d+ex)^4}-\frac{g(a+b\text{ArcSin}(cx))}{3e^2(d+ex)^3}-\frac{bc^3\text{ArcTan}\left(\frac{c^2dx+e}{\sqrt{1-c^2x^2}\sqrt{c^2d^2-e^2}}\right)\left(-2c^4d^3(dg+3ef)-c^2de^2(9ef-13dg)+4e^4g\right)}{24e^2\left(c^2d^2-e^2\right)^{7/2}}-\frac{bc\sqrt{1-c^2x^2}\left(4e^2g-c^2d(5ef-dg)\right)}{24e\left(c^2d^2-e^2\right)^2(d+ex)^2}+\frac{bc\sqrt{1-c^2x^2}(ef-dg)}{12e\left(c^2d^2-e^2\right)(d+ex)^3}+\frac{bc^3\sqrt{1-c^2x^2}\left(c^2d^2(dg+11ef)+4e^2(ef-4dg)\right)}{24e\left(c^2d^2-e^2\right)^3(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x]))/(d + e*x)^5,x]
```

```
[Out] (b*c*(e*f - d*g)*Sqrt[1 - c^2*x^2])/(12*e*(c^2*d^2 - e^2)*(d + e*x)^3) - (b
*c*(4*e^2*g - c^2*d*(5*e*f - d*g))*Sqrt[1 - c^2*x^2])/(24*e*(c^2*d^2 - e^2)
^2*(d + e*x)^2) + (b*c^3*(4*e^2*(e*f - 4*d*g) + c^2*d^2*(11*e*f + d*g))*Sqr
t[1 - c^2*x^2])/(24*e*(c^2*d^2 - e^2)^3*(d + e*x)) - ((e*f - d*g)*(a + b*Ar
cSin[c*x]))/(4*e^2*(d + e*x)^4) - (g*(a + b*ArcSin[c*x]))/(3*e^2*(d + e*x)^
3) - (b*c^3*(4*e^4*g - c^2*d*e^2*(9*e*f - 13*d*g) - 2*c^4*d^3*(3*e*f + d*g)
)*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(24*e^2*(c
^2*d^2 - e^2)^(7/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
```

```
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 739

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(-(e*f - d*g))*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1
)/(2*(p + 1)*(c*d^2 + a*e^2))), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2),
Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m,
p}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 849

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(e*f - d*g)*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1)/(
(m + 1)*(c*d^2 + a*e^2))), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 4837

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rubi steps

$$\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{(d+ex)^5}\,dx = -\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{4e^2(d+ex)^4} - \frac{g(a+b\sin^{-1}(cx))}{3e^2(d+ex)^3} - (bc)\int \frac{-3ef-d\cdots}{12e^2(d+ex)\cdots}$$

$$= -\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{4e^2(d+ex)^4} - \frac{g(a+b\sin^{-1}(cx))}{3e^2(d+ex)^3} - \frac{(bc)\int \frac{-3ef-dg-4eg\cdots}{(d+ex)^4\sqrt{1-c\cdots}}}{12e^2}\cdots$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{12e\left(c^2d^2-e^2\right)(d+ex)^3} - \frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{4e^2(d+ex)^4} - \frac{g(a+b\sin^{-1}(c\cdots}{3e^2(d+ex)^3\cdots}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{12e\left(c^2d^2-e^2\right)(d+ex)^3} - \frac{bc(4e^2g-c^2d(5ef-dg))\sqrt{1-c^2x^2}}{24e\left(c^2d^2-e^2\right)^2(d+ex)^2} - \frac{(ef\cdots}{\cdots}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{12e\left(c^2d^2-e^2\right)(d+ex)^3} - \frac{bc(4e^2g-c^2d(5ef-dg))\sqrt{1-c^2x^2}}{24e\left(c^2d^2-e^2\right)^2(d+ex)^2} + \frac{bc^3(4\cdots}{\cdots}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{12e\left(c^2d^2-e^2\right)(d+ex)^3} - \frac{bc(4e^2g-c^2d(5ef-dg))\sqrt{1-c^2x^2}}{24e\left(c^2d^2-e^2\right)^2(d+ex)^2} + \frac{bc^3(4\cdots}{\cdots}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{12e\left(c^2d^2-e^2\right)(d+ex)^3} - \frac{bc(4e^2g-c^2d(5ef-dg))\sqrt{1-c^2x^2}}{24e\left(c^2d^2-e^2\right)^2(d+ex)^2} + \frac{bc^3(4\cdots}{\cdots}$$

Mathematica [A]
time = 0.78, size = 418, normalized size = 1.16

$$\frac{\frac{a(-6ef+6dg)}{(d+ex)^4} - \frac{8ag}{(d+ex)^3} - \frac{be\sqrt{1-c^2x^2}\left(c^5d^2\left(-2d^3g+11e^3fx^2+d^2e(18f+gx)+de^2x(27f+gx)\right)+2ce^4(dg+e(f+2gx))-c^3e^2\left(15d^3g-4e^3fx^2+5d^2e(f+7gx)+de^2x(-3f+16gx)\right)\right)}{\left(-c^2d^2+e^2\right)^3(d+ex)^3} - \frac{2b(3ef+dg+4egx)\mathrm{ArcSin}(cx)}{(d+ex)^4} + \frac{bc^3\left(4e^4g-2c^4d^3(3ef+dg)+c^2de^2(-9ef+13dg)\right)\log(d+ex)}{(-cd+e)^3(cd+e)^3\sqrt{-c^2d^2+e^2}} + \frac{bc^3\left(-4e^4g+c^2de^2(9ef-13dg)+2c^4d^3(3ef+dg)\right)\log\left(e+c^2dx+\sqrt{-c^2d^2+e^2}\sqrt{1-c^2x^2}\right)}{(-cd+e)^3(cd+e)^3\sqrt{-c^2d^2+e^2}}}{24e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x]))/(d + e*x)^5,x]
```

```
[Out] ((a*(-6*e*f + 6*d*g))/(d + e*x)^4 - (8*a*g)/(d + e*x)^3 - (b*e*Sqrt[1 - c^2
*x^2]*(c^5*d^2*(-2*d^3*g + 11*e^3*f*x^2 + d^2*e*(18*f + g*x) + d*e^2*x*(27*
f + g*x)) + 2*c*e^4*(d*g + e*(f + 2*g*x)) - c^3*e^2*(15*d^3*g - 4*e^3*f*x^2
 + 5*d^2*e*(f + 7*g*x) + d*e^2*x*(-3*f + 16*g*x))))/((-(c^2*d^2) + e^2)^3*(
d + e*x)^3) - (2*b*(3*e*f + d*g + 4*e*g*x)*ArcSin[c*x])/(d + e*x)^4 + (b*c^
3*(4*e^4*g - 2*c^4*d^3*(3*e*f + d*g) + c^2*d*e^2*(-9*e*f + 13*d*g))*Log[d +
 e*x])/((-(c*d) + e)^3*(c*d + e)^3*Sqrt[-(c^2*d^2) + e^2]) + (b*c^3*(-4*e^4
*g + c^2*d*e^2*(9*e*f - 13*d*g) + 2*c^4*d^3*(3*e*f + d*g))*Log[e + c^2*d*x
+ Sqrt[-(c^2*d^2) + e^2]*Sqrt[1 - c^2*x^2]])/((-(c*d) + e)^3*(c*d + e)^3*Sq
rt[-(c^2*d^2) + e^2]))/(24*e^2)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 1792 vs. $2(336) = 672$.
time = 1.23, size = 1793, normalized size = 4.98

method	result	size
derivativedivides	Expression too large to display	1793
default	Expression too large to display	1793

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^5,x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(a*c^4*(-1/3*g/e^2/(c*e*x+c*d)^3+1/4*c*(d*g-e*f)/e^2/(c*e*x+c*d)^4)-1/3
*b*c^4*arcsin(c*x)*g/e^2/(c*e*x+c*d)^3+1/4*b*c^5*arcsin(c*x)/e^2/(c*e*x+c*d
)^4*d*g-1/4*b*c^5*arcsin(c*x)/e/(c*e*x+c*d)^4*f-1/12*b*c^5/e^4/(c^2*d^2-e^2
)/(c*x+d*c/e)^3*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2
)*d*g+1/12*b*c^5/e^3/(c^2*d^2-e^2)/(c*x+d*c/e)^3*(-(c*x+d*c/e)^2+2*d*c/e*(c
*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f-5/24*b*c^6/e^3*d^2/(c^2*d^2-e^2)^2/(c*
x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*g+5
/24*b*c^6/e^2*d/(c^2*d^2-e^2)^2/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+
d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f-5/8*b*c^7/e^2*d^3/(c^2*d^2-e^2)^3/(c*x+d*
c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*g+5/8*b*c
^7/e*d^2/(c^2*d^2-e^2)^3/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c
^2*d^2-e^2)/e^2)^(1/2)*f+5/8*b*c^8/e^3*d^4/(c^2*d^2-e^2)^3/(-(c^2*d^2-e^2)/
e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e
^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*
x+d*c/e))*g-5/8*b*c^8/e^2*d^3/(c^2*d^2-e^2)^3/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln
((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(
c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*f-7
/8*b*c^6/e^3*d^2/(c^2*d^2-e^2)^2/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2
-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+
2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*g+3/8*b*c^6/e^2*
d/(c^2*d^2-e^2)^2/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c
/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*
c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*f+2/3*b*c^5/e^2/(c^2*d^2-e^2)^2
/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*d
*g-1/6*b*c^5/e/(c^2*d^2-e^2)^2/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c
/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f+1/6*b*c^4/e^3*g/(c^2*d^2-e^2)/(c*x+d*c/e)^2*
(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)+1/6*b*c^4/e^3*
g/(c^2*d^2-e^2)/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e
*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/
e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(4*x*e + d)*a*g/(x^4*e^6 + 4*d*x^3*e^5 + 6*d^2*x^2*e^4 + 4*d^3*x*e^3
+ d^4*e^2) - 1/4*a*f/(x^4*e^5 + 4*d*x^3*e^4 + 6*d^2*x^2*e^3 + 4*d^3*x*e^2 +
 d^4*e) - 1/12*((4*b*g*x*e + b*d*g + 3*b*f*e)*arctan2(c*x, sqrt(c*x + 1)*sq
rt(-c*x + 1)) + 12*(x^4*e^6 + 4*d*x^3*e^5 + 6*d^2*x^2*e^4 + 4*d^3*x*e^3 + d
^4*e^2)*integrate(1/12*(4*b*c*g*x*e + b*c*d*g + 3*b*c*f*e)*e^(1/2*log(c*x +
 1) + 1/2*log(-c*x + 1))/(c^4*x^8*e^6 + 4*c^4*d*x^7*e^5 - 4*c^2*d^3*x^3*e^3
 - c^2*d^4*x^2*e^2 + (6*c^4*d^2*e^4 - c^2*e^6)*x^6 + 4*(c^4*d^3*e^3 - c^2*d
*e^5)*x^5 + (c^4*d^4*e^2 - 6*c^2*d^2*e^4)*x^4 + (c^2*x^6*e^6 + 4*c^2*d*x^5*
e^5 + (6*c^2*d^2*e^4 - e^6)*x^4 - 4*d^3*x*e^3 - d^4*e^2 + 4*(c^2*d^3*e^3 -
d*e^5)*x^3 + (c^2*d^4*e^2 - 6*d^2*e^4)*x^2)*e^(log(c*x + 1) + log(-c*x + 1)
)), x))/(x^4*e^6 + 4*d*x^3*e^5 + 6*d^2*x^2*e^4 + 4*d^3*x*e^3 + d^4*e^2)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 1399 vs. $2(333) = 666$.
time = 104.67, size = 2824, normalized size = 7.84

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] [-1/48*(4*a*c^8*d^9*g - 16*a*c^6*d^7*g*e^2 + 24*a*c^4*d^5*g*e^4 - 16*a*c^2*
d^3*g*e^6 + 4*a*d*g*e^8 + (2*b*c^7*d^8*g - 4*b*c^3*g*x^4*e^8 + (9*b*c^5*d*f
*x^4 - 16*b*c^3*d*g*x^3)*e^7 - (13*b*c^5*d^2*g*x^4 - 36*b*c^5*d^2*f*x^3 + 2
4*b*c^3*d^2*g*x^2)*e^6 + 2*(3*b*c^7*d^3*f*x^4 - 26*b*c^5*d^3*g*x^3 + 27*b*c
^5*d^3*f*x^2 - 8*b*c^3*d^3*g*x)*e^5 + 2*(b*c^7*d^4*g*x^4 + 12*b*c^7*d^4*f*x
^3 - 39*b*c^5*d^4*g*x^2 + 18*b*c^5*d^4*f*x - 2*b*c^3*d^4*g)*e^4 + (8*b*c^7*
d^5*g*x^3 + 36*b*c^7*d^5*f*x^2 - 52*b*c^5*d^5*g*x + 9*b*c^5*d^5*f)*e^3 + (1
2*b*c^7*d^6*g*x^2 + 24*b*c^7*d^6*f*x - 13*b*c^5*d^6*g)*e^2 + 2*(4*b*c^7*d^7
*g*x + 3*b*c^7*d^7*f)*e)*sqrt(-c^2*d^2 + e^2)*log((2*c^4*d^2*x^2 + 2*c^2*d*
x*e - c^2*d^2 - 2*sqrt(-c^2*d^2 + e^2)*(c^2*d*x + e)*sqrt(-c^2*x^2 + 1) - (
c^2*x^2 - 2)*e^2)/(x^2*e^2 + 2*d*x*e + d^2)) + 4*(b*c^8*d^9*g - 4*b*c^6*d^7
*g*e^2 + 6*b*c^4*d^5*g*e^4 - 4*b*c^2*d^3*g*e^6 + b*d*g*e^8 + (4*b*g*x + 3*b
*f)*e^9 - 4*(4*b*c^2*d^2*g*x + 3*b*c^2*d^2*f)*e^7 + 6*(4*b*c^4*d^4*g*x + 3*
b*c^4*d^4*f)*e^5 - 4*(4*b*c^6*d^6*g*x + 3*b*c^6*d^6*f)*e^3 + (4*b*c^8*d^8*g
*x + 3*b*c^8*d^8*f)*e)*arcsin(c*x) + 4*(4*a*g*x + 3*a*f)*e^9 - 16*(4*a*c^2*
d^2*g*x + 3*a*c^2*d^2*f)*e^7 + 24*(4*a*c^4*d^4*g*x + 3*a*c^4*d^4*f)*e^5 - 1
6*(4*a*c^6*d^6*g*x + 3*a*c^6*d^6*f)*e^3 + 4*(4*a*c^8*d^8*g*x + 3*a*c^8*d^8*
f)*e + 2*(2*b*c^7*d^8*g*e + 2*(2*b*c^3*f*x^3 + 2*b*c*g*x^2 + b*c*f*x)*e^9 -
 (16*b*c^3*d*g*x^3 - 7*b*c^3*d*f*x^2 - 6*b*c*d*g*x - 2*b*c*d*f)*e^8 + (7*b*
c^5*d^2*f*x^3 - 55*b*c^3*d^2*g*x^2 - 4*b*c^3*d^2*f*x + 2*b*c*d^2*g)*e^7 + (
17*b*c^5*d^3*g*x^3 + 31*b*c^5*d^3*f*x^2 - 56*b*c^3*d^3*g*x - 7*b*c^3*d^3*f)
*e^6 - (11*b*c^7*d^4*f*x^3 - 53*b*c^5*d^4*g*x^2 - 47*b*c^5*d^4*f*x + 17*b*c
^3*d^4*g)*e^5 - (b*c^7*d^5*g*x^3 + 38*b*c^7*d^5*f*x^2 - 49*b*c^5*d^5*g*x -
```

```
23*b*c^5*d^5*f)*e^4 - (2*b*c^7*d^6*g*x^2 + 45*b*c^7*d^6*f*x - 13*b*c^5*d^6*
g)*e^3 + (b*c^7*d^7*g*x - 18*b*c^7*d^7*f)*e^2)*sqrt(-c^2*x^2 + 1))/(4*c^8*d
^11*x*e^3 + c^8*d^12*e^2 + x^4*e^14 + 4*d*x^3*e^13 - 2*(2*c^2*d^2*x^4 - 3*d
^2*x^2)*e^12 - 4*(4*c^2*d^3*x^3 - d^3*x)*e^11 + (6*c^4*d^4*x^4 - 24*c^2*d^4
*x^2 + d^4)*e^10 + 8*(3*c^4*d^5*x^3 - 2*c^2*d^5*x)*e^9 - 4*(c^6*d^6*x^4 - 9
*c^4*d^6*x^2 + c^2*d^6)*e^8 - 8*(2*c^6*d^7*x^3 - 3*c^4*d^7*x)*e^7 + (c^8*d^
8*x^4 - 24*c^6*d^8*x^2 + 6*c^4*d^8)*e^6 + 4*(c^8*d^9*x^3 - 4*c^6*d^9*x)*e^5
 + 2*(3*c^8*d^10*x^2 - 2*c^6*d^10)*e^4), -1/24*(2*a*c^8*d^9*g - 8*a*c^6*d^7
*g*e^2 + 12*a*c^4*d^5*g*e^4 - 8*a*c^2*d^3*g*e^6 + 2*a*d*g*e^8 - (2*b*c^7*d^
8*g - 4*b*c^3*g*x^4*e^8 + (9*b*c^5*d*f*x^4 - 16*b*c^3*d*g*x^3)*e^7 - (13*b*
c^5*d^2*g*x^4 - 36*b*c^5*d^2*f*x^3 + 24*b*c^3*d^2*g*x^2)*e^6 + 2*(3*b*c^7*d
^3*f*x^4 - 26*b*c^5*d^3*g*x^3 + 27*b*c^5*d^3*f*x^2 - 8*b*c^3*d^3*g*x)*e^5 +
 2*(b*c^7*d^4*g*x^4 + 12*b*c^7*d^4*f*x^3 - 39*b*c^5*d^4*g*x^2 + 18*b*c^5*d^
4*f*x - 2*b*c^3*d^4*g)*e^4 + (8*b*c^7*d^5*g*x^3 + 36*b*c^7*d^5*f*x^2 - 52*b
*c^5*d^5*g*x + 9*b*c^5*d^5*f)*e^3 + (12*b*c^7*d^6*g*x^2 + 24*b*c^7*d^6*f*x
- 13*b*c^5*d^6*g)*e^2 + 2*(4*b*c^7*d^7*g*x + 3*b*c^7*d^7*f)*e)*sqrt(c^2*d^2
 - e^2)*arctan(-sqrt(c^2*d^2 - e^2)*(c^2*d*x + e)*sqrt(-c^2*x^2 + 1)/(c^4*d
^2*x^2 - c^2*d^2 - (c^2*x^2 - 1)*e^2)) + 2*(b*c^8*d^9*g - 4*b*c^6*d^7*g*e^2
 + 6*b*c^4*d^5*g*e^4 - 4*b*c^2*d^3*g*e^6 + b*d*g*e^8 + (4*b*g*x + 3*b*f)*e^
9 - 4*(4*b*c^2*d^2*g*x + 3*b*c^2*d^2*f)*e^7 + 6*(4*b*c^4*d^4*g*x + 3*b*c^4*
d^4*f)*e^5 - 4*(4*b*c^6*d^6*g*x + 3*b*c^6*d^6*f)*e^3 + (4*b*c^8*d^8*g*x + 3
*b*c^8*d^8*f)*e)*arcsin(c*x) + 2*(4*a*g*x + 3*a*f)*e^9 - 8*(4*a*c^2*d^2*g*x
 + 3*a*c^2*d^2*f)*e^7 + 12*(4*a*c^4*d^4*g*x + 3*a*c^4*d^4*f)*e^5 - 8*(4*a*c
^6*d^6*g*x + 3*a*c^6*d^6*f)*e^3 + 2*(4*a*c^8*d^8*g*x + 3*a*c^8*d^8*f)*e + (
2*b*c^7*d^8*g*e + 2*(2*b*c^3*f*x^3 + 2*b*c*g*x^2 + b*c*f*x)*e^9 - (16*b*c^3
*d*g*x^3 - 7*b*c^3*d*f*x^2 - 6*b*c*d*g*x - 2*b*c*d*f)*e^8 + (7*b*c^5*d^2*f*
x^3 - 55*b*c^3*d^2*g*x^2 - 4*b*c^3*d^2*f*x + 2*b*c*d^2*g)*e^7 + (17*b*c^5*d
^3*g*x^3 + 31*b*c^5*d^3*f*x^2 - 56*b*c^3*d^3*g*x - 7*b*c^3*d^3*f)*e^6 - (11
*b*c^7*d^4*f*x^3 - 53*b*c^5*d^4*g*x^2 - 47*b*c^5*d^4*f*x + 17*b*c^3*d^4*g)*
e^5 - (b*c^7*d^5*g*x^3 + 38*b*c^7*d^5*f*x^2 - 49*b*c^5*d^5*g*x - 23*b*c^5*d
^5*f)*e^4 - (2*b*c^7*d^6*g*x^2 + 45*b*c^7*d^6*f*x - 13*b*c^5*d^6*g)*e^3 + (
b*c^7*d^7*g*x - 18*b*c^7*d^7*f)*e^2)*sqrt(-c^2*x^2 + 1))/(4*c^8*d^11*x*e^3
+ c^8*d^12*e^2 + x^4*e^14 + 4*d*x^3*e^13 - 2*(2*c^2*d^2*x^4 - 3*d^2*x^2)*e^
12 - 4*(4*c^2*d^3*x^3 - d^3*x)*e^11 + (6*c^4*d^4*x^4 - 24*c^2*d^4*x^2 + d^4
)*e^10 + 8*(3*c^4*d^5*x^3 - 2*c^2*d^5*x)*e^9 - 4*(c^6*d^6*x^4 - 9*c^4*d^6*x
^2 + c^2*d^6)*e^8 - 8*(2*c^6*d^7*x^3 - 3*c^4*d^7*x)*e^7 + (c^8*d^8*x^4 - 24
*c^6*d^8*x^2 + 6*c^4*d^8)*e^6 + 4*(c^8*d^9*x^3 - 4*c^6*d^9*x)*e^5 + 2*(3*c^
8*d^10*x^2 - 2*c^6*d^10)*e^4)]
```

Sympy [F]

time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(cx))(f + gx)}{(d + ex)^5} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))/(e*x+d)**5,x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x)/(d + e*x)**5, x)
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)\,\left(a+b\,\mathrm{asin}(c\,x)\right)}{{(d+e\,x)}^5} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(a + b*asin(c*x)))/(d + e*x)^5,x)
```

```
[Out] int(((f + g*x)*(a + b*asin(c*x)))/(d + e*x)^5, x)
```

3.96 $\int \frac{(f+gx)(a+b\text{ArcSin}(cx))}{(d+ex)^6}\,dx$

Optimal. Leaf size=457

$$\frac{bc(ef-dg)\sqrt{1-c^2x^2}}{20e\left(c^2d^2-e^2\right)(d+ex)^4}-\frac{bc(5e^2g-c^2d(7ef-2dg))\sqrt{1-c^2x^2}}{60e\left(c^2d^2-e^2\right)^2(d+ex)^3}+\frac{bc^3(e^2(9ef-34dg)+c^2d^2(26ef-dg))}{120e\left(c^2d^2-e^2\right)^3(d+ex)^2}$$

```
[Out] -1/5*(-d*g+e*f)*(a+b*arcsin(c*x))/e^2/(e*x+d)^5-1/4*g*(a+b*arcsin(c*x))/e^2
/(e*x+d)^4+1/40*b*c^5*(c^2*d^2*e^2*(-19*d*g+24*e*f)+3*e^4*(-6*d*g+e*f)+2*c^
4*d^4*(d*g+4*e*f))*arctan((c^2*d*x+e)/(c^2*d^2-e^2)^(1/2)/(-c^2*x^2+1)^(1/2
))/e^2/(c^2*d^2-e^2)^(9/2)+1/20*b*c*(-d*g+e*f)*(-c^2*x^2+1)^(1/2)/e/(c^2*d^
2-e^2)/(e*x+d)^4-1/60*b*c*(5*e^2*g-c^2*d*(-2*d*g+7*e*f))*(-c^2*x^2+1)^(1/2)
/e/(c^2*d^2-e^2)^2/(e*x+d)^3+1/120*b*c^3*(e^2*(-34*d*g+9*e*f)+c^2*d^2*(-d*g
+26*e*f))*(-c^2*x^2+1)^(1/2)/e/(c^2*d^2-e^2)^3/(e*x+d)^2-1/24*b*c^3*(4*e^4*
g-c^2*d*e^2*(-18*d*g+11*e*f)-c^4*d^3*(d*g+10*e*f))*(-c^2*x^2+1)^(1/2)/e/(c^
2*d^2-e^2)^4/(e*x+d)
```

Rubi [A]
time = 0.68, antiderivative size = 457, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$, Rules used = {45, 4837, 12, 849, 821, 739, 210}

$$-\frac{(ef-dg)(a+b\text{ArcSin}(cx))}{5e^2(d+ex)^5}-\frac{g(a+b\text{ArcSin}(cx))}{4e^2(d+ex)^4}+\frac{bc^5\text{ArcTan}\left(\frac{c^2dx+e}{\sqrt{1-c^2x^2}\sqrt{c^2d^2-e^2}}\right)\left(2c^4d^4(dg+4ef)+c^2d^2e^2(24ef-19dg)+3e^4(ef-6dg)\right)}{40e^2\left(c^2d^2-e^2\right)^{9/2}}-\frac{bc\sqrt{1-c^2x^2}\left(5e^2g-c^2d(7ef-2dg)\right)}{60e\left(c^2d^2-e^2\right)^2(d+ex)^3}+\frac{bc\sqrt{1-c^2x^2}(ef-dg)}{20e\left(c^2d^2-e^2\right)(d+ex)^4}+\frac{bc^3\sqrt{1-c^2x^2}\left(c^2d^2(26ef-dg)+e^2(9ef-34dg)\right)}{120e\left(c^2d^2-e^2\right)^3(d+ex)^2}-\frac{bc^3\sqrt{1-c^2x^2}\left(c^4(-d^3)(dg+10ef)-c^2de^2(11ef-18dg)+4e^4g\right)}{24e\left(c^2d^2-e^2\right)^4(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x]))/(d + e*x)^6,x]
```

```
[Out] (b*c*(e*f - d*g)*Sqrt[1 - c^2*x^2])/(20*e*(c^2*d^2 - e^2)*(d + e*x)^4) - (b
*c*(5*e^2*g - c^2*d*(7*e*f - 2*d*g))*Sqrt[1 - c^2*x^2])/(60*e*(c^2*d^2 - e^
2)^2*(d + e*x)^3) + (b*c^3*(e^2*(9*e*f - 34*d*g) + c^2*d^2*(26*e*f - d*g))*
Sqrt[1 - c^2*x^2])/(120*e*(c^2*d^2 - e^2)^3*(d + e*x)^2) - (b*c^3*(4*e^4*g
- c^2*d*e^2*(11*e*f - 18*d*g) - c^4*d^3*(10*e*f + d*g))*Sqrt[1 - c^2*x^2])/
(24*e*(c^2*d^2 - e^2)^4*(d + e*x)) - ((e*f - d*g)*(a + b*ArcSin[c*x]))/(5*e
^2*(d + e*x)^5) - (g*(a + b*ArcSin[c*x]))/(4*e^2*(d + e*x)^4) + (b*c^5*(c^2
*d^2*e^2*(24*e*f - 19*d*g) + 3*e^4*(e*f - 6*d*g) + 2*c^4*d^4*(4*e*f + d*g))
*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(40*e^2*(c^
2*d^2 - e^2)^(9/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 739

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(-(e*f - d*g))*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1
)/(2*(p + 1)*(c*d^2 + a*e^2))), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2),
Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m,
p}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 849

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(e*f - d*g)*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1)/(
(m + 1)*(c*d^2 + a*e^2))), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 4837

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rubi steps

$$\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)}{(d+ex)^6}\,dx = -\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{5e^2(d+ex)^5} - \frac{g(a+b\sin^{-1}(cx))}{4e^2(d+ex)^4} - (bc)\int \frac{-4ef-}{20e^2(d+e}$$

$$= -\frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{5e^2(d+ex)^5} - \frac{g(a+b\sin^{-1}(cx))}{4e^2(d+ex)^4} - \frac{(bc)\int \frac{-4ef-dg-5}{(d+ex)^5\sqrt{1-}}}{20e^2}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{20e\left(c^2d^2-e^2\right)(d+ex)^4} - \frac{(ef-dg)\left(a+b\sin^{-1}(cx)\right)}{5e^2(d+ex)^5} - \frac{g(a+b\sin^{-1}(}{4e^2(d+ex}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{20e\left(c^2d^2-e^2\right)(d+ex)^4} - \frac{bc(5e^2g-c^2d(7ef-2dg))\sqrt{1-c^2x^2}}{60e\left(c^2d^2-e^2\right)^2(d+ex)^3} - \frac{(e}{}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{20e\left(c^2d^2-e^2\right)(d+ex)^4} - \frac{bc(5e^2g-c^2d(7ef-2dg))\sqrt{1-c^2x^2}}{60e\left(c^2d^2-e^2\right)^2(d+ex)^3} + \frac{bc}{}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{20e\left(c^2d^2-e^2\right)(d+ex)^4} - \frac{bc(5e^2g-c^2d(7ef-2dg))\sqrt{1-c^2x^2}}{60e\left(c^2d^2-e^2\right)^2(d+ex)^3} + \frac{bc}{}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{20e\left(c^2d^2-e^2\right)(d+ex)^4} - \frac{bc(5e^2g-c^2d(7ef-2dg))\sqrt{1-c^2x^2}}{60e\left(c^2d^2-e^2\right)^2(d+ex)^3} + \frac{bc}{}$$

$$= \frac{bc(ef-dg)\sqrt{1-c^2x^2}}{20e\left(c^2d^2-e^2\right)(d+ex)^4} - \frac{bc(5e^2g-c^2d(7ef-2dg))\sqrt{1-c^2x^2}}{60e\left(c^2d^2-e^2\right)^2(d+ex)^3} + \frac{bc}{}$$

Mathematica [A]
time = 0.88, size = 494, normalized size = 1.08

$$\frac{\frac{3a(-8ef+8dg)}{(d+ex)^5} - \frac{30ag}{(d+ex)^4} + \frac{bce\sqrt{1-c^2x^2}\left(-6\left(-c^2d^2+e^2\right)^3(ef-dg)-2\left(-c^2d^2+e^2\right)^2\left(5e^2g+c^2d(-7ef+2dg)\right)(d+ex)-c^2\left(c^2d^2-e^2\right)\left(c^2d^2(-26ef+dg)+e^2(-9ef+34dg)\right)(d+ex)^2+5c^2\left(-4e^4g+c^2de^2(11ef-18dg)+c^4d^3(10ef+dg)\right)(d+ex)^3\right)}{\left(-c^2d^2+e^2\right)^4(d+ex)^4} - \frac{6b(4ef+dg+5egx)\operatorname{ArcSin}(cx)}{(d+ex)^5} + \frac{3bc^5\left(c^2d^2e^2(24ef-19dg)+3e^4(ef-6dg)+2c^4d^4(4ef+dg)\right)\log(d+ex)}{(-cd+e)^4(cd+e)^4\sqrt{-c^2d^2+e^2}} - \frac{3bc^5\left(c^2d^2e^2(24ef-19dg)+3e^4(ef-6dg)+2c^4d^4(4ef+dg)\right)\log\left(e+c^2dx+\sqrt{-c^2d^2+e^2}\sqrt{1-c^2x^2}\right)}{(-cd+e)^4(cd+e)^4\sqrt{-c^2d^2+e^2}}}{120e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x]))/(d + e*x)^6,x]
```

```
[Out] ((3*a*(-8*e*f + 8*d*g))/(d + e*x)^5 - (30*a*g)/(d + e*x)^4 + (b*c*e*Sqrt[1
- c^2*x^2]*(-6*(-(c^2*d^2) + e^2)^3*(e*f - d*g) - 2*(-(c^2*d^2) + e^2)^2*(5
*e^2*g + c^2*d*(-7*e*f + 2*d*g))*(d + e*x) - c^2*(c^2*d^2 - e^2)*(c^2*d^2*(
-26*e*f + d*g) + e^2*(-9*e*f + 34*d*g))*(d + e*x)^2 + 5*c^2*(-4*e^4*g + c^2
*d*e^2*(11*e*f - 18*d*g) + c^4*d^3*(10*e*f + d*g))*(d + e*x)^3))/((-(c^2*d^
2) + e^2)^4*(d + e*x)^4) - (6*b*(4*e*f + d*g + 5*e*g*x)*ArcSin[c*x])/(d + e
*x)^5 + (3*b*c^5*(c^2*d^2*e^2*(24*e*f - 19*d*g) + 3*e^4*(e*f - 6*d*g) + 2*c
^4*d^4*(4*e*f + d*g))*Log[d + e*x])/((-(c*d) + e)^4*(c*d + e)^4*Sqrt[-(c^2*
```

```
d^2) + e^2]) - (3*b*c^5*(c^2*d^2*e^2*(24*e*f - 19*d*g) + 3*e^4*(e*f - 6*d*g
) + 2*c^4*d^4*(4*e*f + d*g))*Log[e + c^2*d*x + Sqrt[-(c^2*d^2) + e^2]*Sqrt[
1 - c^2*x^2]])/((-(c*d) + e)^4*(c*d + e)^4*Sqrt[-(c^2*d^2) + e^2]))/(120*e^
2)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 2419 vs. $2(429) = 858$.
time = 0.11, size = 2420, normalized size = 5.30

method	result	size
derivativedivides	Expression too large to display	2420
default	Expression too large to display	2420

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^6,x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(a*c^5*(-1/4*g/e^2/(c*e*x+c*d)^4+1/5*c*(d*g-e*f)/e^2/(c*e*x+c*d)^5)-1/4
*b*c^5*arcsin(c*x)*g/e^2/(c*e*x+c*d)^4+1/5*b*c^6*arcsin(c*x)/e^2/(c*e*x+c*d
)^5*d*g-1/5*b*c^6*arcsin(c*x)/e/(c*e*x+c*d)^5*f+1/12*b*c^5/e^4*g/(c^2*d^2-e
^2)/(c*x+d*c/e)^3*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1
/2)+17/60*b*c^6/e^3*g*d/(c^2*d^2-e^2)^2/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c
/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)+13/12*b*c^7/e^2*g*d^2/(c^2*d^2-e^2)
^3/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)
-11/8*b*c^8/e^3*g*d^3/(c^2*d^2-e^2)^3/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^
2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/
e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))+9/20*b*c^6/
e^3*g*d/(c^2*d^2-e^2)^2/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2
+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(
c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))-1/6*b*c^5/e^2*g/(c^2*d^2-
e^2)^2/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(
1/2)-1/20*b*c^6/e^5/(c^2*d^2-e^2)/(c*x+d*c/e)^4*(-(c*x+d*c/e)^2+2*d*c/e*(c*
x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*d*g+1/20*b*c^6/e^4/(c^2*d^2-e^2)/(c*x+d*c
/e)^4*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f-7/60*b
*c^7/e^4*d^2/(c^2*d^2-e^2)^2/(c*x+d*c/e)^3*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c
/e)-(c^2*d^2-e^2)/e^2)^(1/2)*g+7/60*b*c^7/e^3*d/(c^2*d^2-e^2)^2/(c*x+d*c/e)
^3*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f-7/24*b*c^
8/e^3*d^3/(c^2*d^2-e^2)^3/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)
-(c^2*d^2-e^2)/e^2)^(1/2)*g+7/24*b*c^8/e^2*d^2/(c^2*d^2-e^2)^3/(c*x+d*c/e)^
2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f-7/8*b*c^9/
e^2*d^4/(c^2*d^2-e^2)^4/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^
2*d^2-e^2)/e^2)^(1/2)*g+7/8*b*c^9/e*d^3/(c^2*d^2-e^2)^4/(c*x+d*c/e)*(-(c*x+
d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f+7/8*b*c^10/e^3*d^5/
(c^2*d^2-e^2)^4/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e
*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/
e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*g-7/8*b*c^10/e^2*d^4/(c^2*d^2-e^2
```

```
)^4/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)
+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-
e^2)/e^2)^(1/2))/(c*x+d*c/e))*f+3/4*b*c^8/e^2*d^2/(c^2*d^2-e^2)^3/(-(c^2*d^
2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2
-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/
2))/(c*x+d*c/e))*f-11/24*b*c^7/e*d/(c^2*d^2-e^2)^3/(c*x+d*c/e)*(-(c*x+d*c/e
)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f-3/40*b*c^6/e^2/(c^2*d^2-
e^2)^2/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)
^(1/2)*f-3/40*b*c^6/e^2/(c^2*d^2-e^2)^2/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(
c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*
c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*f)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] -1/20*(5*x*e + d)*a*g/(x^5*e^7 + 5*d*x^4*e^6 + 10*d^2*x^3*e^5 + 10*d^3*x^2*
e^4 + 5*d^4*x*e^3 + d^5*e^2) - 1/5*a*f/(x^5*e^6 + 5*d*x^4*e^5 + 10*d^2*x^3*
e^4 + 10*d^3*x^2*e^3 + 5*d^4*x*e^2 + d^5*e) - 1/20*((5*b*g*x*e + b*d*g + 4*
b*f*e)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + 20*(x^5*e^7 + 5*d*x^4*e
^6 + 10*d^2*x^3*e^5 + 10*d^3*x^2*e^4 + 5*d^4*x*e^3 + d^5*e^2)*integrate(1/2
0*(5*b*c*g*x*e + b*c*d*g + 4*b*c*f*e)*e^(1/2*log(c*x + 1) + 1/2*log(-c*x +
1))/(c^4*x^9*e^7 + 5*c^4*d*x^8*e^6 - 5*c^2*d^4*x^3*e^3 - c^2*d^5*x^2*e^2 +
(10*c^4*d^2*e^5 - c^2*e^7)*x^7 + 5*(2*c^4*d^3*e^4 - c^2*d*e^6)*x^6 + 5*(c^4
*d^4*e^3 - 2*c^2*d^2*e^5)*x^5 + (c^4*d^5*e^2 - 10*c^2*d^3*e^4)*x^4 + (c^2*x
^7*e^7 + 5*c^2*d*x^6*e^6 + (10*c^2*d^2*e^5 - e^7)*x^5 - 5*d^4*x*e^3 - d^5*e
^2 + 5*(2*c^2*d^3*e^4 - d*e^6)*x^4 + 5*(c^2*d^4*e^3 - 2*d^2*e^5)*x^3 + (c^2
*d^5*e^2 - 10*d^3*e^4)*x^2)*e^(log(c*x + 1) + log(-c*x + 1)), x))/(x^5*e^7
 + 5*d*x^4*e^6 + 10*d^2*x^3*e^5 + 10*d^3*x^2*e^4 + 5*d^4*x*e^3 + d^5*e^2)
```

Fricas [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] Timed out
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(cx))(f + gx)}{(d + ex)^6}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))/(e*x+d)**6,x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x)/(d + e*x)**6, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] integrate((g*x + f)*(b*arcsin(c*x) + a)/(e*x + d)^6, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)\,\left(a+b\,\mathrm{asin}(c\,x)\right)}{{(d+e\,x)}^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(a + b*asin(c*x)))/(d + e*x)^6,x)
```

```
[Out] int(((f + g*x)*(a + b*asin(c*x)))/(d + e*x)^6, x)
```

3.97 $\int (d+ex)^3 \left(f+gx+hx^2\right) (a+b\text{ArcSin}(cx)) \, dx$

Optimal. Leaf size=512

$$\frac{b(12e^2(eg+3dh)+25c^2d(3e^2f+3deg+d^2h))\,x^2\sqrt{1-c^2x^2}}{225c^3}+\frac{be(5e^2h+9c^2(e^2f+3deg+3d^2h))\,x^3\sqrt{1-}$$

```
[Out] -1/96*b*(24*c^4*d^2*(d*g+3*e*f)+5*e^3*h+9*c^2*e*(3*d^2*h+3*d*e*g+e^2*f))*ar
csin(c*x)/c^6+d^3*f*x*(a+b*arcsin(c*x))+1/2*d^2*(d*g+3*e*f)*x^2*(a+b*arcsin
(c*x))+1/3*d*(d^2*h+3*d*e*g+3*e^2*f)*x^3*(a+b*arcsin(c*x))+1/4*e*(3*d^2*h+3
*d*e*g+e^2*f)*x^4*(a+b*arcsin(c*x))+1/5*e^2*(3*d*h+e*g)*x^5*(a+b*arcsin(c*x
))+1/6*e^3*h*x^6*(a+b*arcsin(c*x))+1/225*b*(12*e^2*(3*d*h+e*g)+25*c^2*d*(d^
2*h+3*d*e*g+3*e^2*f))*x^2*(-c^2*x^2+1)^(1/2)/c^3+1/144*b*e*(5*e^2*h+9*c^2*(
3*d^2*h+3*d*e*g+e^2*f))*x^3*(-c^2*x^2+1)^(1/2)/c^3+1/25*b*e^2*(3*d*h+e*g)*x
^4*(-c^2*x^2+1)^(1/2)/c+1/36*b*e^3*h*x^5*(-c^2*x^2+1)^(1/2)/c+1/7200*b*(720
0*c^4*d^3*f+768*e^2*(3*d*h+e*g)+1600*c^2*d*(d^2*h+3*d*e*g+3*e^2*f)+75*(24*c
^4*d^2*(d*g+3*e*f)+5*e^3*h+9*c^2*e*(3*d^2*h+3*d*e*g+e^2*f))*x)*(-c^2*x^2+1)
^(1/2)/c^5
```

Rubi [A]
time = 1.38, antiderivative size = 509, normalized size of antiderivative = 0.99, number of steps used = 8, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {4833, 12, 1823, 794, 222}

$$d^3fx(a+b\text{ArcSin}(cx))+\frac{1}{4}ex^4(a+b\text{ArcSin}(cx))\left(3d^2h+3deg+e^2f\right)+\frac{1}{3}dx^3(a+b\text{ArcSin}(cx))\left(d^2h+3deg+3e^2f\right)+\frac{1}{2}d^2x^2(dg+3ef)(a+b\text{ArcSin}(cx))+\frac{1}{5}e^2x^5(3dh+eg)(a+b\text{ArcSin}(cx))+\frac{1}{6}e^3hx^6(a+b\text{ArcSin}(cx))-\frac{b\text{ArcSin}(cx)\left(24c^4d^2(dg+3ef)+9c^2e(3d^2h+3deg+e^2f)+5e^3h\right)}{96c^6}+\frac{bex^3\sqrt{1-c^2x^2}\left(e^2\left(\frac{5h}{c^2}+9f\right)+27d^2h+27deg\right)}{144c}+\frac{be^2x^4\sqrt{1-c^2x^2}(3dh+eg)}{25c}+\frac{be^3hx^5\sqrt{1-c^2x^2}}{36c}+\frac{bx^2\sqrt{1-c^2x^2}\left(25c^2d(d^2h+3deg+3e^2f)+12e^2(3dh+eg)\right)}{225c^3}+\frac{b\sqrt{1-c^2x^2}\left(75x\left(24c^4d^2(dg+3ef)+9c^2e(3d^2h+3deg+e^2f)+5e^3h\right)+32\left(225c^4d^3f+50c^2d(d^2h+3deg+3e^2f)+24e^2(3dh+eg)\right)\right)}{7200c^5}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^3*(f + g*x + h*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*(12*e^2*(e*g + 3*d*h) + 25*c^2*d*(3*e^2*f + 3*d*e*g + d^2*h))*x^2*Sqrt[1
 - c^2*x^2])/(225*c^3) + (b*e*(27*d*e*g + 27*d^2*h + e^2*(9*f + (5*h)/c^2))
*x^3*Sqrt[1 - c^2*x^2])/(144*c) + (b*e^2*(e*g + 3*d*h)*x^4*Sqrt[1 - c^2*x^2
])/(25*c) + (b*e^3*h*x^5*Sqrt[1 - c^2*x^2])/(36*c) + (b*(32*(225*c^4*d^3*f
+ 24*e^2*(e*g + 3*d*h) + 50*c^2*d*(3*e^2*f + 3*d*e*g + d^2*h)) + 75*(24*c^4
*d^2*(3*e*f + d*g) + 5*e^3*h + 9*c^2*e*(e^2*f + 3*d*e*g + 3*d^2*h))*x)*Sqrt
[1 - c^2*x^2])/(7200*c^5) - (b*(24*c^4*d^2*(3*e*f + d*g) + 5*e^3*h + 9*c^2*
e*(e^2*f + 3*d*e*g + 3*d^2*h))*ArcSin[c*x])/(96*c^6) + d^3*f*x*(a + b*ArcSi
n[c*x]) + (d^2*(3*e*f + d*g)*x^2*(a + b*ArcSin[c*x]))/2 + (d*(3*e^2*f + 3*d
*e*g + d^2*h)*x^3*(a + b*ArcSin[c*x]))/3 + (e*(e^2*f + 3*d*e*g + 3*d^2*h)*x
^4*(a + b*ArcSin[c*x]))/4 + (e^2*(e*g + 3*d*h)*x^5*(a + b*ArcSin[c*x]))/5 +
 (e^3*h*x^6*(a + b*ArcSin[c*x]))/6
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*((a + c*x^2)^(p
+ 1)/(2*c*(p + 1)*(2*p + 3))), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 1823

```
Int[(Pq_)*((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2)^(p_), x_Symbol] :> With[
{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[f*(c*x)^(m + q - 1
)*((a + b*x^2)^(p + 1)/(b*c^(q - 1)*(m + q + 2*p + 1))), x] + Dist[1/(b*(m
+ q + 2*p + 1)), Int[(c*x)^m*(a + b*x^2)^p*ExpandToSum[b*(m + q + 2*p + 1)*
Pq - b*f*(m + q + 2*p + 1)*x^q - a*f*(m + q - 1)*x^(q - 2), x], x], x] /; G
tQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, m, p}, x] && PolyQ[
Pq, x] && ( !IGtQ[m, 0] || IGtQ[p + 1/2, -1])
```

Rule 4833

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_), x_Symbol] :> With[{u = IntHid
e[ExpandExpression[Px, x], x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, I
nt[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[{a, b, c}, x
] && PolynomialQ[Px, x]
```

Rubi steps

$$\int (d+ex)^3 \left(f+gx+hx^2\right) \left(a+b\sin^{-1}(cx)\right) \, dx = d^3fx\left(a+b\sin^{-1}(cx)\right) + \frac{1}{2}d^2(3ef+dg)x^2\left(a+b\sin^{-1}(c\right.$$

$$= d^3fx\left(a+b\sin^{-1}(cx)\right) + \frac{1}{2}d^2(3ef+dg)x^2\left(a+b\sin^{-1}(c\right.$$

$$= \frac{be^3hx^5\sqrt{1-c^2x^2}}{36c} + d^3fx\left(a+b\sin^{-1}(cx)\right) + \frac{1}{2}d^2(3ef$$

$$= \frac{be^2(eg+3dh)x^4\sqrt{1-c^2x^2}}{25c} + \frac{be^3hx^5\sqrt{1-c^2x^2}}{36c} + d^3f$$

$$= \frac{be(5e^2h+9c^2(e^2f+3deg+3d^2h))\,x^3\sqrt{1-c^2x^2}}{144c^3} + \frac{be^2}{}$$

$$= \frac{b(12e^2(eg+3dh)+25c^2d(3e^2f+3deg+d^2h))\,x^2\sqrt{1-}}{225c^3}$$

$$= \frac{b(12e^2(eg+3dh)+25c^2d(3e^2f+3deg+d^2h))\,x^2\sqrt{1-}}{225c^3}$$

$$= \frac{b(12e^2(eg+3dh)+25c^2d(3e^2f+3deg+d^2h))\,x^2\sqrt{1-}}{225c^3}$$

Mathematica [**A**]
time = 0.28, size = 463, normalized size = 0.90

$$ad^3fx+\frac{1}{2}ad^2(3ef+dg)x^2+\frac{1}{3}ad\left(3e^2f+3deg+d^2h\right)x^3+\frac{1}{4}ae\left(e^2f+3deg+3d^2h\right)x^4+\frac{1}{5}ae^2(eg+3dh)x^5+\frac{1}{6}ae^3hx^6+\frac{b\sqrt{1-c^2x^2}\left(3e^2(256eg+768dh+125ehx)+c^2\left(1600d^3h+75d^2e(64g+27hx)+e^3x\left(675f+384gx+250hx^2\right)+3de^2\left(1600f+675gx+384hx^2\right)\right)+2c^4\left(100d^3(36f+x(9g+4hx))+75d^2ex(36f+x(16g+9hx))+3de^2x^2(400f+9x(25g+16hx))+e^3x^3(225f+4x(36g+25hx))\right)\right)}{7200c^5}-\frac{b\left(24c^4d^2(3ef+dg)+5e^3h+9c^2e\left(e^2f+3deg+3d^2h\right)\right)\text{ArcSin}(cx)}{96c^6}+\frac{1}{60}bx\left(10d^3(6f+x(3g+2hx))+15d^2ex(6f+x(4g+3hx))+3de^2x^2(20f+3x(5g+4hx))+e^3x^3(15f+2x(6g+5hx))\right)\text{ArcSin}(cx)$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^3*(f + g*x + h*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] a*d^3*f*x + (a*d^2*(3*e*f + d*g)*x^2)/2 + (a*d*(3*e^2*f + 3*d*e*g + d^2*h)*
x^3)/3 + (a*e*(e^2*f + 3*d*e*g + 3*d^2*h)*x^4)/4 + (a*e^2*(e*g + 3*d*h)*x^5
)/5 + (a*e^3*h*x^6)/6 + (b*Sqrt[1 - c^2*x^2]*(3*e^2*(256*e*g + 768*d*h + 12
5*e*h*x) + c^2*(1600*d^3*h + 75*d^2*e*(64*g + 27*h*x) + e^3*x*(675*f + 384*
g*x + 250*h*x^2) + 3*d*e^2*(1600*f + 675*g*x + 384*h*x^2)) + 2*c^4*(100*d^3
*(36*f + x*(9*g + 4*h*x)) + 75*d^2*e*x*(36*f + x*(16*g + 9*h*x)) + 3*d*e^2*
x^2*(400*f + 9*x*(25*g + 16*h*x)) + e^3*x^3*(225*f + 4*x*(36*g + 25*h*x))))
)/(7200*c^5) - (b*(24*c^4*d^2*(3*e*f + d*g) + 5*e^3*h + 9*c^2*e*(e^2*f + 3*
d*e*g + 3*d^2*h))*ArcSin[c*x])/(96*c^6) + (b*x*(10*d^3*(6*f + x*(3*g + 2*h*
x)) + 15*d^2*e*x*(6*f + x*(4*g + 3*h*x)) + 3*d*e^2*x^2*(20*f + 3*x*(5*g + 4
*h*x)) + e^3*x^3*(15*f + 2*x*(6*g + 5*h*x)))*ArcSin[c*x])/60
```

Maple [**A**]
time = 0.28, size = 705, normalized size = 1.38

method	result
derivativedivides	$\frac{a\left(\frac{e^3 h c^6 x^6}{6}+\frac{\left(3cd e^2 h+c e^3 g\right)c^5 x^5}{5}+\frac{\left(3c^2 d^2 e h+3c^2 d e^2 g+c^2 e^3 f\right)c^4 x^4}{4}+\frac{\left(c^3 d^3 h+3c^3 d^2 e g+3c^3 d e^2 f\right)c^3 x^3}{3}+\frac{\left(c^4 d^3 g+3c^4 d^2 e f\right)c^2 x}{2}\right)}{c^5}$
default	$\frac{a\left(\frac{e^3 h c^6 x^6}{6}+\frac{\left(3cd e^2 h+c e^3 g\right)c^5 x^5}{5}+\frac{\left(3c^2 d^2 e h+3c^2 d e^2 g+c^2 e^3 f\right)c^4 x^4}{4}+\frac{\left(c^3 d^3 h+3c^3 d^2 e g+3c^3 d e^2 f\right)c^3 x^3}{3}+\frac{\left(c^4 d^3 g+3c^4 d^2 e f\right)c^2 x}{2}\right)}{c^5}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^3*(h*x^2+g*x+f)*(a+b*arcsin(c*x)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(a/c^5*(1/6*e^3*h*c^6*x^6+1/5*(3*c*d*e^2*h+c*e^3*g)*c^5*x^5+1/4*(3*c^2*
d^2*e*h+3*c^2*d*e^2*g+c^2*e^3*f)*c^4*x^4+1/3*(c^3*d^3*h+3*c^3*d^2*e*g+3*c^3
*d*e^2*f)*c^3*x^3+1/2*(c^4*d^3*g+3*c^4*d^2*e*f)*c^2*x^2+d^3*c^6*f*x)+b/c^5*
(1/6*arcsin(c*x)*e^3*h*c^6*x^6+3/5*arcsin(c*x)*c^6*d*e^2*h*x^5+1/5*arcsin(c
*x)*c^6*e^3*g*x^5+3/4*arcsin(c*x)*c^6*d^2*e*h*x^4+3/4*arcsin(c*x)*c^6*d*e^2
*g*x^4+1/4*arcsin(c*x)*c^6*e^3*f*x^4+1/3*arcsin(c*x)*c^6*d^3*h*x^3+arcsin(c
*x)*c^6*d^2*e*g*x^3+arcsin(c*x)*c^6*d*e^2*f*x^3+1/2*arcsin(c*x)*c^6*d^3*g*x
^2+3/2*arcsin(c*x)*c^6*d^2*e*f*x^2+arcsin(c*x)*d^3*c^6*f*x-1/6*e^3*h*(-1/6*
c^5*x^5*(-c^2*x^2+1)^(1/2)-5/24*c^3*x^3*(-c^2*x^2+1)^(1/2)-5/16*c*x*(-c^2*x
^2+1)^(1/2)+5/16*arcsin(c*x))-1/60*(36*c*d*e^2*h+12*c*e^3*g)*(-1/5*c^4*x^4*
(-c^2*x^2+1)^(1/2)-4/15*c^2*x^2*(-c^2*x^2+1)^(1/2)-8/15*(-c^2*x^2+1)^(1/2))
-1/60*(45*c^2*d^2*e*h+45*c^2*d*e^2*g+15*c^2*e^3*f)*(-1/4*c^3*x^3*(-c^2*x^2+
1)^(1/2)-3/8*c*x*(-c^2*x^2+1)^(1/2)+3/8*arcsin(c*x))-1/60*(20*c^3*d^3*h+60*
c^3*d^2*e*g+60*c^3*d*e^2*f)*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-c^2*x^2+
1)^(1/2))-1/60*(30*c^4*d^3*g+90*c^4*d^2*e*f)*(-1/2*c*x*(-c^2*x^2+1)^(1/2)+1
/2*arcsin(c*x))+d^3*c^5*f*(-c^2*x^2+1)^(1/2)))
```

Maxima [A]
time = 0.49, size = 853, normalized size = 1.67

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/6*a*h*x^6*e^3 + 3/5*a*d*h*x^5*e^2 + 3/4*a*d^2*h*x^4*e + 1/3*a*d^3*h*x^3 +
 1/5*a*g*x^5*e^3 + 3/4*a*d*g*x^4*e^2 + a*d^2*g*x^3*e + 1/2*a*d^3*g*x^2 + 1/
4*a*f*x^4*e^3 + a*d*f*x^3*e^2 + 3/2*a*d^2*f*x^2*e + 1/4*(2*x^2*arcsin(c*x)
+ c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c*x)/c^3))*b*d^3*g + 1/9*(3*x^3*arcs
```

```
in(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*d^3*
h + a*d^3*f*x + 3/4*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcs
in(c*x)/c^3))*b*d^2*f*e + 1/3*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^
2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*d^2*g*e + 3/32*(8*x^4*arcsin(c*x) + (2
*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c*x)/c^
5)*c)*b*d^2*h*e + (c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*b*d^3*f/c + 1/3*(3
*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4
))*b*d*f*e^2 + 3/32*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*
sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c*x)/c^5)*c)*b*d*g*e^2 + 1/25*(15*x^5*a
rcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 +
 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*b*d*h*e^2 + 1/32*(8*x^4*arcsin(c*x) + (2*sqrt
(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c*x)/c^5)*c)
*b*f*e^3 + 1/75*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqr
t(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*b*g*e^3 + 1/288*(48*
x^6*arcsin(c*x) + (8*sqrt(-c^2*x^2 + 1)*x^5/c^2 + 10*sqrt(-c^2*x^2 + 1)*x^3
/c^4 + 15*sqrt(-c^2*x^2 + 1)*x/c^6 - 15*arcsin(c*x)/c^7)*c)*b*h*e^3
```

Fricas [A]
time = 3.86, size = 639, normalized size = 1.25

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/7200*(2400*a*c^6*d^3*h*x^3 + 3600*a*c^6*d^3*g*x^2 + 7200*a*c^6*d^3*f*x +
15*(160*b*c^6*d^3*h*x^3 + 240*b*c^6*d^3*g*x^2 + 480*b*c^6*d^3*f*x - 120*b*c
^4*d^3*g + (80*b*c^6*h*x^6 + 96*b*c^6*g*x^5 + 120*b*c^6*f*x^4 - 45*b*c^2*f
- 25*b*h)*e^3 + 3*(96*b*c^6*d*h*x^5 + 120*b*c^6*d*g*x^4 + 160*b*c^6*d*f*x^3
 - 45*b*c^2*d*g)*e^2 + 15*(24*b*c^6*d^2*h*x^4 + 32*b*c^6*d^2*g*x^3 + 48*b*c
^6*d^2*f*x^2 - 24*b*c^4*d^2*f - 9*b*c^2*d^2*h)*e)*arcsin(c*x) + 120*(10*a*c
^6*h*x^6 + 12*a*c^6*g*x^5 + 15*a*c^6*f*x^4)*e^3 + 360*(12*a*c^6*d*h*x^5 + 1
5*a*c^6*d*g*x^4 + 20*a*c^6*d*f*x^3)*e^2 + 1800*(3*a*c^6*d^2*h*x^4 + 4*a*c^6
*d^2*g*x^3 + 6*a*c^6*d^2*f*x^2)*e + (800*b*c^5*d^3*h*x^2 + 1800*b*c^5*d^3*g
*x + 7200*b*c^5*d^3*f + 1600*b*c^3*d^3*h + (200*b*c^5*h*x^5 + 288*b*c^5*g*x
^4 + 384*b*c^3*g*x^2 + 50*(9*b*c^5*f + 5*b*c^3*h)*x^3 + 768*b*c*g + 75*(9*b
*c^3*f + 5*b*c*h)*x)*e^3 + 3*(288*b*c^5*d*h*x^4 + 450*b*c^5*d*g*x^3 + 675*b
*c^3*d*g*x + 1600*b*c^3*d*f + 768*b*c*d*h + 32*(25*b*c^5*d*f + 12*b*c^3*d*h
)*x^2)*e^2 + 75*(18*b*c^5*d^2*h*x^3 + 32*b*c^5*d^2*g*x^2 + 64*b*c^3*d^2*g +
 9*(8*b*c^5*d^2*f + 3*b*c^3*d^2*h)*x)*e)*sqrt(-c^2*x^2 + 1))/c^6
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 1263 vs. $2(505) = 1010$.
time = 0.79, size = 1263, normalized size = 2.47

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**3*(h*x**2+g*x+f)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d**3*f*x + a*d**3*g*x**2/2 + a*d**3*h*x**3/3 + 3*a*d**2*e*f*x*
*2/2 + a*d**2*e*g*x**3 + 3*a*d**2*e*h*x**4/4 + a*d*e**2*f*x**3 + 3*a*d*e**2
*g*x**4/4 + 3*a*d*e**2*h*x**5/5 + a*e**3*f*x**4/4 + a*e**3*g*x**5/5 + a*e**
3*h*x**6/6 + b*d**3*f*x*asin(c*x) + b*d**3*g*x**2*asin(c*x)/2 + b*d**3*h*x*
*3*asin(c*x)/3 + 3*b*d**2*e*f*x**2*asin(c*x)/2 + b*d**2*e*g*x**3*asin(c*x)
+ 3*b*d**2*e*h*x**4*asin(c*x)/4 + b*d*e**2*f*x**3*asin(c*x) + 3*b*d*e**2*g*
x**4*asin(c*x)/4 + 3*b*d*e**2*h*x**5*asin(c*x)/5 + b*e**3*f*x**4*asin(c*x)/
4 + b*e**3*g*x**5*asin(c*x)/5 + b*e**3*h*x**6*asin(c*x)/6 + b*d**3*f*sqrt(-
c**2*x**2 + 1)/c + b*d**3*g*x*sqrt(-c**2*x**2 + 1)/(4*c) + b*d**3*h*x**2*sq
rt(-c**2*x**2 + 1)/(9*c) + 3*b*d**2*e*f*x*sqrt(-c**2*x**2 + 1)/(4*c) + b*d*
*2*e*g*x**2*sqrt(-c**2*x**2 + 1)/(3*c) + 3*b*d**2*e*h*x**3*sqrt(-c**2*x**2
+ 1)/(16*c) + b*d*e**2*f*x**2*sqrt(-c**2*x**2 + 1)/(3*c) + 3*b*d*e**2*g*x**
3*sqrt(-c**2*x**2 + 1)/(16*c) + 3*b*d*e**2*h*x**4*sqrt(-c**2*x**2 + 1)/(25*
c) + b*e**3*f*x**3*sqrt(-c**2*x**2 + 1)/(16*c) + b*e**3*g*x**4*sqrt(-c**2*x
**2 + 1)/(25*c) + b*e**3*h*x**5*sqrt(-c**2*x**2 + 1)/(36*c) - b*d**3*g*asin
(c*x)/(4*c**2) - 3*b*d**2*e*f*asin(c*x)/(4*c**2) + 2*b*d**3*h*sqrt(-c**2*x*
*2 + 1)/(9*c**3) + 2*b*d**2*e*g*sqrt(-c**2*x**2 + 1)/(3*c**3) + 9*b*d**2*e*
h*x*sqrt(-c**2*x**2 + 1)/(32*c**3) + 2*b*d*e**2*f*sqrt(-c**2*x**2 + 1)/(3*c
**3) + 9*b*d*e**2*g*x*sqrt(-c**2*x**2 + 1)/(32*c**3) + 4*b*d*e**2*h*x**2*sq
rt(-c**2*x**2 + 1)/(25*c**3) + 3*b*e**3*f*x*sqrt(-c**2*x**2 + 1)/(32*c**3)
+ 4*b*e**3*g*x**2*sqrt(-c**2*x**2 + 1)/(75*c**3) + 5*b*e**3*h*x**3*sqrt(-c*
*2*x**2 + 1)/(144*c**3) - 9*b*d**2*e*h*asin(c*x)/(32*c**4) - 9*b*d*e**2*g*a
sin(c*x)/(32*c**4) - 3*b*e**3*f*asin(c*x)/(32*c**4) + 8*b*d*e**2*h*sqrt(-c*
*2*x**2 + 1)/(25*c**5) + 8*b*e**3*g*sqrt(-c**2*x**2 + 1)/(75*c**5) + 5*b*e*
*3*h*x*sqrt(-c**2*x**2 + 1)/(96*c**5) - 5*b*e**3*h*asin(c*x)/(96*c**6), Ne(
c, 0)), (a*(d**3*f*x + d**3*g*x**2/2 + d**3*h*x**3/3 + 3*d**2*e*f*x**2/2 +
d**2*e*g*x**3 + 3*d**2*e*h*x**4/4 + d*e**2*f*x**3 + 3*d*e**2*g*x**4/4 + 3*d
*e**2*h*x**5/5 + e**3*f*x**4/4 + e**3*g*x**5/5 + e**3*h*x**6/6), True))
```

Giac [**B**] Leaf count of result is larger than twice the leaf count of optimal. 1337 vs. $2(477) = 954$.
time = 0.44, size = 1337, normalized size = 2.61

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/6*a*e^3*h*x^6 + 1/5*a*e^3*g*x^5 + 3/5*a*d*e^2*h*x^5 + 1/4*a*e^3*f*x^4 + 3
/4*a*d*e^2*g*x^4 + 3/4*a*d^2*e*h*x^4 + a*d*e^2*f*x^3 + a*d^2*e*g*x^3 + 1/3*
a*d^3*h*x^3 + b*d^3*f*x*arcsin(c*x) + a*d^3*f*x + (c^2*x^2 - 1)*b*d*e^2*f*x
*arcsin(c*x)/c^2 + (c^2*x^2 - 1)*b*d^2*e*g*x*arcsin(c*x)/c^2 + 1/3*(c^2*x^2
```

```
 - 1)*b*d^3*h*x*arcsin(c*x)/c^2 + 3/4*sqrt(-c^2*x^2 + 1)*b*d^2*e*f*x/c + 1/
4*sqrt(-c^2*x^2 + 1)*b*d^3*g*x/c + 3/2*(c^2*x^2 - 1)*b*d^2*e*f*arcsin(c*x)/
c^2 + 1/2*(c^2*x^2 - 1)*b*d^3*g*arcsin(c*x)/c^2 + b*d*e^2*f*x*arcsin(c*x)/c
^2 + b*d^2*e*g*x*arcsin(c*x)/c^2 + 1/5*(c^2*x^2 - 1)^2*b*e^3*g*x*arcsin(c*x
)/c^4 + 1/3*b*d^3*h*x*arcsin(c*x)/c^2 + 3/5*(c^2*x^2 - 1)^2*b*d*e^2*h*x*arc
sin(c*x)/c^4 + sqrt(-c^2*x^2 + 1)*b*d^3*f/c - 1/16*(-c^2*x^2 + 1)^(3/2)*b*e
^3*f*x/c^3 - 3/16*(-c^2*x^2 + 1)^(3/2)*b*d*e^2*g*x/c^3 - 3/16*(-c^2*x^2 + 1
)^(3/2)*b*d^2*e*h*x/c^3 + 3/2*(c^2*x^2 - 1)*a*d^2*e*f/c^2 + 1/2*(c^2*x^2 -
1)*a*d^3*g/c^2 + 3/4*b*d^2*e*f*arcsin(c*x)/c^2 + 1/4*(c^2*x^2 - 1)^2*b*e^3*
f*arcsin(c*x)/c^4 + 1/4*b*d^3*g*arcsin(c*x)/c^2 + 3/4*(c^2*x^2 - 1)^2*b*d*e
^2*g*arcsin(c*x)/c^4 + 3/4*(c^2*x^2 - 1)^2*b*d^2*e*h*arcsin(c*x)/c^4 + 2/5*
(c^2*x^2 - 1)*b*e^3*g*x*arcsin(c*x)/c^4 + 6/5*(c^2*x^2 - 1)*b*d*e^2*h*x*arc
sin(c*x)/c^4 - 1/3*(-c^2*x^2 + 1)^(3/2)*b*d*e^2*f/c^3 - 1/3*(-c^2*x^2 + 1)^
(3/2)*b*d^2*e*g/c^3 - 1/9*(-c^2*x^2 + 1)^(3/2)*b*d^3*h/c^3 + 5/32*sqrt(-c^2
*x^2 + 1)*b*e^3*f*x/c^3 + 15/32*sqrt(-c^2*x^2 + 1)*b*d*e^2*g*x/c^3 + 15/32*
sqrt(-c^2*x^2 + 1)*b*d^2*e*h*x/c^3 + 1/36*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1
)*b*e^3*h*x/c^5 + 1/2*(c^2*x^2 - 1)*b*e^3*f*arcsin(c*x)/c^4 + 3/2*(c^2*x^2
- 1)*b*d*e^2*g*arcsin(c*x)/c^4 + 3/2*(c^2*x^2 - 1)*b*d^2*e*h*arcsin(c*x)/c^
4 + 1/6*(c^2*x^2 - 1)^3*b*e^3*h*arcsin(c*x)/c^6 + 1/5*b*e^3*g*x*arcsin(c*x)
/c^4 + 3/5*b*d*e^2*h*x*arcsin(c*x)/c^4 + sqrt(-c^2*x^2 + 1)*b*d*e^2*f/c^3 +
 sqrt(-c^2*x^2 + 1)*b*d^2*e*g/c^3 + 1/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)
*b*e^3*g/c^5 + 1/3*sqrt(-c^2*x^2 + 1)*b*d^3*h/c^3 + 3/25*(c^2*x^2 - 1)^2*sq
rt(-c^2*x^2 + 1)*b*d*e^2*h/c^5 - 13/144*(-c^2*x^2 + 1)^(3/2)*b*e^3*h*x/c^5
+ 5/32*b*e^3*f*arcsin(c*x)/c^4 + 15/32*b*d*e^2*g*arcsin(c*x)/c^4 + 15/32*b*
d^2*e*h*arcsin(c*x)/c^4 + 1/2*(c^2*x^2 - 1)^2*b*e^3*h*arcsin(c*x)/c^6 - 2/1
5*(-c^2*x^2 + 1)^(3/2)*b*e^3*g/c^5 - 2/5*(-c^2*x^2 + 1)^(3/2)*b*d*e^2*h/c^5
 + 11/96*sqrt(-c^2*x^2 + 1)*b*e^3*h*x/c^5 + 1/2*(c^2*x^2 - 1)*b*e^3*h*arcsi
n(c*x)/c^6 + 1/5*sqrt(-c^2*x^2 + 1)*b*e^3*g/c^5 + 3/5*sqrt(-c^2*x^2 + 1)*b*
d*e^2*h/c^5 + 11/96*b*e^3*h*arcsin(c*x)/c^6
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,\mathrm{asin}(c\,x))\,\left(d+e\,x\right)^3\,\left(h\,x^2+g\,x+f\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(d + e*x)^3*(f + g*x + h*x^2),x)
```

```
[Out] int((a + b*asin(c*x))*(d + e*x)^3*(f + g*x + h*x^2), x)
```

3.98 $\int (d+ex)^2 \left(f+gx+hx^2\right) (a+b\textbf{ArcSin}(cx)) \, dx$

Optimal. Leaf size=361

$$\frac{b\left(12e^2h+25c^2\left(e^2f+2deg+d^2h\right)\right)x^2\sqrt{1-c^2x^2}}{225c^3}+\frac{be(eg+2dh)x^3\sqrt{1-c^2x^2}}{16c}+\frac{be^2hx^4\sqrt{1-c^2x^2}}{25c}+\frac{b(32(22$$

```
[Out] -1/32*b*(8*c^2*d*(d*g+2*e*f)+3*e*(2*d*h+e*g))*arcsin(c*x)/c^4+d^2*f*x*(a+b*
arcsin(c*x))+1/2*d*(d*g+2*e*f)*x^2*(a+b*arcsin(c*x))+1/3*(d^2*h+2*d*e*g+e^2
*f)*x^3*(a+b*arcsin(c*x))+1/4*e*(2*d*h+e*g)*x^4*(a+b*arcsin(c*x))+1/5*e^2*h
*x^5*(a+b*arcsin(c*x))+1/225*b*(12*e^2*h+25*c^2*(d^2*h+2*d*e*g+e^2*f))*x^2*
(-c^2*x^2+1)^(1/2)/c^3+1/16*b*e*(2*d*h+e*g)*x^3*(-c^2*x^2+1)^(1/2)/c+1/25*b
*e^2*h*x^4*(-c^2*x^2+1)^(1/2)/c+1/7200*b*(7200*c^4*d^2*f+768*e^2*h+1600*c^2
*(d^2*h+2*d*e*g+e^2*f)+225*c^2*(8*c^2*d*(d*g+2*e*f)+3*e*(2*d*h+e*g))*x)*(-c
^2*x^2+1)^(1/2)/c^5
```

Rubi [A]

time = 0.71, antiderivative size = 361, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {4833, 12, 1823, 794, 222}

$$\frac{1}{3}x^3(a+b\text{ArcSin}(cx))\left(d^2h+2deg+e^2f\right)+d^2fx(a+b\text{ArcSin}(cx))+\frac{1}{2}dx^2(dg+2ef)(a+b\text{ArcSin}(cx))+\frac{1}{4}ex^4(2dh+eg)(a+b\text{ArcSin}(cx))+\frac{1}{5}e^2hx^5(a+b\text{ArcSin}(cx))-\frac{b\text{ArcSin}(cx)\left(8c^2d(dg+2ef)+3e(2dh+eg)\right)}{32c^4}+\frac{bex^3\sqrt{1-c^2x^2}(2dh+eg)}{16c}+\frac{be^2hx^4\sqrt{1-c^2x^2}}{25c}+\frac{bx^2\sqrt{1-c^2x^2}\left(25c^2\left(d^2h+2deg+e^2f\right)+12e^2h\right)}{225c^3}+\frac{b\sqrt{1-c^2x^2}\left(225c^2x\left(8c^2d(dg+2ef)+3e(2dh+eg)\right)+32\left(225c^4d^2f+50c^2\left(d^2h+2deg+e^2f\right)+24e^2h\right)\right)}{7200c^5}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^2*(f + g*x + h*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*(12*e^2*h + 25*c^2*(e^2*f + 2*d*e*g + d^2*h))*x^2*Sqrt[1 - c^2*x^2])/(22
5*c^3) + (b*e*(e*g + 2*d*h)*x^3*Sqrt[1 - c^2*x^2])/(16*c) + (b*e^2*h*x^4*Sq
rt[1 - c^2*x^2])/(25*c) + (b*(32*(225*c^4*d^2*f + 24*e^2*h + 50*c^2*(e^2*f
+ 2*d*e*g + d^2*h)) + 225*c^2*(8*c^2*d*(2*e*f + d*g) + 3*e*(e*g + 2*d*h))*x
)*Sqrt[1 - c^2*x^2])/(7200*c^5) - (b*(8*c^2*d*(2*e*f + d*g) + 3*e*(e*g + 2*
d*h))*ArcSin[c*x])/(32*c^4) + d^2*f*x*(a + b*ArcSin[c*x]) + (d*(2*e*f + d*g
)*x^2*(a + b*ArcSin[c*x]))/2 + ((e^2*f + 2*d*e*g + d^2*h)*x^3*(a + b*ArcSin
[c*x]))/3 + (e*(e*g + 2*d*h)*x^4*(a + b*ArcSin[c*x]))/4 + (e^2*h*x^5*(a + b
*ArcSin[c*x]))/5
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*((a + c*x^2)^(p
+ 1)/(2*c*(p + 1)*(2*p + 3))), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 1823

```
Int[(Pq_)*((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2)^(p_), x_Symbol] :> With[
{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[f*(c*x)^(m + q - 1
)*((a + b*x^2)^(p + 1)/(b*c^(q - 1)*(m + q + 2*p + 1))), x] + Dist[1/(b*(m
+ q + 2*p + 1)), Int[(c*x)^m*(a + b*x^2)^p*ExpandToSum[b*(m + q + 2*p + 1)*
Pq - b*f*(m + q + 2*p + 1)*x^q - a*f*(m + q - 1)*x^(q - 2), x], x], x] /; G
tQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, m, p}, x] && PolyQ[
Pq, x] && ( !IGtQ[m, 0] || IGtQ[p + 1/2, -1])
```

Rule 4833

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_), x_Symbol] :> With[{u = IntHid
e[ExpandExpression[Px, x], x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, I
nt[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[{a, b, c}, x
] && PolynomialQ[Px, x]
```

Rubi steps

$$\int (d+ex)^2 \left(f+gx+hx^2\right) \left(a+b\sin^{-1}(cx)\right)\, dx = d^2fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d(2ef+dg)x^2\left(a+b\sin^{-1}(c\right.$$

$$= d^2fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d(2ef+dg)x^2\left(a+b\sin^{-1}(c\right.$$

$$= \frac{be^2hx^4\sqrt{1-c^2x^2}}{25c}+d^2fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d(2ef+$$

$$= \frac{be(eg+2dh)x^3\sqrt{1-c^2x^2}}{16c}+\frac{be^2hx^4\sqrt{1-c^2x^2}}{25c}+d^2f$$

$$= \frac{b(12e^2h+25c^2(e^2f+2deg+d^2h))\,x^2\sqrt{1-c^2x^2}}{225c^3}+\frac{be(}{}$$

$$= \frac{b(12e^2h+25c^2(e^2f+2deg+d^2h))\,x^2\sqrt{1-c^2x^2}}{225c^3}+\frac{be(}{}$$

$$= \frac{b(12e^2h+25c^2(e^2f+2deg+d^2h))\,x^2\sqrt{1-c^2x^2}}{225c^3}+\frac{be(}{}$$

Mathematica [A]

time = 0.19, size = 323, normalized size = 0.89

$$ad^2fx+\frac{1}{2}ad(2ef+dg)x^2+\frac{1}{3}a\left(e^2f+2deg+d^2h\right)x^3+\frac{1}{4}ae(eg+2dh)x^4+\frac{1}{5}ae^2hx^5+\frac{b\sqrt{1-c^2x^2}\left(768e^2h+c^2(1600d^2h+50de(64g+27hx)+e^2(1600f+675gx+384hx^2))+2c^4(100d^2(36f+x(9g+4hx))+50dex(36f+x(16g+9hx))+e^2x^2(400f+9x(25g+16hx)))\right)}{7200c^5}-\frac{b(8c^2d(2ef+dg)+3e(eg+2dh))\,\mathrm{ArcSin}(cx)}{32c^4}+\frac{1}{60}bx\left(10d^2(6f+x(3g+2hx))+10dex(6f+x(4g+3hx))+e^2x^2(20f+3x(5g+4hx))\right)\mathrm{ArcSin}(cx)$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^2*(f + g*x + h*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] a*d^2*f*x + (a*d*(2*e*f + d*g)*x^2)/2 + (a*(e^2*f + 2*d*e*g + d^2*h)*x^3)/3
 + (a*e*(e*g + 2*d*h)*x^4)/4 + (a*e^2*h*x^5)/5 + (b*Sqrt[1 - c^2*x^2]*(768*
e^2*h + c^2*(1600*d^2*h + 50*d*e*(64*g + 27*h*x) + e^2*(1600*f + 675*g*x +
384*h*x^2)) + 2*c^4*(100*d^2*(36*f + x*(9*g + 4*h*x)) + 50*d*e*x*(36*f + x*
(16*g + 9*h*x)) + e^2*x^2*(400*f + 9*x*(25*g + 16*h*x)))))/(7200*c^5) - (b*
(8*c^2*d*(2*e*f + d*g) + 3*e*(e*g + 2*d*h))*ArcSin[c*x])/(32*c^4) + (b*x*(1
0*d^2*(6*f + x*(3*g + 2*h*x)) + 10*d*e*x*(6*f + x*(4*g + 3*h*x)) + e^2*x^2*
(20*f + 3*x*(5*g + 4*h*x)))*ArcSin[c*x])/60
```

Maple [A]

time = 0.18, size = 502, normalized size = 1.39

method	result
derivativedivides	$\frac{a\left(\frac{e^2hc^5x^5}{5}+\frac{(2cdeh+ce^2g)c^4x^4}{4}+\frac{(c^2d^2h+2c^2deg+c^2e^2f)c^3x^3}{3}+\frac{(c^3d^2g+2c^3def)c^2x^2}{2}+d^2c^5fx\right)}{c^4}+\frac{b\left(\frac{\arcsin(cx)e^2hc^5x^5}{5}+\mathrm{arcs}\right.}{}$
default	$\frac{a\left(\frac{e^2hc^5x^5}{5}+\frac{(2cdeh+ce^2g)c^4x^4}{4}+\frac{(c^2d^2h+2c^2deg+c^2e^2f)c^3x^3}{3}+\frac{(c^3d^2g+2c^3def)c^2x^2}{2}+d^2c^5fx\right)}{c^4}+\frac{b\left(\frac{\arcsin(cx)e^2hc^5x^5}{5}+\mathrm{arcs}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^2*(h*x^2+g*x+f)*(a+b*arcsin(c*x)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(a/c^4*(1/5*e^2*h*c^5*x^5+1/4*(2*c*d*e*h+c*e^2*g)*c^4*x^4+1/3*(c^2*d^2*
h+2*c^2*d*e*g+c^2*e^2*f)*c^3*x^3+1/2*(c^3*d^2*g+2*c^3*d*e*f)*c^2*x^2+d^2*c^
5*f*x)+b/c^4*(1/5*arcsin(c*x)*e^2*h*c^5*x^5+1/2*arcsin(c*x)*c^5*d*e*h*x^4+1
/4*arcsin(c*x)*c^5*e^2*g*x^4+1/3*arcsin(c*x)*c^5*d^2*h*x^3+2/3*arcsin(c*x)*
c^5*d*e*g*x^3+1/3*arcsin(c*x)*c^5*e^2*f*x^3+1/2*arcsin(c*x)*c^5*d^2*g*x^2+a
rcsin(c*x)*c^5*d*e*f*x^2+arcsin(c*x)*d^2*c^5*f*x-1/5*e^2*h*(-1/5*c^4*x^4*(-
c^2*x^2+1)^(1/2)-4/15*c^2*x^2*(-c^2*x^2+1)^(1/2)-8/15*(-c^2*x^2+1)^(1/2))-1
/60*(30*c*d*e*h+15*c*e^2*g)*(-1/4*c^3*x^3*(-c^2*x^2+1)^(1/2)-3/8*c*x*(-c^2*
x^2+1)^(1/2)+3/8*arcsin(c*x))-1/60*(20*c^2*d^2*h+40*c^2*d*e*g+20*c^2*e^2*f)
*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-c^2*x^2+1)^(1/2))-1/60*(30*c^3*d^2*
```

g+60*c^3*d*e*f)*(-1/2*c*x*(-c^2*x^2+1)^(1/2)+1/2*arcsin(c*x))+d^2*c^4*f*(-c
^2*x^2+1)^(1/2)))

Maxima [A]
time = 0.50, size = 581, normalized size = 1.61

$$\frac{1}{5} a h x^5 e^2 + \frac{1}{2} a d h x^4 e + \frac{1}{3} a d^2 h x^3 + \frac{1}{4} a g x^4 e^2 + \frac{2}{3} a d g x^3 e + \frac{1}{2} a d^2 g x^2 + \frac{1}{3} a f x^3 e^2 + a d f x^2 e + \frac{1}{4}\left(2 x^2 \arcsin(cx) + c\left(\frac{\sqrt{-c^2x^2+1}\,x}{c^2} - \frac{\arcsin(cx)}{c^3}\right)\right) b d^2 g + \frac{1}{9}\left(3x^3\arcsin(cx) + c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2} + \frac{2\sqrt{-c^2x^2+1}}{c^4}\right)\right) b d^2 h + a d^2 f x + \frac{1}{2}\left(2x^2\arcsin(cx) + c\left(\frac{\sqrt{-c^2x^2+1}\,x}{c^2} - \frac{\arcsin(cx)}{c^3}\right)\right) b d f e + \frac{2}{9}\left(3x^3\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2}+\frac{2\sqrt{-c^2x^2+1}}{c^4}\right)\right) b d g e + \frac{1}{16}\left(8x^4\arcsin(cx) + \left(\frac{2\sqrt{-c^2x^2+1}\,x^3}{c^2} + \frac{3\sqrt{-c^2x^2+1}\,x}{c^4} - \frac{3\arcsin(cx)}{c^5}\right)c\right) b d h e + \frac{\left(cx\arcsin(cx)+\sqrt{-c^2x^2+1}\right) b d^2 f}{c} + \frac{1}{9}\left(3x^3\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2}+\frac{2\sqrt{-c^2x^2+1}}{c^4}\right)\right) b f e^2 + \frac{1}{32}\left(8x^4\arcsin(cx) + \left(\frac{2\sqrt{-c^2x^2+1}\,x^3}{c^2} + \frac{3\sqrt{-c^2x^2+1}\,x}{c^4} - \frac{3\arcsin(cx)}{c^5}\right)c\right) b g e^2 + \frac{1}{75}\left(15x^5\arcsin(cx) + \left(\frac{3\sqrt{-c^2x^2+1}\,x^4}{c^2} + \frac{4\sqrt{-c^2x^2+1}\,x^2}{c^4} + \frac{8\sqrt{-c^2x^2+1}}{c^6}\right)c\right) b h e^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/5*a*h*x^5*e^2 + 1/2*a*d*h*x^4*e + 1/3*a*d^2*h*x^3 + 1/4*a*g*x^4*e^2 + 2/3
*a*d*g*x^3*e + 1/2*a*d^2*g*x^2 + 1/3*a*f*x^3*e^2 + a*d*f*x^2*e + 1/4*(2*x^2
*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c*x)/c^3))*b*d^2*g + 1/
9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)
/c^4))*b*d^2*h + a*d^2*f*x + 1/2*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)
*x/c^2 - arcsin(c*x)/c^3))*b*d*f*e + 2/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*
x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*d*g*e + 1/16*(8*x^4*arcsin(
c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsi
n(c*x)/c^5)*c)*b*d*h*e + (c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*b*d^2*f/c +
 1/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 +
 1)/c^4))*b*f*e^2 + 1/32*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2
 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c*x)/c^5)*c)*b*g*e^2 + 1/75*(15*x^
5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^
4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*b*h*e^2
```

Fricas [A]
time = 3.40, size = 437, normalized size = 1.21

$$\frac{2400 a c^5 d^2 h x^3 + 3600 a c^5 d^2 g x^2 + 7200 a c^5 d^2 f x + 15\left(160 b c^5 d^2 h x^3 + 240 b c^5 d^2 g x^2 + 480 b c^5 d^2 f x - 120 b c^3 d^2 g + \left(96 b c^5 h x^5 + 120 b c^5 g x^4 + 160 b c^5 f x^3 - 45 b c g\right) e^2 + 10\left(24 b c^5 d h x^4 + 32 b c^5 d g x^3 + 48 b c^5 d f x^2 - 24 b c^3 d f - 9 b c d h\right) e\right)\arcsin(cx) + 120\left(12 a c^5 h x^5 + 15 a c^5 g x^4 + 20 a c^5 f x^3\right) e^2 + 1200\left(3 a c^5 d h x^4 + 4 a c^5 d g x^3 + 6 a c^5 d f x^2\right) e + \left(800 b c^4 d^2 h x^2 + 1800 b c^4 d^2 g x + 7200 b c^4 d^2 f + 1600 b c^2 d^2 h + \left(288 b c^4 h x^4 + 450 b c^4 g x^3 + 675 b c^2 g x + 1600 b c^2 f + 32\left(25 b c^4 f + 12 b c^2 h\right) x^2 + 768 b h\right) e^2 + 50\left(18 b c^4 d h x^3 + 32 b c^4 d g x^2 + 64 b c^2 d g + 9\left(8 b c^4 d f + 3 b c^2 d h\right) x\right) e\right)\sqrt{-c^2x^2+1}}{7200\, c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/7200*(2400*a*c^5*d^2*h*x^3 + 3600*a*c^5*d^2*g*x^2 + 7200*a*c^5*d^2*f*x +
15*(160*b*c^5*d^2*h*x^3 + 240*b*c^5*d^2*g*x^2 + 480*b*c^5*d^2*f*x - 120*b*c
^3*d^2*g + (96*b*c^5*h*x^5 + 120*b*c^5*g*x^4 + 160*b*c^5*f*x^3 - 45*b*c*g)*
e^2 + 10*(24*b*c^5*d*h*x^4 + 32*b*c^5*d*g*x^3 + 48*b*c^5*d*f*x^2 - 24*b*c^3
*d*f - 9*b*c*d*h)*e)*arcsin(c*x) + 120*(12*a*c^5*h*x^5 + 15*a*c^5*g*x^4 + 2
0*a*c^5*f*x^3)*e^2 + 1200*(3*a*c^5*d*h*x^4 + 4*a*c^5*d*g*x^3 + 6*a*c^5*d*f*
x^2)*e + (800*b*c^4*d^2*h*x^2 + 1800*b*c^4*d^2*g*x + 7200*b*c^4*d^2*f + 160
0*b*c^2*d^2*h + (288*b*c^4*h*x^4 + 450*b*c^4*g*x^3 + 675*b*c^2*g*x + 1600*b
*c^2*f + 32*(25*b*c^4*f + 12*b*c^2*h)*x^2 + 768*b*h)*e^2 + 50*(18*b*c^4*d*h
*x^3 + 32*b*c^4*d*g*x^2 + 64*b*c^2*d*g + 9*(8*b*c^4*d*f + 3*b*c^2*d*h)*x)*e
)*sqrt(-c^2*x^2 + 1))/c^5
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 821 vs. $2(352) = 704$.
time = 0.58, size = 821, normalized size = 2.27

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**2*(h*x**2+g*x+f)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d**2*f*x + a*d**2*g*x**2/2 + a*d**2*h*x**3/3 + a*d*e*f*x**2 +
2*a*d*e*g*x**3/3 + a*d*e*h*x**4/2 + a*e**2*f*x**3/3 + a*e**2*g*x**4/4 + a*e
**2*h*x**5/5 + b*d**2*f*x*asin(c*x) + b*d**2*g*x**2*asin(c*x)/2 + b*d**2*h*
x**3*asin(c*x)/3 + b*d*e*f*x**2*asin(c*x) + 2*b*d*e*g*x**3*asin(c*x)/3 + b*
d*e*h*x**4*asin(c*x)/2 + b*e**2*f*x**3*asin(c*x)/3 + b*e**2*g*x**4*asin(c*x
)/4 + b*e**2*h*x**5*asin(c*x)/5 + b*d**2*f*sqrt(-c**2*x**2 + 1)/c + b*d**2*
g*x*sqrt(-c**2*x**2 + 1)/(4*c) + b*d**2*h*x**2*sqrt(-c**2*x**2 + 1)/(9*c) +
 b*d*e*f*x*sqrt(-c**2*x**2 + 1)/(2*c) + 2*b*d*e*g*x**2*sqrt(-c**2*x**2 + 1)
/(9*c) + b*d*e*h*x**3*sqrt(-c**2*x**2 + 1)/(8*c) + b*e**2*f*x**2*sqrt(-c**2
*x**2 + 1)/(9*c) + b*e**2*g*x**3*sqrt(-c**2*x**2 + 1)/(16*c) + b*e**2*h*x**
4*sqrt(-c**2*x**2 + 1)/(25*c) - b*d**2*g*asin(c*x)/(4*c**2) - b*d*e*f*asin(
c*x)/(2*c**2) + 2*b*d**2*h*sqrt(-c**2*x**2 + 1)/(9*c**3) + 4*b*d*e*g*sqrt(-
c**2*x**2 + 1)/(9*c**3) + 3*b*d*e*h*x*sqrt(-c**2*x**2 + 1)/(16*c**3) + 2*b*
e**2*f*sqrt(-c**2*x**2 + 1)/(9*c**3) + 3*b*e**2*g*x*sqrt(-c**2*x**2 + 1)/(3
2*c**3) + 4*b*e**2*h*x**2*sqrt(-c**2*x**2 + 1)/(75*c**3) - 3*b*d*e*h*asin(c
*x)/(16*c**4) - 3*b*e**2*g*asin(c*x)/(32*c**4) + 8*b*e**2*h*sqrt(-c**2*x**2
 + 1)/(75*c**5), Ne(c, 0)), (a*(d**2*f*x + d**2*g*x**2/2 + d**2*h*x**3/3 +
d*e*f*x**2 + 2*d*e*g*x**3/3 + d*e*h*x**4/2 + e**2*f*x**3/3 + e**2*g*x**4/4
+ e**2*h*x**5/5), True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 847 vs. $2(332) = 664$.
time = 0.41, size = 847, normalized size = 2.35

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/5*a*e^2*h*x^5 + 1/4*a*e^2*g*x^4 + 1/2*a*d*e*h*x^4 + 1/3*a*e^2*f*x^3 + 2/3
*a*d*e*g*x^3 + 1/3*a*d^2*h*x^3 + b*d^2*f*x*arcsin(c*x) + a*d^2*f*x + 1/3*(c
^2*x^2 - 1)*b*e^2*f*x*arcsin(c*x)/c^2 + 2/3*(c^2*x^2 - 1)*b*d*e*g*x*arcsin(
c*x)/c^2 + 1/3*(c^2*x^2 - 1)*b*d^2*h*x*arcsin(c*x)/c^2 + 1/2*sqrt(-c^2*x^2
+ 1)*b*d*e*f*x/c + 1/4*sqrt(-c^2*x^2 + 1)*b*d^2*g*x/c + (c^2*x^2 - 1)*b*d*e
*f*arcsin(c*x)/c^2 + 1/2*(c^2*x^2 - 1)*b*d^2*g*arcsin(c*x)/c^2 + 1/3*b*e^2*
f*x*arcsin(c*x)/c^2 + 2/3*b*d*e*g*x*arcsin(c*x)/c^2 + 1/3*b*d^2*h*x*arcsin(
```

```
c*x)/c^2 + 1/5*(c^2*x^2 - 1)^2*b*e^2*h*x*arcsin(c*x)/c^4 + sqrt(-c^2*x^2 +
1)*b*d^2*f/c - 1/16*(-c^2*x^2 + 1)^(3/2)*b*e^2*g*x/c^3 - 1/8*(-c^2*x^2 + 1)
^(3/2)*b*d*e*h*x/c^3 + (c^2*x^2 - 1)*a*d*e*f/c^2 + 1/2*(c^2*x^2 - 1)*a*d^2*
g/c^2 + 1/2*b*d*e*f*arcsin(c*x)/c^2 + 1/4*b*d^2*g*arcsin(c*x)/c^2 + 1/4*(c^
2*x^2 - 1)^2*b*e^2*g*arcsin(c*x)/c^4 + 1/2*(c^2*x^2 - 1)^2*b*d*e*h*arcsin(c
*x)/c^4 + 2/5*(c^2*x^2 - 1)*b*e^2*h*x*arcsin(c*x)/c^4 - 1/9*(-c^2*x^2 + 1)^
(3/2)*b*e^2*f/c^3 - 2/9*(-c^2*x^2 + 1)^(3/2)*b*d*e*g/c^3 - 1/9*(-c^2*x^2 +
1)^(3/2)*b*d^2*h/c^3 + 5/32*sqrt(-c^2*x^2 + 1)*b*e^2*g*x/c^3 + 5/16*sqrt(-c
^2*x^2 + 1)*b*d*e*h*x/c^3 + 1/2*(c^2*x^2 - 1)*b*e^2*g*arcsin(c*x)/c^4 + (c^
2*x^2 - 1)*b*d*e*h*arcsin(c*x)/c^4 + 1/5*b*e^2*h*x*arcsin(c*x)/c^4 + 1/3*sq
rt(-c^2*x^2 + 1)*b*e^2*f/c^3 + 2/3*sqrt(-c^2*x^2 + 1)*b*d*e*g/c^3 + 1/3*sqr
t(-c^2*x^2 + 1)*b*d^2*h/c^3 + 1/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*e^2
*h/c^5 + 5/32*b*e^2*g*arcsin(c*x)/c^4 + 5/16*b*d*e*h*arcsin(c*x)/c^4 - 2/15
*(-c^2*x^2 + 1)^(3/2)*b*e^2*h/c^5 + 1/5*sqrt(-c^2*x^2 + 1)*b*e^2*h/c^5
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,\mathrm{asin}(c\,x))\,\left(d+e\,x\right)^2\,\left(h\,x^2+g\,x+f\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(d + e*x)^2*(f + g*x + h*x^2),x)
[Out] int((a + b*asin(c*x))*(d + e*x)^2*(f + g*x + h*x^2), x)
```

3.99 $\int (d+ex)\left(f+gx+hx^2\right)(a+b\mathbf{ArcSin}(cx))\,dx$

Optimal. Leaf size=223

$$\frac{b(eg+dh)x^2\sqrt{1-c^2x^2}}{9c}+\frac{behx^3\sqrt{1-c^2x^2}}{16c}+\frac{b(32(9c^2df+2eg+2dh)+9(8c^2(ef+dg)+3eh)\,x)\,\sqrt{1-c^2x}}{288c^3}$$

```
[Out] -1/32*b*(8*c^2*(d*g+e*f)+3*e*h)*arcsin(c*x)/c^4+d*f*x*(a+b*arcsin(c*x))+1/2
*(d*g+e*f)*x^2*(a+b*arcsin(c*x))+1/3*(d*h+e*g)*x^3*(a+b*arcsin(c*x))+1/4*e*
h*x^4*(a+b*arcsin(c*x))+1/9*b*(d*h+e*g)*x^2*(-c^2*x^2+1)^(1/2)/c+1/16*b*e*h
*x^3*(-c^2*x^2+1)^(1/2)/c+1/288*b*(288*c^2*d*f+64*d*h+64*e*g+9*(8*c^2*(d*g+
e*f)+3*e*h)*x)*(-c^2*x^2+1)^(1/2)/c^3
```

Rubi [A]
time = 0.31, antiderivative size = 223, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = {4833, 12, 1823, 794, 222}

$$\frac{1}{2}x^2(dg+ef)(a+b\text{ArcSin}(cx))+\frac{1}{3}x^3(dh+eg)(a+b\text{ArcSin}(cx))+dfx(a+b\text{ArcSin}(cx))+\frac{1}{4}ehx^4(a+b\text{ArcSin}(cx))-\frac{b\text{ArcSin}(cx)\left(8c^2(dg+ef)+3eh\right)}{32c^4}+\frac{bx^2\sqrt{1-c^2x^2}\,(dh+eg)}{9c}+\frac{behx^3\sqrt{1-c^2x^2}}{16c}+\frac{b\sqrt{1-c^2x^2}\left(9x\left(8c^2(dg+ef)+3eh\right)+32\left(9c^2df+2dh+2eg\right)\right)}{288c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)*(f + g*x + h*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*(e*g + d*h)*x^2*Sqrt[1 - c^2*x^2])/(9*c) + (b*e*h*x^3*Sqrt[1 - c^2*x^2])
/(16*c) + (b*(32*(9*c^2*d*f + 2*e*g + 2*d*h) + 9*(8*c^2*(e*f + d*g) + 3*e*h
)*x)*Sqrt[1 - c^2*x^2])/(288*c^3) - (b*(8*c^2*(e*f + d*g) + 3*e*h)*ArcSin[c
*x])/(32*c^4) + d*f*x*(a + b*ArcSin[c*x]) + ((e*f + d*g)*x^2*(a + b*ArcSin[
c*x]))/2 + ((e*g + d*h)*x^3*(a + b*ArcSin[c*x]))/3 + (e*h*x^4*(a + b*ArcSin
[c*x]))/4
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*((a + c*x^2)^(p
+ 1)/(2*c*(p + 1)*(2*p + 3))), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
```

```
Q[p, -1]
```

Rule 1823

```
Int[(Pq_)*((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2)^(p_), x_Symbol] :> With[
{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[f*(c*x)^(m + q - 1
)*((a + b*x^2)^(p + 1)/(b*c^(q - 1)*(m + q + 2*p + 1))), x] + Dist[1/(b*(m
+ q + 2*p + 1)), Int[(c*x)^m*(a + b*x^2)^p*ExpandToSum[b*(m + q + 2*p + 1)*
Pq - b*f*(m + q + 2*p + 1)*x^q - a*f*(m + q - 1)*x^(q - 2), x], x], x] /; G
tQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, m, p}, x] && PolyQ[
Pq, x] && ( !IGtQ[m, 0] || IGtQ[p + 1/2, -1])
```

Rule 4833

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_), x_Symbol] :> With[{u = IntHid
e[ExpandExpression[Px, x], x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, I
nt[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[{a, b, c}, x
] && PolynomialQ[Px, x]
```

Rubi steps

$$\int (d+ex)\left(f+gx+hx^2\right)\left(a+b\sin^{-1}(cx)\right)\,dx = dfx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}(ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)+$$

$$= dfx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}(ef+dg)x^2\left(a+b\sin^{-1}(cx)\right)+$$

$$= \frac{behx^3\sqrt{1-c^2x^2}}{16c}+dfx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}(ef+dg)x$$

$$= \frac{b(eg+dh)x^2\sqrt{1-c^2x^2}}{9c}+\frac{behx^3\sqrt{1-c^2x^2}}{16c}+dfx\left(a+\right.$$

$$= \frac{b(eg+dh)x^2\sqrt{1-c^2x^2}}{9c}+\frac{behx^3\sqrt{1-c^2x^2}}{16c}+\frac{b(32(9c^2}{}$$

$$= \frac{b(eg+dh)x^2\sqrt{1-c^2x^2}}{9c}+\frac{behx^3\sqrt{1-c^2x^2}}{16c}+\frac{b(32(9c^2}{}$$

Mathematica [A]
time = 0.18, size = 186, normalized size = 0.83

$$\frac{24ac^4x(2d(6f+x(3g+2hx))+ex(6f+x(4g+3hx)))+bc\sqrt{1-c^2x^2}\,(64eg+64dh+27ehx+2c^2(4d(36f+9gx+4hx^2)+ex(36f+16gx+9hx^2)))+3b(-24c^2(ef+dg)-9eh+8c^4x(2d(6f+3gx+2hx^2)+ex(6f+4gx+3hx^2)))\,\mathrm{ArcSin}(cx)}{288c^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)*(f + g*x + h*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (24*a*c^4*x*(2*d*(6*f + x*(3*g + 2*h*x)) + e*x*(6*f + x*(4*g + 3*h*x))) + b
*c*Sqrt[1 - c^2*x^2]*(64*e*g + 64*d*h + 27*e*h*x + 2*c^2*(4*d*(36*f + 9*g*x
 + 4*h*x^2) + e*x*(36*f + 16*g*x + 9*h*x^2))) + 3*b*(-24*c^2*(e*f + d*g) -
9*e*h + 8*c^4*x*(2*d*(6*f + 3*g*x + 2*h*x^2) + e*x*(6*f + 4*g*x + 3*h*x^2))
)*ArcSin[c*x])/(288*c^4)
```

Maple [A]
time = 0.14, size = 307, normalized size = 1.38

method	result
derivativedivides	$\frac{a\left(\frac{eh\,c^4x^4}{4}+\frac{(cdh+ceg)c^3x^3}{3}+\frac{\left(c^2dg+c^2ef\right)c^2x^2}{2}+d\,c^4fx\right)}{c^3}+\frac{b\left(\frac{\arcsin(cx)eh\,c^4x^4}{4}+\frac{\arcsin(cx)c^4dh\,x^3}{3}+\frac{\arcsin(cx)c^4eg\,x^3}{3}+\arcsin(c\ldots\right.}{}$
default	$\frac{a\left(\frac{eh\,c^4x^4}{4}+\frac{(cdh+ceg)c^3x^3}{3}+\frac{\left(c^2dg+c^2ef\right)c^2x^2}{2}+d\,c^4fx\right)}{c^3}+\frac{b\left(\frac{\arcsin(cx)eh\,c^4x^4}{4}+\frac{\arcsin(cx)c^4dh\,x^3}{3}+\frac{\arcsin(cx)c^4eg\,x^3}{3}+\arcsin(c\ldots\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(h*x^2+g*x+f)*(a+b*arcsin(c*x)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(a/c^3*(1/4*e*h*c^4*x^4+1/3*(c*d*h+c*e*g)*c^3*x^3+1/2*(c^2*d*g+c^2*e*f)
*c^2*x^2+d*c^4*f*x)+b/c^3*(1/4*arcsin(c*x)*e*h*c^4*x^4+1/3*arcsin(c*x)*c^4*
d*h*x^3+1/3*arcsin(c*x)*c^4*e*g*x^3+1/2*arcsin(c*x)*c^4*d*g*x^2+1/2*arcsin(
c*x)*c^4*e*f*x^2+arcsin(c*x)*d*c^4*f*x-1/4*e*h*(-1/4*c^3*x^3*(-c^2*x^2+1)^(
1/2)-3/8*c*x*(-c^2*x^2+1)^(1/2)+3/8*arcsin(c*x))-1/12*(4*c*d*h+4*c*e*g)*(-1
/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-c^2*x^2+1)^(1/2))-1/12*(6*c^2*d*g+6*c^2
*e*f)*(-1/2*c*x*(-c^2*x^2+1)^(1/2)+1/2*arcsin(c*x))+d*c^3*f*(-c^2*x^2+1)^(1
/2)))
```

Maxima [A]
time = 0.48, size = 340, normalized size = 1.52

$$\frac{1}{4}ahx^4e+\frac{1}{3}adhx^3+\frac{1}{3}agx^3e+\frac{1}{2}adgx^2+\frac{1}{2}afx^2e+\frac{1}{4}\left(2x^2\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}\,x}{c^2}-\frac{\arcsin(cx)}{c^3}\right)\right)bdg+\frac{1}{9}\left(3x^3\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2}+\frac{2\sqrt{-c^2x^2+1}}{c^4}\right)\right)bdh+adfx+\frac{1}{4}\left(2x^2\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}\,x}{c^2}-\frac{\arcsin(cx)}{c^3}\right)\right)bfe+\frac{1}{9}\left(3x^3\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2}+\frac{2\sqrt{-c^2x^2+1}}{c^4}\right)\right)bge+\frac{1}{32}\left(8x^4\arcsin(cx)+\left(\frac{2\sqrt{-c^2x^2+1}\,x^3}{c^2}+\frac{3\sqrt{-c^2x^2+1}\,x}{c^4}-\frac{3\arcsin(cx)}{c^5}\right)c\right)bhe+\frac{\left(cx\arcsin(cx)+\sqrt{-c^2x^2+1}\right)bdf}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/4*a*h*x^4*e + 1/3*a*d*h*x^3 + 1/3*a*g*x^3*e + 1/2*a*d*g*x^2 + 1/2*a*f*x^2
*e + 1/4*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c*x)/c^3
))*b*d*g + 1/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(
```

```
-c^2*x^2 + 1)/c^4))*b*d*h + a*d*f*x + 1/4*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2
*x^2 + 1)*x/c^2 - arcsin(c*x)/c^3))*b*f*e + 1/9*(3*x^3*arcsin(c*x) + c*(sqr
t(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*g*e + 1/32*(8*x^4*ar
csin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*
arcsin(c*x)/c^5)*c)*b*h*e + (c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*b*d*f/c
```

Fricas [A]
time = 2.71, size = 256, normalized size = 1.15

$$\frac{96\,ac^4dhx^3+144\,ac^4dgx^2+288\,ac^4dfx+3\,(32\,bc^4dhx^3+48\,bc^4dgx^2+96\,bc^4dfx-24\,bc^2dg+(24\,bc^4hx^4+32\,bc^4gx^3+48\,bc^4fx^2-24\,bc^2f-9\,bh)e)\arcsin(cx)+24\,(3\,ac^4hx^4+4\,ac^4gx^3+6\,ac^4fx^2)e+(32\,bc^3dhx^2+72\,bc^3dgx+288\,bc^3df+64\,bcdh+(18\,bc^3hx^3+32\,bc^3gx^2+64\,bcg+9\,(8\,bc^3f+3\,bch)x)e)\sqrt{-c^2x^2+1}}{288\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/288*(96*a*c^4*d*h*x^3 + 144*a*c^4*d*g*x^2 + 288*a*c^4*d*f*x + 3*(32*b*c^4
*d*h*x^3 + 48*b*c^4*d*g*x^2 + 96*b*c^4*d*f*x - 24*b*c^2*d*g + (24*b*c^4*h*x
^4 + 32*b*c^4*g*x^3 + 48*b*c^4*f*x^2 - 24*b*c^2*f - 9*b*h)*e)*arcsin(c*x) +
 24*(3*a*c^4*h*x^4 + 4*a*c^4*g*x^3 + 6*a*c^4*f*x^2)*e + (32*b*c^3*d*h*x^2 +
 72*b*c^3*d*g*x + 288*b*c^3*d*f + 64*b*c*d*h + (18*b*c^3*h*x^3 + 32*b*c^3*g
*x^2 + 64*b*c*g + 9*(8*b*c^3*f + 3*b*c*h)*x)*e)*sqrt(-c^2*x^2 + 1))/c^4
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 449 vs. $2(209) = 418$.
time = 0.38, size = 449, normalized size = 2.01

$$\begin{cases} adfx+\frac{adgx^2}{2}+\frac{adhx^3}{3}+\frac{aefx^2}{2}+\frac{aegx^3}{3}+\frac{aehx^4}{4}+bdfx\operatorname{asin}(cx)+\frac{bdgx^2\operatorname{asin}(cx)}{2}+\frac{bdhx^3\operatorname{asin}(cx)}{3}+\frac{befx^2\operatorname{asin}(cx)}{2}+\frac{begx^3\operatorname{asin}(cx)}{3}+\frac{behx^4\operatorname{asin}(cx)}{4}+\frac{bdf\sqrt{-c^2x^2+1}}{c}+\frac{bdgx\sqrt{-c^2x^2+1}}{4c}+\frac{bdhx^2\sqrt{-c^2x^2+1}}{9c}+\frac{befx\sqrt{-c^2x^2+1}}{4c}+\frac{begx^2\sqrt{-c^2x^2+1}}{9c}+\frac{behx^3\sqrt{-c^2x^2+1}}{16c}-\frac{bdg\operatorname{asin}(cx)}{4c^2}-\frac{bef\operatorname{asin}(cx)}{4c^2}+\frac{2bdh\sqrt{-c^2x^2+1}}{9c^3}+\frac{2beg\sqrt{-c^2x^2+1}}{9c^3}+\frac{3behx\sqrt{-c^2x^2+1}}{32c^3}-\frac{3beh\operatorname{asin}(cx)}{32c^4} & \text{for}\ c\neq 0\\ a\left(dfx+\frac{dgx^2}{2}+\frac{dhx^3}{3}+\frac{efx^2}{2}+\frac{egx^3}{3}+\frac{ehx^4}{4}\right) & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(h*x**2+g*x+f)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d*f*x + a*d*g*x**2/2 + a*d*h*x**3/3 + a*e*f*x**2/2 + a*e*g*x**
3/3 + a*e*h*x**4/4 + b*d*f*x*asin(c*x) + b*d*g*x**2*asin(c*x)/2 + b*d*h*x**
3*asin(c*x)/3 + b*e*f*x**2*asin(c*x)/2 + b*e*g*x**3*asin(c*x)/3 + b*e*h*x**
4*asin(c*x)/4 + b*d*f*sqrt(-c**2*x**2 + 1)/c + b*d*g*x*sqrt(-c**2*x**2 + 1)
/(4*c) + b*d*h*x**2*sqrt(-c**2*x**2 + 1)/(9*c) + b*e*f*x*sqrt(-c**2*x**2 +
1)/(4*c) + b*e*g*x**2*sqrt(-c**2*x**2 + 1)/(9*c) + b*e*h*x**3*sqrt(-c**2*x*
*2 + 1)/(16*c) - b*d*g*asin(c*x)/(4*c**2) - b*e*f*asin(c*x)/(4*c**2) + 2*b*
d*h*sqrt(-c**2*x**2 + 1)/(9*c**3) + 2*b*e*g*sqrt(-c**2*x**2 + 1)/(9*c**3) +
 3*b*e*h*x*sqrt(-c**2*x**2 + 1)/(32*c**3) - 3*b*e*h*asin(c*x)/(32*c**4), Ne
(c, 0)), (a*(d*f*x + d*g*x**2/2 + d*h*x**3/3 + e*f*x**2/2 + e*g*x**3/3 + e*
h*x**4/4), True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 448 vs. $2(200) = 400$.
time = 0.43, size = 448, normalized size = 2.01

$$\frac{1}{4}\,aehx^4+\frac{1}{3}\,aegx^3+\frac{1}{3}\,adhx^3+bdfx\arcsin(cx)+adfx+\frac{(c^2x^2-1)begx\arcsin(cx)}{3\,c^2}+\frac{(c^2x^2-1)bdhx\arcsin(cx)}{3\,c^2}+\frac{\sqrt{-c^2x^2+1}\,befx}{4\,c}+\frac{\sqrt{-c^2x^2+1}\,bdgx}{4\,c}+\frac{(c^2x^2-1)bef\arcsin(cx)}{2\,c^2}+\frac{(c^2x^2-1)bdg\arcsin(cx)}{2\,c^2}+\frac{begx\arcsin(cx)}{3\,c^2}+\frac{bdhx\arcsin(cx)}{3\,c^2}+\frac{\sqrt{-c^2x^2+1}\,bdf}{c}-\frac{(-c^2x^2+1)^{\frac{3}{2}}behx}{16\,c^3}+\frac{(c^2x^2-1)aef}{2\,c^2}+\frac{(c^2x^2-1)adg}{2\,c^2}+\frac{bef\arcsin(cx)}{4\,c^2}+\frac{bdg\arcsin(cx)}{4\,c^2}+\frac{(c^2x^2-1)^2beh\arcsin(cx)}{4\,c^4}-\frac{(-c^2x^2+1)^{\frac{3}{2}}beg}{9\,c^3}-\frac{(-c^2x^2+1)^{\frac{3}{2}}bdh}{9\,c^3}+\frac{5\,\sqrt{-c^2x^2+1}\,behx}{32\,c^3}+\frac{(c^2x^2-1)beh\arcsin(cx)}{2\,c^4}+\frac{\sqrt{-c^2x^2+1}\,beg}{3\,c^3}+\frac{\sqrt{-c^2x^2+1}\,bdh}{3\,c^3}+\frac{5\,beh\arcsin(cx)}{32\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/4*a*e*h*x^4 + 1/3*a*e*g*x^3 + 1/3*a*d*h*x^3 + b*d*f*x*arcsin(c*x) + a*d*f
*x + 1/3*(c^2*x^2 - 1)*b*e*g*x*arcsin(c*x)/c^2 + 1/3*(c^2*x^2 - 1)*b*d*h*x*
arcsin(c*x)/c^2 + 1/4*sqrt(-c^2*x^2 + 1)*b*e*f*x/c + 1/4*sqrt(-c^2*x^2 + 1)
*b*d*g*x/c + 1/2*(c^2*x^2 - 1)*b*e*f*arcsin(c*x)/c^2 + 1/2*(c^2*x^2 - 1)*b*
d*g*arcsin(c*x)/c^2 + 1/3*b*e*g*x*arcsin(c*x)/c^2 + 1/3*b*d*h*x*arcsin(c*x)
/c^2 + sqrt(-c^2*x^2 + 1)*b*d*f/c - 1/16*(-c^2*x^2 + 1)^(3/2)*b*e*h*x/c^3 +
 1/2*(c^2*x^2 - 1)*a*e*f/c^2 + 1/2*(c^2*x^2 - 1)*a*d*g/c^2 + 1/4*b*e*f*arcs
in(c*x)/c^2 + 1/4*b*d*g*arcsin(c*x)/c^2 + 1/4*(c^2*x^2 - 1)^2*b*e*h*arcsin(
c*x)/c^4 - 1/9*(-c^2*x^2 + 1)^(3/2)*b*e*g/c^3 - 1/9*(-c^2*x^2 + 1)^(3/2)*b*
d*h/c^3 + 5/32*sqrt(-c^2*x^2 + 1)*b*e*h*x/c^3 + 1/2*(c^2*x^2 - 1)*b*e*h*arc
sin(c*x)/c^4 + 1/3*sqrt(-c^2*x^2 + 1)*b*e*g/c^3 + 1/3*sqrt(-c^2*x^2 + 1)*b*
d*h/c^3 + 5/32*b*e*h*arcsin(c*x)/c^4
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (a + b\,\mathrm{asin}(c\,x))\,(d + e\,x)\,\left(h\,x^2 + g\,x + f\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(d + e*x)*(f + g*x + h*x^2),x)
```

```
[Out] int((a + b*asin(c*x))*(d + e*x)*(f + g*x + h*x^2), x)
```

3.100 $\int \frac{(f+gx+hx^2)(a+b\text{ArcSin}(cx))}{d+ex} \, dx$

Optimal. Leaf size=459

$$\frac{b(4(eg-dh)+ehx)\sqrt{1-c^2x^2}}{4ce^2}-\frac{bh\text{ArcSin}(cx)}{4c^2e}-\frac{ib(e^2f-deg+d^2h)\text{ArcSin}(cx)^2}{2e^3}+\frac{(eg-dh)x(a+b\text{ArcS}}{e^2}$$

```
[Out] -1/4*b*h*arcsin(c*x)/c^2/e-1/2*I*b*(d^2*h-d*e*g+e^2*f)*arcsin(c*x)^2/e^3+(-
d*h+e*g)*x*(a+b*arcsin(c*x))/e^2+1/2*h*x^2*(a+b*arcsin(c*x))/e-b*(d^2*h-d*e
*g+e^2*f)*arcsin(c*x)*ln(e*x+d)/e^3+(d^2*h-d*e*g+e^2*f)*(a+b*arcsin(c*x))*l
n(e*x+d)/e^3+b*(d^2*h-d*e*g+e^2*f)*arcsin(c*x)*ln(1-I*e*(I*c*x+(-c^2*x^2+1)
^(1/2))/(c*d-(c^2*d^2-e^2)^(1/2)))/e^3+b*(d^2*h-d*e*g+e^2*f)*arcsin(c*x)*ln
(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d+(c^2*d^2-e^2)^(1/2)))/e^3-I*b*(d^2*h
-d*e*g+e^2*f)*polylog(2,I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d-(c^2*d^2-e^2)^(
1/2)))/e^3-I*b*(d^2*h-d*e*g+e^2*f)*polylog(2,I*e*(I*c*x+(-c^2*x^2+1)^(1/2))
/(c*d+(c^2*d^2-e^2)^(1/2)))/e^3+1/4*b*(e*h*x-4*d*h+4*e*g)*(-c^2*x^2+1)^(1/2
)/c/e^2
```

Rubi [A]
time = 0.57, antiderivative size = 459, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 12, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.462$, Rules used = {712, 4837, 12, 6874, 794, 222, 2451, 4825, 4615, 2221, 2317, 2438}

$$\frac{\log(d+ex)(a+b\text{ArcSin}(cx))(d^2h-deg+e^2f)}{e^3}+\frac{x(eg-dh)(a+b\text{ArcSin}(cx))}{e^2}+\frac{hx^2(a+b\text{ArcSin}(cx))}{2e}-\frac{ib(d^2h-deg+e^2f)\text{Li}_2\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^3}-\frac{ib(d^2h-deg+e^2f)\text{Li}_2\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)}{e^3}+\frac{b\text{ArcSin}(cx)(d^2h-deg+e^2f)\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^3}+\frac{b\text{ArcSin}(cx)(d^2h-deg+e^2f)\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e^3}-\frac{bh\text{ArcSin}(cx)}{4c^2e}-\frac{ib\text{ArcSin}(cx)^2(d^2h-deg+e^2f)}{2e^3}-\frac{b\text{ArcSin}(cx)\log(d+ex)(d^2h-deg+e^2f)}{e^3}+\frac{b\sqrt{1-c^2x^2}(4(eg-dh)+ehx)}{4ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x + h*x^2)*(a + b*ArcSin[c*x]))/(d + e*x),x]
```

```
[Out] (b*(4*(e*g - d*h) + e*h*x)*Sqrt[1 - c^2*x^2])/(4*c*e^2) - (b*h*ArcSin[c*x])
/(4*c^2*e) - ((I/2)*b*(e^2*f - d*e*g + d^2*h)*ArcSin[c*x]^2)/e^3 + ((e*g -
d*h)*x*(a + b*ArcSin[c*x]))/e^2 + (h*x^2*(a + b*ArcSin[c*x]))/(2*e) + (b*(e
^2*f - d*e*g + d^2*h)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sq
rt[c^2*d^2 - e^2])])/e^3 + (b*(e^2*f - d*e*g + d^2*h)*ArcSin[c*x]*Log[1 - (
I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^3 - (b*(e^2*f - d*e*
g + d^2*h)*ArcSin[c*x]*Log[d + e*x])/e^3 + ((e^2*f - d*e*g + d^2*h)*(a + b*
ArcSin[c*x])*Log[d + e*x])/e^3 - (I*b*(e^2*f - d*e*g + d^2*h)*PolyLog[2, (I
*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^3 - (I*b*(e^2*f - d*e
*g + d^2*h)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]
)/e^3
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 712

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*((a + c*x^2)^(p
+ 1)/(2*c*(p + 1)*(2*p + 3))), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2451

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 4615

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Int[(e + f*x)^m*(E^(I*(c + d*x))/(a - Rt[a^2 - b^2, 2] - I*b*E^(
I*(c + d*x)))), x] + Int[(e + f*x)^m*(E^(I*(c + d*x))/(a + Rt[a^2 - b^2, 2]
 - I*b*E^(I*(c + d*x)))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0]
 && PosQ[a^2 - b^2]
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[(a + b*x)^n*(Cos[x]/(c*d + e*Sin[x])), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4837

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(f+gx+hx^2)\,(a+b\sin^{-1}(cx))}{d+ex}\,dx = \frac{(eg-dh)x(a+b\sin^{-1}(cx))}{e^2} + \frac{hx^2(a+b\sin^{-1}(cx))}{2e} + \frac{(e^2f-deg\ \cdots}{\cdots}$$

$$= \frac{(eg-dh)x(a+b\sin^{-1}(cx))}{e^2} + \frac{hx^2(a+b\sin^{-1}(cx))}{2e} + \frac{(e^2f-deg\ \cdots}{\cdots}$$

$$= \frac{(eg-dh)x(a+b\sin^{-1}(cx))}{e^2} + \frac{hx^2(a+b\sin^{-1}(cx))}{2e} + \frac{(e^2f-deg\ \cdots}{\cdots}$$

$$= \frac{(eg-dh)x(a+b\sin^{-1}(cx))}{e^2} + \frac{hx^2(a+b\sin^{-1}(cx))}{2e} + \frac{(e^2f-deg\ \cdots}{\cdots}$$

$$= \frac{b(4(eg-dh)+ehx)\sqrt{1-c^2x^2}}{4ce^2} + \frac{(eg-dh)x(a+b\sin^{-1}(cx))}{e^2} + \cdots$$

$$= \frac{b(4(eg-dh)+ehx)\sqrt{1-c^2x^2}}{4ce^2} - \frac{bh\sin^{-1}(cx)}{4c^2e} + \frac{(eg-dh)x(a+\cdots}{e^2}$$

$$= \frac{b(4(eg-dh)+ehx)\sqrt{1-c^2x^2}}{4ce^2} - \frac{bh\sin^{-1}(cx)}{4c^2e} - \frac{ib(e^2f-deg+\cdots}{2e\cdots}$$

$$= \frac{b(4(eg-dh)+ehx)\sqrt{1-c^2x^2}}{4ce^2} - \frac{bh\sin^{-1}(cx)}{4c^2e} - \frac{ib(e^2f-deg+\cdots}{2e\cdots}$$

$$= \frac{b(4(eg-dh)+ehx)\sqrt{1-c^2x^2}}{4ce^2} - \frac{bh\sin^{-1}(cx)}{4c^2e} - \frac{ib(e^2f-deg+\cdots}{2e\cdots}$$

$$= \frac{b(4(eg-dh)+ehx)\sqrt{1-c^2x^2}}{4ce^2} - \frac{bh\sin^{-1}(cx)}{4c^2e} - \frac{ib(e^2f-deg+\cdots}{2e\cdots}$$

Mathematica [**B**] Both result and optimal contain complex but leaf count is larger than twice the leaf count of optimal. 928 vs. $2(459) = 918$.
time = 2.00, size = 928, normalized size = 2.02

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x + h*x^2)*(a + b*ArcSin[c*x]))/(d + e*x),x]
```

```
[Out] (8*a*c^2*e*(e*g - d*h)*x + 4*a*c^2*e^2*h*x^2 + 8*a*c^2*(e^2*f - d*e*g + d^2
*h)*Log[d + e*x] + b*c*e*g*(8*e*Sqrt[1 - c^2*x^2] + 8*c*e*x*ArcSin[c*x] - c
```

```
*d*(I*(Pi - 2*ArcSin[c*x])^2 - (32*I)*ArcSin[Sqrt[1 + (c*d)/e]/Sqrt[2]]*Arc
Tan[((c*d - e)*Cot[(Pi + 2*ArcSin[c*x])/4])/Sqrt[c^2*d^2 - e^2]] - 4*(Pi +
4*ArcSin[Sqrt[1 + (c*d)/e]/Sqrt[2]] - 2*ArcSin[c*x])*Log[1 - (I*(-(c*d) + S
qrt[c^2*d^2 - e^2]))/(e*E^(I*ArcSin[c*x]))] - 4*(Pi - 4*ArcSin[Sqrt[1 + (c*
d)/e]/Sqrt[2]] - 2*ArcSin[c*x])*Log[1 + (I*(c*d + Sqrt[c^2*d^2 - e^2]))/(e*
E^(I*ArcSin[c*x]))] + 4*(Pi - 2*ArcSin[c*x])*Log[c*(d + e*x)] + 8*ArcSin[c*
x]*Log[c*(d + e*x)] + (8*I)*(PolyLog[2, (I*(-(c*d) + Sqrt[c^2*d^2 - e^2]))/
(e*E^(I*ArcSin[c*x]))] + PolyLog[2, ((-I)*(c*d + Sqrt[c^2*d^2 - e^2]))/(e*E
^(I*ArcSin[c*x]))]))) - (4*I)*b*c^2*e^2*f*(ArcSin[c*x]*(ArcSin[c*x] + (2*I)
*(Log[1 + (I*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] + Log[1 -
 (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])) + 2*PolyLog[2, ((-I
)*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] + 2*PolyLog[2, (I*e*
E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]) - b*h*(8*c*d*e*Sqrt[1 - c^
2*x^2] + 8*c^2*d*e*x*ArcSin[c*x] + (4*I)*c^2*d^2*ArcSin[c*x]^2 + 2*e^2*ArcS
in[c*x]*Cos[2*ArcSin[c*x]] - 8*c^2*d^2*ArcSin[c*x]*Log[1 + (I*e*E^(I*ArcSin
[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] - 8*c^2*d^2*ArcSin[c*x]*Log[1 - (I*
e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])] + (8*I)*c^2*d^2*PolyLog[2
, ((-I)*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] + (8*I)*c^2*d^
2*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])] - e^2*Sin
[2*ArcSin[c*x]]))/(8*c^2*e^3)
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 2484 vs. $2(464) = 928$.
time = 0.86, size = 2485, normalized size = 5.41

method	result	size
derivativedivides	Expression too large to display	2485
default	Expression too large to display	2485

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d),x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(-a*c/e^2*ln(c*e*x+c*d)*d*g+I*b*c/e*d^2*h/(c^2*d^2-e^2)*dilog((I*d*c+e*
(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2
)))+I*b*c/e*d^2*h/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(
-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-b*c/e*d^2*h*arcsin(c*x)/
(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/
(I*d*c-(-c^2*d^2+e^2)^(1/2)))-b*c/e*d^2*h*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d
*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)
^(1/2)))+b*c^3/e^3*d^4*h*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2
*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+b*c^3/e^
3*d^4*h*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-
c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-I*b*c^3/e^3*d^4*h/(c^2*d^
2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d
*c+(-c^2*d^2+e^2)^(1/2)))-b*c^3/e^2*d^3*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d
```

```
*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)
^(1/2)))+b*c^3/e*d^2*f*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x
^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+b*c^3/e*d^
2*f*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*
d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+I*b*c^3/e^2*d^3*g/(c^2*d^2-e^
2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(
-c^2*d^2+e^2)^(1/2)))-I*b*c^3/e*f/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2
*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*d^2-b*c^
3/e^2*d^3*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2)
)+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-I*b*c^3/e*f/(c^2*d^2-
e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c
+(-c^2*d^2+e^2)^(1/2)))*d^2+I*b*c^3/e^2*d^3*g/(c^2*d^2-e^2)*dilog((I*d*c+e*
(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2
)))+b*arcsin(c*x)*g/e*c*x-1/2*I*b*c*arcsin(c*x)^2/e*f-I*b*c^3/e^3*d^4*h/(c^
2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/
(I*d*c-(-c^2*d^2+e^2)^(1/2)))+b*g/e*(-c^2*x^2+1)^(1/2)+a*g/e*c*x+a*c/e*ln(c
*e*x+c*d)*f+1/2*I*b*c*arcsin(c*x)^2/e^2*d*g+I*b*c*e*f/(c^2*d^2-e^2)*dilog((
I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e
^2)^(1/2)))-b*c*e*f*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+
1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+I*b*c*e*f/(c^
2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/
(I*d*c+(-c^2*d^2+e^2)^(1/2)))+b*c*d*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e
*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/
2)))-b*c*e*f*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2
))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-I*b*c*d*g/(c^2*d^2-e
^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-
(-c^2*d^2+e^2)^(1/2)))+b*c*d*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x
+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-I*
b*c*d*g/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e
^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-1/2*I*b*c*arcsin(c*x)^2/e^3*d^2*h-
b*arcsin(c*x)/e^2*d*h*c*x-b/e^2*(-c^2*x^2+1)^(1/2)*d*h+1/8*b/c/e*h*sin(2*ar
csin(c*x))+a*c/e^3*ln(c*e*x+c*d)*d^2*h-a/e^2*d*h*c*x+1/2*a*c/e*h*x^2-1/4*b/
c/e*h*arcsin(c*x)*cos(2*arcsin(c*x)))
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d),x, algorithm="maxima")

[Out] a*f*e^(-1)*log(x*e + d) - (d*e^(-2)*log(x*e + d) - x*e^(-1))*a*g + 1/2*(2*d
^2*e^(-3)*log(x*e + d) + (x^2*e - 2*d*x)*e^(-2))*a*h + integrate((b*h*x^2 +
 b*g*x + b*f)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(x*e + d), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d),x, algorithm="fricas")
[Out] integral((a*h*x^2 + a*g*x + a*f + (b*h*x^2 + b*g*x + b*f)*arcsin(c*x))/(x*e
 + d), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\operatorname{asin}(cx))(f + gx + hx^2)}{d + ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x**2+g*x+f)*(a+b*asin(c*x))/(e*x+d),x)
[Out] Integral((a + b*asin(c*x))*(f + g*x + h*x**2)/(d + e*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d),x, algorithm="giac")
[Out] integrate((h*x^2 + g*x + f)*(b*arcsin(c*x) + a)/(e*x + d), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\operatorname{asin}(c\,x))\ (h\,x^2 + g\,x + f)}{d + e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(f + g*x + h*x^2))/(d + e*x),x)
[Out] int(((a + b*asin(c*x))*(f + g*x + h*x^2))/(d + e*x), x)
```

3.101 $\int \frac{(f+gx+hx^2)(a+b\text{ArcSin}(cx))}{(d+ex)^2}\,dx$

Optimal. Leaf size=460

$$\frac{bh\sqrt{1-c^2x^2}}{ce^2}-\frac{ib(eg-2dh)\text{ArcSin}(cx)^2}{2e^3}+\frac{hx(a+b\text{ArcSin}(cx))}{e^2}-\frac{(e^2f-deg+d^2h)\,(a+b\text{ArcSin}(cx))}{e^3(d+ex)}+\frac{bc(}{}$$

```
[Out] -1/2*I*b*(-2*d*h+e*g)*arcsin(c*x)^2/e^3+h*x*(a+b*arcsin(c*x))/e^2-(d^2*h-d*
e*g+e^2*f)*(a+b*arcsin(c*x))/e^3/(e*x+d)-b*(-2*d*h+e*g)*arcsin(c*x)*ln(e*x+
d)/e^3+(-2*d*h+e*g)*(a+b*arcsin(c*x))*ln(e*x+d)/e^3+b*(-2*d*h+e*g)*arcsin(c
*x)*ln(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d-(c^2*d^2-e^2)^(1/2)))/e^3+b*(-
2*d*h+e*g)*arcsin(c*x)*ln(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d+(c^2*d^2-e^
2)^(1/2)))/e^3-I*b*(-2*d*h+e*g)*polylog(2,I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c
*d-(c^2*d^2-e^2)^(1/2)))/e^3-I*b*(-2*d*h+e*g)*polylog(2,I*e*(I*c*x+(-c^2*x^
2+1)^(1/2))/(c*d+(c^2*d^2-e^2)^(1/2)))/e^3+b*c*(d^2*h-d*e*g+e^2*f)*arctan((
c^2*d*x+e)/(c^2*d^2-e^2)^(1/2)/(-c^2*x^2+1)^(1/2))/e^3/(c^2*d^2-e^2)^(1/2)+
b*h*(-c^2*x^2+1)^(1/2)/c/e^2
```

Rubi [A]
time = 0.60, antiderivative size = 460, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 14, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.538$, Rules used = {712, 4837, 12, 6874, 267, 739, 210, 222, 2451, 4825, 4615, 2221, 2317, 2438}

$$-\frac{(a+b\text{ArcSin}(cx))\,(d^2h-deg+e^2f)}{e^3(d+ex)}+\frac{(eg-2dh)\log(d+ex)(a+b\text{ArcSin}(cx))}{e^3}+\frac{hx(a+b\text{ArcSin}(cx))}{e^2}-\frac{ib(eg-2dh)\text{Li}_2\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^3}-\frac{ib(eg-2dh)\text{Li}_2\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)}{e^3}+\frac{b\text{ArcSin}(cx)(eg-2dh)\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^3}+\frac{b\text{ArcSin}(cx)(eg-2dh)\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e^3}-\frac{ib\text{ArcSin}(cx)^2(eg-2dh)}{2e^3}-\frac{b\text{ArcSin}(cx)(eg-2dh)\log(d+ex)}{e^3}+\frac{bc\text{ArcTan}\left(\frac{c^2dx+e}{\sqrt{1-c^2x^2}\sqrt{c^2d^2-e^2}}\right)(d^2h-deg+e^2f)}{e^3\sqrt{c^2d^2-e^2}}+\frac{bh\sqrt{1-c^2x^2}}{ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x + h*x^2)*(a + b*ArcSin[c*x]))/(d + e*x)^2,x]
```

```
[Out] (b*h*Sqrt[1 - c^2*x^2])/(c*e^2) - ((I/2)*b*(e*g - 2*d*h)*ArcSin[c*x]^2)/e^3
 + (h*x*(a + b*ArcSin[c*x]))/e^2 - ((e^2*f - d*e*g + d^2*h)*(a + b*ArcSin[c
*x]))/(e^3*(d + e*x)) + (b*c*(e^2*f - d*e*g + d^2*h)*ArcTan[(e + c^2*d*x)/(
Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(e^3*Sqrt[c^2*d^2 - e^2]) + (b*(e*
g - 2*d*h)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2
- e^2])])/e^3 + (b*(e*g - 2*d*h)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x])
)/(c*d + Sqrt[c^2*d^2 - e^2])])/e^3 - (b*(e*g - 2*d*h)*ArcSin[c*x]*Log[d +
e*x])/e^3 + ((e*g - 2*d*h)*(a + b*ArcSin[c*x])*Log[d + e*x])/e^3 - (I*b*(e*
g - 2*d*h)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])
/e^3 - (I*b*(e*g - 2*d*h)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^
2*d^2 - e^2])])/e^3
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 712

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 739

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2451

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 4615

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Int[(e + f*x)^m*(E^(I*(c + d*x))/(a - Rt[a^2 - b^2, 2] - I*b*E^(
I*(c + d*x)))), x] + Int[(e + f*x)^m*(E^(I*(c + d*x))/(a + Rt[a^2 - b^2, 2]
 - I*b*E^(I*(c + d*x)))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0]
 && PosQ[a^2 - b^2]
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[(a + b*x)^n*(Cos[x]/(c*d + e*Sin[x])), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4837

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(f+gx+hx^2)(a+b\sin^{-1}(cx))}{(d+ex)^2}\,dx = \frac{hx(a+b\sin^{-1}(cx))}{e^2} - \frac{(e^2f-deg+d^2h)(a+b\sin^{-1}(cx))}{e^3(d+ex)} + \frac{(eg$$

$$= \frac{hx(a+b\sin^{-1}(cx))}{e^2} - \frac{(e^2f-deg+d^2h)(a+b\sin^{-1}(cx))}{e^3(d+ex)} + \frac{(eg$$

$$= \frac{hx(a+b\sin^{-1}(cx))}{e^2} - \frac{(e^2f-deg+d^2h)(a+b\sin^{-1}(cx))}{e^3(d+ex)} + \frac{(eg$$

$$= \frac{hx(a+b\sin^{-1}(cx))}{e^2} - \frac{(e^2f-deg+d^2h)(a+b\sin^{-1}(cx))}{e^3(d+ex)} + \frac{(eg$$

$$= \frac{bh\sqrt{1-c^2x^2}}{ce^2} + \frac{hx(a+b\sin^{-1}(cx))}{e^2} - \frac{(e^2f-deg+d^2h)(a+b}{e^3(d+ex)}$$

$$= \frac{bh\sqrt{1-c^2x^2}}{ce^2} + \frac{hx(a+b\sin^{-1}(cx))}{e^2} - \frac{(e^2f-deg+d^2h)(a+b}{e^3(d+ex)}$$

$$= \frac{bh\sqrt{1-c^2x^2}}{ce^2} - \frac{ib(eg-2dh)\sin^{-1}(cx)^2}{2e^3} + \frac{hx(a+b\sin^{-1}(cx))}{e^2} -$$

$$= \frac{bh\sqrt{1-c^2x^2}}{ce^2} - \frac{ib(eg-2dh)\sin^{-1}(cx)^2}{2e^3} + \frac{hx(a+b\sin^{-1}(cx))}{e^2} -$$

$$= \frac{bh\sqrt{1-c^2x^2}}{ce^2} - \frac{ib(eg-2dh)\sin^{-1}(cx)^2}{2e^3} + \frac{hx(a+b\sin^{-1}(cx))}{e^2} -$$

$$= \frac{bh\sqrt{1-c^2x^2}}{ce^2} - \frac{ib(eg-2dh)\sin^{-1}(cx)^2}{2e^3} + \frac{hx(a+b\sin^{-1}(cx))}{e^2} -$$

Mathematica [C] Result contains higher order function than in optimal. Order 6 vs. order 4 in optimal.
time = 1.85, size = 770, normalized size = 1.67

$$\frac{2aehx - \frac{2a(e^2f-deg+d^2h)}{d+ex} - 2bef\left(\frac{c\sqrt{\frac{e\left(-\sqrt{\frac{1}{c^2}}+x\right)}{d+ex}}\sqrt{\frac{e\left(\sqrt{\frac{1}{c^2}}+x\right)}{d+ex}}F_1\left(1;\frac{1}{2},\frac{1}{2};2;\frac{d-\sqrt{\frac{1}{c^2}}e}{d+ex},\frac{d+\sqrt{\frac{1}{c^2}}e}{d+ex}\right)}{\sqrt{1-c^2x^2}} + \frac{e\text{ArcSin}(cx)}{d+ex}\right) + 2a(eg-2dh)\log(d+ex) + beg\left(\frac{2d\text{ArcSin}(cx)}{d+ex} - i\text{ArcSin}(cx)^2 - \frac{2cd\text{ArcTan}\left(\frac{e+c^2dx}{\sqrt{c^2d^2-e^2}\sqrt{1-c^2x^2}}\right)}{\sqrt{c^2d^2-e^2}} + 2\text{ArcSin}(cx)\log\left(1+\frac{iee^{i\text{ArcSin}(cx)}}{-cd+\sqrt{c^2d^2-e^2}}\right) + 2\text{ArcSin}(cx)\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right) - 2i\text{PolyLog}\left(2,-\frac{iee^{i\text{ArcSin}(cx)}}{-cd+\sqrt{c^2d^2-e^2}}\right) - 2i\text{PolyLog}\left(2,\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)\right) + 2bh\left(\frac{e\sqrt{1-c^2x^2}}{c} + ex\text{ArcSin}(cx) - \frac{d^2\text{ArcSin}(cx)}{d+ex} + id\text{ArcSin}(cx)^2 + \frac{cd^2\text{ArcTan}\left(\frac{e+c^2dx}{\sqrt{c^2d^2-e^2}\sqrt{1-c^2x^2}}\right)}{\sqrt{c^2d^2-e^2}} - 2d\text{ArcSin}(cx)\log\left(1+\frac{iee^{i\text{ArcSin}(cx)}}{-cd+\sqrt{c^2d^2-e^2}}\right) - 2d\text{ArcSin}(cx)\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right) + 2id\text{PolyLog}\left(2,-\frac{iee^{i\text{ArcSin}(cx)}}{-cd+\sqrt{c^2d^2-e^2}}\right) + 2id\text{PolyLog}\left(2,\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)\right)}{2e^3}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((f + g*x + h*x^2)*(a + b*ArcSin[c*x]))/(d + e*x)^2,x]
```

```
[Out] (2*a*e*h*x - (2*a*(e^2*f - d*e*g + d^2*h))/(d + e*x) - 2*b*e*f*((c*Sqrt[(e*
(-Sqrt[c^(-2)] + x))/(d + e*x)]*Sqrt[(e*(Sqrt[c^(-2)] + x))/(d + e*x)]*Appe
llF1[1, 1/2, 1/2, 2, (d - Sqrt[c^(-2)]*e)/(d + e*x), (d + Sqrt[c^(-2)]*e)/(
d + e*x)])/Sqrt[1 - c^2*x^2] + (e*ArcSin[c*x])/(d + e*x)) + 2*a*(e*g - 2*d*
h)*Log[d + e*x] + b*e*g*((2*d*ArcSin[c*x])/(d + e*x) - I*ArcSin[c*x]^2 - (2
*c*d*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/Sqrt[c^
2*d^2 - e^2] + 2*ArcSin[c*x]*Log[1 + (I*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt
[c^2*d^2 - e^2])] + 2*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sq
rt[c^2*d^2 - e^2])] - (2*I)*PolyLog[2, ((-I)*e*E^(I*ArcSin[c*x]))/(-(c*d) +
 Sqrt[c^2*d^2 - e^2])] - (2*I)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sq
rt[c^2*d^2 - e^2])]) + 2*b*h*((e*Sqrt[1 - c^2*x^2])/c + e*x*ArcSin[c*x] - (
d^2*ArcSin[c*x])/(d + e*x) + I*d*ArcSin[c*x]^2 + (c*d^2*ArcTan[(e + c^2*d*x
)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/Sqrt[c^2*d^2 - e^2] - 2*d*ArcSi
n[c*x]*Log[1 + (I*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] - 2*
d*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]
+ (2*I)*d*PolyLog[2, ((-I)*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^
2])] + (2*I)*d*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2
])]))/(2*e^3)
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 1957 vs. $2(467) = 934$.
time = 1.72, size = 1958, normalized size = 4.26

method	result	size
derivativedivides	Expression too large to display	1958
default	Expression too large to display	1958

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(-a*c^2/e^3/(c*e*x+c*d)*d^2*h-2*a*c/e^3*ln(c*e*x+c*d)*d*h+b*arcsin(c*x)
*h/e^2*c*x+a*c^2/e^2/(c*e*x+c*d)*d*g-b*c^2*arcsin(c*x)/e/(c*e*x+c*d)*f-2*I*
b/e^3*c^2*d^2*h/(c^2*d^2-e^2)^(1/2)*arctanh(1/2*(2*I*e*(I*c*x+(-c^2*x^2+1)^
(1/2))-2*d*c)/(c^2*d^2-e^2)^(1/2))-2*I*b/e*c*d*h/(c^2*d^2-e^2)*dilog((I*d*c
+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(
1/2)))+2*I*b/e^3*c^3*d^3*h/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)
^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+2*I*b/e^3*c^3*d
^3*h/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)
^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-2*I*b/e*c*d*h/(c^2*d^2-e^2)*dilog((I*
d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2
)^(1/2)))-2*b/e^3*c^3*d^3*h*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-
c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-2*b/e
^3*c^3*d^3*h*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2
```

```
))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+2*b/e*c*d*h*arcsin(c
*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/
2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+2*b/e*c*d*h*arcsin(c*x)/(c^2*d^2-e^2)*ln(
(I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+
e^2)^(1/2)))+b*h/e^2*(-c^2*x^2+1)^(1/2)-a*c^2/e/(c*e*x+c*d)*f+a*c*g/e^2*ln(
c*e*x+c*d)+I*b*c*g/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+
(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-b*c*g*arcsin(c*x)/(c^2*
d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*
c-(-c^2*d^2+e^2)^(1/2)))-b*c*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x
+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+I*
b*c*g/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2
)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-1/2*I*b*c*g*arcsin(c*x)^2/e^2+b*c^3/
e^2*d^2*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-
(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+b*c^3/e^2*d^2*g*arcsin(
c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1
/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+2*I*b*c^2/e^2*d*g/(c^2*d^2-e^2)^(1/2)*ar
ctanh(1/2*(2*I*e*(I*c*x+(-c^2*x^2+1)^(1/2))-2*d*c)/(c^2*d^2-e^2)^(1/2))+b*c
^2*arcsin(c*x)/e^2/(c*e*x+c*d)*d*g-2*I*b*c^2/e*f/(c^2*d^2-e^2)^(1/2)*arctan
h(1/2*(2*I*e*(I*c*x+(-c^2*x^2+1)^(1/2))-2*d*c)/(c^2*d^2-e^2)^(1/2))+a*h/e^2
*c*x-I*b*c^3/e^2*d^2*g/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/
2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-I*b*c^3/e^2*d^2*g/(
c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2)
)/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-b*arcsin(c*x)*c^2/e^3/(c*e*x+c*d)*d^2*h+I*b
*c*arcsin(c*x)^2/e^3*d*h)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c*d-%e>0)', see `assume?` for more
details
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] integral((a*h*x^2 + a*g*x + a*f + (b*h*x^2 + b*g*x + b*f)*arcsin(c*x))/(x^2
*e^2 + 2*d*x*e + d^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\operatorname{asin}{(cx)})(f + gx + hx^2)}{(d + ex)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x**2+g*x+f)*(a+b*asin(c*x))/(e*x+d)**2,x)
[Out] Integral((a + b*asin(c*x))*(f + g*x + h*x**2)/(d + e*x)**2, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^2,x, algorithm="giac")
[Out] integrate((h*x^2 + g*x + f)*(b*arcsin(c*x) + a)/(e*x + d)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\mathrm{asin}(c\,x))\,(h\,x^2 + g\,x + f)}{(d + e\,x)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(f + g*x + h*x^2))/(d + e*x)^2,x)
[Out] int(((a + b*asin(c*x))*(f + g*x + h*x^2))/(d + e*x)^2, x)
```

3.102 $\int \frac{(f+gx+hx^2)(a+b\text{ArcSin}(cx))}{(d+ex)^3}\,dx$

Optimal. Leaf size=488

$$\frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{2e^2(c^2d^2-e^2)(d+ex)}-\frac{ibh\text{ArcSin}(cx)^2}{2e^3}-\frac{(e^2f-deg+d^2h)(a+b\text{ArcSin}(cx))}{2e^3(d+ex)^2}-\frac{(eg-2dh)(a+}{e^3(d+}$$

```
[Out] -1/2*I*b*h*arcsin(c*x)^2/e^3-1/2*(d^2*h-d*e*g+e^2*f)*(a+b*arcsin(c*x))/e^3/
(e*x+d)^2-(-2*d*h+e*g)*(a+b*arcsin(c*x))/e^3/(e*x+d)-1/2*b*c*(2*e^2*(-2*d*h
+e*g)-c^2*d*(-3*d^2*h+d*e*g+e^2*f))*arctan((c^2*d*x+e)/(c^2*d^2-e^2)^(1/2)/
(-c^2*x^2+1)^(1/2))/e^3/(c^2*d^2-e^2)^(3/2)-b*h*arcsin(c*x)*ln(e*x+d)/e^3+h
*(a+b*arcsin(c*x))*ln(e*x+d)/e^3+b*h*arcsin(c*x)*ln(1-I*e*(I*c*x+(-c^2*x^2+
1)^(1/2))/(c*d-(c^2*d^2-e^2)^(1/2)))/e^3+b*h*arcsin(c*x)*ln(1-I*e*(I*c*x+(-
c^2*x^2+1)^(1/2))/(c*d+(c^2*d^2-e^2)^(1/2)))/e^3-I*b*h*polylog(2,I*e*(I*c*x
+(-c^2*x^2+1)^(1/2))/(c*d-(c^2*d^2-e^2)^(1/2)))/e^3-I*b*h*polylog(2,I*e*(I*
c*x+(-c^2*x^2+1)^(1/2))/(c*d+(c^2*d^2-e^2)^(1/2)))/e^3+1/2*b*c*(d^2*h-d*e*g
+e^2*f)*(-c^2*x^2+1)^(1/2)/e^2/(c^2*d^2-e^2)/(e*x+d)
```

Rubi [A]
time = 0.92, antiderivative size = 488, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 14, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.538$, Rules used = {712, 4837, 12, 6874, 821, 739, 210, 222, 2451, 4825, 4615, 2221, 2317, 2438}

$$-\frac{(a+b\text{ArcSin}(cx))(d^2h-deg+e^2f)}{2e^3(d+ex)^2}-\frac{(eg-2dh)(a+b\text{ArcSin}(cx))}{e^3(d+ex)}+\frac{h\log(d+ex)(a+b\text{ArcSin}(cx))}{e^3}-\frac{ibh\text{Li}_2\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^3}-\frac{ibh\text{Li}_2\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)}{e^3}+\frac{bh\text{ArcSin}(cx)\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^3}+\frac{bh\text{ArcSin}(cx)\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e^3}-\frac{bh\text{ArcSin}(cx)\log(d+ex)}{e^3}-\frac{ibh\text{ArcSin}(cx)^2}{2e^3}-\frac{bc\text{ArcTan}\left(\frac{c^2dx+e}{\sqrt{1-c^2x^2}\sqrt{c^2d^2-e^2}}\right)(2e^2(eg-2dh)-c^2d(-3d^2h+deg+e^2f))}{2e^3(c^2d^2-e^2)^{3/2}}+\frac{bc\sqrt{1-c^2x^2}(d^2h-deg+e^2f)}{2e^2(c^2d^2-e^2)(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x + h*x^2)*(a + b*ArcSin[c*x]))/(d + e*x)^3,x]
```

```
[Out] (b*c*(e^2*f - d*e*g + d^2*h)*Sqrt[1 - c^2*x^2])/(2*e^2*(c^2*d^2 - e^2)*(d +
 e*x)) - ((I/2)*b*h*ArcSin[c*x]^2)/e^3 - ((e^2*f - d*e*g + d^2*h)*(a + b*Ar
cSin[c*x]))/(2*e^3*(d + e*x)^2) - ((e*g - 2*d*h)*(a + b*ArcSin[c*x]))/(e^3*
(d + e*x)) - (b*c*(2*e^2*(e*g - 2*d*h) - c^2*d*(e^2*f + d*e*g - 3*d^2*h))*A
rcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(2*e^3*(c^2*d
^2 - e^2)^(3/2)) + (b*h*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d -
Sqrt[c^2*d^2 - e^2])])/e^3 + (b*h*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]
))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^3 - (b*h*ArcSin[c*x]*Log[d + e*x])/e^3 +
 (h*(a + b*ArcSin[c*x])*Log[d + e*x])/e^3 - (I*b*h*PolyLog[2, (I*e*E^(I*Arc
Sin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^3 - (I*b*h*PolyLog[2, (I*e*E^(I*
ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^3
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 712

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 739

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(-(e*f - d*g))*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1
)/(2*(p + 1)*(c*d^2 + a*e^2))), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2),
Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m,
p}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2451

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 4615

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Int[(e + f*x)^m*(E^(I*(c + d*x))/(a - Rt[a^2 - b^2, 2] - I*b*E^(
I*(c + d*x)))), x] + Int[(e + f*x)^m*(E^(I*(c + d*x))/(a + Rt[a^2 - b^2, 2]
 - I*b*E^(I*(c + d*x)))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0]
 && PosQ[a^2 - b^2]
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[(a + b*x)^n*(Cos[x]/(c*d + e*Sin[x])), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4837

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(f+gx+hx^2)(a+b\sin^{-1}(cx))}{(d+ex)^3}\,dx = -\frac{(e^2f-deg+d^2h)(a+b\sin^{-1}(cx))}{2e^3(d+ex)^2} - \frac{(eg-2dh)(a+b\sin^{-1}(cx}{e^3(d+ex)}$$

$$= -\frac{(e^2f-deg+d^2h)(a+b\sin^{-1}(cx))}{2e^3(d+ex)^2} - \frac{(eg-2dh)(a+b\sin^{-1}(cx}{e^3(d+ex)}$$

$$= -\frac{(e^2f-deg+d^2h)(a+b\sin^{-1}(cx))}{2e^3(d+ex)^2} - \frac{(eg-2dh)(a+b\sin^{-1}(cx}{e^3(d+ex)}$$

$$= -\frac{(e^2f-deg+d^2h)(a+b\sin^{-1}(cx))}{2e^3(d+ex)^2} - \frac{(eg-2dh)(a+b\sin^{-1}(cx}{e^3(d+ex)}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{2e^2(c^2d^2-e^2)(d+ex)} - \frac{(e^2f-deg+d^2h)(a+b\sin^{-1}(}{2e^3(d+ex)^2}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{2e^2(c^2d^2-e^2)(d+ex)} - \frac{(e^2f-deg+d^2h)(a+b\sin^{-1}(}{2e^3(d+ex)^2}$$

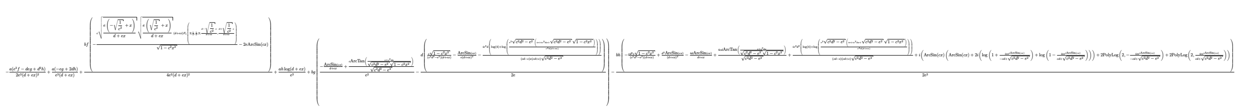
$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{2e^2(c^2d^2-e^2)(d+ex)} - \frac{ibh\sin^{-1}(cx)^2}{2e^3} - \frac{(e^2f-deg+}{2e}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{2e^2(c^2d^2-e^2)(d+ex)} - \frac{ibh\sin^{-1}(cx)^2}{2e^3} - \frac{(e^2f-deg+}{2e}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{2e^2(c^2d^2-e^2)(d+ex)} - \frac{ibh\sin^{-1}(cx)^2}{2e^3} - \frac{(e^2f-deg+}{2e}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{2e^2(c^2d^2-e^2)(d+ex)} - \frac{ibh\sin^{-1}(cx)^2}{2e^3} - \frac{(e^2f-deg+}{2e}$$

Mathematica [C] Result contains higher order function than in optimal. Order 6 vs. order 4 in optimal.
time = 4.39, size = 939, normalized size = 1.92



Warning: Unable to verify antiderivative.

```
[In] Integrate[((f + g*x + h*x^2)*(a + b*ArcSin[c*x]))/(d + e*x)^3,x]
```

```
[Out] -1/2*(a*(e^2*f - d*e*g + d^2*h))/(e^3*(d + e*x)^2) + (a*(-(e*g) + 2*d*h))/(
e^3*(d + e*x)) + (b*f*(-((c*Sqrt[(e*(-Sqrt[c^(-2)] + x))/(d + e*x)]*Sqrt[(e
*(Sqrt[c^(-2)] + x))/(d + e*x)]*(d + e*x)*AppellF1[2, 1/2, 1/2, 3, (d - Sqr
t[c^(-2)]*e)/(d + e*x), (d + Sqrt[c^(-2)]*e)/(d + e*x)])/Sqrt[1 - c^2*x^2])
 - 2*e*ArcSin[c*x]))/(4*e^2*(d + e*x)^2) + (a*h*Log[d + e*x])/e^3 + b*g*((-
(ArcSin[c*x]/(d + e*x)) + (c*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt
[1 - c^2*x^2])])/Sqrt[c^2*d^2 - e^2])/e^2 - (d*((c*Sqrt[1 - c^2*x^2])/((c^2
*d^2 - e^2)*(d + e*x)) - ArcSin[c*x]/(e*(d + e*x)^2) - (I*c^3*d*(Log[4] + L
og[(e^2*Sqrt[c^2*d^2 - e^2]*(I*e + I*c^2*d*x + Sqrt[c^2*d^2 - e^2]*Sqrt[1 -
 c^2*x^2]))/(c^3*d*(d + e*x))]))/((c*d - e)*e*(c*d + e)*Sqrt[c^2*d^2 - e^2]
)))/(2*e)) - (b*h*(-((c*d^2*e*Sqrt[1 - c^2*x^2])/((c^2*d^2 - e^2)*(d + e*x)
)) + (d^2*ArcSin[c*x])/(d + e*x)^2 - (4*d*ArcSin[c*x])/(d + e*x) + (4*c*d*A
rcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/Sqrt[c^2*d^2
- e^2] + (I*c^3*d^3*(Log[4] + Log[(e^2*Sqrt[c^2*d^2 - e^2]*(I*e + I*c^2*d*x
 + Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2]))/(c^3*d*(d + e*x))]))/((c*d - e)*
(c*d + e)*Sqrt[c^2*d^2 - e^2]) + I*(ArcSin[c*x]*(ArcSin[c*x] + (2*I)*(Log[1
 + (I*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] + Log[1 - (I*e*E
^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])) + 2*PolyLog[2, ((-I)*e*E^(
I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] + 2*PolyLog[2, (I*e*E^(I*Ar
cSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])))/(2*e^3)
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 2731 vs. $2(489) = 978$.
time = 2.84, size = 2732, normalized size = 5.60

method	result	size
derivativedivides	Expression too large to display	2732
default	Expression too large to display	2732

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(-2*b*c^3/(c^2*d^2-e^2)/(c*e*x+c*d)^2*arcsin(c*x)*d*h*x+1/2*b*c^4/(c^2*
d^2-e^2)/(c*e*x+c*d)^2*e*(-c^2*x^2+1)^(1/2)*f*x+b*c^3/(c^2*d^2-e^2)/(c*e*x+
c*d)^2*e*arcsin(c*x)*g*x+2*b*c^5/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^2*arcsin(c*x
)*d^3*h*x-b*c^5/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e*arcsin(c*x)*d^2*g*x+I*b*c^5/(
c^2*d^2-e^2)/(c*e*x+c*d)^2/e*d^2*g*x+1/2*b*c^4/(c^2*d^2-e^2)/(c*e*x+c*d)^2/
e*(-c^2*x^2+1)^(1/2)*d^2*h*x-I*b*c^5/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^2*d^3*h*
x-1/2*I*b*c^5/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e*d^2*h*x^2-1/2*a*c^3/e^3/(c*e*x+
c*d)^2*d^2*h-4*I*b*c^2/e/(c^2*d^2-e^2)^(3/2)*d*h*arctanh(1/2*(2*I*e*(I*c*x+
(-c^2*x^2+1)^(1/2))-2*d*c)/(c^2*d^2-e^2)^(1/2))-I*b*c^4/e^2/(c^2*d^2-e^2)^(
3/2)*d^2*g*arctanh(1/2*(2*I*e*(I*c*x+(-c^2*x^2+1)^(1/2))-2*d*c)/(c^2*d^2-e^
2)^(1/2))-1/2*I*b*c^5/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^3*d^4*h+1/2*I*b*c^5/(c^
```

```
2*d^2-e^2)/(c*e*x+c*d)^2/e^2*d^3*g-1/2*b*c^5/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^
2*d^3*g*arcsin(c*x)-1/2*b*c^5/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e*d^2*f*arcsin(c*
x)+3*I*b*c^4/e^3/(c^2*d^2-e^2)^(3/2)*h*d^3*arctanh(1/2*(2*I*e*(I*c*x+(-c^2*
x^2+1)^(1/2))-2*d*c)/(c^2*d^2-e^2)^(1/2))+2*I*b*c^3/e/(c^2*d^2-e^2)^2*d^2*h
*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c
^2*d^2+e^2)^(1/2)))-I*b*c^3/e^3/(c^2*d^2-e^2)*d^2*h*arcsin(c*x)^2+2*I*b*c^3
/e/(c^2*d^2-e^2)^2*d^2*h*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^
2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-3/2*b*c^3/(c^2*d^2-e^2)/(c*e*x+
c*d)^2/e*d^2*h*arcsin(c*x)-2*b*c^3/e/(c^2*d^2-e^2)^2*d^2*h*arcsin(c*x)*ln((
I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e
^2)^(1/2)))-2*b*c^3/e/(c^2*d^2-e^2)^2*d^2*h*arcsin(c*x)*ln((I*d*c+e*(I*c*x+
(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+b*c
^5/e^3/(c^2*d^2-e^2)^2*h*d^4*arcsin(c*x)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1
/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+b*c^5/e^3/(c^2*d^2
-e^2)^2*h*d^4*arcsin(c*x)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+
e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+3/2*b*c^5/(c^2*d^2-e^2)/(c*e*x+c*
d)^2/e^3*d^4*h*arcsin(c*x)-I*b*c^4/e/(c^2*d^2-e^2)^(3/2)*d*f*arctanh(1/2*(2
*I*e*(I*c*x+(-c^2*x^2+1)^(1/2))-2*d*c)/(c^2*d^2-e^2)^(1/2))+1/2*b*c^4/(c^2*
d^2-e^2)/(c*e*x+c*d)^2/e^2*(-c^2*x^2+1)^(1/2)*d^3*h-1/2*b*c^4/(c^2*d^2-e^2)
/(c*e*x+c*d)^2/e*(-c^2*x^2+1)^(1/2)*d^2*g-1/2*I*b*c^5/(c^2*d^2-e^2)/(c*e*x+
c*d)^2/e*d^2*f-I*b*c^5/e^3/(c^2*d^2-e^2)^2*h*d^4*dilog((I*d*c+e*(I*c*x+(-c^
2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-I*b*c^5
/e^3/(c^2*d^2-e^2)^2*h*d^4*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*
d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+a*c*h/e^3*ln(c*e*x+c*d)-1/2*a
*c^3/e/(c*e*x+c*d)^2*f-a*c^2/e^2/(c*e*x+c*d)*g+1/2*a*c^3/e^2/(c*e*x+c*d)^2*
d*g+2*a*c^2/e^3/(c*e*x+c*d)*d*h+1/2*I*b*c*h*arcsin(c*x)^2/e^3+2*I*b*c^2/(c^
2*d^2-e^2)^(3/2)*g*arctanh(1/2*(2*I*e*(I*c*x+(-c^2*x^2+1)^(1/2))-2*d*c)/(c^
2*d^2-e^2)^(1/2))-1/2*I*b*c^5/(c^2*d^2-e^2)/(c*e*x+c*d)^2*e*f*x^2-I*b*c^5/(
c^2*d^2-e^2)/(c*e*x+c*d)^2*d*f*x+1/2*I*b*c^5/(c^2*d^2-e^2)/(c*e*x+c*d)^2*d*
g*x^2-1/2*b*c^4/(c^2*d^2-e^2)/(c*e*x+c*d)^2*(-c^2*x^2+1)^(1/2)*d*g*x+1/2*b*
c^4/(c^2*d^2-e^2)/(c*e*x+c*d)^2*(-c^2*x^2+1)^(1/2)*d*f+1/2*b*c^3/(c^2*d^2-e
^2)/(c*e*x+c*d)^2*g*arcsin(c*x)*d+I*b*c/e/(c^2*d^2-e^2)*h*arcsin(c*x)^2+b*c
*e/(c^2*d^2-e^2)^2*h*arcsin(c*x)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c
^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+b*c*e/(c^2*d^2-e^2)^2*h*ar
csin(c*x)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d
*c+(-c^2*d^2+e^2)^(1/2)))+1/2*b*c^3/(c^2*d^2-e^2)/(c*e*x+c*d)^2*e*f*arcsin(
c*x)-I*b*c*e/(c^2*d^2-e^2)^2*h*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-
c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-I*b*c*e/(c^2*d^2-e^2)^2*h
*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c
^2*d^2+e^2)^(1/2))))
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c*d-%e>0)', see `assume?` for more
details
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] integral((a*h*x^2 + a*g*x + a*f + (b*h*x^2 + b*g*x + b*f)*arcsin(c*x))/(x^3
*e^3 + 3*d*x^2*e^2 + 3*d^2*x*e + d^3), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(cx))(f + gx + hx^2)}{(d + ex)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x**2+g*x+f)*(a+b*asin(c*x))/(e*x+d)**3,x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x + h*x**2)/(d + e*x)**3, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] integrate((h*x^2 + g*x + f)*(b*arcsin(c*x) + a)/(e*x + d)^3, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b \operatorname{asin}(c\,x))\,(h\,x^2 + g\,x + f)}{(d + e\,x)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(f + g*x + h*x^2))/(d + e*x)^3,x)
```

```
[Out] int(((a + b*asin(c*x))*(f + g*x + h*x^2))/(d + e*x)^3, x)
```

3.103 $\int \frac{(f+gx+hx^2)(a+b\mathbf{ArcSin}(cx))}{(d+ex)^4}\,dx$

Optimal. Leaf size=349

$$\frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{6e^2\left(c^2d^2-e^2\right)(d+ex)^2}-\frac{bc(e^2(eg-2dh)-c^2(de^2f-d^3h))\sqrt{1-c^2x^2}}{2e^2\left(c^2d^2-e^2\right)^2(d+ex)}-\frac{(e^2f-deg+d^2h)\,(a+bA}{3e^3(d+ex)^3}$$

```
[Out] -1/3*(d^2*h-d*e*g+e^2*f)*(a+b*arcsin(c*x))/e^3/(e*x+d)^3-1/2*(-2*d*h+e*g)*(
a+b*arcsin(c*x))/e^3/(e*x+d)^2-h*(a+b*arcsin(c*x))/e^3/(e*x+d)+1/6*b*c*(6*e
^4*h+c^2*e^2*(-5*d^2*h-4*d*e*g+e^2*f)+c^4*d^2*(2*d^2*h+d*e*g+2*e^2*f))*arct
an((c^2*d*x+e)/(c^2*d^2-e^2)^(1/2)/(-c^2*x^2+1)^(1/2))/e^3/(c^2*d^2-e^2)^(5
/2)+1/6*b*c*(d^2*h-d*e*g+e^2*f)*(-c^2*x^2+1)^(1/2)/e^2/(c^2*d^2-e^2)/(e*x+d
)^2-1/2*b*c*(e^2*(-2*d*h+e*g)-c^2*(-d^3*h+d*e^2*f))*(-c^2*x^2+1)^(1/2)/e^2/
(c^2*d^2-e^2)^2/(e*x+d)
```

Rubi [A]
time = 0.43, antiderivative size = 349, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.269$, Rules used = {712, 4837, 12, 1665, 821, 739, 210}

$$-\frac{(a+b\text{ArcSin}(cx))\left(d^2h-deg+e^2f\right)}{3e^3(d+ex)^3}-\frac{(eg-2dh)(a+b\text{ArcSin}(cx))}{2e^3(d+ex)^2}-\frac{h(a+b\text{ArcSin}(cx))}{e^3(d+ex)}+\frac{bc\text{ArcTan}\left(\frac{c^2dx+e}{\sqrt{1-c^2x^2}\sqrt{c^2d^2-e^2}}\right)\left(c^4d^2(2d^2h+deg+2e^2f)+c^2e^2(-5d^2h-4deg+e^2f)+6e^4h\right)}{6e^3\left(c^2d^2-e^2\right)^{5/2}}+\frac{bc\sqrt{1-c^2x^2}\left(d^2h-deg+e^2f\right)}{6e^2\left(c^2d^2-e^2\right)(d+ex)^2}-\frac{bc\sqrt{1-c^2x^2}\left(e^2(eg-2dh)-c^2(de^2f-d^3h)\right)}{2e^2\left(c^2d^2-e^2\right)^2(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x + h*x^2)*(a + b*ArcSin[c*x]))/(d + e*x)^4,x]
```

```
[Out] (b*c*(e^2*f - d*e*g + d^2*h)*Sqrt[1 - c^2*x^2])/(6*e^2*(c^2*d^2 - e^2)*(d +
 e*x)^2) - (b*c*(e^2*(e*g - 2*d*h) - c^2*(d*e^2*f - d^3*h))*Sqrt[1 - c^2*x^
2])/(2*e^2*(c^2*d^2 - e^2)^2*(d + e*x)) - ((e^2*f - d*e*g + d^2*h)*(a + b*A
rcSin[c*x]))/(3*e^3*(d + e*x)^3) - ((e*g - 2*d*h)*(a + b*ArcSin[c*x]))/(2*e
^3*(d + e*x)^2) - (h*(a + b*ArcSin[c*x]))/(e^3*(d + e*x)) + (b*c*(6*e^4*h +
 c^2*e^2*(e^2*f - 4*d*e*g - 5*d^2*h) + c^4*d^2*(2*e^2*f + d*e*g + 2*d^2*h))
*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(6*e^3*(c^2
*d^2 - e^2)^(5/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 712

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 739

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(-(e*f - d*g))*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1
)/(2*(p + 1)*(c*d^2 + a*e^2))), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2),
Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m,
p}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 1665

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :>
 With[{Q = PolynomialQuotient[Pq, d + e*x, x], R = PolynomialRemainder[Pq,
d + e*x, x]}, Simp[(e*R*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*
d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)
*(a + c*x^2)^p*ExpandToSum[(m + 1)*(c*d^2 + a*e^2)*Q + c*d*R*(m + 1) - c*e*
R*(m + 2*p + 3)*x, x], x], x]] /; FreeQ[{a, c, d, e, p}, x] && PolyQ[Pq, x]
 && NeQ[c*d^2 + a*e^2, 0] && LtQ[m, -1]
```

Rule 4837

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rubi steps

$$\int \frac{(f+gx+hx^2)\left(a+b\sin^{-1}(cx)\right)}{(d+ex)^4}\,dx = -\frac{(e^2f-deg+d^2h)\left(a+b\sin^{-1}(cx)\right)}{3e^3(d+ex)^3} - \frac{(eg-2dh)\left(a+b\sin^{-1}(cx\right.}{2e^3(d+ex)^2}$$

$$= -\frac{(e^2f-deg+d^2h)\left(a+b\sin^{-1}(cx)\right)}{3e^3(d+ex)^3} - \frac{(eg-2dh)\left(a+b\sin^{-1}(cx\right.}{2e^3(d+ex)^2}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{6e^2\left(c^2d^2-e^2\right)(d+ex)^2} - \frac{(e^2f-deg+d^2h)\left(a+b\sin^{-1}(\right.}{3e^3(d+ex)^3}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{6e^2\left(c^2d^2-e^2\right)(d+ex)^2} - \frac{bc(e^2(eg-2dh)-c^2(de^2f-d^3}{2e^2\left(c^2d^2-e^2\right)^2(d+}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{6e^2\left(c^2d^2-e^2\right)(d+ex)^2} - \frac{bc(e^2(eg-2dh)-c^2(de^2f-d^3}{2e^2\left(c^2d^2-e^2\right)^2(d+}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{6e^2\left(c^2d^2-e^2\right)(d+ex)^2} - \frac{bc(e^2(eg-2dh)-c^2(de^2f-d^3}{2e^2\left(c^2d^2-e^2\right)^2(d+}$$

Mathematica [A]
time = 1.10, size = 442, normalized size = 1.27

$$-\frac{\frac{2a(e^2f-deg+d^2h)}{(d+ex)^3}+\frac{3a(eg-2dh)}{(d+ex)^2}+\frac{6ah}{d+ex}+\frac{bce\sqrt{1-c^2x^2}\left(e^2(-5d^2h+e^2(f+3gx)+2de(g-3hx))+c^2d(-4de^2f+2d^3h-3e^3fx+d^2e(g+3hx))\right)}{(-c^2d^2+e^2)^2(d+ex)^2}+\frac{b(2d^2h+de(g+6hx)+e^2(2f+3x(g+2hx)))\text{ArcSin}(cx)}{(d+ex)^3}-\frac{bc(6e^4h+c^2e^2(e^2f-4deg-5d^2h)+c^4d^2(2e^2f+deg+2d^2h))\log(d+ex)}{(-cd+e)^2(cd+e)^2\sqrt{-c^2d^2+e^2}}+\frac{bc(6e^4h+c^2e^2(e^2f-4deg-5d^2h)+c^4d^2(2e^2f+deg+2d^2h))\log\left(e+c^2dx+\sqrt{-c^2d^2+e^2}\sqrt{1-c^2x^2}\right)}{(-cd+e)^2(cd+e)^2\sqrt{-c^2d^2+e^2}}}{6e^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x + h*x^2)*(a + b*ArcSin[c*x]))/(d + e*x)^4,x]
```

```
[Out] -1/6*((2*a*(e^2*f - d*e*g + d^2*h))/(d + e*x)^3 + (3*a*(e*g - 2*d*h))/(d +
e*x)^2 + (6*a*h)/(d + e*x) + (b*c*e*Sqrt[1 - c^2*x^2]*(e^2*(-5*d^2*h + e^2*
(f + 3*g*x) + 2*d*e*(g - 3*h*x)) + c^2*d*(-4*d*e^2*f + 2*d^3*h - 3*e^3*f*x
+ d^2*e*(g + 3*h*x))))/((-(c^2*d^2) + e^2)^2*(d + e*x)^2) + (b*(2*d^2*h + d
*e*(g + 6*h*x) + e^2*(2*f + 3*x*(g + 2*h*x)))*ArcSin[c*x])/(d + e*x)^3 - (b
*c*(6*e^4*h + c^2*e^2*(e^2*f - 4*d*e*g - 5*d^2*h) + c^4*d^2*(2*e^2*f + d*e*
g + 2*d^2*h))*Log[d + e*x])/((-(c*d) + e)^2*(c*d + e)^2*Sqrt[-(c^2*d^2) + e
^2]) + (b*c*(6*e^4*h + c^2*e^2*(e^2*f - 4*d*e*g - 5*d^2*h) + c^4*d^2*(2*e^2
*f + d*e*g + 2*d^2*h))*Log[e + c^2*d*x + Sqrt[-(c^2*d^2) + e^2]*Sqrt[1 - c^
2*x^2]])/((-(c*d) + e)^2*(c*d + e)^2*Sqrt[-(c^2*d^2) + e^2]))/e^3
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 2139 vs. $2(329) = 658$.
time = 0.13, size = 2140, normalized size = 6.13

method	result	size
derivativedivides	Expression too large to display	2140
default	Expression too large to display	2140

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^4,x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(a*c^2*(-1/3*c^2*(d^2*h-d*e*g+e^2*f)/e^3/(c*e*x+c*d)^3+1/2*c*(2*d*h-e*g
)/e^3/(c*e*x+c*d)^2-h/e^3/(c*e*x+c*d))-1/3*b*c^4*arcsin(c*x)/e^3/(c*e*x+c*d
)^3*d^2*h+1/3*b*c^4*arcsin(c*x)/e^2/(c*e*x+c*d)^3*d*g-1/3*b*c^4*arcsin(c*x)
/e/(c*e*x+c*d)^3*f+b*c^3*arcsin(c*x)/e^3/(c*e*x+c*d)^2*d*h-1/2*b*c^3*arcsin
(c*x)*g/e^2/(c*e*x+c*d)^2-b*c^2*arcsin(c*x)*h/e^3/(c*e*x+c*d)+1/6*b*c^4/e^4
/(c^2*d^2-e^2)/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e
^2)/e^2)^(1/2)*d^2*h-1/6*b*c^4/e^3/(c^2*d^2-e^2)/(c*x+d*c/e)^2*(-(c*x+d*c/e
)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*d*g+1/6*b*c^4/e^2/(c^2*d^2
-e^2)/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^
(1/2)*f+1/2*b*c^5/e^3*d^3/(c^2*d^2-e^2)^2/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c
/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*h-1/2*b*c^5/e^2*d^2/(c^2*d^2-e^2)^2
/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*g
+1/2*b*c^5/e*d/(c^2*d^2-e^2)^2/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c
/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f-1/2*b*c^6/e^4*d^4/(c^2*d^2-e^2)^2/(-(c^2*d^2
-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-
e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2
))/(c*x+d*c/e))*h+1/2*b*c^6/e^3*d^3/(c^2*d^2-e^2)^2/(-(c^2*d^2-e^2)/e^2)^(1
/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/
2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e
))*g-1/2*b*c^6/e^2*d^2/(c^2*d^2-e^2)^2/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c
^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c
/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*f+7/6*b*c^
4/e^4/(c^2*d^2-e^2)/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d
*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+
d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*d^2*h-2/3*b*c^4/e^3/(c^2*d^2-
e^2)/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e
)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2
-e^2)/e^2)^(1/2))/(c*x+d*c/e))*d*g+1/6*b*c^4/e^2/(c^2*d^2-e^2)/(-(c^2*d^2-e
^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^
2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))
/(c*x+d*c/e))*f-b*c^3/e^3/(c^2*d^2-e^2)/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e
*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*d*h+1/2*b*c^3/e^2*g/(c^2*d^2-e^2)/(c*
x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)-b*c^2
/e^4*h/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c
/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d
^2-e^2)/e^2)^(1/2))/(c*x+d*c/e)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] -1/6*(3*x*e + d)*a*g/(x^3*e^5 + 3*d*x^2*e^4 + 3*d^2*x*e^3 + d^3*e^2) - 1/3*
(3*x^2*e^2 + 3*d*x*e + d^2)*a*h/(x^3*e^6 + 3*d*x^2*e^5 + 3*d^2*x*e^4 + d^3*
e^3) - 1/3*a*f/(x^3*e^4 + 3*d*x^2*e^3 + 3*d^2*x*e^2 + d^3*e) - 1/6*((6*b*h*
x^2*e^2 + 2*b*d^2*h + b*d*g*e + 2*b*f*e^2 + 3*(2*b*d*h*e + b*g*e^2)*x)*arct
an2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + 6*(x^3*e^6 + 3*d*x^2*e^5 + 3*d^2*x
*e^4 + d^3*e^3)*integrate(1/6*(6*b*c*h*x^2*e^2 + 2*b*c*d^2*h + b*c*d*g*e +
2*b*c*f*e^2 + 3*(2*b*c*d*h*e + b*c*g*e^2)*x)*e^(1/2*log(c*x + 1) + 1/2*log(
-c*x + 1))/(c^4*x^7*e^6 + 3*c^4*d*x^6*e^5 - 3*c^2*d^2*x^3*e^4 - c^2*d^3*x^2
*e^3 + (3*c^4*d^2*e^4 - c^2*e^6)*x^5 + (c^4*d^3*e^3 - 3*c^2*d*e^5)*x^4 + (c
^2*x^5*e^6 + 3*c^2*d*x^4*e^5 + (3*c^2*d^2*e^4 - e^6)*x^3 - 3*d^2*x*e^4 - d^
3*e^3 + (c^2*d^3*e^3 - 3*d*e^5)*x^2)*e^(log(c*x + 1) + log(-c*x + 1))), x))
/(x^3*e^6 + 3*d*x^2*e^5 + 3*d^2*x*e^4 + d^3*e^3)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 1421 vs. $2(327) = 654$.
time = 203.91, size = 2872, normalized size = 8.23

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] [-1/12*(4*a*c^6*d^8*h + (2*b*c^5*d^7*h + (b*c^3*f + 6*b*c*h)*x^3*e^7 - (4*b
*c^3*d*g*x^3 - 3*(b*c^3*d*f + 6*b*c*d*h)*x^2)*e^6 - (12*b*c^3*d^2*g*x^2 - (
2*b*c^5*d^2*f - 5*b*c^3*d^2*h)*x^3 - 3*(b*c^3*d^2*f + 6*b*c*d^2*h)*x)*e^5 +
 (b*c^5*d^3*g*x^3 - 12*b*c^3*d^3*g*x + b*c^3*d^3*f + 6*b*c*d^3*h + 3*(2*b*c
^5*d^3*f - 5*b*c^3*d^3*h)*x^2)*e^4 + (2*b*c^5*d^4*h*x^3 + 3*b*c^5*d^4*g*x^2
 - 4*b*c^3*d^4*g + 3*(2*b*c^5*d^4*f - 5*b*c^3*d^4*h)*x)*e^3 + (6*b*c^5*d^5*
h*x^2 + 3*b*c^5*d^5*g*x + 2*b*c^5*d^5*f - 5*b*c^3*d^5*h)*e^2 + (6*b*c^5*d^6
*h*x + b*c^5*d^6*g)*e)*sqrt(-c^2*d^2 + e^2)*log((2*c^4*d^2*x^2 + 2*c^2*d*x*
e - c^2*d^2 - 2*sqrt(-c^2*d^2 + e^2)*(c^2*d*x + e)*sqrt(-c^2*x^2 + 1) - (c^
2*x^2 - 2)*e^2)/(x^2*e^2 + 2*d*x*e + d^2)) + 2*(2*b*c^6*d^8*h - (6*b*h*x^2
+ 3*b*g*x + 2*b*f)*e^8 - (6*b*d*h*x + b*d*g)*e^7 + (18*b*c^2*d^2*h*x^2 + 9*
b*c^2*d^2*g*x + 6*b*c^2*d^2*f - 2*b*d^2*h)*e^6 + 3*(6*b*c^2*d^3*h*x + b*c^2
*d^3*g)*e^5 - 3*(6*b*c^4*d^4*h*x^2 + 3*b*c^4*d^4*g*x + 2*b*c^4*d^4*f - 2*b*
c^2*d^4*h)*e^4 - 3*(6*b*c^4*d^5*h*x + b*c^4*d^5*g)*e^3 + (6*b*c^6*d^6*h*x^2
 + 3*b*c^6*d^6*g*x + 2*b*c^6*d^6*f - 6*b*c^4*d^6*h)*e^2 + (6*b*c^6*d^7*h*x
```

+ b*c^6*d^7*g)*e)*arcsin(c*x) - 2*(6*a*h*x^2 + 3*a*g*x + 2*a*f)*e^8 - 2*(6*
a*d*h*x + a*d*g)*e^7 + 2*(18*a*c^2*d^2*h*x^2 + 9*a*c^2*d^2*g*x + 6*a*c^2*d^
2*f - 2*a*d^2*h)*e^6 + 6*(6*a*c^2*d^3*h*x + a*c^2*d^3*g)*e^5 - 6*(6*a*c^4*d
^4*h*x^2 + 3*a*c^4*d^4*g*x + 2*a*c^4*d^4*f - 2*a*c^2*d^4*h)*e^4 - 6*(6*a*c^
4*d^5*h*x + a*c^4*d^5*g)*e^3 + 2*(6*a*c^6*d^6*h*x^2 + 3*a*c^6*d^6*g*x + 2*a
*c^6*d^6*f - 6*a*c^4*d^6*h)*e^2 + 2*(6*a*c^6*d^7*h*x + a*c^6*d^7*g)*e + 2*(
2*b*c^5*d^7*h*e - (3*b*c*g*x^2 + b*c*f*x)*e^8 - (5*b*c*d*g*x + b*c*d*f - 3*
(b*c^3*d*f + 2*b*c*d*h)*x^2)*e^7 + (3*b*c^3*d^2*g*x^2 - 2*b*c*d^2*g + (8*b*
c^3*d^2*f + 11*b*c*d^2*h)*x)*e^6 + (4*b*c^3*d^3*g*x + 5*b*c^3*d^3*f + 5*b*c
*d^3*h - 3*(b*c^5*d^3*f + 3*b*c^3*d^3*h)*x^2)*e^5 + (b*c^3*d^4*g - (7*b*c^5
*d^4*f + 16*b*c^3*d^4*h)*x)*e^4 + (3*b*c^5*d^5*h*x^2 + b*c^5*d^5*g*x - 4*b*
c^5*d^5*f - 7*b*c^3*d^5*h)*e^3 + (5*b*c^5*d^6*h*x + b*c^5*d^6*g)*e^2)*sqrt(
-c^2*x^2 + 1))/(3*c^6*d^8*x*e^4 + c^6*d^9*e^3 - x^3*e^12 - 3*d*x^2*e^11 + 3
*(c^2*d^2*x^3 - d^2*x)*e^10 + (9*c^2*d^3*x^2 - d^3)*e^9 - 3*(c^4*d^4*x^3 -
3*c^2*d^4*x)*e^8 - 3*(3*c^4*d^5*x^2 - c^2*d^5)*e^7 + (c^6*d^6*x^3 - 9*c^4*d
^6*x)*e^6 + 3*(c^6*d^7*x^2 - c^4*d^7)*e^5), -1/6*(2*a*c^6*d^8*h - (2*b*c^5*
d^7*h + (b*c^3*f + 6*b*c*h)*x^3*e^7 - (4*b*c^3*d*g*x^3 - 3*(b*c^3*d*f + 6*b
*c*d*h)*x^2)*e^6 - (12*b*c^3*d^2*g*x^2 - (2*b*c^5*d^2*f - 5*b*c^3*d^2*h)*x^
3 - 3*(b*c^3*d^2*f + 6*b*c*d^2*h)*x)*e^5 + (b*c^5*d^3*g*x^3 - 12*b*c^3*d^3*
g*x + b*c^3*d^3*f + 6*b*c*d^3*h + 3*(2*b*c^5*d^3*f - 5*b*c^3*d^3*h)*x^2)*e^
4 + (2*b*c^5*d^4*h*x^3 + 3*b*c^5*d^4*g*x^2 - 4*b*c^3*d^4*g + 3*(2*b*c^5*d^4
*f - 5*b*c^3*d^4*h)*x)*e^3 + (6*b*c^5*d^5*h*x^2 + 3*b*c^5*d^5*g*x + 2*b*c^5
*d^5*f - 5*b*c^3*d^5*h)*e^2 + (6*b*c^5*d^6*h*x + b*c^5*d^6*g)*e)*sqrt(c^2*d
^2 - e^2)*arctan(-sqrt(c^2*d^2 - e^2)*(c^2*d*x + e)*sqrt(-c^2*x^2 + 1)/(c^4
*d^2*x^2 - c^2*d^2 - (c^2*x^2 - 1)*e^2)) + (2*b*c^6*d^8*h - (6*b*h*x^2 + 3*
b*g*x + 2*b*f)*e^8 - (6*b*d*h*x + b*d*g)*e^7 + (18*b*c^2*d^2*h*x^2 + 9*b*c^
2*d^2*g*x + 6*b*c^2*d^2*f - 2*b*d^2*h)*e^6 + 3*(6*b*c^2*d^3*h*x + b*c^2*d^3
*g)*e^5 - 3*(6*b*c^4*d^4*h*x^2 + 3*b*c^4*d^4*g*x + 2*b*c^4*d^4*f - 2*b*c^2*
d^4*h)*e^4 - 3*(6*b*c^4*d^5*h*x + b*c^4*d^5*g)*e^3 + (6*b*c^6*d^6*h*x^2 + 3
*b*c^6*d^6*g*x + 2*b*c^6*d^6*f - 6*b*c^4*d^6*h)*e^2 + (6*b*c^6*d^7*h*x + b*
c^6*d^7*g)*e)*arcsin(c*x) - (6*a*h*x^2 + 3*a*g*x + 2*a*f)*e^8 - (6*a*d*h*x
+ a*d*g)*e^7 + (18*a*c^2*d^2*h*x^2 + 9*a*c^2*d^2*g*x + 6*a*c^2*d^2*f - 2*a*
d^2*h)*e^6 + 3*(6*a*c^2*d^3*h*x + a*c^2*d^3*g)*e^5 - 3*(6*a*c^4*d^4*h*x^2 +
3*a*c^4*d^4*g*x + 2*a*c^4*d^4*f - 2*a*c^2*d^4*h)*e^4 - 3*(6*a*c^4*d^5*h*x
+ a*c^4*d^5*g)*e^3 + (6*a*c^6*d^6*h*x^2 + 3*a*c^6*d^6*g*x + 2*a*c^6*d^6*f -
6*a*c^4*d^6*h)*e^2 + (6*a*c^6*d^7*h*x + a*c^6*d^7*g)*e + (2*b*c^5*d^7*h*e
- (3*b*c*g*x^2 + b*c*f*x)*e^8 - (5*b*c*d*g*x + b*c*d*f - 3*(b*c^3*d*f + 2*b
*c*d*h)*x^2)*e^7 + (3*b*c^3*d^2*g*x^2 - 2*b*c*d^2*g + (8*b*c^3*d^2*f + 11*b
*c*d^2*h)*x)*e^6 + (4*b*c^3*d^3*g*x + 5*b*c^3*d^3*f + 5*b*c*d^3*h - 3*(b*c^
5*d^3*f + 3*b*c^3*d^3*h)*x^2)*e^5 + (b*c^3*d^4*g - (7*b*c^5*d^4*f + 16*b*c^
3*d^4*h)*x)*e^4 + (3*b*c^5*d^5*h*x^2 + b*c^5*d^5*g*x - 4*b*c^5*d^5*f - 7*b*
c^3*d^5*h)*e^3 + (5*b*c^5*d^6*h*x + b*c^5*d^6*g)*e^2)*sqrt(-c^2*x^2 + 1))/(
3*c^6*d^8*x*e^4 + c^6*d^9*e^3 - x^3*e^12 - 3*d*x^2*e^11 + 3*(c^2*d^2*x^3 -
d^2*x)*e^10 + (9*c^2*d^3*x^2 - d^3)*e^9 - 3*(c^4*d^4*x^3 - 3*c^2*d^4*x)*e^8
- 3*(3*c^4*d^5*x^2 - c^2*d^5)*e^7 + (c^6*d^6*x^3 - 9*c^4*d^6*x)*e^6 + 3*(c

```
^6*d^7*x^2 - c^4*d^7)*e^5)]
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+b\operatorname{asin}(cx))\,(f+gx+hx^2)}{(d+ex)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x**2+g*x+f)*(a+b*asin(c*x))/(e*x+d)**4,x)
[Out] Integral((a + b*asin(c*x))*(f + g*x + h*x**2)/(d + e*x)**4, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^4,x, algorithm="giac")
[Out] integrate((h*x^2 + g*x + f)*(b*arcsin(c*x) + a)/(e*x + d)^4, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\operatorname{asin}(c\,x))\,\left(h\,x^2+g\,x+f\right)}{(d+e\,x)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(f + g*x + h*x^2))/(d + e*x)^4,x)
[Out] int(((a + b*asin(c*x))*(f + g*x + h*x^2))/(d + e*x)^4, x)
```

3.104 $\int \frac{(f+gx+hx^2)(a+b\mathbf{ArcSin}(cx))}{(d+ex)^5}\,dx$

Optimal. Leaf size=470

$$\frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{12e^2(c^2d^2-e^2)(d+ex)^3}-\frac{bc(4e^2(eg-2dh)-c^2d(5e^2f-deg-3d^2h))\sqrt{1-c^2x^2}}{24e^2(c^2d^2-e^2)^2(d+ex)^2}+\frac{bc(12e^4h+c^4c}{}$$

```
[Out] -1/4*(d^2*h-d*e*g+e^2*f)*(a+b*arcsin(c*x))/e^3/(e*x+d)^4-1/3*(-2*d*h+e*g)*(
a+b*arcsin(c*x))/e^3/(e*x+d)^3-1/2*h*(a+b*arcsin(c*x))/e^3/(e*x+d)^2-1/24*b
*c^3*(4*e^4*(-5*d*h+e*g)-c^2*d*e^2*(-7*d^2*h-13*d*e*g+9*e^2*f)-2*c^4*d^3*(d
^2*h+d*e*g+3*e^2*f))*arctan((c^2*d*x+e)/(c^2*d^2-e^2)^(1/2)/(-c^2*x^2+1)^(1
/2))/e^3/(c^2*d^2-e^2)^(7/2)+1/12*b*c*(d^2*h-d*e*g+e^2*f)*(-c^2*x^2+1)^(1/2
)/e^2/(c^2*d^2-e^2)/(e*x+d)^3-1/24*b*c*(4*e^2*(-2*d*h+e*g)-c^2*d*(-3*d^2*h-
d*e*g+5*e^2*f))*(-c^2*x^2+1)^(1/2)/e^2/(c^2*d^2-e^2)^2/(e*x+d)^2+1/24*b*c*(
12*e^4*h+c^4*d^2*(-d^2*h+d*e*g+11*e^2*f)+4*c^2*e^2*(d^2*h-4*d*e*g+e^2*f))*(
-c^2*x^2+1)^(1/2)/e^2/(c^2*d^2-e^2)^3/(e*x+d)
```

Rubi [A]
time = 0.65, antiderivative size = 470, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.308$, Rules used = {712, 4837, 12, 1665, 849, 821, 739, 210}

$$-\frac{(a+b\text{ArcSin}(cx))(d^2h-deg+e^2f)}{4e^3(d+ex)^4}-\frac{(eg-2dh)(a+b\text{ArcSin}(cx))}{3e^3(d+ex)^3}-\frac{h(a+b\text{ArcSin}(cx))}{2e^3(d+ex)^2}-\frac{bc^3\text{ArcTan}\left(\frac{c^2dx+e}{\sqrt{1-c^2x^2}\sqrt{c^2d^2-e^2}}\right)(-2c^4d^3(d^2h+deg+3e^2f)-c^2de^2(-7d^2h-13deg+9e^2f)+4e^4(eg-5dh))}{24e^3(c^2d^2-e^2)^{7/2}}-\frac{bc\sqrt{1-c^2x^2}(4e^2(eg-2dh)-c^2d(-3d^2h-deg+5e^2f))}{24e^2(c^2d^2-e^2)^2(d+ex)^2}+\frac{bc\sqrt{1-c^2x^2}(d^2h-deg+e^2f)}{12e^2(c^2d^2-e^2)(d+ex)^3}+\frac{bc\sqrt{1-c^2x^2}(c^4d^2(d^2(-h)+deg+11e^2f)+4c^2e^2(d^2h-4deg+e^2f)+12e^4h)}{24e^2(c^2d^2-e^2)^3(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x + h*x^2)*(a + b*ArcSin[c*x]))/(d + e*x)^5,x]
```

```
[Out] (b*c*(e^2*f - d*e*g + d^2*h)*Sqrt[1 - c^2*x^2])/(12*e^2*(c^2*d^2 - e^2)*(d
+ e*x)^3) - (b*c*(4*e^2*(e*g - 2*d*h) - c^2*d*(5*e^2*f - d*e*g - 3*d^2*h))*
Sqrt[1 - c^2*x^2])/(24*e^2*(c^2*d^2 - e^2)^2*(d + e*x)^2) + (b*c*(12*e^4*h
+ c^4*d^2*(11*e^2*f + d*e*g - d^2*h) + 4*c^2*e^2*(e^2*f - 4*d*e*g + d^2*h))
*Sqrt[1 - c^2*x^2])/(24*e^2*(c^2*d^2 - e^2)^3*(d + e*x)) - ((e^2*f - d*e*g
+ d^2*h)*(a + b*ArcSin[c*x]))/(4*e^3*(d + e*x)^4) - ((e*g - 2*d*h)*(a + b*A
rcSin[c*x]))/(3*e^3*(d + e*x)^3) - (h*(a + b*ArcSin[c*x]))/(2*e^3*(d + e*x)
^2) - (b*c^3*(4*e^4*(e*g - 5*d*h) - c^2*d*e^2*(9*e^2*f - 13*d*e*g - 7*d^2*h
) - 2*c^4*d^3*(3*e^2*f + d*e*g + d^2*h))*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2
 - e^2]*Sqrt[1 - c^2*x^2])])/(24*e^3*(c^2*d^2 - e^2)^(7/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 712

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 739

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(-(e*f - d*g))*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1
)/(2*(p + 1)*(c*d^2 + a*e^2))), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2),
Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m,
p}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 849

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(e*f - d*g)*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1)/(
(m + 1)*(c*d^2 + a*e^2))), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 1665

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :>
 With[{Q = PolynomialQuotient[Pq, d + e*x, x], R = PolynomialRemainder[Pq,
d + e*x, x]}, Simp[(e*R*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*
d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)
*(a + c*x^2)^p*ExpandToSum[(m + 1)*(c*d^2 + a*e^2)*Q + c*d*R*(m + 1) - c*e*
R*(m + 2*p + 3)*x, x], x], x]] /; FreeQ[{a, c, d, e, p}, x] && PolyQ[Pq, x]
 && NeQ[c*d^2 + a*e^2, 0] && LtQ[m, -1]
```

Rule 4837

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rubi steps

$$\int \frac{(f+gx+hx^2)(a+b\sin^{-1}(cx))}{(d+ex)^5}\,dx = -\frac{(e^2f-deg+d^2h)(a+b\sin^{-1}(cx))}{4e^3(d+ex)^4} - \frac{(eg-2dh)(a+b\sin^{-1}(c}{3e^3(d+ex)^3}$$

$$= -\frac{(e^2f-deg+d^2h)(a+b\sin^{-1}(cx))}{4e^3(d+ex)^4} - \frac{(eg-2dh)(a+b\sin^{-1}(c}{3e^3(d+ex)^3}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{12e^2(c^2d^2-e^2)(d+ex)^3} - \frac{(e^2f-deg+d^2h)(a+b\sin^{-1}}{4e^3(d+ex)^4}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{12e^2(c^2d^2-e^2)(d+ex)^3} - \frac{bc(4e^2(eg-2dh)-c^2d(5e^2f}{24e^2(c^2d^2-e^2}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{12e^2(c^2d^2-e^2)(d+ex)^3} - \frac{bc(4e^2(eg-2dh)-c^2d(5e^2f}{24e^2(c^2d^2-e^2}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{12e^2(c^2d^2-e^2)(d+ex)^3} - \frac{bc(4e^2(eg-2dh)-c^2d(5e^2f}{24e^2(c^2d^2-e^2}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{12e^2(c^2d^2-e^2)(d+ex)^3} - \frac{bc(4e^2(eg-2dh)-c^2d(5e^2f}{24e^2(c^2d^2-e^2}$$

Mathematica [A]
time = 1.80, size = 575, normalized size = 1.22

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x + h*x^2)*(a + b*ArcSin[c*x]))/(d + e*x)^5,x]
```

```
[Out] -1/24*((6*a*(e^2*f - d*e*g + d^2*h))/(d + e*x)^4 + (8*a*(e*g - 2*d*h))/(d +
 e*x)^3 + (12*a*h)/(d + e*x)^2 + (b*c*e*Sqrt[1 - c^2*x^2]*(c^4*d^2*(-2*d^4*
h + 11*e^4*f*x^2 + d*e^3*x*(27*f + g*x) - d^3*e*(2*g + 5*h*x) + d^2*e^2*(18
```

```
*f + x*(g - h*x))) + 2*e^4*(3*d^2*h + d*e*(g + 8*h*x) + e^2*(f + 2*x*(g + 3
*h*x))) + c^2*e^2*(11*d^4*h + 4*e^4*f*x^2 + d*e^3*x*(3*f - 16*g*x) + d^3*e*
(-15*g + 19*h*x) + d^2*e^2*(-5*f + x*(-35*g + 4*h*x)))))/((-(c^2*d^2) + e^2
)^3*(d + e*x)^3) + (2*b*(d^2*h + d*e*(g + 4*h*x) + e^2*(3*f + 4*g*x + 6*h*x
^2))*ArcSin[c*x])/(d + e*x)^4 - (b*c^3*(-4*e^4*(e*g - 5*d*h) + c^2*d*e^2*(9
*e^2*f - 13*d*e*g - 7*d^2*h) + 2*c^4*d^3*(3*e^2*f + d*e*g + d^2*h))*Log[d +
 e*x])/((c*d - e)^3*(c*d + e)^3*Sqrt[-(c^2*d^2) + e^2]) + (b*c^3*(-4*e^4*(e
*g - 5*d*h) + c^2*d*e^2*(9*e^2*f - 13*d*e*g - 7*d^2*h) + 2*c^4*d^3*(3*e^2*f
 + d*e*g + d^2*h))*Log[e + c^2*d*x + Sqrt[-(c^2*d^2) + e^2]*Sqrt[1 - c^2*x^
2]])/((c*d - e)^3*(c*d + e)^3*Sqrt[-(c^2*d^2) + e^2]))/e^3
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 2964 vs. $2(444) = 888$.
time = 0.11, size = 2965, normalized size = 6.31

method	result	size
derivativedivides	Expression too large to display	2965
default	Expression too large to display	2965

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^5,x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(-1/4*b*c^5*arcsin(c*x)/e^3/(c*e*x+c*d)^4*d^2*h+1/4*b*c^5*arcsin(c*x)/e
^2/(c*e*x+c*d)^4*d*g+1/12*b*c^5/e^3/(c^2*d^2-e^2)/(c*x+d*c/e)^3*(-(c*x+d*c/
e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f-1/6*b*c^5/e/(c^2*d^2-e^
2)^2/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/
2)*f-1/3*b*c^4*arcsin(c*x)*g/e^2/(c*e*x+c*d)^3-1/3*b*c^4/e^4/(c^2*d^2-e^2)/
(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*
d*h+5/8*b*c^7/e^3*d^4/(c^2*d^2-e^2)^3/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(
c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*h-7/6*b*c^5/e^3/(c^2*d^2-e^2)^2/(c*x+d*
c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*d^2*h+1/1
2*b*c^5/e^5/(c^2*d^2-e^2)/(c*x+d*c/e)^3*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)
-(c^2*d^2-e^2)/e^2)^(1/2)*d^2*h+5/24*b*c^6/e^4*d^3/(c^2*d^2-e^2)^2/(c*x+d*c
/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*h-5/8*b*
c^8/e^4*d^5/(c^2*d^2-e^2)^3/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)
/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c
/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*h-5/6*b*c^4/e^4/(c^2*
d^2-e^2)/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d
*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2
*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*d*h+11/8*b*c^6/e^4*d^3/(c^2*d^2-e^2)^2/(
-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-
(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/
e^2)^(1/2))/(c*x+d*c/e))*h-1/4*b*c^5*arcsin(c*x)/e/(c*e*x+c*d)^4*f+1/2*b*c^
3/e^3*h/(c^2*d^2-e^2)/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*
d^2-e^2)/e^2)^(1/2)+2/3*b*c^4*arcsin(c*x)/e^3/(c*e*x+c*d)^3*d*h-1/2*b*c^3*a
```

```
rcsin(c*x)*h/e^3/(c*e*x+c*d)^2+a*c^3*(1/3*c*(2*d*h-e*g)/e^3/(c*e*x+c*d)^3-1
/2*h/e^3/(c*e*x+c*d)^2-1/4*c^2*(d^2*h-d*e*g+e^2*f)/e^3/(c*e*x+c*d)^4)+1/6*b
*c^4/e^3*g/(c^2*d^2-e^2)/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-
(c^2*d^2-e^2)/e^2)^(1/2)+1/6*b*c^4/e^3*g/(c^2*d^2-e^2)/(-(c^2*d^2-e^2)/e^2)
^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^
(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*
c/e))+3/8*b*c^6/e^2*d/(c^2*d^2-e^2)^2/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^
2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/
e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*f+2/3*b*c^5
/e^2/(c^2*d^2-e^2)^2/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d
^2-e^2)/e^2)^(1/2)*d*g-1/12*b*c^5/e^4/(c^2*d^2-e^2)/(c*x+d*c/e)^3*(-(c*x+d*
c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*d*g-5/24*b*c^6/e^3*d^2/
(c^2*d^2-e^2)^2/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-
e^2)/e^2)^(1/2)*g+5/24*b*c^6/e^2*d/(c^2*d^2-e^2)^2/(c*x+d*c/e)^2*(-(c*x+d*c
/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f-5/8*b*c^7/e^2*d^3/(c^2
*d^2-e^2)^3/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e
^2)^(1/2)*g+5/8*b*c^7/e*d^2/(c^2*d^2-e^2)^3/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d
*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f+5/8*b*c^8/e^3*d^4/(c^2*d^2-e^2)
^3/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+
2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e
^2)/e^2)^(1/2))/(c*x+d*c/e))*g-5/8*b*c^8/e^2*d^3/(c^2*d^2-e^2)^3/(-(c^2*d^2
-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-
e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2
))/(c*x+d*c/e))*f-7/8*b*c^6/e^3*d^2/(c^2*d^2-e^2)^2/(-(c^2*d^2-e^2)/e^2)^(1
/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/
2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e
))*g)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(4*x*e + d)*a*g/(x^4*e^6 + 4*d*x^3*e^5 + 6*d^2*x^2*e^4 + 4*d^3*x*e^3
+ d^4*e^2) - 1/12*(6*x^2*e^2 + 4*d*x*e + d^2)*a*h/(x^4*e^7 + 4*d*x^3*e^6 +
6*d^2*x^2*e^5 + 4*d^3*x*e^4 + d^4*e^3) - 1/4*a*f/(x^4*e^5 + 4*d*x^3*e^4 + 6
*d^2*x^2*e^3 + 4*d^3*x*e^2 + d^4*e) - 1/12*((6*b*h*x^2*e^2 + b*d^2*h + b*d*
g*e + 3*b*f*e^2 + 4*(b*d*h*e + b*g*e^2)*x)*arctan2(c*x, sqrt(c*x + 1)*sqrt(
-c*x + 1)) + 12*(x^4*e^7 + 4*d*x^3*e^6 + 6*d^2*x^2*e^5 + 4*d^3*x*e^4 + d^4*
e^3)*integrate(1/12*(6*b*c*h*x^2*e^2 + b*c*d^2*h + b*c*d*g*e + 3*b*c*f*e^2
+ 4*(b*c*d*h*e + b*c*g*e^2)*x)*e^(1/2*log(c*x + 1) + 1/2*log(-c*x + 1))/(c^
4*x^8*e^7 + 4*c^4*d*x^7*e^6 - 4*c^2*d^3*x^3*e^4 - c^2*d^4*x^2*e^3 + (6*c^4*
```

```
d^2*e^5 - c^2*e^7)*x^6 + 4*(c^4*d^3*e^4 - c^2*d*e^6)*x^5 + (c^4*d^4*e^3 - 6
*c^2*d^2*e^5)*x^4 + (c^2*x^6*e^7 + 4*c^2*d*x^5*e^6 + (6*c^2*d^2*e^5 - e^7)*
x^4 - 4*d^3*x*e^4 - d^4*e^3 + 4*(c^2*d^3*e^4 - d*e^6)*x^3 + (c^2*d^4*e^3 -
6*d^2*e^5)*x^2)*e^(log(c*x + 1) + log(-c*x + 1))), x))/(x^4*e^7 + 4*d*x^3*e
^6 + 6*d^2*x^2*e^5 + 4*d^3*x*e^4 + d^4*e^3)
```

Fricas [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^5,x, algorithm="fricas")
[Out] Timed out
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\operatorname{asin}(cx))(f + gx + hx^2)}{(d + ex)^5}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x**2+g*x+f)*(a+b*asin(c*x))/(e*x+d)**5,x)
[Out] Integral((a + b*asin(c*x))*(f + g*x + h*x**2)/(d + e*x)**5, x)
```

Giac [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^5,x, algorithm="giac")
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\operatorname{asin}(c\,x))\,(h\,x^2 + g\,x + f)}{(d + e\,x)^5}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(f + g*x + h*x^2))/(d + e*x)^5,x)
[Out] int(((a + b*asin(c*x))*(f + g*x + h*x^2))/(d + e*x)^5, x)
```

3.105 $\int \frac{(f+gx+hx^2)(a+b\text{ArcSin}(cx))}{(d+ex)^6}\,dx$

Optimal. Leaf size=593

$$\frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{20e^2(c^2d^2-e^2)(d+ex)^4}-\frac{bc(5e^2(eg-2dh)-c^2d(7e^2f-2deg-3d^2h))\sqrt{1-c^2x^2}}{60e^2(c^2d^2-e^2)^2(d+ex)^3}+\frac{bc(20e^4h+c}{}$$

```
[Out] -1/5*(d^2*h-d*e*g+e^2*f)*(a+b*arcsin(c*x))/e^3/(e*x+d)^5-1/4*(-2*d*h+e*g)*(
a+b*arcsin(c*x))/e^3/(e*x+d)^4-1/3*h*(a+b*arcsin(c*x))/e^3/(e*x+d)^3+1/120*
b*c^3*(20*e^6*h+3*c^4*d^2*e^2*(-6*d^2*h-19*d*e*g+24*e^2*f)+2*c^6*d^4*(2*d^2
*h+3*d*e*g+12*e^2*f)+9*c^2*e^4*(11*d^2*h-6*d*e*g+e^2*f))*arctan((c^2*d*x+e)
/(c^2*d^2-e^2)^(1/2)/(-c^2*x^2+1)^(1/2))/e^3/(c^2*d^2-e^2)^(9/2)+1/20*b*c*(
d^2*h-d*e*g+e^2*f)*(-c^2*x^2+1)^(1/2)/e^2/(c^2*d^2-e^2)/(e*x+d)^4-1/60*b*c*
(5*e^2*(-2*d*h+e*g)-c^2*d*(-3*d^2*h-2*d*e*g+7*e^2*f))*(-c^2*x^2+1)^(1/2)/e^
2/(c^2*d^2-e^2)^2/(e*x+d)^3+1/120*b*c*(20*e^4*h+c^4*d^2*(-4*d^2*h-d*e*g+26*
e^2*f)+c^2*e^2*(19*d^2*h-34*d*e*g+9*e^2*f))*(-c^2*x^2+1)^(1/2)/e^2/(c^2*d^2
-e^2)^3/(e*x+d)^2+1/24*b*c^3*(c^4*d^3*(d*g+10*e*f)-4*e^3*(-5*d*h+e*g)+c^2*d
*e*(d^2*h-18*d*e*g+11*e^2*f))*(-c^2*x^2+1)^(1/2)/e/(c^2*d^2-e^2)^4/(e*x+d)
```

Rubi [A]
time = 0.89, antiderivative size = 593, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.308$, Rules used = {712, 4837, 12, 1665, 849, 821, 739, 210}

$$-\frac{(a+b\text{ArcSin}(cx))(d^2h-deg+e^2f)}{5e^3(d+ex)^5}-\frac{(eg-2dh)(a+b\text{ArcSin}(cx))}{4e^3(d+ex)^4}-\frac{h(a+b\text{ArcSin}(cx))}{3e^3(d+ex)^3}+\frac{bc^3\text{ArcTan}\left(\frac{c^2dx+e}{\sqrt{1-c^2x^2}\sqrt{c^2d^2-e^2}}\right)(2c^6d^4(2d^2h+3deg+12e^2f)+3c^4d^2e^2(-6d^2h-19deg+24e^2f)+9c^2e^4(11d^2h-6deg+e^2f)+20e^6h)}{120e^3(c^2d^2-e^2)^{9/2}}-\frac{bc\sqrt{1-c^2x^2}(5e^2(eg-2dh)-c^2d(-3d^2h-2deg+7e^2f))}{60e^2(c^2d^2-e^2)^2(d+ex)^3}+\frac{bc\sqrt{1-c^2x^2}(d^2h-deg+e^2f)}{20e^2(c^2d^2-e^2)(d+ex)^4}+\frac{bc\sqrt{1-c^2x^2}(c^4d^2(-4d^2h-deg+26e^2f)+c^2e^2(19d^2h-34deg+9e^2f)+20e^4h)}{120e^2(c^2d^2-e^2)^3(d+ex)^2}+\frac{bc^3\sqrt{1-c^2x^2}(c^4d^3(dg+10ef)+c^2de(d^2h-18deg+11e^2f)-4e^3(eg-5dh))}{24e(c^2d^2-e^2)^4(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x + h*x^2)*(a + b*ArcSin[c*x]))/(d + e*x)^6,x]
```

```
[Out] (b*c*(e^2*f - d*e*g + d^2*h)*Sqrt[1 - c^2*x^2])/(20*e^2*(c^2*d^2 - e^2)*(d
+ e*x)^4) - (b*c*(5*e^2*(e*g - 2*d*h) - c^2*d*(7*e^2*f - 2*d*e*g - 3*d^2*h)
)*Sqrt[1 - c^2*x^2])/(60*e^2*(c^2*d^2 - e^2)^2*(d + e*x)^3) + (b*c*(20*e^4*
h + c^4*d^2*(26*e^2*f - d*e*g - 4*d^2*h) + c^2*e^2*(9*e^2*f - 34*d*e*g + 19
*d^2*h))*Sqrt[1 - c^2*x^2])/(120*e^2*(c^2*d^2 - e^2)^3*(d + e*x)^2) + (b*c^
3*(c^4*d^3*(10*e*f + d*g) - 4*e^3*(e*g - 5*d*h) + c^2*d*e*(11*e^2*f - 18*d*
e*g + d^2*h))*Sqrt[1 - c^2*x^2])/(24*e*(c^2*d^2 - e^2)^4*(d + e*x)) - ((e^2
*f - d*e*g + d^2*h)*(a + b*ArcSin[c*x]))/(5*e^3*(d + e*x)^5) - ((e*g - 2*d*
h)*(a + b*ArcSin[c*x]))/(4*e^3*(d + e*x)^4) - (h*(a + b*ArcSin[c*x]))/(3*e^
3*(d + e*x)^3) + (b*c^3*(20*e^6*h + 3*c^4*d^2*e^2*(24*e^2*f - 19*d*e*g - 6*
d^2*h) + 2*c^6*d^4*(12*e^2*f + 3*d*e*g + 2*d^2*h) + 9*c^2*e^4*(e^2*f - 6*d*
e*g + 11*d^2*h))*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2
])])/(120*e^3*(c^2*d^2 - e^2)^(9/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 712

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 739

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(-(e*f - d*g))*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1
)/(2*(p + 1)*(c*d^2 + a*e^2))), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2),
Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m,
p}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 849

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(e*f - d*g)*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1)/(
(m + 1)*(c*d^2 + a*e^2))), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 1665

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :>
 With[{Q = PolynomialQuotient[Pq, d + e*x, x], R = PolynomialRemainder[Pq,
d + e*x, x]}, Simp[(e*R*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*
```

```
d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)
*(a + c*x^2)^p*ExpandToSum[(m + 1)*(c*d^2 + a*e^2)*Q + c*d*R*(m + 1) - c*e*
R*(m + 2*p + 3)*x, x], x], x]] /; FreeQ[{a, c, d, e, p}, x] && PolyQ[Pq, x]
 && NeQ[c*d^2 + a*e^2, 0] && LtQ[m, -1]
```

Rule 4837

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rubi steps

$$\int \frac{(f+gx+hx^2)\left(a+b\sin^{-1}(cx)\right)}{(d+ex)^6}\,dx = -\frac{(e^2f-deg+d^2h)\left(a+b\sin^{-1}(cx)\right)}{5e^3(d+ex)^5} - \frac{(eg-2dh)\left(a+b\sin^{-1}(c\right.}{4e^3(d+ex)^4}$$

$$= -\frac{(e^2f-deg+d^2h)\left(a+b\sin^{-1}(cx)\right)}{5e^3(d+ex)^5} - \frac{(eg-2dh)\left(a+b\sin^{-1}(c\right.}{4e^3(d+ex)^4}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{20e^2\left(c^2d^2-e^2\right)(d+ex)^4} - \frac{(e^2f-deg+d^2h)\left(a+b\sin^{-1}\right.}{5e^3(d+ex)^5}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{20e^2\left(c^2d^2-e^2\right)(d+ex)^4} - \frac{bc(5e^2(eg-2dh)-c^2d(7e^2f\ldots}{60e^2\left(c^2d^2-e\ldots\right.}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{20e^2\left(c^2d^2-e^2\right)(d+ex)^4} - \frac{bc(5e^2(eg-2dh)-c^2d(7e^2f\ldots}{60e^2\left(c^2d^2-e\ldots\right.}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{20e^2\left(c^2d^2-e^2\right)(d+ex)^4} - \frac{bc(5e^2(eg-2dh)-c^2d(7e^2f\ldots}{60e^2\left(c^2d^2-e\ldots\right.}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{20e^2\left(c^2d^2-e^2\right)(d+ex)^4} - \frac{bc(5e^2(eg-2dh)-c^2d(7e^2f\ldots}{60e^2\left(c^2d^2-e\ldots\right.}$$

$$= \frac{bc(e^2f-deg+d^2h)\sqrt{1-c^2x^2}}{20e^2\left(c^2d^2-e^2\right)(d+ex)^4} - \frac{bc(5e^2(eg-2dh)-c^2d(7e^2f\ldots}{60e^2\left(c^2d^2-e\ldots\right.}$$

Mathematica [A]
time = 1.52, size = 682, normalized size = 1.15

$$-\frac{\frac{24a(e^2f-deg+d^2h)}{(d+ex)^5}+\frac{30a(eg-2dh)}{(d+ex)^4}+\frac{40ah}{(d+ex)^3}-\frac{bce\sqrt{1-c^2x^2}\left(6(c^2d^2-e^2)^3(e^2f-deg+d^2h)-2(-c^2d^2+e^2)^2(5e^2(eg-2dh)+c^2d(-7e^2f+2deg+3d^2h))(d+ex)-(-c^2d^2+e^2)(20e^4h-c^4d^2(-26e^2f+deg+4d^2h)+c^2e^2(9e^2f-34deg+19d^2h))(d+ex)^2+5c^2e(c^4d^3(10ef+dg)-4e^3(eg-5dh)+c^2de(11e^2f-18deg+d^2h))(d+ex)^3\right)}{(-c^2d^2+e^2)^4(d+ex)^4}+\frac{2b(2d^2h+de(3g+10hx)+e^2(12f+5x(3g+4hx)))\mathrm{ArcSin}(cx)}{(d+ex)^5}-\frac{bc^3(20e^6h+2c^6d^4(12e^2f+3deg+2d^2h)-3c^4d^2e^2(-24e^2f+19deg+6d^2h)+9c^2e^4(e^2f-6deg+11d^2h))\log(d+ex)}{(-cd+e)^4(cd+e)^4\sqrt{-c^2d^2+e^2}}+\frac{bc^3(20e^6h+2c^6d^4(12e^2f+3deg+2d^2h)-3c^4d^2e^2(-24e^2f+19deg+6d^2h)+9c^2e^4(e^2f-6deg+11d^2h))\log\left(e+c^2dx+\sqrt{-c^2d^2+e^2}\sqrt{1-c^2x^2}\right)}{(-cd+e)^4(cd+e)^4\sqrt{-c^2d^2+e^2}}}{120e^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x + h*x^2)*(a + b*ArcSin[c*x]))/(d + e*x)^6,x]
```

```
[Out] -1/120*((24*a*(e^2*f - d*e*g + d^2*h))/(d + e*x)^5 + (30*a*(e*g - 2*d*h))/(
d + e*x)^4 + (40*a*h)/(d + e*x)^3 - (b*c*e*Sqrt[1 - c^2*x^2]*(6*(c^2*d^2 -
e^2)^3*(e^2*f - d*e*g + d^2*h) - 2*(-(c^2*d^2) + e^2)^2*(5*e^2*(e*g - 2*d*h
) + c^2*d*(-7*e^2*f + 2*d*e*g + 3*d^2*h))*(d + e*x) - (-(c^2*d^2) + e^2)*(2
0*e^4*h - c^4*d^2*(-26*e^2*f + d*e*g + 4*d^2*h) + c^2*e^2*(9*e^2*f - 34*d*e
*g + 19*d^2*h))*(d + e*x)^2 + 5*c^2*e*(c^4*d^3*(10*e*f + d*g) - 4*e^3*(e*g
- 5*d*h) + c^2*d*e*(11*e^2*f - 18*d*e*g + d^2*h))*(d + e*x)^3))/((-(c^2*d^2
) + e^2)^4*(d + e*x)^4) + (2*b*(2*d^2*h + d*e*(3*g + 10*h*x) + e^2*(12*f +
5*x*(3*g + 4*h*x)))*ArcSin[c*x])/(d + e*x)^5 - (b*c^3*(20*e^6*h + 2*c^6*d^4
*(12*e^2*f + 3*d*e*g + 2*d^2*h) - 3*c^4*d^2*e^2*(-24*e^2*f + 19*d*e*g + 6*d
^2*h) + 9*c^2*e^4*(e^2*f - 6*d*e*g + 11*d^2*h))*Log[d + e*x])/((-(c*d) + e)
^4*(c*d + e)^4*Sqrt[-(c^2*d^2) + e^2]) + (b*c^3*(20*e^6*h + 2*c^6*d^4*(12*e
^2*f + 3*d*e*g + 2*d^2*h) - 3*c^4*d^2*e^2*(-24*e^2*f + 19*d*e*g + 6*d^2*h)
+ 9*c^2*e^4*(e^2*f - 6*d*e*g + 11*d^2*h))*Log[e + c^2*d*x + Sqrt[-(c^2*d^2)
 + e^2]*Sqrt[1 - c^2*x^2]])/((-(c*d) + e)^4*(c*d + e)^4*Sqrt[-(c^2*d^2) + e
^2]))/e^3
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 4036 vs. $2(563) = 1126$.
time = 0.11, size = 4037, normalized size = 6.81

method	result	size
derivativedivides	Expression too large to display	4037
default	Expression too large to display	4037

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^6,x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(a*c^4*(-1/3*h/e^3/(c*e*x+c*d)^3-1/5*c^2*(d^2*h-d*e*g+e^2*f)/e^3/(c*e*x
+c*d)^5+1/4*c*(2*d*h-e*g)/e^3/(c*e*x+c*d)^4)+7/8*b*c^10/e^3*d^5/(c^2*d^2-e^
2)^4/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e
)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2
-e^2)/e^2)^(1/2))/(c*x+d*c/e))*g-7/8*b*c^10/e^2*d^4/(c^2*d^2-e^2)^4/(-(c^2*
d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d
^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(
1/2))/(c*x+d*c/e))*f+3/4*b*c^8/e^2*d^2/(c^2*d^2-e^2)^3/(-(c^2*d^2-e^2)/e^2)
^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^
(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*
c/e))*f-11/24*b*c^7/e*d/(c^2*d^2-e^2)^3/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e
*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f-7/8*b*c^9/e^2*d^4/(c^2*d^2-e^2)^4/(
c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*g+7
```

/8*b*c^9/e*d^3/(c^2*d^2-e^2)^4/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c
/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f-7/60*b*c^7/e^4*d^2/(c^2*d^2-e^2)^2/(c*x+d*c/
e)^3*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*g+7/60*b*
c^7/e^3*d/(c^2*d^2-e^2)^2/(c*x+d*c/e)^3*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)
-(c^2*d^2-e^2)/e^2)^(1/2)*f-7/24*b*c^8/e^3*d^3/(c^2*d^2-e^2)^3/(c*x+d*c/e)^
2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*g+7/24*b*c^8
/e^2*d^2/(c^2*d^2-e^2)^3/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-
(c^2*d^2-e^2)/e^2)^(1/2)*f+9/20*b*c^6/e^3*g*d/(c^2*d^2-e^2)^2/(-(c^2*d^2-e^
2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2
)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/
(c*x+d*c/e))-1/20*b*c^6/e^5/(c^2*d^2-e^2)/(c*x+d*c/e)^4*(-(c*x+d*c/e)^2+2*d
c/e(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*d*g+17/60*b*c^6/e^3*g*d/(c^2*d^2-
e^2)^2/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)
^(1/2)+13/12*b*c^7/e^2*g*d^2/(c^2*d^2-e^2)^3/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*
d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)-11/8*b*c^8/e^3*g*d^3/(c^2*d^2-e^
2)^3/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e
)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2
-e^2)/e^2)^(1/2))/(c*x+d*c/e))+1/6*b*c^4/e^4*h/(c^2*d^2-e^2)/(c*x+d*c/e)^2*
(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)+1/6*b*c^4/e^4*
h/(c^2*d^2-e^2)/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e
*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/
e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))-1/5*b*c^6*arcsin(c*x)/e^3/(c*e*x+
c*d)^5*d^2*h+1/2*b*c^5*arcsin(c*x)/e^3/(c*e*x+c*d)^4*d*h-1/4*b*c^5*arcsin(c
*x)*g/e^2/(c*e*x+c*d)^4-1/6*b*c^5/e^2*g/(c^2*d^2-e^2)^2/(c*x+d*c/e)*(-(c*x+
d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)+1/20*b*c^6/e^4/(c^2*d
^2-e^2)/(c*x+d*c/e)^4*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2
)^(1/2)*f-3/40*b*c^6/e^2/(c^2*d^2-e^2)^2/(c*x+d*c/e)^2*(-(c*x+d*c/e)^2+2*d*
c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f-3/40*b*c^6/e^2/(c^2*d^2-e^2)^2/(
-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-
(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/
e^2)^(1/2))/(c*x+d*c/e))*f-1/5*b*c^6*arcsin(c*x)/e/(c*e*x+c*d)^5*f+1/5*b*c^
6*arcsin(c*x)/e^2/(c*e*x+c*d)^5*d*g+1/12*b*c^5/e^4*g/(c^2*d^2-e^2)/(c*x+d*c
/e)^3*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)-1/3*b*c^
4*arcsin(c*x)*h/e^3/(c*e*x+c*d)^3+7/24*b*c^8/e^4*d^4/(c^2*d^2-e^2)^3/(c*x+d
c/e)^2(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*h+7/60
*b*c^7/e^5*d^3/(c^2*d^2-e^2)^2/(c*x+d*c/e)^3*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d
*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*h-1/6*b*c^5/e^5/(c^2*d^2-e^2)/(c*x+d*c/e)^3*
(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*d*h-7/8*b*c^10
/e^4*d^6/(c^2*d^2-e^2)^4/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^
2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*
(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*h-53/40*b*c^6/e^4*d^2/(c
^2*d^2-e^2)^2/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(
c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)
-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*h+2*b*c^8/e^4*d^4/(c^2*d^2-e^2)^3/(
-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-

```
(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/
e^2)^(1/2))/(c*x+d*c/e))*h-41/24*b*c^7/e^3*d^3/(c^2*d^2-e^2)^3/(c*x+d*c/e)*
(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*h+1/20*b*c^6/e
^6/(c^2*d^2-e^2)/(c*x+d*c/e)^4*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2
-e^2)/e^2)^(1/2)*d^2*h-59/120*b*c^6/e^4*d^2/(c^2*d^2-e^2)^2/(c*x+d*c/e)^2*(
-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2)*h+7/8*b*c^9/e^3
*d^5/(c^2*d^2-e^2)^4/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d
^2-e^2)/e^2)^(1/2)*h+5/6*b*c^5/e^3/(c^2*d^2-e^2)^2/(c*x+d*c/e)*(-(c*x+d*c/e
)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2...
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] -1/20*(5*x*e + d)*a*g/(x^5*e^7 + 5*d*x^4*e^6 + 10*d^2*x^3*e^5 + 10*d^3*x^2*
e^4 + 5*d^4*x*e^3 + d^5*e^2) - 1/30*(10*x^2*e^2 + 5*d*x*e + d^2)*a*h/(x^5*e
^8 + 5*d*x^4*e^7 + 10*d^2*x^3*e^6 + 10*d^3*x^2*e^5 + 5*d^4*x*e^4 + d^5*e^3)
 - 1/5*a*f/(x^5*e^6 + 5*d*x^4*e^5 + 10*d^2*x^3*e^4 + 10*d^3*x^2*e^3 + 5*d^4
*x*e^2 + d^5*e) - 1/60*((20*b*h*x^2*e^2 + 2*b*d^2*h + 3*b*d*g*e + 12*b*f*e^
2 + 5*(2*b*d*h*e + 3*b*g*e^2)*x)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))
 + 60*(x^5*e^8 + 5*d*x^4*e^7 + 10*d^2*x^3*e^6 + 10*d^3*x^2*e^5 + 5*d^4*x*e^
4 + d^5*e^3)*integrate(1/60*(20*b*c*h*x^2*e^2 + 2*b*c*d^2*h + 3*b*c*d*g*e +
 12*b*c*f*e^2 + 5*(2*b*c*d*h*e + 3*b*c*g*e^2)*x)*e^(1/2*log(c*x + 1) + 1/2*
log(-c*x + 1))/(c^4*x^9*e^8 + 5*c^4*d*x^8*e^7 - 5*c^2*d^4*x^3*e^4 - c^2*d^5
*x^2*e^3 + (10*c^4*d^2*e^6 - c^2*e^8)*x^7 + 5*(2*c^4*d^3*e^5 - c^2*d*e^7)*x
^6 + 5*(c^4*d^4*e^4 - 2*c^2*d^2*e^6)*x^5 + (c^4*d^5*e^3 - 10*c^2*d^3*e^5)*x
^4 + (c^2*x^7*e^8 + 5*c^2*d*x^6*e^7 + (10*c^2*d^2*e^6 - e^8)*x^5 - 5*d^4*x*
e^4 - d^5*e^3 + 5*(2*c^2*d^3*e^5 - d*e^7)*x^4 + 5*(c^2*d^4*e^4 - 2*d^2*e^6)
*x^3 + (c^2*d^5*e^3 - 10*d^3*e^5)*x^2)*e^(log(c*x + 1) + log(-c*x + 1))), x
))/(x^5*e^8 + 5*d*x^4*e^7 + 10*d^2*x^3*e^6 + 10*d^3*x^2*e^5 + 5*d^4*x*e^4 +
 d^5*e^3)
```

Fricas [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] Timed out
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\operatorname{asin}(cx))(f + gx + hx^2)}{(d + ex)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x**2+g*x+f)*(a+b*asin(c*x))/(e*x+d)**6,x)
[Out] Integral((a + b*asin(c*x))*(f + g*x + h*x**2)/(d + e*x)**6, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^6,x, algorithm="giac")
[Out] integrate((h*x^2 + g*x + f)*(b*arcsin(c*x) + a)/(e*x + d)^6, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\operatorname{asin}(c\,x))\,(h\,x^2 + g\,x + f)}{(d + e\,x)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(f + g*x + h*x^2))/(d + e*x)^6,x)
[Out] int(((a + b*asin(c*x))*(f + g*x + h*x^2))/(d + e*x)^6, x)
```

3.106 $\int (d+ex)^3 \left(f+gx+hx^2+ix^3\right) (a+b\textbf{ArcSin}(cx))\,dx$

Optimal. Leaf size=684

$$\frac{b\left(1225c^4d\left(3e^2f+3deg+d^2h\right)+360e^3i+588c^2e\left(e^2g+3deh+3d^2i\right)\right)x^2\sqrt{1-c^2x^2}}{11025c^5}+\frac{b\left(5e^2(eh+3di)+9c^2(\right.}{}$$

```
[Out] -1/96*b*(24*c^4*d^2*(d*g+3*e*f)+5*e^2*(3*d*i+e*h)+9*c^2*(d^3*i+3*d^2*e*h+3*
d*e^2*g+e^3*f))*arcsin(c*x)/c^6+d^3*f*x*(a+b*arcsin(c*x))+1/2*d^2*(d*g+3*e*
f)*x^2*(a+b*arcsin(c*x))+1/3*d*(d^2*h+3*d*e*g+3*e^2*f)*x^3*(a+b*arcsin(c*x)
)+1/4*(d^3*i+3*d^2*e*h+3*d*e^2*g+e^3*f)*x^4*(a+b*arcsin(c*x))+1/5*e*(3*d^2*
i+3*d*e*h+e^2*g)*x^5*(a+b*arcsin(c*x))+1/6*e^2*(3*d*i+e*h)*x^6*(a+b*arcsin(
c*x))+1/7*e^3*i*x^7*(a+b*arcsin(c*x))+1/11025*b*(1225*c^4*d*(d^2*h+3*d*e*g+
3*e^2*f)+360*e^3*i+588*c^2*e*(3*d^2*i+3*d*e*h+e^2*g))*x^2*(-c^2*x^2+1)^(1/2
)/c^5+1/144*b*(5*e^2*(3*d*i+e*h)+9*c^2*(d^3*i+3*d^2*e*h+3*d*e^2*g+e^3*f))*x
^3*(-c^2*x^2+1)^(1/2)/c^3+1/1225*b*e*(30*e^2*i+49*c^2*(3*d^2*i+3*d*e*h+e^2*
g))*x^4*(-c^2*x^2+1)^(1/2)/c^3+1/36*b*e^2*(3*d*i+e*h)*x^5*(-c^2*x^2+1)^(1/2
)/c+1/49*b*e^3*i*x^6*(-c^2*x^2+1)^(1/2)/c+1/352800*b*(352800*c^6*d^3*f+7840
0*c^4*d*(d^2*h+3*d*e*g+3*e^2*f)+23040*e^3*i+37632*c^2*e*(3*d^2*i+3*d*e*h+e^
2*g)+3675*c^2*(24*c^4*d^2*(d*g+3*e*f)+5*e^2*(3*d*i+e*h)+9*c^2*(d^3*i+3*d^2*
e*h+3*d*e^2*g+e^3*f))*x)*(-c^2*x^2+1)^(1/2)/c^7
```

Rubi [A]
time = 3.17, antiderivative size = 684, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.161$, Rules used = {4833, 12, 1823, 794, 222}

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^3*(f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*(1225*c^4*d*(3*e^2*f + 3*d*e*g + d^2*h) + 360*e^3*i + 588*c^2*e*(e^2*g +
 3*d*e*h + 3*d^2*i))*x^2*Sqrt[1 - c^2*x^2])/(11025*c^5) + (b*(5*e^2*(e*h +
3*d*i) + 9*c^2*(e^3*f + 3*d*e^2*g + 3*d^2*e*h + d^3*i))*x^3*Sqrt[1 - c^2*x^
2])/(144*c^3) + (b*e*(30*e^2*i + 49*c^2*(e^2*g + 3*d*e*h + 3*d^2*i))*x^4*Sq
rt[1 - c^2*x^2])/(1225*c^3) + (b*e^2*(e*h + 3*d*i)*x^5*Sqrt[1 - c^2*x^2])/(
36*c) + (b*e^3*i*x^6*Sqrt[1 - c^2*x^2])/(49*c) + (b*(32*(11025*c^6*d^3*f +
2450*c^4*d*(3*e^2*f + 3*d*e*g + d^2*h) + 720*e^3*i + 1176*c^2*e*(e^2*g + 3*
d*e*h + 3*d^2*i)) + 3675*c^2*(24*c^4*d^2*(3*e*f + d*g) + 5*e^2*(e*h + 3*d*i
) + 9*c^2*(e^3*f + 3*d*e^2*g + 3*d^2*e*h + d^3*i))*x)*Sqrt[1 - c^2*x^2])/(3
52800*c^7) - (b*(24*c^4*d^2*(3*e*f + d*g) + 5*e^2*(e*h + 3*d*i) + 9*c^2*(e^
3*f + 3*d*e^2*g + 3*d^2*e*h + d^3*i))*ArcSin[c*x])/(96*c^6) + d^3*f*x*(a +
b*ArcSin[c*x]) + (d^2*(3*e*f + d*g)*x^2*(a + b*ArcSin[c*x]))/2 + (d*(3*e^2*
f + 3*d*e*g + d^2*h)*x^3*(a + b*ArcSin[c*x]))/3 + ((e^3*f + 3*d*e^2*g + 3*d
```

```
^2*e*h + d^3*i)*x^4*(a + b*ArcSin[c*x]))/4 + (e*(e^2*g + 3*d*e*h + 3*d^2*i)
*x^5*(a + b*ArcSin[c*x]))/5 + (e^2*(e*h + 3*d*i)*x^6*(a + b*ArcSin[c*x]))/6
 + (e^3*i*x^7*(a + b*ArcSin[c*x]))/7
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*((a + c*x^2)^(p
+ 1)/(2*c*(p + 1)*(2*p + 3))), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 1823

```
Int[(Pq_)*((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2)^(p_), x_Symbol] :> With[
{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[f*(c*x)^(m + q - 1
)*((a + b*x^2)^(p + 1)/(b*c^(q - 1)*(m + q + 2*p + 1))), x] + Dist[1/(b*(m
+ q + 2*p + 1)), Int[(c*x)^m*(a + b*x^2)^p*ExpandToSum[b*(m + q + 2*p + 1)*
Pq - b*f*(m + q + 2*p + 1)*x^q - a*f*(m + q - 1)*x^(q - 2), x], x], x] /; G
tQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, m, p}, x] && PolyQ[
Pq, x] && ( !IGtQ[m, 0] || IGtQ[p + 1/2, -1])
```

Rule 4833

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_), x_Symbol] :> With[{u = IntHid
e[ExpandExpression[Px, x], x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, I
nt[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[{a, b, c}, x
] && PolynomialQ[Px, x]
```

Rubi steps

$$\int (d+ex)^3 \left(f+gx+hx^2+106x^3\right) \left(a+b\sin^{-1}(cx)\right) \, dx = d^3fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d^2(3ef+dg)x^2\left(a+b\right.$$

$$= d^3fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d^2(3ef+dg)x^2\left(a+b\right.$$

$$= \frac{106be^3x^6\sqrt{1-c^2x^2}}{49c}+d^3fx\left(a+b\sin^{-1}(cx)\right)+$$

$$= \frac{be^2(318d+eh)x^5\sqrt{1-c^2x^2}}{36c}+\frac{106be^3x^6\sqrt{1-c}}{49c}$$

$$= \frac{be\left(3180e^2+49c^2\left(318d^2+e^2g+3deh\right)\right)x^4\sqrt{1-}}{1225c^3}$$

$$= \frac{b\left(5e^2(318d+eh)+9c^2\left(106d^3+e^3f+3de^2g+\right.\right.}{144c^3}$$

$$= \frac{b\left(38160e^3+1225c^4d\left(3e^2f+3deg+d^2h\right)+588\right.}{11025c^5}$$

$$= \frac{b\left(38160e^3+1225c^4d\left(3e^2f+3deg+d^2h\right)+588\right.}{11025c^5}$$

$$= \frac{b\left(38160e^3+1225c^4d\left(3e^2f+3deg+d^2h\right)+588\right.}{11025c^5}$$

Mathematica [A]
time = 0.41, size = 619, normalized size = 0.90

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^3*(f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]),x]
```

```
[Out] a*d^3*f*x + (a*d^2*(3*e*f + d*g)*x^2)/2 + (a*d*(3*e^2*f + 3*d*e*g + d^2*h)*
x^3)/3 + (a*(e^3*f + 3*d*e^2*g + 3*d^2*e*h + d^3*i)*x^4)/4 + (a*e*(e^2*g +
3*d*e*h + 3*d^2*i)*x^5)/5 + (a*e^2*(e*h + 3*d*i)*x^6)/6 + (a*e^3*i*x^7)/7 +
 (b*Sqrt[1 - c^2*x^2]*(23040*e^3*i + 3*c^2*e*(37632*d^2*i + 147*d*e*(256*h
+ 125*i*x) + e^2*(12544*g + 5*x*(1225*h + 768*i*x))) + c^4*(1225*d^3*(64*h
+ 27*i*x) + 147*d^2*e*(1600*g + 675*h*x + 384*i*x^2) + 147*d*e^2*(1600*f +
x*(675*g + 384*h*x + 250*i*x^2)) + e^3*x*(33075*f + 2*x*(9408*g + 6125*h*x
+ 4320*i*x^2))) + 2*c^6*(1225*d^3*(144*f + x*(36*g + x*(16*h + 9*i*x))) + 1
47*d^2*e*x*(900*f + x*(400*g + 9*x*(25*h + 16*i*x))) + 147*d*e^2*x^2*(400*f
 + x*(225*g + 4*x*(36*h + 25*i*x))) + e^3*x^3*(11025*f + 4*x*(1764*g + 25*x
```

```
*(49*h + 36*i*x))))))/(352800*c^7) - (b*(24*c^4*d^2*(3*e*f + d*g) + 5*e^2*(
e*h + 3*d*i) + 9*c^2*(e^3*f + 3*d*e^2*g + 3*d^2*e*h + d^3*i))*ArcSin[c*x])/
(96*c^6) + (b*x*(35*d^3*(12*f + x*(6*g + x*(4*h + 3*i*x))) + 21*d^2*e*x*(30
*f + x*(20*g + 3*x*(5*h + 4*i*x))) + 21*d*e^2*x^2*(20*f + x*(15*g + 2*x*(6*
h + 5*i*x))) + e^3*x^3*(105*f + 2*x*(42*g + 5*x*(7*h + 6*i*x))))*ArcSin[c*x
])/420
```

Maple [A]
time = 0.15, size = 932, normalized size = 1.36 Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^3*(i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x)),x,method=_RETURNVERBOSE
)
```

```
[Out] 1/c*(a/c^6*(1/7*e^3*i*c^7*x^7+1/6*(3*c*d*e^2*i+c*e^3*h)*c^6*x^6+1/5*(3*c^2*
d^2*e*i+3*c^2*d*e^2*h+c^2*e^3*g)*c^5*x^5+1/4*(c^3*d^3*i+3*c^3*d^2*e*h+3*c^3
*d*e^2*g+c^3*e^3*f)*c^4*x^4+1/3*(c^4*d^3*h+3*c^4*d^2*e*g+3*c^4*d*e^2*f)*c^3
*x^3+1/2*(c^5*d^3*g+3*c^5*d^2*e*f)*c^2*x^2+d^3*c^7*f*x)+b/c^6*(1/7*arcsin(c
*x)*e^3*i*c^7*x^7+1/2*arcsin(c*x)*c^7*d*e^2*i*x^6+1/6*arcsin(c*x)*c^7*e^3*h
*x^6+3/5*arcsin(c*x)*c^7*d^2*e*i*x^5+3/5*arcsin(c*x)*c^7*d*e^2*h*x^5+1/5*ar
csin(c*x)*c^7*e^3*g*x^5+1/4*arcsin(c*x)*c^7*d^3*i*x^4+3/4*arcsin(c*x)*c^7*d
^2*e*h*x^4+3/4*arcsin(c*x)*c^7*d*e^2*g*x^4+1/4*arcsin(c*x)*c^7*e^3*f*x^4+1/
3*arcsin(c*x)*c^7*d^3*h*x^3+arcsin(c*x)*c^7*d^2*e*g*x^3+arcsin(c*x)*c^7*d*e
^2*f*x^3+1/2*arcsin(c*x)*c^7*d^3*g*x^2+3/2*arcsin(c*x)*c^7*d^2*e*f*x^2+arcs
in(c*x)*d^3*c^7*f*x-1/7*e^3*i*(-1/7*c^6*x^6*(-c^2*x^2+1)^(1/2)-6/35*c^4*x^4
*(-c^2*x^2+1)^(1/2)-8/35*c^2*x^2*(-c^2*x^2+1)^(1/2)-16/35*(-c^2*x^2+1)^(1/2
))-1/420*(210*c*d*e^2*i+70*c*e^3*h)*(-1/6*c^5*x^5*(-c^2*x^2+1)^(1/2)-5/24*c
^3*x^3*(-c^2*x^2+1)^(1/2)-5/16*c*x*(-c^2*x^2+1)^(1/2)+5/16*arcsin(c*x))-1/4
20*(252*c^2*d^2*e*i+252*c^2*d*e^2*h+84*c^2*e^3*g)*(-1/5*c^4*x^4*(-c^2*x^2+1
)^(1/2)-4/15*c^2*x^2*(-c^2*x^2+1)^(1/2)-8/15*(-c^2*x^2+1)^(1/2))-1/420*(105
*c^3*d^3*i+315*c^3*d^2*e*h+315*c^3*d*e^2*g+105*c^3*e^3*f)*(-1/4*c^3*x^3*(-c
^2*x^2+1)^(1/2)-3/8*c*x*(-c^2*x^2+1)^(1/2)+3/8*arcsin(c*x))-1/420*(140*c^4*
d^3*h+420*c^4*d^2*e*g+420*c^4*d*e^2*f)*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3
*(-c^2*x^2+1)^(1/2))-1/420*(210*c^5*d^3*g+630*c^5*d^2*e*f)*(-1/2*c*x*(-c^2*
x^2+1)^(1/2)+1/2*arcsin(c*x))+d^3*c^6*f*(-c^2*x^2+1)^(1/2)))
```

Maxima [A]
time = 0.49, size = 1215, normalized size = 1.78

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="max
ima")
```

```
[Out] 1/6*a*h*x^6*e^3 + 1/7*I*a*x^7*e^3 + 3/5*a*d*h*x^5*e^2 + 1/2*I*a*d*x^6*e^2 +
 3/4*a*d^2*h*x^4*e + 3/5*I*a*d^2*x^5*e + 1/3*a*d^3*h*x^3 + 1/4*I*a*d^3*x^4
```

```
+ 1/5*a*g*x^5*e^3 + 3/4*a*d*g*x^4*e^2 + a*d^2*g*x^3*e + 1/2*a*d^3*g*x^2 + 1
/4*a*f*x^4*e^3 + a*d*f*x^3*e^2 + 3/2*a*d^2*f*x^2*e + 1/4*(2*x^2*arcsin(c*x)
 + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c*x)/c^3))*b*d^3*g + 1/9*(3*x^3*arc
sin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*d^3
*h + a*d^3*f*x + 3/4*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arc
sin(c*x)/c^3))*b*d^2*f*e + 1/3*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x
^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*d^2*g*e + 3/32*(8*x^4*arcsin(c*x) + (
2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c*x)/c
^5)*c)*b*d^2*h*e + 1/32*I*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^
2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c*x)/c^5)*c)*b*d^3 + (c*x*arcsin(
c*x) + sqrt(-c^2*x^2 + 1))*b*d^3*f/c + 1/3*(3*x^3*arcsin(c*x) + c*(sqrt(-c^
2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*d*f*e^2 + 3/32*(8*x^4*arc
sin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*a
rcsin(c*x)/c^5)*c)*b*d*g*e^2 + 1/25*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2
+ 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*
b*d*h*e^2 + 1/25*I*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*
sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*b*d^2*e + 1/32*(8
*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c
^4 - 3*arcsin(c*x)/c^5)*c)*b*f*e^3 + 1/75*(15*x^5*arcsin(c*x) + (3*sqrt(-c^
2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^
6)*c)*b*g*e^3 + 1/288*(48*x^6*arcsin(c*x) + (8*sqrt(-c^2*x^2 + 1)*x^5/c^2 +
 10*sqrt(-c^2*x^2 + 1)*x^3/c^4 + 15*sqrt(-c^2*x^2 + 1)*x/c^6 - 15*arcsin(c*
x)/c^7)*c)*b*h*e^3 + 1/96*I*(48*x^6*arcsin(c*x) + (8*sqrt(-c^2*x^2 + 1)*x^5
/c^2 + 10*sqrt(-c^2*x^2 + 1)*x^3/c^4 + 15*sqrt(-c^2*x^2 + 1)*x/c^6 - 15*arc
sin(c*x)/c^7)*c)*b*d*e^2 + 1/245*I*(35*x^7*arcsin(c*x) + (5*sqrt(-c^2*x^2 +
 1)*x^6/c^2 + 6*sqrt(-c^2*x^2 + 1)*x^4/c^4 + 8*sqrt(-c^2*x^2 + 1)*x^2/c^6 +
 16*sqrt(-c^2*x^2 + 1)/c^8)*c)*b*e^3
```

Fricas [**A**]
time = 2.54, size = 885, normalized size = 1.29

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="fri
cas")
```

```
[Out] 1/705600*(235200*a*c^7*d^3*h*x^3 + 176400*I*a*c^7*d^3*x^4 + 352800*a*c^7*d^
3*g*x^2 + 705600*a*c^7*d^3*f*x + 1680*(70*a*c^7*h*x^6 + 60*I*a*c^7*x^7 + 84
*a*c^7*g*x^5 + 105*a*c^7*f*x^4)*e^3 + 35280*(12*a*c^7*d*h*x^5 + 10*I*a*c^7*
d*x^6 + 15*a*c^7*d*g*x^4 + 20*a*c^7*d*f*x^3)*e^2 + 35280*(15*a*c^7*d^2*h*x^
4 + 12*I*a*c^7*d^2*x^5 + 20*a*c^7*d^2*g*x^3 + 30*a*c^7*d^2*f*x^2)*e - 105*(
1120*I*b*c^7*d^3*h*x^3 - 840*b*c^7*d^3*x^4 + 1680*I*b*c^7*d^3*g*x^2 + 3360*
I*b*c^7*d^3*f*x - 840*I*b*c^5*d^3*g + 315*b*c^3*d^3 + (560*I*b*c^7*h*x^6 -
480*b*c^7*x^7 + 672*I*b*c^7*g*x^5 + 840*I*b*c^7*f*x^4 - 315*I*b*c^3*f - 175
```

```
*I*b*c*h)*e^3 + 21*(96*I*b*c^7*d*h*x^5 - 80*b*c^7*d*x^6 + 120*I*b*c^7*d*g*x
^4 + 160*I*b*c^7*d*f*x^3 - 45*I*b*c^3*d*g + 25*b*c*d)*e^2 + 21*(120*I*b*c^7
*d^2*h*x^4 - 96*b*c^7*d^2*x^5 + 160*I*b*c^7*d^2*g*x^3 + 240*I*b*c^7*d^2*f*x
^2 - 120*I*b*c^5*d^2*f - 45*I*b*c^3*d^2*h)*e)*log(-2*c^2*x^2 - 2*sqrt(c^2*x
^2 - 1)*c*x + 1) - 2*(-39200*I*b*c^6*d^3*h*x^2 + 22050*b*c^6*d^3*x^3 - 3528
00*I*b*c^6*d^3*f - 78400*I*b*c^4*d^3*h + 11025*(-8*I*b*c^6*d^3*g + 3*b*c^4*
d^3)*x + (-9800*I*b*c^6*h*x^5 + 7200*b*c^6*x^6 + 288*(-49*I*b*c^6*g + 30*b*
c^4)*x^4 - 37632*I*b*c^2*g + 2450*(-9*I*b*c^6*f - 5*I*b*c^4*h)*x^3 + 384*(-
49*I*b*c^4*g + 30*b*c^2)*x^2 + 3675*(-9*I*b*c^4*f - 5*I*b*c^2*h)*x + 23040*
b)*e^3 + 147*(-288*I*b*c^6*d*h*x^4 + 200*b*c^6*d*x^5 - 1600*I*b*c^4*d*f - 7
68*I*b*c^2*d*h + 50*(-9*I*b*c^6*d*g + 5*b*c^4*d)*x^3 + 32*(-25*I*b*c^6*d*f
- 12*I*b*c^4*d*h)*x^2 + 75*(-9*I*b*c^4*d*g + 5*b*c^2*d)*x)*e^2 + 147*(-450*
I*b*c^6*d^2*h*x^3 + 288*b*c^6*d^2*x^4 - 1600*I*b*c^4*d^2*g + 768*b*c^2*d^2
+ 32*(-25*I*b*c^6*d^2*g + 12*b*c^4*d^2)*x^2 + 225*(-8*I*b*c^6*d^2*f - 3*I*b
*c^4*d^2*h)*x)*e)*sqrt(c^2*x^2 - 1))/c^7
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 1809 vs. $2(688) = 1376$.
time = 1.19, size = 1809, normalized size = 2.64

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**3*(i*x**3+h*x**2+g*x+f)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d**3*f*x + a*d**3*g*x**2/2 + a*d**3*h*x**3/3 + a*d**3*i*x**4/4
 + 3*a*d**2*e*f*x**2/2 + a*d**2*e*g*x**3 + 3*a*d**2*e*h*x**4/4 + 3*a*d**2*e
*i*x**5/5 + a*d*e**2*f*x**3 + 3*a*d*e**2*g*x**4/4 + 3*a*d*e**2*h*x**5/5 + a
*d*e**2*i*x**6/2 + a*e**3*f*x**4/4 + a*e**3*g*x**5/5 + a*e**3*h*x**6/6 + a*
e**3*i*x**7/7 + b*d**3*f*x*asin(c*x) + b*d**3*g*x**2*asin(c*x)/2 + b*d**3*h
*x**3*asin(c*x)/3 + b*d**3*i*x**4*asin(c*x)/4 + 3*b*d**2*e*f*x**2*asin(c*x)
/2 + b*d**2*e*g*x**3*asin(c*x) + 3*b*d**2*e*h*x**4*asin(c*x)/4 + 3*b*d**2*e
*i*x**5*asin(c*x)/5 + b*d*e**2*f*x**3*asin(c*x) + 3*b*d*e**2*g*x**4*asin(c*
x)/4 + 3*b*d*e**2*h*x**5*asin(c*x)/5 + b*d*e**2*i*x**6*asin(c*x)/2 + b*e**3
*f*x**4*asin(c*x)/4 + b*e**3*g*x**5*asin(c*x)/5 + b*e**3*h*x**6*asin(c*x)/6
 + b*e**3*i*x**7*asin(c*x)/7 + b*d**3*f*sqrt(-c**2*x**2 + 1)/c + b*d**3*g*x
*sqrt(-c**2*x**2 + 1)/(4*c) + b*d**3*h*x**2*sqrt(-c**2*x**2 + 1)/(9*c) + b*
d**3*i*x**3*sqrt(-c**2*x**2 + 1)/(16*c) + 3*b*d**2*e*f*x*sqrt(-c**2*x**2 +
1)/(4*c) + b*d**2*e*g*x**2*sqrt(-c**2*x**2 + 1)/(3*c) + 3*b*d**2*e*h*x**3*s
qrt(-c**2*x**2 + 1)/(16*c) + 3*b*d**2*e*i*x**4*sqrt(-c**2*x**2 + 1)/(25*c)
+ b*d*e**2*f*x**2*sqrt(-c**2*x**2 + 1)/(3*c) + 3*b*d*e**2*g*x**3*sqrt(-c**2
*x**2 + 1)/(16*c) + 3*b*d*e**2*h*x**4*sqrt(-c**2*x**2 + 1)/(25*c) + b*d*e**
2*i*x**5*sqrt(-c**2*x**2 + 1)/(12*c) + b*e**3*f*x**3*sqrt(-c**2*x**2 + 1)/(
16*c) + b*e**3*g*x**4*sqrt(-c**2*x**2 + 1)/(25*c) + b*e**3*h*x**5*sqrt(-c**
2*x**2 + 1)/(36*c) + b*e**3*i*x**6*sqrt(-c**2*x**2 + 1)/(49*c) - b*d**3*g*a
```

```
sin(c*x)/(4*c**2) - 3*b*d**2*e*f*asin(c*x)/(4*c**2) + 2*b*d**3*h*sqrt(-c**2
*x**2 + 1)/(9*c**3) + 3*b*d**3*i*x*sqrt(-c**2*x**2 + 1)/(32*c**3) + 2*b*d**
2*e*g*sqrt(-c**2*x**2 + 1)/(3*c**3) + 9*b*d**2*e*h*x*sqrt(-c**2*x**2 + 1)/(
32*c**3) + 4*b*d**2*e*i*x**2*sqrt(-c**2*x**2 + 1)/(25*c**3) + 2*b*d*e**2*f*
sqrt(-c**2*x**2 + 1)/(3*c**3) + 9*b*d*e**2*g*x*sqrt(-c**2*x**2 + 1)/(32*c**
3) + 4*b*d*e**2*h*x**2*sqrt(-c**2*x**2 + 1)/(25*c**3) + 5*b*d*e**2*i*x**3*s
qrt(-c**2*x**2 + 1)/(48*c**3) + 3*b*e**3*f*x*sqrt(-c**2*x**2 + 1)/(32*c**3)
 + 4*b*e**3*g*x**2*sqrt(-c**2*x**2 + 1)/(75*c**3) + 5*b*e**3*h*x**3*sqrt(-c
**2*x**2 + 1)/(144*c**3) + 6*b*e**3*i*x**4*sqrt(-c**2*x**2 + 1)/(245*c**3)
- 3*b*d**3*i*asin(c*x)/(32*c**4) - 9*b*d**2*e*h*asin(c*x)/(32*c**4) - 9*b*d
*e**2*g*asin(c*x)/(32*c**4) - 3*b*e**3*f*asin(c*x)/(32*c**4) + 8*b*d**2*e*i
*sqrt(-c**2*x**2 + 1)/(25*c**5) + 8*b*d*e**2*h*sqrt(-c**2*x**2 + 1)/(25*c**
5) + 5*b*d*e**2*i*x*sqrt(-c**2*x**2 + 1)/(32*c**5) + 8*b*e**3*g*sqrt(-c**2*
x**2 + 1)/(75*c**5) + 5*b*e**3*h*x*sqrt(-c**2*x**2 + 1)/(96*c**5) + 8*b*e**
3*i*x**2*sqrt(-c**2*x**2 + 1)/(245*c**5) - 5*b*d*e**2*i*asin(c*x)/(32*c**6)
 - 5*b*e**3*h*asin(c*x)/(96*c**6) + 16*b*e**3*i*sqrt(-c**2*x**2 + 1)/(245*c
**7), Ne(c, 0)), (a*(d**3*f*x + d**3*g*x**2/2 + d**3*h*x**3/3 + d**3*i*x**4
/4 + 3*d**2*e*f*x**2/2 + d**2*e*g*x**3 + 3*d**2*e*h*x**4/4 + 3*d**2*e*i*x**
5/5 + d*e**2*f*x**3 + 3*d*e**2*g*x**4/4 + 3*d*e**2*h*x**5/5 + d*e**2*i*x**6
/2 + e**3*f*x**4/4 + e**3*g*x**5/5 + e**3*h*x**6/6 + e**3*i*x**7/7), True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 2010 vs. $2(643) = 1286$.
time = 0.44, size = 2010, normalized size = 2.94

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="gia
c")
```

```
[Out] 1/7*a*e^3*i*x^7 + 1/6*a*e^3*h*x^6 + 1/2*a*d*e^2*i*x^6 + 1/5*a*e^3*g*x^5 + 3
/5*a*d*e^2*h*x^5 + 3/5*a*d^2*e*i*x^5 + 1/4*a*e^3*f*x^4 + 3/4*a*d*e^2*g*x^4
+ 3/4*a*d^2*e*h*x^4 + 1/4*a*d^3*i*x^4 + a*d*e^2*f*x^3 + a*d^2*e*g*x^3 + 1/3
*a*d^3*h*x^3 + b*d^3*f*x*arcsin(c*x) + a*d^3*f*x + (c^2*x^2 - 1)*b*d*e^2*f*
x*arcsin(c*x)/c^2 + (c^2*x^2 - 1)*b*d^2*e*g*x*arcsin(c*x)/c^2 + 1/3*(c^2*x^
2 - 1)*b*d^3*h*x*arcsin(c*x)/c^2 + 3/4*sqrt(-c^2*x^2 + 1)*b*d^2*e*f*x/c + 1
/4*sqrt(-c^2*x^2 + 1)*b*d^3*g*x/c + 3/2*(c^2*x^2 - 1)*b*d^2*e*f*arcsin(c*x)
/c^2 + 1/2*(c^2*x^2 - 1)*b*d^3*g*arcsin(c*x)/c^2 + b*d*e^2*f*x*arcsin(c*x)/
c^2 + b*d^2*e*g*x*arcsin(c*x)/c^2 + 1/5*(c^2*x^2 - 1)^2*b*e^3*g*x*arcsin(c*
x)/c^4 + 1/3*b*d^3*h*x*arcsin(c*x)/c^2 + 3/5*(c^2*x^2 - 1)^2*b*d*e^2*h*x*ar
csin(c*x)/c^4 + 3/5*(c^2*x^2 - 1)^2*b*d^2*e*i*x*arcsin(c*x)/c^4 + sqrt(-c^2
*x^2 + 1)*b*d^3*f/c - 1/16*(-c^2*x^2 + 1)^(3/2)*b*e^3*f*x/c^3 - 3/16*(-c^2*
x^2 + 1)^(3/2)*b*d*e^2*g*x/c^3 - 3/16*(-c^2*x^2 + 1)^(3/2)*b*d^2*e*h*x/c^3
- 1/16*(-c^2*x^2 + 1)^(3/2)*b*d^3*i*x/c^3 + 3/2*(c^2*x^2 - 1)*a*d^2*e*f/c^2
```

```
 + 1/2*(c^2*x^2 - 1)*a*d^3*g/c^2 + 3/4*b*d^2*e*f*arcsin(c*x)/c^2 + 1/4*(c^2
*x^2 - 1)^2*b*e^3*f*arcsin(c*x)/c^4 + 1/4*b*d^3*g*arcsin(c*x)/c^2 + 3/4*(c^
2*x^2 - 1)^2*b*d*e^2*g*arcsin(c*x)/c^4 + 3/4*(c^2*x^2 - 1)^2*b*d^2*e*h*arcs
in(c*x)/c^4 + 1/4*(c^2*x^2 - 1)^2*b*d^3*i*arcsin(c*x)/c^4 + 2/5*(c^2*x^2 -
1)*b*e^3*g*x*arcsin(c*x)/c^4 + 6/5*(c^2*x^2 - 1)*b*d*e^2*h*x*arcsin(c*x)/c^
4 + 6/5*(c^2*x^2 - 1)*b*d^2*e*i*x*arcsin(c*x)/c^4 + 1/7*(c^2*x^2 - 1)^3*b*e
^3*i*x*arcsin(c*x)/c^6 - 1/3*(-c^2*x^2 + 1)^(3/2)*b*d*e^2*f/c^3 - 1/3*(-c^2
*x^2 + 1)^(3/2)*b*d^2*e*g/c^3 - 1/9*(-c^2*x^2 + 1)^(3/2)*b*d^3*h/c^3 + 5/32
*sqrt(-c^2*x^2 + 1)*b*e^3*f*x/c^3 + 15/32*sqrt(-c^2*x^2 + 1)*b*d*e^2*g*x/c^
3 + 15/32*sqrt(-c^2*x^2 + 1)*b*d^2*e*h*x/c^3 + 1/36*(c^2*x^2 - 1)^2*sqrt(-c
^2*x^2 + 1)*b*e^3*h*x/c^5 + 5/32*sqrt(-c^2*x^2 + 1)*b*d^3*i*x/c^3 + 1/12*(c
^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*d*e^2*i*x/c^5 + 1/2*(c^2*x^2 - 1)*b*e^3*
f*arcsin(c*x)/c^4 + 3/2*(c^2*x^2 - 1)*b*d*e^2*g*arcsin(c*x)/c^4 + 3/2*(c^2*
x^2 - 1)*b*d^2*e*h*arcsin(c*x)/c^4 + 1/6*(c^2*x^2 - 1)^3*b*e^3*h*arcsin(c*x
)/c^6 + 1/2*(c^2*x^2 - 1)*b*d^3*i*arcsin(c*x)/c^4 + 1/2*(c^2*x^2 - 1)^3*b*d
*e^2*i*arcsin(c*x)/c^6 + 1/5*b*e^3*g*x*arcsin(c*x)/c^4 + 3/5*b*d*e^2*h*x*ar
csin(c*x)/c^4 + 3/5*b*d^2*e*i*x*arcsin(c*x)/c^4 + 3/7*(c^2*x^2 - 1)^2*b*e^3
*i*x*arcsin(c*x)/c^6 + sqrt(-c^2*x^2 + 1)*b*d*e^2*f/c^3 + sqrt(-c^2*x^2 + 1
)*b*d^2*e*g/c^3 + 1/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*e^3*g/c^5 + 1/3
*sqrt(-c^2*x^2 + 1)*b*d^3*h/c^3 + 3/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b
*d*e^2*h/c^5 + 3/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*d^2*e*i/c^5 - 13/1
44*(-c^2*x^2 + 1)^(3/2)*b*e^3*h*x/c^5 - 13/48*(-c^2*x^2 + 1)^(3/2)*b*d*e^2*
i*x/c^5 + 5/32*b*e^3*f*arcsin(c*x)/c^4 + 15/32*b*d*e^2*g*arcsin(c*x)/c^4 +
15/32*b*d^2*e*h*arcsin(c*x)/c^4 + 1/2*(c^2*x^2 - 1)^2*b*e^3*h*arcsin(c*x)/c
^6 + 5/32*b*d^3*i*arcsin(c*x)/c^4 + 3/2*(c^2*x^2 - 1)^2*b*d*e^2*i*arcsin(c*
x)/c^6 + 3/7*(c^2*x^2 - 1)*b*e^3*i*x*arcsin(c*x)/c^6 - 2/15*(-c^2*x^2 + 1)^
(3/2)*b*e^3*g/c^5 - 2/5*(-c^2*x^2 + 1)^(3/2)*b*d*e^2*h/c^5 - 2/5*(-c^2*x^2
+ 1)^(3/2)*b*d^2*e*i/c^5 + 1/49*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*b*e^3*i/
c^7 + 11/96*sqrt(-c^2*x^2 + 1)*b*e^3*h*x/c^5 + 11/32*sqrt(-c^2*x^2 + 1)*b*d
*e^2*i*x/c^5 + 1/2*(c^2*x^2 - 1)*b*e^3*h*arcsin(c*x)/c^6 + 3/2*(c^2*x^2 - 1
)*b*d*e^2*i*arcsin(c*x)/c^6 + 1/7*b*e^3*i*x*arcsin(c*x)/c^6 + 1/5*sqrt(-c^2
*x^2 + 1)*b*e^3*g/c^5 + 3/5*sqrt(-c^2*x^2 + 1)*b*d*e^2*h/c^5 + 3/5*sqrt(-c^
2*x^2 + 1)*b*d^2*e*i/c^5 + 3/35*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*e^3*i/
c^7 + 11/96*b*e^3*h*arcsin(c*x)/c^6 + 11/32*b*d*e^2*i*arcsin(c*x)/c^6 - 1/7
*(-c^2*x^2 + 1)^(3/2)*b*e^3*i/c^7 + 1/7*sqrt(-c^2*x^2 + 1)*b*e^3*i/c^7
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,\mathrm{asin}(c\,x))\,\left(d+e\,x\right)^3\,\left(i\,x^3+h\,x^2+g\,x+f\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(d + e*x)^3*(f + g*x + h*x^2 + i*x^3),x)
[Out] int((a + b*asin(c*x))*(d + e*x)^3*(f + g*x + h*x^2 + i*x^3), x)
```

3.107 $\int (d+ex)^2 \left(f+gx+hx^2+ix^3\right) (a+b\textbf{ArcSin}(cx)) \, dx$

Optimal. Leaf size=484

$$\frac{b(25c^2(e^2f+2deg+d^2h)+12e(eh+2di))\,x^2\sqrt{1-c^2x^2}}{225c^3}+\frac{b(5e^2i+9c^2(e^2g+2deh+d^2i))\,x^3\sqrt{1-c^2x^2}}{144c^3}+$$

```
[Out] -1/96*b*(24*c^4*d*(d*g+2*e*f)+5*e^2*i+9*c^2*(d^2*i+2*d*e*h+e^2*g))*arcsin(c
*x)/c^6+d^2*f*x*(a+b*arcsin(c*x))+1/2*d*(d*g+2*e*f)*x^2*(a+b*arcsin(c*x))+1
/3*(d^2*h+2*d*e*g+e^2*f)*x^3*(a+b*arcsin(c*x))+1/4*(d^2*i+2*d*e*h+e^2*g)*x^
4*(a+b*arcsin(c*x))+1/5*e*(2*d*i+e*h)*x^5*(a+b*arcsin(c*x))+1/6*e^2*i*x^6*(
a+b*arcsin(c*x))+1/225*b*(25*c^2*(d^2*h+2*d*e*g+e^2*f)+12*e*(2*d*i+e*h))*x^
2*(-c^2*x^2+1)^(1/2)/c^3+1/144*b*(5*e^2*i+9*c^2*(d^2*i+2*d*e*h+e^2*g))*x^3*
(-c^2*x^2+1)^(1/2)/c^3+1/25*b*e*(2*d*i+e*h)*x^4*(-c^2*x^2+1)^(1/2)/c+1/36*b
*e^2*i*x^5*(-c^2*x^2+1)^(1/2)/c+1/7200*b*(7200*c^4*d^2*f+1600*c^2*(d^2*h+2*
d*e*g+e^2*f)+768*e*(2*d*i+e*h)+75*(24*c^4*d*(d*g+2*e*f)+5*e^2*i+9*c^2*(d^2*
i+2*d*e*h+e^2*g))*x)*(-c^2*x^2+1)^(1/2)/c^5
```

Rubi [A]

time = 1.40, antiderivative size = 482, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.161$, Rules used = {4833, 12, 1823, 794, 222}

$$\frac{1}{3}x^3(a+b\text{ArcSin}(cx))\left(d^2h+2deg+e^2f\right)+\frac{1}{4}x^4(a+b\text{ArcSin}(cx))\left(d^2i+2deh+e^2g\right)+d^2fx(a+b\text{ArcSin}(cx))+\frac{1}{2}dx^2(dg+2ef)(a+b\text{ArcSin}(cx))+\frac{1}{5}ex^5(2di+eh)(a+b\text{ArcSin}(cx))+\frac{1}{6}e^2ix^6(a+b\text{ArcSin}(cx))-\frac{b\text{ArcSin}(cx)\left(24c^4d(dg+2ef)+9c^2(d^2i+2deh+e^2g)+5e^2i\right)}{96c^6}+\frac{bx^3\sqrt{1-c^2x^2}\left(e^2\left(\frac{5i}{c^2}+9g\right)+9d^2i+18deh\right)}{144c}+\frac{bex^4\sqrt{1-c^2x^2}(2di+eh)}{25c}+\frac{be^2ix^5\sqrt{1-c^2x^2}}{36c}+\frac{bx^2\sqrt{1-c^2x^2}\left(25c^2(d^2h+2deg+e^2f)+12e(2di+eh)\right)}{225c^3}+\frac{b\sqrt{1-c^2x^2}\left(75x\left(24c^4d(dg+2ef)+9c^2(d^2i+2deh+e^2g)+5e^2i\right)+32\left(225c^4d^2f+50c^2(d^2h+2deg+e^2f)+24e(2di+eh)\right)\right)}{7200c^5}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^2*(f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*(25*c^2*(e^2*f + 2*d*e*g + d^2*h) + 12*e*(e*h + 2*d*i))*x^2*Sqrt[1 - c^2
*x^2])/(225*c^3) + (b*(18*d*e*h + 9*d^2*i + e^2*(9*g + (5*i)/c^2))*x^3*Sqrt
[1 - c^2*x^2])/(144*c) + (b*e*(e*h + 2*d*i)*x^4*Sqrt[1 - c^2*x^2])/(25*c) +
 (b*e^2*i*x^5*Sqrt[1 - c^2*x^2])/(36*c) + (b*(32*(225*c^4*d^2*f + 50*c^2*(e
^2*f + 2*d*e*g + d^2*h) + 24*e*(e*h + 2*d*i)) + 75*(24*c^4*d*(2*e*f + d*g)
+ 5*e^2*i + 9*c^2*(e^2*g + 2*d*e*h + d^2*i))*x)*Sqrt[1 - c^2*x^2])/(7200*c^
5) - (b*(24*c^4*d*(2*e*f + d*g) + 5*e^2*i + 9*c^2*(e^2*g + 2*d*e*h + d^2*i)
)*ArcSin[c*x])/(96*c^6) + d^2*f*x*(a + b*ArcSin[c*x]) + (d*(2*e*f + d*g)*x^
2*(a + b*ArcSin[c*x]))/2 + ((e^2*f + 2*d*e*g + d^2*h)*x^3*(a + b*ArcSin[c*x
]))/3 + ((e^2*g + 2*d*e*h + d^2*i)*x^4*(a + b*ArcSin[c*x]))/4 + (e*(e*h + 2
*d*i)*x^5*(a + b*ArcSin[c*x]))/5 + (e^2*i*x^6*(a + b*ArcSin[c*x]))/6
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*((a + c*x^2)^(p
+ 1)/(2*c*(p + 1)*(2*p + 3))), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 1823

```
Int[(Pq_)*((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2)^(p_), x_Symbol] :> With[
{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[f*(c*x)^(m + q - 1
)*((a + b*x^2)^(p + 1)/(b*c^(q - 1)*(m + q + 2*p + 1))), x] + Dist[1/(b*(m
+ q + 2*p + 1)), Int[(c*x)^m*(a + b*x^2)^p*ExpandToSum[b*(m + q + 2*p + 1)*
Pq - b*f*(m + q + 2*p + 1)*x^q - a*f*(m + q - 1)*x^(q - 2), x], x], x] /; G
tQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, m, p}, x] && PolyQ[
Pq, x] && ( !IGtQ[m, 0] || IGtQ[p + 1/2, -1])
```

Rule 4833

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_), x_Symbol] :> With[{u = IntHid
e[ExpandExpression[Px, x], x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, I
nt[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[{a, b, c}, x
] && PolynomialQ[Px, x]
```

Rubi steps

$$\int (d+ex)^2 \left(f+gx+hx^2+107x^3\right) \left(a+b\sin^{-1}(cx)\right) \, dx = d^2fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d(2ef+dg)x^2\left(a+b\,\mathrm{s}\right.$$

$$= d^2fx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d(2ef+dg)x^2\left(a+b\,\mathrm{s}\right.$$

$$= \frac{107be^2x^5\sqrt{1-c^2x^2}}{36c}+d^2fx\left(a+b\sin^{-1}(cx)\right)+$$

$$= \frac{be(214d+eh)x^4\sqrt{1-c^2x^2}}{25c}+\frac{107be^2x^5\sqrt{1-c^2}}{36c}$$

$$= \frac{b(535e^2+9c^2(107d^2+e^2g+2deh))\,x^3\sqrt{1-c^2x}}{144c^3}$$

$$= \frac{b(2de(1284+25c^2g)+25c^2d^2h+e^2(25c^2f+12}{225c^3}$$

$$= \frac{b(2de(1284+25c^2g)+25c^2d^2h+e^2(25c^2f+12}{225c^3}$$

$$= \frac{b(2de(1284+25c^2g)+25c^2d^2h+e^2(25c^2f+12}{225c^3}$$

Mathematica [A]
time = 0.27, size = 431, normalized size = 0.89

$$ad^2fx+\frac{1}{2}ad(2ef+dg)x^2+\frac{1}{3}a\left(e^2f+2deg+d^2h\right)x^3+\frac{1}{4}a\left(e^2g+2deh+d^2i\right)x^4+\frac{1}{5}ae(eh+2di)x^5+\frac{1}{6}ae^2ix^6+\frac{b\sqrt{1-c^2x^2}\,(3e(256eh+512di+125eix)+c^2(25d^2(64h+27ix)+2de(1600g+675hx+384ix^2)+e^2(1600f+x(675g+384hx+250ix^2)))+2c^4(25d^2(144f+x(36g+x(16h+9ix)))+2dex(900f+x(400g+9x(25h+16ix)))+e^2x^2(400f+x(225g+4x(36h+25ix)))))}{7200c^5}-\frac{b(24c^4d(2ef+dg)+5e^2i+9c^2(e^2g+2deh+d^2i))\,\mathrm{ArcSin}(cx)}{96c^6}+\frac{1}{60}bx\left(5d^2(12f+x(6g+x(4h+3ix)))+2dex(30f+x(20g+3x(5h+4ix)))+e^2x^2(20f+x(15g+2x(6h+5ix)))\right)\mathrm{ArcSin}(cx)$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^2*(f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]),x]
```

```
[Out] a*d^2*f*x + (a*d*(2*e*f + d*g)*x^2)/2 + (a*(e^2*f + 2*d*e*g + d^2*h)*x^3)/3
 + (a*(e^2*g + 2*d*e*h + d^2*i)*x^4)/4 + (a*e*(e*h + 2*d*i)*x^5)/5 + (a*e^2
*i*x^6)/6 + (b*Sqrt[1 - c^2*x^2]*(3*e*(256*e*h + 512*d*i + 125*e*i*x) + c^2
*(25*d^2*(64*h + 27*i*x) + 2*d*e*(1600*g + 675*h*x + 384*i*x^2) + e^2*(1600
*f + x*(675*g + 384*h*x + 250*i*x^2))) + 2*c^4*(25*d^2*(144*f + x*(36*g + x
*(16*h + 9*i*x))) + 2*d*e*x*(900*f + x*(400*g + 9*x*(25*h + 16*i*x))) + e^2
*x^2*(400*f + x*(225*g + 4*x*(36*h + 25*i*x))))))/(7200*c^5) - (b*(24*c^4*d
*(2*e*f + d*g) + 5*e^2*i + 9*c^2*(e^2*g + 2*d*e*h + d^2*i))*ArcSin[c*x])/(9
6*c^6) + (b*x*(5*d^2*(12*f + x*(6*g + x*(4*h + 3*i*x))) + 2*d*e*x*(30*f + x
*(20*g + 3*x*(5*h + 4*i*x))) + e^2*x^2*(20*f + x*(15*g + 2*x*(6*h + 5*i*x))
))*ArcSin[c*x])/60
```

Maple [A]
time = 0.11, size = 674, normalized size = 1.39

method	result
derivativedivides	$\frac{a\left(\frac{e^2 i c^6 x^6}{6}+\frac{(2cdei+c e^2h)c^5x^5}{5}+\frac{(c^2d^2i+2c^2deh+c^2e^2g)c^4x^4}{4}+\frac{(c^3d^2h+2c^3deg+c^3e^2f)c^3x^3}{3}+\frac{(c^4d^2g+2c^4def)c^2x^2}{2}+d^2c^6fx\right.}{c^5}$
default	$\frac{a\left(\frac{e^2 i c^6 x^6}{6}+\frac{(2cdei+c e^2h)c^5x^5}{5}+\frac{(c^2d^2i+2c^2deh+c^2e^2g)c^4x^4}{4}+\frac{(c^3d^2h+2c^3deg+c^3e^2f)c^3x^3}{3}+\frac{(c^4d^2g+2c^4def)c^2x^2}{2}+d^2c^6fx\right.}{c^5}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^2*(i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x)),x,method=_RETURNVERBOSE
)
```

```
[Out] 1/c*(a/c^5*(1/6*e^2*i*c^6*x^6+1/5*(2*c*d*e*i+c*e^2*h)*c^5*x^5+1/4*(c^2*d^2*
i+2*c^2*d*e*h+c^2*e^2*g)*c^4*x^4+1/3*(c^3*d^2*h+2*c^3*d*e*g+c^3*e^2*f)*c^3*
x^3+1/2*(c^4*d^2*g+2*c^4*d*e*f)*c^2*x^2+d^2*c^6*f*x)+b/c^5*(1/6*arcsin(c*x)
*e^2*i*c^6*x^6+2/5*arcsin(c*x)*c^6*d*e*i*x^5+1/5*arcsin(c*x)*c^6*e^2*h*x^5+
1/4*arcsin(c*x)*c^6*d^2*i*x^4+1/2*arcsin(c*x)*c^6*d*e*h*x^4+1/4*arcsin(c*x)
*c^6*e^2*g*x^4+1/3*arcsin(c*x)*c^6*d^2*h*x^3+2/3*arcsin(c*x)*c^6*d*e*g*x^3+
1/3*arcsin(c*x)*c^6*e^2*f*x^3+1/2*arcsin(c*x)*c^6*d^2*g*x^2+arcsin(c*x)*c^6
*d*e*f*x^2+arcsin(c*x)*d^2*c^6*f*x-1/6*e^2*i*(-1/6*c^5*x^5*(-c^2*x^2+1)^(1/
2)-5/24*c^3*x^3*(-c^2*x^2+1)^(1/2)-5/16*c*x*(-c^2*x^2+1)^(1/2)+5/16*arcsin(
c*x))-1/60*(24*c*d*e*i+12*c*e^2*h)*(-1/5*c^4*x^4*(-c^2*x^2+1)^(1/2)-4/15*c^
2*x^2*(-c^2*x^2+1)^(1/2)-8/15*(-c^2*x^2+1)^(1/2))-1/60*(15*c^2*d^2*i+30*c^2
*d*e*h+15*c^2*e^2*g)*(-1/4*c^3*x^3*(-c^2*x^2+1)^(1/2)-3/8*c*x*(-c^2*x^2+1)^
(1/2)+3/8*arcsin(c*x))-1/60*(20*c^3*d^2*h+40*c^3*d*e*g+20*c^3*e^2*f)*(-1/3*
c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-c^2*x^2+1)^(1/2))-1/60*(30*c^4*d^2*g+60*c^
4*d*e*f)*(-1/2*c*x*(-c^2*x^2+1)^(1/2)+1/2*arcsin(c*x))+d^2*c^5*f*(-c^2*x^2+
1)^(1/2)))
```

Maxima [A]
time = 0.48, size = 834, normalized size = 1.72

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="max
ima")
```

```
[Out] 1/5*a*h*x^5*e^2 + 1/6*I*a*x^6*e^2 + 1/2*a*d*h*x^4*e + 2/5*I*a*d*x^5*e + 1/3
*a*d^2*h*x^3 + 1/4*I*a*d^2*x^4 + 1/4*a*g*x^4*e^2 + 2/3*a*d*g*x^3*e + 1/2*a*
```

```
d^2*g*x^2 + 1/3*a*f*x^3*e^2 + a*d*f*x^2*e + 1/4*(2*x^2*arcsin(c*x) + c*(sqr
t(-c^2*x^2 + 1)*x/c^2 - arcsin(c*x)/c^3))*b*d^2*g + 1/9*(3*x^3*arcsin(c*x)
+ c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*d^2*h + a*d^
2*f*x + 1/2*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c*x)/
c^3))*b*d*f*e + 2/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*
sqrt(-c^2*x^2 + 1)/c^4))*b*d*g*e + 1/16*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x
^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c*x)/c^5)*c)*b*d*h*
e + 1/32*I*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2
*x^2 + 1)*x/c^4 - 3*arcsin(c*x)/c^5)*c)*b*d^2 + (c*x*arcsin(c*x) + sqrt(-c^
2*x^2 + 1))*b*d^2*f/c + 1/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/
c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*f*e^2 + 1/32*(8*x^4*arcsin(c*x) + (2*sqr
t(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c*x)/c^5)*c
)*b*g*e^2 + 1/75*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sq
rt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*b*h*e^2 + 2/75*I*(1
5*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^
2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*b*d*e + 1/288*I*(48*x^6*arcsin(c*x) +
(8*sqrt(-c^2*x^2 + 1)*x^5/c^2 + 10*sqrt(-c^2*x^2 + 1)*x^3/c^4 + 15*sqrt(-c^
2*x^2 + 1)*x/c^6 - 15*arcsin(c*x)/c^7)*c)*b*e^2
```

Fricas [**A**]
time = 2.34, size = 612, normalized size = 1.26

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="fri
cas")
```

```
[Out] 1/14400*(4800*a*c^6*d^2*h*x^3 + 3600*I*a*c^6*d^2*x^4 + 7200*a*c^6*d^2*g*x^2
 + 14400*a*c^6*d^2*f*x + 240*(12*a*c^6*h*x^5 + 10*I*a*c^6*x^6 + 15*a*c^6*g*
x^4 + 20*a*c^6*f*x^3)*e^2 + 480*(15*a*c^6*d*h*x^4 + 12*I*a*c^6*d*x^5 + 20*a
*c^6*d*g*x^3 + 30*a*c^6*d*f*x^2)*e - 15*(160*I*b*c^6*d^2*h*x^3 - 120*b*c^6*
d^2*x^4 + 240*I*b*c^6*d^2*g*x^2 + 480*I*b*c^6*d^2*f*x - 120*I*b*c^4*d^2*g +
 45*b*c^2*d^2 + (96*I*b*c^6*h*x^5 - 80*b*c^6*x^6 + 120*I*b*c^6*g*x^4 + 160*
I*b*c^6*f*x^3 - 45*I*b*c^2*g + 25*b)*e^2 + 2*(120*I*b*c^6*d*h*x^4 - 96*b*c^
6*d*x^5 + 160*I*b*c^6*d*g*x^3 + 240*I*b*c^6*d*f*x^2 - 120*I*b*c^4*d*f - 45*
I*b*c^2*d*h)*e)*log(-2*c^2*x^2 - 2*sqrt(c^2*x^2 - 1)*c*x + 1) - 2*(-800*I*b
*c^5*d^2*h*x^2 + 450*b*c^5*d^2*x^3 - 7200*I*b*c^5*d^2*f - 1600*I*b*c^3*d^2*
h + 225*(-8*I*b*c^5*d^2*g + 3*b*c^3*d^2)*x + (-288*I*b*c^5*h*x^4 + 200*b*c^
5*x^5 - 1600*I*b*c^3*f + 50*(-9*I*b*c^5*g + 5*b*c^3)*x^3 - 768*I*b*c*h + 32
*(-25*I*b*c^5*f - 12*I*b*c^3*h)*x^2 + 75*(-9*I*b*c^3*g + 5*b*c)*x)*e^2 + 2*
(-450*I*b*c^5*d*h*x^3 + 288*b*c^5*d*x^4 - 1600*I*b*c^3*d*g + 768*b*c*d + 32
*(-25*I*b*c^5*d*g + 12*b*c^3*d)*x^2 + 225*(-8*I*b*c^5*d*f - 3*I*b*c^3*d*h)*
x)*e)*sqrt(c^2*x^2 - 1))/c^6
```

Sympy [**B**] Leaf count of result is larger than twice the leaf count of optimal. 1197 vs. $2(474) = 948$.

time = 0.80, size = 1197, normalized size = 2.47

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**2*(i*x**3+h*x**2+g*x+f)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d**2*f*x + a*d**2*g*x**2/2 + a*d**2*h*x**3/3 + a*d**2*i*x**4/4
 + a*d*e*f*x**2 + 2*a*d*e*g*x**3/3 + a*d*e*h*x**4/2 + 2*a*d*e*i*x**5/5 + a*
e**2*f*x**3/3 + a*e**2*g*x**4/4 + a*e**2*h*x**5/5 + a*e**2*i*x**6/6 + b*d**
2*f*x*asin(c*x) + b*d**2*g*x**2*asin(c*x)/2 + b*d**2*h*x**3*asin(c*x)/3 + b
*d**2*i*x**4*asin(c*x)/4 + b*d*e*f*x**2*asin(c*x) + 2*b*d*e*g*x**3*asin(c*x
)/3 + b*d*e*h*x**4*asin(c*x)/2 + 2*b*d*e*i*x**5*asin(c*x)/5 + b*e**2*f*x**3
*asin(c*x)/3 + b*e**2*g*x**4*asin(c*x)/4 + b*e**2*h*x**5*asin(c*x)/5 + b*e*
*2*i*x**6*asin(c*x)/6 + b*d**2*f*sqrt(-c**2*x**2 + 1)/c + b*d**2*g*x*sqrt(-
c**2*x**2 + 1)/(4*c) + b*d**2*h*x**2*sqrt(-c**2*x**2 + 1)/(9*c) + b*d**2*i*
x**3*sqrt(-c**2*x**2 + 1)/(16*c) + b*d*e*f*x*sqrt(-c**2*x**2 + 1)/(2*c) + 2
*b*d*e*g*x**2*sqrt(-c**2*x**2 + 1)/(9*c) + b*d*e*h*x**3*sqrt(-c**2*x**2 + 1
)/(8*c) + 2*b*d*e*i*x**4*sqrt(-c**2*x**2 + 1)/(25*c) + b*e**2*f*x**2*sqrt(-
c**2*x**2 + 1)/(9*c) + b*e**2*g*x**3*sqrt(-c**2*x**2 + 1)/(16*c) + b*e**2*h
*x**4*sqrt(-c**2*x**2 + 1)/(25*c) + b*e**2*i*x**5*sqrt(-c**2*x**2 + 1)/(36*
c) - b*d**2*g*asin(c*x)/(4*c**2) - b*d*e*f*asin(c*x)/(2*c**2) + 2*b*d**2*h*
sqrt(-c**2*x**2 + 1)/(9*c**3) + 3*b*d**2*i*x*sqrt(-c**2*x**2 + 1)/(32*c**3)
 + 4*b*d*e*g*sqrt(-c**2*x**2 + 1)/(9*c**3) + 3*b*d*e*h*x*sqrt(-c**2*x**2 +
1)/(16*c**3) + 8*b*d*e*i*x**2*sqrt(-c**2*x**2 + 1)/(75*c**3) + 2*b*e**2*f*s
qrt(-c**2*x**2 + 1)/(9*c**3) + 3*b*e**2*g*x*sqrt(-c**2*x**2 + 1)/(32*c**3)
+ 4*b*e**2*h*x**2*sqrt(-c**2*x**2 + 1)/(75*c**3) + 5*b*e**2*i*x**3*sqrt(-c*
*2*x**2 + 1)/(144*c**3) - 3*b*d**2*i*asin(c*x)/(32*c**4) - 3*b*d*e*h*asin(c
*x)/(16*c**4) - 3*b*e**2*g*asin(c*x)/(32*c**4) + 16*b*d*e*i*sqrt(-c**2*x**2
 + 1)/(75*c**5) + 8*b*e**2*h*sqrt(-c**2*x**2 + 1)/(75*c**5) + 5*b*e**2*i*x*
sqrt(-c**2*x**2 + 1)/(96*c**5) - 5*b*e**2*i*asin(c*x)/(96*c**6), Ne(c, 0)),
 (a*(d**2*f*x + d**2*g*x**2/2 + d**2*h*x**3/3 + d**2*i*x**4/4 + d*e*f*x**2
+ 2*d*e*g*x**3/3 + d*e*h*x**4/2 + 2*d*e*i*x**5/5 + e**2*f*x**3/3 + e**2*g*x
**4/4 + e**2*h*x**5/5 + e**2*i*x**6/6), True))
```

Giac [**B**] Leaf count of result is larger than twice the leaf count of optimal. 1287 vs. 2(449) = 898.
time = 0.44, size = 1287, normalized size = 2.66

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="gia
c")
```

```
[Out] 1/6*a*e^2*i*x^6 + 1/5*a*e^2*h*x^5 + 2/5*a*d*e*i*x^5 + 1/4*a*e^2*g*x^4 + 1/2
*a*d*e*h*x^4 + 1/4*a*d^2*i*x^4 + 1/3*a*e^2*f*x^3 + 2/3*a*d*e*g*x^3 + 1/3*a*
d^2*h*x^3 + b*d^2*f*x*arcsin(c*x) + a*d^2*f*x + 1/3*(c^2*x^2 - 1)*b*e^2*f*x
*arcsin(c*x)/c^2 + 2/3*(c^2*x^2 - 1)*b*d*e*g*x*arcsin(c*x)/c^2 + 1/3*(c^2*x
^2 - 1)*b*d^2*h*x*arcsin(c*x)/c^2 + 1/2*sqrt(-c^2*x^2 + 1)*b*d*e*f*x/c + 1/
4*sqrt(-c^2*x^2 + 1)*b*d^2*g*x/c + (c^2*x^2 - 1)*b*d*e*f*arcsin(c*x)/c^2 +
1/2*(c^2*x^2 - 1)*b*d^2*g*arcsin(c*x)/c^2 + 1/3*b*e^2*f*x*arcsin(c*x)/c^2 +
 2/3*b*d*e*g*x*arcsin(c*x)/c^2 + 1/3*b*d^2*h*x*arcsin(c*x)/c^2 + 1/5*(c^2*x
^2 - 1)^2*b*e^2*h*x*arcsin(c*x)/c^4 + 2/5*(c^2*x^2 - 1)^2*b*d*e*i*x*arcsin(
c*x)/c^4 + sqrt(-c^2*x^2 + 1)*b*d^2*f/c - 1/16*(-c^2*x^2 + 1)^(3/2)*b*e^2*g
*x/c^3 - 1/8*(-c^2*x^2 + 1)^(3/2)*b*d*e*h*x/c^3 - 1/16*(-c^2*x^2 + 1)^(3/2)
*b*d^2*i*x/c^3 + (c^2*x^2 - 1)*a*d*e*f/c^2 + 1/2*(c^2*x^2 - 1)*a*d^2*g/c^2
+ 1/2*b*d*e*f*arcsin(c*x)/c^2 + 1/4*b*d^2*g*arcsin(c*x)/c^2 + 1/4*(c^2*x^2
- 1)^2*b*e^2*g*arcsin(c*x)/c^4 + 1/2*(c^2*x^2 - 1)^2*b*d*e*h*arcsin(c*x)/c^
4 + 1/4*(c^2*x^2 - 1)^2*b*d^2*i*arcsin(c*x)/c^4 + 2/5*(c^2*x^2 - 1)*b*e^2*h
*x*arcsin(c*x)/c^4 + 4/5*(c^2*x^2 - 1)*b*d*e*i*x*arcsin(c*x)/c^4 - 1/9*(-c^
2*x^2 + 1)^(3/2)*b*e^2*f/c^3 - 2/9*(-c^2*x^2 + 1)^(3/2)*b*d*e*g/c^3 - 1/9*(
-c^2*x^2 + 1)^(3/2)*b*d^2*h/c^3 + 5/32*sqrt(-c^2*x^2 + 1)*b*e^2*g*x/c^3 + 5
/16*sqrt(-c^2*x^2 + 1)*b*d*e*h*x/c^3 + 5/32*sqrt(-c^2*x^2 + 1)*b*d^2*i*x/c^
3 + 1/36*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*e^2*i*x/c^5 + 1/2*(c^2*x^2 -
1)*b*e^2*g*arcsin(c*x)/c^4 + (c^2*x^2 - 1)*b*d*e*h*arcsin(c*x)/c^4 + 1/2*(c
^2*x^2 - 1)*b*d^2*i*arcsin(c*x)/c^4 + 1/6*(c^2*x^2 - 1)^3*b*e^2*i*arcsin(c*
x)/c^6 + 1/5*b*e^2*h*x*arcsin(c*x)/c^4 + 2/5*b*d*e*i*x*arcsin(c*x)/c^4 + 1/
3*sqrt(-c^2*x^2 + 1)*b*e^2*f/c^3 + 2/3*sqrt(-c^2*x^2 + 1)*b*d*e*g/c^3 + 1/3
*sqrt(-c^2*x^2 + 1)*b*d^2*h/c^3 + 1/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b
*e^2*h/c^5 + 2/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*d*e*i/c^5 - 13/144*(
-c^2*x^2 + 1)^(3/2)*b*e^2*i*x/c^5 + 5/32*b*e^2*g*arcsin(c*x)/c^4 + 5/16*b*d
*e*h*arcsin(c*x)/c^4 + 5/32*b*d^2*i*arcsin(c*x)/c^4 + 1/2*(c^2*x^2 - 1)^2*b
*e^2*i*arcsin(c*x)/c^6 - 2/15*(-c^2*x^2 + 1)^(3/2)*b*e^2*h/c^5 - 4/15*(-c^2
*x^2 + 1)^(3/2)*b*d*e*i/c^5 + 11/96*sqrt(-c^2*x^2 + 1)*b*e^2*i*x/c^5 + 1/2*
(c^2*x^2 - 1)*b*e^2*i*arcsin(c*x)/c^6 + 1/5*sqrt(-c^2*x^2 + 1)*b*e^2*h/c^5
+ 2/5*sqrt(-c^2*x^2 + 1)*b*d*e*i/c^5 + 11/96*b*e^2*i*arcsin(c*x)/c^6
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,\mathrm{asin}(c\,x))\,\left(d+e\,x\right)^2\,\left(i\,x^3+h\,x^2+g\,x+f\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(d + e*x)^2*(f + g*x + h*x^2 + i*x^3),x)
```

```
[Out] int((a + b*asin(c*x))*(d + e*x)^2*(f + g*x + h*x^2 + i*x^3), x)
```

3.108 $\int (d+ex)\left(f+gx+hx^2+ix^3\right)(a+b\mathbf{ArcSin}(cx))\,dx$

Optimal. Leaf size=308

$$\frac{b(25c^2(eg+dh)+12ei)\,x^2\sqrt{1-c^2x^2}}{225c^3}+\frac{b(eh+di)x^3\sqrt{1-c^2x^2}}{16c}+\frac{beix^4\sqrt{1-c^2x^2}}{25c}+\frac{b(32(225c^4df+50c^2(e$$

```
[Out] -1/32*b*(8*c^2*(d*g+e*f)+3*d*i+3*e*h)*arcsin(c*x)/c^4+d*f*x*(a+b*arcsin(c*x
))+1/2*(d*g+e*f)*x^2*(a+b*arcsin(c*x))+1/3*(d*h+e*g)*x^3*(a+b*arcsin(c*x))+
1/4*(d*i+e*h)*x^4*(a+b*arcsin(c*x))+1/5*e*i*x^5*(a+b*arcsin(c*x))+1/225*b*(
25*c^2*(d*h+e*g)+12*e*i)*x^2*(-c^2*x^2+1)^(1/2)/c^3+1/16*b*(d*i+e*h)*x^3*(-
c^2*x^2+1)^(1/2)/c+1/25*b*e*i*x^4*(-c^2*x^2+1)^(1/2)/c+1/7200*b*(7200*c^4*d
*f+1600*c^2*(d*h+e*g)+768*e*i+225*c^2*(8*c^2*(d*g+e*f)+3*d*i+3*e*h)*x)*(-c^
2*x^2+1)^(1/2)/c^5
```

Rubi [A]
time = 0.62, antiderivative size = 308, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {4833, 12, 1823, 794, 222}

$$\frac{1}{2}x^2(dg+ef)(a+b\text{ArcSin}(cx))+\frac{1}{3}x^3(dh+eg)(a+b\text{ArcSin}(cx))+\frac{1}{4}x^4(di+eh)(a+b\text{ArcSin}(cx))+dfx(a+b\text{ArcSin}(cx))+\frac{1}{5}eix^5(a+b\text{ArcSin}(cx))-\frac{b\text{ArcSin}(cx)\left(8c^2(dg+ef)+3(di+eh)\right)}{32c^4}+\frac{bx^3\sqrt{1-c^2x^2}\,(di+eh)}{16c}+\frac{beix^4\sqrt{1-c^2x^2}}{25c}+\frac{bx^2\sqrt{1-c^2x^2}\,(25c^2(dh+eg)+12ei)}{225c^3}+\frac{b\sqrt{1-c^2x^2}\,(225c^2x(8c^2(dg+ef)+3(di+eh))+32(225c^4df+50c^2(dh+eg)+24ei))}{7200c^5}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)*(f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*(25*c^2*(e*g + d*h) + 12*e*i)*x^2*Sqrt[1 - c^2*x^2])/(225*c^3) + (b*(e*h
 + d*i)*x^3*Sqrt[1 - c^2*x^2])/(16*c) + (b*e*i*x^4*Sqrt[1 - c^2*x^2])/(25*c
) + (b*(32*(225*c^4*d*f + 50*c^2*(e*g + d*h) + 24*e*i) + 225*c^2*(8*c^2*(e*
f + d*g) + 3*(e*h + d*i))*x)*Sqrt[1 - c^2*x^2])/(7200*c^5) - (b*(8*c^2*(e*f
 + d*g) + 3*(e*h + d*i))*ArcSin[c*x])/(32*c^4) + d*f*x*(a + b*ArcSin[c*x])
+ ((e*f + d*g)*x^2*(a + b*ArcSin[c*x]))/2 + ((e*g + d*h)*x^3*(a + b*ArcSin[
c*x]))/3 + ((e*h + d*i)*x^4*(a + b*ArcSin[c*x]))/4 + (e*i*x^5*(a + b*ArcSin
[c*x]))/5
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*((a + c*x^2)^(p
+ 1)/(2*c*(p + 1)*(2*p + 3))), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 1823

```
Int[(Pq_)*((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2)^(p_), x_Symbol] :> With[
{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[f*(c*x)^(m + q - 1
)*((a + b*x^2)^(p + 1)/(b*c^(q - 1)*(m + q + 2*p + 1))), x] + Dist[1/(b*(m
+ q + 2*p + 1)), Int[(c*x)^m*(a + b*x^2)^p*ExpandToSum[b*(m + q + 2*p + 1)*
Pq - b*f*(m + q + 2*p + 1)*x^q - a*f*(m + q - 1)*x^(q - 2), x], x], x] /; G
tQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, m, p}, x] && PolyQ[
Pq, x] && ( !IGtQ[m, 0] || IGtQ[p + 1/2, -1])
```

Rule 4833

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_), x_Symbol] :> With[{u = IntHid
e[ExpandExpression[Px, x], x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, I
nt[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[{a, b, c}, x
] && PolynomialQ[Px, x]
```

Rubi steps

$$\int (d+ex)\left(f+gx+hx^2+108x^3\right)\left(a+b\sin^{-1}(cx)\right)\,dx = dfx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}(ef+dg)x^2\left(a+b\sin^{-1}\right.$$

$$= dfx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}(ef+dg)x^2\left(a+b\sin^{-1}\right.$$

$$= \frac{108bex^4\sqrt{1-c^2x^2}}{25c}+dfx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}($$

$$= \frac{b(108d+eh)x^3\sqrt{1-c^2x^2}}{16c}+\frac{108bex^4\sqrt{1-c^2x^2}}{25c}$$

$$= \frac{b\left(e\left(1296+25c^2g\right)+25c^2dh\right)x^2\sqrt{1-c^2x^2}}{225c^3}+\frac{b(1}{}$$

$$= \frac{b\left(e\left(1296+25c^2g\right)+25c^2dh\right)x^2\sqrt{1-c^2x^2}}{225c^3}+\frac{b(1}{}$$

$$= \frac{b\left(e\left(1296+25c^2g\right)+25c^2dh\right)x^2\sqrt{1-c^2x^2}}{225c^3}+\frac{b(1}{}$$

Mathematica [A]

time = 0.16, size = 265, normalized size = 0.86

$$adfx+\frac{1}{2}a(ef+dg)x^2+\frac{1}{3}a(eg+dh)x^3+\frac{1}{4}a(eh+di)x^4+\frac{1}{5}aeix^5+\frac{b\sqrt{1-c^2x^2}\,(768ei+c^2(25d(64h+27ix)+e(1600g+675hx+384ix^2))+2c^4(25d(144f+x(36g+x(16h+9ix)))+ex(900f+x(400g+9x(25h+16ix)))))}{7200c^5}-\frac{b(8c^2(ef+dg)+3(eh+di))\operatorname{ArcSin}(cx)}{32c^4}+\frac{1}{60}bx(5d(12f+x(6g+x(4h+3ix)))+ex(30f+x(20g+3x(5h+4ix))))\operatorname{ArcSin}(cx)$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)*(f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]),x]
```

```
[Out] a*d*f*x + (a*(e*f + d*g)*x^2)/2 + (a*(e*g + d*h)*x^3)/3 + (a*(e*h + d*i)*x^
4)/4 + (a*e*i*x^5)/5 + (b*Sqrt[1 - c^2*x^2]*(768*e*i + c^2*(25*d*(64*h + 27
*i*x) + e*(1600*g + 675*h*x + 384*i*x^2)) + 2*c^4*(25*d*(144*f + x*(36*g +
x*(16*h + 9*i*x))) + e*x*(900*f + x*(400*g + 9*x*(25*h + 16*i*x))))))/(7200
*c^5) - (b*(8*c^2*(e*f + d*g) + 3*(e*h + d*i))*ArcSin[c*x])/(32*c^4) + (b*x
*(5*d*(12*f + x*(6*g + x*(4*h + 3*i*x))) + e*x*(30*f + x*(20*g + 3*x*(5*h +
 4*i*x))))*ArcSin[c*x])/60
```

Maple [A]

time = 0.01, size = 428, normalized size = 1.39

method	result
derivativedivides	$\frac{a\left(\frac{ei\,c^5x^5}{5}+\frac{(cdi+ceh)c^4x^4}{4}+\frac{(c^2dh+c^2eg)c^3x^3}{3}+\frac{(c^3dg+c^3ef)c^2x^2}{2}+d\,c^5fx\right)}{c^4}+\frac{b\left(\frac{\arcsin(cx)ei\,c^5x^5}{5}+\frac{\arcsin(cx)c^5di\,x^4}{4}+\arcsin\right.}{}$
default	$\frac{a\left(\frac{ei\,c^5x^5}{5}+\frac{(cdi+ceh)c^4x^4}{4}+\frac{(c^2dh+c^2eg)c^3x^3}{3}+\frac{(c^3dg+c^3ef)c^2x^2}{2}+d\,c^5fx\right)}{c^4}+\frac{b\left(\frac{\arcsin(cx)ei\,c^5x^5}{5}+\frac{\arcsin(cx)c^5di\,x^4}{4}+\arcsin\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(a/c^4*(1/5*e*i*c^5*x^5+1/4*(c*d*i+c*e*h)*c^4*x^4+1/3*(c^2*d*h+c^2*e*g)
*c^3*x^3+1/2*(c^3*d*g+c^3*e*f)*c^2*x^2+d*c^5*f*x)+b/c^4*(1/5*arcsin(c*x)*e*
i*c^5*x^5+1/4*arcsin(c*x)*c^5*d*i*x^4+1/4*arcsin(c*x)*c^5*e*h*x^4+1/3*arcsi
n(c*x)*c^5*d*h*x^3+1/3*arcsin(c*x)*c^5*e*g*x^3+1/2*arcsin(c*x)*c^5*d*g*x^2+
1/2*arcsin(c*x)*c^5*e*f*x^2+arcsin(c*x)*d*c^5*f*x-1/5*e*i*(-1/5*c^4*x^4*(-c
^2*x^2+1)^(1/2)-4/15*c^2*x^2*(-c^2*x^2+1)^(1/2)-8/15*(-c^2*x^2+1)^(1/2))-1/
60*(15*c*d*i+15*c*e*h)*(-1/4*c^3*x^3*(-c^2*x^2+1)^(1/2)-3/8*c*x*(-c^2*x^2+1
)^(1/2)+3/8*arcsin(c*x))-1/60*(20*c^2*d*h+20*c^2*e*g)*(-1/3*c^2*x^2*(-c^2*x
^2+1)^(1/2)-2/3*(-c^2*x^2+1)^(1/2))-1/60*(30*c^3*d*g+30*c^3*e*f)*(-1/2*c*x*
(-c^2*x^2+1)^(1/2)+1/2*arcsin(c*x))+d*c^4*f*(-c^2*x^2+1)^(1/2)))
```

Maxima [A]
time = 0.48, size = 494, normalized size = 1.60

$$\frac{1}{4} aehx^{4} + \frac{1}{5} iaex^{5} + \frac{1}{3} adhx^{3} + \frac{1}{4} iadx^{4} + \frac{1}{3} aegx^{3} + \frac{1}{2} adgx^{2} + \frac{1}{2} aefx^{2} + \frac{1}{4} \left(2 x^{2} \arcsin\left(cx\right) + c \left(\frac{\sqrt{-c^{2} x^{2} + 1} x}{c^{2}} - \frac{\arcsin\left(cx\right)}{c^{3}}\right)\right) bdg + \frac{1}{9} \left(3 x^{3} \arcsin\left(cx\right) + c \left(\frac{\sqrt{-c^{2} x^{2} + 1} x^{2}}{c^{2}} + \frac{2 \sqrt{-c^{2} x^{2} + 1}}{c^{4}}\right)\right) bdh + adfx + \frac{1}{4} \left(2 x^{2} \arcsin\left(cx\right) + c \left(\frac{\sqrt{-c^{2} x^{2} + 1} x}{c^{2}} - \frac{\arcsin\left(cx\right)}{c^{3}}\right)\right) bef + \frac{1}{9} \left(3 x^{3} \arcsin\left(cx\right) + c \left(\frac{\sqrt{-c^{2} x^{2} + 1} x^{2}}{c^{2}} + \frac{2 \sqrt{-c^{2} x^{2} + 1}}{c^{4}}\right)\right) beg + \frac{1}{32} \left(8 x^{4} \arcsin\left(cx\right) + \left(\frac{2 \sqrt{-c^{2} x^{2} + 1} x^{3}}{c^{2}} + \frac{3 \sqrt{-c^{2} x^{2} + 1} x}{c^{4}} - \frac{3 \arcsin\left(cx\right)}{c^{5}}\right) c\right) beh + \frac{1}{32} i \left(8 x^{4} \arcsin\left(cx\right) + \left(\frac{2 \sqrt{-c^{2} x^{2} + 1} x^{3}}{c^{2}} + \frac{3 \sqrt{-c^{2} x^{2} + 1} x}{c^{4}} - \frac{3 \arcsin\left(cx\right)}{c^{5}}\right) c\right) bd + \frac{\left(cx \arcsin\left(cx\right) + \sqrt{-c^{2} x^{2} + 1}\right) bdf}{c} + \frac{1}{75} i \left(15 x^{5} \arcsin\left(cx\right) + \left(\frac{3 \sqrt{-c^{2} x^{2} + 1} x^{4}}{c^{2}} + \frac{4 \sqrt{-c^{2} x^{2} + 1} x^{2}}{c^{4}} + \frac{8 \sqrt{-c^{2} x^{2} + 1}}{c^{6}}\right) c\right) be$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="maxim
a")
```

```
[Out] 1/4*a*h*x^4*e + 1/5*I*a*x^5*e + 1/3*a*d*h*x^3 + 1/4*I*a*d*x^4 + 1/3*a*g*x^3
*e + 1/2*a*d*g*x^2 + 1/2*a*f*x^2*e + 1/4*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*
x^2 + 1)*x/c^2 - arcsin(c*x)/c^3))*b*d*g + 1/9*(3*x^3*arcsin(c*x) + c*(sqrt
(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*d*h + a*d*f*x + 1/4*(
2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c*x)/c^3))*b*f*e +
 1/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 +
 1)/c^4))*b*g*e + 1/32*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 +
 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c*x)/c^5)*c)*b*h*e + 1/32*I*(8*x^4*a
rcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3
*arcsin(c*x)/c^5)*c)*b*d + (c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*b*d*f/c +
 1/75*I*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x
^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*b*e
```

Fricas [A]
time = 3.37, size = 369, normalized size = 1.20

$$\frac{4800 a c^{5} d h x^{3} + 3600 i a c^{5} d x^{4} + 7200 a c^{5} d g x^{2} + 14400 a c^{5} d f x + 240 \left(15 a c^{5} h x^{4} + 12 i a c^{5} x^{5} + 20 a c^{5} g x^{3} + 30 a c^{5} f x^{2}\right) e - 15 \left(160 i b c^{5} d h x^{3} - 120 b c^{5} d x^{4} + 240 i b c^{5} d g x^{2} + 480 i b c^{5} d f x - 120 i b c^{3} d g + 45 b c d + \left(120 i b c^{5} h x^{4} - 96 b c^{5} x^{5} + 160 i b c^{5} g x^{3} + 240 i b c^{5} f x^{2} - 120 i b c^{3} f - 45 i b c h\right) e\right) \log\left(-2 c^{2} x^{2} - 2 \sqrt{c^{2} x^{2} - 1} c x + 1\right) - 2 \left(-800 i b c^{4} d h x^{2} + 450 b c^{4} d x^{3} - 7200 i b c^{4} d f - 1600 i b c^{2} d h + 225 \left(-8 i b c^{4} d g + 3 b c^{2} d\right) x + \left(-450 i b c^{4} h x^{3} + 288 b c^{4} x^{4} - 1600 i b c^{2} g + 32 \left(-25 i b c^{4} g + 12 b c^{2}\right) x^{2} + 225 \left(-8 i b c^{4} f - 3 i b c^{2} h\right) x + 768 b\right) e\right) \sqrt{c^{2} x^{2} - 1}}{14400 c^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="frica
s")
```

```
[Out] 1/14400*(4800*a*c^5*d*h*x^3 + 3600*I*a*c^5*d*x^4 + 7200*a*c^5*d*g*x^2 + 144
00*a*c^5*d*f*x + 240*(15*a*c^5*h*x^4 + 12*I*a*c^5*x^5 + 20*a*c^5*g*x^3 + 30
*a*c^5*f*x^2)*e - 15*(160*I*b*c^5*d*h*x^3 - 120*b*c^5*d*x^4 + 240*I*b*c^5*d
*g*x^2 + 480*I*b*c^5*d*f*x - 120*I*b*c^3*d*g + 45*b*c*d + (120*I*b*c^5*h*x^
4 - 96*b*c^5*x^5 + 160*I*b*c^5*g*x^3 + 240*I*b*c^5*f*x^2 - 120*I*b*c^3*f -
45*I*b*c*h)*e)*log(-2*c^2*x^2 - 2*sqrt(c^2*x^2 - 1)*c*x + 1) - 2*(-800*I*b*
c^4*d*h*x^2 + 450*b*c^4*d*x^3 - 7200*I*b*c^4*d*f - 1600*I*b*c^2*d*h + 225*(
-8*I*b*c^4*d*g + 3*b*c^2*d)*x + (-450*I*b*c^4*h*x^3 + 288*b*c^4*x^4 - 1600*
I*b*c^2*g + 32*(-25*I*b*c^4*g + 12*b*c^2)*x^2 + 225*(-8*I*b*c^4*f - 3*I*b*c
^2*h)*x + 768*b)*e)*sqrt(c^2*x^2 - 1))/c^5
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 658 vs. $2(292) = 584$.
time = 0.54, size = 658, normalized size = 2.14

$$\begin{cases} adfx + \frac{adgx^{2}}{2} + \frac{adhx^{3}}{3} + \frac{adix^{4}}{4} + \frac{aefx^{2}}{2} + \frac{aegx^{3}}{3} + \frac{aehx^{4}}{4} + \frac{aeix^{5}}{5} + bdfx \operatorname{asin}{\left(cx \right)} + \frac{bdgx^{2} \operatorname{asin}{\left(cx \right)}}{2} + \frac{bdhx^{3} \operatorname{asin}{\left(cx \right)}}{3} + \frac{bdix^{4} \operatorname{asin}{\left(cx \right)}}{4} + \frac{befx^{2} \operatorname{asin}{\left(cx \right)}}{2} + \frac{begx^{3} \operatorname{asin}{\left(cx \right)}}{3} + \frac{behx^{4} \operatorname{asin}{\left(cx \right)}}{4} + \frac{beix^{5} \operatorname{asin}{\left(cx \right)}}{5} + \frac{bdf \sqrt{- c^{2} x^{2} + 1}}{c} + \frac{bdgx \sqrt{- c^{2} x^{2} + 1}}{4c} + \frac{bdhx^{2} \sqrt{- c^{2} x^{2} + 1}}{9c} + \frac{bdix^{3} \sqrt{- c^{2} x^{2} + 1}}{16c} + \frac{befx \sqrt{- c^{2} x^{2} + 1}}{4c} + \frac{begx^{2} \sqrt{- c^{2} x^{2} + 1}}{9c} + \frac{behx^{3} \sqrt{- c^{2} x^{2} + 1}}{16c} + \frac{beix^{4} \sqrt{- c^{2} x^{2} + 1}}{25c} - \frac{bdg \operatorname{asin}{\left(cx \right)}}{4c^{2}} - \frac{bef \operatorname{asin}{\left(cx \right)}}{4c^{2}} + \frac{2bdh \sqrt{- c^{2} x^{2} + 1}}{9c^{3}} + \frac{3bdix \sqrt{- c^{2} x^{2} + 1}}{32c^{3}} + \frac{2beg \sqrt{- c^{2} x^{2} + 1}}{9c^{3}} + \frac{3behx \sqrt{- c^{2} x^{2} + 1}}{32c^{3}} + \frac{4beix^{2} \sqrt{- c^{2} x^{2} + 1}}{75c^{3}} - \frac{3bdi \operatorname{asin}{\left(cx \right)}}{32c^{4}} - \frac{3beh \operatorname{asin}{\left(cx \right)}}{32c^{4}} + \frac{8bei \sqrt{- c^{2} x^{2} + 1}}{75c^{5}} & \text{for}\: c \neq 0 \\ a \left(dfx + \frac{dgx^{2}}{2} + \frac{dhx^{3}}{3} + \frac{dix^{4}}{4} + \frac{efx^{2}}{2} + \frac{egx^{3}}{3} + \frac{ehx^{4}}{4} + \frac{eix^{5}}{5}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(i*x**3+h*x**2+g*x+f)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d*f*x + a*d*g*x**2/2 + a*d*h*x**3/3 + a*d*i*x**4/4 + a*e*f*x**
2/2 + a*e*g*x**3/3 + a*e*h*x**4/4 + a*e*i*x**5/5 + b*d*f*x*asin(c*x) + b*d*
g*x**2*asin(c*x)/2 + b*d*h*x**3*asin(c*x)/3 + b*d*i*x**4*asin(c*x)/4 + b*e*
f*x**2*asin(c*x)/2 + b*e*g*x**3*asin(c*x)/3 + b*e*h*x**4*asin(c*x)/4 + b*e*
i*x**5*asin(c*x)/5 + b*d*f*sqrt(-c**2*x**2 + 1)/c + b*d*g*x*sqrt(-c**2*x**2
 + 1)/(4*c) + b*d*h*x**2*sqrt(-c**2*x**2 + 1)/(9*c) + b*d*i*x**3*sqrt(-c**2
*x**2 + 1)/(16*c) + b*e*f*x*sqrt(-c**2*x**2 + 1)/(4*c) + b*e*g*x**2*sqrt(-c
**2*x**2 + 1)/(9*c) + b*e*h*x**3*sqrt(-c**2*x**2 + 1)/(16*c) + b*e*i*x**4*s
qrt(-c**2*x**2 + 1)/(25*c) - b*d*g*asin(c*x)/(4*c**2) - b*e*f*asin(c*x)/(4*
c**2) + 2*b*d*h*sqrt(-c**2*x**2 + 1)/(9*c**3) + 3*b*d*i*x*sqrt(-c**2*x**2 +
 1)/(32*c**3) + 2*b*e*g*sqrt(-c**2*x**2 + 1)/(9*c**3) + 3*b*e*h*x*sqrt(-c**
2*x**2 + 1)/(32*c**3) + 4*b*e*i*x**2*sqrt(-c**2*x**2 + 1)/(75*c**3) - 3*b*d
*i*asin(c*x)/(32*c**4) - 3*b*e*h*asin(c*x)/(32*c**4) + 8*b*e*i*sqrt(-c**2*x
**2 + 1)/(75*c**5), Ne(c, 0)), (a*(d*f*x + d*g*x**2/2 + d*h*x**3/3 + d*i*x*
*4/4 + e*f*x**2/2 + e*g*x**3/3 + e*h*x**4/4 + e*i*x**5/5), True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 692 vs. 2(277) = 554.
time = 0.42, size = 692, normalized size = 2.25

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x)),x, algorithm="giac"
)
```

```
[Out] 1/5*a*e*i*x^5 + 1/4*a*e*h*x^4 + 1/4*a*d*i*x^4 + 1/3*a*e*g*x^3 + 1/3*a*d*h*x
^3 + b*d*f*x*arcsin(c*x) + a*d*f*x + 1/3*(c^2*x^2 - 1)*b*e*g*x*arcsin(c*x)/
c^2 + 1/3*(c^2*x^2 - 1)*b*d*h*x*arcsin(c*x)/c^2 + 1/4*sqrt(-c^2*x^2 + 1)*b*
e*f*x/c + 1/4*sqrt(-c^2*x^2 + 1)*b*d*g*x/c + 1/2*(c^2*x^2 - 1)*b*e*f*arcsin
(c*x)/c^2 + 1/2*(c^2*x^2 - 1)*b*d*g*arcsin(c*x)/c^2 + 1/3*b*e*g*x*arcsin(c*
x)/c^2 + 1/3*b*d*h*x*arcsin(c*x)/c^2 + 1/5*(c^2*x^2 - 1)^2*b*e*i*x*arcsin(c
*x)/c^4 + sqrt(-c^2*x^2 + 1)*b*d*f/c - 1/16*(-c^2*x^2 + 1)^(3/2)*b*e*h*x/c^
3 - 1/16*(-c^2*x^2 + 1)^(3/2)*b*d*i*x/c^3 + 1/2*(c^2*x^2 - 1)*a*e*f/c^2 + 1
/2*(c^2*x^2 - 1)*a*d*g/c^2 + 1/4*b*e*f*arcsin(c*x)/c^2 + 1/4*b*d*g*arcsin(c
*x)/c^2 + 1/4*(c^2*x^2 - 1)^2*b*e*h*arcsin(c*x)/c^4 + 1/4*(c^2*x^2 - 1)^2*b
*d*i*arcsin(c*x)/c^4 + 2/5*(c^2*x^2 - 1)*b*e*i*x*arcsin(c*x)/c^4 - 1/9*(-c^
2*x^2 + 1)^(3/2)*b*e*g/c^3 - 1/9*(-c^2*x^2 + 1)^(3/2)*b*d*h/c^3 + 5/32*sqrt
(-c^2*x^2 + 1)*b*e*h*x/c^3 + 5/32*sqrt(-c^2*x^2 + 1)*b*d*i*x/c^3 + 1/2*(c^2
*x^2 - 1)*b*e*h*arcsin(c*x)/c^4 + 1/2*(c^2*x^2 - 1)*b*d*i*arcsin(c*x)/c^4 +
 1/5*b*e*i*x*arcsin(c*x)/c^4 + 1/3*sqrt(-c^2*x^2 + 1)*b*e*g/c^3 + 1/3*sqrt(
-c^2*x^2 + 1)*b*d*h/c^3 + 1/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*e*i/c^5
```

```
+ 5/32*b*e*h*arcsin(c*x)/c^4 + 5/32*b*d*i*arcsin(c*x)/c^4 - 2/15*(-c^2*x^2
+ 1)^(3/2)*b*e*i/c^5 + 1/5*sqrt(-c^2*x^2 + 1)*b*e*i/c^5
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int (a + b\,\mathrm{asin}(c\,x))\;(d + e\,x)\;\left(i\,x^3 + h\,x^2 + g\,x + f\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(d + e*x)*(f + g*x + h*x^2 + i*x^3),x)
[Out] int((a + b*asin(c*x))*(d + e*x)*(f + g*x + h*x^2 + i*x^3), x)
```

3.109 $\int \frac{(f+gx+hx^2+ix^3)(a+b\text{ArcSin}(cx))}{d+ex}\,dx$

Optimal. Leaf size=623

$$\frac{bix^2\sqrt{1-c^2x^2}}{9ce}+\frac{b(4(2e^2i+9c^2(e^2g-deh+d^2i))+9c^2e(eh-di)x)\sqrt{1-c^2x^2}}{36c^3e^3}-\frac{b(eh-di)\text{ArcSin}(cx)}{4c^2e^2}-$$

```
[Out] -1/4*b*(-d*i+e*h)*arcsin(c*x)/c^2/e^2-1/2*I*b*(-d^3*i+d^2*e*h-d*e^2*g+e^3*f
)*arcsin(c*x)^2/e^4+(d^2*i-d*e*h+e^2*g)*x*(a+b*arcsin(c*x))/e^3+1/2*(-d*i+e
*h)*x^2*(a+b*arcsin(c*x))/e^2+1/3*i*x^3*(a+b*arcsin(c*x))/e-b*(-d^3*i+d^2*e
*h-d*e^2*g+e^3*f)*arcsin(c*x)*ln(e*x+d)/e^4+(-d^3*i+d^2*e*h-d*e^2*g+e^3*f)*
(a+b*arcsin(c*x))*ln(e*x+d)/e^4+b*(-d^3*i+d^2*e*h-d*e^2*g+e^3*f)*arcsin(c*x
)*ln(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d-(c^2*d^2-e^2)^(1/2)))/e^4+b*(-d^
3*i+d^2*e*h-d*e^2*g+e^3*f)*arcsin(c*x)*ln(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/
(c*d+(c^2*d^2-e^2)^(1/2)))/e^4-I*b*(-d^3*i+d^2*e*h-d*e^2*g+e^3*f)*polylog(2
,I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d-(c^2*d^2-e^2)^(1/2)))/e^4-I*b*(-d^3*i+
d^2*e*h-d*e^2*g+e^3*f)*polylog(2,I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d+(c^2*d
^2-e^2)^(1/2)))/e^4+1/9*b*i*x^2*(-c^2*x^2+1)^(1/2)/c/e+1/36*b*(8*e^2*i+36*c
^2*(d^2*i-d*e*h+e^2*g)+9*c^2*e*(-d*i+e*h)*x)*(-c^2*x^2+1)^(1/2)/c^3/e^3
```

Rubi [A]
time = 0.81, antiderivative size = 623, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 13, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.419$, Rules used = {1864, 4837, 12, 6874, 1823, 794, 222, 2451, 4825, 4615, 2221, 2317, 2438}

$$\frac{x(a+b\text{ArcSin}(cx))(d^2i-deh+e^2g)}{e^3}+\frac{\log(d+ex)(a+b\text{ArcSin}(cx))(d^3(-i)+d^2eh-de^2g+e^3f)}{e^4}+\frac{x^2(eh-di)(a+b\text{ArcSin}(cx))}{2e^2}+\frac{ix^3(a+b\text{ArcSin}(cx))}{3e}-\frac{ib\text{Li}_2\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)(d^3(-i)+d^2eh-de^2g+e^3f)}{e^4}-\frac{ib\text{Li}_2\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)(d^3(-i)+d^2eh-de^2g+e^3f)}{e^4}+\frac{b\text{ArcSin}(cx)\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)(d^3(-i)+d^2eh-de^2g+e^3f)}{e^4}+\frac{b\text{ArcSin}(cx)\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)(d^3(-i)+d^2eh-de^2g+e^3f)}{e^4}-\frac{b\text{ArcSin}(cx)(eh-di)}{4c^2e^2}-\frac{ib\text{ArcSin}(cx)^2(d^3(-i)+d^2eh-de^2g+e^3f)}{2e^4}-\frac{b\text{ArcSin}(cx)\log(d+ex)(d^3(-i)+d^2eh-de^2g+e^3f)}{e^4}+\frac{bix^2\sqrt{1-c^2x^2}}{9ce}+\frac{b\sqrt{1-c^2x^2}(4(9c^2(d^2i-deh+e^2g)+2e^2i)+9c^2ex(eh-di))}{36c^3e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]))/(d + e*x),x]
```

```
[Out] (b*i*x^2*Sqrt[1 - c^2*x^2])/(9*c*e) + (b*(4*(2*e^2*i + 9*c^2*(e^2*g - d*e*h
 + d^2*i)) + 9*c^2*e*(e*h - d*i)*x)*Sqrt[1 - c^2*x^2])/(36*c^3*e^3) - (b*(e
*h - d*i)*ArcSin[c*x])/(4*c^2*e^2) - ((I/2)*b*(e^3*f - d*e^2*g + d^2*e*h -
d^3*i)*ArcSin[c*x]^2)/e^4 + ((e^2*g - d*e*h + d^2*i)*x*(a + b*ArcSin[c*x]))
/e^3 + ((e*h - d*i)*x^2*(a + b*ArcSin[c*x]))/(2*e^2) + (i*x^3*(a + b*ArcSin
[c*x]))/(3*e) + (b*(e^3*f - d*e^2*g + d^2*e*h - d^3*i)*ArcSin[c*x]*Log[1 -
(I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^4 + (b*(e^3*f - d*e
^2*g + d^2*e*h - d^3*i)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d +
Sqrt[c^2*d^2 - e^2])])/e^4 - (b*(e^3*f - d*e^2*g + d^2*e*h - d^3*i)*ArcSin[
c*x]*Log[d + e*x])/e^4 + ((e^3*f - d*e^2*g + d^2*e*h - d^3*i)*(a + b*ArcSin
[c*x])*Log[d + e*x])/e^4 - (I*b*(e^3*f - d*e^2*g + d^2*e*h - d^3*i)*PolyLog
[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^4 - (I*b*(e^3*f
 - d*e^2*g + d^2*e*h - d^3*i)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqr
t[c^2*d^2 - e^2])])/e^4
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*((a + c*x^2)^(p
+ 1)/(2*c*(p + 1)*(2*p + 3))), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 1823

```
Int[(Pq_)*((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2)^(p_), x_Symbol] :> With[
{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[f*(c*x)^(m + q - 1
)*((a + b*x^2)^(p + 1)/(b*c^(q - 1)*(m + q + 2*p + 1))), x] + Dist[1/(b*(m
+ q + 2*p + 1)), Int[(c*x)^m*(a + b*x^2)^p*ExpandToSum[b*(m + q + 2*p + 1)*
Pq - b*f*(m + q + 2*p + 1)*x^q - a*f*(m + q - 1)*x^(q - 2), x], x], x] /; G
tQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, m, p}, x] && PolyQ[
Pq, x] && ( !IGtQ[m, 0] || IGtQ[p + 1/2, -1])
```

Rule 1864

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_.), x_Symbol] :> Int[ExpandIntegrand
[Pq*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, n}, x] && PolyQ[Pq, x] && (IGtQ[p
, 0] || EqQ[n, 1])
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
```

```
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2451

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 4615

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Int[(e + f*x)^m*(E^(I*(c + d*x))/(a - Rt[a^2 - b^2, 2] - I*b*E^(
I*(c + d*x)))), x] + Int[(e + f*x)^m*(E^(I*(c + d*x))/(a + Rt[a^2 - b^2, 2]
 - I*b*E^(I*(c + d*x)))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0]
 && PosQ[a^2 - b^2]
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[(a + b*x)^n*(Cos[x]/(c*d + e*Sin[x])), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4837

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(f+gx+hx^2+109x^3)(a+b\sin^{-1}(cx))}{d+ex}\,dx = \frac{(109d^2+e^2g-deh)\,x(a+b\sin^{-1}(cx))}{e^3} - \frac{(109d-eh)x^2(\ldots}{2e\ldots}$$

$$= \frac{(109d^2+e^2g-deh)\,x(a+b\sin^{-1}(cx))}{e^3} - \frac{(109d-eh)x^2(\ldots}{2e\ldots}$$

$$= \frac{(109d^2+e^2g-deh)\,x(a+b\sin^{-1}(cx))}{e^3} - \frac{(109d-eh)x^2(\ldots}{2e\ldots}$$

$$= \frac{(109d^2+e^2g-deh)\,x(a+b\sin^{-1}(cx))}{e^3} - \frac{(109d-eh)x^2(\ldots}{2e\ldots}$$

$$= \frac{109bx^2\sqrt{1-c^2x^2}}{9ce} + \frac{(109d^2+e^2g-deh)\,x(a+b\sin^{-1}(c\ldots}{e^3}$$

$$= \frac{109bx^2\sqrt{1-c^2x^2}}{9ce} + \frac{b(4(218e^2+9c^2(109d^2+e^2g-deh)\ldots}{36c^3\ldots}$$

$$= \frac{109bx^2\sqrt{1-c^2x^2}}{9ce} + \frac{b(4(218e^2+9c^2(109d^2+e^2g-deh)\ldots}{36c^3\ldots}$$

$$= \frac{109bx^2\sqrt{1-c^2x^2}}{9ce} + \frac{b(4(218e^2+9c^2(109d^2+e^2g-deh)\ldots}{36c^3\ldots}$$

$$= \frac{109bx^2\sqrt{1-c^2x^2}}{9ce} + \frac{b(4(218e^2+9c^2(109d^2+e^2g-deh)\ldots}{36c^3\ldots}$$

$$= \frac{109bx^2\sqrt{1-c^2x^2}}{9ce} + \frac{b(4(218e^2+9c^2(109d^2+e^2g-deh)\ldots}{36c^3\ldots}$$

Mathematica [**B**] Both result and optimal contain complex but leaf count is larger than twice the leaf count of optimal. 1650 vs. 2(623) = 1246.
time = 4.96, size = 1650, normalized size = 2.65

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]))/(d + e*x),x]
```

```
[Out] (144*a*c^3*e*(e^2*g - d*e*h + d^2*i)*x + 72*a*c^3*e^2*(e*h - d*i)*x^2 + 48*
a*c^3*e^3*i*x^3 + 144*a*c^3*(e^3*f - d*e^2*g + d^2*e*h - d^3*i)*Log[d + e*x
```

```
] + 18*b*c^2*e^2*g*(8*e*Sqrt[1 - c^2*x^2] + 8*c*e*x*ArcSin[c*x] - c*d*(I*(P
i - 2*ArcSin[c*x])^2 - (32*I)*ArcSin[Sqrt[1 + (c*d)/e]/Sqrt[2]]*ArcTan[((c*
d - e)*Cot[(Pi + 2*ArcSin[c*x])/4])/Sqrt[c^2*d^2 - e^2]] - 4*(Pi + 4*ArcSin
[Sqrt[1 + (c*d)/e]/Sqrt[2]] - 2*ArcSin[c*x])*Log[1 - (I*(-(c*d) + Sqrt[c^2*
d^2 - e^2]))/(e*E^(I*ArcSin[c*x]))] - 4*(Pi - 4*ArcSin[Sqrt[1 + (c*d)/e]/Sq
rt[2]] - 2*ArcSin[c*x])*Log[1 + (I*(c*d + Sqrt[c^2*d^2 - e^2]))/(e*E^(I*Arc
Sin[c*x]))] + 4*(Pi - 2*ArcSin[c*x])*Log[c*(d + e*x)] + 8*ArcSin[c*x]*Log[c
*(d + e*x)] + (8*I)*(PolyLog[2, (I*(-(c*d) + Sqrt[c^2*d^2 - e^2]))/(e*E^(I*
ArcSin[c*x]))] + PolyLog[2, ((-I)*(c*d + Sqrt[c^2*d^2 - e^2]))/(e*E^(I*ArcS
in[c*x]))]))) - (72*I)*b*c^3*e^3*f*(ArcSin[c*x]*(ArcSin[c*x] + (2*I)*(Log[1
 + (I*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] + Log[1 - (I*e*E
^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])) + 2*PolyLog[2, ((-I)*e*E^(
I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] + 2*PolyLog[2, (I*e*E^(I*Ar
cSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]) - 18*b*c*e*h*(8*c*d*e*Sqrt[1 - c^
2*x^2] + 8*c^2*d*e*x*ArcSin[c*x] + (4*I)*c^2*d^2*ArcSin[c*x]^2 + 2*e^2*ArcS
in[c*x]*Cos[2*ArcSin[c*x]] - 8*c^2*d^2*ArcSin[c*x]*Log[1 + (I*e*E^(I*ArcSin
[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] - 8*c^2*d^2*ArcSin[c*x]*Log[1 - (I*
e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])] + (8*I)*c^2*d^2*PolyLog[2
, ((-I)*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] + (8*I)*c^2*d^
2*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])] - e^2*Sin
[2*ArcSin[c*x]]) + b*i*(144*c^2*d^2*e*Sqrt[1 - c^2*x^2] + 36*e^3*Sqrt[1 - c
^2*x^2] + 144*c^3*d^2*e*x*ArcSin[c*x] + 36*c*e^3*x*ArcSin[c*x] - 9*c*d*e^2*
(I*(Pi - 2*ArcSin[c*x])^2 - (32*I)*ArcSin[Sqrt[1 + (c*d)/e]/Sqrt[2]]*ArcTan
[((c*d - e)*Cot[(Pi + 2*ArcSin[c*x])/4])/Sqrt[c^2*d^2 - e^2]] - 4*(Pi + 4*A
rcSin[Sqrt[1 + (c*d)/e]/Sqrt[2]] - 2*ArcSin[c*x])*Log[1 - (I*(-(c*d) + Sqrt
[c^2*d^2 - e^2]))/(e*E^(I*ArcSin[c*x]))] - 4*(Pi - 4*ArcSin[Sqrt[1 + (c*d)/
e]/Sqrt[2]] - 2*ArcSin[c*x])*Log[1 + (I*(c*d + Sqrt[c^2*d^2 - e^2]))/(e*E^(
I*ArcSin[c*x]))] + 4*(Pi - 2*ArcSin[c*x])*Log[c*(d + e*x)] + 8*ArcSin[c*x]*
Log[c*(d + e*x)] + (8*I)*(PolyLog[2, (I*(-(c*d) + Sqrt[c^2*d^2 - e^2]))/(e*
E^(I*ArcSin[c*x]))] + PolyLog[2, ((-I)*(c*d + Sqrt[c^2*d^2 - e^2]))/(e*E^(I
*ArcSin[c*x]))])) + (36*I)*c*d*(2*c^2*d^2 - e^2)*(ArcSin[c*x]*(ArcSin[c*x]
+ (2*I)*(Log[1 + (I*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] +
Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])) + 2*PolyLog[
2, ((-I)*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] + 2*PolyLog[2
, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]) + 18*c*d*e^2*(2*Arc
Sin[c*x]*Cos[2*ArcSin[c*x]] - Sin[2*ArcSin[c*x]]) - 4*e^3*(Cos[3*ArcSin[c*x
]] + 3*ArcSin[c*x]*Sin[3*ArcSin[c*x]])))/(144*c^3*e^4)
```

Maple [**B**] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 3469 vs. $2(621) = 1242$.
time = 1.26, size = 3470, normalized size = 5.57

method	result	size
derivativedivides	Expression too large to display	3470
default	Expression too large to display	3470

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d),x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(-a*c/e^2*ln(c*e*x+c*d)*d*g+I*b*c/e*d^2*h/(c^2*d^2-e^2)*dilog((I*d*c+e*
(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2
)))+I*b*c/e*d^2*h/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(
-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-b*c/e*d^2*h*arcsin(c*x)/
(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/
(I*d*c-(-c^2*d^2+e^2)^(1/2)))-b*c/e*d^2*h*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d
*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)
^(1/2)))+b*c^3/e^3*d^4*h*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2
*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+b*c^3/e^
3*d^4*h*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-
c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-I*b*c^3/e^3*d^4*h/(c^2*d^
2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d
*c+(-c^2*d^2+e^2)^(1/2)))+b/e^3*(-c^2*x^2+1)^(1/2)*d^2*i-1/36*b/c^2*i/e*cos
(3*arcsin(c*x))+1/4*b/c^2/e*(-c^2*x^2+1)^(1/2)*i-b*c^3/e^2*d^3*g*arcsin(c*x
)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2)
)/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+b*c^3/e*d^2*f*arcsin(c*x)/(c^2*d^2-e^2)*ln(
(I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+
e^2)^(1/2)))+b*c^3/e*d^2*f*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c
^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+I*b*c^
3/e^2*d^3*g/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d
^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-I*b*c^3/e*f/(c^2*d^2-e^2)*dilo
g((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^
2+e^2)^(1/2)))*d^2-b*c^3/e^2*d^3*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I
*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2))
)-I*b*c^3/e*f/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2
*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*d^2+I*b*c^3/e^2*d^3*g/(c^2*d
^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*
d*c-(-c^2*d^2+e^2)^(1/2)))-a*c/e^4*ln(c*e*x+c*d)*d^3*i+a/e^3*d^2*i*c*x+1/3*
a*c/e*i*x^3-1/8*b/c/e^2*sin(2*arcsin(c*x))*d*i-1/12*b/c^2*arcsin(c*x)*i/e*s
in(3*arcsin(c*x))+b*arcsin(c*x)*g/e*c*x-1/2*I*b*c*arcsin(c*x)^2/e*f-I*b*c^3
/e^3*d^4*h/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^
2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-1/2*a*c/e^2*d*i*x^2+1/4*b/c/e^2
*arcsin(c*x)*cos(2*arcsin(c*x))*d*i+1/2*I*b*c*arcsin(c*x)^2/e^4*d^3*i+b*arc
sin(c*x)/e^3*d^2*i*c*x+1/4*b/c/e*arcsin(c*x)*i*x+b*g/e*(-c^2*x^2+1)^(1/2)+a
*g/e*c*x+a*c/e*ln(c*e*x+c*d)*f+1/2*I*b*c*arcsin(c*x)^2/e^2*d*g+I*b*c*e*f/(c
^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))
/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-b*c*e*f*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+
e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1
/2)))+I*b*c*e*f/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c
^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+b*c*d*g*arcsin(c*x)/(c^2*d
```

```
^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c
+(-c^2*d^2+e^2)^(1/2)))-b*c*e*f*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*
x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-I
*b*c*d*g/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+
e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+b*c*d*g*arcsin(c*x)/(c^2*d^2-e^2)
*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*
d^2+e^2)^(1/2)))-I*b*c*d*g/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)
^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-1/2*I*b*c*arcsi
n(c*x)^2/e^3*d^2*h-b*arcsin(c*x)/e^2*d*h*c*x-b*c^3/e^4*d^5*i*arcsin(c*x)/(c
^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I
*d*c+(-c^2*d^2+e^2)^(1/2)))+b*c/e^2*d^3*i*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d
*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)
^(1/2)))-b*c^3/e^4*d^5*i*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2
*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-I*b*c/e^
2*d^3*i/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e
^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-I*b*c/e^2*d^3*i/(c^2*d^2-e^2)*dilo
g((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^
2+e^2)^(1/2)))-b/e^2*(-c^2*x^2+1)^(1/2)*d*h+1/8*b/c/e*h*sin(2*arcsin(c*x))+
a*c/e^3*ln(c*e*x+c*d)*d^2*h-a/e^2*d*h*c*x+1/2*a*c/e*h*x^2-1/4*b/c/e*h*arcsi
n(c*x)*cos(2*arcsin(c*x))+I*b*c^3/e^4*d^5*i/(c^2*d^2-e^2)*dilog((I*d*c+e*(I
*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2))
)+b*c/e^2*d^3*i*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(
1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+I*b*c^3/e^4*d^5*i
/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/
2))/(I*d*c+(-c^2*d^2+e^2)^(1/2))))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d),x, algorithm="maxim
a")
```

```
[Out] a*f*e^(-1)*log(x*e + d) - (d*e^(-2)*log(x*e + d) - x*e^(-1))*a*g + 1/2*(2*d
^2*e^(-3)*log(x*e + d) + (x^2*e - 2*d*x)*e^(-2))*a*h - 1/6*I*(6*d^3*e^(-4)*
log(x*e + d) - (2*x^3*e^2 - 3*d*x^2*e + 6*d^2*x)*e^(-3))*a + I*b*integrate(
x^3*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(x*e + d), x) + integrate((b
*h*x^2 + b*g*x + b*f)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(x*e + d),
 x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d),x, algorithm="frica
s")
```

```
[Out] integral(1/2*(2*a*h*x^2 + 2*I*a*x^3 + 2*a*g*x + 2*a*f + (-I*b*h*x^2 + b*x^3
 - I*b*g*x - I*b*f)*log(-2*c^2*x^2 - 2*sqrt(c^2*x^2 - 1)*c*x + 1))/(x*e + d
), x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\,\mathrm{asin}\,(cx))\,(f + gx + hx^2 + ix^3)}{d + ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x**3+h*x**2+g*x+f)*(a+b*asin(c*x))/(e*x+d),x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x + h*x**2 + i*x**3)/(d + e*x), x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d),x, algorithm="giac"
)
```

```
[Out] integrate((i*x^3 + h*x^2 + g*x + f)*(b*arcsin(c*x) + a)/(e*x + d), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\mathrm{asin}(c\,x))\,\left(i\,x^3 + h\,x^2 + g\,x + f\right)}{d + e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(f + g*x + h*x^2 + i*x^3))/(d + e*x),x)
```

```
[Out] int(((a + b*asin(c*x))*(f + g*x + h*x^2 + i*x^3))/(d + e*x), x)
```

3.110 $\int \frac{(f+gx+hx^2+ix^3)(a+b\text{ArcSin}(cx))}{(d+ex)^2}\,dx$

Optimal. Leaf size=617

$$\frac{b(eh-2di)\sqrt{1-c^2x^2}}{ce^3}+\frac{bix\sqrt{1-c^2x^2}}{4ce^2}-\frac{bi\text{ArcSin}(cx)}{4c^2e^2}-\frac{ib(e^2g-2deh+3d^2i)\,\text{ArcSin}(cx)^2}{2e^4}+\frac{(eh-2di)x(a\cdots}{}$$

```
[Out] -1/4*b*i*arcsin(c*x)/c^2/e^2-1/2*I*b*(3*d^2*i-2*d*e*h+e^2*g)*arcsin(c*x)^2/
e^4+(-2*d*i+e*h)*x*(a+b*arcsin(c*x))/e^3+1/2*i*x^2*(a+b*arcsin(c*x))/e^2-(-
d^3*i+d^2*e*h-d*e^2*g+e^3*f)*(a+b*arcsin(c*x))/e^4/(e*x+d)-b*(3*d^2*i-2*d*e
*h+e^2*g)*arcsin(c*x)*ln(e*x+d)/e^4+(3*d^2*i-2*d*e*h+e^2*g)*(a+b*arcsin(c*x
))*ln(e*x+d)/e^4+b*(3*d^2*i-2*d*e*h+e^2*g)*arcsin(c*x)*ln(1-I*e*(I*c*x+(-c^
2*x^2+1)^(1/2))/(c*d-(c^2*d^2-e^2)^(1/2)))/e^4+b*(3*d^2*i-2*d*e*h+e^2*g)*ar
csin(c*x)*ln(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d+(c^2*d^2-e^2)^(1/2)))/e^
4-I*b*(3*d^2*i-2*d*e*h+e^2*g)*polylog(2,I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d
-(c^2*d^2-e^2)^(1/2)))/e^4-I*b*(3*d^2*i-2*d*e*h+e^2*g)*polylog(2,I*e*(I*c*x
+(-c^2*x^2+1)^(1/2))/(c*d+(c^2*d^2-e^2)^(1/2)))/e^4+b*c*(-d^3*i+d^2*e*h-d*e
^2*g+e^3*f)*arctan((c^2*d*x+e)/(c^2*d^2-e^2)^(1/2)/(-c^2*x^2+1)^(1/2))/e^4/
(c^2*d^2-e^2)^(1/2)+b*(-2*d*i+e*h)*(-c^2*x^2+1)^(1/2)/c/e^3+1/4*b*i*x*(-c^2
*x^2+1)^(1/2)/c/e^2
```

Rubi [A]

time = 1.12, antiderivative size = 617, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 15, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.484$, Rules used = {1864, 4837, 12, 6874, 267, 327, 222, 739, 210, 2451, 4825, 4615, 2221, 2317, 2438}

$$\frac{\log(d+ex)(a+b\text{ArcSin}(cx))\left(3d^2i-2deh+e^2g\right)}{e^4}-\frac{(a+b\text{ArcSin}(cx))\left(d^3(-i)+d^2eh-de^2g+e^3f\right)}{e^4(d+ex)}+\frac{x(eh-2di)(a+b\text{ArcSin}(cx))}{e^3}+\frac{ix^2(a+b\text{ArcSin}(cx))}{2e^2}-\frac{ib\left(3d^2i-2deh+e^2g\right)\text{Li}_2\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^4}-\frac{ib\left(3d^2i-2deh+e^2g\right)\text{Li}_2\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)}{e^4}+\frac{b\text{ArcSin}(cx)\left(3d^2i-2deh+e^2g\right)\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^4}+\frac{b\text{ArcSin}(cx)\left(3d^2i-2deh+e^2g\right)\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e^4}-\frac{bi\text{ArcSin}(cx)}{4c^2e^2}-\frac{ib\text{ArcSin}(cx)^2\left(3d^2i-2deh+e^2g\right)}{2e^4}-\frac{b\text{ArcSin}(cx)\log(d+ex)\left(3d^2i-2deh+e^2g\right)}{e^4}+\frac{bc\text{ArcTan}\left(\frac{c^2dx+e}{\sqrt{1-c^2x^2}\sqrt{c^2d^2-e^2}}\right)\left(d^3(-i)+d^2eh-de^2g+e^3f\right)}{e^4\sqrt{c^2d^2-e^2}}+\frac{b\sqrt{1-c^2x^2}(eh-2di)}{ce^3}+\frac{bix\sqrt{1-c^2x^2}}{4ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]))/(d + e*x)^2,x]
```

```
[Out] (b*(e*h - 2*d*i)*Sqrt[1 - c^2*x^2])/(c*e^3) + (b*i*x*Sqrt[1 - c^2*x^2])/(4*
c*e^2) - (b*i*ArcSin[c*x])/(4*c^2*e^2) - ((I/2)*b*(e^2*g - 2*d*e*h + 3*d^2*
i)*ArcSin[c*x]^2)/e^4 + ((e*h - 2*d*i)*x*(a + b*ArcSin[c*x]))/e^3 + (i*x^2*
(a + b*ArcSin[c*x]))/(2*e^2) - ((e^3*f - d*e^2*g + d^2*e*h - d^3*i)*(a + b*
ArcSin[c*x]))/(e^4*(d + e*x)) + (b*c*(e^3*f - d*e^2*g + d^2*e*h - d^3*i)*Ar
cTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(e^4*Sqrt[c^2*
d^2 - e^2]) + (b*(e^2*g - 2*d*e*h + 3*d^2*i)*ArcSin[c*x]*Log[1 - (I*e*E^(I*
ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^4 + (b*(e^2*g - 2*d*e*h + 3*d
^2*i)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2
])])/e^4 - (b*(e^2*g - 2*d*e*h + 3*d^2*i)*ArcSin[c*x]*Log[d + e*x])/e^4 + (
(e^2*g - 2*d*e*h + 3*d^2*i)*(a + b*ArcSin[c*x])*Log[d + e*x])/e^4 - (I*b*(e
```

```
^2*g - 2*d*e*h + 3*d^2*i)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^
2*d^2 - e^2])])/e^4 - (I*b*(e^2*g - 2*d*e*h + 3*d^2*i)*PolyLog[2, (I*e*E^(I
*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^4
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 739

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 1864

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_.), x_Symbol] :> Int[ExpandIntegrand
[Pq*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, n}, x] && PolyQ[Pq, x] && (IGtQ[p
, 0] || EqQ[n, 1])
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2451

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 4615

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Int[(e + f*x)^m*(E^(I*(c + d*x))/(a - Rt[a^2 - b^2, 2] - I*b*E^(
I*(c + d*x)))), x] + Int[(e + f*x)^m*(E^(I*(c + d*x))/(a + Rt[a^2 - b^2, 2]
 - I*b*E^(I*(c + d*x)))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0]
 && PosQ[a^2 - b^2]
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[(a + b*x)^n*(Cos[x]/(c*d + e*Sin[x])), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4837

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(f+gx+hx^2+110x^3)(a+b\sin^{-1}(cx))}{(d+ex)^2}\,dx = -\frac{(220d-eh)x(a+b\sin^{-1}(cx))}{e^3}+\frac{55x^2(a+b\sin^{-1}(cx))}{e^2}$$

$$= -\frac{(220d-eh)x(a+b\sin^{-1}(cx))}{e^3}+\frac{55x^2(a+b\sin^{-1}(cx))}{e^2}$$

$$= -\frac{(220d-eh)x(a+b\sin^{-1}(cx))}{e^3}+\frac{55x^2(a+b\sin^{-1}(cx))}{e^2}$$

$$= -\frac{(220d-eh)x(a+b\sin^{-1}(cx))}{e^3}+\frac{55x^2(a+b\sin^{-1}(cx))}{e^2}$$

$$= \frac{55b(d+ex)\sqrt{1-c^2x^2}}{2ce^3}-\frac{(220d-eh)x(a+b\sin^{-1}(cx))}{e^3}$$

$$= -\frac{b(495d-2eh)\sqrt{1-c^2x^2}}{2ce^3}+\frac{55b(d+ex)\sqrt{1-c^2x^2}}{2ce^3}-$$

$$= -\frac{b(495d-2eh)\sqrt{1-c^2x^2}}{2ce^3}+\frac{55b(d+ex)\sqrt{1-c^2x^2}}{2ce^3}-$$

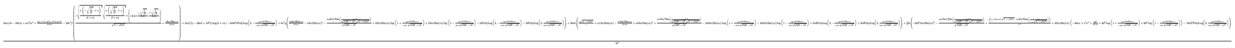
$$= -\frac{b(495d-2eh)\sqrt{1-c^2x^2}}{2ce^3}+\frac{55b(d+ex)\sqrt{1-c^2x^2}}{2ce^3}-$$

$$= -\frac{b(495d-2eh)\sqrt{1-c^2x^2}}{2ce^3}+\frac{55b(d+ex)\sqrt{1-c^2x^2}}{2ce^3}-$$

$$= -\frac{b(495d-2eh)\sqrt{1-c^2x^2}}{2ce^3}+\frac{55b(d+ex)\sqrt{1-c^2x^2}}{2ce^3}-$$

Mathematica [C] Result contains higher order function than in optimal. Order 6 vs. order 4 in optimal.

time = 3.40, size = 1168, normalized size = 1.89



Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]))/(d + e*x)^2,x]
```

```
[Out] (2*a*e*(e*h - 2*d*i)*x + a*e^2*i*x^2 + (2*a*(-(e^3*f) + d*e^2*g - d^2*e*h +
 d^3*i))/(d + e*x) - 2*b*e^2*f*((c*Sqrt[(e*(-Sqrt[c^(-2)] + x))/(d + e*x)]*
Sqrt[(e*(Sqrt[c^(-2)] + x))/(d + e*x)]*AppellF1[1, 1/2, 1/2, 2, (d - Sqrt[c
^(-2)]*e)/(d + e*x), (d + Sqrt[c^(-2)]*e)/(d + e*x)])/Sqrt[1 - c^2*x^2] + (
e*ArcSin[c*x])/(d + e*x)) + 2*a*(e^2*g - 2*d*e*h + 3*d^2*i)*Log[d + e*x] -
(6*I)*b*d^2*i*PolyLog[2, ((-I)*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2
- e^2])] + b*e^2*g*((2*d*ArcSin[c*x])/(d + e*x) - I*ArcSin[c*x]^2 - (2*c*d*
ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/Sqrt[c^2*d^2
 - e^2] + 2*ArcSin[c*x]*Log[1 + (I*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*
d^2 - e^2])] + 2*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^
2*d^2 - e^2])] - (2*I)*PolyLog[2, ((-I)*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt
[c^2*d^2 - e^2])] - (2*I)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^
2*d^2 - e^2])]) + 2*b*e*h*((e*Sqrt[1 - c^2*x^2])/c + e*x*ArcSin[c*x] - (d^2
*ArcSin[c*x])/(d + e*x) + I*d*ArcSin[c*x]^2 + (c*d^2*ArcTan[(e + c^2*d*x)/(
Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/Sqrt[c^2*d^2 - e^2] - 2*d*ArcSin[c
*x]*Log[1 + (I*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] - 2*d*A
rcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])] + (
2*I)*d*PolyLog[2, ((-I)*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])
] + (2*I)*d*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]
) + (b*i*((-6*I)*d^2*ArcSin[c*x]^2 - (4*c*d^3*ArcTan[(e + c^2*d*x)/(Sqrt[c^
2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/Sqrt[c^2*d^2 - e^2] + (e*(c*(-8*d + e*x)*
Sqrt[1 - c^2*x^2] - 2*e*ArcTan[(c*x)/(-1 + Sqrt[1 - c^2*x^2])]))/c^2 + 2*Ar
cSin[c*x]*(-4*d*e*x + e^2*x^2 + (2*d^3)/(d + e*x) + 6*d^2*Log[1 + (I*e*E^(I
*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] + 6*d^2*Log[1 - (I*e*E^(I*Ar
cSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]) - (12*I)*d^2*PolyLog[2, (I*e*E^(I
*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]))/2)/(2*e^4)
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 2985 vs. 2(616) = 1232.
time = 3.27, size = 2986, normalized size = 4.84

method	result	size
derivativedivides	Expression too large to display	2986
default	Expression too large to display	2986

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^2,x,method=_RETURNVERBOSE
)
```

[Out] 1/c*(-a*c^2/e^3/(c*e*x+c*d)*d^2*h-2*a*c/e^3*ln(c*e*x+c*d)*d*h+b*arcsin(c*x)
*h/e^2*c*x+a*c^2/e^2/(c*e*x+c*d)*d*g-2*b/e^3*arcsin(c*x)*d*i*c*x+1/4*b/e^2*
i*(-c^2*x^2+1)^(1/2)*x+1/2*b*c/e^2*i*arcsin(c*x)*x^2+b*c^2*arcsin(c*x)/e^4/
(c*e*x+c*d)*d^3*i-3/2*I*b*c*arcsin(c*x)^2/e^4*d^2*i-1/4*b/c/e^2*i*arcsin(c*
x)-2*b/e^3*(-c^2*x^2+1)^(1/2)*d*i-b*c^2*arcsin(c*x)/e/(c*e*x+c*d)*f+3*I*b*c
/e^2*d^2*i/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^
2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-3*I*b*c^3/e^4*d^4*i/(c^2*d^2-e^
2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(
-c^2*d^2+e^2)^(1/2)))+3*I*b*c/e^2*d^2*i/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x
+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+2*
I*b*c^2/e^4*d^3*i/(c^2*d^2-e^2)^(1/2)*arctanh(1/2*(2*I*e*(I*c*x+(-c^2*x^2+1
)^(1/2))-2*d*c)/(c^2*d^2-e^2)^(1/2))-3*I*b*c^3/e^4*d^4*i/(c^2*d^2-e^2)*dilo
g((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^
2+e^2)^(1/2)))+3*b*c^3/e^4*d^4*i*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c
*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+
3*b*c^3/e^4*d^4*i*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)
^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-3*b*c/e^2*d^2*i
*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2
+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-3*b*c/e^2*d^2*i*arcsin(c*x)/(c^2
*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d
*c+(-c^2*d^2+e^2)^(1/2)))-2*I*b/e^3*c^2*d^2*h/(c^2*d^2-e^2)^(1/2)*arctanh(1
/2*(2*I*e*(I*c*x+(-c^2*x^2+1)^(1/2))-2*d*c)/(c^2*d^2-e^2)^(1/2))-2*I*b/e*c*
d*h/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^
(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+2*I*b/e^3*c^3*d^3*h/(c^2*d^2-e^2)*dilo
g((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^
2+e^2)^(1/2)))+2*I*b/e^3*c^3*d^3*h/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^
2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-2*I*b/e
*c*d*h/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^
2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-2*b/e^3*c^3*d^3*h*arcsin(c*x)/(c^2*
d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*
c-(-c^2*d^2+e^2)^(1/2)))-2*b/e^3*c^3*d^3*h*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*
d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2
)^(1/2)))+2*b/e*c*d*h*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^
2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+2*b/e*c*d*h
*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2
+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+b*h/e^2*(-c^2*x^2+1)^(1/2)-a*c^2
/e/(c*e*x+c*d)*f+a*c*g/e^2*ln(c*e*x+c*d)+I*b*c*g/(c^2*d^2-e^2)*dilog((I*d*c
+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(
1/2)))-b*c*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2
))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-b*c*g*arcsin(c*x)/(c
^2*d^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I
*d*c+(-c^2*d^2+e^2)^(1/2)))+I*b*c*g/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c
^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-1/2*I*
b*c*g*arcsin(c*x)^2/e^2+3*a*c/e^4*ln(c*e*x+c*d)*d^2*i+1/2*a*c/e^2*i*x^2-2*a
/e^3*d*i*c*x+a*c^2/e^4/(c*e*x+c*d)*d^3*i+b*c^3/e^2*d^2*g*arcsin(c*x)/(c^2*d

```
^2-e^2)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c
-(-c^2*d^2+e^2)^(1/2)))+b*c^3/e^2*d^2*g*arcsin(c*x)/(c^2*d^2-e^2)*ln((I*d*c
+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(
1/2)))+2*I*b*c^2/e^2*d*g/(c^2*d^2-e^2)^(1/2)*arctanh(1/2*(2*I*e*(I*c*x+(-c^
2*x^2+1)^(1/2))-2*d*c)/(c^2*d^2-e^2)^(1/2))+b*c^2*arcsin(c*x)/e^2/(c*e*x+c*
d)*d*g-2*I*b*c^2/e*f/(c^2*d^2-e^2)^(1/2)*arctanh(1/2*(2*I*e*(I*c*x+(-c^2*x^
2+1)^(1/2))-2*d*c)/(c^2*d^2-e^2)^(1/2))+a*h/e^2*c*x-I*b*c^3/e^2*d^2*g/(c^2*
d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I
*d*c+(-c^2*d^2+e^2)^(1/2)))-I*b*c^3/e^2*d^2*g/(c^2*d^2-e^2)*dilog((I*d*c+e*
(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2
)))-b*arcsin(c*x)*c^2/e^3/(c*e*x+c*d)*d^2*h+I*b*c*arcsin(c*x)^2/e^3*d*h)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^2,x, algorithm="max
ima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c*d-%e>0)', see `assume?` for more
details
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^2,x, algorithm="fri
cas")
```

```
[Out] integral(1/2*(2*a*h*x^2 + 2*I*a*x^3 + 2*a*g*x + 2*a*f + (-I*b*h*x^2 + b*x^3
 - I*b*g*x - I*b*f)*log(-2*c^2*x^2 - 2*sqrt(c^2*x^2 - 1)*c*x + 1))/(x^2*e^2
 + 2*d*x*e + d^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}{(cx)}) (f + gx + hx^2 + ix^3)}{(d + ex)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x**3+h*x**2+g*x+f)*(a+b*asin(c*x))/(e*x+d)**2,x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x + h*x**2 + i*x**3)/(d + e*x)**2, x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^2,x, algorithm="gia
c")
```

```
[Out] integrate((i*x^3 + h*x^2 + g*x + f)*(b*arcsin(c*x) + a)/(e*x + d)^2, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))\,\left(i\,x^3+h\,x^2+g\,x+f\right)}{{(d+e\,x)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(f + g*x + h*x^2 + i*x^3))/(d + e*x)^2,x)
```

```
[Out] int(((a + b*asin(c*x))*(f + g*x + h*x^2 + i*x^3))/(d + e*x)^2, x)
```

3.111 $\int \frac{(f+gx+hx^2+ix^3)(a+b\textbf{ArcSin}(cx))}{(d+ex)^3}\,dx$

Optimal. Leaf size=1016

$$\frac{bi\sqrt{1-c^2x^2}}{ce^3}+\frac{5bcd^3i\sqrt{1-c^2x^2}}{2e^3\left(c^2d^2-e^2\right)(d+ex)}-\frac{bcd^2(3eh+4di)\sqrt{1-c^2x^2}}{2e^3\left(c^2d^2-e^2\right)(d+ex)}+\frac{bcd(e^2g+4deh-4d^2i)\sqrt{1-c^2x^2}}{2e^3\left(c^2d^2-e^2\right)(d+ex)}+$$

```
[Out] -I*b*(-3*d*i+e*h)*polylog(2,I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d-(c^2*d^2-e^
2)^(1/2)))/e^4+i*x*(a+b*arcsin(c*x))/e^3-1/2*(-d^3*i+d^2*e*h-d*e^2*g+e^3*f)
*(a+b*arcsin(c*x))/e^4/(e*x+d)^2-(3*d^2*i-2*d*e*h+e^2*g)*(a+b*arcsin(c*x))/
e^4/(e*x+d)+5/2*b*c^3*d^4*i*arctan((c^2*d*x+e)/(c^2*d^2-e^2)^(1/2)/(-c^2*x^
2+1)^(1/2))/e^4/(c^2*d^2-e^2)^(3/2)-1/2*b*c*d^2*(3*c^2*d*h+4*e*i)*arctan((c
^2*d*x+e)/(c^2*d^2-e^2)^(1/2)/(-c^2*x^2+1)^(1/2))/e^3/(c^2*d^2-e^2)^(3/2)+1
/2*b*c*d*(4*e^2*(-2*d*i+e*h)+c^2*(4*d^3*i+d*e^2*g))*arctan((c^2*d*x+e)/(c^2
*d^2-e^2)^(1/2)/(-c^2*x^2+1)^(1/2))/e^4/(c^2*d^2-e^2)^(3/2)-1/2*b*c*(2*e^4*
g-6*d^2*e^2*i-c^2*(-4*d^4*i+d*e^3*f))*arctan((c^2*d*x+e)/(c^2*d^2-e^2)^(1/2
)/(-c^2*x^2+1)^(1/2))/e^4/(c^2*d^2-e^2)^(3/2)-b*(-3*d*i+e*h)*arcsin(c*x)*ln
(e*x+d)/e^4+(-3*d*i+e*h)*(a+b*arcsin(c*x))*ln(e*x+d)/e^4+b*(-3*d*i+e*h)*arc
sin(c*x)*ln(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d-(c^2*d^2-e^2)^(1/2)))/e^4
+b*(-3*d*i+e*h)*arcsin(c*x)*ln(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d+(c^2*d
^2-e^2)^(1/2)))/e^4-1/2*I*b*(-3*d*i+e*h)*arcsin(c*x)^2/e^4-I*b*(-3*d*i+e*h)
*polylog(2,I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d+(c^2*d^2-e^2)^(1/2)))/e^4+b*
i*(-c^2*x^2+1)^(1/2)/c/e^3+5/2*b*c*d^3*i*(-c^2*x^2+1)^(1/2)/e^3/(c^2*d^2-e^
2)/(e*x+d)-1/2*b*c*d^2*(4*d*i+3*e*h)*(-c^2*x^2+1)^(1/2)/e^3/(c^2*d^2-e^2)/(
e*x+d)+1/2*b*c*d*(-4*d^2*i+4*d*e*h+e^2*g)*(-c^2*x^2+1)^(1/2)/e^3/(c^2*d^2-e
^2)/(e*x+d)+1/2*b*c*(2*d^3*i-2*d*e^2*g+e^3*f)*(-c^2*x^2+1)^(1/2)/e^3/(c^2*d
^2-e^2)/(e*x+d)
```

Rubi [A]
time = 1.90, antiderivative size = 1016, normalized size of antiderivative = 1.00, number of steps used = 30, number of rules used = 18, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.581$, Rules used = {1864, 4837, 12, 6874, 745, 739, 210, 821, 1665, 858, 222, 1668, 2451, 4825, 4615, 2221, 2317, 2438}

Antiderivative was successfully verified.

```
[In] Int[((f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]))/(d + e*x)^3,x]
```

```
[Out] (b*i*Sqrt[1 - c^2*x^2])/(c*e^3) + (5*b*c*d^3*i*Sqrt[1 - c^2*x^2])/(2*e^3*(c
^2*d^2 - e^2)*(d + e*x)) - (b*c*d^2*(3*e*h + 4*d*i)*Sqrt[1 - c^2*x^2])/(2*e
^3*(c^2*d^2 - e^2)*(d + e*x)) + (b*c*d*(e^2*g + 4*d*e*h - 4*d^2*i)*Sqrt[1 -
 c^2*x^2])/(2*e^3*(c^2*d^2 - e^2)*(d + e*x)) + (b*c*(e^3*f - 2*d*e^2*g + 2*
```

```
d^3*i)*Sqrt[1 - c^2*x^2])/(2*e^3*(c^2*d^2 - e^2)*(d + e*x)) - ((I/2)*b*(e*h
 - 3*d*i)*ArcSin[c*x]^2)/e^4 + (i*x*(a + b*ArcSin[c*x]))/e^3 - ((e^3*f - d*
e^2*g + d^2*e*h - d^3*i)*(a + b*ArcSin[c*x]))/(2*e^4*(d + e*x)^2) - ((e^2*g
 - 2*d*e*h + 3*d^2*i)*(a + b*ArcSin[c*x]))/(e^4*(d + e*x)) + (5*b*c^3*d^4*i
*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(2*e^4*(c^2
*d^2 - e^2)^(3/2)) - (b*c*d^2*(3*c^2*d*h + 4*e*i)*ArcTan[(e + c^2*d*x)/(Sqr
t[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(2*e^3*(c^2*d^2 - e^2)^(3/2)) + (b*c*
d*(4*e^2*(e*h - 2*d*i) + c^2*(d*e^2*g + 4*d^3*i))*ArcTan[(e + c^2*d*x)/(Sqr
t[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(2*e^4*(c^2*d^2 - e^2)^(3/2)) - (b*c*
(2*e^4*g - 6*d^2*e^2*i - c^2*(d*e^3*f - 4*d^4*i))*ArcTan[(e + c^2*d*x)/(Sqr
t[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(2*e^4*(c^2*d^2 - e^2)^(3/2)) + (b*(e
*h - 3*d*i)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2
 - e^2])])/e^4 + (b*(e*h - 3*d*i)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]
))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^4 - (b*(e*h - 3*d*i)*ArcSin[c*x]*Log[d +
 e*x])/e^4 + ((e*h - 3*d*i)*(a + b*ArcSin[c*x])*Log[d + e*x])/e^4 - (I*b*(e
*h - 3*d*i)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])]
)/e^4 - (I*b*(e*h - 3*d*i)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c
^2*d^2 - e^2])])/e^4
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 739

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 745

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
e*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1)/((m + 1)*(c*d^2 + a*e^2))), x] + D
ist[c*(d/(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; F
```

```
reeQ[{a, c, d, e, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[m + 2*p + 3, 0]
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(-(e*f - d*g))*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1
)/(2*(p + 1)*(c*d^2 + a*e^2))), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2),
Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m,
p}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 858

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rule 1665

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :>
 With[{Q = PolynomialQuotient[Pq, d + e*x, x], R = PolynomialRemainder[Pq,
d + e*x, x]}, Simp[(e*R*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*
d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)
*(a + c*x^2)^p*ExpandToSum[(m + 1)*(c*d^2 + a*e^2)*Q + c*d*R*(m + 1) - c*e*
R*(m + 2*p + 3)*x, x], x], x]] /; FreeQ[{a, c, d, e, p}, x] && PolyQ[Pq, x]
 && NeQ[c*d^2 + a*e^2, 0] && LtQ[m, -1]
```

Rule 1668

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :
> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[f*(d + e*x)
^(m + q - 1)*((a + c*x^2)^(p + 1)/(c*e^(q - 1)*(m + q + 2*p + 1))), x] + Di
st[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + c*x^2)^p*ExpandToSum[c
*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1)*(d + e*x)^q - f*(d + e*x)
^(q - 2)*(a*e^2*(m + q - 1) - c*d^2*(m + q + 2*p + 1) - 2*c*d*e*(m + q + p)
*x), x], x], x] /; GtQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, c, d,
 e, m, p}, x] && PolyQ[Pq, x] && NeQ[c*d^2 + a*e^2, 0] &&  !(EqQ[d, 0] && T
rue) &&  !(IGtQ[m, 0] && RationalQ[a, c, d, e] && (IntegerQ[p] || ILtQ[p +
1/2, 0]))
```

Rule 1864

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_.), x_Symbol] :> Int[ExpandIntegrand
[Pq*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, n}, x] && PolyQ[Pq, x] && (IGtQ[p
, 0] || EqQ[n, 1])
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2451

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 4615

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Int[(e + f*x)^m*(E^(I*(c + d*x))/(a - Rt[a^2 - b^2, 2] - I*b*E^(
I*(c + d*x)))), x] + Int[(e + f*x)^m*(E^(I*(c + d*x))/(a + Rt[a^2 - b^2, 2]
 - I*b*E^(I*(c + d*x)))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0]
 && PosQ[a^2 - b^2]
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[(a + b*x)^n*(Cos[x]/(c*d + e*Sin[x])), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4837

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
```

```
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(f+gx+hx^2+111x^3)(a+b\sin^{-1}(cx))}{(d+ex)^3}\,dx = \frac{111x(a+b\sin^{-1}(cx))}{e^3} + \frac{(111d^3-e^3f+de^2g-d^2eh)(a}{2e^4(d+ex)^2}$$

$$= \frac{111x(a+b\sin^{-1}(cx))}{e^3} + \frac{(111d^3-e^3f+de^2g-d^2eh)(a}{2e^4(d+ex)^2}$$

$$= \frac{111x(a+b\sin^{-1}(cx))}{e^3} + \frac{(111d^3-e^3f+de^2g-d^2eh)(a}{2e^4(d+ex)^2}$$

$$= \frac{111x(a+b\sin^{-1}(cx))}{e^3} + \frac{(111d^3-e^3f+de^2g-d^2eh)(a}{2e^4(d+ex)^2}$$

$$= \frac{555bcd^3\sqrt{1-c^2x^2}}{2e^3(c^2d^2-e^2)(d+ex)} + \frac{bc(222d^3+e^3f-2de^2g)\sqrt{1-}}{2e^3(c^2d^2-e^2)(d+ex)}$$

$$= \frac{111b\sqrt{1-c^2x^2}}{ce^3} + \frac{555bcd^3\sqrt{1-c^2x^2}}{2e^3(c^2d^2-e^2)(d+ex)} + \frac{bc(222d^3+}{2e^3(}$$

$$= \frac{111b\sqrt{1-c^2x^2}}{ce^3} + \frac{555bcd^3\sqrt{1-c^2x^2}}{2e^3(c^2d^2-e^2)(d+ex)} + \frac{bc(222d^3+}{2e^3(}$$

$$= \frac{111b\sqrt{1-c^2x^2}}{ce^3} + \frac{555bcd^3\sqrt{1-c^2x^2}}{2e^3(c^2d^2-e^2)(d+ex)} + \frac{bc(222d^3+}{2e^3(}$$

$$= \frac{111b\sqrt{1-c^2x^2}}{ce^3} + \frac{555bcd^3\sqrt{1-c^2x^2}}{2e^3(c^2d^2-e^2)(d+ex)} + \frac{bc(222d^3+}{2e^3(}$$

$$= \frac{111b\sqrt{1-c^2x^2}}{ce^3} + \frac{555bcd^3\sqrt{1-c^2x^2}}{2e^3(c^2d^2-e^2)(d+ex)} + \frac{bc(222d^3+}{2e^3(}$$

Mathematica [C] Result contains higher order function than in optimal. Order 6 vs. order 4 in optimal.
time = 6.09, size = 1556, normalized size = 1.53

[illegible]

Warning: Unable to verify antiderivative.

```
[In] Integrate[((f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]))/(d + e*x)^3,x]
```

```
[Out] (a*i*x)/e^3 + (-(a*e^3*f) + a*d*e^2*g - a*d^2*e*h + a*d^3*i)/(2*e^4*(d + e*
x)^2) + (-(a*e^2*g) + 2*a*d*e*h - 3*a*d^2*i)/(e^4*(d + e*x)) + b*f*(-1/4*(c
*Sqrt[1 + (-d - Sqrt[c^(-2)]*e)/(d + e*x)]*Sqrt[1 + (-d + Sqrt[c^(-2)]*e)/(
d + e*x)]*AppellF1[2, 1/2, 1/2, 3, -((-d + Sqrt[c^(-2)]*e)/(d + e*x)), -((-
d - Sqrt[c^(-2)]*e)/(d + e*x))])/(e^2*(d + e*x)*Sqrt[1 - c^2*x^2]) - ArcSin
[c*x]/(2*e*(d + e*x)^2)) + ((a*e*h - 3*a*d*i)*Log[d + e*x])/e^4 + b*g*((-(A
rcSin[c*x]/(d + e*x)) + (c*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1
 - c^2*x^2])])/Sqrt[c^2*d^2 - e^2])/e^2 - (d*((c*Sqrt[1 - c^2*x^2])/((c^2*d
^2 - e^2)*(d + e*x)) - ArcSin[c*x]/(e*(d + e*x)^2) - (I*c^3*d*(Log[4] + Log
[(e^2*Sqrt[c^2*d^2 - e^2]*(I*e + I*c^2*d*x + Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c
^2*x^2]))/(c^3*d*(d + e*x))]))/((c*d - e)*e*(c*d + e)*Sqrt[c^2*d^2 - e^2]))
)/(2*e)) + b*i*((Sqrt[1 - c^2*x^2] + c*x*ArcSin[c*x])/(c*e^3) + (3*d^2*(-(A
rcSin[c*x]/(d + e*x)) + (c*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1
 - c^2*x^2])])/Sqrt[c^2*d^2 - e^2]))/e^4 - (d^3*((c*Sqrt[1 - c^2*x^2])/((c^
2*d^2 - e^2)*(d + e*x)) - ArcSin[c*x]/(e*(d + e*x)^2) - (I*c^3*d*(Log[4] +
Log[(e^2*Sqrt[c^2*d^2 - e^2]*(I*e + I*c^2*d*x + Sqrt[c^2*d^2 - e^2]*Sqrt[1
- c^2*x^2]))/(c^3*d*(d + e*x))]))/((c*d - e)*e*(c*d + e)*Sqrt[c^2*d^2 - e^2
])))/(2*e^3) - (3*d*(((-1/2*I)*ArcSin[c*x]^2)/e + (ArcSin[c*x]*Log[1 - (I*e
*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e + (ArcSin[c*x]*Log[1 -
(I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e - (I*PolyLog[2, ((-
I)*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])])/e - (I*PolyLog[2,
(I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e))/e^3) + b*h*((-2*d
*(-(ArcSin[c*x]/(d + e*x)) + (c*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*S
qrt[1 - c^2*x^2])])/Sqrt[c^2*d^2 - e^2]))/e^3 + (d^2*((c*Sqrt[1 - c^2*x^2])
/((c^2*d^2 - e^2)*(d + e*x)) - ArcSin[c*x]/(e*(d + e*x)^2) - (I*c^3*d*(Log[
4] + Log[(e^2*Sqrt[c^2*d^2 - e^2]*(I*e + I*c^2*d*x + Sqrt[c^2*d^2 - e^2]*Sq
rt[1 - c^2*x^2]))/(c^3*d*(d + e*x))]))/((c*d - e)*e*(c*d + e)*Sqrt[c^2*d^2
- e^2])))/(2*e^2) + (((-1/2*I)*ArcSin[c*x]^2)/e + (ArcSin[c*x]*Log[1 - (I*e
*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e + (ArcSin[c*x]*Log[1 -
(I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e - (I*PolyLog[2, ((-
I)*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])])/e - (I*PolyLog[2,
(I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e)/e^2)
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 4585 vs. 2(979) = 1958.
time = 3.94, size = 4586, normalized size = 4.51

method	result	size
derivativedivides	Expression too large to display	4586
default	Expression too large to display	4586

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^3,x,method=_RETURNVERBOSE
)
```

```
[Out] 1/c*(-2*b*c^3/(c^2*d^2-e^2)/(c*e*x+c*d)^2*arcsin(c*x)*d*h*x+1/2*b*c^4/(c^2*
d^2-e^2)/(c*e*x+c*d)^2*e*(-c^2*x^2+1)^(1/2)*f*x+b*c^3/(c^2*d^2-e^2)/(c*e*x+
c*d)^2*e*arcsin(c*x)*g*x+2*b*c^5/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^2*arcsin(c*x
)*d^3*h*x-b*c^5/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e*arcsin(c*x)*d^2*g*x+I*b*c^5/(
c^2*d^2-e^2)/(c*e*x+c*d)^2/e*d^2*g*x+1/2*b*c^4/(c^2*d^2-e^2)/(c*e*x+c*d)^2/
e*(-c^2*x^2+1)^(1/2)*d^2*h*x-I*b*c^5/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^2*d^3*h*
x-1/2*I*b*c^5/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e*d^2*h*x^2+5/2*b*c^3/(c^2*d^2-e^
2)/(c*e*x+c*d)^2/e^2*d^3*i*arcsin(c*x)-3*b/e^4/(c^2*d^2-e^2)^2*c^5*d^5*i*ar
csin(c*x)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d
*c-(-c^2*d^2+e^2)^(1/2)))-3*b/e^4/(c^2*d^2-e^2)^2*c^5*d^5*i*arcsin(c*x)*ln(
(I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+
e^2)^(1/2)))+6*b/e^2/(c^2*d^2-e^2)^2*c^3*d^3*i*arcsin(c*x)*ln((I*d*c+e*(I*c
*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+
6*I*b/e^2/(c^2*d^2-e^2)^(3/2)*c^2*d^2*i*arctanh(1/2*(2*I*e*(I*c*x+(-c^2*x^2
+1)^(1/2))-2*d*c)/(c^2*d^2-e^2)^(1/2))+3*I*b/e^4/(c^2*d^2-e^2)*c^3*d^3*i*ar
csin(c*x)^2-5*I*b/e^4/(c^2*d^2-e^2)^(3/2)*c^4*d^4*i*arctanh(1/2*(2*I*e*(I*c
*x+(-c^2*x^2+1)^(1/2))-2*d*c)/(c^2*d^2-e^2)^(1/2))+3*I*b/e^4/(c^2*d^2-e^2)^
2*c^5*d^5*i*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))
/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-6*I*b/e^2/(c^2*d^2-e^2)^2*c^3*d^3*i*dilog((I
*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^
2)^(1/2)))+3*I*b/e^4/(c^2*d^2-e^2)^2*c^5*d^5*i*dilog((I*d*c+e*(I*c*x+(-c^2*
x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+1/2*I*b*c
^5/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^4*d^5*i-6*I*b/e^2/(c^2*d^2-e^2)^2*c^3*d^3*
i*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-
c^2*d^2+e^2)^(1/2)))-3*a*c/e^4*ln(c*e*x+c*d)*d*i-1/2*a*c^3/e^3/(c*e*x+c*d)^
2*d^2*h-4*I*b*c^2/e/(c^2*d^2-e^2)^(3/2)*d*h*arctanh(1/2*(2*I*e*(I*c*x+(-c^2
*x^2+1)^(1/2))-2*d*c)/(c^2*d^2-e^2)^(1/2))-I*b*c^4/e^2/(c^2*d^2-e^2)^(3/2)*
d^2*g*arctanh(1/2*(2*I*e*(I*c*x+(-c^2*x^2+1)^(1/2))-2*d*c)/(c^2*d^2-e^2)^(1
/2))-1/2*I*b*c^5/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^3*d^4*h+1/2*I*b*c^5/(c^2*d^2
-e^2)/(c*e*x+c*d)^2/e^2*d^3*g-1/2*b*c^5/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^2*d^3
*g*arcsin(c*x)-1/2*b*c^5/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e*d^2*f*arcsin(c*x)+3*
I*b*c^4/e^3/(c^2*d^2-e^2)^(3/2)*h*d^3*arctanh(1/2*(2*I*e*(I*c*x+(-c^2*x^2+1
)^(1/2))-2*d*c)/(c^2*d^2-e^2)^(1/2))+2*I*b*c^3/e/(c^2*d^2-e^2)^2*d^2*h*dilo
g((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^
2+e^2)^(1/2)))-I*b*c^3/e^3/(c^2*d^2-e^2)*d^2*h*arcsin(c*x)^2+2*I*b*c^3/e/(c
```

```
^2*d^2-e^2)^2*d^2*h*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2
)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-3/2*b*c^3/(c^2*d^2-e^2)/(c*e*x+c*d)^
2/e*d^2*h*arcsin(c*x)-2*b*c^3/e/(c^2*d^2-e^2)^2*d^2*h*arcsin(c*x)*ln((I*d*c
+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(
1/2)))-2*b*c^3/e/(c^2*d^2-e^2)^2*d^2*h*arcsin(c*x)*ln((I*d*c+e*(I*c*x+(-c^2
*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+b*c^5/e^
3/(c^2*d^2-e^2)^2*h*d^4*arcsin(c*x)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-
(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+b*c^5/e^3/(c^2*d^2-e^2)
^2*h*d^4*arcsin(c*x)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^
(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+3/2*b*c^5/(c^2*d^2-e^2)/(c*e*x+c*d)^2/
e^3*d^4*h*arcsin(c*x)-I*b*c^4/e/(c^2*d^2-e^2)^(3/2)*d*f*arctanh(1/2*(2*I*e*
(I*c*x+(-c^2*x^2+1)^(1/2))-2*d*c)/(c^2*d^2-e^2)^(1/2))+1/2*b*c^4/(c^2*d^2-e
^2)/(c*e*x+c*d)^2/e^2*(-c^2*x^2+1)^(1/2)*d^3*h-1/2*b*c^4/(c^2*d^2-e^2)/(c*e
*x+c*d)^2/e*(-c^2*x^2+1)^(1/2)*d^2*g-1/2*I*b*c^5/(c^2*d^2-e^2)/(c*e*x+c*d)^
2/e*d^2*f-I*b*c^5/e^3/(c^2*d^2-e^2)^2*h*d^4*dilog((I*d*c+e*(I*c*x+(-c^2*x^2
+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-I*b*c^5/e^3/
(c^2*d^2-e^2)^2*h*d^4*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e
^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+a*c*h/e^3*ln(c*e*x+c*d)-1/2*a*c^3/
e/(c*e*x+c*d)^2*f-a*c^2/e^2/(c*e*x+c*d)*g+1/2*a*c^3/e^2/(c*e*x+c*d)^2*d*g+2
*a*c^2/e^3/(c*e*x+c*d)*d*h+1/2*I*b*c*h*arcsin(c*x)^2/e^3+2*I*b*c^2/(c^2*d^2
-e^2)^(3/2)*g*arctanh(1/2*(2*I*e*(I*c*x+(-c^2*x^2+1)^(1/2))-2*d*c)/(c^2*d^2
-e^2)^(1/2))-3*b/(c^2*d^2-e^2)^2*c*d*i*arcsin(c*x)*ln((I*d*c+e*(I*c*x+(-c^2
*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-3*b/(c^2
*d^2-e^2)^2*c*d*i*arcsin(c*x)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*
d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+3*I*b/(c^2*d^2-e^2)^2*c*d*i*d
ilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2
*d^2+e^2)^(1/2)))+3*I*b/(c^2*d^2-e^2)^2*c*d*i*dilog((I*d*c+e*(I*c*x+(-c^2*x
^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-3/2*I*b*c*
arcsin(c*x)^2/e^4*d*i-3*b*c^5/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^3*arcsin(c*x)*d
^4*i*x-1/2*b*c^4/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^2*(-c^2*x^2+1)^(1/2)*d^3*i*x
+3*b*c^3/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e*arcsin(c*x)*d^2*i*x+I*b*c^5/(c^2*d^2
-e^2)/(c*e*x+c*d)^2/e^3*d^4*i*x+1/2*I*b*c^5/(c^...
```

Maxima [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^3,x, algorithm="max
ima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c*d-%e>0)', see `assume?` for more
details
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^3,x, algorithm="fri
cas")
```

```
[Out] integral(1/2*(2*a*h*x^2 + 2*I*a*x^3 + 2*a*g*x + 2*a*f + (-I*b*h*x^2 + b*x^3
 - I*b*g*x - I*b*f)*log(-2*c^2*x^2 - 2*sqrt(c^2*x^2 - 1)*c*x + 1))/(x^3*e^3
 + 3*d*x^2*e^2 + 3*d^2*x*e + d^3), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(cx))(f + gx + hx^2 + ix^3)}{(d + ex)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x**3+h*x**2+g*x+f)*(a+b*asin(c*x))/(e*x+d)**3,x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x + h*x**2 + i*x**3)/(d + e*x)**3, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^3,x, algorithm="gia
c")
```

```
[Out] integrate((i*x^3 + h*x^2 + g*x + f)*(b*arcsin(c*x) + a)/(e*x + d)^3, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b \operatorname{asin}(c\,x))\,(i\,x^3 + h\,x^2 + g\,x + f)}{(d + e\,x)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(f + g*x + h*x^2 + i*x^3))/(d + e*x)^3,x)
```

```
[Out] int(((a + b*asin(c*x))*(f + g*x + h*x^2 + i*x^3))/(d + e*x)^3, x)
```

3.112 $\int \frac{(f+gx+hx^2+ix^3)(a+b\,\mathbf{ArcSin}(cx))}{(d+ex)^4}\,dx$

Optimal. Leaf size=1278

$$\frac{bc(2e^2f-3deg+6d^2h)\sqrt{1-c^2x^2}}{12e^2(c^2d^2-e^2)(d+ex)^2}-\frac{11bcd^3i\sqrt{1-c^2x^2}}{12e^3(c^2d^2-e^2)(d+ex)^2}+\frac{bcd^2(2eh+27di)\sqrt{1-c^2x^2}}{12e^3(c^2d^2-e^2)(d+ex)^2}+\frac{bcd(e^2g-6d}{12e^3(c}$$

```
[Out] -1/2*I*b*i*arcsin(c*x)^2/e^4-1/3*(-d^3*i+d^2*e*h-d*e^2*g+e^3*f)*(a+b*arcsin
(c*x))/e^4/(e*x+d)^3-1/2*(3*d^2*i-2*d*e*h+e^2*g)*(a+b*arcsin(c*x))/e^4/(e*x
+d)^2-(-3*d*i+e*h)*(a+b*arcsin(c*x))/e^4/(e*x+d)+1/12*b*c*(4*c^4*d^2*f+12*e
^2*h+c^2*(6*d^2*h-9*d*e*g+2*e^2*f))*arctan((c^2*d*x+e)/(c^2*d^2-e^2)^(1/2)/
(-c^2*x^2+1)^(1/2))/e/(c^2*d^2-e^2)^(5/2)-11/12*b*c^3*d^3*(2*c^2*d^2+e^2)*i
*arctan((c^2*d*x+e)/(c^2*d^2-e^2)^(1/2)/(-c^2*x^2+1)^(1/2))/e^4/(c^2*d^2-e^
2)^(5/2)+1/12*b*c^3*d^2*(4*c^2*d^2*h+e*(81*d*i+2*e*h))*arctan((c^2*d*x+e)/(
c^2*d^2-e^2)^(1/2)/(-c^2*x^2+1)^(1/2))/e^3/(c^2*d^2-e^2)^(5/2)+1/12*b*c*d*(
2*c^4*d^2*g-36*e^2*i+c^2*(-18*d^2*i-18*d*e*h+e^2*g))*arctan((c^2*d*x+e)/(c^
2*d^2-e^2)^(1/2)/(-c^2*x^2+1)^(1/2))/e^2/(c^2*d^2-e^2)^(5/2)-b*i*arcsin(c*x
)*ln(e*x+d)/e^4+i*(a+b*arcsin(c*x))*ln(e*x+d)/e^4+b*i*arcsin(c*x)*ln(1-I*e*
(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d-(c^2*d^2-e^2)^(1/2)))/e^4+b*i*arcsin(c*x)*l
n(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d+(c^2*d^2-e^2)^(1/2)))/e^4-I*b*i*pol
ylog(2,I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d+(c^2*d^2-e^2)^(1/2)))/e^4-I*b*i*
polylog(2,I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d-(c^2*d^2-e^2)^(1/2)))/e^4+1/1
2*b*c*(6*d^2*h-3*d*e*g+2*e^2*f)*(-c^2*x^2+1)^(1/2)/e^2/(c^2*d^2-e^2)/(e*x+d
)^2-11/12*b*c*d^3*i*(-c^2*x^2+1)^(1/2)/e^3/(c^2*d^2-e^2)/(e*x+d)^2+1/12*b*c
*d^2*(27*d*i+2*e*h)*(-c^2*x^2+1)^(1/2)/e^3/(c^2*d^2-e^2)/(e*x+d)^2+1/12*b*c
*d*(-18*d^2*i-6*d*e*h+e^2*g)*(-c^2*x^2+1)^(1/2)/e^3/(c^2*d^2-e^2)/(e*x+d)^2
-1/4*b*c*(2*e^2*(-4*d*h+e*g)-c^2*d*(-2*d^2*h-d*e*g+2*e^2*f))*(-c^2*x^2+1)^(
1/2)/e^2/(c^2*d^2-e^2)^2/(e*x+d)-11/4*b*c^3*d^4*i*(-c^2*x^2+1)^(1/2)/e^3/(c
^2*d^2-e^2)^2/(e*x+d)+1/4*b*c*d^2*(18*e^2*i+c^2*d*(9*d*i+2*e*h))*(-c^2*x^2+
1)^(1/2)/e^3/(c^2*d^2-e^2)^2/(e*x+d)-1/4*b*c*d*(4*e^2*(6*d*i+e*h)-c^2*d*(6*
d^2*i-2*d*e*h+e^2*g))*(-c^2*x^2+1)^(1/2)/e^3/(c^2*d^2-e^2)^2/(e*x+d)
```

Rubi [A]
time = 2.05, antiderivative size = 1278, normalized size of antiderivative = 1.00, number of steps used = 29, number of rules used = 17, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.548$, Rules used = {1864, 4837, 12, 6874, 759, 821, 739, 210, 849, 1665, 222, 2451, 4825, 4615, 2221, 2317, 2438}

Antiderivative was successfully verified.

```
[In] Int[((f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]))/(d + e*x)^4,x]
```

```
[Out] (b*c*(2*e^2*f - 3*d*e*g + 6*d^2*h)*Sqrt[1 - c^2*x^2])/(12*e^2*(c^2*d^2 - e^
2)*(d + e*x)^2) - (11*b*c*d^3*i*Sqrt[1 - c^2*x^2])/(12*e^3*(c^2*d^2 - e^2)*
(d + e*x)^2) + (b*c*d^2*(2*e*h + 27*d*i)*Sqrt[1 - c^2*x^2])/(12*e^3*(c^2*d^
2 - e^2)*(d + e*x)^2) + (b*c*d*(e^2*g - 6*d*e*h - 18*d^2*i)*Sqrt[1 - c^2*x^
2])/(12*e^3*(c^2*d^2 - e^2)*(d + e*x)^2) - (b*c*(2*e^2*(e*g - 4*d*h) - c^2*
d*(2*e^2*f - d*e*g - 2*d^2*h))*Sqrt[1 - c^2*x^2])/(4*e^2*(c^2*d^2 - e^2)^2*
(d + e*x)) - (11*b*c^3*d^4*i*Sqrt[1 - c^2*x^2])/(4*e^3*(c^2*d^2 - e^2)^2*(d
 + e*x)) + (b*c*d^2*(18*e^2*i + c^2*d*(2*e*h + 9*d*i))*Sqrt[1 - c^2*x^2])/(
4*e^3*(c^2*d^2 - e^2)^2*(d + e*x)) - (b*c*d*(4*e^2*(e*h + 6*d*i) - c^2*d*(e
^2*g - 2*d*e*h + 6*d^2*i))*Sqrt[1 - c^2*x^2])/(4*e^3*(c^2*d^2 - e^2)^2*(d +
 e*x)) - ((I/2)*b*i*ArcSin[c*x]^2)/e^4 - ((e^3*f - d*e^2*g + d^2*e*h - d^3*
i)*(a + b*ArcSin[c*x]))/(3*e^4*(d + e*x)^3) - ((e^2*g - 2*d*e*h + 3*d^2*i)*
(a + b*ArcSin[c*x]))/(2*e^4*(d + e*x)^2) - ((e*h - 3*d*i)*(a + b*ArcSin[c*x
]))/(e^4*(d + e*x)) + (b*c*(4*c^4*d^2*f + 12*e^2*h + c^2*(2*e^2*f - 9*d*e*g
 + 6*d^2*h))*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])
/(12*e*(c^2*d^2 - e^2)^(5/2)) - (11*b*c^3*d^3*(2*c^2*d^2 + e^2)*i*ArcTan[(e
 + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(12*e^4*(c^2*d^2 - e^
2)^(5/2)) + (b*c^3*d^2*(4*c^2*d^2*h + e*(2*e*h + 81*d*i))*ArcTan[(e + c^2*d
*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(12*e^3*(c^2*d^2 - e^2)^(5/2)
) + (b*c*d*(2*c^4*d^2*g - 36*e^2*i + c^2*(e^2*g - 18*d*e*h - 18*d^2*i))*Arc
Tan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(12*e^2*(c^2*d^
2 - e^2)^(5/2)) + (b*i*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - S
qrt[c^2*d^2 - e^2])])/e^4 + (b*i*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x])
)/(c*d + Sqrt[c^2*d^2 - e^2])])/e^4 - (b*i*ArcSin[c*x]*Log[d + e*x])/e^4 +
(i*(a + b*ArcSin[c*x])*Log[d + e*x])/e^4 - (I*b*i*PolyLog[2, (I*e*E^(I*ArcS
in[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^4 - (I*b*i*PolyLog[2, (I*e*E^(I*A
rcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^4
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 739

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
```

```
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 759

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
e*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1)/((m + 1)*(c*d^2 + a*e^2))), x] + D
ist[c/((m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)*Simp[d*(m + 1) - e*(
m + 2*p + 3)*x, x]*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, m, p}, x] &&
 NeQ[c*d^2 + a*e^2, 0] && NeQ[m, -1] && ((LtQ[m, -1] && IntQuadraticQ[a, 0,
 c, d, e, m, p, x]) || (SumSimplerQ[m, 1] && IntegerQ[p]) || ILtQ[Simplify[
m + 2*p + 3], 0])
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(-(e*f - d*g))*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1
)/(2*(p + 1)*(c*d^2 + a*e^2))), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2),
Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m,
p}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 849

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(e*f - d*g)*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1)/(
(m + 1)*(c*d^2 + a*e^2))), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 1665

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :>
 With[{Q = PolynomialQuotient[Pq, d + e*x, x], R = PolynomialRemainder[Pq,
d + e*x, x]}, Simp[(e*R*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*
d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)
*(a + c*x^2)^p*ExpandToSum[(m + 1)*(c*d^2 + a*e^2)*Q + c*d*R*(m + 1) - c*e*
R*(m + 2*p + 3)*x, x], x], x]] /; FreeQ[{a, c, d, e, p}, x] && PolyQ[Pq, x]
 && NeQ[c*d^2 + a*e^2, 0] && LtQ[m, -1]
```

Rule 1864

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_.), x_Symbol] :> Int[ExpandIntegrand
[Pq*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, n}, x] && PolyQ[Pq, x] && (IGtQ[p
```

```
, 0] || EqQ[n, 1])
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2451

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 4615

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Int[(e + f*x)^m*(E^(I*(c + d*x))/(a - Rt[a^2 - b^2, 2] - I*b*E^(
I*(c + d*x)))), x] + Int[(e + f*x)^m*(E^(I*(c + d*x))/(a + Rt[a^2 - b^2, 2]
 - I*b*E^(I*(c + d*x)))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0]
 && PosQ[a^2 - b^2]
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[(a + b*x)^n*(Cos[x]/(c*d + e*Sin[x])), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4837

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
```

```
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(f+gx+hx^2+112x^3)(a+b\sin^{-1}(cx))}{(d+ex)^4}\,dx = \frac{(112d^3-e^3f+de^2g-d^2eh)(a+b\sin^{-1}(cx))}{3e^4(d+ex)^3} - \frac{(336d^2+$$

$$= \frac{(112d^3-e^3f+de^2g-d^2eh)(a+b\sin^{-1}(cx))}{3e^4(d+ex)^3} - \frac{(336d^2+$$

$$= \frac{(112d^3-e^3f+de^2g-d^2eh)(a+b\sin^{-1}(cx))}{3e^4(d+ex)^3} - \frac{(336d^2+$$

$$= \frac{(112d^3-e^3f+de^2g-d^2eh)(a+b\sin^{-1}(cx))}{3e^4(d+ex)^3} - \frac{(336d^2+$$

$$= -\frac{308bcd^3\sqrt{1-c^2x^2}}{3e^3(c^2d^2-e^2)(d+ex)^2} + \frac{bc(2e^2f-3deg+6d^2h)\sqrt{1-}{12e^2(c^2d^2-e^2)(d+ex}$$

$$= -\frac{308bcd^3\sqrt{1-c^2x^2}}{3e^3(c^2d^2-e^2)(d+ex)^2} + \frac{bc(2e^2f-3deg+6d^2h)\sqrt{1-}{12e^2(c^2d^2-e^2)(d+ex}$$

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$$= -\frac{308bcd^3\sqrt{1-c^2x^2}}{3e^3(c^2d^2-e^2)(d+ex)^2} + \frac{bc(2e^2f-3deg+6d^2h)\sqrt{1-}{12e^2(c^2d^2-e^2)(d+ex}$$

$$= -\frac{308bcd^3\sqrt{1-c^2x^2}}{3e^3(c^2d^2-e^2)(d+ex)^2} + \frac{bc(2e^2f-3deg+6d^2h)\sqrt{1-}{12e^2(c^2d^2-e^2)(d+ex}$$

Mathematica [C] Result contains higher order function than in optimal. Order 6 vs. order 4 in optimal.
time = 6.40, size = 1921, normalized size = 1.50

Warning: Unable to verify antiderivative.

```
[In] Integrate[((f + g*x + h*x^2 + i*x^3)*(a + b*ArcSin[c*x]))/(d + e*x)^4,x]
```

```
[Out] (-(a*e^3*f) + a*d*e^2*g - a*d^2*e*h + a*d^3*i)/(3*e^4*(d + e*x)^3) + (-(a*e
^2*g) + 2*a*d*e*h - 3*a*d^2*i)/(2*e^4*(d + e*x)^2) + (-(a*e*h) + 3*a*d*i)/(
e^4*(d + e*x)) + b*f*(-1/9*(c*Sqrt[1 + (-d - Sqrt[c^(-2)]*e)/(d + e*x)]*Sqr
t[1 + (-d + Sqrt[c^(-2)]*e)/(d + e*x)]*AppellF1[3, 1/2, 1/2, 4, -((-d + Sqr
t[c^(-2)]*e)/(d + e*x)), -((-d - Sqrt[c^(-2)]*e)/(d + e*x))])/(e^2*(d + e*x
)^2*Sqrt[1 - c^2*x^2]) - ArcSin[c*x]/(3*e*(d + e*x)^3)) + (a*i*Log[d + e*x]
)/e^4 + b*h*((-(ArcSin[c*x]/(d + e*x)) + (c*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*
d^2 - e^2]*Sqrt[1 - c^2*x^2])])/Sqrt[c^2*d^2 - e^2])/e^3 - (d*((c*Sqrt[1 -
c^2*x^2])/((c^2*d^2 - e^2)*(d + e*x)) - ArcSin[c*x]/(e*(d + e*x)^2) - (I*c^
3*d*(Log[4] + Log[(e^2*Sqrt[c^2*d^2 - e^2]*(I*e + I*c^2*d*x + Sqrt[c^2*d^2
- e^2]*Sqrt[1 - c^2*x^2]))/(c^3*d*(d + e*x))]))/((c*d - e)*e*(c*d + e)*Sqrt
[c^2*d^2 - e^2])))/e^2 + (d^2*((Sqrt[1 - c^2*x^2]*(-(c*e^2) + c^3*d*(4*d +
3*e*x)))/((-(c^2*d^2) + e^2)^2*(d + e*x)^2) - (2*ArcSin[c*x])/(e*(d + e*x)^
3) + (c^3*(2*c^2*d^2 + e^2)*Log[d + e*x])/(e*(-(c*d) + e)^2*(c*d + e)^2*Sqr
t[-(c^2*d^2) + e^2]) - (c^3*(2*c^2*d^2 + e^2)*Log[e + c^2*d*x + Sqrt[-(c^2*
d^2) + e^2]*Sqrt[1 - c^2*x^2]])/(e*(-(c*d) + e)^2*(c*d + e)^2*Sqrt[-(c^2*d^
2) + e^2])))/(6*e^2)) + b*g*(((c*Sqrt[1 - c^2*x^2])/((c^2*d^2 - e^2)*(d + e
*x)) - ArcSin[c*x]/(e*(d + e*x)^2) - (I*c^3*d*(Log[4] + Log[(e^2*Sqrt[c^2*d
^2 - e^2]*(I*e + I*c^2*d*x + Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2]))/(c^3*d
*(d + e*x))]))/((c*d - e)*e*(c*d + e)*Sqrt[c^2*d^2 - e^2]))/(2*e) - (d*((Sq
rt[1 - c^2*x^2]*(-(c*e^2) + c^3*d*(4*d + 3*e*x)))/((-(c^2*d^2) + e^2)^2*(d
+ e*x)^2) - (2*ArcSin[c*x])/(e*(d + e*x)^3) + (c^3*(2*c^2*d^2 + e^2)*Log[d
+ e*x])/(e*(-(c*d) + e)^2*(c*d + e)^2*Sqrt[-(c^2*d^2) + e^2]) - (c^3*(2*c^2
*d^2 + e^2)*Log[e + c^2*d*x + Sqrt[-(c^2*d^2) + e^2]*Sqrt[1 - c^2*x^2]])/(e
*(-(c*d) + e)^2*(c*d + e)^2*Sqrt[-(c^2*d^2) + e^2])))/(6*e)) + b*i*((-3*d*(
-(ArcSin[c*x]/(d + e*x)) + (c*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqr
t[1 - c^2*x^2])])/Sqrt[c^2*d^2 - e^2]))/e^4 + (3*d^2*((c*Sqrt[1 - c^2*x^2])
/((c^2*d^2 - e^2)*(d + e*x)) - ArcSin[c*x]/(e*(d + e*x)^2) - (I*c^3*d*(Log[
4] + Log[(e^2*Sqrt[c^2*d^2 - e^2]*(I*e + I*c^2*d*x + Sqrt[c^2*d^2 - e^2]*Sq
rt[1 - c^2*x^2]))/(c^3*d*(d + e*x))]))/((c*d - e)*e*(c*d + e)*Sqrt[c^2*d^2
- e^2])))/(2*e^3) - (d^3*((Sqrt[1 - c^2*x^2]*(-(c*e^2) + c^3*d*(4*d + 3*e*x
)))/((-(c^2*d^2) + e^2)^2*(d + e*x)^2) - (2*ArcSin[c*x])/(e*(d + e*x)^3) +
(c^3*(2*c^2*d^2 + e^2)*Log[d + e*x])/(e*(-(c*d) + e)^2*(c*d + e)^2*Sqrt[-(c
^2*d^2) + e^2]) - (c^3*(2*c^2*d^2 + e^2)*Log[e + c^2*d*x + Sqrt[-(c^2*d^2)
+ e^2]*Sqrt[1 - c^2*x^2]])/(e*(-(c*d) + e)^2*(c*d + e)^2*Sqrt[-(c^2*d^2) +
e^2])))/(6*e^3) + (((-1/2*I)*ArcSin[c*x]^2)/e + (ArcSin[c*x]*Log[1 - (I*e*E
```

```
^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e + (ArcSin[c*x]*Log[1 - (I
*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e - (I*PolyLog[2, ((-I)
*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])])/e - (I*PolyLog[2, (I
*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e)/e^3)
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 5710 vs. $2(1225) = 2450$.
time = 6.75, size = 5711, normalized size = 4.47

method	result	size
derivativedivides	Expression too large to display	5711
default	Expression too large to display	5711

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^4,x,method=_RETURNVERBOSE
)
```

```
[Out] result too large to display
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^4,x, algorithm="max
ima")
```

```
[Out] 1/6*I*(6*e^(-4)*log(x*e + d) + (18*d*x^2*e^2 + 27*d^2*x*e + 11*d^3)/(x^3*e^
7 + 3*d*x^2*e^6 + 3*d^2*x*e^5 + d^3*e^4))*a - 1/6*(3*x*e + d)*a*g/(x^3*e^5
+ 3*d*x^2*e^4 + 3*d^2*x*e^3 + d^3*e^2) - 1/3*(3*x^2*e^2 + 3*d*x*e + d^2)*a*
h/(x^3*e^6 + 3*d*x^2*e^5 + 3*d^2*x*e^4 + d^3*e^3) + I*b*integrate(x^3*arcta
n2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(x^4*e^4 + 4*d*x^3*e^3 + 6*d^2*x^2*e^
2 + 4*d^3*x*e + d^4), x) - 1/3*a*f/(x^3*e^4 + 3*d*x^2*e^3 + 3*d^2*x*e^2 + d
^3*e) + integrate((b*h*x^2 + b*g*x + b*f)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-
c*x + 1))/(x^4*e^4 + 4*d*x^3*e^3 + 6*d^2*x^2*e^2 + 4*d^3*x*e + d^4), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^4,x, algorithm="fri
cas")
```

```
[Out] integral(1/2*(2*a*h*x^2 + 2*I*a*x^3 + 2*a*g*x + 2*a*f + (-I*b*h*x^2 + b*x^3
 - I*b*g*x - I*b*f)*log(-2*c^2*x^2 - 2*sqrt(c^2*x^2 - 1)*c*x + 1))/(x^4*e^4
 + 4*d*x^3*e^3 + 6*d^2*x^2*e^2 + 4*d^3*x*e + d^4), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(cx))(f + gx + hx^2 + ix^3)}{(d + ex)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x**3+h*x**2+g*x+f)*(a+b*asin(c*x))/(e*x+d)**4,x)
```

```
[Out] Integral((a + b*asin(c*x))*(f + g*x + h*x**2 + i*x**3)/(d + e*x)**4, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x^3+h*x^2+g*x+f)*(a+b*arcsin(c*x))/(e*x+d)^4,x, algorithm="gia
c")
```

```
[Out] integrate((i*x^3 + h*x^2 + g*x + f)*(b*arcsin(c*x) + a)/(e*x + d)^4, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b \operatorname{asin}(c\,x))\,(i\,x^3 + h\,x^2 + g\,x + f)}{(d + e\,x)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(f + g*x + h*x^2 + i*x^3))/(d + e*x)^4,x)
```

```
[Out] int(((a + b*asin(c*x))*(f + g*x + h*x^2 + i*x^3))/(d + e*x)^4, x)
```

3.113 $\int \frac{(f+gx)(a+b\,\mathbf{ArcSin}(cx))^2}{(d+ex)^3}\,dx$

Optimal. Leaf size=935

$$\frac{abc(ef-dg)\sqrt{1-c^2x^2}}{e\left(c^2d^2-e^2\right)(d+ex)}+\frac{abg^2\mathrm{ArcSin}(cx)}{e^2(ef-dg)}+\frac{b^2c(ef-dg)\sqrt{1-c^2x^2}\,\mathrm{ArcSin}(cx)}{e\left(c^2d^2-e^2\right)(d+ex)}+\frac{b^2g^2\mathrm{ArcSin}(cx)^2}{2e^2(ef-dg)}-\frac{(f+gx}{2(e}$$

```
[Out] a*b*g^2*arcsin(c*x)/e^2/(-d*g+e*f)+1/2*b^2*g^2*arcsin(c*x)^2/e^2/(-d*g+e*f)
-1/2*(g*x+f)^2*(a+b*arcsin(c*x))^2/(-d*g+e*f)/(e*x+d)^2-a*b*c*(2*e^2*g-c^2*
d*(d*g+e*f))*arctan((c^2*d*x+e)/(c^2*d^2-e^2)^(1/2)/(-c^2*x^2+1)^(1/2))/e^2
/(c^2*d^2-e^2)^(3/2)-b^2*c^2*(-d*g+e*f)*ln(e*x+d)/e^2/(c^2*d^2-e^2)-I*b^2*c
^3*d*(-d*g+e*f)*arcsin(c*x)*ln(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d-(c^2*d
^2-e^2)^(1/2)))/e^2/(c^2*d^2-e^2)^(3/2)+I*b^2*c^3*d*(-d*g+e*f)*arcsin(c*x)*
ln(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d+(c^2*d^2-e^2)^(1/2)))/e^2/(c^2*d^2
-e^2)^(3/2)-b^2*c^3*d*(-d*g+e*f)*polylog(2,I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(
c*d-(c^2*d^2-e^2)^(1/2)))/e^2/(c^2*d^2-e^2)^(3/2)+b^2*c^3*d*(-d*g+e*f)*poly
log(2,I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d+(c^2*d^2-e^2)^(1/2)))/e^2/(c^2*d^
2-e^2)^(3/2)-2*I*b^2*c*g*arcsin(c*x)*ln(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c
*d-(c^2*d^2-e^2)^(1/2)))/e^2/(c^2*d^2-e^2)^(1/2)+2*I*b^2*c*g*arcsin(c*x)*ln
(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d+(c^2*d^2-e^2)^(1/2)))/e^2/(c^2*d^2-e
^2)^(1/2)-2*b^2*c*g*polylog(2,I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d-(c^2*d^2-
e^2)^(1/2)))/e^2/(c^2*d^2-e^2)^(1/2)+2*b^2*c*g*polylog(2,I*e*(I*c*x+(-c^2*x
^2+1)^(1/2))/(c*d+(c^2*d^2-e^2)^(1/2)))/e^2/(c^2*d^2-e^2)^(1/2)+a*b*c*(-d*g
+e*f)*(-c^2*x^2+1)^(1/2)/e/(c^2*d^2-e^2)/(e*x+d)+b^2*c*(-d*g+e*f)*arcsin(c*
x)*(-c^2*x^2+1)^(1/2)/e/(c^2*d^2-e^2)/(e*x+d)
```

Rubi [A]
time = 2.15, antiderivative size = 935, normalized size of antiderivative = 1.00, number of steps used = 33, number of rules used = 20, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.870$, Rules used = {37, 4839, 12, 1665, 858, 222, 739, 210, 4883, 4881, 4737, 4857, 3405, 3404, 2296, 2221, 2317, 2438, 2747, 31}

$$-\frac{ib^2d(ef-dg)\mathrm{ArcSin}(cx)\log\left(1-\frac{iee^{i\mathrm{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)c^3}{e^2\left(c^2d^2-e^2\right)^{3/2}}+\frac{ib^2d(ef-dg)\mathrm{ArcSin}(cx)\log\left(1-\frac{iee^{i\mathrm{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)c^3}{e^2\left(c^2d^2-e^2\right)^{3/2}}-\frac{b^2d(ef-dg)\mathrm{Li}_2\left(\frac{iee^{i\mathrm{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)c^3}{e^2\left(c^2d^2-e^2\right)^{3/2}}+\frac{b^2d(ef-dg)\mathrm{Li}_2\left(\frac{iee^{i\mathrm{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)c^3}{e^2\left(c^2d^2-e^2\right)^{3/2}}-\frac{b^2(ef-dg)\log(d+ex)c^2}{e^2\left(c^2d^2-e^2\right)}+\frac{b^2(ef-dg)\sqrt{1-c^2x^2}\,\mathrm{ArcSin}(cx)c}{e\left(c^2d^2-e^2\right)(d+ex)}-\frac{ab\left(2e^2g-c^2d(ef+dg)\right)\mathrm{ArcTan}\left(\frac{dxc^2+e}{\sqrt{c^2d^2-e^2}\sqrt{1-c^2x^2}}\right)c}{e^2\left(c^2d^2-e^2\right)^{3/2}}-\frac{2ib^2g\mathrm{ArcSin}(cx)\log\left(1-\frac{iee^{i\mathrm{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)c}{e^2\sqrt{c^2d^2-e^2}}+\frac{2ib^2g\mathrm{ArcSin}(cx)\log\left(1-\frac{iee^{i\mathrm{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)c}{e^2\sqrt{c^2d^2-e^2}}-\frac{2b^2g\mathrm{Li}_2\left(\frac{iee^{i\mathrm{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)c}{e^2\sqrt{c^2d^2-e^2}}+\frac{2b^2g\mathrm{Li}_2\left(\frac{iee^{i\mathrm{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)c}{e^2\sqrt{c^2d^2-e^2}}+\frac{ab(ef-dg)\sqrt{1-c^2x^2}\,c}{e\left(c^2d^2-e^2\right)(d+ex)}+\frac{b^2g^2\mathrm{ArcSin}(cx)^2}{2e^2(ef-dg)}-\frac{(f+gx)^2(a+b\mathrm{ArcSin}(cx))^2}{2(ef-dg)(d+ex)^2}+\frac{abg^2\mathrm{ArcSin}(cx)}{e^2(ef-dg)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(a + b*ArcSin[c*x])^2)/(d + e*x)^3,x]
```

```
[Out] (a*b*c*(e*f - d*g)*Sqrt[1 - c^2*x^2])/(e*(c^2*d^2 - e^2)*(d + e*x)) + (a*b*
g^2*ArcSin[c*x])/(e^2*(e*f - d*g)) + (b^2*c*(e*f - d*g)*Sqrt[1 - c^2*x^2]*A
rcSin[c*x])/(e*(c^2*d^2 - e^2)*(d + e*x)) + (b^2*g^2*ArcSin[c*x]^2)/(2*e^2*
(e*f - d*g)) - ((f + g*x)^2*(a + b*ArcSin[c*x])^2)/(2*(e*f - d*g)*(d + e*x)
^2) - (a*b*c*(2*e^2*g - c^2*d*(e*f + d*g))*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d
^2 - e^2]*Sqrt[1 - c^2*x^2])])/(e^2*(c^2*d^2 - e^2)^(3/2)) - ((2*I)*b^2*c*g
```

```
*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/
(e^2*Sqrt[c^2*d^2 - e^2]) - (I*b^2*c^3*d*(e*f - d*g)*ArcSin[c*x]*Log[1 - (I
*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/(e^2*(c^2*d^2 - e^2)^(3
/2)) + ((2*I)*b^2*c*g*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sq
rt[c^2*d^2 - e^2])])/(e^2*Sqrt[c^2*d^2 - e^2]) + (I*b^2*c^3*d*(e*f - d*g)*A
rcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/(e
^2*(c^2*d^2 - e^2)^(3/2)) - (b^2*c^2*(e*f - d*g)*Log[d + e*x])/(e^2*(c^2*d^
2 - e^2)) - (2*b^2*c*g*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d
^2 - e^2])])/(e^2*Sqrt[c^2*d^2 - e^2]) - (b^2*c^3*d*(e*f - d*g)*PolyLog[2,
(I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/(e^2*(c^2*d^2 - e^2)^
(3/2)) + (2*b^2*c*g*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2
- e^2])])/(e^2*Sqrt[c^2*d^2 - e^2]) + (b^2*c^3*d*(e*f - d*g)*PolyLog[2, (I*
e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/(e^2*(c^2*d^2 - e^2)^(3/
2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 739

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
```

```
[{a, c, d, e}, x]
```

Rule 858

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rule 1665

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :>
 With[{Q = PolynomialQuotient[Pq, d + e*x, x], R = PolynomialRemainder[Pq,
d + e*x, x]}, Simp[(e*R*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*
d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)
*(a + c*x^2)^p*ExpandToSum[(m + 1)*(c*d^2 + a*e^2)*Q + c*d*R*(m + 1) - c*e*
R*(m + 2*p + 3)*x, x], x], x]] /; FreeQ[{a, c, d, e, p}, x] && PolyQ[Pq, x]
 && NeQ[c*d^2 + a*e^2, 0] && LtQ[m, -1]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2296

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[2*(c/q), Int[
(f + g*x)^m*(F^u/(b - q + 2*c*F^u)), x], x] - Dist[2*(c/q), Int[(f + g*x)^m
*(F^u/(b + q + 2*c*F^u)), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2747

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rule 3404

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[(c + d*x)^m*(E^(I*(e + f*x))/(I*b + 2*a*E^(I*(e + f*x)
) - I*b*E^(2*I*(e + f*x)))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3405

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[b*(c + d*x)^m*(Cos[e + f*x]/(f*(a^2 - b^2)*(a + b*Sin[e + f
*x]))), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[b*d*(m/(f*(a^2 - b^2))), Int[(c + d*x)^(m - 1)*(Cos[e + f*x]/(a
+ b*Sin[e + f*x])), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4839

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_))^(m_)*((f_.)
 + (g_.)*(x_))^(p_.), x_Symbol] :> With[{u = IntHide[(f + g*x)^p*(d + e*x)^
m, x]}, Dist[(a + b*ArcSin[c*x])^n, u, x] - Dist[b*c*n, Int[SimplifyIntegra
nd[u*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*x^2]), x], x], x]] /; FreeQ[
{a, b, c, d, e, f, g}, x] && IGtQ[n, 0] && IGtQ[p, 0] && ILtQ[m, 0] && LtQ[
m + p + 1, 0]
```

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4881

```
Int[ArcSin[(c_.)*(x_)]^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p_), x_Symbol] :
> With[{u = ExpandIntegrand[(d + e*x^2)^p*ArcSin[c*x]^n, RFx, x]}, Int[u, x
] /; SumQ[u]] /; FreeQ[{c, d, e}, x] && RationalFunctionQ[RFx, x] && IGtQ[n
, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 4883

```
Int[(ArcSin[(c_.)*(x_)]*(b_.) + (a_))^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p
_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p, RFx*(a + b*ArcSin[c*x])
^n, x], x] /; FreeQ[{a, b, c, d, e}, x] && RationalFunctionQ[RFx, x] && IGt
Q[n, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rubi steps

$$\int \frac{(f+gx)\left(a+b\sin^{-1}(cx)\right)^2}{(d+ex)^3}\,dx = -\frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{2(ef-dg)(d+ex)^2} - (2bc)\int -\frac{(f+gx)^2\left(a+b\sin^{-1}(cx\right.}{2(ef-dg)(d+ex)^2\sqrt{1-c\ldots}}$$

$$= -\frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{2(ef-dg)(d+ex)^2} + \frac{(bc)\int \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)}{(d+ex)^2\sqrt{1-c^2x^2}}\,dx}{ef-dg}$$

$$= -\frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{2(ef-dg)(d+ex)^2} + \frac{(bc)\int \left(\frac{a(f+gx)^2}{(d+ex)^2\sqrt{1-c^2x^2}} + \frac{b(f+gx)^2}{(d+ex)^2\sqrt{\ldots}}\right.}{ef-dg}$$

$$= -\frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{2(ef-dg)(d+ex)^2} + \frac{(abc)\int \frac{(f+gx)^2}{(d+ex)^2\sqrt{1-c^2x^2}}\,dx}{ef-dg} + \frac{(b^2c)\int \ldots}{\ldots}$$

$$= \frac{abc(ef-dg)\sqrt{1-c^2x^2}}{e\left(c^2d^2-e^2\right)(d+ex)} - \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{2(ef-dg)(d+ex)^2} + \frac{(b^2c)\int \left(\frac{g\ldots}{e^2\sqrt{\ldots}}\right.}{\ldots}$$

$$= \frac{abc(ef-dg)\sqrt{1-c^2x^2}}{e\left(c^2d^2-e^2\right)(d+ex)} - \frac{(f+gx)^2\left(a+b\sin^{-1}(cx)\right)^2}{2(ef-dg)(d+ex)^2} + \frac{(2b^2cg)\int \frac{\ldots}{(d\ldots}}{\ldots}$$

$$= \frac{abc(ef-dg)\sqrt{1-c^2x^2}}{e\left(c^2d^2-e^2\right)(d+ex)} + \frac{abg^2\sin^{-1}(cx)}{e^2(ef-dg)} + \frac{b^2g^2\sin^{-1}(cx)^2}{2e^2(ef-dg)} - \frac{(f+gx\ldots}{2(e\ldots}$$

$$= \frac{abc(ef-dg)\sqrt{1-c^2x^2}}{e\left(c^2d^2-e^2\right)(d+ex)} + \frac{abg^2\sin^{-1}(cx)}{e^2(ef-dg)} + \frac{b^2c(ef-dg)\sqrt{1-c^2x^2}\,\mathrm{s}\ldots}{e\left(c^2d^2-e^2\right)(d+e\ldots}$$

$$= \frac{abc(ef-dg)\sqrt{1-c^2x^2}}{e\left(c^2d^2-e^2\right)(d+ex)} + \frac{abg^2\sin^{-1}(cx)}{e^2(ef-dg)} + \frac{b^2c(ef-dg)\sqrt{1-c^2x^2}\,\mathrm{s}\ldots}{e\left(c^2d^2-e^2\right)(d+e\ldots}$$

$$= \frac{abc(ef-dg)\sqrt{1-c^2x^2}}{e\left(c^2d^2-e^2\right)(d+ex)} + \frac{abg^2\sin^{-1}(cx)}{e^2(ef-dg)} + \frac{b^2c(ef-dg)\sqrt{1-c^2x^2}\,\mathrm{s}\ldots}{e\left(c^2d^2-e^2\right)(d+e\ldots}$$

$$= \frac{abc(ef-dg)\sqrt{1-c^2x^2}}{e\left(c^2d^2-e^2\right)(d+ex)} + \frac{abg^2\sin^{-1}(cx)}{e^2(ef-dg)} + \frac{b^2c(ef-dg)\sqrt{1-c^2x^2}\,\mathrm{s}\ldots}{e\left(c^2d^2-e^2\right)(d+e\ldots}$$

$$= \frac{abc(ef-dg)\sqrt{1-c^2x^2}}{e\left(c^2d^2-e^2\right)(d+ex)} + \frac{abg^2\sin^{-1}(cx)}{e^2(ef-dg)} + \frac{b^2c(ef-dg)\sqrt{1-c^2x^2}\,\mathrm{s}\ldots}{e\left(c^2d^2-e^2\right)(d+e\ldots}$$

$$= \frac{abc(ef-dg)\sqrt{1-c^2x^2}}{e\left(c^2d^2-e^2\right)(d+ex)} + \frac{abg^2\sin^{-1}(cx)}{e^2(ef-dg)} + \frac{b^2c(ef-dg)\sqrt{1-c^2x^2}\,\mathrm{s}\ldots}{e\left(c^2d^2-e^2\right)(d+e\ldots}$$

Mathematica [A]
time = 1.12, size = 574, normalized size = 0.61

$$\frac{-\frac{(ef-dg)(a+b\text{ArcSin}(cx))^2}{(d+ex)^2}-\frac{2g(a+b\text{ArcSin}(cx))^2}{d+ex}+\frac{4bcg\left(-i(a+b\text{ArcSin}(cx))\left(\log\left(1+\frac{iee^{i\text{ArcSin}(cx)}}{-cd+\sqrt{c^2d^2-e^2}}\right)-\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)\right)-b\text{PolyLog}\left(2,\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)+b\text{PolyLog}\left(2,\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)\right)}{\sqrt{c^2d^2-e^2}}+\frac{2bc(ef-dg)\left(e\sqrt{c^2d^2-e^2}\sqrt{1-c^2x^2}(a+b\text{ArcSin}(cx))-bc\sqrt{c^2d^2-e^2}(d+ex)\log(d+ex)-ic^2d(d+ex)\left((a+b\text{ArcSin}(cx))\left(\log\left(1+\frac{iee^{i\text{ArcSin}(cx)}}{-cd+\sqrt{c^2d^2-e^2}}\right)-\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)\right)-ib\text{PolyLog}\left(2,\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)+ib\text{PolyLog}\left(2,\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)\right)\right)}{(c^2d^2-e^2)^{3/2}(d+ex)}}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(a + b*ArcSin[c*x])^2)/(d + e*x)^3,x]
```

```
[Out] (-(((e*f - d*g)*(a + b*ArcSin[c*x])^2)/(d + e*x)^2) - (2*g*(a + b*ArcSin[c*
x])^2)/(d + e*x) + (4*b*c*g*((-I)*(a + b*ArcSin[c*x])*(Log[1 + (I*e*E^(I*Ar
cSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] - Log[1 - (I*e*E^(I*ArcSin[c*x]
))/(c*d + Sqrt[c^2*d^2 - e^2])]) - b*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*
d - Sqrt[c^2*d^2 - e^2])] + b*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqr
t[c^2*d^2 - e^2])]))/Sqrt[c^2*d^2 - e^2] + (2*b*c*(e*f - d*g)*(e*Sqrt[c^2*d
^2 - e^2]*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) - b*c*Sqrt[c^2*d^2 - e^2]*(
d + e*x)*Log[d + e*x] - I*c^2*d*(d + e*x)*((a + b*ArcSin[c*x])*(Log[1 + (I*
e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] - Log[1 - (I*e*E^(I*Ar
cSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]) - I*b*PolyLog[2, (I*e*E^(I*ArcSin
[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])] + I*b*PolyLog[2, (I*e*E^(I*ArcSin[c*x]
))/(c*d + Sqrt[c^2*d^2 - e^2])])))/((c^2*d^2 - e^2)^(3/2)*(d + e*x)))/(2*e^
2)
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 3107 vs. 2(941) = 1882.
time = 1.89, size = 3108, normalized size = 3.32

method	result	size
derivativedivides	Expression too large to display	3108
default	Expression too large to display	3108

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*arcsin(c*x))^2/(e*x+d)^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(a^2*c^2*(1/2*c*(d*g-e*f)/e^2/(c*e*x+c*d)^2-g/e^2/(c*e*x+c*d))-a*b*c^3/
e^2/(c^2*d^2-e^2)/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-
e^2)/e^2)^(1/2)*d*g+a*b*c^4/e^3*d^2/(c^2*d^2-e^2)/(-(c^2*d^2-e^2)/e^2)^(1/2
)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)
*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))
*g-a*b*c^4/e^2*d/(c^2*d^2-e^2)/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e
^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*
d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*f+b^2*c^3*arcsin(c
*x)^2/(c^2*d^2-e^2)/(c*e*x+c*d)^2*e*g*x+a*b*c^3*arcsin(c*x)/e^2/(c*e*x+c*d)
^2*d*g+a*b*c^3/e/(c^2*d^2-e^2)/(c*x+d*c/e)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c
/e)-(c^2*d^2-e^2)/e^2)^(1/2)*f+b^2*c^4*arcsin(c*x)/(c^2*d^2-e^2)/(c*e*x+c*d
)^2*(-c^2*x^2+1)^(1/2)*d*f-1/2*b^2*c^5*arcsin(c*x)^2/(c^2*d^2-e^2)/(c*e*x+c
```

```
*d)^2/e^2*d^3*g-1/2*b^2*c^5*arcsin(c*x)^2/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e*d^2
*f+2*b^2*c^3/e/(c^2*d^2-e^2)*f*ln(I*c*x+(-c^2*x^2+1)^(1/2))+2*I*b^2*c^5*arc
sin(c*x)/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e*d^2*g*x+I*b^2*c^4/e*(-c^2*d^2+e^2)^(
1/2)/(c^2*d^2-e^2)^2*d*f*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^
2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+I*b^2*c^4/e^2*(-c^2*d^2+e^2)^(1
/2)/(c^2*d^2-e^2)^2*g*d^2*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d
^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-b^2*c^4/e*(-c^2*d^2+e^2)^(1/2)
/(c^2*d^2-e^2)^2*d*f*arcsin(c*x)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c
^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+b^2*c^4/e^2*(-c^2*d^2+e^2)
^(1/2)/(c^2*d^2-e^2)^2*g*d^2*arcsin(c*x)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1
/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+b^2*c^4/e*(-c^2*d^
2+e^2)^(1/2)/(c^2*d^2-e^2)^2*d*f*arcsin(c*x)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1
)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-b^2*c^4/e^2*(-
c^2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)^2*g*d^2*arcsin(c*x)*ln((I*d*c+e*(I*c*x+(-c
^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+I*b^2*
c^5*arcsin(c*x)/(c^2*d^2-e^2)/(c*e*x+c*d)^2/e^2*d^3*g-b^2*c^4*arcsin(c*x)/(
c^2*d^2-e^2)/(c*e*x+c*d)^2/e*(-c^2*x^2+1)^(1/2)*d^2*g-I*b^2*c^4/e*(-c^2*d^2
+e^2)^(1/2)/(c^2*d^2-e^2)^2*d*f*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(
-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-I*b^2*c^4/e^2*(-c^2*d^2+
e^2)^(1/2)/(c^2*d^2-e^2)^2*g*d^2*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+
(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-I*b^2*c^5*arcsin(c*x)/(
c^2*d^2-e^2)/(c*e*x+c*d)^2/e*d^2*f-2*b^2*c^3/e^2/(c^2*d^2-e^2)*d*g*ln(I*c*x
+(-c^2*x^2+1)^(1/2))+1/2*b^2*c^3*arcsin(c*x)^2/(c^2*d^2-e^2)/(c*e*x+c*d)^2*
e*f+b^2*c^3/e^2/(c^2*d^2-e^2)*d*g*ln(I*e*(I*c*x+(-c^2*x^2+1)^(1/2))^2-2*d*c
*(I*c*x+(-c^2*x^2+1)^(1/2))-I*e)+1/2*b^2*c^3*arcsin(c*x)^2/(c^2*d^2-e^2)/(c
*e*x+c*d)^2*d*g-a*b*c^3*arcsin(c*x)/e/(c*e*x+c*d)^2*f-2*a*b*c^2*arcsin(c*x)
*g/e^2/(c*e*x+c*d)-2*a*b*c^2/e^3*g/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d
^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^
2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))+2*b^2*c^2*(-c^
2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)^2*g*arcsin(c*x)*ln((I*d*c+e*(I*c*x+(-c^2*x^2
+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))-2*b^2*c^2*(-
c^2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)^2*g*arcsin(c*x)*ln((I*d*c+e*(I*c*x+(-c^2*x
^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))+2*I*b^2*c^
2*(-c^2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)^2*g*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)
^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))-2*I*b^2*c^2*(-c
^2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)^2*g*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2
))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))+b^2*c^4*arcsin(c*x)/
(c^2*d^2-e^2)/(c*e*x+c*d)^2*e*(-c^2*x^2+1)^(1/2)*f*x+I*b^2*c^5*arcsin(c*x)/
(c^2*d^2-e^2)/(c*e*x+c*d)^2*d*g*x^2-b^2*c^4*arcsin(c*x)/(c^2*d^2-e^2)/(c*e*
x+c*d)^2*(-c^2*x^2+1)^(1/2)*d*g*x-b^2*c^5*arcsin(c*x)^2/(c^2*d^2-e^2)/(c*e*
x+c*d)^2/e*d^2*g*x-2*I*b^2*c^5*arcsin(c*x)/(c^2*d^2-e^2)/(c*e*x+c*d)^2*d*f*
x-I*b^2*c^5*arcsin(c*x)/(c^2*d^2-e^2)/(c*e*x+c*d)^2*e*f*x^2-b^2*c^3/e/(c^2*
d^2-e^2)*f*ln(I*e*(I*c*x+(-c^2*x^2+1)^(1/2))^2-2*d*c*(I*c*x+(-c^2*x^2+1)^(1
/2))-I*e))
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c*d-%e>0)', see `assume?` for more
details
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] integral((a^2*g*x + a^2*f + (b^2*g*x + b^2*f)*arcsin(c*x)^2 + 2*(a*b*g*x +
a*b*f)*arcsin(c*x))/(x^3*e^3 + 3*d*x^2*e^2 + 3*d^2*x*e + d^3), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(cx))^2 (f + gx)}{(d + ex)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*asin(c*x))**2/(e*x+d)**3,x)
```

```
[Out] Integral((a + b*asin(c*x))**2*(f + g*x)/(d + e*x)**3, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*arcsin(c*x))^2/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] integrate((g*x + f)*(b*arcsin(c*x) + a)^2/(e*x + d)^3, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)\,\left(a+b\,\mathrm{asin}(c\,x)\right)^2}{{(d+e\,x)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(a + b*asin(c*x))^2)/(d + e*x)^3,x)
[Out] int(((f + g*x)*(a + b*asin(c*x))^2)/(d + e*x)^3, x)
```

3.114 $\int \frac{(f+gx)^2(a+b\mathbf{ArcSin}(cx))^2}{(d+ex)^3}\,dx$

Optimal. Leaf size=1678

$$-\frac{a^2(ef-dg)^2}{2e^3(d+ex)^2}-\frac{2a^2g(ef-dg)}{e^3(d+ex)}+\frac{abc(ef-dg)^2\sqrt{1-c^2x^2}}{e^2\left(c^2d^2-e^2\right)(d+ex)}-\frac{ab(ef-dg)^2\text{ArcSin}(cx)}{e^3(d+ex)^2}-\frac{4abg(ef-dg)\text{ArcSi}}{e^3(d+ex)}$$

```
[Out] -b^2*c^3*d*(-d*g+e*f)^2*polylog(2,I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d-(c^2*
d^2-e^2)^(1/2)))/e^3/(c^2*d^2-e^2)^(3/2)+b^2*c^3*d*(-d*g+e*f)^2*polylog(2,I
*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d+(c^2*d^2-e^2)^(1/2)))/e^3/(c^2*d^2-e^2)^
(3/2)-4*b^2*c*g*(-d*g+e*f)*polylog(2,I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d-(c
^2*d^2-e^2)^(1/2)))/e^3/(c^2*d^2-e^2)^(1/2)+4*b^2*c*g*(-d*g+e*f)*polylog(2,
I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d+(c^2*d^2-e^2)^(1/2)))/e^3/(c^2*d^2-e^2)
^(1/2)-2*a^2*g*(-d*g+e*f)/e^3/(e*x+d)-1/2*b^2*(-d*g+e*f)^2*arcsin(c*x)^2/e^
3/(e*x+d)^2-1/3*I*b^2*g^2*arcsin(c*x)^3/e^3+b^2*g^2*arcsin(c*x)^2*ln(1-I*e*
(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d-(c^2*d^2-e^2)^(1/2)))/e^3+b^2*g^2*arcsin(c*
x)^2*ln(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d+(c^2*d^2-e^2)^(1/2)))/e^3-4*a
*b*g*(-d*g+e*f)*arcsin(c*x)/e^3/(e*x+d)+2*b^2*g^2*polylog(3,I*e*(I*c*x+(-c^
2*x^2+1)^(1/2))/(c*d-(c^2*d^2-e^2)^(1/2)))/e^3+2*b^2*g^2*polylog(3,I*e*(I*c
*x+(-c^2*x^2+1)^(1/2))/(c*d+(c^2*d^2-e^2)^(1/2)))/e^3+a^2*g^2*ln(e*x+d)/e^3
-1/2*a^2*(-d*g+e*f)^2/e^3/(e*x+d)^2-a*b*c*(-d*g+e*f)*(4*e^2*g-c^2*d*(3*d*g+
e*f))*arctan((c^2*d*x+e)/(c^2*d^2-e^2)^(1/2)/(-c^2*x^2+1)^(1/2))/e^3/(c^2*d
^2-e^2)^(3/2)+a*b*c*(-d*g+e*f)^2*(-c^2*x^2+1)^(1/2)/e^2/(c^2*d^2-e^2)/(e*x+
d)+b^2*c*(-d*g+e*f)^2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)/e^2/(c^2*d^2-e^2)/(e*x
+d)+4*I*b^2*c*g*(-d*g+e*f)*arcsin(c*x)*ln(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/
(c*d+(c^2*d^2-e^2)^(1/2)))/e^3/(c^2*d^2-e^2)^(1/2)+I*b^2*c^3*d*(-d*g+e*f)^2
*arcsin(c*x)*ln(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d+(c^2*d^2-e^2)^(1/2)))
/e^3/(c^2*d^2-e^2)^(3/2)-I*b^2*c^3*d*(-d*g+e*f)^2*arcsin(c*x)*ln(1-I*e*(I*c
*x+(-c^2*x^2+1)^(1/2))/(c*d-(c^2*d^2-e^2)^(1/2)))/e^3/(c^2*d^2-e^2)^(3/2)-4
*I*b^2*c*g*(-d*g+e*f)*arcsin(c*x)*ln(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d-
(c^2*d^2-e^2)^(1/2)))/e^3/(c^2*d^2-e^2)^(1/2)-I*a*b*g^2*arcsin(c*x)^2/e^3+2
*a*b*g^2*arcsin(c*x)*ln(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d-(c^2*d^2-e^2)
^(1/2)))/e^3+2*a*b*g^2*arcsin(c*x)*ln(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d
+(c^2*d^2-e^2)^(1/2)))/e^3-2*I*a*b*g^2*polylog(2,I*e*(I*c*x+(-c^2*x^2+1)^(1
/2))/(c*d-(c^2*d^2-e^2)^(1/2)))/e^3-2*I*b^2*g^2*arcsin(c*x)*polylog(2,I*e*(
I*c*x+(-c^2*x^2+1)^(1/2))/(c*d-(c^2*d^2-e^2)^(1/2)))/e^3-2*I*a*b*g^2*polylo
g(2,I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d+(c^2*d^2-e^2)^(1/2)))/e^3-2*I*b^2*g
^2*arcsin(c*x)*polylog(2,I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d+(c^2*d^2-e^2)^
(1/2)))/e^3-b^2*c^2*(-d*g+e*f)^2*ln(e*x+d)/e^3/(c^2*d^2-e^2)-a*b*(-d*g+e*f)
^2*arcsin(c*x)/e^3/(e*x+d)^2-2*b^2*g*(-d*g+e*f)*arcsin(c*x)^2/e^3/(e*x+d)
```

Rubi [A]

time = 2.73, antiderivative size = 1678, normalized size of antiderivative = 1.00, number of steps used = 55, number of rules used = 25, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 1.000$, Rules used = {4843, 45, 4837, 12, 6874, 821, 739, 210, 222, 2451, 4825, 4615, 2221, 2317, 2438, 4827, 4857, 3405, 3404, 2296, 2747, 31, 2611, 2320, 6724}

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^2*(a + b*ArcSin[c*x])^2)/(d + e*x)^3,x]
```

```
[Out] -1/2*(a^2*(e*f - d*g)^2)/(e^3*(d + e*x)^2) - (2*a^2*g*(e*f - d*g))/(e^3*(d
+ e*x)) + (a*b*c*(e*f - d*g)^2*Sqrt[1 - c^2*x^2])/(e^2*(c^2*d^2 - e^2)*(d +
 e*x)) - (a*b*(e*f - d*g)^2*ArcSin[c*x])/(e^3*(d + e*x)^2) - (4*a*b*g*(e*f
- d*g)*ArcSin[c*x])/(e^3*(d + e*x)) + (b^2*c*(e*f - d*g)^2*Sqrt[1 - c^2*x^2
]*ArcSin[c*x])/(e^2*(c^2*d^2 - e^2)*(d + e*x)) - (I*a*b*g^2*ArcSin[c*x]^2)/
e^3 - (b^2*(e*f - d*g)^2*ArcSin[c*x]^2)/(2*e^3*(d + e*x)^2) - (2*b^2*g*(e*f
 - d*g)*ArcSin[c*x]^2)/(e^3*(d + e*x)) - ((I/3)*b^2*g^2*ArcSin[c*x]^3)/e^3
- (a*b*c*(e*f - d*g)*(4*e^2*g - c^2*d*(e*f + 3*d*g))*ArcTan[(e + c^2*d*x)/(
Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(e^3*(c^2*d^2 - e^2)^(3/2)) + (2*a
*b*g^2*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^
2])])/e^3 - ((4*I)*b^2*c*g*(e*f - d*g)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin
[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/(e^3*Sqrt[c^2*d^2 - e^2]) - (I*b^2*c^
3*d*(e*f - d*g)^2*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c
^2*d^2 - e^2])])/(e^3*(c^2*d^2 - e^2)^(3/2)) + (b^2*g^2*ArcSin[c*x]^2*Log[1
 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^3 + (2*a*b*g^2*A
rcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^
3 + ((4*I)*b^2*c*g*(e*f - d*g)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/
(c*d + Sqrt[c^2*d^2 - e^2])])/(e^3*Sqrt[c^2*d^2 - e^2]) + (I*b^2*c^3*d*(e*f
 - d*g)^2*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 -
 e^2])])/(e^3*(c^2*d^2 - e^2)^(3/2)) + (b^2*g^2*ArcSin[c*x]^2*Log[1 - (I*e*
E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^3 + (a^2*g^2*Log[d + e*x
])/e^3 - (b^2*c^2*(e*f - d*g)^2*Log[d + e*x])/(e^3*(c^2*d^2 - e^2)) - ((2*I
)*a*b*g^2*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/
e^3 - (4*b^2*c*g*(e*f - d*g)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt
[c^2*d^2 - e^2])])/(e^3*Sqrt[c^2*d^2 - e^2]) - (b^2*c^3*d*(e*f - d*g)^2*Pol
yLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/(e^3*(c^2*d^2
 - e^2)^(3/2)) - ((2*I)*b^2*g^2*ArcSin[c*x]*PolyLog[2, (I*e*E^(I*ArcSin[c*x
]))/(c*d - Sqrt[c^2*d^2 - e^2])])/e^3 - ((2*I)*a*b*g^2*PolyLog[2, (I*e*E^(I
*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/e^3 + (4*b^2*c*g*(e*f - d*g)*P
olyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/(e^3*Sqrt[c
^2*d^2 - e^2]) + (b^2*c^3*d*(e*f - d*g)^2*PolyLog[2, (I*e*E^(I*ArcSin[c*x])
)/(c*d + Sqrt[c^2*d^2 - e^2])])/(e^3*(c^2*d^2 - e^2)^(3/2)) - ((2*I)*b^2*g^
2*ArcSin[c*x]*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2]
)])/e^3 + (2*b^2*g^2*PolyLog[3, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2
 - e^2])])/e^3 + (2*b^2*g^2*PolyLog[3, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[
c^2*d^2 - e^2])])/e^3
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 739

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(-(e*f - d*g))*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1
)/(2*(p + 1)*(c*d^2 + a*e^2))), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2),
Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m,
p}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
```

```
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2296

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[2*(c/q), Int[
(f + g*x)^m*(F^u/(b - q + 2*c*F^u)), x], x] - Dist[2*(c/q), Int[(f + g*x)^m
*(F^u/(b + q + 2*c*F^u)), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2451

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 2747

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rule 3404

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[(c + d*x)^m*(E^(I*(e + f*x))/(I*b + 2*a*E^(I*(e + f*x)
) - I*b*E^(2*I*(e + f*x)))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3405

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[b*(c + d*x)^m*(Cos[e + f*x]/(f*(a^2 - b^2)*(a + b*Sin[e + f
*x]))), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[b*d*(m/(f*(a^2 - b^2))), Int[(c + d*x)^(m - 1)*(Cos[e + f*x]/(a
+ b*Sin[e + f*x])), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 4615

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Int[(e + f*x)^m*(E^(I*(c + d*x))/(a - Rt[a^2 - b^2, 2] - I*b*E^(
I*(c + d*x)))), x] + Int[(e + f*x)^m*(E^(I*(c + d*x))/(a + Rt[a^2 - b^2, 2]
 - I*b*E^(I*(c + d*x)))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0]
 && PosQ[a^2 - b^2]
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[(a + b*x)^n*(Cos[x]/(c*d + e*Sin[x])), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4827

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(e*(m + 1))), x] -
Dist[b*c*(n/(e*(m + 1))), Int[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1
)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4837

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 4843

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(Px_)*((d_) + (e_.)*(x_))^(m_.)
, x_Symbol] :> Int[ExpandIntegrand[Px*(d + e*x)^m*(a + b*ArcSin[c*x])^n, x]
, x] /; FreeQ[{a, b, c, d, e}, x] && PolynomialQ[Px, x] && IGtQ[n, 0] && In
tegerQ[m]
```

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(f+gx)^2 \left(a+b\sin^{-1}(cx)\right)^2}{(d+ex)^3}\,dx = \int \left(\frac{a^2(f+gx)^2}{(d+ex)^3} + \frac{2ab(f+gx)^2\sin^{-1}(cx)}{(d+ex)^3} + \frac{b^2(f+gx)^2\sin^{-1}(cx)^2}{(d+ex)^3}\right)$$

$$= a^2 \int \frac{(f+gx)^2}{(d+ex)^3}\,dx + (2ab)\int \frac{(f+gx)^2\sin^{-1}(cx)}{(d+ex)^3}\,dx + b^2 \int \frac{(f+gx)^2 \text{s}}{(d+}$$

$$= -\frac{ab(ef-dg)^2\sin^{-1}(cx)}{e^3(d+ex)^2} - \frac{4abg(ef-dg)\sin^{-1}(cx)}{e^3(d+ex)} + \frac{2abg^2\sin^{-1}(cx)}{e^3}$$

$$= -\frac{a^2(ef-dg)^2}{2e^3(d+ex)^2} - \frac{2a^2g(ef-dg)}{e^3(d+ex)} - \frac{ab(ef-dg)^2\sin^{-1}(cx)}{e^3(d+ex)^2} - \frac{4abg(ef-}{e^3(}$$

$$= -\frac{a^2(ef-dg)^2}{2e^3(d+ex)^2} - \frac{2a^2g(ef-dg)}{e^3(d+ex)} - \frac{ab(ef-dg)^2\sin^{-1}(cx)}{e^3(d+ex)^2} - \frac{4abg(ef-}{e^3(}$$

$$= -\frac{a^2(ef-dg)^2}{2e^3(d+ex)^2} - \frac{2a^2g(ef-dg)}{e^3(d+ex)} - \frac{ab(ef-dg)^2\sin^{-1}(cx)}{e^3(d+ex)^2} - \frac{4abg(ef-}{e^3(}$$

$$= -\frac{a^2(ef-dg)^2}{2e^3(d+ex)^2} - \frac{2a^2g(ef-dg)}{e^3(d+ex)} + \frac{abc(ef-dg)^2\sqrt{1-c^2x^2}}{e^2\left(c^2d^2-e^2\right)(d+ex)} - \frac{ab(ef-}{e}$$

$$= -\frac{a^2(ef-dg)^2}{2e^3(d+ex)^2} - \frac{2a^2g(ef-dg)}{e^3(d+ex)} + \frac{abc(ef-dg)^2\sqrt{1-c^2x^2}}{e^2\left(c^2d^2-e^2\right)(d+ex)} - \frac{ab(ef-}{e}$$

$$= -\frac{a^2(ef-dg)^2}{2e^3(d+ex)^2} - \frac{2a^2g(ef-dg)}{e^3(d+ex)} + \frac{abc(ef-dg)^2\sqrt{1-c^2x^2}}{e^2\left(c^2d^2-e^2\right)(d+ex)} - \frac{ab(ef-}{e}$$

$$= -\frac{a^2(ef-dg)^2}{2e^3(d+ex)^2} - \frac{2a^2g(ef-dg)}{e^3(d+ex)} + \frac{abc(ef-dg)^2\sqrt{1-c^2x^2}}{e^2\left(c^2d^2-e^2\right)(d+ex)} - \frac{ab(ef-}{e}$$

$$= -\frac{a^2(ef-dg)^2}{2e^3(d+ex)^2} - \frac{2a^2g(ef-dg)}{e^3(d+ex)} + \frac{abc(ef-dg)^2\sqrt{1-c^2x^2}}{e^2\left(c^2d^2-e^2\right)(d+ex)} - \frac{ab(ef-}{e}$$

$$= -\frac{a^2(ef-dg)^2}{2e^3(d+ex)^2} - \frac{2a^2g(ef-dg)}{e^3(d+ex)} + \frac{abc(ef-dg)^2\sqrt{1-c^2x^2}}{e^2\left(c^2d^2-e^2\right)(d+ex)} - \frac{ab(ef-}{e}$$

Mathematica [A]
time = 2.82, size = 903, normalized size = 0.54

$$\frac{-\frac{3(ef-dg)^2(a+b\operatorname{ArcSin}(cx))^2}{(d+ex)^2}+\frac{12g(-ef+dg)(a+b\operatorname{ArcSin}(cx))^2}{d+ex}-\frac{2ig^2(a+b\operatorname{ArcSin}(cx))^3}{b}+6g^2(a+b\operatorname{ArcSin}(cx))^2\log\left(1+\frac{iee^{i\operatorname{ArcSin}(cx)}}{-cd+\sqrt{c^2d^2-e^2}}\right)+6g^2(a+b\operatorname{ArcSin}(cx))^2\log\left(1-\frac{iee^{i\operatorname{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)+\frac{24bcg(-ef+dg)\left(i(a+b\operatorname{ArcSin}(cx))\left(\log\left(1+\frac{iee^{i\operatorname{ArcSin}(cx)}}{-cd+\sqrt{c^2d^2-e^2}}\right)-\log\left(1-\frac{iee^{i\operatorname{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)\right)+b\operatorname{PolyLog}\left(2,\frac{iee^{i\operatorname{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)-b\operatorname{PolyLog}\left(2,\frac{iee^{i\operatorname{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)\right)}{\sqrt{c^2d^2-e^2}}+\frac{6bc^2(ef-dg)^2\left(\frac{e\sqrt{1-c^2x^2}(a+b\operatorname{ArcSin}(cx))}{cd+cex}-b\log(d+ex)+\frac{cd\left(-i(a+b\operatorname{ArcSin}(cx))\left(\log\left(1+\frac{iee^{i\operatorname{ArcSin}(cx)}}{-cd+\sqrt{c^2d^2-e^2}}\right)-\log\left(1-\frac{iee^{i\operatorname{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)\right)-b\operatorname{PolyLog}\left(2,\frac{iee^{i\operatorname{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)+b\operatorname{PolyLog}\left(2,\frac{iee^{i\operatorname{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)\right)}{\sqrt{c^2d^2-e^2}}\right)}{c^2d^2-e^2}-12bg^2\left(i(a+b\operatorname{ArcSin}(cx))\operatorname{PolyLog}\left(2,\frac{iee^{i\operatorname{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)-b\operatorname{PolyLog}\left(3,\frac{iee^{i\operatorname{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)\right)-12bg^2\left(i(a+b\operatorname{ArcSin}(cx))\operatorname{PolyLog}\left(2,\frac{iee^{i\operatorname{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)-b\operatorname{PolyLog}\left(3,\frac{iee^{i\operatorname{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)\right)}{6e^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^2*(a + b*ArcSin[c*x])^2)/(d + e*x)^3,x]
```

```
[Out] ((-3*(e*f - d*g)^2*(a + b*ArcSin[c*x])^2)/(d + e*x)^2 + (12*g*(-(e*f) + d*g
)*(a + b*ArcSin[c*x])^2)/(d + e*x) - ((2*I)*g^2*(a + b*ArcSin[c*x])^3)/b +
6*g^2*(a + b*ArcSin[c*x])^2*Log[1 + (I*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[
c^2*d^2 - e^2])] + 6*g^2*(a + b*ArcSin[c*x])^2*Log[1 - (I*e*E^(I*ArcSin[c*x
]))/(c*d + Sqrt[c^2*d^2 - e^2])] + (24*b*c*g*(-(e*f) + d*g)*(I*(a + b*ArcSi
n[c*x])*(Log[1 + (I*e*E^(I*ArcSin[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] -
Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]) + b*PolyLog[2
, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])] - b*PolyLog[2, (I*e*
E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]))/Sqrt[c^2*d^2 - e^2] + (6*
b*c^2*(e*f - d*g)^2*((e*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(c*d + c*e*x
) - b*Log[d + e*x] + (c*d*((-I)*(a + b*ArcSin[c*x])*(Log[1 + (I*e*E^(I*ArcS
in[c*x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] - Log[1 - (I*e*E^(I*ArcSin[c*x]))
/(c*d + Sqrt[c^2*d^2 - e^2])]) - b*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d
- Sqrt[c^2*d^2 - e^2])] + b*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[
c^2*d^2 - e^2])]))/Sqrt[c^2*d^2 - e^2]))/(c^2*d^2 - e^2) - 12*b*g^2*(I*(a +
 b*ArcSin[c*x])*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^
2])] - b*PolyLog[3, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])]) -
 12*b*g^2*(I*(a + b*ArcSin[c*x])*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d +
Sqrt[c^2*d^2 - e^2])] - b*PolyLog[3, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^
2*d^2 - e^2])]))/(6*e^3)
```

Maple [F]
time = 0.98, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^2 (a+b\arcsin(cx))^2}{(ex+d)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*arcsin(c*x))^2/(e*x+d)^3,x)
```

```
[Out] int((g*x+f)^2*(a+b*arcsin(c*x))^2/(e*x+d)^3,x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c*d-%e>0)', see `assume?` for more
details
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] integral((a^2*g^2*x^2 + 2*a^2*f*g*x + a^2*f^2 + (b^2*g^2*x^2 + 2*b^2*f*g*x
+ b^2*f^2)*arcsin(c*x)^2 + 2*(a*b*g^2*x^2 + 2*a*b*f*g*x + a*b*f^2)*arcsin(c
*x))/(x^3*e^3 + 3*d*x^2*e^2 + 3*d^2*x*e + d^3), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+b\operatorname{asin}(cx))^2 (f+gx)^2}{(d+ex)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*asin(c*x))**2/(e*x+d)**3,x)
```

```
[Out] Integral((a + b*asin(c*x))**2*(f + g*x)**2/(d + e*x)**3, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*arcsin(c*x))^2/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^2*(b*arcsin(c*x) + a)^2/(e*x + d)^3, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^2\,(a+b\,\mathrm{asin}(c\,x))^2}{(d+e\,x)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)^2*(a + b*asin(c*x))^2)/(d + e*x)^3,x)
```

```
[Out] int(((f + g*x)^2*(a + b*asin(c*x))^2)/(d + e*x)^3, x)
```

3.115 $\int (g+hx)^3 (d+ex+fx^2) (a+b\text{ArcSin}(cx))^2 dx$

Optimal. Leaf size=1016

$$-2b^2dg^3x-\frac{16b^2h^2(3fg+eh)x}{75c^4}-\frac{4b^2g(fg^2+3h(eg+dh))\,x}{9c^2}-\frac{5b^2fh^3x^2}{96c^4}-\frac{1}{4}b^2g^2(eg+3dh)x^2-\frac{3b^2h(3fg^2+h}{32}$$

```
[Out] 5/48*b*f*h^3*x*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^5+1/2*b*g^2*(3*d*h+e*
g)*x*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c+3/16*b*h*(3*f*g^2+h*(d*h+3*e*g)
)*x*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3+8/75*b*h^2*(e*h+3*f*g)*x^2*(a+
b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3+2/9*b*g*(f*g^2+3*h*(d*h+e*g))*x^2*(a+
b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c+5/72*b*f*h^3*x^3*(a+b*arcsin(c*x))*(-c^
2*x^2+1)^(1/2)/c^3+1/8*b*h*(3*f*g^2+h*(d*h+3*e*g))*x^3*(a+b*arcsin(c*x))*(-
c^2*x^2+1)^(1/2)/c+2/25*b*h^2*(e*h+3*f*g)*x^4*(a+b*arcsin(c*x))*(-c^2*x^2+1
)^(1/2)/c+1/18*b*f*h^3*x^5*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c-5/288*b^2
*f*h^3*x^4/c^2-16/75*b^2*h^2*(e*h+3*f*g)*x/c^4-4/9*b^2*g*(f*g^2+3*h*(d*h+e*
g))*x/c^2-5/96*b^2*f*h^3*x^2/c^4-3/32*b^2*h*(3*f*g^2+h*(d*h+3*e*g))*x^2/c^2
-8/225*b^2*h^2*(e*h+3*f*g)*x^3/c^2+d*g^3*x*(a+b*arcsin(c*x))^2-2*b^2*d*g^3*
x-1/4*b^2*g^2*(3*d*h+e*g)*x^2-2/27*b^2*g*(f*g^2+3*h*(d*h+e*g))*x^3-1/32*b^2
*h*(3*f*g^2+h*(d*h+3*e*g))*x^4-2/125*b^2*h^2*(e*h+3*f*g)*x^5-1/108*b^2*f*h^
3*x^6-5/96*f*h^3*(a+b*arcsin(c*x))^2/c^6-1/4*g^2*(3*d*h+e*g)*(a+b*arcsin(c*
x))^2/c^2-3/32*h*(3*f*g^2+h*(d*h+3*e*g))*(a+b*arcsin(c*x))^2/c^4+1/2*g^2*(3
*d*h+e*g)*x^2*(a+b*arcsin(c*x))^2+1/3*g*(f*g^2+3*h*(d*h+e*g))*x^3*(a+b*arcs
in(c*x))^2+1/4*h*(3*f*g^2+h*(d*h+3*e*g))*x^4*(a+b*arcsin(c*x))^2+1/5*h^2*(e
*h+3*f*g)*x^5*(a+b*arcsin(c*x))^2+1/6*f*h^3*x^6*(a+b*arcsin(c*x))^2+2*b*d*g
^3*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c+16/75*b*h^2*(e*h+3*f*g)*(a+b*arcs
in(c*x))*(-c^2*x^2+1)^(1/2)/c^5+4/9*b*g*(f*g^2+3*h*(d*h+e*g))*(a+b*arcsin(c
*x))*(-c^2*x^2+1)^(1/2)/c^3
```

Rubi [A]
time = 1.00, antiderivative size = 1016, normalized size of antiderivative = 1.00, number of steps used = 35, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {4835, 4715, 4767, 8, 4723, 4795, 4737, 30}

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^3*(d + e*x + f*x^2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -2*b^2*d*g^3*x - (16*b^2*h^2*(3*f*g + e*h)*x)/(75*c^4) - (4*b^2*g*(f*g^2 +
3*h*(e*g + d*h))*x)/(9*c^2) - (5*b^2*f*h^3*x^2)/(96*c^4) - (b^2*g^2*(e*g +
3*d*h)*x^2)/4 - (3*b^2*h*(3*f*g^2 + h*(3*e*g + d*h))*x^2)/(32*c^2) - (8*b^2
*h^2*(3*f*g + e*h)*x^3)/(225*c^2) - (2*b^2*g*(f*g^2 + 3*h*(e*g + d*h))*x^3)
/27 - (5*b^2*f*h^3*x^4)/(288*c^2) - (b^2*h*(3*f*g^2 + h*(3*e*g + d*h))*x^4)
/32 - (2*b^2*h^2*(3*f*g + e*h)*x^5)/125 - (b^2*f*h^3*x^6)/108 + (2*b*d*g^3*
```

```
Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c + (16*b*h^2*(3*f*g + e*h)*Sqrt[1 -
 c^2*x^2]*(a + b*ArcSin[c*x]))/(75*c^5) + (4*b*g*(f*g^2 + 3*h*(e*g + d*h))*
Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(9*c^3) + (5*b*f*h^3*x*Sqrt[1 - c^2*
x^2]*(a + b*ArcSin[c*x]))/(48*c^5) + (b*g^2*(e*g + 3*d*h)*x*Sqrt[1 - c^2*x^
2]*(a + b*ArcSin[c*x]))/(2*c) + (3*b*h*(3*f*g^2 + h*(3*e*g + d*h))*x*Sqrt[1
 - c^2*x^2]*(a + b*ArcSin[c*x]))/(16*c^3) + (8*b*h^2*(3*f*g + e*h)*x^2*Sqrt
[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(75*c^3) + (2*b*g*(f*g^2 + 3*h*(e*g + d*
h))*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(9*c) + (5*b*f*h^3*x^3*Sqrt[
1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(72*c^3) + (b*h*(3*f*g^2 + h*(3*e*g + d*h
))*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(8*c) + (2*b*h^2*(3*f*g + e*h
)*x^4*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(25*c) + (b*f*h^3*x^5*Sqrt[1 -
 c^2*x^2]*(a + b*ArcSin[c*x]))/(18*c) - (5*f*h^3*(a + b*ArcSin[c*x])^2)/(96
*c^6) - (g^2*(e*g + 3*d*h)*(a + b*ArcSin[c*x])^2)/(4*c^2) - (3*h*(3*f*g^2 +
 h*(3*e*g + d*h))*(a + b*ArcSin[c*x])^2)/(32*c^4) + d*g^3*x*(a + b*ArcSin[c
*x])^2 + (g^2*(e*g + 3*d*h)*x^2*(a + b*ArcSin[c*x])^2)/2 + (g*(f*g^2 + 3*h*
(e*g + d*h))*x^3*(a + b*ArcSin[c*x])^2)/3 + (h*(3*f*g^2 + h*(3*e*g + d*h))*
x^4*(a + b*ArcSin[c*x])^2)/4 + (h^2*(3*f*g + e*h)*x^5*(a + b*ArcSin[c*x])^2
)/5 + (f*h^3*x^6*(a + b*ArcSin[c*x])^2)/6
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
```

```
+ e, 0] && NeQ[n, -1]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4835

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(Px_), x_Symbol] :> Int[ExpandI
ntegrand[Px*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[{a, b, c, n}, x] && Poly
nomialQ[Px, x]
```

Rubi steps

$$\int (g+hx)^3 \left(d+ex+fx^2\right) \left(a+b\sin^{-1}(cx)\right)^2 \, dx = \int \left(dg^3\left(a+b\sin^{-1}(cx)\right)^2 + g^2(eg+3dh)x\left(a+b\sin^{-1}(\right.\right.$$

$$= \left(dg^3\right) \int \left(a+b\sin^{-1}(cx)\right)^2 \, dx + \left(fh^3\right) \int x^5\left(a+b\sin^{-1}\right.$$

$$= dg^3x\left(a+b\sin^{-1}(cx)\right)^2 + \frac{1}{2}g^2(eg+3dh)x^2\left(a+b\sin^{-1}(\right.$$

$$= \frac{2bdg^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c} + \frac{bg^2(eg+3dh)x\sqrt{1}}{}$$

$$= -2b^2dg^3x - \frac{1}{4}b^2g^2(eg+3dh)x^2 - \frac{2}{27}b^2g\left(fg^2+3h(eg+\right.$$

$$= -2b^2dg^3x - \frac{4b^2g\left(fg^2+3h(eg+dh)\right)x}{9c^2} - \frac{1}{4}b^2g^2(eg+3$$

$$= -2b^2dg^3x - \frac{16b^2h^2(3fg+eh)x}{75c^4} - \frac{4b^2g\left(fg^2+3h(eg+\right.}{9c^2}$$

Mathematica [A]
time = 0.68, size = 734, normalized size = 0.72

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^3*(d + e*x + f*x^2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] d*g^3*x*(a + b*ArcSin[c*x])^2 + (g^2*(e*g + 3*d*h)*x^2*(a + b*ArcSin[c*x])^
2)/2 + (g*(f*g^2 + 3*h*(e*g + d*h))*x^3*(a + b*ArcSin[c*x])^2)/3 + (h*(3*f*
g^2 + h*(3*e*g + d*h))*x^4*(a + b*ArcSin[c*x])^2)/4 + (h^2*(3*f*g + e*h)*x^
5*(a + b*ArcSin[c*x])^2)/5 + (f*h^3*x^6*(a + b*ArcSin[c*x])^2)/6 - (2*b*g*(
f*g^2 + 3*h*(e*g + d*h))*(-3*a*Sqrt[1 - c^2*x^2]*(2 + c^2*x^2) + b*c*x*(6 +
 c^2*x^2) - 3*b*Sqrt[1 - c^2*x^2]*(2 + c^2*x^2)*ArcSin[c*x]))/(27*c^3) - (2
*b*h^2*(3*f*g + e*h)*(-15*a*Sqrt[1 - c^2*x^2]*(8 + 4*c^2*x^2 + 3*c^4*x^4) +
 b*c*x*(120 + 20*c^2*x^2 + 9*c^4*x^4) - 15*b*Sqrt[1 - c^2*x^2]*(8 + 4*c^2*x
^2 + 3*c^4*x^4)*ArcSin[c*x]))/(1125*c^5) - (f*h^3*(45*a^2 - 6*a*b*c*x*Sqrt[
1 - c^2*x^2]*(15 + 10*c^2*x^2 + 8*c^4*x^4) + b^2*c^2*x^2*(45 + 15*c^2*x^2 +
 8*c^4*x^4) - 6*b*(-15*a + b*c*x*Sqrt[1 - c^2*x^2]*(15 + 10*c^2*x^2 + 8*c^4
*x^4))*ArcSin[c*x] + 45*b^2*ArcSin[c*x]^2))/(864*c^6) - 2*b*d*g^3*(b*x - (S
qrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c) - (b*h*(3*f*g^2 + h*(3*e*g + d*h))
*((3*b*x^2)/c^2 + b*x^4 - (6*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c^3 -
 (4*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c + (3*(a + b*ArcSin[c*x])^2
```

```
)/(b*c^4)))/32 - (b*g^2*(e*g + 3*d*h)*(b*x^2 - (2*x*Sqrt[1 - c^2*x^2]*(a +
b*ArcSin[c*x]))/c + (a + b*ArcSin[c*x])^2/(b*c^2)))/4
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 2599 vs. $2(932) = 1864$.
time = 0.56, size = 2600, normalized size = 2.56

method	result	size
derivativedivides	Expression too large to display	2600
default	Expression too large to display	2600

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^3*(f*x^2+e*x+d)*(a+b*arcsin(c*x))^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(a^2/c^5*(1/6*h^3*f*c^6*x^6+1/5*(c*e*h^3+3*c*f*g*h^2)*c^5*x^5+1/4*(c^2*
d*h^3+3*c^2*e*g*h^2+3*c^2*f*g^2*h)*c^4*x^4+1/3*(3*c^3*d*g*h^2+3*c^3*e*g^2*h
+c^3*f*g^3)*c^3*x^3+1/2*(3*c^4*d*g^2*h+c^4*e*g^3)*c^2*x^2+c^6*g^3*d*x)+b^2/
c^5*(1/3375*h^3*c*e*(675*arcsin(c*x)^2*c^5*x^5+270*arcsin(c*x)*(-c^2*x^2+1)
^(1/2)*c^4*x^4-2250*c^3*x^3*arcsin(c*x)^2-54*c^5*x^5-1140*arcsin(c*x)*(-c^2
*x^2+1)^(1/2)*c^2*x^2+3375*c*x*arcsin(c*x)^2+380*c^3*x^3+4470*arcsin(c*x)*(
-c^2*x^2+1)^(1/2)-4470*c*x)+1/1125*c*g*h^2*f*(675*arcsin(c*x)^2*c^5*x^5+270
*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^4*x^4-2250*c^3*x^3*arcsin(c*x)^2-54*c^5*x
^5-1140*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x^2+3375*c*x*arcsin(c*x)^2+380*c
^3*x^3+4470*arcsin(c*x)*(-c^2*x^2+1)^(1/2)-4470*c*x)+1/864*h^3*f*(144*arcsi
n(c*x)^2*c^6*x^6+48*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^5*x^5-432*arcsin(c*x)^
2*c^4*x^4-8*c^6*x^6-156*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^3*x^3+432*arcsin(c
*x)^2*c^2*x^2+39*c^4*x^4+198*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*x-99*arcsin(c
*x)^2-99*c^2*x^2+68)+1/9*c^3*g*h^2*d*(9*c^3*x^3*arcsin(c*x)^2+6*arcsin(c*x)
*(-c^2*x^2+1)^(1/2)*c^2*x^2-27*c*x*arcsin(c*x)^2-2*c^3*x^3-42*arcsin(c*x)*(
-c^2*x^2+1)^(1/2)+42*c*x)+1/9*c^3*g^2*h*e*(9*c^3*x^3*arcsin(c*x)^2+6*arcsin
(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x^2-27*c*x*arcsin(c*x)^2-2*c^3*x^3-42*arcsin(c
*x)*(-c^2*x^2+1)^(1/2)+42*c*x)+1/27*c^3*g^3*f*(9*c^3*x^3*arcsin(c*x)^2+6*ar
csin(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x^2-27*c*x*arcsin(c*x)^2-2*c^3*x^3-42*arcs
in(c*x)*(-c^2*x^2+1)^(1/2)+42*c*x)+1/128*c^2*d*h^3*(32*arcsin(c*x)^2*c^4*x^
4+16*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^3*x^3-64*arcsin(c*x)^2*c^2*x^2-4*c^4*
x^4-40*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*x+20*arcsin(c*x)^2+20*c^2*x^2-25)+3
/128*c^2*e*g*h^2*(32*arcsin(c*x)^2*c^4*x^4+16*arcsin(c*x)*(-c^2*x^2+1)^(1/2
)*c^3*x^3-64*arcsin(c*x)^2*c^2*x^2-4*c^4*x^4-40*arcsin(c*x)*(-c^2*x^2+1)^(1
/2)*c*x+20*arcsin(c*x)^2+20*c^2*x^2-25)+3/128*c^2*f*g^2*h*(32*arcsin(c*x)^2
*c^4*x^4+16*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^3*x^3-64*arcsin(c*x)^2*c^2*x^2
-4*c^4*x^4-40*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*x+20*arcsin(c*x)^2+20*c^2*x^
2-25)+c^5*g^3*d*(c*x*arcsin(c*x)^2-2*c*x+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2))+
3/4*c^4*d*g^2*h*(2*arcsin(c*x)^2*c^2*x^2+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c
*x-arcsin(c*x)^2-c^2*x^2)+1/4*c^4*e*g^3*(2*arcsin(c*x)^2*c^2*x^2+2*arcsin(c
*x)*(-c^2*x^2+1)^(1/2)*c*x-arcsin(c*x)^2-c^2*x^2)+2/27*h^3*c*e*(9*c^3*x^3*a
```

```
rcsin(c*x)^2+6*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x^2-27*c*x*arcsin(c*x)^2-
2*c^3*x^3-42*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+42*c*x)+2/9*c*g*h^2*f*(9*c^3*x^
3*arcsin(c*x)^2+6*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x^2-27*c*x*arcsin(c*x)
^2-2*c^3*x^3-42*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+42*c*x)+1/64*h^3*f*(32*arcsi
n(c*x)^2*c^4*x^4+16*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^3*x^3-64*arcsin(c*x)^2
*c^2*x^2-4*c^4*x^4-40*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*x+20*arcsin(c*x)^2+2
0*c^2*x^2-25)+3*c^3*g*h^2*d*(c*x*arcsin(c*x)^2-2*c*x+2*arcsin(c*x)*(-c^2*x^
2+1)^(1/2))+3*c^3*g^2*h*e*(c*x*arcsin(c*x)^2-2*c*x+2*arcsin(c*x)*(-c^2*x^2+
1)^(1/2))+c^3*g^3*f*(c*x*arcsin(c*x)^2-2*c*x+2*arcsin(c*x)*(-c^2*x^2+1)^(1/
2))+1/4*c^2*d*h^3*(2*arcsin(c*x)^2*c^2*x^2+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)
*c*x-arcsin(c*x)^2-c^2*x^2)+3/4*c^2*e*g*h^2*(2*arcsin(c*x)^2*c^2*x^2+2*arcs
in(c*x)*(-c^2*x^2+1)^(1/2)*c*x-arcsin(c*x)^2-c^2*x^2)+3/4*c^2*f*g^2*h*(2*ar
csin(c*x)^2*c^2*x^2+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*x-arcsin(c*x)^2-c^2*
x^2)+h^3*c*e*(c*x*arcsin(c*x)^2-2*c*x+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2))+3*c
*g*h^2*f*(c*x*arcsin(c*x)^2-2*c*x+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2))+1/4*h^3
*f*(2*arcsin(c*x)^2*c^2*x^2+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*x-arcsin(c*x
)^2-c^2*x^2))+2*a*b/c^5*(1/6*arcsin(c*x)*h^3*f*c^6*x^6+1/5*arcsin(c*x)*c^6*
e*h^3*x^5+3/5*arcsin(c*x)*c^6*f*g*h^2*x^5+1/4*arcsin(c*x)*c^6*d*h^3*x^4+3/4
*arcsin(c*x)*c^6*e*g*h^2*x^4+3/4*arcsin(c*x)*c^6*f*g^2*h*x^4+arcsin(c*x)*c^
6*d*g*h^2*x^3+arcsin(c*x)*c^6*e*g^2*h*x^3+1/3*arcsin(c*x)*c^6*f*g^3*x^3+3/2
*arcsin(c*x)*c^6*d*g^2*h*x^2+1/2*arcsin(c*x)*c^6*e*g^3*x^2+arcsin(c*x)*c^6*
g^3*d*x-1/6*h^3*f*(-1/6*c^5*x^5*(-c^2*x^2+1)^(1/2)-5/24*c^3*x^3*(-c^2*x^2+1
)^(1/2)-5/16*c*x*(-c^2*x^2+1)^(1/2)+5/16*arcsin(c*x))-1/60*(12*c*e*h^3+36*c
*f*g*h^2)*(-1/5*c^4*x^4*(-c^2*x^2+1)^(1/2)-4/15*c^2*x^2*(-c^2*x^2+1)^(1/2)-
8/15*(-c^2*x^2+1)^(1/2))-1/60*(15*c^2*d*h^3+45*c^2*e*g*h^2+45*c^2*f*g^2*h)*
(-1/4*c^3*x^3*(-c^2*x^2+1)^(1/2)-3/8*c*x*(-c^2*x^2+1)^(1/2)+3/8*arcsin(c*x)
)-1/60*(60*c^3*d*g*h^2+60*c^3*e*g^2*h+20*c^3*f*g^3)*(-1/3*c^2*x^2*(-c^2*x^2
+1)^(1/2)-2/3*(-c^2*x^2+1)^(1/2))-1/60*(90*c^4*d*g^2*h+30*c^4*e*g^3)*(-1/2*
c*x*(-c^2*x^2+1)^(1/2)+1/2*arcsin(c*x))+c^5*g^3*d*(-c^2*x^2+1)^(1/2)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^3*(f*x^2+e*x+d)*(a+b*arcsin(c*x))^2,x, algorithm="maxima"
)
```

```
[Out] 1/6*a^2*f*h^3*x^6 + 3/5*a^2*f*g*h^2*x^5 + 1/5*a^2*h^3*x^5*e + 3/4*a^2*f*g^2
*h*x^4 + 1/4*a^2*d*h^3*x^4 + 3/4*a^2*g*h^2*x^4*e + 1/3*a^2*f*g^3*x^3 + a^2*
d*g*h^2*x^3 + b^2*d*g^3*x*arcsin(c*x)^2 + a^2*g^2*h*x^3*e + 3/2*a^2*d*g^2*h
*x^2 + 1/2*a^2*g^3*x^2*e + 2/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x
^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*f*g^3 + 3/2*(2*x^2*arcsin(c*x) + c*
(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c*x)/c^3))*a*b*d*g^2*h + 3/16*(8*x^4*arc
```

```
sin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*a
rcsin(c*x)/c^5)*c)*a*b*f*g^2*h + 2/3*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2
+ 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*d*g*h^2 + 2/25*(15*x^5*arcsin
(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sq
rt(-c^2*x^2 + 1)/c^6)*c)*a*b*f*g*h^2 + 1/16*(8*x^4*arcsin(c*x) + (2*sqrt(-c
^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c*x)/c^5)*c)*a*
b*d*h^3 + 1/144*(48*x^6*arcsin(c*x) + (8*sqrt(-c^2*x^2 + 1)*x^5/c^2 + 10*sq
rt(-c^2*x^2 + 1)*x^3/c^4 + 15*sqrt(-c^2*x^2 + 1)*x/c^6 - 15*arcsin(c*x)/c^7
)*c)*a*b*f*h^3 - 2*b^2*d*g^3*(x - sqrt(-c^2*x^2 + 1)*arcsin(c*x)/c) + a^2*d
*g^3*x + 1/2*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c*x)
/c^3))*a*b*g^3*e + 2/3*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 +
 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*g^2*h*e + 3/16*(8*x^4*arcsin(c*x) + (2*sqrt
(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c*x)/c^5)*c)
*a*b*g*h^2*e + 2/75*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4
*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*a*b*h^3*e + 2*(c
*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*a*b*d*g^3/c + 1/60*(10*b^2*f*h^3*x^6 +
 12*(3*b^2*f*g*h^2 + b^2*h^3*e)*x^5 + 15*(3*b^2*f*g^2*h + b^2*d*h^3 + 3*b^2
*g*h^2*e)*x^4 + 20*(b^2*f*g^3 + 3*b^2*d*g*h^2 + 3*b^2*g^2*h*e)*x^3 + 30*(3*
b^2*d*g^2*h + b^2*g^3*e)*x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2
+ integrate(1/30*(10*b^2*c*f*h^3*x^6 + 12*(3*b^2*c*f*g*h^2 + b^2*c*h^3*e)*x
^5 + 15*(3*b^2*c*f*g^2*h + b^2*c*d*h^3 + 3*b^2*c*g*h^2*e)*x^4 + 20*(b^2*c*f
*g^3 + 3*b^2*c*d*g*h^2 + 3*b^2*c*g^2*h*e)*x^3 + 30*(3*b^2*c*d*g^2*h + b^2*c
*g^3*e)*x^2)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-
c*x + 1))/(c^2*x^2 - 1), x)
```

Fricas [A]
time = 3.17, size = 1590, normalized size = 1.56

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^3*(f*x^2+e*x+d)*(a+b*arcsin(c*x))^2,x, algorithm="fricas"
)
```

```
[Out] 1/108000*(1000*(18*a^2 - b^2)*c^6*f*h^3*x^6 + 2592*(25*a^2 - 2*b^2)*c^6*f*g
*h^2*x^5 + 375*(27*(8*a^2 - b^2)*c^6*f*g^2*h + (9*(8*a^2 - b^2)*c^6*d - 5*b
^2*c^4*f)*h^3)*x^4 + 160*(25*(9*a^2 - 2*b^2)*c^6*f*g^3 + 3*(25*(9*a^2 - 2*b
^2)*c^6*d - 24*b^2*c^4*f)*g*h^2)*x^3 + 1125*(9*(8*(2*a^2 - b^2)*c^6*d - 3*b
^2*c^4*f)*g^2*h - (9*b^2*c^4*d + 5*b^2*c^2*f)*h^3)*x^2 + 225*(80*b^2*c^6*f*
h^3*x^6 + 288*b^2*c^6*f*g*h^2*x^5 + 720*b^2*c^6*d*g^2*h*x^2 + 480*b^2*c^6*d
*g^3*x + 120*(3*b^2*c^6*f*g^2*h + b^2*c^6*d*h^3)*x^4 - 45*(8*b^2*c^4*d + 3*
b^2*c^2*f)*g^2*h - 5*(9*b^2*c^2*d + 5*b^2*f)*h^3 + 160*(b^2*c^6*f*g^3 + 3*b
^2*c^6*d*g*h^2)*x^3 + 3*(32*b^2*c^6*h^3*x^5 + 120*b^2*c^6*g*h^2*x^4 + 160*b
^2*c^6*g^2*h*x^3 + 80*b^2*c^6*g^3*x^2 - 40*b^2*c^4*g^3 - 45*b^2*c^2*g*h^2)*
e)*arcsin(c*x)^2 + 480*(25*(9*(a^2 - 2*b^2)*c^6*d - 4*b^2*c^4*f)*g^3 - 12*(
```

```
25*b^2*c^4*d + 12*b^2*c^2*f)*g*h^2)*x + 450*(80*a*b*c^6*f*h^3*x^6 + 288*a*b
*c^6*f*g*h^2*x^5 + 720*a*b*c^6*d*g^2*h*x^2 + 480*a*b*c^6*d*g^3*x + 120*(3*a
*b*c^6*f*g^2*h + a*b*c^6*d*h^3)*x^4 - 45*(8*a*b*c^4*d + 3*a*b*c^2*f)*g^2*h
- 5*(9*a*b*c^2*d + 5*a*b*f)*h^3 + 160*(a*b*c^6*f*g^3 + 3*a*b*c^6*d*g*h^2)*x
^3 + 3*(32*a*b*c^6*h^3*x^5 + 120*a*b*c^6*g*h^2*x^4 + 160*a*b*c^6*g^2*h*x^3
+ 80*a*b*c^6*g^3*x^2 - 40*a*b*c^4*g^3 - 45*a*b*c^2*g*h^2)*e)*arcsin(c*x) +
3*(288*(25*a^2 - 2*b^2)*c^6*h^3*x^5 + 3375*(8*a^2 - b^2)*c^6*g*h^2*x^4 + 16
0*(25*(9*a^2 - 2*b^2)*c^6*g^2*h - 8*b^2*c^4*h^3)*x^3 + 1125*(8*(2*a^2 - b^2
)*c^6*g^3 - 9*b^2*c^4*g*h^2)*x^2 - 1920*(25*b^2*c^4*g^2*h + 4*b^2*c^2*h^3)*
x)*e + 30*(200*a*b*c^5*f*h^3*x^5 + 864*a*b*c^5*f*g*h^2*x^4 + 800*(9*a*b*c^5
*d + 2*a*b*c^3*f)*g^3 + 192*(25*a*b*c^3*d + 12*a*b*c*f)*g*h^2 + 50*(27*a*b*
c^5*f*g^2*h + (9*a*b*c^5*d + 5*a*b*c^3*f)*h^3)*x^3 + 32*(25*a*b*c^5*f*g^3 +
 3*(25*a*b*c^5*d + 12*a*b*c^3*f)*g*h^2)*x^2 + 75*(9*(8*a*b*c^5*d + 3*a*b*c^
3*f)*g^2*h + (9*a*b*c^3*d + 5*a*b*c*f)*h^3)*x + (200*b^2*c^5*f*h^3*x^5 + 86
4*b^2*c^5*f*g*h^2*x^4 + 800*(9*b^2*c^5*d + 2*b^2*c^3*f)*g^3 + 192*(25*b^2*c
^3*d + 12*b^2*c*f)*g*h^2 + 50*(27*b^2*c^5*f*g^2*h + (9*b^2*c^5*d + 5*b^2*c^
3*f)*h^3)*x^3 + 32*(25*b^2*c^5*f*g^3 + 3*(25*b^2*c^5*d + 12*b^2*c^3*f)*g*h^
2)*x^2 + 75*(9*(8*b^2*c^5*d + 3*b^2*c^3*f)*g^2*h + (9*b^2*c^3*d + 5*b^2*c*f
)*h^3)*x + 3*(96*b^2*c^5*h^3*x^4 + 450*b^2*c^5*g*h^2*x^3 + 1600*b^2*c^3*g^2
*h + 256*b^2*c*h^3 + 32*(25*b^2*c^5*g^2*h + 4*b^2*c^3*h^3)*x^2 + 75*(8*b^2*
c^5*g^3 + 9*b^2*c^3*g*h^2)*x)*e)*arcsin(c*x) + 3*(96*a*b*c^5*h^3*x^4 + 450*
a*b*c^5*g*h^2*x^3 + 1600*a*b*c^3*g^2*h + 256*a*b*c*h^3 + 32*(25*a*b*c^5*g^2
*h + 4*a*b*c^3*h^3)*x^2 + 75*(8*a*b*c^5*g^3 + 9*a*b*c^3*g*h^2)*x)*e)*sqrt(-
c^2*x^2 + 1))/c^6
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 2992 vs. $2(1006) = 2012$.
time = 1.44, size = 2992, normalized size = 2.94

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**3*(f*x**2+e*x+d)*(a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((a**2*d*g**3*x + 3*a**2*d*g**2*h*x**2/2 + a**2*d*g*h**2*x**3 + a*
*2*d*h**3*x**4/4 + a**2*e*g**3*x**2/2 + a**2*e*g**2*h*x**3 + 3*a**2*e*g*h**
2*x**4/4 + a**2*e*h**3*x**5/5 + a**2*f*g**3*x**3/3 + 3*a**2*f*g**2*h*x**4/4
 + 3*a**2*f*g*h**2*x**5/5 + a**2*f*h**3*x**6/6 + 2*a*b*d*g**3*x*asin(c*x) +
 3*a*b*d*g**2*h*x**2*asin(c*x) + 2*a*b*d*g*h**2*x**3*asin(c*x) + a*b*d*h**3
*x**4*asin(c*x)/2 + a*b*e*g**3*x**2*asin(c*x) + 2*a*b*e*g**2*h*x**3*asin(c*
x) + 3*a*b*e*g*h**2*x**4*asin(c*x)/2 + 2*a*b*e*h**3*x**5*asin(c*x)/5 + 2*a*
b*f*g**3*x**3*asin(c*x)/3 + 3*a*b*f*g**2*h*x**4*asin(c*x)/2 + 6*a*b*f*g*h**
2*x**5*asin(c*x)/5 + a*b*f*h**3*x**6*asin(c*x)/3 + 2*a*b*d*g**3*sqrt(-c**2*
x**2 + 1)/c + 3*a*b*d*g**2*h*x*sqrt(-c**2*x**2 + 1)/(2*c) + 2*a*b*d*g*h**2*
x**2*sqrt(-c**2*x**2 + 1)/(3*c) + a*b*d*h**3*x**3*sqrt(-c**2*x**2 + 1)/(8*c
```

```
) + a*b*e*g**3*x*sqrt(-c**2*x**2 + 1)/(2*c) + 2*a*b*e*g**2*h*x**2*sqrt(-c**
2*x**2 + 1)/(3*c) + 3*a*b*e*g*h**2*x**3*sqrt(-c**2*x**2 + 1)/(8*c) + 2*a*b*
e*h**3*x**4*sqrt(-c**2*x**2 + 1)/(25*c) + 2*a*b*f*g**3*x**2*sqrt(-c**2*x**2
 + 1)/(9*c) + 3*a*b*f*g**2*h*x**3*sqrt(-c**2*x**2 + 1)/(8*c) + 6*a*b*f*g*h*
*2*x**4*sqrt(-c**2*x**2 + 1)/(25*c) + a*b*f*h**3*x**5*sqrt(-c**2*x**2 + 1)/
(18*c) - 3*a*b*d*g**2*h*asin(c*x)/(2*c**2) - a*b*e*g**3*asin(c*x)/(2*c**2)
+ 4*a*b*d*g*h**2*sqrt(-c**2*x**2 + 1)/(3*c**3) + 3*a*b*d*h**3*x*sqrt(-c**2*
x**2 + 1)/(16*c**3) + 4*a*b*e*g**2*h*sqrt(-c**2*x**2 + 1)/(3*c**3) + 9*a*b*
e*g*h**2*x*sqrt(-c**2*x**2 + 1)/(16*c**3) + 8*a*b*e*h**3*x**2*sqrt(-c**2*x*
*2 + 1)/(75*c**3) + 4*a*b*f*g**3*sqrt(-c**2*x**2 + 1)/(9*c**3) + 9*a*b*f*g*
*2*h*x*sqrt(-c**2*x**2 + 1)/(16*c**3) + 8*a*b*f*g*h**2*x**2*sqrt(-c**2*x**2
 + 1)/(25*c**3) + 5*a*b*f*h**3*x**3*sqrt(-c**2*x**2 + 1)/(72*c**3) - 3*a*b*
d*h**3*asin(c*x)/(16*c**4) - 9*a*b*e*g*h**2*asin(c*x)/(16*c**4) - 9*a*b*f*g
**2*h*asin(c*x)/(16*c**4) + 16*a*b*e*h**3*sqrt(-c**2*x**2 + 1)/(75*c**5) +
16*a*b*f*g*h**2*sqrt(-c**2*x**2 + 1)/(25*c**5) + 5*a*b*f*h**3*x*sqrt(-c**2*
x**2 + 1)/(48*c**5) - 5*a*b*f*h**3*asin(c*x)/(48*c**6) + b**2*d*g**3*x*asin
(c*x)**2 - 2*b**2*d*g**3*x + 3*b**2*d*g**2*h*x**2*asin(c*x)**2/2 - 3*b**2*d
*g**2*h*x**2/4 + b**2*d*g*h**2*x**3*asin(c*x)**2 - 2*b**2*d*g*h**2*x**3/9 +
 b**2*d*h**3*x**4*asin(c*x)**2/4 - b**2*d*h**3*x**4/32 + b**2*e*g**3*x**2*a
sin(c*x)**2/2 - b**2*e*g**3*x**2/4 + b**2*e*g**2*h*x**3*asin(c*x)**2 - 2*b*
*2*e*g**2*h*x**3/9 + 3*b**2*e*g*h**2*x**4*asin(c*x)**2/4 - 3*b**2*e*g*h**2*
x**4/32 + b**2*e*h**3*x**5*asin(c*x)**2/5 - 2*b**2*e*h**3*x**5/125 + b**2*f
*g**3*x**3*asin(c*x)**2/3 - 2*b**2*f*g**3*x**3/27 + 3*b**2*f*g**2*h*x**4*as
in(c*x)**2/4 - 3*b**2*f*g**2*h*x**4/32 + 3*b**2*f*g*h**2*x**5*asin(c*x)**2/
5 - 6*b**2*f*g*h**2*x**5/125 + b**2*f*h**3*x**6*asin(c*x)**2/6 - b**2*f*h**
3*x**6/108 + 2*b**2*d*g**3*sqrt(-c**2*x**2 + 1)*asin(c*x)/c + 3*b**2*d*g**2
*h*x*sqrt(-c**2*x**2 + 1)*asin(c*x)/(2*c) + 2*b**2*d*g*h**2*x**2*sqrt(-c**2
*x**2 + 1)*asin(c*x)/(3*c) + b**2*d*h**3*x**3*sqrt(-c**2*x**2 + 1)*asin(c*x
)/(8*c) + b**2*e*g**3*x*sqrt(-c**2*x**2 + 1)*asin(c*x)/(2*c) + 2*b**2*e*g**
2*h*x**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(3*c) + 3*b**2*e*g*h**2*x**3*sqrt(-
c**2*x**2 + 1)*asin(c*x)/(8*c) + 2*b**2*e*h**3*x**4*sqrt(-c**2*x**2 + 1)*as
in(c*x)/(25*c) + 2*b**2*f*g**3*x**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(9*c) +
3*b**2*f*g**2*h*x**3*sqrt(-c**2*x**2 + 1)*asin(c*x)/(8*c) + 6*b**2*f*g*h**2
*x**4*sqrt(-c**2*x**2 + 1)*asin(c*x)/(25*c) + b**2*f*h**3*x**5*sqrt(-c**2*x
**2 + 1)*asin(c*x)/(18*c) - 3*b**2*d*g**2*h*asin(c*x)**2/(4*c**2) - 4*b**2*
d*g*h**2*x/(3*c**2) - 3*b**2*d*h**3*x**2/(32*c**2) - b**2*e*g**3*asin(c*x)*
*2/(4*c**2) - 4*b**2*e*g**2*h*x/(3*c**2) - 9*b**2*e*g*h**2*x**2/(32*c**2) -
 8*b**2*e*h**3*x**3/(225*c**2) - 4*b**2*f*g**3*x/(9*c**2) - 9*b**2*f*g**2*h
*x**2/(32*c**2) - 8*b**2*f*g*h**2*x**3/(75*c**2) - 5*b**2*f*h**3*x**4/(288*
c**2) + 4*b**2*d*g*h**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(3*c**3) + 3*b**2*d*
h**3*x*sqrt(-c**2*x**2 + 1)*asin(c*x)/(16*c**3) + 4*b**2*e*g**2*h*sqrt(-c**
2*x**2 + 1)*asin(c*x)/(3*c**3) + 9*b**2*e*g*h**2*x*sqrt(-c**2*x**2 + 1)*asi
n(c*x)/(16*c**3) + 8*b**2*e*h**3*x**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(75*c*
*3) + 4*b**2*f*g**3*sqrt(-c**2*x**2 + 1)*asin(c*x)/(9*c**3) + 9*b**2*f*g**2
*h*x*sqrt(-c**2*x**2 + 1)*asin(c*x)/(16*c**3) + 8*b**2*f*g*h**2*x**2*sqrt(-
```

```
c**2*x**2 + 1)*asin(c*x)/(25*c**3) + 5*b**2*f*h**3*x**3*sqrt(-c**2*x**2 + 1
)*asin(c*x)/(72*c**3) - 3*b**2*d*h**3*asin(c*x)**2/(32*c**4) - 9*b**2*e*g*h
**2*asin(c*x)**2/(32*c**4) - 16*b**2*e*h**3*x/(75*c**4) - 9*b**2*f*g**2*h*a
sin(c*x)**2/(32*c**4) - 16*b**2*f*g*h**2*x/(25*c**4) - 5*b**2*f*h**3*x**2/(
96*c**4) + 16*b**2*e*h**3*sqrt(-c**2*x**2 + 1)*asin(c*x)/(75*c**5) + 16*b**
2*f*g*h**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(25*c**5) + 5*b**2*f*h**3*x*sqrt(
-c**2*x**2 + 1)*asin(c*x)/(48*c**5) - 5*b**2*f*h**3*asin(c*x)**2/(96*c**6),
 Ne(c, 0)), (a**2*(d*g**3*x + 3*d*g**2*h*x**2/2 + d*g*h**2*x**3 + d*h**3*x*
*4/4 + e*g**3*x**2/2 + e*g**2*h*x**3 + 3*e*g*h**2*x**4/4 + e*h**3*x**5/5 +
f*g**3*x**3/3 + 3*f*g**2*h*x**4/4 + 3*f*g*h**2*x**5/5 + f*h**3*x**6/6), Tru
e))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 3444 vs. $2(932) = 1864$.
time = 0.50, size = 3444, normalized size = 3.39

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^3*(f*x^2+e*x+d)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] 1/6*a^2*f*h^3*x^6 + 3/5*a^2*f*g*h^2*x^5 + 1/5*a^2*e*h^3*x^5 + 3/4*a^2*f*g^2
*h*x^4 + 3/4*a^2*e*g*h^2*x^4 + 1/4*a^2*d*h^3*x^4 + 1/3*a^2*f*g^3*x^3 + a^2*
e*g^2*h*x^3 + a^2*d*g*h^2*x^3 + b^2*d*g^3*x*arcsin(c*x)^2 + 2*a*b*d*g^3*x*a
rcsin(c*x) + 1/3*(c^2*x^2 - 1)*b^2*f*g^3*x*arcsin(c*x)^2/c^2 + (c^2*x^2 - 1
)*b^2*e*g^2*h*x*arcsin(c*x)^2/c^2 + (c^2*x^2 - 1)*b^2*d*g*h^2*x*arcsin(c*x)
^2/c^2 + 1/2*sqrt(-c^2*x^2 + 1)*b^2*e*g^3*x*arcsin(c*x)/c + 3/2*sqrt(-c^2*x
^2 + 1)*b^2*d*g^2*h*x*arcsin(c*x)/c + a^2*d*g^3*x - 2*b^2*d*g^3*x + 2/3*(c^
2*x^2 - 1)*a*b*f*g^3*x*arcsin(c*x)/c^2 + 2*(c^2*x^2 - 1)*a*b*e*g^2*h*x*arcs
in(c*x)/c^2 + 2*(c^2*x^2 - 1)*a*b*d*g*h^2*x*arcsin(c*x)/c^2 + 1/2*(c^2*x^2
- 1)*b^2*e*g^3*arcsin(c*x)^2/c^2 + 3/2*(c^2*x^2 - 1)*b^2*d*g^2*h*arcsin(c*x
)^2/c^2 + 1/3*b^2*f*g^3*x*arcsin(c*x)^2/c^2 + b^2*e*g^2*h*x*arcsin(c*x)^2/c
^2 + b^2*d*g*h^2*x*arcsin(c*x)^2/c^2 + 3/5*(c^2*x^2 - 1)^2*b^2*f*g*h^2*x*ar
csin(c*x)^2/c^4 + 1/5*(c^2*x^2 - 1)^2*b^2*e*h^3*x*arcsin(c*x)^2/c^4 + 1/2*s
qrt(-c^2*x^2 + 1)*a*b*e*g^3*x/c + 3/2*sqrt(-c^2*x^2 + 1)*a*b*d*g^2*h*x/c +
2*sqrt(-c^2*x^2 + 1)*b^2*d*g^3*arcsin(c*x)/c - 3/8*(-c^2*x^2 + 1)^(3/2)*b^2
*f*g^2*h*x*arcsin(c*x)/c^3 - 3/8*(-c^2*x^2 + 1)^(3/2)*b^2*e*g*h^2*x*arcsin(
c*x)/c^3 - 1/8*(-c^2*x^2 + 1)^(3/2)*b^2*d*h^3*x*arcsin(c*x)/c^3 - 2/27*(c^2
*x^2 - 1)*b^2*f*g^3*x/c^2 - 2/9*(c^2*x^2 - 1)*b^2*e*g^2*h*x/c^2 - 2/9*(c^2*
x^2 - 1)*b^2*d*g*h^2*x/c^2 + (c^2*x^2 - 1)*a*b*e*g^3*arcsin(c*x)/c^2 + 3*(c
^2*x^2 - 1)*a*b*d*g^2*h*arcsin(c*x)/c^2 + 2/3*a*b*f*g^3*x*arcsin(c*x)/c^2 +
 2*a*b*e*g^2*h*x*arcsin(c*x)/c^2 + 2*a*b*d*g*h^2*x*arcsin(c*x)/c^2 + 6/5*(c
^2*x^2 - 1)^2*a*b*f*g*h^2*x*arcsin(c*x)/c^4 + 2/5*(c^2*x^2 - 1)^2*a*b*e*h^3
*x*arcsin(c*x)/c^4 + 1/4*b^2*e*g^3*arcsin(c*x)^2/c^2 + 3/4*b^2*d*g^2*h*arcs
in(c*x)^2/c^2 + 3/4*(c^2*x^2 - 1)^2*b^2*f*g^2*h*arcsin(c*x)^2/c^4 + 3/4*(c^
```

```
2*x^2 - 1)^2*b^2*e*g*h^2*arcsin(c*x)^2/c^4 + 1/4*(c^2*x^2 - 1)^2*b^2*d*h^3*
arcsin(c*x)^2/c^4 + 6/5*(c^2*x^2 - 1)*b^2*f*g*h^2*x*arcsin(c*x)^2/c^4 + 2/5
*(c^2*x^2 - 1)*b^2*e*h^3*x*arcsin(c*x)^2/c^4 + 2*sqrt(-c^2*x^2 + 1)*a*b*d*g
^3/c - 3/8*(-c^2*x^2 + 1)^(3/2)*a*b*f*g^2*h*x/c^3 - 3/8*(-c^2*x^2 + 1)^(3/2
)*a*b*e*g*h^2*x/c^3 - 1/8*(-c^2*x^2 + 1)^(3/2)*a*b*d*h^3*x/c^3 - 2/9*(-c^2*
x^2 + 1)^(3/2)*b^2*f*g^3*arcsin(c*x)/c^3 - 2/3*(-c^2*x^2 + 1)^(3/2)*b^2*e*g
^2*h*arcsin(c*x)/c^3 - 2/3*(-c^2*x^2 + 1)^(3/2)*b^2*d*g*h^2*arcsin(c*x)/c^3
 + 15/16*sqrt(-c^2*x^2 + 1)*b^2*f*g^2*h*x*arcsin(c*x)/c^3 + 15/16*sqrt(-c^2
*x^2 + 1)*b^2*e*g*h^2*x*arcsin(c*x)/c^3 + 5/16*sqrt(-c^2*x^2 + 1)*b^2*d*h^3
*x*arcsin(c*x)/c^3 + 1/18*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b^2*f*h^3*x*ar
csin(c*x)/c^5 + 1/2*(c^2*x^2 - 1)*a^2*e*g^3/c^2 - 1/4*(c^2*x^2 - 1)*b^2*e*g
^3/c^2 + 3/2*(c^2*x^2 - 1)*a^2*d*g^2*h/c^2 - 3/4*(c^2*x^2 - 1)*b^2*d*g^2*h/
c^2 - 14/27*b^2*f*g^3*x/c^2 - 14/9*b^2*e*g^2*h*x/c^2 - 14/9*b^2*d*g*h^2*x/c
^2 - 6/125*(c^2*x^2 - 1)^2*b^2*f*g*h^2*x/c^4 - 2/125*(c^2*x^2 - 1)^2*b^2*e*
h^3*x/c^4 + 1/2*a*b*e*g^3*arcsin(c*x)/c^2 + 3/2*a*b*d*g^2*h*arcsin(c*x)/c^2
 + 3/2*(c^2*x^2 - 1)^2*a*b*f*g^2*h*arcsin(c*x)/c^4 + 3/2*(c^2*x^2 - 1)^2*a*
b*e*g*h^2*arcsin(c*x)/c^4 + 1/2*(c^2*x^2 - 1)^2*a*b*d*h^3*arcsin(c*x)/c^4 +
 12/5*(c^2*x^2 - 1)*a*b*f*g*h^2*x*arcsin(c*x)/c^4 + 4/5*(c^2*x^2 - 1)*a*b*e
*h^3*x*arcsin(c*x)/c^4 + 3/2*(c^2*x^2 - 1)*b^2*f*g^2*h*arcsin(c*x)^2/c^4 +
3/2*(c^2*x^2 - 1)*b^2*e*g*h^2*arcsin(c*x)^2/c^4 + 1/2*(c^2*x^2 - 1)*b^2*d*h
^3*arcsin(c*x)^2/c^4 + 1/6*(c^2*x^2 - 1)^3*b^2*f*h^3*arcsin(c*x)^2/c^6 + 3/
5*b^2*f*g*h^2*x*arcsin(c*x)^2/c^4 + 1/5*b^2*e*h^3*x*arcsin(c*x)^2/c^4 - 2/9
*(-c^2*x^2 + 1)^(3/2)*a*b*f*g^3/c^3 - 2/3*(-c^2*x^2 + 1)^(3/2)*a*b*e*g^2*h/
c^3 - 2/3*(-c^2*x^2 + 1)^(3/2)*a*b*d*g*h^2/c^3 + 15/16*sqrt(-c^2*x^2 + 1)*a
*b*f*g^2*h*x/c^3 + 15/16*sqrt(-c^2*x^2 + 1)*a*b*e*g*h^2*x/c^3 + 5/16*sqrt(-
c^2*x^2 + 1)*a*b*d*h^3*x/c^3 + 1/18*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*a*b*
f*h^3*x/c^5 + 2/3*sqrt(-c^2*x^2 + 1)*b^2*f*g^3*arcsin(c*x)/c^3 + 2*sqrt(-c^
2*x^2 + 1)*b^2*e*g^2*h*arcsin(c*x)/c^3 + 2*sqrt(-c^2*x^2 + 1)*b^2*d*g*h^2*a
rcsin(c*x)/c^3 + 6/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b^2*f*g*h^2*arcsin
(c*x)/c^5 + 2/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b^2*e*h^3*arcsin(c*x)/c
^5 - 13/72*(-c^2*x^2 + 1)^(3/2)*b^2*f*h^3*x*arcsin(c*x)/c^5 - 1/8*b^2*e*g^3
/c^2 - 3/8*b^2*d*g^2*h/c^2 - 3/32*(c^2*x^2 - 1)^2*b^2*f*g^2*h/c^4 - 3/32*(c
^2*x^2 - 1)^2*b^2*e*g*h^2/c^4 - 1/32*(c^2*x^2 - 1)^2*b^2*d*h^3/c^4 - 76/375
*(c^2*x^2 - 1)*b^2*f*g*h^2*x/c^4 - 76/1125*(c^2*x^2 - 1)*b^2*e*h^3*x/c^4 +
3*(c^2*x^2 - 1)*a*b*f*g^2*h*arcsin(c*x)/c^4 + 3*(c^2*x^2 - 1)*a*b*e*g*h^2*a
rcsin(c*x)/c^4 + (c^2*x^2 - 1)*a*b*d*h^3*arcsin(c*x)/c^4 + 1/3*(c^2*x^2 - 1
)^3*a*b*f*h^3*arcsin(c*x)/c^6 + 6/5*a*b*f*g*h^2*x*arcsin(c*x)/c^4 + 2/5*a*b
*e*h^3*x*arcsin(c*x)/c^4 + 15/32*b^2*f*g^2*h*arcsin(c*x)^2/c^4 + 15/32*b^2*
e*g*h^2*arcsin(c*x)^2/c^4 + 5/32*b^2*d*h^3*arcsin(c*x)^2/c^4 + 1/2*(c^2*x^2
 - 1)^2*b^2*f*h^3*arcsin(c*x)^2/c^6 + 2/3*sqrt(-c^2*x^2 + 1)*a*b*f*g^3/c^3
+ 2*sqrt(-c^2*x^2 + 1)*a*b*e*g^2*h/c^3 + 2*sqrt(-c^2*x^2 + 1)*a*b*d*g*h^2/c
^3 + 6/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*a*b*f*g*h^2/c^5 + 2/25*(c^2*x^
2 - 1)^2*sqrt(-c^2*x^2 + 1)*a*b*e*h^3/c^5 - 13/...
```

Mupad [**F**]

time = 0.00, size = -1, normalized size = -0.00

$$\int (g+h\,x)^3\,(a+b\operatorname{asin}(c\,x))^2\,\left(f\,x^2+e\,x+d\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^3*(a + b*asin(c*x))^2*(d + e*x + f*x^2),x)
[Out] int((g + h*x)^3*(a + b*asin(c*x))^2*(d + e*x + f*x^2), x)
```

3.116 $\int (g+hx)^2 (d+ex+fx^2) (a+b\mathbf{ArcSin}(cx))^2 \, dx$

Optimal. Leaf size=701

$$-2b^2dg^2x-\frac{16b^2fh^2x}{75c^4}-\frac{4b^2(fg^2+h(2eg+dh))\,x}{9c^2}-\frac{1}{4}b^2g(eg+2dh)x^2-\frac{3b^2h(2fg+eh)x^2}{32c^2}-\frac{8b^2fh^2x^3}{225c^2}-\frac{2}{27}b^2($$

```
[Out] 1/2*b*g*(2*d*h+e*g)*x*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c+3/16*b*h*(e*h+
2*f*g)*x*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3+8/75*b*f*h^2*x^2*(a+b*arc
sin(c*x))*(-c^2*x^2+1)^(1/2)/c^3+1/8*b*h*(e*h+2*f*g)*x^3*(a+b*arcsin(c*x))*
(-c^2*x^2+1)^(1/2)/c+2/25*b*f*h^2*x^4*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/
c-2/27*b^2*(f*g^2+h*(d*h+2*e*g))*x^3+1/3*(f*g^2+h*(d*h+2*e*g))*x^3*(a+b*arc
sin(c*x))^2-16/75*b^2*f*h^2*x/c^4-3/32*b^2*h*(e*h+2*f*g)*x^2/c^2-8/225*b^2*
f*h^2*x^3/c^2+4/9*b*(f*g^2+h*(d*h+2*e*g))*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1
/2)/c^3+d*g^2*x*(a+b*arcsin(c*x))^2-2/125*b^2*f*h^2*x^5-1/4*g*(2*d*h+e*g)*(
a+b*arcsin(c*x))^2/c^2-3/32*h*(e*h+2*f*g)*(a+b*arcsin(c*x))^2/c^4+1/2*g*(2*
d*h+e*g)*x^2*(a+b*arcsin(c*x))^2+1/4*h*(e*h+2*f*g)*x^4*(a+b*arcsin(c*x))^2+
1/5*f*h^2*x^5*(a+b*arcsin(c*x))^2-2*b^2*d*g^2*x-4/9*b^2*(f*g^2+h*(d*h+2*e*g
))*x/c^2-1/4*b^2*g*(2*d*h+e*g)*x^2-1/32*b^2*h*(e*h+2*f*g)*x^4+2*b*d*g^2*(a+
b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c+16/75*b*f*h^2*(a+b*arcsin(c*x))*(-c^2*x
^2+1)^(1/2)/c^5+2/9*b*(f*g^2+h*(d*h+2*e*g))*x^2*(a+b*arcsin(c*x))*(-c^2*x^2
+1)^(1/2)/c
```

Rubi [A]
time = 0.76, antiderivative size = 701, normalized size of antiderivative = 1.00, number of steps used = 27, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {4835, 4715, 4767, 8, 4723, 4795, 4737, 30}

$$-\frac{3h(eh+2fg)(a+b\text{ArcSin}(cx))^2}{32c^4}+\frac{2bx^2\sqrt{1-c^2x^2}(a+b\text{ArcSin}(cx))\left(h(dh+2eg)+fg^2\right)}{9c}+\frac{bgx\sqrt{1-c^2x^2}(2dh+eg)(a+b\text{ArcSin}(cx))}{2c}-\frac{g(2dh+eg)(a+b\text{ArcSin}(cx))^2}{4c^2}+\frac{2bdg^2\sqrt{1-c^2x^2}(a+b\text{ArcSin}(cx))}{c}+\frac{bhx^3\sqrt{1-c^2x^2}(eh+2fg)(a+b\text{ArcSin}(cx))}{8c}+\frac{2bfh^2x^4\sqrt{1-c^2x^2}(a+b\text{ArcSin}(cx))}{25c}+\frac{16bfh^2\sqrt{1-c^2x^2}(a+b\text{ArcSin}(cx))}{75c^5}+\frac{4b\sqrt{1-c^2x^2}(a+b\text{ArcSin}(cx))\left(h(dh+2eg)+fg^2\right)}{9c^3}+\frac{3bhx\sqrt{1-c^2x^2}(eh+2fg)(a+b\text{ArcSin}(cx))}{16c^3}+\frac{8bfh^2x^2\sqrt{1-c^2x^2}(a+b\text{ArcSin}(cx))}{75c^3}+\frac{1}{3}x^3(a+b\text{ArcSin}(cx))^2\left(h(dh+2eg)+fg^2\right)+\frac{1}{2}gx^2(2dh+eg)(a+b\text{ArcSin}(cx))^2+dg^2x(a+b\text{ArcSin}(cx))^2+\frac{1}{4}hx^4(eh+2fg)(a+b\text{ArcSin}(cx))^2+\frac{1}{5}fh^2x^5(a+b\text{ArcSin}(cx))^2-\frac{16b^2fh^2x}{75c^4}-\frac{4b^2x\left(h(dh+2eg)+fg^2\right)}{9c^2}-\frac{3b^2hx^2(eh+2fg)}{32c^2}-\frac{8b^2fh^2x^3}{225c^2}-\frac{2}{27}b^2x^3\left(h(dh+2eg)+fg^2\right)-\frac{1}{4}b^2gx^2(2dh+eg)-2b^2dg^2x-\frac{1}{32}b^2hx^4(eh+2fg)-\frac{2}{125}b^2fh^2x^5$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2*(d + e*x + f*x^2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -2*b^2*d*g^2*x - (16*b^2*f*h^2*x)/(75*c^4) - (4*b^2*(f*g^2 + h*(2*e*g + d*h
))*x)/(9*c^2) - (b^2*g*(e*g + 2*d*h)*x^2)/4 - (3*b^2*h*(2*f*g + e*h)*x^2)/(
32*c^2) - (8*b^2*f*h^2*x^3)/(225*c^2) - (2*b^2*(f*g^2 + h*(2*e*g + d*h))*x^
3)/27 - (b^2*h*(2*f*g + e*h)*x^4)/32 - (2*b^2*f*h^2*x^5)/125 + (2*b*d*g^2*S
qrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c + (16*b*f*h^2*Sqrt[1 - c^2*x^2]*(a
+ b*ArcSin[c*x]))/(75*c^5) + (4*b*(f*g^2 + h*(2*e*g + d*h))*Sqrt[1 - c^2*x^
2]*(a + b*ArcSin[c*x]))/(9*c^3) + (b*g*(e*g + 2*d*h)*x*Sqrt[1 - c^2*x^2]*(a
 + b*ArcSin[c*x]))/(2*c) + (3*b*h*(2*f*g + e*h)*x*Sqrt[1 - c^2*x^2]*(a + b*
ArcSin[c*x]))/(16*c^3) + (8*b*f*h^2*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x
]))/(75*c^3) + (2*b*(f*g^2 + h*(2*e*g + d*h))*x^2*Sqrt[1 - c^2*x^2]*(a + b*
ArcSin[c*x]))/(9*c) + (b*h*(2*f*g + e*h)*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSi
n[c*x]))/(8*c) + (2*b*f*h^2*x^4*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(25*
```

```
c) - (g*(e*g + 2*d*h)*(a + b*ArcSin[c*x])^2)/(4*c^2) - (3*h*(2*f*g + e*h)*(
a + b*ArcSin[c*x])^2)/(32*c^4) + d*g^2*x*(a + b*ArcSin[c*x])^2 + (g*(e*g +
2*d*h)*x^2*(a + b*ArcSin[c*x])^2)/2 + ((f*g^2 + h*(2*e*g + d*h))*x^3*(a + b
*ArcSin[c*x])^2)/3 + (h*(2*f*g + e*h)*x^4*(a + b*ArcSin[c*x])^2)/4 + (f*h^2
*x^5*(a + b*ArcSin[c*x])^2)/5
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
```

```
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4835

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(Px_), x_Symbol] :> Int[ExpandI
ntegrand[Px*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[{a, b, c, n}, x] && Poly
nomialQ[Px, x]
```

Rubi steps

$$\int (g+hx)^2 \left(d+ex+fx^2\right) \left(a+b\sin^{-1}(cx)\right)^2 \, dx = \int \left(dg^2\left(a+b\sin^{-1}(cx)\right)^2 + g(eg+2dh)x\left(a+b\sin^{-1}(\right.\right.$$

$$= \left(dg^2\right) \int \left(a+b\sin^{-1}(cx)\right)^2 \, dx + \left(fh^2\right) \int x^4\left(a+b\sin\right.$$

$$= dg^2x\left(a+b\sin^{-1}(cx)\right)^2 + \frac{1}{2}g(eg+2dh)x^2\left(a+b\sin^{-1}(\right.$$

$$= \frac{2bdg^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c} + \frac{bg(eg+2dh)x\sqrt{1}}{}$$

$$= -2b^2dg^2x - \frac{1}{4}b^2g(eg+2dh)x^2 - \frac{2}{27}b^2\left(fg^2+h(2eg+\right.$$

$$= -2b^2dg^2x - \frac{4b^2\left(fg^2+h(2eg+dh)\right)x}{9c^2} - \frac{1}{4}b^2g(eg+2d$$

$$= -2b^2dg^2x - \frac{16b^2fh^2x}{75c^4} - \frac{4b^2\left(fg^2+h(2eg+dh)\right)x}{9c^2} -$$

Mathematica [A]
time = 0.36, size = 534, normalized size = 0.76

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2*(d + e*x + f*x^2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] d*g^2*x*(a + b*ArcSin[c*x])^2 + (g*(e*g + 2*d*h)*x^2*(a + b*ArcSin[c*x])^2)
/2 + ((f*g^2 + h*(2*e*g + d*h))*x^3*(a + b*ArcSin[c*x])^2)/3 + (h*(2*f*g +
```

```
e*h)*x^4*(a + b*ArcSin[c*x])^2)/4 + (f*h^2*x^5*(a + b*ArcSin[c*x])^2)/5 - (
2*b*(f*g^2 + h*(2*e*g + d*h))*(-3*a*Sqrt[1 - c^2*x^2]*(2 + c^2*x^2) + b*c*x
*(6 + c^2*x^2) - 3*b*Sqrt[1 - c^2*x^2]*(2 + c^2*x^2)*ArcSin[c*x]))/(27*c^3)
 - (2*b*f*h^2*(-15*a*Sqrt[1 - c^2*x^2]*(8 + 4*c^2*x^2 + 3*c^4*x^4) + b*c*x*
(120 + 20*c^2*x^2 + 9*c^4*x^4) - 15*b*Sqrt[1 - c^2*x^2]*(8 + 4*c^2*x^2 + 3*
c^4*x^4)*ArcSin[c*x]))/(1125*c^5) - 2*b*d*g^2*(b*x - (Sqrt[1 - c^2*x^2]*(a
+ b*ArcSin[c*x]))/c) - (b*h*(2*f*g + e*h)*((3*b*x^2)/c^2 + b*x^4 - (6*x*Sqr
t[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c^3 - (4*x^3*Sqrt[1 - c^2*x^2]*(a + b*A
rcSin[c*x]))/c + (3*(a + b*ArcSin[c*x])^2)/(b*c^4)))/32 - (b*g*(e*g + 2*d*h
)*(b*x^2 - (2*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c + (a + b*ArcSin[c*
x])^2/(b*c^2)))/4
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 1632 vs. $2(639) = 1278$.

time = 0.34, size = 1633, normalized size = 2.33

method	result	size
derivativedivides	Expression too large to display	1633
default	Expression too large to display	1633

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2*(f*x^2+e*x+d)*(a+b*arcsin(c*x))^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(a^2/c^4*(1/5*h^2*f*c^5*x^5+1/4*(c*e*h^2+2*c*f*g*h)*c^4*x^4+1/3*(c^2*d*
h^2+2*c^2*e*g*h+c^2*f*g^2)*c^3*x^3+1/2*(2*c^3*d*g*h+c^3*e*g^2)*c^2*x^2+c^5*
g^2*d*x)+b^2/c^4*(1/3375*h^2*f*(675*arcsin(c*x)^2*c^5*x^5+270*arcsin(c*x)*(
-c^2*x^2+1)^(1/2)*c^4*x^4-2250*c^3*x^3*arcsin(c*x)^2-54*c^5*x^5-1140*arcsin
(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x^2+3375*c*x*arcsin(c*x)^2+380*c^3*x^3+4470*ar
csin(c*x)*(-c^2*x^2+1)^(1/2)-4470*c*x)+1/128*c*e*h^2*(32*arcsin(c*x)^2*c^4*
x^4+16*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^3*x^3-64*arcsin(c*x)^2*c^2*x^2-4*c^
4*x^4-40*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*x+20*arcsin(c*x)^2+20*c^2*x^2-25)
+1/64*c*f*g*h*(32*arcsin(c*x)^2*c^4*x^4+16*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c
^3*x^3-64*arcsin(c*x)^2*c^2*x^2-4*c^4*x^4-40*arcsin(c*x)*(-c^2*x^2+1)^(1/2)
*c*x+20*arcsin(c*x)^2+20*c^2*x^2-25)+1/27*h^2*d*c^2*(9*c^3*x^3*arcsin(c*x)^
2+6*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x^2-27*c*x*arcsin(c*x)^2-2*c^3*x^3-4
2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+42*c*x)+2/27*c^2*g*h*e*(9*c^3*x^3*arcsin(c
*x)^2+6*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x^2-27*c*x*arcsin(c*x)^2-2*c^3*x
^3-42*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+42*c*x)+1/27*c^2*g^2*f*(9*c^3*x^3*arcs
in(c*x)^2+6*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x^2-27*c*x*arcsin(c*x)^2-2*c
^3*x^3-42*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+42*c*x)+1/2*c^3*d*g*h*(2*arcsin(c*
x)^2*c^2*x^2+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*x-arcsin(c*x)^2-c^2*x^2)+1/
4*c^3*e*g^2*(2*arcsin(c*x)^2*c^2*x^2+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*x-a
rcsin(c*x)^2-c^2*x^2)+c^4*g^2*d*(c*x*arcsin(c*x)^2-2*c*x+2*arcsin(c*x)*(-c^
2*x^2+1)^(1/2))+2/27*h^2*f*(9*c^3*x^3*arcsin(c*x)^2+6*arcsin(c*x)*(-c^2*x^2
+1)^(1/2)*c^2*x^2-27*c*x*arcsin(c*x)^2-2*c^3*x^3-42*arcsin(c*x)*(-c^2*x^2+1
```

```
)^(1/2)+42*c*x)+1/4*c*e*h^2*(2*arcsin(c*x)^2*c^2*x^2+2*arcsin(c*x)*(-c^2*x^
2+1)^(1/2)*c*x-arcsin(c*x)^2-c^2*x^2)+1/2*c*f*g*h*(2*arcsin(c*x)^2*c^2*x^2+
2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*x-arcsin(c*x)^2-c^2*x^2)+h^2*d*c^2*(c*x*
arcsin(c*x)^2-2*c*x+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2))+2*c^2*g*h*e*(c*x*arcs
in(c*x)^2-2*c*x+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2))+c^2*g^2*f*(c*x*arcsin(c*x
)^2-2*c*x+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2))+h^2*f*(c*x*arcsin(c*x)^2-2*c*x+
2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)))+2*a*b/c^4*(1/5*arcsin(c*x)*h^2*f*c^5*x^5
+1/4*arcsin(c*x)*c^5*e*h^2*x^4+1/2*arcsin(c*x)*c^5*f*g*h*x^4+1/3*arcsin(c*x
)*c^5*d*h^2*x^3+2/3*arcsin(c*x)*c^5*e*g*h*x^3+1/3*arcsin(c*x)*c^5*f*g^2*x^3
+arcsin(c*x)*c^5*d*g*h*x^2+1/2*arcsin(c*x)*c^5*e*g^2*x^2+arcsin(c*x)*c^5*g^
2*d*x-1/5*h^2*f*(-1/5*c^4*x^4*(-c^2*x^2+1)^(1/2)-4/15*c^2*x^2*(-c^2*x^2+1)^
(1/2)-8/15*(-c^2*x^2+1)^(1/2))-1/60*(15*c*e*h^2+30*c*f*g*h)*(-1/4*c^3*x^3*(
-c^2*x^2+1)^(1/2)-3/8*c*x*(-c^2*x^2+1)^(1/2)+3/8*arcsin(c*x))-1/60*(20*c^2*
d*h^2+40*c^2*e*g*h+20*c^2*f*g^2)*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-c^2
*x^2+1)^(1/2))-1/60*(60*c^3*d*g*h+30*c^3*e*g^2)*(-1/2*c*x*(-c^2*x^2+1)^(1/2
)+1/2*arcsin(c*x))+c^4*g^2*d*(-c^2*x^2+1)^(1/2)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(f*x^2+e*x+d)*(a+b*arcsin(c*x))^2,x, algorithm="maxima"
)
```

```
[Out] 1/5*a^2*f*h^2*x^5 + 1/2*a^2*f*g*h*x^4 + 1/4*a^2*h^2*x^4*e + 1/3*a^2*f*g^2*x
^3 + 1/3*a^2*d*h^2*x^3 + b^2*d*g^2*x*arcsin(c*x)^2 + 2/3*a^2*g*h*x^3*e + a^
2*d*g*h*x^2 + 1/2*a^2*g^2*x^2*e + 2/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2
 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*f*g^2 + (2*x^2*arcsin(c*x) +
 c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c*x)/c^3))*a*b*d*g*h + 1/8*(8*x^4*arc
sin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*a
rcsin(c*x)/c^5)*c)*a*b*f*g*h + 2/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 +
1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*d*h^2 + 2/75*(15*x^5*arcsin(c*x
) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-
c^2*x^2 + 1)/c^6)*c)*a*b*f*h^2 - 2*b^2*d*g^2*(x - sqrt(-c^2*x^2 + 1)*arcsin
(c*x)/c) + a^2*d*g^2*x + 1/2*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c
^2 - arcsin(c*x)/c^3))*a*b*g^2*e + 4/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^
2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*g*h*e + 1/16*(8*x^4*arcsin(
c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsi
n(c*x)/c^5)*c)*a*b*h^2*e + 2*(c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*a*b*d*g
^2/c + 1/60*(12*b^2*f*h^2*x^5 + 15*(2*b^2*f*g*h + b^2*h^2*e)*x^4 + 20*(b^2*
f*g^2 + b^2*d*h^2 + 2*b^2*g*h*e)*x^3 + 30*(2*b^2*d*g*h + b^2*g^2*e)*x^2)*ar
ctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + integrate(1/30*(12*b^2*c*f*h^2
*x^5 + 15*(2*b^2*c*f*g*h + b^2*c*h^2*e)*x^4 + 20*(b^2*c*f*g^2 + b^2*c*d*h^2
```

```
 + 2*b^2*c*g*h*e)*x^3 + 30*(2*b^2*c*d*g*h + b^2*c*g^2*e)*x^2)*sqrt(c*x + 1)
*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^2*x^2 - 1), x
)
```

Fricas [A]
time = 2.50, size = 1057, normalized size = 1.51

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(f*x^2+e*x+d)*(a+b*arcsin(c*x))^2,x, algorithm="fricas"
)
```

```
[Out] 1/108000*(864*(25*a^2 - 2*b^2)*c^5*f*h^2*x^5 + 6750*(8*a^2 - b^2)*c^5*f*g*h
*x^4 + 6750*(8*(2*a^2 - b^2)*c^5*d - 3*b^2*c^3*f)*g*h*x^2 + 160*(25*(9*a^2
- 2*b^2)*c^5*f*g^2 + (25*(9*a^2 - 2*b^2)*c^5*d - 24*b^2*c^3*f)*h^2)*x^3 + 2
25*(96*b^2*c^5*f*h^2*x^5 + 240*b^2*c^5*f*g*h*x^4 + 480*b^2*c^5*d*g*h*x^2 +
480*b^2*c^5*d*g^2*x + 160*(b^2*c^5*f*g^2 + b^2*c^5*d*h^2)*x^3 - 30*(8*b^2*c
^3*d + 3*b^2*c*f)*g*h + 5*(24*b^2*c^5*h^2*x^4 + 64*b^2*c^5*g*h*x^3 + 48*b^2
*c^5*g^2*x^2 - 24*b^2*c^3*g^2 - 9*b^2*c*h^2)*e)*arcsin(c*x)^2 + 480*(25*(9*
(a^2 - 2*b^2)*c^5*d - 4*b^2*c^3*f)*g^2 - 4*(25*b^2*c^3*d + 12*b^2*c*f)*h^2)
*x + 450*(96*a*b*c^5*f*h^2*x^5 + 240*a*b*c^5*f*g*h*x^4 + 480*a*b*c^5*d*g*h*
x^2 + 480*a*b*c^5*d*g^2*x + 160*(a*b*c^5*f*g^2 + a*b*c^5*d*h^2)*x^3 - 30*(8
*a*b*c^3*d + 3*a*b*c*f)*g*h + 5*(24*a*b*c^5*h^2*x^4 + 64*a*b*c^5*g*h*x^3 +
48*a*b*c^5*g^2*x^2 - 24*a*b*c^3*g^2 - 9*a*b*c*h^2)*e)*arcsin(c*x) + 125*(27
*(8*a^2 - b^2)*c^5*h^2*x^4 + 64*(9*a^2 - 2*b^2)*c^5*g*h*x^3 - 768*b^2*c^3*g
*h*x + 27*(8*(2*a^2 - b^2)*c^5*g^2 - 3*b^2*c^3*h^2)*x^2)*e + 30*(288*a*b*c^
4*f*h^2*x^4 + 900*a*b*c^4*f*g*h*x^3 + 450*(8*a*b*c^4*d + 3*a*b*c^2*f)*g*h*x
 + 800*(9*a*b*c^4*d + 2*a*b*c^2*f)*g^2 + 64*(25*a*b*c^2*d + 12*a*b*f)*h^2 +
 32*(25*a*b*c^4*f*g^2 + (25*a*b*c^4*d + 12*a*b*c^2*f)*h^2)*x^2 + (288*b^2*c
^4*f*h^2*x^4 + 900*b^2*c^4*f*g*h*x^3 + 450*(8*b^2*c^4*d + 3*b^2*c^2*f)*g*h*
x + 800*(9*b^2*c^4*d + 2*b^2*c^2*f)*g^2 + 64*(25*b^2*c^2*d + 12*b^2*f)*h^2
+ 32*(25*b^2*c^4*f*g^2 + (25*b^2*c^4*d + 12*b^2*c^2*f)*h^2)*x^2 + 25*(18*b^
2*c^4*h^2*x^3 + 64*b^2*c^4*g*h*x^2 + 128*b^2*c^2*g*h + 9*(8*b^2*c^4*g^2 + 3
*b^2*c^2*h^2)*x)*e)*arcsin(c*x) + 25*(18*a*b*c^4*h^2*x^3 + 64*a*b*c^4*g*h*x
^2 + 128*a*b*c^2*g*h + 9*(8*a*b*c^4*g^2 + 3*a*b*c^2*h^2)*x)*e)*sqrt(-c^2*x^
2 + 1))/c^5
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 1935 vs. $2(694) = 1388$.
time = 0.91, size = 1935, normalized size = 2.76

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2*(f*x**2+e*x+d)*(a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((a**2*d*g**2*x + a**2*d*g*h*x**2 + a**2*d*h**2*x**3/3 + a**2*e*g*
*2*x**2/2 + 2*a**2*e*g*h*x**3/3 + a**2*e*h**2*x**4/4 + a**2*f*g**2*x**3/3 +
 a**2*f*g*h*x**4/2 + a**2*f*h**2*x**5/5 + 2*a*b*d*g**2*x*asin(c*x) + 2*a*b*
d*g*h*x**2*asin(c*x) + 2*a*b*d*h**2*x**3*asin(c*x)/3 + a*b*e*g**2*x**2*asin
(c*x) + 4*a*b*e*g*h*x**3*asin(c*x)/3 + a*b*e*h**2*x**4*asin(c*x)/2 + 2*a*b*
f*g**2*x**3*asin(c*x)/3 + a*b*f*g*h*x**4*asin(c*x) + 2*a*b*f*h**2*x**5*asin
(c*x)/5 + 2*a*b*d*g**2*sqrt(-c**2*x**2 + 1)/c + a*b*d*g*h*x*sqrt(-c**2*x**2
 + 1)/c + 2*a*b*d*h**2*x**2*sqrt(-c**2*x**2 + 1)/(9*c) + a*b*e*g**2*x*sqrt(
-c**2*x**2 + 1)/(2*c) + 4*a*b*e*g*h*x**2*sqrt(-c**2*x**2 + 1)/(9*c) + a*b*e
*h**2*x**3*sqrt(-c**2*x**2 + 1)/(8*c) + 2*a*b*f*g**2*x**2*sqrt(-c**2*x**2 +
 1)/(9*c) + a*b*f*g*h*x**3*sqrt(-c**2*x**2 + 1)/(4*c) + 2*a*b*f*h**2*x**4*s
qrt(-c**2*x**2 + 1)/(25*c) - a*b*d*g*h*asin(c*x)/c**2 - a*b*e*g**2*asin(c*x
)/(2*c**2) + 4*a*b*d*h**2*sqrt(-c**2*x**2 + 1)/(9*c**3) + 8*a*b*e*g*h*sqrt(
-c**2*x**2 + 1)/(9*c**3) + 3*a*b*e*h**2*x*sqrt(-c**2*x**2 + 1)/(16*c**3) +
4*a*b*f*g**2*sqrt(-c**2*x**2 + 1)/(9*c**3) + 3*a*b*f*g*h*x*sqrt(-c**2*x**2
+ 1)/(8*c**3) + 8*a*b*f*h**2*x**2*sqrt(-c**2*x**2 + 1)/(75*c**3) - 3*a*b*e*
h**2*asin(c*x)/(16*c**4) - 3*a*b*f*g*h*asin(c*x)/(8*c**4) + 16*a*b*f*h**2*s
qrt(-c**2*x**2 + 1)/(75*c**5) + b**2*d*g**2*x*asin(c*x)**2 - 2*b**2*d*g**2*
x + b**2*d*g*h*x**2*asin(c*x)**2 - b**2*d*g*h*x**2/2 + b**2*d*h**2*x**3*asi
n(c*x)**2/3 - 2*b**2*d*h**2*x**3/27 + b**2*e*g**2*x**2*asin(c*x)**2/2 - b**
2*e*g**2*x**2/4 + 2*b**2*e*g*h*x**3*asin(c*x)**2/3 - 4*b**2*e*g*h*x**3/27 +
 b**2*e*h**2*x**4*asin(c*x)**2/4 - b**2*e*h**2*x**4/32 + b**2*f*g**2*x**3*a
sin(c*x)**2/3 - 2*b**2*f*g**2*x**3/27 + b**2*f*g*h*x**4*asin(c*x)**2/2 - b*
*2*f*g*h*x**4/16 + b**2*f*h**2*x**5*asin(c*x)**2/5 - 2*b**2*f*h**2*x**5/125
 + 2*b**2*d*g**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/c + b**2*d*g*h*x*sqrt(-c**2
*x**2 + 1)*asin(c*x)/c + 2*b**2*d*h**2*x**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/
(9*c) + b**2*e*g**2*x*sqrt(-c**2*x**2 + 1)*asin(c*x)/(2*c) + 4*b**2*e*g*h*x
**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(9*c) + b**2*e*h**2*x**3*sqrt(-c**2*x**2
 + 1)*asin(c*x)/(8*c) + 2*b**2*f*g**2*x**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(
9*c) + b**2*f*g*h*x**3*sqrt(-c**2*x**2 + 1)*asin(c*x)/(4*c) + 2*b**2*f*h**2
*x**4*sqrt(-c**2*x**2 + 1)*asin(c*x)/(25*c) - b**2*d*g*h*asin(c*x)**2/(2*c*
*2) - 4*b**2*d*h**2*x/(9*c**2) - b**2*e*g**2*asin(c*x)**2/(4*c**2) - 8*b**2
*e*g*h*x/(9*c**2) - 3*b**2*e*h**2*x**2/(32*c**2) - 4*b**2*f*g**2*x/(9*c**2)
 - 3*b**2*f*g*h*x**2/(16*c**2) - 8*b**2*f*h**2*x**3/(225*c**2) + 4*b**2*d*h
**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(9*c**3) + 8*b**2*e*g*h*sqrt(-c**2*x**2
+ 1)*asin(c*x)/(9*c**3) + 3*b**2*e*h**2*x*sqrt(-c**2*x**2 + 1)*asin(c*x)/(1
6*c**3) + 4*b**2*f*g**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(9*c**3) + 3*b**2*f*
g*h*x*sqrt(-c**2*x**2 + 1)*asin(c*x)/(8*c**3) + 8*b**2*f*h**2*x**2*sqrt(-c*
*2*x**2 + 1)*asin(c*x)/(75*c**3) - 3*b**2*e*h**2*asin(c*x)**2/(32*c**4) - 3
*b**2*f*g*h*asin(c*x)**2/(16*c**4) - 16*b**2*f*h**2*x/(75*c**4) + 16*b**2*f
*h**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(75*c**5), Ne(c, 0)), (a**2*(d*g**2*x
+ d*g*h*x**2 + d*h**2*x**3/3 + e*g**2*x**2/2 + 2*e*g*h*x**3/3 + e*h**2*x**4
/4 + f*g**2*x**3/3 + f*g*h*x**4/2 + f*h**2*x**5/5), True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 2166 vs.

2(639) = 1278.
time = 0.45, size = 2166, normalized size = 3.09

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(f*x^2+e*x+d)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] 1/5*a^2*f*h^2*x^5 + 1/2*a^2*f*g*h*x^4 + 1/4*a^2*e*h^2*x^4 + 1/3*a^2*f*g^2*x
^3 + 2/3*a^2*e*g*h*x^3 + 1/3*a^2*d*h^2*x^3 + b^2*d*g^2*x*arcsin(c*x)^2 + 2*
a*b*d*g^2*x*arcsin(c*x) + 1/3*(c^2*x^2 - 1)*b^2*f*g^2*x*arcsin(c*x)^2/c^2 +
 2/3*(c^2*x^2 - 1)*b^2*e*g*h*x*arcsin(c*x)^2/c^2 + 1/3*(c^2*x^2 - 1)*b^2*d*
h^2*x*arcsin(c*x)^2/c^2 + 1/2*sqrt(-c^2*x^2 + 1)*b^2*e*g^2*x*arcsin(c*x)/c
+ sqrt(-c^2*x^2 + 1)*b^2*d*g*h*x*arcsin(c*x)/c + a^2*d*g^2*x - 2*b^2*d*g^2*
x + 2/3*(c^2*x^2 - 1)*a*b*f*g^2*x*arcsin(c*x)/c^2 + 4/3*(c^2*x^2 - 1)*a*b*e
*g*h*x*arcsin(c*x)/c^2 + 2/3*(c^2*x^2 - 1)*a*b*d*h^2*x*arcsin(c*x)/c^2 + 1/
2*(c^2*x^2 - 1)*b^2*e*g^2*arcsin(c*x)^2/c^2 + (c^2*x^2 - 1)*b^2*d*g*h*arcsi
n(c*x)^2/c^2 + 1/3*b^2*f*g^2*x*arcsin(c*x)^2/c^2 + 2/3*b^2*e*g*h*x*arcsin(c
*x)^2/c^2 + 1/3*b^2*d*h^2*x*arcsin(c*x)^2/c^2 + 1/5*(c^2*x^2 - 1)^2*b^2*f*h
^2*x*arcsin(c*x)^2/c^4 + 1/2*sqrt(-c^2*x^2 + 1)*a*b*e*g^2*x/c + sqrt(-c^2*x
^2 + 1)*a*b*d*g*h*x/c + 2*sqrt(-c^2*x^2 + 1)*b^2*d*g^2*arcsin(c*x)/c - 1/4*
(-c^2*x^2 + 1)^(3/2)*b^2*f*g*h*x*arcsin(c*x)/c^3 - 1/8*(-c^2*x^2 + 1)^(3/2)
*b^2*e*h^2*x*arcsin(c*x)/c^3 - 2/27*(c^2*x^2 - 1)*b^2*f*g^2*x/c^2 - 4/27*(c
^2*x^2 - 1)*b^2*e*g*h*x/c^2 - 2/27*(c^2*x^2 - 1)*b^2*d*h^2*x/c^2 + (c^2*x^2
 - 1)*a*b*e*g^2*arcsin(c*x)/c^2 + 2*(c^2*x^2 - 1)*a*b*d*g*h*arcsin(c*x)/c^2
 + 2/3*a*b*f*g^2*x*arcsin(c*x)/c^2 + 4/3*a*b*e*g*h*x*arcsin(c*x)/c^2 + 2/3*
a*b*d*h^2*x*arcsin(c*x)/c^2 + 2/5*(c^2*x^2 - 1)^2*a*b*f*h^2*x*arcsin(c*x)/c
^4 + 1/4*b^2*e*g^2*arcsin(c*x)^2/c^2 + 1/2*b^2*d*g*h*arcsin(c*x)^2/c^2 + 1/
2*(c^2*x^2 - 1)^2*b^2*f*g*h*arcsin(c*x)^2/c^4 + 1/4*(c^2*x^2 - 1)^2*b^2*e*h
^2*arcsin(c*x)^2/c^4 + 2/5*(c^2*x^2 - 1)*b^2*f*h^2*x*arcsin(c*x)^2/c^4 + 2*
sqrt(-c^2*x^2 + 1)*a*b*d*g^2/c - 1/4*(-c^2*x^2 + 1)^(3/2)*a*b*f*g*h*x/c^3 -
 1/8*(-c^2*x^2 + 1)^(3/2)*a*b*e*h^2*x/c^3 - 2/9*(-c^2*x^2 + 1)^(3/2)*b^2*f*
g^2*arcsin(c*x)/c^3 - 4/9*(-c^2*x^2 + 1)^(3/2)*b^2*e*g*h*arcsin(c*x)/c^3 -
2/9*(-c^2*x^2 + 1)^(3/2)*b^2*d*h^2*arcsin(c*x)/c^3 + 5/8*sqrt(-c^2*x^2 + 1)
*b^2*f*g*h*x*arcsin(c*x)/c^3 + 5/16*sqrt(-c^2*x^2 + 1)*b^2*e*h^2*x*arcsin(c
*x)/c^3 + 1/2*(c^2*x^2 - 1)*a^2*e*g^2/c^2 - 1/4*(c^2*x^2 - 1)*b^2*e*g^2/c^2
 + (c^2*x^2 - 1)*a^2*d*g*h/c^2 - 1/2*(c^2*x^2 - 1)*b^2*d*g*h/c^2 - 14/27*b^
2*f*g^2*x/c^2 - 28/27*b^2*e*g*h*x/c^2 - 14/27*b^2*d*h^2*x/c^2 - 2/125*(c^2*
x^2 - 1)^2*b^2*f*h^2*x/c^4 + 1/2*a*b*e*g^2*arcsin(c*x)/c^2 + a*b*d*g*h*arcs
in(c*x)/c^2 + (c^2*x^2 - 1)^2*a*b*f*g*h*arcsin(c*x)/c^4 + 1/2*(c^2*x^2 - 1)
^2*a*b*e*h^2*arcsin(c*x)/c^4 + 4/5*(c^2*x^2 - 1)*a*b*f*h^2*x*arcsin(c*x)/c^
4 + (c^2*x^2 - 1)*b^2*f*g*h*arcsin(c*x)^2/c^4 + 1/2*(c^2*x^2 - 1)*b^2*e*h^2
*arcsin(c*x)^2/c^4 + 1/5*b^2*f*h^2*x*arcsin(c*x)^2/c^4 - 2/9*(-c^2*x^2 + 1)
^(3/2)*a*b*f*g^2/c^3 - 4/9*(-c^2*x^2 + 1)^(3/2)*a*b*e*g*h/c^3 - 2/9*(-c^2*x
^2 + 1)^(3/2)*a*b*d*h^2/c^3 + 5/8*sqrt(-c^2*x^2 + 1)*a*b*f*g*h*x/c^3 + 5/16
```

```
*sqrt(-c^2*x^2 + 1)*a*b*e*h^2*x/c^3 + 2/3*sqrt(-c^2*x^2 + 1)*b^2*f*g^2*arcs
in(c*x)/c^3 + 4/3*sqrt(-c^2*x^2 + 1)*b^2*e*g*h*arcsin(c*x)/c^3 + 2/3*sqrt(-
c^2*x^2 + 1)*b^2*d*h^2*arcsin(c*x)/c^3 + 2/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2
 + 1)*b^2*f*h^2*arcsin(c*x)/c^5 - 1/8*b^2*e*g^2/c^2 - 1/4*b^2*d*g*h/c^2 - 1
/16*(c^2*x^2 - 1)^2*b^2*f*g*h/c^4 - 1/32*(c^2*x^2 - 1)^2*b^2*e*h^2/c^4 - 76
/1125*(c^2*x^2 - 1)*b^2*f*h^2*x/c^4 + 2*(c^2*x^2 - 1)*a*b*f*g*h*arcsin(c*x)
/c^4 + (c^2*x^2 - 1)*a*b*e*h^2*arcsin(c*x)/c^4 + 2/5*a*b*f*h^2*x*arcsin(c*x
)/c^4 + 5/16*b^2*f*g*h*arcsin(c*x)^2/c^4 + 5/32*b^2*e*h^2*arcsin(c*x)^2/c^4
 + 2/3*sqrt(-c^2*x^2 + 1)*a*b*f*g^2/c^3 + 4/3*sqrt(-c^2*x^2 + 1)*a*b*e*g*h/
c^3 + 2/3*sqrt(-c^2*x^2 + 1)*a*b*d*h^2/c^3 + 2/25*(c^2*x^2 - 1)^2*sqrt(-c^2
*x^2 + 1)*a*b*f*h^2/c^5 - 4/15*(-c^2*x^2 + 1)^(3/2)*b^2*f*h^2*arcsin(c*x)/c
^5 - 5/16*(c^2*x^2 - 1)*b^2*f*g*h/c^4 - 5/32*(c^2*x^2 - 1)*b^2*e*h^2/c^4 -
298/1125*b^2*f*h^2*x/c^4 + 5/8*a*b*f*g*h*arcsin(c*x)/c^4 + 5/16*a*b*e*h^2*a
rcsin(c*x)/c^4 - 4/15*(-c^2*x^2 + 1)^(3/2)*a*b*f*h^2/c^5 + 2/5*sqrt(-c^2*x^
2 + 1)*b^2*f*h^2*arcsin(c*x)/c^5 - 17/128*b^2*f*g*h/c^4 - 17/256*b^2*e*h^2/
c^4 + 2/5*sqrt(-c^2*x^2 + 1)*a*b*f*h^2/c^5
```

Mupad [**F**]

time = 0.00, size = -1, normalized size = -0.00

$$\int (g+h\,x)^2\,(a+b\,\mathrm{asin}(c\,x))^2\,\left(f\,x^2+e\,x+d\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^2*(a + b*asin(c*x))^2*(d + e*x + f*x^2),x)
[Out] int((g + h*x)^2*(a + b*asin(c*x))^2*(d + e*x + f*x^2), x)
```

3.117 $\int (g+hx)\left(d+ex+fx^2\right)(a+b\text{ArcSin}(cx))^2\,dx$

Optimal. Leaf size=425

$$-2b^2dgx-\frac{4b^2(fg+eh)x}{9c^2}-\frac{3b^2fhx^2}{32c^2}-\frac{1}{4}b^2(eg+dh)x^2-\frac{2}{27}b^2(fg+eh)x^3-\frac{1}{32}b^2fhx^4+\frac{2bdg\sqrt{1-c^2x^2}\,(a+b\text{Ar}$$

```
[Out] -2*b^2*d*g*x-4/9*b^2*(e*h+f*g)*x/c^2-3/32*b^2*f*h*x^2/c^2-1/4*b^2*(d*h+e*g)
*x^2-2/27*b^2*(e*h+f*g)*x^3-1/32*b^2*f*h*x^4-3/32*f*h*(a+b*arcsin(c*x))^2/c
^4-1/4*(d*h+e*g)*(a+b*arcsin(c*x))^2/c^2+d*g*x*(a+b*arcsin(c*x))^2+1/2*(d*h
+e*g)*x^2*(a+b*arcsin(c*x))^2+1/3*(e*h+f*g)*x^3*(a+b*arcsin(c*x))^2+1/4*f*h
*x^4*(a+b*arcsin(c*x))^2+2*b*d*g*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c+4/9
*b*(e*h+f*g)*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3+3/16*b*f*h*x*(a+b*arc
sin(c*x))*(-c^2*x^2+1)^(1/2)/c^3+1/2*b*(d*h+e*g)*x*(a+b*arcsin(c*x))*(-c^2*
x^2+1)^(1/2)/c+2/9*b*(e*h+f*g)*x^2*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c+1
/8*b*f*h*x^3*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A]
time = 0.48, antiderivative size = 425, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.308$, Rules used = {4835, 4715, 4767, 8, 4723, 4795, 4737, 30}

$$-\frac{3fh(a+b\text{ArcSin}(cx))^2}{32c^4}+\frac{bx\sqrt{1-c^2x^2}\,(dh+eg)(a+b\text{ArcSin}(cx))}{2c}-\frac{(dh+eg)(a+b\text{ArcSin}(cx))^2}{4c^2}+\frac{2bdg\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{c}+\frac{2bx^2\sqrt{1-c^2x^2}\,(eh+fg)(a+b\text{ArcSin}(cx))}{9c}+\frac{bfhx^3\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{8c}+\frac{4b\sqrt{1-c^2x^2}\,(eh+fg)(a+b\text{ArcSin}(cx))}{9c^3}+\frac{3bfhx\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{16c^3}+\frac{1}{2}x^2(dh+eg)(a+b\text{ArcSin}(cx))^2+dgx(a+b\text{ArcSin}(cx))^2+\frac{1}{3}x^3(eh+fg)(a+b\text{ArcSin}(cx))^2+\frac{1}{4}fhx^4(a+b\text{ArcSin}(cx))^2-\frac{4b^2x(eh+fg)}{9c^2}-\frac{3b^2fhx^2}{32c^2}-\frac{1}{4}b^2x^2(dh+eg)-2b^2dgx-\frac{2}{27}b^2x^3(eh+fg)-\frac{1}{32}b^2fhx^4$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)*(d + e*x + f*x^2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -2*b^2*d*g*x - (4*b^2*(f*g + e*h)*x)/(9*c^2) - (3*b^2*f*h*x^2)/(32*c^2) - (
b^2*(e*g + d*h)*x^2)/4 - (2*b^2*(f*g + e*h)*x^3)/27 - (b^2*f*h*x^4)/32 + (2
*b*d*g*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c + (4*b*(f*g + e*h)*Sqrt[1 -
 c^2*x^2]*(a + b*ArcSin[c*x]))/(9*c^3) + (3*b*f*h*x*Sqrt[1 - c^2*x^2]*(a +
b*ArcSin[c*x]))/(16*c^3) + (b*(e*g + d*h)*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin
[c*x]))/(2*c) + (2*b*(f*g + e*h)*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))
/(9*c) + (b*f*h*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(8*c) - (3*f*h*(
a + b*ArcSin[c*x])^2)/(32*c^4) - ((e*g + d*h)*(a + b*ArcSin[c*x])^2)/(4*c^2
) + d*g*x*(a + b*ArcSin[c*x])^2 + ((e*g + d*h)*x^2*(a + b*ArcSin[c*x])^2)/2
 + ((f*g + e*h)*x^3*(a + b*ArcSin[c*x])^2)/3 + (f*h*x^4*(a + b*ArcSin[c*x])
^2)/4
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4835

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(Px_), x_Symbol] :> Int[ExpandI
ntegrand[Px*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[{a, b, c, n}, x] && Poly
nomialQ[Px, x]
```

Rubi steps

$$\int (g+hx)\left(d+ex+fx^2\right)\left(a+b\sin^{-1}(cx)\right)^2\,dx = \int \Big(dg\big(a+b\sin^{-1}(cx)\big)^2 + (eg+dh)x\big(a+b\sin^{-1}(cx)\big)^2$$

$$= (dg)\int \left(a+b\sin^{-1}(cx)\right)^2\,dx + (fh)\int x^3\big(a+b\sin^{-1}(cx$$

$$= dgx\big(a+b\sin^{-1}(cx)\big)^2 + \frac{1}{2}(eg+dh)x^2\big(a+b\sin^{-1}(cx)\big)^2$$

$$= \frac{2bdg\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{c} + \frac{b(eg+dh)x\sqrt{1-c^2}}{2}$$

$$= -2b^2dgx - \frac{1}{4}b^2(eg+dh)x^2 - \frac{2}{27}b^2(fg+eh)x^3 - \frac{1}{32}b^2f$$

$$= -2b^2dgx - \frac{4b^2(fg+eh)x}{9c^2} - \frac{3b^2fhx^2}{32c^2} - \frac{1}{4}b^2(eg+dh)x^2$$

Mathematica [A]
time = 0.25, size = 364, normalized size = 0.86

$$dgx(a+b\text{ArcSin}(cx))^2+\frac{1}{2}(eg+dh)x^2(a+b\text{ArcSin}(cx))^2+\frac{1}{3}(fg+eh)x^3(a+b\text{ArcSin}(cx))^2+\frac{1}{4}fhx^4(a+b\text{ArcSin}(cx))^2-\frac{2b(fg+eh)\left(-3a\sqrt{1-c^2x^2}\,(2+c^2x^2)+bcx(6+c^2x^2)-3b\sqrt{1-c^2x^2}\,(2+c^2x^2)\,\text{ArcSin}(cx)\right)}{27c^3}-2bdg\left(bx-\frac{\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{c}\right)-\frac{1}{32}bfh\left(\frac{3bx^2}{c^2}+bx^4-\frac{6x\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{c^3}-\frac{4x^3\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{c}+\frac{3(a+b\text{ArcSin}(cx))^2}{bc^4}\right)-\frac{1}{4}b(eg+dh)\left(bx^2-\frac{2x\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{c}+\frac{(a+b\text{ArcSin}(cx))^2}{bc^2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)*(d + e*x + f*x^2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] d*g*x*(a + b*ArcSin[c*x])^2 + ((e*g + d*h)*x^2*(a + b*ArcSin[c*x])^2)/2 + (
(f*g + e*h)*x^3*(a + b*ArcSin[c*x])^2)/3 + (f*h*x^4*(a + b*ArcSin[c*x])^2)/
4 - (2*b*(f*g + e*h)*(-3*a*Sqrt[1 - c^2*x^2]*(2 + c^2*x^2) + b*c*x*(6 + c^2
*x^2) - 3*b*Sqrt[1 - c^2*x^2]*(2 + c^2*x^2)*ArcSin[c*x]))/(27*c^3) - 2*b*d*
g*(b*x - (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c) - (b*f*h*((3*b*x^2)/c^2
 + b*x^4 - (6*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c^3 - (4*x^3*Sqrt[1
- c^2*x^2]*(a + b*ArcSin[c*x]))/c + (3*(a + b*ArcSin[c*x])^2)/(b*c^4)))/32
- (b*(e*g + d*h)*(b*x^2 - (2*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c + (
a + b*ArcSin[c*x])^2/(b*c^2)))/4
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 869 vs. 2(383) = 766.
time = 0.25, size = 870, normalized size = 2.05 Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)*(f*x^2+e*x+d)*(a+b*arcsin(c*x))^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/c*(a^2/c^3*(1/4*h*f*c^4*x^4+1/3*(c*e*h+c*f*g)*c^3*x^3+1/2*(c^2*d*h+c^2*e*
g)*c^2*x^2+c^4*g*d*x)+b^2/c^3*(1/128*h*f*(32*arcsin(c*x)^2*c^4*x^4+16*arcsi
```

```
n(c*x)*(-c^2*x^2+1)^(1/2)*c^3*x^3-64*arcsin(c*x)^2*c^2*x^2-4*c^4*x^4-40*arc
sin(c*x)*(-c^2*x^2+1)^(1/2)*c*x+20*arcsin(c*x)^2+20*c^2*x^2-25)+1/4*c^2*d*h
*(2*arcsin(c*x)^2*c^2*x^2+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c*x-arcsin(c*x)^
2-c^2*x^2)+1/4*c^2*e*g*(2*arcsin(c*x)^2*c^2*x^2+2*arcsin(c*x)*(-c^2*x^2+1)^
(1/2)*c*x-arcsin(c*x)^2-c^2*x^2)+1/27*h*c*e*(9*c^3*x^3*arcsin(c*x)^2+6*arcs
in(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x^2-27*c*x*arcsin(c*x)^2-2*c^3*x^3-42*arcsin
(c*x)*(-c^2*x^2+1)^(1/2)+42*c*x)+1/27*c*g*f*(9*c^3*x^3*arcsin(c*x)^2+6*arcs
in(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x^2-27*c*x*arcsin(c*x)^2-2*c^3*x^3-42*arcsin
(c*x)*(-c^2*x^2+1)^(1/2)+42*c*x)+c^3*g*d*(c*x*arcsin(c*x)^2-2*c*x+2*arcsin(
c*x)*(-c^2*x^2+1)^(1/2))+1/4*h*f*(2*arcsin(c*x)^2*c^2*x^2+2*arcsin(c*x)*(-c
^2*x^2+1)^(1/2)*c*x-arcsin(c*x)^2-c^2*x^2)+h*c*e*(c*x*arcsin(c*x)^2-2*c*x+2
*arcsin(c*x)*(-c^2*x^2+1)^(1/2))+c*g*f*(c*x*arcsin(c*x)^2-2*c*x+2*arcsin(c*
x)*(-c^2*x^2+1)^(1/2)))+2*a*b/c^3*(1/4*arcsin(c*x)*h*f*c^4*x^4+1/3*arcsin(c
*x)*c^4*e*h*x^3+1/3*arcsin(c*x)*c^4*f*g*x^3+1/2*arcsin(c*x)*c^4*d*h*x^2+1/2
*arcsin(c*x)*c^4*e*g*x^2+arcsin(c*x)*c^4*g*d*x-1/4*h*f*(-1/4*c^3*x^3*(-c^2*
x^2+1)^(1/2)-3/8*c*x*(-c^2*x^2+1)^(1/2)+3/8*arcsin(c*x))-1/12*(4*c*e*h+4*c*
f*g)*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-c^2*x^2+1)^(1/2))-1/12*(6*c^2*d
*h+6*c^2*e*g)*(-1/2*c*x*(-c^2*x^2+1)^(1/2)+1/2*arcsin(c*x))+c^3*g*d*(-c^2*x
^2+1)^(1/2)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(f*x^2+e*x+d)*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] 1/4*a^2*f*h*x^4 + 1/3*a^2*f*g*x^3 + b^2*d*g*x*arcsin(c*x)^2 + 1/3*a^2*h*x^3
*e + 1/2*a^2*d*h*x^2 + 1/2*a^2*g*x^2*e + 2/9*(3*x^3*arcsin(c*x) + c*(sqrt(-
c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*f*g + 1/2*(2*x^2*arcs
in(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c*x)/c^3))*a*b*d*h + 1/16*(8
*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c
^4 - 3*arcsin(c*x)/c^5)*c)*a*b*f*h - 2*b^2*d*g*(x - sqrt(-c^2*x^2 + 1)*arcs
in(c*x)/c) + a^2*d*g*x + 1/2*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c
^2 - arcsin(c*x)/c^3))*a*b*g*e + 2/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2
+ 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*h*e + 2*(c*x*arcsin(c*x) + sq
rt(-c^2*x^2 + 1))*a*b*d*g/c + 1/12*(3*b^2*f*h*x^4 + 4*(b^2*f*g + b^2*h*e)*x
^3 + 6*(b^2*d*h + b^2*g*e)*x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^
2 + integrate(1/6*(3*b^2*c*f*h*x^4 + 4*(b^2*c*f*g + b^2*c*h*e)*x^3 + 6*(b^2
*c*d*h + b^2*c*g*e)*x^2)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x
 + 1)*sqrt(-c*x + 1))/(c^2*x^2 - 1), x)
```

Fricas [A]
time = 2.07, size = 600, normalized size = 1.41

$$\frac{27\,(8\,a^2-b^2)c^4fhx^4+32\,(9\,a^2-2\,b^2)c^4fgx^3+27\,(8\,(2\,a^2-b^2)c^4d-3\,b^2c^2f)hx^2+96\,(9\,(a^2-2\,b^2)c^4d-4\,b^2c^2f)gx+9\,(24\,b^2c^4fhx^4+32\,b^2c^4fgx^3+48\,b^2c^4dhx^2+96\,b^2c^4dgx-3\,(8\,b^2c^2d+3\,b^2f)h+8\,(4\,b^2c^4hx^3+6\,b^2c^4gx^2-3\,b^2c^2g)e)\arcsin\left(cx\right)^2+18\,(24\,abc^4fhx^4+32\,abc^4fgx^3+48\,abc^4dhx^2+96\,abc^4dgx-3\,(8\,abc^2d+3\,abf)h+8\,(4\,abc^4hx^3+6\,abc^4gx^2-3\,abc^2g)e)\arcsin\left(cx\right)+8\,(4\,(9\,a^2-2\,b^2)c^4hx^3+27\,(2\,a^2-b^2)c^4gx^2-48\,b^2c^2hx)e+6\,(18\,abc^3fhx^3+32\,abc^3fgx^2+9\,(8\,abc^3d+3\,abcf)hx+32\,(9\,abc^3d+2\,abcf)g+(18\,b^2c^3fhx^3+32\,b^2c^3fgx^2+9\,(8\,b^2c^3d+3\,b^2cf)hx+32\,(9\,b^2c^3d+2\,b^2cf)g+8\,(4\,b^2c^3hx^2+9\,b^2c^3gx+8\,b^2ch)e)\arcsin\left(cx\right)+8\,(4\,abc^3hx^2+9\,abc^3gx+8\,abch)e)\sqrt{-c^2x^2+1}}{864\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(f*x^2+e*x+d)*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] 1/864*(27*(8*a^2 - b^2)*c^4*f*h*x^4 + 32*(9*a^2 - 2*b^2)*c^4*f*g*x^3 + 27*(
8*(2*a^2 - b^2)*c^4*d - 3*b^2*c^2*f)*h*x^2 + 96*(9*(a^2 - 2*b^2)*c^4*d - 4*
b^2*c^2*f)*g*x + 9*(24*b^2*c^4*f*h*x^4 + 32*b^2*c^4*f*g*x^3 + 48*b^2*c^4*d*
h*x^2 + 96*b^2*c^4*d*g*x - 3*(8*b^2*c^2*d + 3*b^2*f)*h + 8*(4*b^2*c^4*h*x^3
 + 6*b^2*c^4*g*x^2 - 3*b^2*c^2*g)*e)*arcsin(c*x)^2 + 18*(24*a*b*c^4*f*h*x^4
 + 32*a*b*c^4*f*g*x^3 + 48*a*b*c^4*d*h*x^2 + 96*a*b*c^4*d*g*x - 3*(8*a*b*c^
2*d + 3*a*b*f)*h + 8*(4*a*b*c^4*h*x^3 + 6*a*b*c^4*g*x^2 - 3*a*b*c^2*g)*e)*a
rcsin(c*x) + 8*(4*(9*a^2 - 2*b^2)*c^4*h*x^3 + 27*(2*a^2 - b^2)*c^4*g*x^2 -
48*b^2*c^2*h*x)*e + 6*(18*a*b*c^3*f*h*x^3 + 32*a*b*c^3*f*g*x^2 + 9*(8*a*b*c
^3*d + 3*a*b*c*f)*h*x + 32*(9*a*b*c^3*d + 2*a*b*c*f)*g + (18*b^2*c^3*f*h*x^
3 + 32*b^2*c^3*f*g*x^2 + 9*(8*b^2*c^3*d + 3*b^2*c*f)*h*x + 32*(9*b^2*c^3*d
+ 2*b^2*c*f)*g + 8*(4*b^2*c^3*h*x^2 + 9*b^2*c^3*g*x + 8*b^2*c*h)*e)*arcsin(
c*x) + 8*(4*a*b*c^3*h*x^2 + 9*a*b*c^3*g*x + 8*a*b*c*h)*e)*sqrt(-c^2*x^2 + 1
))/c^4
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 1059 vs. $2(416) = 832$.
time = 0.61, size = 1059, normalized size = 2.49

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(f*x**2+e*x+d)*(a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((a**2*d*g*x + a**2*d*h*x**2/2 + a**2*e*g*x**2/2 + a**2*e*h*x**3/3
 + a**2*f*g*x**3/3 + a**2*f*h*x**4/4 + 2*a*b*d*g*x*asin(c*x) + a*b*d*h*x**2
*asin(c*x) + a*b*e*g*x**2*asin(c*x) + 2*a*b*e*h*x**3*asin(c*x)/3 + 2*a*b*f*
g*x**3*asin(c*x)/3 + a*b*f*h*x**4*asin(c*x)/2 + 2*a*b*d*g*sqrt(-c**2*x**2 +
 1)/c + a*b*d*h*x*sqrt(-c**2*x**2 + 1)/(2*c) + a*b*e*g*x*sqrt(-c**2*x**2 +
1)/(2*c) + 2*a*b*e*h*x**2*sqrt(-c**2*x**2 + 1)/(9*c) + 2*a*b*f*g*x**2*sqrt(
-c**2*x**2 + 1)/(9*c) + a*b*f*h*x**3*sqrt(-c**2*x**2 + 1)/(8*c) - a*b*d*h*a
sin(c*x)/(2*c**2) - a*b*e*g*asin(c*x)/(2*c**2) + 4*a*b*e*h*sqrt(-c**2*x**2
+ 1)/(9*c**3) + 4*a*b*f*g*sqrt(-c**2*x**2 + 1)/(9*c**3) + 3*a*b*f*h*x*sqrt(
-c**2*x**2 + 1)/(16*c**3) - 3*a*b*f*h*asin(c*x)/(16*c**4) + b**2*d*g*x*asin
(c*x)**2 - 2*b**2*d*g*x + b**2*d*h*x**2*asin(c*x)**2/2 - b**2*d*h*x**2/4 +
b**2*e*g*x**2*asin(c*x)**2/2 - b**2*e*g*x**2/4 + b**2*e*h*x**3*asin(c*x)**2
/3 - 2*b**2*e*h*x**3/27 + b**2*f*g*x**3*asin(c*x)**2/3 - 2*b**2*f*g*x**3/27
 + b**2*f*h*x**4*asin(c*x)**2/4 - b**2*f*h*x**4/32 + 2*b**2*d*g*sqrt(-c**2*
x**2 + 1)*asin(c*x)/c + b**2*d*h*x*sqrt(-c**2*x**2 + 1)*asin(c*x)/(2*c) + b
**2*e*g*x*sqrt(-c**2*x**2 + 1)*asin(c*x)/(2*c) + 2*b**2*e*h*x**2*sqrt(-c**2
*x**2 + 1)*asin(c*x)/(9*c) + 2*b**2*f*g*x**2*sqrt(-c**2*x**2 + 1)*asin(c*x)
/(9*c) + b**2*f*h*x**3*sqrt(-c**2*x**2 + 1)*asin(c*x)/(8*c) - b**2*d*h*asin
```

```
(c*x)**2/(4*c**2) - b**2*e*g*asin(c*x)**2/(4*c**2) - 4*b**2*e*h*x/(9*c**2)
- 4*b**2*f*g*x/(9*c**2) - 3*b**2*f*h*x**2/(32*c**2) + 4*b**2*e*h*sqrt(-c**2
*x**2 + 1)*asin(c*x)/(9*c**3) + 4*b**2*f*g*sqrt(-c**2*x**2 + 1)*asin(c*x)/(
9*c**3) + 3*b**2*f*h*x*sqrt(-c**2*x**2 + 1)*asin(c*x)/(16*c**3) - 3*b**2*f*
h*asin(c*x)**2/(32*c**4), Ne(c, 0)), (a**2*(d*g*x + d*h*x**2/2 + e*g*x**2/2
 + e*h*x**3/3 + f*g*x**3/3 + f*h*x**4/4), True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 1145 vs. $2(383) = 766$.
time = 0.45, size = 1145, normalized size = 2.69

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(f*x^2+e*x+d)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] 1/4*a^2*f*h*x^4 + 1/3*a^2*f*g*x^3 + 1/3*a^2*e*h*x^3 + b^2*d*g*x*arcsin(c*x)
^2 + 2*a*b*d*g*x*arcsin(c*x) + 1/3*(c^2*x^2 - 1)*b^2*f*g*x*arcsin(c*x)^2/c^
2 + 1/3*(c^2*x^2 - 1)*b^2*e*h*x*arcsin(c*x)^2/c^2 + 1/2*sqrt(-c^2*x^2 + 1)*
b^2*e*g*x*arcsin(c*x)/c + 1/2*sqrt(-c^2*x^2 + 1)*b^2*d*h*x*arcsin(c*x)/c +
a^2*d*g*x - 2*b^2*d*g*x + 2/3*(c^2*x^2 - 1)*a*b*f*g*x*arcsin(c*x)/c^2 + 2/3
*(c^2*x^2 - 1)*a*b*e*h*x*arcsin(c*x)/c^2 + 1/2*(c^2*x^2 - 1)*b^2*e*g*arcsin
(c*x)^2/c^2 + 1/2*(c^2*x^2 - 1)*b^2*d*h*arcsin(c*x)^2/c^2 + 1/3*b^2*f*g*x*a
rcsin(c*x)^2/c^2 + 1/3*b^2*e*h*x*arcsin(c*x)^2/c^2 + 1/2*sqrt(-c^2*x^2 + 1)
*a*b*e*g*x/c + 1/2*sqrt(-c^2*x^2 + 1)*a*b*d*h*x/c + 2*sqrt(-c^2*x^2 + 1)*b^
2*d*g*arcsin(c*x)/c - 1/8*(-c^2*x^2 + 1)^(3/2)*b^2*f*h*x*arcsin(c*x)/c^3 -
2/27*(c^2*x^2 - 1)*b^2*f*g*x/c^2 - 2/27*(c^2*x^2 - 1)*b^2*e*h*x/c^2 + (c^2*
x^2 - 1)*a*b*e*g*arcsin(c*x)/c^2 + (c^2*x^2 - 1)*a*b*d*h*arcsin(c*x)/c^2 +
2/3*a*b*f*g*x*arcsin(c*x)/c^2 + 2/3*a*b*e*h*x*arcsin(c*x)/c^2 + 1/4*b^2*e*g
*arcsin(c*x)^2/c^2 + 1/4*b^2*d*h*arcsin(c*x)^2/c^2 + 1/4*(c^2*x^2 - 1)^2*b^
2*f*h*arcsin(c*x)^2/c^4 + 2*sqrt(-c^2*x^2 + 1)*a*b*d*g/c - 1/8*(-c^2*x^2 +
1)^(3/2)*a*b*f*h*x/c^3 - 2/9*(-c^2*x^2 + 1)^(3/2)*b^2*f*g*arcsin(c*x)/c^3 -
 2/9*(-c^2*x^2 + 1)^(3/2)*b^2*e*h*arcsin(c*x)/c^3 + 5/16*sqrt(-c^2*x^2 + 1)
*b^2*f*h*x*arcsin(c*x)/c^3 + 1/2*(c^2*x^2 - 1)*a^2*e*g/c^2 - 1/4*(c^2*x^2 -
 1)*b^2*e*g/c^2 + 1/2*(c^2*x^2 - 1)*a^2*d*h/c^2 - 1/4*(c^2*x^2 - 1)*b^2*d*h
/c^2 - 14/27*b^2*f*g*x/c^2 - 14/27*b^2*e*h*x/c^2 + 1/2*a*b*e*g*arcsin(c*x)/
c^2 + 1/2*a*b*d*h*arcsin(c*x)/c^2 + 1/2*(c^2*x^2 - 1)^2*a*b*f*h*arcsin(c*x)
/c^4 + 1/2*(c^2*x^2 - 1)*b^2*f*h*arcsin(c*x)^2/c^4 - 2/9*(-c^2*x^2 + 1)^(3/
2)*a*b*f*g/c^3 - 2/9*(-c^2*x^2 + 1)^(3/2)*a*b*e*h/c^3 + 5/16*sqrt(-c^2*x^2
+ 1)*a*b*f*h*x/c^3 + 2/3*sqrt(-c^2*x^2 + 1)*b^2*f*g*arcsin(c*x)/c^3 + 2/3*s
qrt(-c^2*x^2 + 1)*b^2*e*h*arcsin(c*x)/c^3 - 1/8*b^2*e*g/c^2 - 1/8*b^2*d*h/c
^2 - 1/32*(c^2*x^2 - 1)^2*b^2*f*h/c^4 + (c^2*x^2 - 1)*a*b*f*h*arcsin(c*x)/c
^4 + 5/32*b^2*f*h*arcsin(c*x)^2/c^4 + 2/3*sqrt(-c^2*x^2 + 1)*a*b*f*g/c^3 +
2/3*sqrt(-c^2*x^2 + 1)*a*b*e*h/c^3 - 5/32*(c^2*x^2 - 1)*b^2*f*h/c^4 + 5/16*
a*b*f*h*arcsin(c*x)/c^4 - 17/256*b^2*f*h/c^4
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (g+hx)\,(a+b\operatorname{asin}(c\,x))^2\,\left(f\,x^2+e\,x+d\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)*(a + b*asin(c*x))^2*(d + e*x + f*x^2),x)
[Out] int((g + h*x)*(a + b*asin(c*x))^2*(d + e*x + f*x^2), x)
```

3.118 $\int \frac{(d+ex+fx^2)(a+b\textbf{ArcSin}(cx))^2}{g+hx}\,dx$

Optimal. Leaf size=1067

$$-\frac{a^2(fg-eh)x}{h^2}+\frac{2b^2(fg-eh)x}{h^2}+\frac{a^2fx^2}{2h}-\frac{b^2fx^2}{4h}-\frac{ab(4(fg-eh)-fhx)\sqrt{1-c^2x^2}}{2ch^2}-\frac{abf\text{ArcSin}(cx)}{2c^2h}-\frac{2ab}{}$$

[Out] a*b*f*x^2*arcsin(c*x)/h-b^2*(-e*h+f*g)*x*arcsin(c*x)^2/h^2+1/2*b^2*f*x*arcs
in(c*x)*(-c^2*x^2+1)^(1/2)/c/h-1/3*I*b^2*(d*h^2-e*g*h+f*g^2)*arcsin(c*x)^3/
h^3-1/4*b^2*f*arcsin(c*x)^2/c^2/h+1/2*b^2*f*x^2*arcsin(c*x)^2/h+b^2*(d*h^2-
e*g*h+f*g^2)*arcsin(c*x)^2*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*h/(c*g-(c^2*g^
2-h^2)^(1/2)))/h^3+b^2*(d*h^2-e*g*h+f*g^2)*arcsin(c*x)^2*ln(1-I*(I*c*x+(-c^
2*x^2+1)^(1/2))*h/(c*g+(c^2*g^2-h^2)^(1/2)))/h^3-a^2*(-e*h+f*g)*x/h^2+a^2*(
d*h^2-e*g*h+f*g^2)*ln(h*x+g)/h^3+2*b^2*(d*h^2-e*g*h+f*g^2)*polylog(3,I*(I*c
*x+(-c^2*x^2+1)^(1/2))*h/(c*g-(c^2*g^2-h^2)^(1/2)))/h^3+2*b^2*(d*h^2-e*g*h+
f*g^2)*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2))*h/(c*g+(c^2*g^2-h^2)^(1/2)))/
h^3+2*b^2*(-e*h+f*g)*x/h^2+1/2*a^2*f*x^2/h-1/4*b^2*f*x^2/h-2*I*b^2*(d*h^2-e
*g*h+f*g^2)*arcsin(c*x)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*h/(c*g-(c^2*
g^2-h^2)^(1/2)))/h^3-2*I*a*b*(d*h^2-e*g*h+f*g^2)*polylog(2,I*(I*c*x+(-c^2*x
^2+1)^(1/2))*h/(c*g+(c^2*g^2-h^2)^(1/2)))/h^3-2*I*b^2*(d*h^2-e*g*h+f*g^2)*a
rcsin(c*x)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*h/(c*g+(c^2*g^2-h^2)^(1/2
)))/h^3-1/2*a*b*f*arcsin(c*x)/c^2/h-2*a*b*(-e*h+f*g)*x*arcsin(c*x)/h^2-I*a*
b*(d*h^2-e*g*h+f*g^2)*arcsin(c*x)^2/h^3+2*a*b*(d*h^2-e*g*h+f*g^2)*arcsin(c*
x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*h/(c*g-(c^2*g^2-h^2)^(1/2)))/h^3+2*a*b
*(d*h^2-e*g*h+f*g^2)*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*h/(c*g+(
c^2*g^2-h^2)^(1/2)))/h^3-1/2*a*b*(-f*h*x-4*e*h+4*f*g)*(-c^2*x^2+1)^(1/2)/c/
h^2-2*b^2*(-e*h+f*g)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)/c/h^2-2*I*a*b*(d*h^2-e*
g*h+f*g^2)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*h/(c*g-(c^2*g^2-h^2)^(1/2
)))/h^3

Rubi [A]
time = 1.35, antiderivative size = 1067, normalized size of antiderivative = 1.00, number of steps used = 38, number of rules used = 23, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.821$, Rules used = {4843, 712, 4837, 12, 6874, 794, 222, 2451, 4825, 4615, 2221, 2317, 2438, 4715, 4767, 8, 4723, 4795, 4737, 30, 2611, 2320, 6724}

Antiderivative was successfully verified.

[In] Int[((d + e*x + f*x^2)*(a + b*ArcSin[c*x])^2)/(g + h*x),x]

[Out] -((a^2*(f*g - e*h)*x)/h^2) + (2*b^2*(f*g - e*h)*x)/h^2 + (a^2*f*x^2)/(2*h)
- (b^2*f*x^2)/(4*h) - (a*b*(4*(f*g - e*h) - f*h*x)*Sqrt[1 - c^2*x^2])/(2*c*

```
h^2) - (a*b*f*ArcSin[c*x])/(2*c^2*h) - (2*a*b*(f*g - e*h)*x*ArcSin[c*x])/h^
2 + (a*b*f*x^2*ArcSin[c*x])/h - (2*b^2*(f*g - e*h)*Sqrt[1 - c^2*x^2]*ArcSin
[c*x])/(c*h^2) + (b^2*f*x*Sqrt[1 - c^2*x^2]*ArcSin[c*x])/(2*c*h) - (b^2*f*A
rcSin[c*x]^2)/(4*c^2*h) - (I*a*b*(f*g^2 - e*g*h + d*h^2)*ArcSin[c*x]^2)/h^3
 - (b^2*(f*g - e*h)*x*ArcSin[c*x]^2)/h^2 + (b^2*f*x^2*ArcSin[c*x]^2)/(2*h)
- ((I/3)*b^2*(f*g^2 - e*g*h + d*h^2)*ArcSin[c*x]^3)/h^3 + (2*a*b*(f*g^2 - e
*g*h + d*h^2)*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g
^2 - h^2])])/h^3 + (b^2*(f*g^2 - e*g*h + d*h^2)*ArcSin[c*x]^2*Log[1 - (I*E^
(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])])/h^3 + (2*a*b*(f*g^2 - e*g*
h + d*h^2)*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2
- h^2])])/h^3 + (b^2*(f*g^2 - e*g*h + d*h^2)*ArcSin[c*x]^2*Log[1 - (I*E^(I*
ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])])/h^3 + (a^2*(f*g^2 - e*g*h + d
*h^2)*Log[g + h*x])/h^3 - ((2*I)*a*b*(f*g^2 - e*g*h + d*h^2)*PolyLog[2, (I*
E^(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])])/h^3 - ((2*I)*b^2*(f*g^2
- e*g*h + d*h^2)*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin[c*x])*h)/(c*g - Sqrt
[c^2*g^2 - h^2])])/h^3 - ((2*I)*a*b*(f*g^2 - e*g*h + d*h^2)*PolyLog[2, (I*E
^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])])/h^3 - ((2*I)*b^2*(f*g^2 -
 e*g*h + d*h^2)*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[
c^2*g^2 - h^2])])/h^3 + (2*b^2*(f*g^2 - e*g*h + d*h^2)*PolyLog[3, (I*E^(I*A
rcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])])/h^3 + (2*b^2*(f*g^2 - e*g*h +
d*h^2)*PolyLog[3, (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])])/h^3
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 712

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
```

```
&& IntegerQ[m]))
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*((a + c*x^2)^(p
+ 1)/(2*c*(p + 1)*(2*p + 3))), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2451

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 4615

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Int[(e + f*x)^m*(E^(I*(c + d*x))/(a - Rt[a^2 - b^2, 2] - I*b*E^(
I*(c + d*x)))), x] + Int[(e + f*x)^m*(E^(I*(c + d*x))/(a + Rt[a^2 - b^2, 2]
 - I*b*E^(I*(c + d*x)))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0]
 && PosQ[a^2 - b^2]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
```

```
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[(a + b*x)^n*(Cos[x]/(c*d + e*Sin[x])), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4837

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 4843

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(Px_)*((d_) + (e_.)*(x_))^(m_.)
, x_Symbol] :> Int[ExpandIntegrand[Px*(d + e*x)^m*(a + b*ArcSin[c*x])^n, x]
, x] /; FreeQ[{a, b, c, d, e}, x] && PolynomialQ[Px, x] && IGtQ[n, 0] && In
tegerQ[m]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(d+ex+fx^2)\left(a+b\sin^{-1}(cx)\right)^2}{g+hx}\,dx = \int \left(\frac{a^2(d+ex+fx^2)}{g+hx} + \frac{2ab(d+ex+fx^2)\sin^{-1}(cx)}{g+hx} + \frac{b^2(d+ex\right.$$

$$= a^2 \int \frac{d+ex+fx^2}{g+hx}\,dx + (2ab)\int \frac{(d+ex+fx^2)\sin^{-1}(cx)}{g+hx}\,dx + b^2$$

$$= -\frac{2ab(fg-eh)x\sin^{-1}(cx)}{h^2} + \frac{abfx^2\sin^{-1}(cx)}{h} + \frac{2ab(fg^2-egh+$$

$$= -\frac{a^2(fg-eh)x}{h^2} + \frac{a^2fx^2}{2h} - \frac{2ab(fg-eh)x\sin^{-1}(cx)}{h^2} + \frac{abfx^2\sin^{-}}{h}$$

$$= -\frac{a^2(fg-eh)x}{h^2} + \frac{a^2fx^2}{2h} - \frac{2ab(fg-eh)x\sin^{-1}(cx)}{h^2} + \frac{abfx^2\sin^{-}}{h}$$

$$= -\frac{a^2(fg-eh)x}{h^2} + \frac{a^2fx^2}{2h} - \frac{2ab(fg-eh)x\sin^{-1}(cx)}{h^2} + \frac{abfx^2\sin^{-}}{h}$$

$$= -\frac{a^2(fg-eh)x}{h^2} + \frac{2b^2(fg-eh)x}{h^2} + \frac{a^2fx^2}{2h} - \frac{b^2fx^2}{4h} - \frac{ab(4(fg-e}{}$$

$$= -\frac{a^2(fg-eh)x}{h^2} + \frac{2b^2(fg-eh)x}{h^2} + \frac{a^2fx^2}{2h} - \frac{b^2fx^2}{4h} - \frac{ab(4(fg-e}{}$$

$$= -\frac{a^2(fg-eh)x}{h^2} + \frac{2b^2(fg-eh)x}{h^2} + \frac{a^2fx^2}{2h} - \frac{b^2fx^2}{4h} - \frac{ab(4(fg-e}{}$$

$$= -\frac{a^2(fg-eh)x}{h^2} + \frac{2b^2(fg-eh)x}{h^2} + \frac{a^2fx^2}{2h} - \frac{b^2fx^2}{4h} - \frac{ab(4(fg-e}{}$$

$$= -\frac{a^2(fg-eh)x}{h^2} + \frac{2b^2(fg-eh)x}{h^2} + \frac{a^2fx^2}{2h} - \frac{b^2fx^2}{4h} - \frac{ab(4(fg-e}{}$$

$$= -\frac{a^2(fg-eh)x}{h^2} + \frac{2b^2(fg-eh)x}{h^2} + \frac{a^2fx^2}{2h} - \frac{b^2fx^2}{4h} - \frac{ab(4(fg-e}{}$$

Mathematica [A]

time = 0.46, size = 556, normalized size = 0.52

$$\frac{12h(-fg+eh)x(a+b\text{ArcSin}(cx))^2+6fh^2x^2(a+b\text{ArcSin}(cx))^2-\frac{4i(fg^2+h(-eg+dh))(a+b\text{ArcSin}(cx))^3}{b}+24bh(fg-eh)\left(bx-\frac{\sqrt{1-c^2x^2}(a+b\text{ArcSin}(cx))}{c}\right)-3bfh^2\left(bx^2-\frac{2x\sqrt{1-c^2x^2}(a+b\text{ArcSin}(cx))}{c}+\frac{(a+b\text{ArcSin}(cx))^2}{bc^2}\right)+12(fg^2+h(-eg+dh))(a+b\text{ArcSin}(cx))^2\log\left(1+\frac{ie^{i\text{ArcSin}(cx)}h}{-cg+\sqrt{c^2g^2-h^2}}\right)+12(fg^2+h(-eg+dh))(a+b\text{ArcSin}(cx))^2\log\left(1-\frac{ie^{i\text{ArcSin}(cx)}h}{cg+\sqrt{c^2g^2-h^2}}\right)-24b(fg^2+h(-eg+dh))\left(i(a+b\text{ArcSin}(cx))\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(cx)}h}{cg-\sqrt{c^2g^2-h^2}}\right)-b\text{PolyLog}\left(3,\frac{ie^{i\text{ArcSin}(cx)}h}{cg-\sqrt{c^2g^2-h^2}}\right)\right)-24b(fg^2+h(-eg+dh))\left(i(a+b\text{ArcSin}(cx))\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(cx)}h}{cg+\sqrt{c^2g^2-h^2}}\right)-b\text{PolyLog}\left(3,\frac{ie^{i\text{ArcSin}(cx)}h}{cg+\sqrt{c^2g^2-h^2}}\right)\right)}{12h^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x + f*x^2)*(a + b*ArcSin[c*x])^2)/(g + h*x),x]
```

```
[Out] (12*h*(-(f*g) + e*h)*x*(a + b*ArcSin[c*x])^2 + 6*f*h^2*x^2*(a + b*ArcSin[c*
x])^2 - ((4*I)*(f*g^2 + h*(-(e*g) + d*h))*(a + b*ArcSin[c*x])^3)/b + 24*b*h
*(f*g - e*h)*(b*x - (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c) - 3*b*f*h^2*
(b*x^2 - (2*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c + (a + b*ArcSin[c*x]
)^2/(b*c^2)) + 12*(f*g^2 + h*(-(e*g) + d*h))*(a + b*ArcSin[c*x])^2*Log[1 +
(I*E^(I*ArcSin[c*x])*h)/(-(c*g) + Sqrt[c^2*g^2 - h^2])] + 12*(f*g^2 + h*(-(
e*g) + d*h))*(a + b*ArcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*h)/(c*g + S
qrt[c^2*g^2 - h^2])] - 24*b*(f*g^2 + h*(-(e*g) + d*h))*(I*(a + b*ArcSin[c*x
])*PolyLog[2, (I*E^(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])] - b*Poly
Log[3, (I*E^(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])]) - 24*b*(f*g^2
+ h*(-(e*g) + d*h))*(I*(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*x])*
h)/(c*g + Sqrt[c^2*g^2 - h^2])] - b*PolyLog[3, (I*E^(I*ArcSin[c*x])*h)/(c*g
 + Sqrt[c^2*g^2 - h^2])]))/(12*h^3)
```

Maple [F]
time = 0.30, size = 0, normalized size = 0.00

$$\int \frac{(f\,x^2+ex+d)\,(a+b\arcsin(cx))^2}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x^2+e*x+d)*(a+b*arcsin(c*x))^2/(h*x+g),x)
```

```
[Out] int((f*x^2+e*x+d)*(a+b*arcsin(c*x))^2/(h*x+g),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x^2+e*x+d)*(a+b*arcsin(c*x))^2/(h*x+g),x, algorithm="maxima")
```

```
[Out] 1/2*a^2*f*(2*g^2*log(h*x + g)/h^3 + (h*x^2 - 2*g*x)/h^2) + a^2*(x/h - g*log
(h*x + g)/h^2)*e + a^2*d*log(h*x + g)/h + integrate(((b^2*f*x^2 + b^2*x*e +
 b^2*d)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*f*x^2 + a*b*x
*e + a*b*d)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))/(h*x + g), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x^2+e*x+d)*(a+b*arcsin(c*x))^2/(h*x+g),x, algorithm="fricas")
[Out] integral((a^2*f*x^2 + a^2*x*e + a^2*d + (b^2*f*x^2 + b^2*x*e + b^2*d)*arcsi
n(c*x)^2 + 2*(a*b*f*x^2 + a*b*x*e + a*b*d)*arcsin(c*x))/(h*x + g), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(cx))^2 (d + ex + fx^2)}{g + hx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x**2+e*x+d)*(a+b*asin(c*x))**2/(h*x+g),x)
[Out] Integral((a + b*asin(c*x))**2*(d + e*x + f*x**2)/(g + h*x), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x^2+e*x+d)*(a+b*arcsin(c*x))^2/(h*x+g),x, algorithm="giac")
[Out] integrate((f*x^2 + e*x + d)*(b*arcsin(c*x) + a)^2/(h*x + g), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b \operatorname{asin}(c\,x))^2\,(f\,x^2 + e\,x + d)}{g + h\,x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d + e*x + f*x^2))/(g + h*x),x)
[Out] int(((a + b*asin(c*x))^2*(d + e*x + f*x^2))/(g + h*x), x)
```

3.119 $\int \frac{(d+ex+fx^2)(a+b\mathbf{ArcSin}(cx))^2}{(g+hx)^2}\,dx$

Optimal. Leaf size=1323

$$\frac{a^2fx}{h^2}-\frac{2b^2fx}{h^2}-\frac{a^2(fg^2-egh+dh^2)}{h^3(g+hx)}+\frac{2abf\sqrt{1-c^2x^2}}{ch^2}+\frac{2abfx\text{ArcSin}(cx)}{h^2}-\frac{2ab(fg^2-egh+dh^2)\text{ ArcSin}(}{h^3(g+hx)}$$

```
[Out] I*a*b*(-e*h+2*f*g)*arcsin(c*x)^2/h^3+b^2*f*x*arcsin(c*x)^2/h^2+2*a*b*c*(d*h
^2-e*g*h+f*g^2)*arctan((c^2*g*x+h)/(c^2*g^2-h^2)^(1/2)/(-c^2*x^2+1)^(1/2))/
h^3/(c^2*g^2-h^2)^(1/2)+1/3*I*b^2*(-e*h+2*f*g)*arcsin(c*x)^3/h^3-b^2*(d*h^2
-e*g*h+f*g^2)*arcsin(c*x)^2/h^3/(h*x+g)+a^2*f*x/h^2-b^2*(-e*h+2*f*g)*arcsin
(c*x)^2*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*h/(c*g-(c^2*g^2-h^2)^(1/2)))/h^3-
b^2*(-e*h+2*f*g)*arcsin(c*x)^2*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*h/(c*g+(c^
2*g^2-h^2)^(1/2)))/h^3-a^2*(-e*h+2*f*g)*ln(h*x+g)/h^3-2*b^2*(-e*h+2*f*g)*po
lylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2))*h/(c*g-(c^2*g^2-h^2)^(1/2)))/h^3-2*b^2
*(-e*h+2*f*g)*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2))*h/(c*g+(c^2*g^2-h^2)^(
1/2)))/h^3-2*b^2*f*x/h^2-a^2*(d*h^2-e*g*h+f*g^2)/h^3/(h*x+g)+2*I*b^2*c*(d*h
^2-e*g*h+f*g^2)*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*h/(c*g+(c^2*g
^2-h^2)^(1/2)))/h^3/(c^2*g^2-h^2)^(1/2)-2*I*b^2*c*(d*h^2-e*g*h+f*g^2)*arcsi
n(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*h/(c*g-(c^2*g^2-h^2)^(1/2)))/h^3/(
c^2*g^2-h^2)^(1/2)+2*I*a*b*(-e*h+2*f*g)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/
2))*h/(c*g-(c^2*g^2-h^2)^(1/2)))/h^3+2*I*b^2*(-e*h+2*f*g)*arcsin(c*x)*polyl
og(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*h/(c*g-(c^2*g^2-h^2)^(1/2)))/h^3+2*I*a*b*
(-e*h+2*f*g)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*h/(c*g+(c^2*g^2-h^2)^(1
/2)))/h^3+2*I*b^2*(-e*h+2*f*g)*arcsin(c*x)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^
(1/2))*h/(c*g+(c^2*g^2-h^2)^(1/2)))/h^3-2*a*b*(-e*h+2*f*g)*arcsin(c*x)*ln(1
-I*(I*c*x+(-c^2*x^2+1)^(1/2))*h/(c*g-(c^2*g^2-h^2)^(1/2)))/h^3-2*a*b*(-e*h+
2*f*g)*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2))*h/(c*g+(c^2*g^2-h^2)^(
1/2)))/h^3-2*b^2*c*(d*h^2-e*g*h+f*g^2)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2
))*h/(c*g-(c^2*g^2-h^2)^(1/2)))/h^3/(c^2*g^2-h^2)^(1/2)+2*b^2*c*(d*h^2-e*g*
h+f*g^2)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))*h/(c*g+(c^2*g^2-h^2)^(1/2))
)/h^3/(c^2*g^2-h^2)^(1/2)+2*a*b*f*(-c^2*x^2+1)^(1/2)/c/h^2+2*b^2*f*arcsin(c
*x)*(-c^2*x^2+1)^(1/2)/c/h^2+2*a*b*f*x*arcsin(c*x)/h^2-2*a*b*(d*h^2-e*g*h+f
*g^2)*arcsin(c*x)/h^3/(h*x+g)
```

Rubi [A]
time = 1.74, antiderivative size = 1323, normalized size of antiderivative = 1.00, number of steps used = 45, number of rules used = 25, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.893$, Rules used = {4843, 712, 4837, 12, 6874, 267, 739, 210, 222, 2451, 4825, 4615, 2221, 2317, 2438, 4715, 4767, 8, 4827, 4857, 3404, 2296, 2611, 2320, 6724}

Antiderivative was successfully verified.

```
[In] Int[((d + e*x + f*x^2)*(a + b*ArcSin[c*x])^2)/(g + h*x)^2,x]
```

```
[Out] (a^2*f*x)/h^2 - (2*b^2*f*x)/h^2 - (a^2*(f*g^2 - e*g*h + d*h^2))/(h^3*(g + h
*x)) + (2*a*b*f*Sqrt[1 - c^2*x^2])/(c*h^2) + (2*a*b*f*x*ArcSin[c*x])/h^2 -
(2*a*b*(f*g^2 - e*g*h + d*h^2)*ArcSin[c*x])/(h^3*(g + h*x)) + (2*b^2*f*Sqrt
[1 - c^2*x^2]*ArcSin[c*x])/(c*h^2) + (I*a*b*(2*f*g - e*h)*ArcSin[c*x]^2)/h^
3 + (b^2*f*x*ArcSin[c*x]^2)/h^2 - (b^2*(f*g^2 - e*g*h + d*h^2)*ArcSin[c*x]^
2)/(h^3*(g + h*x)) + ((I/3)*b^2*(2*f*g - e*h)*ArcSin[c*x]^3)/h^3 + (2*a*b*c
*(f*g^2 - e*g*h + d*h^2)*ArcTan[(h + c^2*g*x)/(Sqrt[c^2*g^2 - h^2]*Sqrt[1 -
 c^2*x^2])])/(h^3*Sqrt[c^2*g^2 - h^2]) - (2*a*b*(2*f*g - e*h)*ArcSin[c*x]*L
og[1 - (I*E^(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])])/h^3 - ((2*I)*b
^2*c*(f*g^2 - e*g*h + d*h^2)*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*h)/(c
*g - Sqrt[c^2*g^2 - h^2])])/(h^3*Sqrt[c^2*g^2 - h^2]) - (b^2*(2*f*g - e*h)*
ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])])
/h^3 - (2*a*b*(2*f*g - e*h)*ArcSin[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*h)/(c*
g + Sqrt[c^2*g^2 - h^2])])/h^3 + ((2*I)*b^2*c*(f*g^2 - e*g*h + d*h^2)*ArcSi
n[c*x]*Log[1 - (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])])/(h^3*S
qrt[c^2*g^2 - h^2]) - (b^2*(2*f*g - e*h)*ArcSin[c*x]^2*Log[1 - (I*E^(I*ArcS
in[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])])/h^3 - (a^2*(2*f*g - e*h)*Log[g +
h*x])/h^3 + ((2*I)*a*b*(2*f*g - e*h)*PolyLog[2, (I*E^(I*ArcSin[c*x])*h)/(c*
g - Sqrt[c^2*g^2 - h^2])])/h^3 - (2*b^2*c*(f*g^2 - e*g*h + d*h^2)*PolyLog[2
, (I*E^(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])])/(h^3*Sqrt[c^2*g^2 -
 h^2]) + ((2*I)*b^2*(2*f*g - e*h)*ArcSin[c*x]*PolyLog[2, (I*E^(I*ArcSin[c*x
])*h)/(c*g - Sqrt[c^2*g^2 - h^2])])/h^3 + ((2*I)*a*b*(2*f*g - e*h)*PolyLog[
2, (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])])/h^3 + (2*b^2*c*(f*
g^2 - e*g*h + d*h^2)*PolyLog[2, (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2
 - h^2])])/(h^3*Sqrt[c^2*g^2 - h^2]) + ((2*I)*b^2*(2*f*g - e*h)*ArcSin[c*x]
*PolyLog[2, (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])])/h^3 - (2*
b^2*(2*f*g - e*h)*PolyLog[3, (I*E^(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 -
h^2])])/h^3 - (2*b^2*(2*f*g - e*h)*PolyLog[3, (I*E^(I*ArcSin[c*x])*h)/(c*g
+ Sqrt[c^2*g^2 - h^2])])/h^3
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
```

```
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 712

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 739

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2296

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[2*(c/q), Int[
(f + g*x)^m*(F^u/(b - q + 2*c*F^u)), x], x] - Dist[2*(c/q), Int[(f + g*x)^m
*(F^u/(b + q + 2*c*F^u)), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
```

```
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2451

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 3404

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[(c + d*x)^m*(E^(I*(e + f*x))/(I*b + 2*a*E^(I*(e + f*x)
) - I*b*E^(2*I*(e + f*x)))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4615

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Int[(e + f*x)^m*(E^(I*(c + d*x))/(a - Rt[a^2 - b^2, 2] - I*b*E^(
I*(c + d*x)))), x] + Int[(e + f*x)^m*(E^(I*(c + d*x))/(a + Rt[a^2 - b^2, 2]
 - I*b*E^(I*(c + d*x)))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0]
 && PosQ[a^2 - b^2]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[(a + b*x)^n*(Cos[x]/(c*d + e*Sin[x])), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4827

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(e*(m + 1))), x] -
Dist[b*c*(n/(e*(m + 1))), Int[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1
)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4837

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(Px_)*((d_.) + (e_.)*(x_))^(m_.), x_
Symbol] :> With[{u = IntHide[Px*(d + e*x)^m, x]}, Dist[a + b*ArcSin[c*x], u
, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /;
FreeQ[{a, b, c, d, e, m}, x] && PolynomialQ[Px, x]
```

Rule 4843

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(Px_)*((d_) + (e_.)*(x_))^(m_.)
, x_Symbol] :> Int[ExpandIntegrand[Px*(d + e*x)^m*(a + b*ArcSin[c*x])^n, x]
, x] /; FreeQ[{a, b, c, d, e}, x] && PolynomialQ[Px, x] && IGtQ[n, 0] && In
tegerQ[m]
```

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
```

```
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(d+ex+fx^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(g+hx)^2}\,dx = \int \Bigg(\frac{a^2(d+ex+fx^2)}{(g+hx)^2} + \frac{2ab(d+ex+fx^2)\sin^{-1}(cx)}{(g+hx)^2} + \frac{b^2(d+e}{}$$

$$= a^2 \int \frac{d+ex+fx^2}{(g+hx)^2}\,dx + (2ab)\int \frac{(d+ex+fx^2)\sin^{-1}(cx)}{(g+hx)^2}\,dx +$$

$$= \frac{2abfx\sin^{-1}(cx)}{h^2} - \frac{2ab(fg^2-egh+dh^2)\sin^{-1}(cx)}{h^3(g+hx)} - \frac{2ab(2fg-}{}$$

$$= \frac{a^2fx}{h^2} - \frac{a^2(fg^2-egh+dh^2)}{h^3(g+hx)} + \frac{2abfx\sin^{-1}(cx)}{h^2} - \frac{2ab(fg^2-eg}{h^3}$$

$$= \frac{a^2fx}{h^2} - \frac{a^2(fg^2-egh+dh^2)}{h^3(g+hx)} + \frac{2abfx\sin^{-1}(cx)}{h^2} - \frac{2ab(fg^2-eg}{h^3}$$

$$= \frac{a^2fx}{h^2} - \frac{a^2(fg^2-egh+dh^2)}{h^3(g+hx)} + \frac{2abfx\sin^{-1}(cx)}{h^2} - \frac{2ab(fg^2-eg}{h^3}$$

$$= \frac{a^2fx}{h^2} - \frac{2b^2fx}{h^2} - \frac{a^2(fg^2-egh+dh^2)}{h^3(g+hx)} + \frac{2abf\sqrt{1-c^2x^2}}{ch^2} + \frac{2ab}{}$$

$$= \frac{a^2fx}{h^2} - \frac{2b^2fx}{h^2} - \frac{a^2(fg^2-egh+dh^2)}{h^3(g+hx)} + \frac{2abf\sqrt{1-c^2x^2}}{ch^2} + \frac{2ab}{}$$

$$= \frac{a^2fx}{h^2} - \frac{2b^2fx}{h^2} - \frac{a^2(fg^2-egh+dh^2)}{h^3(g+hx)} + \frac{2abf\sqrt{1-c^2x^2}}{ch^2} + \frac{2ab}{}$$

$$= \frac{a^2fx}{h^2} - \frac{2b^2fx}{h^2} - \frac{a^2(fg^2-egh+dh^2)}{h^3(g+hx)} + \frac{2abf\sqrt{1-c^2x^2}}{ch^2} + \frac{2ab}{}$$

$$= \frac{a^2fx}{h^2} - \frac{2b^2fx}{h^2} - \frac{a^2(fg^2-egh+dh^2)}{h^3(g+hx)} + \frac{2abf\sqrt{1-c^2x^2}}{ch^2} + \frac{2ab}{}$$

$$= \frac{a^2fx}{h^2} - \frac{2b^2fx}{h^2} - \frac{a^2(fg^2-egh+dh^2)}{h^3(g+hx)} + \frac{2abf\sqrt{1-c^2x^2}}{ch^2} + \frac{2ab}{}$$

Mathematica [A]
time = 0.85, size = 688, normalized size = 0.52

$$\frac{3fhx(a+b\text{ArcSin}(cx))^2-\frac{3(fg^2+h(-eg+dh))(a+b\text{ArcSin}(cx))^2}{g+hx}+\frac{i(2fg-eh)(a+b\text{ArcSin}(cx))^3}{b}-6bfh\left(bx-\frac{\sqrt{1-c^2x^2}(a+b\text{ArcSin}(cx))}{c}\right)-3(2fg-eh)(a+b\text{ArcSin}(cx))^2\log\left(1+\frac{ie^{i\text{ArcSin}(cx)}h}{-cg+\sqrt{c^2g^2-h^2}}\right)-3(2fg-eh)(a+b\text{ArcSin}(cx))^2\log\left(1-\frac{ie^{i\text{ArcSin}(cx)}h}{cg+\sqrt{c^2g^2-h^2}}\right)+\frac{6bc(fg^2+h(-eg+dh))\left(-i(a+b\text{ArcSin}(cx))\left(\log\left(1+\frac{ie^{i\text{ArcSin}(cx)}h}{-cg+\sqrt{c^2g^2-h^2}}\right)-\log\left(1-\frac{ie^{i\text{ArcSin}(cx)}h}{cg+\sqrt{c^2g^2-h^2}}\right)\right)-b\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(cx)}h}{cg-\sqrt{c^2g^2-h^2}}\right)+b\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(cx)}h}{cg+\sqrt{c^2g^2-h^2}}\right)\right)}{\sqrt{c^2g^2-h^2}}+6b(2fg-eh)\left(i(a+b\text{ArcSin}(cx))\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(cx)}h}{cg-\sqrt{c^2g^2-h^2}}\right)-b\text{PolyLog}\left(3,\frac{ie^{i\text{ArcSin}(cx)}h}{cg-\sqrt{c^2g^2-h^2}}\right)\right)+6b(2fg-eh)\left(i(a+b\text{ArcSin}(cx))\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(cx)}h}{cg+\sqrt{c^2g^2-h^2}}\right)-b\text{PolyLog}\left(3,\frac{ie^{i\text{ArcSin}(cx)}h}{cg+\sqrt{c^2g^2-h^2}}\right)\right)}{3h^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x + f*x^2)*(a + b*ArcSin[c*x])^2)/(g + h*x)^2,x]
```

```
[Out] (3*f*h*x*(a + b*ArcSin[c*x])^2 - (3*(f*g^2 + h*(-(e*g) + d*h))*(a + b*ArcSi
n[c*x])^2)/(g + h*x) + (I*(2*f*g - e*h)*(a + b*ArcSin[c*x])^3)/b - 6*b*f*h*
(b*x - (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c) - 3*(2*f*g - e*h)*(a + b*
ArcSin[c*x])^2*Log[1 + (I*E^(I*ArcSin[c*x])*h)/(-(c*g) + Sqrt[c^2*g^2 - h^2
])] - 3*(2*f*g - e*h)*(a + b*ArcSin[c*x])^2*Log[1 - (I*E^(I*ArcSin[c*x])*h)
/(c*g + Sqrt[c^2*g^2 - h^2])] + (6*b*c*(f*g^2 + h*(-(e*g) + d*h))*((-I)*(a
+ b*ArcSin[c*x])*(Log[1 + (I*E^(I*ArcSin[c*x])*h)/(-(c*g) + Sqrt[c^2*g^2 -
h^2])] - Log[1 - (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])]) - b*
PolyLog[2, (I*E^(I*ArcSin[c*x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])] + b*PolyLog
[2, (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])]))/Sqrt[c^2*g^2 - h
^2] + 6*b*(2*f*g - e*h)*(I*(a + b*ArcSin[c*x])*PolyLog[2, (I*E^(I*ArcSin[c*
x])*h)/(c*g - Sqrt[c^2*g^2 - h^2])] - b*PolyLog[3, (I*E^(I*ArcSin[c*x])*h)/
(c*g - Sqrt[c^2*g^2 - h^2])]) + 6*b*(2*f*g - e*h)*(I*(a + b*ArcSin[c*x])*Po
lyLog[2, (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])] - b*PolyLog[3
, (I*E^(I*ArcSin[c*x])*h)/(c*g + Sqrt[c^2*g^2 - h^2])]))/(3*h^3)
```

Maple [F]
time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{\left(f\,x^{2}+e x +d \right) \left(a +b \arcsin \left(c x \right)\right)^{2}}{\left(h x +g \right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x^2+e*x+d)*(a+b*arcsin(c*x))^2/(h*x+g)^2,x)
```

```
[Out] int((f*x^2+e*x+d)*(a+b*arcsin(c*x))^2/(h*x+g)^2,x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x^2+e*x+d)*(a+b*arcsin(c*x))^2/(h*x+g)^2,x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(h-c*g>0)', see `assume?` for more d
etails)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x^2+e*x+d)*(a+b*arcsin(c*x))^2/(h*x+g)^2,x, algorithm="fricas"
)
```

```
[Out] integral((a^2*f*x^2 + a^2*x*e + a^2*d + (b^2*f*x^2 + b^2*x*e + b^2*d)*arcsi
n(c*x)^2 + 2*(a*b*f*x^2 + a*b*x*e + a*b*d)*arcsin(c*x))/(h^2*x^2 + 2*g*h*x
+ g^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\operatorname{asin}\left(cx\right)\right)^{2}\left(d+ex+fx^{2}\right)}{\left(g+hx\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x**2+e*x+d)*(a+b*asin(c*x))**2/(h*x+g)**2,x)
```

```
[Out] Integral((a + b*asin(c*x))**2*(d + e*x + f*x**2)/(g + h*x)**2, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x^2+e*x+d)*(a+b*arcsin(c*x))^2/(h*x+g)^2,x, algorithm="giac")
```

```
[Out] integrate((f*x^2 + e*x + d)*(b*arcsin(c*x) + a)^2/(h*x + g)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,\left(f\,x^2+e\,x+d\right)}{{\left(g+h\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d + e*x + f*x^2))/(g + h*x)^2,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d + e*x + f*x^2))/(g + h*x)^2, x)
```

3.120 $\int \frac{(ef+2dhx+ehx^2)(a+b\textbf{ArcSin}(cx))^2}{(d+ex)^2}\,dx$

Optimal. Leaf size=520

$$-\frac{2b^2hx}{e}+\frac{2abh\sqrt{1-c^2x^2}}{ce}+\frac{2b^2h\sqrt{1-c^2x^2}\,\text{ArcSin}(cx)}{ce}+\frac{hx(a+b\text{ArcSin}(cx))^2}{e}-\frac{\left(f-\frac{d^2h}{e^2}\right)(a+b\text{ArcSin}(cx}{d+ex}$$

```
[Out] -2*b^2*h*x/e+h*x*(a+b*arcsin(c*x))^2/e-(f-d^2*h/e^2)*(a+b*arcsin(c*x))^2/(e
*x+d)+2*a*b*c*(-d^2*h+e^2*f)*arctan((c^2*d*x+e)/(c^2*d^2-e^2)^(1/2)/(-c^2*x
^2+1)^(1/2))/e^2/(c^2*d^2-e^2)^(1/2)-2*I*b^2*c*(-d^2*h+e^2*f)*arcsin(c*x)*l
n(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d-(c^2*d^2-e^2)^(1/2)))/e^2/(c^2*d^2-
e^2)^(1/2)+2*I*b^2*c*(-d^2*h+e^2*f)*arcsin(c*x)*ln(1-I*e*(I*c*x+(-c^2*x^2+1
)^(1/2))/(c*d+(c^2*d^2-e^2)^(1/2)))/e^2/(c^2*d^2-e^2)^(1/2)-2*b^2*c*(-d^2*h
+e^2*f)*polylog(2,I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d-(c^2*d^2-e^2)^(1/2)))
/e^2/(c^2*d^2-e^2)^(1/2)+2*b^2*c*(-d^2*h+e^2*f)*polylog(2,I*e*(I*c*x+(-c^2*
x^2+1)^(1/2))/(c*d+(c^2*d^2-e^2)^(1/2)))/e^2/(c^2*d^2-e^2)^(1/2)+2*a*b*h*(-
c^2*x^2+1)^(1/2)/c/e+2*b^2*h*arcsin(c*x)*(-c^2*x^2+1)^(1/2)/c/e
```

Rubi [A]
time = 1.15, antiderivative size = 520, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 18, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.546$, Rules used = {697, 4841, 6874, 267, 739, 210, 4883, 1668, 12, 4881, 4767, 8, 4857, 3404, 2296, 2221, 2317, 2438}

$$-\frac{\left(f-\frac{d^2h}{e^2}\right)(a+b\text{ArcSin}(cx))^2}{d+ex}+\frac{hx(a+b\text{ArcSin}(cx))^2}{e}+\frac{2abc(e^2f-d^2h)\,\text{ArcTan}\left(\frac{c^2dx+e}{\sqrt{1-c^2x^2}\sqrt{c^2d^2-e^2}}\right)}{e^2\sqrt{c^2d^2-e^2}}+\frac{2abh\sqrt{1-c^2x^2}}{ce}-\frac{2b^2c(e^2f-d^2h)\,\text{Li}_2\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^2\sqrt{c^2d^2-e^2}}+\frac{2b^2c(e^2f-d^2h)\,\text{Li}_2\left(\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)}{e^2\sqrt{c^2d^2-e^2}}-\frac{2ib^2c\text{ArcSin}(cx)(e^2f-d^2h)\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)}{e^2\sqrt{c^2d^2-e^2}}+\frac{2ib^2c\text{ArcSin}(cx)(e^2f-d^2h)\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{\sqrt{c^2d^2-e^2}+cd}\right)}{e^2\sqrt{c^2d^2-e^2}}+\frac{2b^2h\sqrt{1-c^2x^2}\,\text{ArcSin}(cx)}{ce}-\frac{2b^2hx}{e}$$

Antiderivative was successfully verified.

```
[In] Int[((e*f + 2*d*h*x + e*h*x^2)*(a + b*ArcSin[c*x])^2)/(d + e*x)^2,x]
```

```
[Out] (-2*b^2*h*x)/e + (2*a*b*h*Sqrt[1 - c^2*x^2])/(c*e) + (2*b^2*h*Sqrt[1 - c^2*
x^2]*ArcSin[c*x])/(c*e) + (h*x*(a + b*ArcSin[c*x])^2)/e - ((f - (d^2*h)/e^2
)*(a + b*ArcSin[c*x])^2)/(d + e*x) + (2*a*b*c*(e^2*f - d^2*h)*ArcTan[(e + c
^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2])])/(e^2*Sqrt[c^2*d^2 - e^2])
 - ((2*I)*b^2*c*(e^2*f - d^2*h)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))
/(c*d - Sqrt[c^2*d^2 - e^2])])/(e^2*Sqrt[c^2*d^2 - e^2]) + ((2*I)*b^2*c*(e^
2*f - d^2*h)*ArcSin[c*x]*Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^
2 - e^2])])/(e^2*Sqrt[c^2*d^2 - e^2]) - (2*b^2*c*(e^2*f - d^2*h)*PolyLog[2,
 (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/(e^2*Sqrt[c^2*d^2 -
e^2]) + (2*b^2*c*(e^2*f - d^2*h)*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d +
Sqrt[c^2*d^2 - e^2])])/(e^2*Sqrt[c^2*d^2 - e^2])
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 697

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[2*c*d - b*e, 0] &
& IGtQ[p, 0] &&  !(EqQ[m, 3] && NeQ[p, 1])
```

Rule 739

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 1668

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :
> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[f*(d + e*x)
^(m + q - 1)*((a + c*x^2)^(p + 1)/(c*e^(q - 1)*(m + q + 2*p + 1))), x] + Di
st[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + c*x^2)^p*ExpandToSum[c
*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1)*(d + e*x)^q - f*(d + e*x)
^(q - 2)*(a*e^2*(m + q - 1) - c*d^2*(m + q + 2*p + 1) - 2*c*d*e*(m + q + p)
*x), x], x], x] /; GtQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, c, d,
 e, m, p}, x] && PolyQ[Pq, x] && NeQ[c*d^2 + a*e^2, 0] &&  !(EqQ[d, 0] && T
rue) &&  !(IGtQ[m, 0] && RationalQ[a, c, d, e] && (IntegerQ[p] || ILtQ[p +
1/2, 0]))
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2296

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[2*(c/q), Int[
(f + g*x)^m*(F^u/(b - q + 2*c*F^u)), x], x] - Dist[2*(c/q), Int[(f + g*x)^m
*(F^u/(b + q + 2*c*F^u)), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3404

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[(c + d*x)^m*(E^(I*(e + f*x))/(I*b + 2*a*E^(I*(e + f*x)
) - I*b*E^(2*I*(e + f*x)))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4841

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.) + (g_.)*(x_) + (h_.)*(x
_)^2)^(p_.))/((d_) + (e_.)*(x_))^2, x_Symbol] :> With[{u = IntHide[(f + g*x
 + h*x^2)^p/(d + e*x)^2, x]}, Dist[(a + b*ArcSin[c*x])^n, u, x] - Dist[b*c*
n, Int[SimplifyIntegrand[u*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*x^2]),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, h}, x] && IGtQ[n, 0] && IGtQ[p,
 0] && EqQ[e*g - 2*d*h, 0]
```

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4881

```
Int[ArcSin[(c_.)*(x_)]^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p_), x_Symbol] :
> With[{u = ExpandIntegrand[(d + e*x^2)^p*ArcSin[c*x]^n, RFx, x]}, Int[u, x
] /; SumQ[u]] /; FreeQ[{c, d, e}, x] && RationalFunctionQ[RFx, x] && IGtQ[n
, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 4883

```
Int[(ArcSin[(c_.)*(x_)]*(b_.) + (a_))^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p
_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p, RFx*(a + b*ArcSin[c*x])
^n, x], x] /; FreeQ[{a, b, c, d, e}, x] && RationalFunctionQ[RFx, x] && IGt
Q[n, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(ef+2dhx+ehx^2)\left(a+b\sin^{-1}(cx)\right)^2}{(d+ex)^2}\,dx = \frac{hx(a+b\sin^{-1}(cx))^2}{e} - \frac{\left(f-\frac{d^2h}{e^2}\right)\left(a+b\sin^{-1}(cx)\right)^2}{d+ex} - (2bc)$$

$$= \frac{hx(a+b\sin^{-1}(cx))^2}{e} - \frac{\left(f-\frac{d^2h}{e^2}\right)\left(a+b\sin^{-1}(cx)\right)^2}{d+ex} - (2bc)$$

$$= \frac{hx(a+b\sin^{-1}(cx))^2}{e} - \frac{\left(f-\frac{d^2h}{e^2}\right)\left(a+b\sin^{-1}(cx)\right)^2}{d+ex} - \frac{(2abc}{}$$

$$= \frac{2abh\sqrt{1-c^2x^2}}{ce} + \frac{hx(a+b\sin^{-1}(cx))^2}{e} - \frac{\left(f-\frac{d^2h}{e^2}\right)(a+b\,\mathrm{s}}{d+ex}$$

$$= \frac{2abh\sqrt{1-c^2x^2}}{ce} + \frac{hx(a+b\sin^{-1}(cx))^2}{e} - \frac{\left(f-\frac{d^2h}{e^2}\right)(a+b\,\mathrm{s}}{d+ex}$$

$$= \frac{2abh\sqrt{1-c^2x^2}}{ce} + \frac{2b^2h\sqrt{1-c^2x^2}\,\sin^{-1}(cx)}{ce} + \frac{hx(a+b\sin^{-1}}{e}$$

$$= -\frac{2b^2hx}{e} + \frac{2abh\sqrt{1-c^2x^2}}{ce} + \frac{2b^2h\sqrt{1-c^2x^2}\,\sin^{-1}(cx)}{ce} + \frac{h}{}$$

$$= -\frac{2b^2hx}{e} + \frac{2abh\sqrt{1-c^2x^2}}{ce} + \frac{2b^2h\sqrt{1-c^2x^2}\,\sin^{-1}(cx)}{ce} + \frac{h}{}$$

$$= -\frac{2b^2hx}{e} + \frac{2abh\sqrt{1-c^2x^2}}{ce} + \frac{2b^2h\sqrt{1-c^2x^2}\,\sin^{-1}(cx)}{ce} + \frac{h}{}$$

$$= -\frac{2b^2hx}{e} + \frac{2abh\sqrt{1-c^2x^2}}{ce} + \frac{2b^2h\sqrt{1-c^2x^2}\,\sin^{-1}(cx)}{ce} + \frac{h}{}$$

$$= -\frac{2b^2hx}{e} + \frac{2abh\sqrt{1-c^2x^2}}{ce} + \frac{2b^2h\sqrt{1-c^2x^2}\,\sin^{-1}(cx)}{ce} + \frac{h}{}$$

Mathematica [A]
time = 0.29, size = 307, normalized size = 0.59

$$\frac{hx(a+b\text{ArcSin}(cx))^2}{e} - \frac{\left(f-\frac{d^2h}{e^2}\right)(a+b\text{ArcSin}(cx))^2}{d+ex} - \frac{2bh\left(bx-\frac{\sqrt{1-c^2x^2}\,(a+b\text{ArcSin}(cx))}{c}\right)}{e} + \frac{2bc(e^2f-d^2h)\left(-i(a+b\text{ArcSin}(cx))\left(\log\left(1+\frac{iee^{i\text{ArcSin}(cx)}}{-cd+\sqrt{c^2d^2-e^2}}\right)-\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)\right)-b\text{PolyLog}\left(2,\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)+b\text{PolyLog}\left(2,\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)\right)}{e^2\sqrt{c^2d^2-e^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e*f + 2*d*h*x + e*h*x^2)*(a + b*ArcSin[c*x])^2)/(d + e*x)^2,x]
```

```
[Out] (h*x*(a + b*ArcSin[c*x])^2)/e - ((f - (d^2*h)/e^2)*(a + b*ArcSin[c*x])^2)/(
d + e*x) - (2*b*h*(b*x - (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c))/e + (2
*b*c*(e^2*f - d^2*h)*((-I)*(a + b*ArcSin[c*x])*(Log[1 + (I*e*E^(I*ArcSin[c*
x]))/(-(c*d) + Sqrt[c^2*d^2 - e^2])] - Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d
 + Sqrt[c^2*d^2 - e^2])]) - b*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqr
t[c^2*d^2 - e^2])] + b*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d
^2 - e^2])]))/(e^2*Sqrt[c^2*d^2 - e^2])
```

Maple [**B**] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 1426 vs. $2(520) = 1040$.
time = 1.72, size = 1427, normalized size = 2.74 Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*h*x^2+2*d*h*x+e*f)*(a+b*arcsin(c*x))^2/(e*x+d)^2,x,method=_RETURNVER
BOSE)
```

```
[Out] 1/c*(a^2*(h/e*c*x+c^2*(d^2*h-e^2*f)/e^2/(c*e*x+c*d))+2*b^2/e*h*(-c^2*x^2+1)
^(1/2)*arcsin(c*x)+b^2/e*h*arcsin(c*x)^2*c*x-2*b^2*h/e*c*x+b^2*arcsin(c*x)^
2*c^2/e^2/(c*e*x+c*d)*d^2*h-b^2*arcsin(c*x)^2*c^2/(c*e*x+c*d)*f+2*b^2*(-c^2
*d^2+e^2)^(1/2)/e^2/(c^2*d^2-e^2)*c^2*arcsin(c*x)*ln((I*d*c+e*(I*c*x+(-c^2*
x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*d^2*h-2*b
^2*(-c^2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)*c^2*arcsin(c*x)*ln((I*d*c+e*(I*c*x+(-
c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*f-2*b
^2*(-c^2*d^2+e^2)^(1/2)/e^2/(c^2*d^2-e^2)*c^2*arcsin(c*x)*ln((I*d*c+e*(I*c*
x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*d
^2*h+2*b^2*(-c^2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)*c^2*arcsin(c*x)*ln((I*d*c+e*(
I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)
))*f+2*I*b^2*(-c^2*d^2+e^2)^(1/2)/e^2/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(
-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*h*d^
2*c^2-2*I*b^2*(-c^2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^
2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*f*c^2-2
*I*b^2*(-c^2*d^2+e^2)^(1/2)/e^2/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x
^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*h*d^2*c^2+
2*I*b^2*(-c^2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+
1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*f*c^2+2*a*b*a
rcsin(c*x)*h/e*c*x+2*a*b*arcsin(c*x)*c^2/e^2/(c*e*x+c*d)*d^2*h-2*a*b*arcsin
(c*x)*c^2/(c*e*x+c*d)*f+2*a*b/e*h*(-c^2*x^2+1)^(1/2)+2*a*b/e^3*c^2/(-(c^2*d
^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^
2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1
/2))/(c*x+d*c/e))*d^2*h-2*a*b/e*c^2/(-(c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*
d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)
^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/e))*f)
```

Maxima [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*h*x^2+2*d*h*x+e*f)*(a+b*arcsin(c*x))^2/(e*x+d)^2,x, algorithm=
"maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c*d-%e>0)', see `assume?` for more
details
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*h*x^2+2*d*h*x+e*f)*(a+b*arcsin(c*x))^2/(e*x+d)^2,x, algorithm=
"fricas")
```

```
[Out] integral((2*a^2*d*h*x + (2*b^2*d*h*x + (b^2*h*x^2 + b^2*f)*e)*arcsin(c*x)^2
 + 2*(2*a*b*d*h*x + (a*b*h*x^2 + a*b*f)*e)*arcsin(c*x) + (a^2*h*x^2 + a^2*f
)*e)/(x^2*e^2 + 2*d*x*e + d^2), x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(cx))^2 \cdot (2dhx + ef + ehx^2)}{(d + ex)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*h*x**2+2*d*h*x+e*f)*(a+b*asin(c*x))**2/(e*x+d)**2,x)
```

```
[Out] Integral((a + b*asin(c*x))**2*(2*d*h*x + e*f + e*h*x**2)/(d + e*x)**2, x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*h*x^2+2*d*h*x+e*f)*(a+b*arcsin(c*x))^2/(e*x+d)^2,x, algorithm=
"giac")
```

```
[Out] integrate((e*h*x^2 + 2*d*h*x + e*f)*(b*arcsin(c*x) + a)^2/(e*x + d)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\mathrm{asin}(c\,x))^2\,(e\,h\,x^2 + 2\,d\,h\,x + e\,f)}{(d + e\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(e*f + e*h*x^2 + 2*d*h*x))/(d + e*x)^2,x)
[Out] int(((a + b*asin(c*x))^2*(e*f + e*h*x^2 + 2*d*h*x))/(d + e*x)^2, x)
```

3.121 $\int \frac{(ef+2dhx+ehx^2)^2(a+b\mathbf{ArcSin}(cx))^2}{(d+ex)^2}\,dx$

Optimal. Leaf size=920

$$-\frac{4b^2h^2x}{9c^2}-\frac{2b^2h(2e^2f-d^2h)\,x}{e^2}-\frac{b^2dh^2x^2}{2e}-\frac{2}{27}b^2h^2x^3+\frac{abh(4e^2h+c^2(36e^2f-25d^2h))\,\sqrt{1-c^2x^2}}{9c^3e^2}+\frac{5abdh^2(d}{}$$

```
[Out] -4/9*b^2*h^2*x/c^2-2*b^2*h*(-d^2*h+2*e^2*f)*x/e^2-1/2*b^2*d*h^2*x^2/e-2/27*
b^2*h^2*x^3-1/3*a*b*d*(2*c^2*d^2+3*e^2)*h^2*arcsin(c*x)/c^2/e^3-1/3*b^2*d^3
*h^2*arcsin(c*x)^2/e^3-1/2*b^2*d*h^2*arcsin(c*x)^2/c^2/e+2*h*(-d^2*h+e^2*f)
*x*(a+b*arcsin(c*x))^2/e^2-(-d^2*h+e^2*f)^2*(a+b*arcsin(c*x))^2/e^3/(e*x+d)
+1/3*h^2*(e*x+d)^3*(a+b*arcsin(c*x))^2/e^3+2*a*b*c*(-d^2*h+e^2*f)^2*arctan(
(c^2*d*x+e)/(c^2*d^2-e^2)^(1/2)/(-c^2*x^2+1)^(1/2))/e^3/(c^2*d^2-e^2)^(1/2)
+2*I*b^2*c*(-d^2*h+e^2*f)^2*arcsin(c*x)*ln(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))
/(c*d+(c^2*d^2-e^2)^(1/2)))/e^3/(c^2*d^2-e^2)^(1/2)-2*I*b^2*c*(-d^2*h+e^2*f
)^2*arcsin(c*x)*ln(1-I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d-(c^2*d^2-e^2)^(1/2
)))/e^3/(c^2*d^2-e^2)^(1/2)-2*b^2*c*(-d^2*h+e^2*f)^2*polylog(2,I*e*(I*c*x+(
-c^2*x^2+1)^(1/2))/(c*d-(c^2*d^2-e^2)^(1/2)))/e^3/(c^2*d^2-e^2)^(1/2)+2*b^2
*c*(-d^2*h+e^2*f)^2*polylog(2,I*e*(I*c*x+(-c^2*x^2+1)^(1/2))/(c*d+(c^2*d^2-
e^2)^(1/2)))/e^3/(c^2*d^2-e^2)^(1/2)+1/9*a*b*h*(4*e^2*h+c^2*(-25*d^2*h+36*e
^2*f))*(-c^2*x^2+1)^(1/2)/c^3/e^2+5/9*a*b*d*h^2*(e*x+d)*(-c^2*x^2+1)^(1/2)/
c/e^2+2/9*a*b*h^2*(e*x+d)^2*(-c^2*x^2+1)^(1/2)/c/e^2+4/9*b^2*h^2*arcsin(c*x
)*(-c^2*x^2+1)^(1/2)/c^3+2*b^2*h*(-d^2*h+2*e^2*f)*arcsin(c*x)*(-c^2*x^2+1)^
(1/2)/c/e^2+b^2*d*h^2*x*arcsin(c*x)*(-c^2*x^2+1)^(1/2)/c/e+2/9*b^2*h^2*x^2*
arcsin(c*x)*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A]
time = 2.82, antiderivative size = 920, normalized size of antiderivative = 1.00, number of steps used = 32, number of rules used = 25, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.714$, Rules used = {697, 4841, 12, 6874, 267, 739, 210, 757, 794, 222, 4883, 1668, 858, 4881, 4737, 4767, 8, 4795, 30, 4857, 3404, 2296, 2221, 2317, 2438}

Antiderivative was successfully verified.

```
[In] Int[((e*f + 2*d*h*x + e*h*x^2)^2*(a + b*ArcSin[c*x])^2)/(d + e*x)^2,x]
```

```
[Out] (-4*b^2*h^2*x)/(9*c^2) - (2*b^2*h*(2*e^2*f - d^2*h)*x)/e^2 - (b^2*d*h^2*x^2
)/(2*e) - (2*b^2*h^2*x^3)/27 + (a*b*h*(4*e^2*h + c^2*(36*e^2*f - 25*d^2*h))
*Sqrt[1 - c^2*x^2])/(9*c^3*e^2) + (5*a*b*d*h^2*(d + e*x)*Sqrt[1 - c^2*x^2])
/(9*c*e^2) + (2*a*b*h^2*(d + e*x)^2*Sqrt[1 - c^2*x^2])/(9*c*e^2) - (a*b*d*(
2*c^2*d^2 + 3*e^2)*h^2*ArcSin[c*x])/(3*c^2*e^3) + (4*b^2*h^2*Sqrt[1 - c^2*x
^2]*ArcSin[c*x])/(9*c^3) + (2*b^2*h*(2*e^2*f - d^2*h)*Sqrt[1 - c^2*x^2]*Arc
```

```
Sin[c*x])/(c*e^2) + (b^2*d*h^2*x*Sqrt[1 - c^2*x^2]*ArcSin[c*x])/(c*e) + (2*
b^2*h^2*x^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x])/(9*c) - (b^2*d^3*h^2*ArcSin[c*x]
^2)/(3*e^3) - (b^2*d*h^2*ArcSin[c*x]^2)/(2*c^2*e) + (2*h*(e^2*f - d^2*h)*x*
(a + b*ArcSin[c*x])^2)/e^2 - ((e^2*f - d^2*h)^2*(a + b*ArcSin[c*x])^2)/(e^3
*(d + e*x)) + (h^2*(d + e*x)^3*(a + b*ArcSin[c*x])^2)/(3*e^3) + (2*a*b*c*(e
^2*f - d^2*h)^2*ArcTan[(e + c^2*d*x)/(Sqrt[c^2*d^2 - e^2]*Sqrt[1 - c^2*x^2]
)])/(e^3*Sqrt[c^2*d^2 - e^2]) - ((2*I)*b^2*c*(e^2*f - d^2*h)^2*ArcSin[c*x]*
Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2])])/(e^3*Sqrt[c^2
*d^2 - e^2]) + ((2*I)*b^2*c*(e^2*f - d^2*h)^2*ArcSin[c*x]*Log[1 - (I*e*E^(I
*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/(e^3*Sqrt[c^2*d^2 - e^2]) - (2
*b^2*c*(e^2*f - d^2*h)^2*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2
*d^2 - e^2])])/(e^3*Sqrt[c^2*d^2 - e^2]) + (2*b^2*c*(e^2*f - d^2*h)^2*PolyL
og[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])])/(e^3*Sqrt[c^2*d
^2 - e^2])
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 210

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(-(Rt[-a, 2]*Rt[-b, 2])^(
-1))*ArcTan[Rt[-b, 2]*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] &
& (LtQ[a, 0] || LtQ[b, 0])
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 697

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[2*c*d - b*e, 0] &
& IGtQ[p, 0] &&  !(EqQ[m, 3] && NeQ[p, 1])
```

Rule 739

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 757

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
e*(d + e*x)^(m - 1)*((a + c*x^2)^(p + 1)/(c*(m + 2*p + 1))), x] + Dist[1/(c
*(m + 2*p + 1)), Int[(d + e*x)^(m - 2)*Simp[c*d^2*(m + 2*p + 1) - a*e^2*(m
- 1) + 2*c*d*e*(m + p)*x, x]*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, m,
 p}, x] && NeQ[c*d^2 + a*e^2, 0] && If[RationalQ[m], GtQ[m, 1], SumSimplerQ
[m, -2]] && NeQ[m + 2*p + 1, 0] && IntQuadraticQ[a, 0, c, d, e, m, p, x]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*((a + c*x^2)^(p
+ 1)/(2*c*(p + 1)*(2*p + 3))), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 858

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rule 1668

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :
> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[f*(d + e*x)
^(m + q - 1)*((a + c*x^2)^(p + 1)/(c*e^(q - 1)*(m + q + 2*p + 1))), x] + Di
st[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + c*x^2)^p*ExpandToSum[c
*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1)*(d + e*x)^q - f*(d + e*x)
^(q - 2)*(a*e^2*(m + q - 1) - c*d^2*(m + q + 2*p + 1) - 2*c*d*e*(m + q + p)
*x), x], x], x] /; GtQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, c, d,
 e, m, p}, x] && PolyQ[Pq, x] && NeQ[c*d^2 + a*e^2, 0] &&  !(EqQ[d, 0] && T
rue) &&  !(IGtQ[m, 0] && RationalQ[a, c, d, e] && (IntegerQ[p] || ILtQ[p +
```

```
1/2, 0]))
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2296

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[2*(c/q), Int[
(f + g*x)^m*(F^u/(b - q + 2*c*F^u)), x], x] - Dist[2*(c/q), Int[(f + g*x)^m
*(F^u/(b + q + 2*c*F^u)), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3404

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[(c + d*x)^m*(E^(I*(e + f*x))/(I*b + 2*a*E^(I*(e + f*x)
) - I*b*E^(2*I*(e + f*x)))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
```

```
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4841

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.) + (g_.)*(x_) + (h_.)*(x
_)^2)^(p_.))/((d_) + (e_.)*(x_))^2, x_Symbol] :> With[{u = IntHide[(f + g*x
 + h*x^2)^p/(d + e*x)^2, x]}, Dist[(a + b*ArcSin[c*x])^n, u, x] - Dist[b*c*
n, Int[SimplifyIntegrand[u*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*x^2]),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, h}, x] && IGtQ[n, 0] && IGtQ[p,
 0] && EqQ[e*g - 2*d*h, 0]
```

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4881

```
Int[ArcSin[(c_.)*(x_)]^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p_), x_Symbol] :
> With[{u = ExpandIntegrand[(d + e*x^2)^p*ArcSin[c*x]^n, RFx, x]}, Int[u, x
] /; SumQ[u]] /; FreeQ[{c, d, e}, x] && RationalFunctionQ[RFx, x] && IGtQ[n
, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 4883

```
Int[(ArcSin[(c_.)*(x_)]*(b_.) + (a_))^(n_.)*(RFx_)*((d_) + (e_.)*(x_)^2)^(p
_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p, RFx*(a + b*ArcSin[c*x])
^n, x], x] /; FreeQ[{a, b, c, d, e}, x] && RationalFunctionQ[RFx, x] && IGt
Q[n, 0] && EqQ[c^2*d + e, 0] && IntegerQ[p - 1/2]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(ef+2dhx+ehx^2)^2 (a+b\sin^{-1}(cx))^2}{(d+ex)^2} dx = \frac{2h(e^2f-d^2h)\,x(a+b\sin^{-1}(cx))^2}{e^2} - \frac{(e^2f-d^2h)^2 (a+b\sin}{e^3(d+ex)}$$

$$= \frac{2h(e^2f-d^2h)\,x(a+b\sin^{-1}(cx))^2}{e^2} - \frac{(e^2f-d^2h)^2 (a+b\sin}{e^3(d+ex)}$$

$$= \frac{2h(e^2f-d^2h)\,x(a+b\sin^{-1}(cx))^2}{e^2} - \frac{(e^2f-d^2h)^2 (a+b\sin}{e^3(d+ex)}$$

$$= \frac{2h(e^2f-d^2h)\,x(a+b\sin^{-1}(cx))^2}{e^2} - \frac{(e^2f-d^2h)^2 (a+b\sin}{e^3(d+ex)}$$

$$= \frac{2abh^2(d+ex)^2\sqrt{1-c^2x^2}}{9ce^2} + \frac{2h(e^2f-d^2h)\,x(a+b\sin^{-1}(c}{e^2}$$

$$= \frac{5abdh^2(d+ex)\sqrt{1-c^2x^2}}{9ce^2} + \frac{2abh^2(d+ex)^2\sqrt{1-c^2x^2}}{9ce^2} +$$

$$= \frac{abh(4e^2h+c^2(36e^2f-25d^2h))\sqrt{1-c^2x^2}}{9c^3e^2} + \frac{5abdh^2(d+e}{9c}$$

$$= -\frac{2b^2h(2e^2f-d^2h)\,x}{e^2} - \frac{b^2dh^2x^2}{2e} - \frac{2}{27}b^2h^2x^3 + \frac{abh(4e^2h+}{}$$

$$= -\frac{4b^2h^2x}{9c^2} - \frac{2b^2h(2e^2f-d^2h)\,x}{e^2} - \frac{b^2dh^2x^2}{2e} - \frac{2}{27}b^2h^2x^3 + ab$$

$$= -\frac{4b^2h^2x}{9c^2} - \frac{2b^2h(2e^2f-d^2h)\,x}{e^2} - \frac{b^2dh^2x^2}{2e} - \frac{2}{27}b^2h^2x^3 + ab$$

$$= -\frac{4b^2h^2x}{9c^2} - \frac{2b^2h(2e^2f-d^2h)\,x}{e^2} - \frac{b^2dh^2x^2}{2e} - \frac{2}{27}b^2h^2x^3 + ab$$

$$= -\frac{4b^2h^2x}{9c^2} - \frac{2b^2h(2e^2f-d^2h)\,x}{e^2} - \frac{b^2dh^2x^2}{2e} - \frac{2}{27}b^2h^2x^3 + ab$$

Mathematica [A]

time = 0.55, size = 526, normalized size = 0.57

$$\frac{h(2e^2f-d^2h)x(a+b\text{ArcSin}(cx))^2}{e^2}+\frac{dh^2x^2(a+b\text{ArcSin}(cx))^2}{e}+\frac{1}{3}h^2x^3(a+b\text{ArcSin}(cx))^2-\frac{(e^2f-d^2h)^2(a+b\text{ArcSin}(cx))^2}{e^3(d+ex)}-\frac{2bh^2\left(-3a\sqrt{1-c^2x^2}(2+c^2x^2)+bcx(6+c^2x^2)-3b\sqrt{1-c^2x^2}(2+c^2x^2)\text{ArcSin}(cx)\right)}{27c^3}-\frac{2bh(2e^2f-d^2h)\left(bx-\frac{\sqrt{1-c^2x^2}(a+b\text{ArcSin}(cx))}{c}\right)}{e^2}-\frac{bdh^2\left(bx^2-\frac{2x\sqrt{1-c^2x^2}(a+b\text{ArcSin}(cx))}{c}+\frac{(a+b\text{ArcSin}(cx))^2}{bc^2}\right)}{2e}+\frac{2bc(e^2f-d^2h)^2\left(-i(a+b\text{ArcSin}(cx))\left(\log\left(1+\frac{iee^{i\text{ArcSin}(cx)}}{-cd+\sqrt{c^2d^2-e^2}}\right)-\log\left(1-\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)\right)-b\text{PolyLog}\left(2,\frac{iee^{i\text{ArcSin}(cx)}}{cd-\sqrt{c^2d^2-e^2}}\right)+b\text{PolyLog}\left(2,\frac{iee^{i\text{ArcSin}(cx)}}{cd+\sqrt{c^2d^2-e^2}}\right)\right)}{e^3\sqrt{c^2d^2-e^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e*f + 2*d*h*x + e*h*x^2)^2*(a + b*ArcSin[c*x])^2)/(d + e*x)^2,x
]
```

```
[Out] (h*(2*e^2*f - d^2*h)*x*(a + b*ArcSin[c*x])^2)/e^2 + (d*h^2*x^2*(a + b*ArcSi
n[c*x])^2)/e + (h^2*x^3*(a + b*ArcSin[c*x])^2)/3 - ((e^2*f - d^2*h)^2*(a +
b*ArcSin[c*x])^2)/(e^3*(d + e*x)) - (2*b*h^2*(-3*a*Sqrt[1 - c^2*x^2]*(2 + c
^2*x^2) + b*c*x*(6 + c^2*x^2) - 3*b*Sqrt[1 - c^2*x^2]*(2 + c^2*x^2)*ArcSin[
c*x]))/(27*c^3) - (2*b*h*(2*e^2*f - d^2*h)*(b*x - (Sqrt[1 - c^2*x^2]*(a + b
*ArcSin[c*x]))/c))/e^2 - (b*d*h^2*(b*x^2 - (2*x*Sqrt[1 - c^2*x^2]*(a + b*Ar
cSin[c*x]))/c + (a + b*ArcSin[c*x])^2/(b*c^2)))/(2*e) + (2*b*c*(e^2*f - d^2
*h)^2*((-I)*(a + b*ArcSin[c*x])*(Log[1 + (I*e*E^(I*ArcSin[c*x]))/(-(c*d) +
Sqrt[c^2*d^2 - e^2])] - Log[1 - (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2
 - e^2])]) - b*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d - Sqrt[c^2*d^2 - e^2
])] + b*PolyLog[2, (I*e*E^(I*ArcSin[c*x]))/(c*d + Sqrt[c^2*d^2 - e^2])]))/(
e^3*Sqrt[c^2*d^2 - e^2])
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 2635 vs. 2(886) = 1772.
time = 3.82, size = 2636, normalized size = 2.87

method	result	size
derivativedivides	Expression too large to display	2636
default	Expression too large to display	2636

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*h*x^2+2*d*h*x+e*f)^2*(a+b*arcsin(c*x))^2/(e*x+d)^2,x,method=_RETURNV
ERBOSE)
```

```
[Out] 1/c*(-2*a*b/e^2*d^2*h^2*(-c^2*x^2+1)^(1/2)-2*a*b*c^2/(-(c^2*d^2-e^2)/e^2)^(
1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-e^2)/e^2)^(1
/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2))/(c*x+d*c/
e))*f^2+1/4*b^2/c*h^2*arcsin(c*x)^2*x+2*b^2*h*arcsin(c*x)^2*f*c*x+2*b^2*h^2
/e^2*d^2*c*x-2*b^2*h^2/e^2*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*d^2-b^2*c^2*arcsi
n(c*x)^2*e/(c*e*x+c*d)*f^2-1/2*b^2/c*d*h^2/e*arcsin(c*x)^2-4*b^2*c^2*(-c^2*
d^2+e^2)^(1/2)/e/(c^2*d^2-e^2)*arcsin(c*x)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^
(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*d^2*f*h+4*b^2*c^
2*(-c^2*d^2+e^2)^(1/2)/e/(c^2*d^2-e^2)*arcsin(c*x)*ln((I*d*c+e*(I*c*x+(-c^2
*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*d^2*f*h-
4*I*b^2*c^2*(-c^2*d^2+e^2)^(1/2)/e/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^
2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*f*h*d^2
```

```
+4*I*b^2*c^2*(-c^2*d^2+e^2)^(1/2)/e/(c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c
^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*f*h*d^
2+1/4*b^2/c*d*h^2/e-4*b^2*h*f*c*x-1/18*b^2/c^2*h^2*arcsin(c*x)*cos(3*arcsin
(c*x))-1/12*b^2/c^2*sin(3*arcsin(c*x))*arcsin(c*x)^2*h^2+4*b^2*h*(-c^2*x^2+
1)^(1/2)*arcsin(c*x)*f+a^2/c^2*(-h/e^2*(c^3*d^2*h*x-2*c^3*e^2*f*x-c^3*d*e*h
*x^2-1/3*h*c^3*x^3*e^2)-c^4*(d^4*h^2-2*d^2*e^2*f*h+e^4*f^2)/e^3/(c*e*x+c*d)
)+1/54*b^2/c^2*h^2*sin(3*arcsin(c*x))+b^2*d*h^2/e*(-c^2*x^2+1)^(1/2)*arcsin
(c*x)*x-2*I*b^2*c^2*(-c^2*d^2+e^2)^(1/2)/e^3/(c^2*d^2-e^2)*dilog((I*d*c+e*(
I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)
))*h^2*d^4+2*I*b^2*c^2*(-c^2*d^2+e^2)^(1/2)/e^3/(c^2*d^2-e^2)*dilog((I*d*c+
e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2)^(1
/2)))*h^2*d^4+4*a*b*c^2*arcsin(c*x)/e/(c*e*x+c*d)*d^2*f*h+4*a*b*c^2/e^2/(-(
c^2*d^2-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c
^2*d^2-e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^
2)^(1/2))/(c*x+d*c/e))*d^2*f*h+2*a*b*c*arcsin(c*x)*d*h^2/e*x^2+a*b/e*d*h^2*
(-c^2*x^2+1)^(1/2)*x+2*b^2*c^2*(-c^2*d^2+e^2)^(1/2)/e^3/(c^2*d^2-e^2)*arcsi
n(c*x)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2))/(I*d*c+
(-c^2*d^2+e^2)^(1/2)))*d^4*h^2-2*b^2*c^2*(-c^2*d^2+e^2)^(1/2)/e^3/(c^2*d^2-
e^2)*arcsin(c*x)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2
))/(I*d*c-(-c^2*d^2+e^2)^(1/2)))*d^4*h^2-2*I*b^2*c^2*(-c^2*d^2+e^2)^(1/2)/(
c^2*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1/2)
)/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*f^2*e+2*I*b^2*c^2*(-c^2*d^2+e^2)^(1/2)/(c^2
*d^2-e^2)*dilog((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(
I*d*c-(-c^2*d^2+e^2)^(1/2)))*f^2*e+2*b^2*c^2*(-c^2*d^2+e^2)^(1/2)/(c^2*d^2-
e^2)*e*arcsin(c*x)*ln((I*d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))+(-c^2*d^2+e^2)^(1
/2))/(I*d*c+(-c^2*d^2+e^2)^(1/2)))*f^2+2*b^2*c^2*arcsin(c*x)^2/e/(c*e*x+c*d
)*d^2*f*h-2*b^2*c^2*(-c^2*d^2+e^2)^(1/2)/(c^2*d^2-e^2)*e*arcsin(c*x)*ln((I*
d*c+e*(I*c*x+(-c^2*x^2+1)^(1/2))-(-c^2*d^2+e^2)^(1/2))/(I*d*c-(-c^2*d^2+e^2
)^(1/2)))*f^2+b^2*c*d*h^2/e*arcsin(c*x)^2*x^2-2*a*b*c^2*arcsin(c*x)/e^3/(c*
e*x+c*d)*d^4*h^2+4*a*b*arcsin(c*x)*h*f*c*x+2/3*a*b*c*arcsin(c*x)*h^2*x^3+2/
9*a*b*h^2*x^2*(-c^2*x^2+1)^(1/2)-b^2*c^2*arcsin(c*x)^2/e^3/(c*e*x+c*d)*d^4*
h^2-2*a*b*c^2*arcsin(c*x)*e/(c*e*x+c*d)*f^2-a*b/c/e*d*h^2*arcsin(c*x)-1/2*b
^2*c*d*h^2/e*x^2-b^2*h^2/e^2*arcsin(c*x)^2*d^2*c*x-2*a*b*c^2/e^4/(-(c^2*d^2
-e^2)/e^2)^(1/2)*ln((-2*(c^2*d^2-e^2)/e^2+2*d*c/e*(c*x+d*c/e)+2*(-(c^2*d^2-
e^2)/e^2)^(1/2)*(-(c*x+d*c/e)^2+2*d*c/e*(c*x+d*c/e)-(c^2*d^2-e^2)/e^2)^(1/2
))/(c*x+d*c/e))*d^4*h^2-2*a*b*arcsin(c*x)*h^2/e^2*d^2*c*x+1/2*b^2/c^2*h^2*(
-c^2*x^2+1)^(1/2)*arcsin(c*x)+4*a*b*f*h*(-c^2*x^2+1)^(1/2)+4/9*a*b/c^2*h^2*
(-c^2*x^2+1)^(1/2)-1/2*b^2/c*h^2*x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*h*x^2+2*d*h*x+e*f)^2*(a+b*arcsin(c*x))^2/(e*x+d)^2,x, algorith
m="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c*d-%e>0)', see `assume?` for more
details
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*h*x^2+2*d*h*x+e*f)^2*(a+b*arcsin(c*x))^2/(e*x+d)^2,x, algorith
m="fricas")
```

```
[Out] integral((4*a^2*d^2*h^2*x^2 + (4*b^2*d^2*h^2*x^2 + (b^2*h^2*x^4 + 2*b^2*f*h
*x^2 + b^2*f^2)*e^2 + 4*(b^2*d*h^2*x^3 + b^2*d*f*h*x)*e)*arcsin(c*x)^2 + 2*
(4*a*b*d^2*h^2*x^2 + (a*b*h^2*x^4 + 2*a*b*f*h*x^2 + a*b*f^2)*e^2 + 4*(a*b*d
*h^2*x^3 + a*b*d*f*h*x)*e)*arcsin(c*x) + (a^2*h^2*x^4 + 2*a^2*f*h*x^2 + a^2
*f^2)*e^2 + 4*(a^2*d*h^2*x^3 + a^2*d*f*h*x)*e)/(x^2*e^2 + 2*d*x*e + d^2), x
)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\operatorname{asin}\left(cx\right)\right)^{2}\left(2dhx+ef+ehx^{2}\right)^{2}}{\left(d+ex\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*h*x**2+2*d*h*x+e*f)**2*(a+b*asin(c*x))**2/(e*x+d)**2,x)
```

```
[Out] Integral((a + b*asin(c*x))**2*(2*d*h*x + e*f + e*h*x**2)**2/(d + e*x)**2, x
)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*h*x^2+2*d*h*x+e*f)^2*(a+b*arcsin(c*x))^2/(e*x+d)^2,x, algorith
m="giac")
```

```
[Out] integrate((e*h*x^2 + 2*d*h*x + e*f)^2*(b*arcsin(c*x) + a)^2/(e*x + d)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))^2\,(e\,h\,x^2+2\,d\,h\,x+e\,f)^2}{(d+e\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(e*f + e*h*x^2 + 2*d*h*x)^2)/(d + e*x)^2,x)
[Out] int(((a + b*asin(c*x))^2*(e*f + e*h*x^2 + 2*d*h*x)^2)/(d + e*x)^2, x)
```

3.122 $\int x^3 \text{ArcSin}(a+bx)\,dx$

Optimal. Leaf size=137

$$-\frac{7ax^2\sqrt{1-(a+bx)^2}}{48b^2}+\frac{x^3\sqrt{1-(a+bx)^2}}{16b}-\frac{(4a(16+19a^2)-(9+26a^2)(a+bx))\sqrt{1-(a+bx)^2}}{96b^4}-(3$$

```
[Out] -1/32*(8*a^4+24*a^2+3)*arcsin(b*x+a)/b^4+1/4*x^4*arcsin(b*x+a)-7/48*a*x^2*(
1-(b*x+a)^2)^(1/2)/b^2+1/16*x^3*(1-(b*x+a)^2)^(1/2)/b-1/96*(4*a*(19*a^2+16)
-(26*a^2+9)*(b*x+a))*(1-(b*x+a)^2)^(1/2)/b^4
```

Rubi [A]
time = 0.14, antiderivative size = 137, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.600$, Rules used = {4889, 4827, 757, 847, 794, 222}

$$-\frac{(4a(19a^2+16)-(26a^2+9)(a+bx))\sqrt{1-(a+bx)^2}}{96b^4}-\frac{(8a^4+24a^2+3)\text{ArcSin}(a+bx)}{32b^4}+\frac{1}{4}x^4\text{ArcSin}(a+bx)-\frac{7ax^2\sqrt{1-(a+bx)^2}}{48b^2}+\frac{x^3\sqrt{1-(a+bx)^2}}{16b}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*ArcSin[a + b*x],x]
```

```
[Out] (-7*a*x^2*Sqrt[1 - (a + b*x)^2])/(48*b^2) + (x^3*Sqrt[1 - (a + b*x)^2])/(16
*b) - ((4*a*(16 + 19*a^2) - (9 + 26*a^2)*(a + b*x))*Sqrt[1 - (a + b*x)^2])/
(96*b^4) - ((3 + 24*a^2 + 8*a^4)*ArcSin[a + b*x])/(32*b^4) + (x^4*ArcSin[a
+ b*x])/4
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 757

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
e*(d + e*x)^(m - 1)*((a + c*x^2)^(p + 1)/(c*(m + 2*p + 1))), x] + Dist[1/(c
*(m + 2*p + 1)), Int[(d + e*x)^(m - 2)*Simp[c*d^2*(m + 2*p + 1) - a*e^2*(m
- 1) + 2*c*d*e*(m + p)*x, x]*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, m,
 p}, x] && NeQ[c*d^2 + a*e^2, 0] && If[RationalQ[m], GtQ[m, 1], SumSimplerQ
[m, -2]] && NeQ[m + 2*p + 1, 0] && IntQuadraticQ[a, 0, c, d, e, m, p, x]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*((a + c*x^2)^(p
+ 1)/(2*c*(p + 1)*(2*p + 3))), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
```

```
Q[p, -1]
```

Rule 847

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[g*(d + e*x)^m*((a + c*x^2)^(p + 1)/(c*(m + 2*p + 2))
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 4827

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(e*(m + 1))), x] -
Dist[b*c*(n/(e*(m + 1))), Int[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1
)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int x^3 \sin^{-1}(a+bx)\,dx = \frac{\text{Subst}\left(\int \left(-\frac{a}{b}+\frac{x}{b}\right)^3 \sin^{-1}(x)\,dx, x, a+bx\right)}{b}$$

$$= \frac{1}{4}x^4 \sin^{-1}(a+bx) - \frac{1}{4}\text{Subst}\left(\int \frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^4}{\sqrt{1-x^2}}\,dx, x, a+bx\right)$$

$$= \frac{x^3\sqrt{1-(a+bx)^2}}{16b} + \frac{1}{4}x^4 \sin^{-1}(a+bx) + \frac{1}{16}\text{Subst}\left(\int \frac{\left(-\frac{3+4a^2}{b^2}+\frac{7ax}{b^2}\right)\left(-\frac{a}{b}+\frac{x}{b}\right.}{\sqrt{1-x^2}}\right.$$

$$= -\frac{7ax^2\sqrt{1-(a+bx)^2}}{48b^2} + \frac{x^3\sqrt{1-(a+bx)^2}}{16b} + \frac{1}{4}x^4 \sin^{-1}(a+bx) - \frac{1}{48}\text{Subst}\left(\int\right.$$

$$= -\frac{7ax^2\sqrt{1-(a+bx)^2}}{48b^2} + \frac{x^3\sqrt{1-(a+bx)^2}}{16b} - \frac{(4a(16+19a^2)-(9+26a^2)(a+}{96b^4}$$

$$= -\frac{7ax^2\sqrt{1-(a+bx)^2}}{48b^2} + \frac{x^3\sqrt{1-(a+bx)^2}}{16b} - \frac{(4a(16+19a^2)-(9+26a^2)(a+}{96b^4}$$

Mathematica [A]
time = 0.06, size = 99, normalized size = 0.72

$$\frac{\sqrt{1-a^2-2abx-b^2x^2}\,(-50a^3+9bx+26a^2bx+6b^3x^3-a(55+14b^2x^2))-3(3+24a^2+8a^4-8b^4x^4)\,\text{ArcSin}(a+bx)}{96b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*ArcSin[a + b*x],x]
```

```
[Out] (Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*(-50*a^3 + 9*b*x + 26*a^2*b*x + 6*b^3*x^
3 - a*(55 + 14*b^2*x^2)) - 3*(3 + 24*a^2 + 8*a^4 - 8*b^4*x^4)*ArcSin[a + b*
x])/(96*b^4)
```

Maple [A]
time = 0.04, size = 213, normalized size = 1.55

method	result
derivativedivides	$-\arcsin(bx+a)a^3(bx+a)+\frac{3\arcsin(bx+a)a^2(bx+a)^2}{2}-\arcsin(bx+a)a(bx+a)^3+\frac{\arcsin(bx+a)(bx+a)^4}{4}-a^3\sqrt{1-(bx+}$

default	$\frac{-\arcsin(bx+a)a^3(bx+a)+\frac{3\arcsin(bx+a)a^2(bx+a)^2}{2}-\arcsin(bx+a)a(bx+a)^3+\frac{\arcsin(bx+a)(bx+a)^4}{4}-a^3\sqrt{1-(bx+a)}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*arcsin(b*x+a),x,method=_RETURNVERBOSE)
```

```
[Out] 1/b^4*(-arcsin(b*x+a)*a^3*(b*x+a)+3/2*arcsin(b*x+a)*a^2*(b*x+a)^2-arcsin(b*
x+a)*a*(b*x+a)^3+1/4*arcsin(b*x+a)*(b*x+a)^4-a^3*(1-(b*x+a)^2)^(1/2)-3/2*a^
2*(-1/2*(b*x+a)*(1-(b*x+a)^2)^(1/2)+1/2*arcsin(b*x+a))+a*(-1/3*(b*x+a)^2*(1
-(b*x+a)^2)^(1/2)-2/3*(1-(b*x+a)^2)^(1/2))+1/16*(b*x+a)^3*(1-(b*x+a)^2)^(1/
2)+3/32*(b*x+a)*(1-(b*x+a)^2)^(1/2)-3/32*arcsin(b*x+a))
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 333 vs. $2(120) = 240$.
time = 0.47, size = 333, normalized size = 2.43

$$\frac{1}{4}x^4\arcsin(bx+a)+\frac{1}{96}\left(\frac{6\sqrt{-b^2x^2-2abx-a^2+1}\,x^3}{b^2}-\frac{14\sqrt{-b^2x^2-2abx-a^2+1}\,ax^2}{b^3}+\frac{105a^4\arcsin\left(-\frac{b^2x+ab}{\sqrt{a^2b^2-(a^2-1)b^2}}\right)}{b^5}+\frac{35\sqrt{-b^2x^2-2abx-a^2+1}\,a^2x}{b^4}-\frac{90(a^2-1)a^2\arcsin\left(-\frac{b^2x+ab}{\sqrt{a^2b^2-(a^2-1)b^2}}\right)}{b^5}-\frac{105\sqrt{-b^2x^2-2abx-a^2+1}\,a^3}{b^5}-\frac{9\sqrt{-b^2x^2-2abx-a^2+1}\,(a^2-1)x}{b^4}+\frac{9(a^2-1)^2\arcsin\left(-\frac{b^2x+ab}{\sqrt{a^2b^2-(a^2-1)b^2}}\right)}{b^5}+\frac{55\sqrt{-b^2x^2-2abx-a^2+1}\,(a^2-1)a}{b^5}\right)b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arcsin(b*x+a),x, algorithm="maxima")
```

```
[Out] 1/4*x^4*arcsin(b*x + a) + 1/96*(6*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*x^3/b^
2 - 14*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*a*x^2/b^3 + 105*a^4*arcsin(-(b^2*
x + a*b)/sqrt(a^2*b^2 - (a^2 - 1)*b^2))/b^5 + 35*sqrt(-b^2*x^2 - 2*a*b*x -
a^2 + 1)*a^2*x/b^4 - 90*(a^2 - 1)*a^2*arcsin(-(b^2*x + a*b)/sqrt(a^2*b^2 -
(a^2 - 1)*b^2))/b^5 - 105*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*a^3/b^5 - 9*sq
rt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(a^2 - 1)*x/b^4 + 9*(a^2 - 1)^2*arcsin(-(b
^2*x + a*b)/sqrt(a^2*b^2 - (a^2 - 1)*b^2))/b^5 + 55*sqrt(-b^2*x^2 - 2*a*b*x
 - a^2 + 1)*(a^2 - 1)*a/b^5)*b
```

Fricas [A]
time = 2.75, size = 93, normalized size = 0.68

$$\frac{3\,(8\,b^4x^4-8\,a^4-24\,a^2-3)\arcsin(bx+a)+(6\,b^3x^3-14\,ab^2x^2-50\,a^3+(26\,a^2+9)bx-55\,a)\sqrt{-b^2x^2-2\,abx-a^2+1}}{96\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arcsin(b*x+a),x, algorithm="fricas")
```

```
[Out] 1/96*(3*(8*b^4*x^4 - 8*a^4 - 24*a^2 - 3)*arcsin(b*x + a) + (6*b^3*x^3 - 14*
a*b^2*x^2 - 50*a^3 + (26*a^2 + 9)*b*x - 55*a)*sqrt(-b^2*x^2 - 2*a*b*x - a^2
 + 1))/b^4
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 255 vs. $2(119) = 238$.
time = 0.30, size = 255, normalized size = 1.86

$$\begin{cases} -\frac{a^4 \operatorname{asin}(a+bx)}{4b^4} - \frac{25a^3\sqrt{-a^2-2abx-b^2x^2+1}}{48b^4} + \frac{13a^2x\sqrt{-a^2-2abx-b^2x^2+1}}{48b^3} - \frac{3a^2 \operatorname{asin}(a+bx)}{4b^4} - \frac{7ax^2\sqrt{-a^2-2abx-b^2x^2+1}}{48b^2} - \frac{55a\sqrt{-a^2-2abx-b^2x^2+1}}{96b^4} + \frac{x^4 \operatorname{asin}(a+bx)}{4} + \frac{x^3\sqrt{-a^2-2abx-b^2x^2+1}}{16b} + \frac{3x\sqrt{-a^2-2abx-b^2x^2+1}}{32b^3} - \frac{3 \operatorname{asin}(a+bx)}{32b^4} & \text{for } b \neq 0 \\ \frac{x^4 \operatorname{asin}(a)}{4} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*asin(b*x+a),x)
```

```
[Out] Piecewise((-a**4*asin(a + b*x)/(4*b**4) - 25*a**3*sqrt(-a**2 - 2*a*b*x - b*
*2*x**2 + 1)/(48*b**4) + 13*a**2*x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/(4
8*b**3) - 3*a**2*asin(a + b*x)/(4*b**4) - 7*a*x**2*sqrt(-a**2 - 2*a*b*x - b
**2*x**2 + 1)/(48*b**2) - 55*a*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/(96*b*
*4) + x**4*asin(a + b*x)/4 + x**3*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/(16
*b) + 3*x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/(32*b**3) - 3*asin(a + b*x)
/(32*b**4), Ne(b, 0)), (x**4*asin(a)/4, True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 284 vs. $2(120) = 240$.
time = 0.41, size = 284, normalized size = 2.07

$$-\frac{(bx+a)a^3\arcsin(bx+a)}{b^4} - \frac{((bx+a)^2-1)(bx+a)a\arcsin(bx+a)}{b^4} + \frac{3((bx+a)^2-1)a^2\arcsin(bx+a)}{2b^4} + \frac{3\sqrt{-(bx+a)^2+1}(bx+a)a^2}{4b^4} - \frac{\sqrt{-(bx+a)^2+1}a^3}{b^4} + \frac{((bx+a)^2-1)^2\arcsin(bx+a)}{4b^4} - \frac{(bx+a)a\arcsin(bx+a)}{b^4} + \frac{3a^2\arcsin(bx+a)}{4b^4} - \frac{(-(bx+a)^2+1)^{\frac{3}{2}}(bx+a)}{16b^4} + \frac{(-(bx+a)^2+1)^{\frac{3}{2}}a}{3b^4} + \frac{((bx+a)^2-1)\arcsin(bx+a)}{2b^4} + \frac{5\sqrt{-(bx+a)^2+1}(bx+a)}{32b^4} - \frac{\sqrt{-(bx+a)^2+1}a}{b^4} + \frac{5\arcsin(bx+a)}{32b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arcsin(b*x+a),x, algorithm="giac")
```

```
[Out] -(b*x + a)*a^3*arcsin(b*x + a)/b^4 - ((b*x + a)^2 - 1)*(b*x + a)*a*arcsin(b
*x + a)/b^4 + 3/2*((b*x + a)^2 - 1)*a^2*arcsin(b*x + a)/b^4 + 3/4*sqrt(-(b*
x + a)^2 + 1)*(b*x + a)*a^2/b^4 - sqrt(-(b*x + a)^2 + 1)*a^3/b^4 + 1/4*((b*
x + a)^2 - 1)^2*arcsin(b*x + a)/b^4 - (b*x + a)*a*arcsin(b*x + a)/b^4 + 3/4
*a^2*arcsin(b*x + a)/b^4 - 1/16*(-(b*x + a)^2 + 1)^(3/2)*(b*x + a)/b^4 + 1/
3*(-(b*x + a)^2 + 1)^(3/2)*a/b^4 + 1/2*((b*x + a)^2 - 1)*arcsin(b*x + a)/b^
4 + 5/32*sqrt(-(b*x + a)^2 + 1)*(b*x + a)/b^4 - sqrt(-(b*x + a)^2 + 1)*a/b^
4 + 5/32*arcsin(b*x + a)/b^4
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int x^3\,\mathrm{asin}(a+b\,x)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*asin(a + b*x),x)
```

```
[Out] int(x^3*asin(a + b*x), x)
```

3.123 $\int x^2 \mathbf{ArcSin}(a+bx)\,dx$

Optimal. Leaf size=94

$$\frac{x^2\sqrt{1-(a+bx)^2}}{9b}+\frac{(4+11a^2-5abx)\sqrt{1-(a+bx)^2}}{18b^3}+\frac{a(3+2a^2)\,\text{ArcSin}(a+bx)}{6b^3}+\frac{1}{3}x^3\text{ArcSin}(a+bx)$$

```
[Out] 1/6*a*(2*a^2+3)*arcsin(b*x+a)/b^3+1/3*x^3*arcsin(b*x+a)+1/9*x^2*(1-(b*x+a)^
2)^(1/2)/b+1/18*(-5*a*b*x+11*a^2+4)*(1-(b*x+a)^2)^(1/2)/b^3
```

Rubi [A]
time = 0.08, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {4889, 4827, 757, 794, 222}

$$\frac{a(2a^2+3)\,\text{ArcSin}(a+bx)}{6b^3}+\frac{(11a^2-5abx+4)\sqrt{1-(a+bx)^2}}{18b^3}+\frac{1}{3}x^3\text{ArcSin}(a+bx)+\frac{x^2\sqrt{1-(a+bx)^2}}{9b}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcSin[a + b*x],x]
```

```
[Out] (x^2*Sqrt[1 - (a + b*x)^2])/(9*b) + ((4 + 11*a^2 - 5*a*b*x)*Sqrt[1 - (a + b
*x)^2])/(18*b^3) + (a*(3 + 2*a^2)*ArcSin[a + b*x])/(6*b^3) + (x^3*ArcSin[a
+ b*x])/3
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 757

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
e*(d + e*x)^(m - 1)*((a + c*x^2)^(p + 1)/(c*(m + 2*p + 1))), x] + Dist[1/(c
*(m + 2*p + 1)), Int[(d + e*x)^(m - 2)*Simp[c*d^2*(m + 2*p + 1) - a*e^2*(m
- 1) + 2*c*d*e*(m + p)*x, x]*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, m,
 p}, x] && NeQ[c*d^2 + a*e^2, 0] && If[RationalQ[m], GtQ[m, 1], SumSimplerQ
[m, -2]] && NeQ[m + 2*p + 1, 0] && IntQuadraticQ[a, 0, c, d, e, m, p, x]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*((a + c*x^2)^(p
+ 1)/(2*c*(p + 1)*(2*p + 3))), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 4827

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(e*(m + 1))), x] -
Dist[b*c*(n/(e*(m + 1))), Int[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1
)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int x^2 \sin^{-1}(a+bx)\,dx = \frac{\text{Subst}\left(\int \left(-\frac{a}{b}+\frac{x}{b}\right)^2 \sin^{-1}(x)\,dx, x, a+bx\right)}{b}$$

$$= \frac{1}{3}x^3\sin^{-1}(a+bx) - \frac{1}{3}\text{Subst}\left(\int \frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^3}{\sqrt{1-x^2}}\,dx, x, a+bx\right)$$

$$= \frac{x^2\sqrt{1-(a+bx)^2}}{9b} + \frac{1}{3}x^3\sin^{-1}(a+bx) + \frac{1}{9}\text{Subst}\left(\int \frac{\left(-\frac{2+3a^2}{b^2}+\frac{5ax}{b^2}\right)\left(-\frac{a}{b}+\frac{x}{b}\right)}{\sqrt{1-x^2}}\right.$$

$$= \frac{x^2\sqrt{1-(a+bx)^2}}{9b} + \frac{(4+11a^2-5abx)\sqrt{1-(a+bx)^2}}{18b^3} + \frac{1}{3}x^3\sin^{-1}(a+bx) +$$

$$= \frac{x^2\sqrt{1-(a+bx)^2}}{9b} + \frac{(4+11a^2-5abx)\sqrt{1-(a+bx)^2}}{18b^3} + \frac{a(3+2a^2)\sin^{-1}(a+}{6b^3}$$

Mathematica [A]
time = 0.04, size = 77, normalized size = 0.82

$$\frac{\sqrt{1-a^2-2abx-b^2x^2}\,(4+11a^2-5abx+2b^2x^2)+(9a+6a^3+6b^3x^3)\,\text{ArcSin}(a+bx)}{18b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcSin[a + b*x],x]
```

```
[Out] (Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*(4 + 11*a^2 - 5*a*b*x + 2*b^2*x^2) + (9*
a + 6*a^3 + 6*b^3*x^3)*ArcSin[a + b*x])/(18*b^3)
```

Maple [A]
time = 0.00, size = 137, normalized size = 1.46

method	result
derivativedivides	$\frac{\arcsin(bx+a)a^2(bx+a)-\arcsin(bx+a)a(bx+a)^2+\frac{\arcsin(bx+a)(bx+a)^3}{3}+a^2\sqrt{1-(bx+a)^2}+a\left(-\frac{(bx+a)\sqrt{1-(}{2}\right.}{b^3}$
default	$\frac{\arcsin(bx+a)a^2(bx+a)-\arcsin(bx+a)a(bx+a)^2+\frac{\arcsin(bx+a)(bx+a)^3}{3}+a^2\sqrt{1-(bx+a)^2}+a\left(-\frac{(bx+a)\sqrt{1-(}{2}\right.}{b^3}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arcsin(b*x+a),x,method=_RETURNVERBOSE)
```

```
[Out] 1/b^3*(arcsin(b*x+a)*a^2*(b*x+a)-arcsin(b*x+a)*a*(b*x+a)^2+1/3*arcsin(b*x+a
)*(b*x+a)^3+a^2*(1-(b*x+a)^2)^(1/2)+a*(-1/2*(b*x+a)*(1-(b*x+a)^2)^(1/2)+1/2
*arcsin(b*x+a))+1/9*(b*x+a)^2*(1-(b*x+a)^2)^(1/2)+2/9*(1-(b*x+a)^2)^(1/2))
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 220 vs. 2(82) = 164.
time = 0.47, size = 220, normalized size = 2.34

$$\frac{1}{3}x^3\arcsin(bx+a)+\frac{1}{18}b\left(\frac{2\sqrt{-b^2x^2-2abx-a^2+1}\,x^2}{b^2}-\frac{15a^3\arcsin\left(-\frac{b^2x+ab}{\sqrt{a^2b^2-(a^2-1)b^2}}\right)}{b^4}-\frac{5\sqrt{-b^2x^2-2abx-a^2+1}\,ax}{b^3}+\frac{9(a^2-1)a\arcsin\left(-\frac{b^2x+ab}{\sqrt{a^2b^2-(a^2-1)b^2}}\right)}{b^4}+\frac{15\sqrt{-b^2x^2-2abx-a^2+1}\,a^2}{b^4}-\frac{4\sqrt{-b^2x^2-2abx-a^2+1}\,(a^2-1)}{b^4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(b*x+a),x, algorithm="maxima")
```

```
[Out] 1/3*x^3*arcsin(b*x + a) + 1/18*b*(2*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*x^2/
b^2 - 15*a^3*arcsin(-(b^2*x + a*b)/sqrt(a^2*b^2 - (a^2 - 1)*b^2))/b^4 - 5*s
qrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*a*x/b^3 + 9*(a^2 - 1)*a*arcsin(-(b^2*x +
a*b)/sqrt(a^2*b^2 - (a^2 - 1)*b^2))/b^4 + 15*sqrt(-b^2*x^2 - 2*a*b*x - a^2
+ 1)*a^2/b^4 - 4*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(a^2 - 1)/b^4)
```

Fricas [A]
time = 2.07, size = 74, normalized size = 0.79

$$\frac{3\,(2\,b^3x^3+2\,a^3+3\,a)\arcsin(bx+a)+(2\,b^2x^2-5\,abx+11\,a^2+4)\sqrt{-b^2x^2-2\,abx-a^2+1}}{18\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(b*x+a),x, algorithm="fricas")
```

```
[Out] 1/18*(3*(2*b^3*x^3 + 2*a^3 + 3*a)*arcsin(b*x + a) + (2*b^2*x^2 - 5*a*b*x +
11*a^2 + 4)*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1))/b^3
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 170 vs. $2(83) = 166$.
time = 0.20, size = 170, normalized size = 1.81

$$\begin{cases} \frac{a^3 \operatorname{asin}(a+bx)}{3b^3} + \frac{11a^2\sqrt{-a^2-2abx-b^2x^2+1}}{18b^3} - \frac{5ax\sqrt{-a^2-2abx-b^2x^2+1}}{18b^2} + \frac{a\operatorname{asin}(a+bx)}{2b^3} + \frac{x^3\operatorname{asin}(a+bx)}{3} + \frac{x^2\sqrt{-a^2-2abx-b^2x^2+1}}{9b} + \frac{2\sqrt{-a^2-2abx-b^2x^2+1}}{9b^3} & \text{for } b \neq 0 \\ \frac{x^3\operatorname{asin}(a)}{3} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*asin(b*x+a),x)
```

```
[Out] Piecewise((a**3*asin(a + b*x)/(3*b**3) + 11*a**2*sqrt(-a**2 - 2*a*b*x - b**
2*x**2 + 1)/(18*b**3) - 5*a*x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/(18*b**
2) + a*asin(a + b*x)/(2*b**3) + x**3*asin(a + b*x)/3 + x**2*sqrt(-a**2 - 2*
a*b*x - b**2*x**2 + 1)/(9*b) + 2*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/(9*b
**3), Ne(b, 0)), (x**3*asin(a)/3, True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 173 vs. $2(82) = 164$.
time = 0.41, size = 173, normalized size = 1.84

$$\frac{(bx+a)a^2 \arcsin(bx+a)}{b^3} + \frac{\left((bx+a)^2-1\right)(bx+a)\arcsin(bx+a)}{3\,b^3} - \frac{\left((bx+a)^2-1\right)a\arcsin(bx+a)}{b^3} - \frac{\sqrt{-(bx+a)^2+1}\,(bx+a)a}{2\,b^3} + \frac{\sqrt{-(bx+a)^2+1}\,a^2}{b^3} + \frac{(bx+a)\arcsin(bx+a)}{3\,b^3} - \frac{a\arcsin(bx+a)}{2\,b^3} - \frac{\left(-(bx+a)^2+1\right)^{\frac{3}{2}}}{9\,b^3} + \frac{\sqrt{-(bx+a)^2+1}}{3\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(b*x+a),x, algorithm="giac")
```

```
[Out] (b*x + a)*a^2*arcsin(b*x + a)/b^3 + 1/3*((b*x + a)^2 - 1)*(b*x + a)*arcsin(
b*x + a)/b^3 - ((b*x + a)^2 - 1)*a*arcsin(b*x + a)/b^3 - 1/2*sqrt(-(b*x + a
)^2 + 1)*(b*x + a)*a/b^3 + sqrt(-(b*x + a)^2 + 1)*a^2/b^3 + 1/3*(b*x + a)*a
rcsin(b*x + a)/b^3 - 1/2*a*arcsin(b*x + a)/b^3 - 1/9*(-(b*x + a)^2 + 1)^(3/
2)/b^3 + 1/3*sqrt(-(b*x + a)^2 + 1)/b^3
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int x^2 \operatorname{asin}(a+b\,x)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*asin(a + b*x),x)
```

```
[Out] int(x^2*asin(a + b*x), x)
```

3.124 $\int x\mathbf{ArcSin}(a+bx)\,dx$

Optimal. Leaf size=80

$$-\frac{3a\sqrt{1-(a+bx)^2}}{4b^2}+\frac{x\sqrt{1-(a+bx)^2}}{4b}-\frac{(1+2a^2)\operatorname{ArcSin}(a+bx)}{4b^2}+\frac{1}{2}x^2\operatorname{ArcSin}(a+bx)$$

```
[Out] -1/4*(2*a^2+1)*arcsin(b*x+a)/b^2+1/2*x^2*arcsin(b*x+a)-3/4*a*(1-(b*x+a)^2)^
(1/2)/b^2+1/4*x*(1-(b*x+a)^2)^(1/2)/b
```

Rubi [A]
time = 0.05, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}} = 0.625$, Rules used = {4889, 4827, 757, 655, 222}

$$-\frac{(2a^2+1)\operatorname{ArcSin}(a+bx)}{4b^2}+\frac{1}{2}x^2\operatorname{ArcSin}(a+bx)-\frac{3a\sqrt{1-(a+bx)^2}}{4b^2}+\frac{x\sqrt{1-(a+bx)^2}}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcSin[a + b*x],x]
```

```
[Out] (-3*a*Sqrt[1 - (a + b*x)^2])/(4*b^2) + (x*Sqrt[1 - (a + b*x)^2])/(4*b) - ((
1 + 2*a^2)*ArcSin[a + b*x])/(4*b^2) + (x^2*ArcSin[a + b*x])/2
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 655

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[e*((
a + c*x^2)^(p + 1)/(2*c*(p + 1))), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rule 757

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
e*(d + e*x)^(m - 1)*((a + c*x^2)^(p + 1)/(c*(m + 2*p + 1))), x] + Dist[1/(c
*(m + 2*p + 1)), Int[(d + e*x)^(m - 2)*Simp[c*d^2*(m + 2*p + 1) - a*e^2*(m
- 1) + 2*c*d*e*(m + p)*x, x]*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, m,
 p}, x] && NeQ[c*d^2 + a*e^2, 0] && If[RationalQ[m], GtQ[m, 1], SumSimplerQ
[m, -2]] && NeQ[m + 2*p + 1, 0] && IntQuadraticQ[a, 0, c, d, e, m, p, x]
```

Rule 4827

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(e*(m + 1))), x] -
```

```
Dist[b*c*(n/(e*(m + 1))), Int[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1
)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int x\sin^{-1}(a+bx)\,dx = \frac{\text{Subst}\left(\int\left(-\frac{a}{b}+\frac{x}{b}\right)\sin^{-1}(x)\,dx,x,a+bx\right)}{b}$$
$$=\frac{1}{2}x^2\sin^{-1}(a+bx)-\frac{1}{2}\text{Subst}\left(\int\frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^2}{\sqrt{1-x^2}}\,dx,x,a+bx\right)$$
$$=\frac{x\sqrt{1-(a+bx)^2}}{4b}+\frac{1}{2}x^2\sin^{-1}(a+bx)+\frac{1}{4}\text{Subst}\left(\int\frac{-\frac{1+2a^2}{b^2}+\frac{3ax}{b^2}}{\sqrt{1-x^2}}\,dx,x,a+bx\right)$$
$$=-\frac{3a\sqrt{1-(a+bx)^2}}{4b^2}+\frac{x\sqrt{1-(a+bx)^2}}{4b}+\frac{1}{2}x^2\sin^{-1}(a+bx)-\frac{(1+2a^2)\,\text{Subst}(}{}$$
$$=-\frac{3a\sqrt{1-(a+bx)^2}}{4b^2}+\frac{x\sqrt{1-(a+bx)^2}}{4b}-\frac{(1+2a^2)\sin^{-1}(a+bx)}{4b^2}+\frac{1}{2}x^2\sin^{-1}($$

Mathematica [A]
time = 0.03, size = 62, normalized size = 0.78

$$\frac{(-3a+bx)\sqrt{1-a^2-2abx-b^2x^2}+(-1-2a^2+2b^2x^2)\,\text{ArcSin}(a+bx)}{4b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcSin[a + b*x],x]
```

```
[Out] ((-3*a + b*x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2] + (-1 - 2*a^2 + 2*b^2*x^2)*
ArcSin[a + b*x])/(4*b^2)
```

Maple [A]
time = 0.00, size = 79, normalized size = 0.99

method	result

derivativedivides	$\frac{\frac{\arcsin(bx+a)(bx+a)^2}{2}-\arcsin(bx+a)a(bx+a)-a\sqrt{1-(bx+a)^2}+\frac{(bx+a)\sqrt{1-(bx+a)^2}}{4}-\frac{\arcsin(bx+a)}{4}}{b^2}$	7
default	$\frac{\frac{\arcsin(bx+a)(bx+a)^2}{2}-\arcsin(bx+a)a(bx+a)-a\sqrt{1-(bx+a)^2}+\frac{(bx+a)\sqrt{1-(bx+a)^2}}{4}-\frac{\arcsin(bx+a)}{4}}{b^2}$	7

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arcsin(b*x+a),x,method=_RETURNVERBOSE)
```

```
[Out] 1/b^2*(1/2*arcsin(b*x+a)*(b*x+a)^2-arcsin(b*x+a)*a*(b*x+a)-a*(1-(b*x+a)^2)^
(1/2)+1/4*(b*x+a)*(1-(b*x+a)^2)^(1/2)-1/4*arcsin(b*x+a))
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 153 vs. $2(68) = 136$.
time = 0.47, size = 153, normalized size = 1.91

$$\frac{1}{2}x^2\arcsin(bx+a)+\frac{1}{4}b\left(\frac{3a^2\arcsin\left(-\frac{b^2x+ab}{\sqrt{a^2b^2-(a^2-1)b^2}}\right)}{b^3}+\frac{\sqrt{-b^2x^2-2abx-a^2+1}\,x}{b^2}-\frac{(a^2-1)\arcsin\left(-\frac{b^2x+ab}{\sqrt{a^2b^2-(a^2-1)b^2}}\right)}{b^3}-\frac{3\sqrt{-b^2x^2-2abx-a^2+1}\,a}{b^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(b*x+a),x, algorithm="maxima")
```

```
[Out] 1/2*x^2*arcsin(b*x + a) + 1/4*b*(3*a^2*arcsin(-(b^2*x + a*b)/sqrt(a^2*b^2 -
 (a^2 - 1)*b^2))/b^3 + sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*x/b^2 - (a^2 - 1)
*arcsin(-(b^2*x + a*b)/sqrt(a^2*b^2 - (a^2 - 1)*b^2))/b^3 - 3*sqrt(-b^2*x^2
 - 2*a*b*x - a^2 + 1)*a/b^3)
```

Fricas [A]
time = 2.61, size = 58, normalized size = 0.72

$$\frac{(2b^2x^2-2a^2-1)\arcsin(bx+a)+\sqrt{-b^2x^2-2abx-a^2+1}\,(bx-3a)}{4b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(b*x+a),x, algorithm="fricas")
```

```
[Out] 1/4*((2*b^2*x^2 - 2*a^2 - 1)*arcsin(b*x + a) + sqrt(-b^2*x^2 - 2*a*b*x - a^
2 + 1)*(b*x - 3*a))/b^2
```

Sympy [A]
time = 0.11, size = 104, normalized size = 1.30

$$\begin{cases} -\frac{a^2\operatorname{asin}(a+bx)}{2b^2}-\frac{3a\sqrt{-a^2-2abx-b^2x^2+1}}{4b^2}+\frac{x^2\operatorname{asin}(a+bx)}{2}+\frac{x\sqrt{-a^2-2abx-b^2x^2+1}}{4b}-\frac{\operatorname{asin}(a+bx)}{4b^2} & \text{for } b\neq 0 \\ \frac{x^2\operatorname{asin}(a)}{2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*asin(b*x+a),x)
```

```
[Out] Piecewise((-a**2*asin(a + b*x)/(2*b**2) - 3*a*sqrt(-a**2 - 2*a*b*x - b**2*x
**2 + 1)/(4*b**2) + x**2*asin(a + b*x)/2 + x*sqrt(-a**2 - 2*a*b*x - b**2*x*
*2 + 1)/(4*b) - asin(a + b*x)/(4*b**2), Ne(b, 0)), (x**2*asin(a)/2, True))
```

Giac [A]
time = 0.41, size = 91, normalized size = 1.14

$$-\frac{(bx+a)a\arcsin(bx+a)}{b^2}+\frac{((bx+a)^2-1)\arcsin(bx+a)}{2b^2}+\frac{\sqrt{-(bx+a)^2+1}\,(bx+a)}{4b^2}-\frac{\sqrt{-(bx+a)^2+1}\,a}{b^2}+\frac{\arcsin(bx+a)}{4b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(b*x+a),x, algorithm="giac")
```

```
[Out] -(b*x + a)*a*arcsin(b*x + a)/b^2 + 1/2*((b*x + a)^2 - 1)*arcsin(b*x + a)/b^
2 + 1/4*sqrt(-(b*x + a)^2 + 1)*(b*x + a)/b^2 - sqrt(-(b*x + a)^2 + 1)*a/b^2
 + 1/4*arcsin(b*x + a)/b^2
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int x\,\mathrm{asin}(a+b\,x)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*asin(a + b*x),x)
```

```
[Out] int(x*asin(a + b*x), x)
```

3.125 $\int \mathbf{ArcSin}(a+bx)\,dx$

Optimal. Leaf size=35

$$\frac{\sqrt{1-(a+bx)^2}}{b}+\frac{(a+bx)\text{ArcSin}(a+bx)}{b}$$

```
[Out] (b*x+a)*arcsin(b*x+a)/b+(1-(b*x+a)^2)^(1/2)/b
```

Rubi [A]
time = 0.01, antiderivative size = 35, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 6, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {4887, 4715, 267}

$$\frac{(a+bx)\text{ArcSin}(a+bx)}{b}+\frac{\sqrt{1-(a+bx)^2}}{b}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x],x]
```

```
[Out] Sqrt[1 - (a + b*x)^2]/b + ((a + b*x)*ArcSin[a + b*x])/b
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\int \sin^{-1}(a+bx)\,dx = \frac{\text{Subst}\left(\int \sin^{-1}(x)\,dx, x, a+bx\right)}{b}$$
$$= \frac{(a+bx)\sin^{-1}(a+bx)}{b} - \frac{\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}}\,dx, x, a+bx\right)}{b}$$
$$= \frac{\sqrt{1-(a+bx)^2}}{b} + \frac{(a+bx)\sin^{-1}(a+bx)}{b}$$

Mathematica [**B**] Leaf count is larger than twice the leaf count of optimal. 154 vs. $2(35) = 70$.
time = 0.23, size = 154, normalized size = 4.40

$$x\text{ArcSin}(a+bx) + \frac{2b\sqrt{1-a^2-2abx-b^2x^2} + 2ab\text{ArcTan}\left(\frac{\sqrt{-b^2}\,x-\sqrt{1-a^2-2abx-b^2x^2}}{a}\right) + a\sqrt{-b^2}\,\log\left(-1+2abx+2b^2x^2+2\sqrt{-b^2}\,x\sqrt{1-a^2-2abx-b^2x^2}\right)}{2b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x],x]
```

```
[Out] x*ArcSin[a + b*x] + (2*b*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2] + 2*a*b*ArcTan[(
Sqrt[-b^2]*x - Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2])/a] + a*Sqrt[-b^2]*Log[-1
+ 2*a*b*x + 2*b^2*x^2 + 2*Sqrt[-b^2]*x*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]])/
(2*b^2)
```

Maple [**A**]
time = 0.01, size = 31, normalized size = 0.89

method	result	size
derivativedivides	$\frac{(bx+a)\arcsin(bx+a)+\sqrt{1-(bx+a)^2}}{b}$	31
default	$\frac{(bx+a)\arcsin(bx+a)+\sqrt{1-(bx+a)^2}}{b}$	31

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a),x,method=_RETURNVERBOSE)
```

```
[Out] 1/b*((b*x+a)*arcsin(b*x+a)+(1-(b*x+a)^2)^(1/2))
```

Maxima [**A**]
time = 0.47, size = 30, normalized size = 0.86

$$\frac{(bx+a)\arcsin(bx+a) + \sqrt{-(bx+a)^2+1}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a),x, algorithm="maxima")
```

```
[Out] ((b*x + a)*arcsin(b*x + a) + sqrt(-(b*x + a)^2 + 1))/b
```

Fricas [A]
time = 2.86, size = 39, normalized size = 1.11

$$\frac{(bx+a)\arcsin(bx+a)+\sqrt{-b^2x^2-2\,abx-a^2+1}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a),x, algorithm="fricas")
```

```
[Out] ((b*x + a)*arcsin(b*x + a) + sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1))/b
```

Sympy [A]
time = 0.07, size = 46, normalized size = 1.31

$$\begin{cases} \frac{a\,\mathrm{asin}\,(a+bx)}{b}+x\,\mathrm{asin}\,(a+bx)+\frac{\sqrt{-a^2-2abx-b^2x^2+1}}{b} & \text{for } b\neq 0 \\ x\,\mathrm{asin}\,(a) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a),x)
```

```
[Out] Piecewise((a*asin(a + b*x)/b + x*asin(a + b*x) + sqrt(-a**2 - 2*a*b*x - b**
2*x**2 + 1)/b, Ne(b, 0)), (x*asin(a), True))
```

Giac [A]
time = 0.40, size = 30, normalized size = 0.86

$$\frac{(bx+a)\arcsin(bx+a)+\sqrt{-(bx+a)^2+1}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a),x, algorithm="giac")
```

```
[Out] ((b*x + a)*arcsin(b*x + a) + sqrt(-(b*x + a)^2 + 1))/b
```

Mupad [B]
time = 0.56, size = 86, normalized size = 2.46

$$x\,\mathrm{asin}(a+b\,x)+\frac{\sqrt{-a^2-2\,a\,b\,x-b^2\,x^2+1}}{b}+\frac{a\,\ln\left(\sqrt{-a^2-2\,a\,b\,x-b^2\,x^2+1}-\frac{x\,b^2+a\,b}{\sqrt{-b^2}}\right)}{\sqrt{-b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x),x)
```

```
[Out] x*asin(a + b*x) + (1 - b^2*x^2 - 2*a*b*x - a^2)^(1/2)/b + (a*log((1 - b^2*x
^2 - 2*a*b*x - a^2)^(1/2) - (a*b + b^2*x)/(-b^2)^(1/2)))/(-b^2)^(1/2)
```

3.126 $\int \frac{\text{ArcSin}(a+bx)}{x} \, dx$

Optimal. Leaf size=181

$$-\frac{1}{2}i\text{ArcSin}(a+bx)^2+\text{ArcSin}(a+bx)\log\left(1-\frac{e^{i\text{ArcSin}(a+bx)}}{ia-\sqrt{1-a^2}}\right)+\text{ArcSin}(a+bx)\log\left(1-\frac{e^{i\text{ArcSin}(a+bx)}}{ia+\sqrt{1-a^2}}\right)-i\text{Po}$$

```
[Out] -1/2*I*arcsin(b*x+a)^2+arcsin(b*x+a)*ln(1-(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))/(
I*a-(-a^2+1)^(1/2)))+arcsin(b*x+a)*ln(1-(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))/(I*
a+(-a^2+1)^(1/2)))-I*polylog(2,(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))/(I*a-(-a^2+1
)^(1/2)))-I*polylog(2,(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))/(I*a+(-a^2+1)^(1/2)))
```

Rubi [A]
time = 0.19, antiderivative size = 181, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.600, Rules used = {4889, 4825, 4617, 2221, 2317, 2438}

$$-i\text{Li}_2\left(\frac{e^{i\text{ArcSin}(a+bx)}}{ia-\sqrt{1-a^2}}\right)-i\text{Li}_2\left(\frac{e^{i\text{ArcSin}(a+bx)}}{ia+\sqrt{1-a^2}}\right)+\text{ArcSin}(a+bx)\log\left(1-\frac{e^{i\text{ArcSin}(a+bx)}}{-\sqrt{1-a^2}+ia}\right)+\text{ArcSin}(a+bx)\log\left(1-\frac{e^{i\text{ArcSin}(a+bx)}}{\sqrt{1-a^2}+ia}\right)-\frac{1}{2}i\text{ArcSin}(a+bx)^2$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]/x,x]
```

```
[Out] (-1/2*I)*ArcSin[a + b*x]^2 + ArcSin[a + b*x]*Log[1 - E^(I*ArcSin[a + b*x])/
(I*a - Sqrt[1 - a^2])] + ArcSin[a + b*x]*Log[1 - E^(I*ArcSin[a + b*x])/(I*a
 + Sqrt[1 - a^2])] - I*PolyLog[2, E^(I*ArcSin[a + b*x])/(I*a - Sqrt[1 - a^2
])] - I*PolyLog[2, E^(I*ArcSin[a + b*x])/(I*a + Sqrt[1 - a^2])]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4617

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Dist[I, Int[(e + f*x)^m*(E^(I*(c + d*x))/(I*a - Rt[-a^2 + b^2, 2
] + b*E^(I*(c + d*x)))), x], x] + Dist[I, Int[(e + f*x)^m*(E^(I*(c + d*x))/
(I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x)))), x], x]) /; FreeQ[{a, b, c,
d, e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[(a + b*x)^n*(Cos[x]/(c*d + e*Sin[x])), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{\sin^{-1}(a+bx)}{x}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)}{-\frac{a}{b}+\frac{x}{b}}\,dx, x, a+bx\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \frac{x\cos(x)}{-\frac{a}{b}+\frac{\sin(x)}{b}}\,dx, x, \sin^{-1}(a+bx)\right)}{b}$$

$$= -\frac{1}{2}i\sin^{-1}(a+bx)^2 + \frac{i\text{Subst}\left(\int \frac{e^{ix}x}{-\frac{ia}{b}-\frac{\sqrt{1-a^2}}{b}+\frac{e^{ix}}{b}}\,dx, x, \sin^{-1}(a+bx)\right)}{b} + \frac{i\text{Subst}\left(\int\right.}{}$$

$$= -\frac{1}{2}i\sin^{-1}(a+bx)^2 + \sin^{-1}(a+bx)\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + \sin^{-1}(a+bx)\log\left(1\right.$$

$$= -\frac{1}{2}i\sin^{-1}(a+bx)^2 + \sin^{-1}(a+bx)\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + \sin^{-1}(a+bx)\log\left(1\right.$$

$$= -\frac{1}{2}i\sin^{-1}(a+bx)^2 + \sin^{-1}(a+bx)\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + \sin^{-1}(a+bx)\log\left(1\right.$$

Mathematica [A]
time = 0.01, size = 197, normalized size = 1.09

$$-\frac{1}{2}i\text{ArcSin}(a+bx)^2 + \text{ArcSin}(a+bx)\log\left(1+\frac{e^{i\text{ArcSin}(a+bx)}}{\left(-\frac{ia}{b}-\frac{\sqrt{1-a^2}}{b}\right)b}\right) + \text{ArcSin}(a+bx)\log\left(1+\frac{e^{i\text{ArcSin}(a+bx)}}{\left(-\frac{ia}{b}+\frac{\sqrt{1-a^2}}{b}\right)b}\right) - i\text{PolyLog}\left(2, -\frac{e^{i\text{ArcSin}(a+bx)}}{-ia+\sqrt{1-a^2}}\right) - i\text{PolyLog}\left(2, \frac{e^{i\text{ArcSin}(a+bx)}}{ia+\sqrt{1-a^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]/x,x]
```

```
[Out] (-1/2*I)*ArcSin[a + b*x]^2 + ArcSin[a + b*x]*Log[1 + E^(I*ArcSin[a + b*x])/
((((-I)*a)/b - Sqrt[1 - a^2]/b)*b)] + ArcSin[a + b*x]*Log[1 + E^(I*ArcSin[a
 + b*x])/((((-I)*a)/b + Sqrt[1 - a^2]/b)*b)] - I*PolyLog[2, -(E^(I*ArcSin[a
 + b*x])/((-I)*a + Sqrt[1 - a^2]))] - I*PolyLog[2, E^(I*ArcSin[a + b*x])/(I
*a + Sqrt[1 - a^2])]
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 578 vs. 2(204) = 408.
time = 0.64, size = 579, normalized size = 3.20

method	result
derivativedivides	$-\frac{i\arcsin(bx+a)^2}{2}-\frac{ia^2\,\mathrm{dilog}\left(\frac{ia+\sqrt{-a^2+1}-i(bx+a)-\sqrt{1-(bx+a)^2}}{ia+\sqrt{-a^2+1}}\right)}{a^2-1}-\frac{ia^2\,\mathrm{dilog}\left(\frac{ia-\sqrt{-a^2+}}{}\right.}{}$
default	$-\frac{i\arcsin(bx+a)^2}{2}-\frac{ia^2\,\mathrm{dilog}\left(\frac{ia+\sqrt{-a^2+1}-i(bx+a)-\sqrt{1-(bx+a)^2}}{ia+\sqrt{-a^2+1}}\right)}{a^2-1}-\frac{ia^2\,\mathrm{dilog}\left(\frac{ia-\sqrt{-a^2+}}{}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)/x,x,method=_RETURNVERBOSE)
```

```
[Out] -1/2*I*arcsin(b*x+a)^2-I*a^2/(a^2-1)*dilog((I*a+(-a^2+1)^(1/2)-I*(b*x+a)-(1
-(b*x+a)^2)^(1/2))/(I*a+(-a^2+1)^(1/2)))-I*a^2/(a^2-1)*dilog((I*a-(-a^2+1)^
(1/2)-I*(b*x+a)-(1-(b*x+a)^2)^(1/2))/(I*a-(-a^2+1)^(1/2)))+a^2*arcsin(b*x+a
)/(a^2-1)*ln((I*a+(-a^2+1)^(1/2)-I*(b*x+a)-(1-(b*x+a)^2)^(1/2))/(I*a+(-a^2+
1)^(1/2)))+a^2*arcsin(b*x+a)/(a^2-1)*ln((I*a-(-a^2+1)^(1/2)-I*(b*x+a)-(1-(b
*x+a)^2)^(1/2))/(I*a-(-a^2+1)^(1/2)))+I/(a^2-1)*dilog((I*a+(-a^2+1)^(1/2)-I
*(b*x+a)-(1-(b*x+a)^2)^(1/2))/(I*a+(-a^2+1)^(1/2)))+I/(a^2-1)*dilog((I*a-(-
a^2+1)^(1/2)-I*(b*x+a)-(1-(b*x+a)^2)^(1/2))/(I*a-(-a^2+1)^(1/2)))-arcsin(b*
x+a)/(a^2-1)*ln((I*a+(-a^2+1)^(1/2)-I*(b*x+a)-(1-(b*x+a)^2)^(1/2))/(I*a+(-a
^2+1)^(1/2)))-arcsin(b*x+a)/(a^2-1)*ln((I*a-(-a^2+1)^(1/2)-I*(b*x+a)-(1-(b*
x+a)^2)^(1/2))/(I*a-(-a^2+1)^(1/2)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/x,x, algorithm="maxima")
```

```
[Out] integrate(arcsin(b*x + a)/x, x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/x,x, algorithm="fricas")
```

```
[Out] integral(arcsin(b*x + a)/x, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}(a + bx)}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)/x,x)
```

```
[Out] Integral(asin(a + b*x)/x, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/x,x, algorithm="giac")
```

```
[Out] integrate(arcsin(b*x + a)/x, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\operatorname{asin}(a + b\,x)}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)/x,x)
```

```
[Out] int(asin(a + b*x)/x, x)
```

3.127 $\int \frac{\text{ArcSin}(a+bx)}{x^2} \, dx$

Optimal. Leaf size=64

$$-\frac{\text{ArcSin}(a+bx)}{x}-\frac{b\tanh^{-1}\left(\frac{1-a(a+bx)}{\sqrt{1-a^2}\sqrt{1-(a+bx)^2}}\right)}{\sqrt{1-a^2}}$$

```
[Out] -arcsin(b*x+a)/x-b*arctanh((1-a*(b*x+a))/(-a^2+1)^(1/2)/(1-(b*x+a)^2)^(1/2)
)/(-a^2+1)^(1/2)
```

Rubi [A]
time = 0.06, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$, Rules used = {4889, 4827, 739, 212}

$$-\frac{b\tanh^{-1}\left(\frac{1-a(a+bx)}{\sqrt{1-a^2}\sqrt{1-(a+bx)^2}}\right)}{\sqrt{1-a^2}}-\frac{\text{ArcSin}(a+bx)}{x}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]/x^2,x]
```

```
[Out] -(ArcSin[a + b*x]/x) - (b*ArcTanh[(1 - a*(a + b*x))/(Sqrt[1 - a^2]*Sqrt[1 -
 (a + b*x)^2])])/Sqrt[1 - a^2]
```

Rule 212

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1/(Rt[a, 2]*Rt[-b, 2]))*
ArcTanh[Rt[-b, 2]*(x/Rt[a, 2])], x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 739

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 4827

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(e*(m + 1))), x] -
Dist[b*c*(n/(e*(m + 1))), Int[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1
)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sin^{-1}(a+bx)}{x^2}\,dx &= \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)}{\left(-\frac{a}{b}+\frac{x}{b}\right)^2}\,dx, x, a+bx\right)}{b} \\
&= -\frac{\sin^{-1}(a+bx)}{x} + \text{Subst}\left(\int \frac{1}{\left(-\frac{a}{b}+\frac{x}{b}\right)\sqrt{1-x^2}}\,dx, x, a+bx\right) \\
&= -\frac{\sin^{-1}(a+bx)}{x} - \text{Subst}\left(\int \frac{1}{\frac{1}{b^2}-\frac{a^2}{b^2}-x^2}\,dx, x, \frac{\frac{1}{b}-\frac{a(a+bx)}{b}}{\sqrt{1-(a+bx)^2}}\right) \\
&= -\frac{\sin^{-1}(a+bx)}{x} - \frac{b\tanh^{-1}\left(\frac{b\left(\frac{1}{b}-\frac{a(a+bx)}{b}\right)}{\sqrt{1-a^2}\sqrt{1-(a+bx)^2}}\right)}{\sqrt{1-a^2}}
\end{aligned}$$

Mathematica [A]
time = 0.03, size = 66, normalized size = 1.03

$$-\frac{\text{ArcSin}(a+bx)}{x} - \frac{b\tanh^{-1}\left(\frac{1-a^2-abx}{\sqrt{1-a^2}\sqrt{1-(a+bx)^2}}\right)}{\sqrt{1-a^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]/x^2,x]
[Out] -(ArcSin[a + b*x]/x) - (b*ArcTanh[(1 - a^2 - a*b*x)/(Sqrt[1 - a^2]*Sqrt[1 -
 (a + b*x)^2])])/Sqrt[1 - a^2]
```

Maple [A]
time = 0.15, size = 82, normalized size = 1.28

method	result	size
derivativedivides	$b\left(-\frac{\arcsin(bx+a)}{bx} - \frac{\ln\left(\frac{-2a^2+2-2abx+2\sqrt{-a^2+1}\sqrt{-b^2x^2-2abx-a^2+1}}{bx}\right)}{\sqrt{-a^2+1}}\right)$	82

default	$b\left(-\frac{\arcsin(bx+a)}{bx}-\frac{\ln\left(\frac{-2a^2+2-2abx+2\sqrt{-a^2+1}\,\sqrt{-b^2x^2-2abx-a^2+1}}{bx}\right)}{\sqrt{-a^2+1}}\right)$	82

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)/x^2,x,method=_RETURNVERBOSE)
```

```
[Out] b*(-arcsin(b*x+a)/b/x-1/(-a^2+1)^(1/2)*ln((-2*a^2+2-2*a*b*x+2*(-a^2+1)^(1/2
)*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2))/b/x))
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a-1>0)', see `assume?` for more det
ails)Is
```

Fricas [A]
time = 2.90, size = 233, normalized size = 3.64

$$\left[-\frac{\sqrt{-a^2+1}\,bx\log\left(\frac{(2a^2-1)b^2x^2+2a^4+4(a^3-a)bx+2\sqrt{-b^2x^2-2abx-a^2+1}\,(abx+a^2-1)\sqrt{-a^2+1}-4a^2+2}{x^2}\right)+2(a^2-1)\arcsin(bx+a)}{2(a^2-1)x},\ \frac{\sqrt{a^2-1}\,bx\arctan\left(\frac{\sqrt{-b^2x^2-2abx-a^2+1}\,(abx+a^2-1)\sqrt{a^2-1}}{(a^2-1)b^2x^2+a^4+2(a^3-a)bx-2a^2+1}\right)-(a^2-1)\arcsin(bx+a)}{(a^2-1)x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/x^2,x, algorithm="fricas")
```

```
[Out] [-1/2*(sqrt(-a^2 + 1)*b*x*log(((2*a^2 - 1)*b^2*x^2 + 2*a^4 + 4*(a^3 - a)*b*
x + 2*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(a*b*x + a^2 - 1)*sqrt(-a^2 + 1) -
 4*a^2 + 2)/x^2) + 2*(a^2 - 1)*arcsin(b*x + a))/((a^2 - 1)*x), (sqrt(a^2 -
1)*b*x*arctan(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(a*b*x + a^2 - 1)*sqrt(a^2
 - 1)/((a^2 - 1)*b^2*x^2 + a^4 + 2*(a^3 - a)*b*x - 2*a^2 + 1)) - (a^2 - 1)*
arcsin(b*x + a))/((a^2 - 1)*x)]
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}(a+bx)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)/x**2,x)
```

```
[Out] Integral(asin(a + b*x)/x**2, x)
```

Giac [**A**]
time = 0.40, size = 79, normalized size = 1.23

$$\frac{2\,b^2\arctan\left(\frac{\frac{\left(\sqrt{-b^2x^2-2\,abx-a^2+1}\,|b|+b\right)a}{b^2x+ab}-1}{\sqrt{a^2-1}}\right)}{\sqrt{a^2-1}\,|b|}-\frac{\arcsin\left(bx+a\right)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/x^2,x, algorithm="giac")
```

```
[Out] 2*b^2*arctan(((sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)*a/(b^2*x + a*
b) - 1)/sqrt(a^2 - 1))/(sqrt(a^2 - 1)*abs(b)) - arcsin(b*x + a)/x
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\mathrm{asin}(a+b\,x)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)/x^2,x)
```

```
[Out] int(asin(a + b*x)/x^2, x)
```

3.128 $\int \frac{\text{ArcSin}(a+bx)}{x^3} \, dx$

Optimal. Leaf size=103

$$-\frac{b\sqrt{1-(a+bx)^2}}{2(1-a^2)x}-\frac{\text{ArcSin}(a+bx)}{2x^2}-\frac{ab^2\tanh^{-1}\left(\frac{1-a(a+bx)}{\sqrt{1-a^2}\sqrt{1-(a+bx)^2}}\right)}{2(1-a^2)^{3/2}}$$

```
[Out] -1/2*arcsin(b*x+a)/x^2-1/2*a*b^2*arctanh((1-a*(b*x+a))/(-a^2+1)^(1/2)/(1-(b
*x+a)^2)^(1/2))/(-a^2+1)^(3/2)-1/2*b*(1-(b*x+a)^2)^(1/2)/(-a^2+1)/x
```

Rubi [A]
time = 0.08, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {4889, 4827, 745, 739, 212}

$$-\frac{ab^2\tanh^{-1}\left(\frac{1-a(a+bx)}{\sqrt{1-a^2}\sqrt{1-(a+bx)^2}}\right)}{2(1-a^2)^{3/2}}-\frac{b\sqrt{1-(a+bx)^2}}{2(1-a^2)x}-\frac{\text{ArcSin}(a+bx)}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]/x^3,x]
```

```
[Out] -1/2*(b*Sqrt[1 - (a + b*x)^2])/((1 - a^2)*x) - ArcSin[a + b*x]/(2*x^2) - (a
*b^2*ArcTanh[(1 - a*(a + b*x))/(Sqrt[1 - a^2]*Sqrt[1 - (a + b*x)^2])])/(2*(
1 - a^2)^(3/2))
```

Rule 212

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1/(Rt[a, 2]*Rt[-b, 2]))*
ArcTanh[Rt[-b, 2]*(x/Rt[a, 2])], x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 739

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 745

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
e*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1)/((m + 1)*(c*d^2 + a*e^2))), x] + D
ist[c*(d/(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, d, e, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[m + 2*p + 3, 0]
```

Rule 4827

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(e*(m + 1))), x] -
Dist[b*c*(n/(e*(m + 1))), Int[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1
)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[(((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sin^{-1}(a+bx)}{x^3}\,dx &= \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)}{\left(-\frac{a}{b}+\frac{x}{b}\right)^3}\,dx, x, a+bx\right)}{b}\\
&= -\frac{\sin^{-1}(a+bx)}{2x^2}+\frac{1}{2}\text{Subst}\left(\int \frac{1}{\left(-\frac{a}{b}+\frac{x}{b}\right)^2\sqrt{1-x^2}}\,dx, x, a+bx\right)\\
&= -\frac{b\sqrt{1-(a+bx)^2}}{2\left(1-a^2\right)x}-\frac{\sin^{-1}(a+bx)}{2x^2}+\frac{(ab)\text{Subst}\left(\int \frac{1}{\left(-\frac{a}{b}+\frac{x}{b}\right)\sqrt{1-x^2}}\,dx, x, a+bx\right)}{2\left(1-a^2\right)}\\
&= -\frac{b\sqrt{1-(a+bx)^2}}{2\left(1-a^2\right)x}-\frac{\sin^{-1}(a+bx)}{2x^2}-\frac{(ab)\text{Subst}\left(\int \frac{1}{\frac{1}{b^2}-\frac{a^2}{b^2}-x^2}\,dx, x, \frac{\frac{1}{b}-\frac{a(a+bx)}{b}}{\sqrt{1-(a+bx)^2}}\right)}{2\left(1-a^2\right)}\\
&= -\frac{b\sqrt{1-(a+bx)^2}}{2\left(1-a^2\right)x}-\frac{\sin^{-1}(a+bx)}{2x^2}-\frac{ab^2\tanh^{-1}\left(\frac{1-a(a+bx)}{\sqrt{1-a^2}\sqrt{1-(a+bx)^2}}\right)}{2\left(1-a^2\right)^{3/2}}
\end{aligned}$$

Mathematica [A]
time = 0.14, size = 125, normalized size = 1.21

$$-\frac{\text{ArcSin}(a+bx)+\frac{bx\left(\sqrt{1-a^2}\sqrt{1-a^2-2abx-b^2x^2}-abx\log(x)+abx\log\left(1-a^2-abx+\sqrt{1-a^2}\sqrt{1-a^2-2abx-b^2x^2}\right)\right)}{\left(1-a^2\right)^{3/2}}}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]/x^3,x]
```

```
[Out] -1/2*(ArcSin[a + b*x] + (b*x*(Sqrt[1 - a^2]*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^
2] - a*b*x*Log[x] + a*b*x*Log[1 - a^2 - a*b*x + Sqrt[1 - a^2]*Sqrt[1 - a^2
- 2*a*b*x - b^2*x^2]]))/(1 - a^2)^(3/2))/x^2
```

Maple [A]
time = 0.01, size = 124, normalized size = 1.20

method	result
derivativedivides	$b^2\left(-\frac{\arcsin(bx+a)}{2b^2x^2}-\frac{\sqrt{-b^2x^2-2abx-a^2+1}}{2(-a^2+1)bx}-\frac{a\ln\left(\frac{-2a^2+2-2abx+2\sqrt{-a^2+1}\,\sqrt{-b^2x^2-}}{bx}\right.}{2(-a^2+1)^{\frac{3}{2}}}\right.$
default	$b^2\left(-\frac{\arcsin(bx+a)}{2b^2x^2}-\frac{\sqrt{-b^2x^2-2abx-a^2+1}}{2(-a^2+1)bx}-\frac{a\ln\left(\frac{-2a^2+2-2abx+2\sqrt{-a^2+1}\,\sqrt{-b^2x^2-}}{bx}\right.}{2(-a^2+1)^{\frac{3}{2}}}\right.$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)/x^3,x,method=_RETURNVERBOSE)
```

```
[Out] b^2*(-1/2*arcsin(b*x+a)/b^2/x^2-1/2/(-a^2+1)/b/x*(-b^2*x^2-2*a*b*x-a^2+1)^(
1/2)-1/2*a/(-a^2+1)^(3/2)*ln((-2*a^2+2-2*a*b*x+2*(-a^2+1)^(1/2)*(-b^2*x^2-2
*a*b*x-a^2+1)^(1/2))/b/x))
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a-1>0)', see `assume?` for more det
ails)Is
```

Fricas [A]
time = 3.45, size = 325, normalized size = 3.16

$$\left[-\frac{\sqrt{-a^2+1}\,ab^2x^2\log\left(\frac{(2a^2-1)b^2x^2+2a^4+4(a^3-a)bx-2\sqrt{-b^2x^2-2abx-a^2+1}\,(abx+a^2-1)\sqrt{-a^2+1}-4a^2+2}{x^2}\right)-2\sqrt{-b^2x^2-2abx-a^2+1}\,(a^2-1)bx+2(a^4-2a^2+1)\arcsin(bx+a)}{4(a^4-2a^2+1)x^2},\,-\frac{\sqrt{a^2-1}\,ab^2x^2\arctan\left(\frac{\sqrt{-b^2x^2-2abx-a^2+1}\,(abx+a^2-1)\sqrt{a^2-1}}{(a^2-1)b^2x^2+a^4+2(a^3-a)bx-2a^2+1}\right)-\sqrt{-b^2x^2-2abx-a^2+1}\,(a^2-1)bx+(a^4-2a^2+1)\arcsin(bx+a)}{2(a^4-2a^2+1)x^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/x^3,x, algorithm="fricas")
```

```
[Out] [-1/4*(sqrt(-a^2 + 1)*a*b^2*x^2*log(((2*a^2 - 1)*b^2*x^2 + 2*a^4 + 4*(a^3 -
 a)*b*x - 2*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(a*b*x + a^2 - 1)*sqrt(-a^2
+ 1) - 4*a^2 + 2)/x^2) - 2*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(a^2 - 1)*b*x
 + 2*(a^4 - 2*a^2 + 1)*arcsin(b*x + a))/((a^4 - 2*a^2 + 1)*x^2), -1/2*(sqrt
(a^2 - 1)*a*b^2*x^2*arctan(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(a*b*x + a^2
- 1)*sqrt(a^2 - 1)/((a^2 - 1)*b^2*x^2 + a^4 + 2*(a^3 - a)*b*x - 2*a^2 + 1))
 - sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(a^2 - 1)*b*x + (a^4 - 2*a^2 + 1)*arc
sin(b*x + a))/((a^4 - 2*a^2 + 1)*x^2)]
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}\left(a+bx\right)}{x^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)/x**3,x)
```

```
[Out] Integral(asin(a + b*x)/x**3, x)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 243 vs. 2(87) = 174.
time = 0.42, size = 243, normalized size = 2.36

$$-\left(\frac{ab^{2}\arctan\left(\frac{\frac{\left(\sqrt{-b^{2}x^{2}-2\,abx-a^{2}+1}\,|b|+b\right)a}{b^{2}x+ab}-1}{\sqrt{a^{2}-1}}\right)}{\left(a^{2}|b|-|b|\right)\sqrt{a^{2}-1}}-\frac{ab^{2}-\frac{\left(\sqrt{-b^{2}x^{2}-2\,abx-a^{2}+1}\,|b|+b\right)b^{2}}{b^{2}x+ab}}{\left(a^{3}|b|-a|b|\right)\left(\frac{\left(\sqrt{-b^{2}x^{2}-2\,abx-a^{2}+1}\,|b|+b\right)^{2}a}{\left(b^{2}x+ab\right)^{2}}+a-\frac{2\left(\sqrt{-b^{2}x^{2}-2\,abx-a^{2}+1}\,|b|+b\right)}{b^{2}x+ab}\right)}\right)b-\frac{\arcsin\left(bx+a\right)}{2\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/x^3,x, algorithm="giac")
```

```
[Out] -(a*b^2*arctan(((sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)*a/(b^2*x +
a*b) - 1)/sqrt(a^2 - 1))/((a^2*abs(b) - abs(b))*sqrt(a^2 - 1)) - (a*b^2 - (
sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)*b^2/(b^2*x + a*b))/((a^3*abs
(b) - a*abs(b))*((sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)^2*a/(b^2*x
 + a*b)^2 + a - 2*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)/(b^2*x +
a*b))))*b - 1/2*arcsin(b*x + a)/x^2
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\mathrm{asin}\left(a+b\,x\right)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)/x^3,x)
```

```
[Out] int(asin(a + b*x)/x^3, x)
```

3.129 $\int \frac{\text{ArcSin}(a+bx)}{x^4}\,dx$

Optimal. Leaf size=144

$$-\frac{b\sqrt{1-(a+bx)^2}}{6(1-a^2)x^2}-\frac{ab^2\sqrt{1-(a+bx)^2}}{2(1-a^2)^2x}-\frac{\text{ArcSin}(a+bx)}{3x^3}-\frac{(1+2a^2)b^3\tanh^{-1}\left(\frac{1-a(a+bx)}{\sqrt{1-a^2}\sqrt{1-(a+bx)^2}}\right)}{6(1-a^2)^{5/2}}$$

```
[Out] -1/3*arcsin(b*x+a)/x^3-1/6*(2*a^2+1)*b^3*arctanh((1-a*(b*x+a))/(-a^2+1)^(1/
2)/(1-(b*x+a)^2)^(1/2))/(-a^2+1)^(5/2)-1/6*b*(1-(b*x+a)^2)^(1/2)/(-a^2+1)/x
^2-1/2*a*b^2*(1-(b*x+a)^2)^(1/2)/(-a^2+1)^2/x
```

Rubi [A]
time = 0.12, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.600$, Rules used = {4889, 4827, 759, 821, 739, 212}

$$-\frac{(2a^2+1)b^3\tanh^{-1}\left(\frac{1-a(a+bx)}{\sqrt{1-a^2}\sqrt{1-(a+bx)^2}}\right)}{6(1-a^2)^{5/2}}-\frac{ab^2\sqrt{1-(a+bx)^2}}{2(1-a^2)^2x}-\frac{b\sqrt{1-(a+bx)^2}}{6(1-a^2)x^2}-\frac{\text{ArcSin}(a+bx)}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]/x^4,x]
```

```
[Out] -1/6*(b*Sqrt[1 - (a + b*x)^2])/((1 - a^2)*x^2) - (a*b^2*Sqrt[1 - (a + b*x)^
2])/(2*(1 - a^2)^2*x) - ArcSin[a + b*x]/(3*x^3) - ((1 + 2*a^2)*b^3*ArcTanh[
(1 - a*(a + b*x))/(Sqrt[1 - a^2]*Sqrt[1 - (a + b*x)^2])])/(6*(1 - a^2)^(5/2
))
```

Rule 212

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1/(Rt[a, 2]*Rt[-b, 2]))*
ArcTanh[Rt[-b, 2]*(x/Rt[a, 2])], x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 739

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 759

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
e*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1)/((m + 1)*(c*d^2 + a*e^2))), x] + D
ist[c/((m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)*Simp[d*(m + 1) - e*(
```

```
m + 2*p + 3)*x, x]*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, m, p}, x] &&
 NeQ[c*d^2 + a*e^2, 0] && NeQ[m, -1] && ((LtQ[m, -1] && IntQuadraticQ[a, 0,
 c, d, e, m, p, x]) || (SumSimplerQ[m, 1] && IntegerQ[p]) || ILtQ[Simplify[
m + 2*p + 3], 0])
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(-(e*f - d*g))*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1
)/(2*(p + 1)*(c*d^2 + a*e^2))), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2),
Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m,
p}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 4827

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(e*(m + 1))), x] -
Dist[b*c*(n/(e*(m + 1))), Int[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1
)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{\sin^{-1}(a+bx)}{x^4}\,dx = \frac{\mathrm{Subst}\left(\int \frac{\sin^{-1}(x)}{\left(-\frac{a}{b}+\frac{x}{b}\right)^4}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{\sin^{-1}(a+bx)}{3x^3} + \frac{1}{3}\mathrm{Subst}\left(\int \frac{1}{\left(-\frac{a}{b}+\frac{x}{b}\right)^3\sqrt{1-x^2}}\,dx, x, a+bx\right)$$

$$= -\frac{b\sqrt{1-(a+bx)^2}}{6\,(1-a^2)\,x^2} - \frac{\sin^{-1}(a+bx)}{3x^3} + \frac{b^2\mathrm{Subst}\left(\int \frac{\frac{2a}{b}+\frac{x}{b}}{\left(-\frac{a}{b}+\frac{x}{b}\right)^2\sqrt{1-x^2}}\,dx, x, a+bx\right)}{6\,(1-a^2)}$$

$$= -\frac{b\sqrt{1-(a+bx)^2}}{6\,(1-a^2)\,x^2} - \frac{ab^2\sqrt{1-(a+bx)^2}}{2\,(1-a^2)^2\,x} - \frac{\sin^{-1}(a+bx)}{3x^3} + \frac{((1+2a^2)\,b^2)\,\mathrm{Subst}\Big(}{}$$

$$= -\frac{b\sqrt{1-(a+bx)^2}}{6\,(1-a^2)\,x^2} - \frac{ab^2\sqrt{1-(a+bx)^2}}{2\,(1-a^2)^2\,x} - \frac{\sin^{-1}(a+bx)}{3x^3} - \frac{((1+2a^2)\,b^2)\,\mathrm{Subst}\Big(}{}$$

$$= -\frac{b\sqrt{1-(a+bx)^2}}{6\,(1-a^2)\,x^2} - \frac{ab^2\sqrt{1-(a+bx)^2}}{2\,(1-a^2)^2\,x} - \frac{\sin^{-1}(a+bx)}{3x^3} - \frac{(1+2a^2)\,b^3\tanh^{-1}\Big(}{6\,(}$$

Mathematica [A]
time = 0.15, size = 166, normalized size = 1.15

$$\frac{\sqrt{1-a^2}\,bx(-1+a^2-3abx)\sqrt{1-a^2-2abx-b^2x^2} - 2(1-a^2)^{5/2}\,\mathrm{ArcSin}(a+bx) + (1+2a^2)\,b^3x^3\log(x) - (1+2a^2)\,b^3x^3\log\left(1-a^2-abx+\sqrt{1-a^2}\sqrt{1-a^2-2abx-b^2x^2}\right)}{6\,(1-a^2)^{5/2}\,x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]/x^4,x]
```

```
[Out] (Sqrt[1 - a^2]*b*x*(-1 + a^2 - 3*a*b*x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2] -
 2*(1 - a^2)^(5/2)*ArcSin[a + b*x] + (1 + 2*a^2)*b^3*x^3*Log[x] - (1 + 2*a^
2)*b^3*x^3*Log[1 - a^2 - a*b*x + Sqrt[1 - a^2]*Sqrt[1 - a^2 - 2*a*b*x - b^2
*x^2]])/(6*(1 - a^2)^(5/2)*x^3)
```

Maple [A]
time = 0.01, size = 240, normalized size = 1.67

method	result

derivativedivides	$b^3\left(-\frac{\arcsin(bx+a)}{3b^3x^3}-\frac{\sqrt{-b^2x^2-2abx-a^2+1}}{6(-a^2+1)b^2x^2}+\frac{a\left(-\frac{\sqrt{-b^2x^2-2abx-a^2+1}}{\left(-a^2+1\right)bx}-\frac{a\ln\left(\frac{-2a^2\cdots}{\cdots}\right.}{\cdots}\right.}{\cdots}\right.$
default	$b^3\left(-\frac{\arcsin(bx+a)}{3b^3x^3}-\frac{\sqrt{-b^2x^2-2abx-a^2+1}}{6(-a^2+1)b^2x^2}+\frac{a\left(-\frac{\sqrt{-b^2x^2-2abx-a^2+1}}{\left(-a^2+1\right)bx}-\frac{a\ln\left(\frac{-2a^2\cdots}{\cdots}\right.}{\cdots}\right.}{\cdots}\right.$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)/x^4,x,method=_RETURNVERBOSE)
```

```
[Out] b^3*(-1/3*arcsin(b*x+a)/b^3/x^3-1/6/(-a^2+1)/b^2/x^2*(-b^2*x^2-2*a*b*x-a^2+
1)^(1/2)+1/2*a/(-a^2+1)*(-1/(-a^2+1)/b/x*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)-a/(
-a^2+1)^(3/2)*ln((-2*a^2+2-2*a*b*x+2*(-a^2+1)^(1/2)*(-b^2*x^2-2*a*b*x-a^2+1
)^(1/2))/b/x))-1/6/(-a^2+1)^(3/2)*ln((-2*a^2+2-2*a*b*x+2*(-a^2+1)^(1/2)*(-b
^2*x^2-2*a*b*x-a^2+1)^(1/2))/b/x))
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/x^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a-1>0)', see `assume?` for more det
ails)Is
```

Fricas [A]
time = 3.45, size = 404, normalized size = 2.81

$$\left[-\frac{(2a^2+1)\sqrt{-a^2+1}\,b^3x^3\log\left(\frac{(2a^2-1)b^2x^2+2a^4+4(a^3-a)bx+2\sqrt{-b^2x^2-2abx-a^2+1}\,(abx+a^2-1)\sqrt{-a^2+1}-4a^2+2}{x^2}\right)+4(a^6-3a^4+3a^2-1)\arcsin(bx+a)+2(3(a^3-a)b^2x^2-(a^4-2a^2+1)bx)\sqrt{-b^2x^2-2abx-a^2+1}}{12(a^6-3a^4+3a^2-1)x^3},\ \frac{(2a^2+1)\sqrt{a^2-1}\,b^3x^3\arctan\left(\frac{\sqrt{-b^2x^2-2abx-a^2+1}\,(abx+a^2-1)\sqrt{a^2-1}}{(a^2-1)b^2x^2+a^4+2(a^3-a)bx-2a^2+1}\right)-2(a^6-3a^4+3a^2-1)\arcsin(bx+a)-(3(a^3-a)b^2x^2-(a^4-2a^2+1)bx)\sqrt{-b^2x^2-2abx-a^2+1}}{6(a^6-3a^4+3a^2-1)x^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/x^4,x, algorithm="fricas")
```

```
[Out] [-1/12*((2*a^2 + 1)*sqrt(-a^2 + 1)*b^3*x^3*log(((2*a^2 - 1)*b^2*x^2 + 2*a^4
 + 4*(a^3 - a)*b*x + 2*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(a*b*x + a^2 - 1)
*sqrt(-a^2 + 1) - 4*a^2 + 2)/x^2) + 4*(a^6 - 3*a^4 + 3*a^2 - 1)*arcsin(b*x
+ a) + 2*(3*(a^3 - a)*b^2*x^2 - (a^4 - 2*a^2 + 1)*b*x)*sqrt(-b^2*x^2 - 2*a*
b*x - a^2 + 1))/((a^6 - 3*a^4 + 3*a^2 - 1)*x^3), 1/6*((2*a^2 + 1)*sqrt(a^2
- 1)*b^3*x^3*arctan(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(a*b*x + a^2 - 1)*sq
rt(a^2 - 1)/((a^2 - 1)*b^2*x^2 + a^4 + 2*(a^3 - a)*b*x - 2*a^2 + 1)) - 2*(a
^6 - 3*a^4 + 3*a^2 - 1)*arcsin(b*x + a) - (3*(a^3 - a)*b^2*x^2 - (a^4 - 2*a
^2 + 1)*b*x)*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1))/((a^6 - 3*a^4 + 3*a^2 - 1)
*x^3)]
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}\left(a+bx\right)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)/x**4,x)
```

```
[Out] Integral(asin(a + b*x)/x**4, x)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 557 vs. 2(122) = 244.
time = 0.44, size = 557, normalized size = 3.87

$$\frac{1}{3}\,b\left(\frac{(2\,a^2b^3+b^3)\arctan\left(\frac{\frac{\left(\sqrt{-b^2x^2-2\,abx-a^2+1}\,|b|+b\right)a}{b^2x+ab}-1}{\sqrt{a^2-1}}\right)}{(a^4|b|-2\,a^2|b|+|b|)\sqrt{a^2-1}}-\frac{\frac{4\left(\sqrt{-b^2x^2-2\,abx-a^2+1}\,|b|+b\right)^2a^4b^3}{(b^2x+ab)^2}+4\,a^4b^3-\frac{11\left(\sqrt{-b^2x^2-2\,abx-a^2+1}\,|b|+b\right)a^3b^3}{b^2x+ab}-\frac{5\left(\sqrt{-b^2x^2-2\,abx-a^2+1}\,|b|+b\right)^3a^3b^3}{(b^2x+ab)^3}+\frac{7\left(\sqrt{-b^2x^2-2\,abx-a^2+1}\,|b|+b\right)^2a^2b^3}{(b^2x+ab)^2}-a^2b^3+\frac{2\left(\sqrt{-b^2x^2-2\,abx-a^2+1}\,|b|+b\right)ab^3}{b^2x+ab}+\frac{2\left(\sqrt{-b^2x^2-2\,abx-a^2+1}\,|b|+b\right)^3ab^3}{(b^2x+ab)^3}-\frac{2\left(\sqrt{-b^2x^2-2\,abx-a^2+1}\,|b|+b\right)^2b^3}{(b^2x+ab)^2}}{(a^6|b|-2\,a^4|b|+a^2|b|)\left(\frac{\left(\sqrt{-b^2x^2-2\,abx-a^2+1}\,|b|+b\right)^2a}{(b^2x+ab)^2}+a-\frac{2\left(\sqrt{-b^2x^2-2\,abx-a^2+1}\,|b|+b\right)}{b^2x+ab}\right)^2}\right)-\frac{\arcsin\left(bx+a\right)}{3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/x^4,x, algorithm="giac")
```

```
[Out] 1/3*b*((2*a^2*b^3 + b^3)*arctan(((sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b)
 + b)*a/(b^2*x + a*b) - 1)/sqrt(a^2 - 1))/((a^4*abs(b) - 2*a^2*abs(b) + abs
(b))*sqrt(a^2 - 1)) - (4*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)^2*
a^4*b^3/(b^2*x + a*b)^2 + 4*a^4*b^3 - 11*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1
)*abs(b) + b)*a^3*b^3/(b^2*x + a*b) - 5*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)
*abs(b) + b)^3*a^3*b^3/(b^2*x + a*b)^3 + 7*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 +
 1)*abs(b) + b)^2*a^2*b^3/(b^2*x + a*b)^2 - a^2*b^3 + 2*(sqrt(-b^2*x^2 - 2*
a*b*x - a^2 + 1)*abs(b) + b)*a*b^3/(b^2*x + a*b) + 2*(sqrt(-b^2*x^2 - 2*a*b
*x - a^2 + 1)*abs(b) + b)^3*a*b^3/(b^2*x + a*b)^3 - 2*(sqrt(-b^2*x^2 - 2*a*
b*x - a^2 + 1)*abs(b) + b)^2*b^3/(b^2*x + a*b)^2)/((a^6*abs(b) - 2*a^4*abs(
b) + a^2*abs(b))*((sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)^2*a/(b^2*
x + a*b)^2 + a - 2*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)/(b^2*x +
 a*b))^2)) - 1/3*arcsin(b*x + a)/x^3
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\mathrm{asin}(a+b\,x)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)/x^4,x)
```

```
[Out] int(asin(a + b*x)/x^4, x)
```

3.130 $\int \frac{\text{ArcSin}(a+bx)}{x^5} \, dx$

Optimal. Leaf size=186

$$-\frac{b\sqrt{1-(a+bx)^2}}{12(1-a^2)x^3}-\frac{5ab^2\sqrt{1-(a+bx)^2}}{24(1-a^2)^2x^2}-\frac{(4+11a^2)b^3\sqrt{1-(a+bx)^2}}{24(1-a^2)^3x}-\frac{\text{ArcSin}(a+bx)}{4x^4}-\frac{a(3+2a^2)b}{}$$

```
[Out] -1/4*arcsin(b*x+a)/x^4-1/8*a*(2*a^2+3)*b^4*arctanh((1-a*(b*x+a))/(-a^2+1)^(
1/2)/(1-(b*x+a)^2)^(1/2))/(-a^2+1)^(7/2)-1/12*b*(1-(b*x+a)^2)^(1/2)/(-a^2+1
)/x^3-5/24*a*b^2*(1-(b*x+a)^2)^(1/2)/(-a^2+1)^2/x^2-1/24*(11*a^2+4)*b^3*(1-
(b*x+a)^2)^(1/2)/(-a^2+1)^3/x
```

Rubi [A]
time = 0.19, antiderivative size = 186, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.700$, Rules used = {4889, 4827, 759, 849, 821, 739, 212}

$$-\frac{a(2a^2+3)b^4\tanh^{-1}\left(\frac{1-a(a+bx)}{\sqrt{1-a^2}\sqrt{1-(a+bx)^2}}\right)}{8(1-a^2)^{7/2}}-\frac{(11a^2+4)b^3\sqrt{1-(a+bx)^2}}{24(1-a^2)^3x}-\frac{5ab^2\sqrt{1-(a+bx)^2}}{24(1-a^2)^2x^2}-\frac{b\sqrt{1-(a+bx)^2}}{12(1-a^2)x^3}-\frac{\text{ArcSin}(a+bx)}{4x^4}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]/x^5,x]
```

```
[Out] -1/12*(b*Sqrt[1 - (a + b*x)^2])/((1 - a^2)*x^3) - (5*a*b^2*Sqrt[1 - (a + b*
x)^2])/(24*(1 - a^2)^2*x^2) - ((4 + 11*a^2)*b^3*Sqrt[1 - (a + b*x)^2])/(24*
(1 - a^2)^3*x) - ArcSin[a + b*x]/(4*x^4) - (a*(3 + 2*a^2)*b^4*ArcTanh[(1 -
a*(a + b*x))/(Sqrt[1 - a^2]*Sqrt[1 - (a + b*x)^2])])/(8*(1 - a^2)^(7/2))
```

Rule 212

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1/(Rt[a, 2]*Rt[-b, 2]))*
ArcTanh[Rt[-b, 2]*(x/Rt[a, 2])], x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 739

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 759

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
e*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1)/((m + 1)*(c*d^2 + a*e^2))), x] + D
ist[c/((m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 1)*Simp[d*(m + 1) - e*(
```

```
m + 2*p + 3)*x, x]*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, m, p}, x] &&
 NeQ[c*d^2 + a*e^2, 0] && NeQ[m, -1] && ((LtQ[m, -1] && IntQuadraticQ[a, 0,
 c, d, e, m, p, x]) || (SumSimplerQ[m, 1] && IntegerQ[p]) || ILtQ[Simplify[
m + 2*p + 3], 0])
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(-(e*f - d*g))*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1
)/(2*(p + 1)*(c*d^2 + a*e^2))), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2),
Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m,
p}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 849

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(e*f - d*g)*(d + e*x)^(m + 1)*((a + c*x^2)^(p + 1)/(
(m + 1)*(c*d^2 + a*e^2))), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 4827

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(e*(m + 1))), x] -
Dist[b*c*(n/(e*(m + 1))), Int[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1
)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{\sin^{-1}(a+bx)}{x^5}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)}{\left(-\frac{a}{b}+\frac{x}{b}\right)^5}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{\sin^{-1}(a+bx)}{4x^4} + \frac{1}{4}\text{Subst}\left(\int \frac{1}{\left(-\frac{a}{b}+\frac{x}{b}\right)^4\sqrt{1-x^2}}\,dx, x, a+bx\right)$$

$$= -\frac{b\sqrt{1-(a+bx)^2}}{12(1-a^2)x^3} - \frac{\sin^{-1}(a+bx)}{4x^4} + \frac{b^2\text{Subst}\left(\int \frac{\frac{3a}{b}+\frac{2x}{b}}{\left(-\frac{a}{b}+\frac{x}{b}\right)^3\sqrt{1-x^2}}\,dx, x, a+bx\right)}{12(1-a^2)}$$

$$= -\frac{b\sqrt{1-(a+bx)^2}}{12(1-a^2)x^3} - \frac{5ab^2\sqrt{1-(a+bx)^2}}{24(1-a^2)^2x^2} - \frac{\sin^{-1}(a+bx)}{4x^4} - \frac{b^4\text{Subst}\left(\int \frac{-\frac{2(2+3\cdots}{b^2}}{\left(-\frac{a}{b}+\frac{x}{b}\right)^2\cdots}\cdots\right)}{24(\cdots}$$

$$= -\frac{b\sqrt{1-(a+bx)^2}}{12(1-a^2)x^3} - \frac{5ab^2\sqrt{1-(a+bx)^2}}{24(1-a^2)^2x^2} - \frac{(4+11a^2)b^3\sqrt{1-(a+bx)^2}}{24(1-a^2)^3x} - \frac{\sin^{\cdots}}{\cdots}$$

$$= -\frac{b\sqrt{1-(a+bx)^2}}{12(1-a^2)x^3} - \frac{5ab^2\sqrt{1-(a+bx)^2}}{24(1-a^2)^2x^2} - \frac{(4+11a^2)b^3\sqrt{1-(a+bx)^2}}{24(1-a^2)^3x} - \frac{\sin^{\cdots}}{\cdots}$$

$$= -\frac{b\sqrt{1-(a+bx)^2}}{12(1-a^2)x^3} - \frac{5ab^2\sqrt{1-(a+bx)^2}}{24(1-a^2)^2x^2} - \frac{(4+11a^2)b^3\sqrt{1-(a+bx)^2}}{24(1-a^2)^3x} - \frac{\sin^{\cdots}}{\cdots}$$

Mathematica [A]
time = 0.16, size = 194, normalized size = 1.04

$$\frac{1}{8}\left(\frac{b\sqrt{1-a^2-2abx-b^2x^2}\,(2+2a^4+5abx-5a^3bx+4b^2x^2+a^2(-4+11b^2x^2))}{3(-1+a^2)^3x^3} - \frac{2\text{ArcSin}(a+bx)}{x^4} + \frac{a(3+2a^2)b^4\log(x)}{(1-a^2)^{7/2}} - \frac{a(3+2a^2)b^4\log\left(1-a^2-abx+\sqrt{1-a^2}\sqrt{1-a^2-2abx-b^2x^2}\right)}{(1-a^2)^{7/2}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]/x^5,x]
```

```
[Out] ((b*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*(2 + 2*a^4 + 5*a*b*x - 5*a^3*b*x + 4*
b^2*x^2 + a^2*(-4 + 11*b^2*x^2))))/(3*(-1 + a^2)^3*x^3) - (2*ArcSin[a + b*x]
)/x^4 + (a*(3 + 2*a^2)*b^4*Log[x])/(1 - a^2)^(7/2) - (a*(3 + 2*a^2)*b^4*Log
[1 - a^2 - a*b*x + Sqrt[1 - a^2]*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]])/(1 - a
^2)^(7/2))/8
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 407 vs. 2(164) = 328.
time = 0.01, size = 408, normalized size = 2.19

method	result
derivativedivides	$b^4 \left(-\frac{\arcsin(bx+a)}{4b^4x^4} - \frac{\sqrt{-b^2x^2-2abx-a^2+1}}{12(-a^2+1)b^3x^3} + \frac{5a\left(-\frac{\sqrt{-b^2x^2-2abx-a^2+1}}{2(-a^2+1)b^2x^2} + \frac{3a\left(-\frac{\sqrt{-}}{}\right.}{}\right.}{}\right.$
default	$b^4 \left(-\frac{\arcsin(bx+a)}{4b^4x^4} - \frac{\sqrt{-b^2x^2-2abx-a^2+1}}{12(-a^2+1)b^3x^3} + \frac{5a\left(-\frac{\sqrt{-b^2x^2-2abx-a^2+1}}{2(-a^2+1)b^2x^2} + \frac{3a\left(-\frac{\sqrt{-}}{}\right.}{}\right.}{}\right.$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)/x^5,x,method=_RETURNVERBOSE)
```

```
[Out] b^4*(-1/4*arcsin(b*x+a)/b^4/x^4-1/12/(-a^2+1)/b^3/x^3*(-b^2*x^2-2*a*b*x-a^2
+1)^(1/2)+5/12*a/(-a^2+1)*(-1/2/(-a^2+1)/b^2/x^2*(-b^2*x^2-2*a*b*x-a^2+1)^(
1/2)+3/2*a/(-a^2+1)*(-1/(-a^2+1)/b/x*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)-a/(-a^2
+1)^(3/2)*ln((-2*a^2+2-2*a*b*x+2*(-a^2+1)^(1/2)*(-b^2*x^2-2*a*b*x-a^2+1)^(1
/2))/b/x))-1/2/(-a^2+1)^(3/2)*ln((-2*a^2+2-2*a*b*x+2*(-a^2+1)^(1/2)*(-b^2*x
^2-2*a*b*x-a^2+1)^(1/2))/b/x))+1/6/(-a^2+1)*(-1/(-a^2+1)/b/x*(-b^2*x^2-2*a*
b*x-a^2+1)^(1/2)-a/(-a^2+1)^(3/2)*ln((-2*a^2+2-2*a*b*x+2*(-a^2+1)^(1/2)*(-b
^2*x^2-2*a*b*x-a^2+1)^(1/2))/b/x)))
```

Maxima [F(-2)]

time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/x^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a-1>0)', see `assume?` for more det
ails)Is
```

Fricas [A]
time = 3.61, size = 484, normalized size = 2.60

$$\left[-\frac{3\,(2\,a^{3}+3\,a)\sqrt{-a^{2}+1}\,b^{4}x^{4}\log\left(\frac{(2\,a^{2}-1)\,b^{2}x^{2}+2\,a^{4}+4\,(a^{3}-a)\,bx-2\,\sqrt{-b^{2}x^{2}-2\,abx-a^{2}+1}\,(abx+a^{2}-1)\sqrt{-a^{2}+1}-4\,a^{2}+2}{x^{2}}\right)+12\,(a^{8}-4\,a^{6}+6\,a^{4}-4\,a^{2}+1)\arcsin\left(bx+a\right)-2\,\left((11\,a^{4}-7\,a^{2}-4)\,b^{3}x^{3}-5\,(a^{5}-2\,a^{3}+a)\,b^{2}x^{2}+2\,(a^{6}-3\,a^{4}+3\,a^{2}-1)\,bx\right)\sqrt{-b^{2}x^{2}-2\,abx-a^{2}+1}}{48\,(a^{8}-4\,a^{6}+6\,a^{4}-4\,a^{2}+1)\,x^{4}},\ -\frac{3\,(2\,a^{3}+3\,a)\sqrt{a^{2}-1}\,b^{4}x^{4}\arctan\left(\frac{\sqrt{-b^{2}x^{2}-2\,abx-a^{2}+1}\,(abx+a^{2}-1)\sqrt{a^{2}-1}}{(a^{2}-1)\,b^{2}x^{2}+a^{4}+2\,(a^{3}-a)\,bx-2\,a^{2}+1}\right)+6\,(a^{8}-4\,a^{6}+6\,a^{4}-4\,a^{2}+1)\arcsin\left(bx+a\right)-\left((11\,a^{4}-7\,a^{2}-4)\,b^{3}x^{3}-5\,(a^{5}-2\,a^{3}+a)\,b^{2}x^{2}+2\,(a^{6}-3\,a^{4}+3\,a^{2}-1)\,bx\right)\sqrt{-b^{2}x^{2}-2\,abx-a^{2}+1}}{24\,(a^{8}-4\,a^{6}+6\,a^{4}-4\,a^{2}+1)\,x^{4}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/x^5,x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(2*a^3 + 3*a)*sqrt(-a^2 + 1)*b^4*x^4*log(((2*a^2 - 1)*b^2*x^2 + 2
*a^4 + 4*(a^3 - a)*b*x - 2*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(a*b*x + a^2
- 1)*sqrt(-a^2 + 1) - 4*a^2 + 2)/x^2) + 12*(a^8 - 4*a^6 + 6*a^4 - 4*a^2 + 1
)*arcsin(b*x + a) - 2*((11*a^4 - 7*a^2 - 4)*b^3*x^3 - 5*(a^5 - 2*a^3 + a)*b
^2*x^2 + 2*(a^6 - 3*a^4 + 3*a^2 - 1)*b*x)*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1
))/((a^8 - 4*a^6 + 6*a^4 - 4*a^2 + 1)*x^4), -1/24*(3*(2*a^3 + 3*a)*sqrt(a^2
 - 1)*b^4*x^4*arctan(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(a*b*x + a^2 - 1)*s
qrt(a^2 - 1)/((a^2 - 1)*b^2*x^2 + a^4 + 2*(a^3 - a)*b*x - 2*a^2 + 1)) + 6*(
a^8 - 4*a^6 + 6*a^4 - 4*a^2 + 1)*arcsin(b*x + a) - ((11*a^4 - 7*a^2 - 4)*b^
3*x^3 - 5*(a^5 - 2*a^3 + a)*b^2*x^2 + 2*(a^6 - 3*a^4 + 3*a^2 - 1)*b*x)*sqrt
(-b^2*x^2 - 2*a*b*x - a^2 + 1))/((a^8 - 4*a^6 + 6*a^4 - 4*a^2 + 1)*x^4)]
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}{\left(a + bx \right)}}{x^{5}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)/x**5,x)
```

```
[Out] Integral(asin(a + b*x)/x**5, x)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 1112 vs. $2(158) = 316$.
time = 0.45, size = 1112, normalized size = 5.98

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/x^5,x, algorithm="giac")
```

```
[Out] -1/12*b*(3*(2*a^3*b^4 + 3*a*b^4)*arctan(((sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1
)*abs(b) + b)*a/(b^2*x + a*b) - 1)/sqrt(a^2 - 1))/((a^6*abs(b) - 3*a^4*abs(
b) + 3*a^2*abs(b) - abs(b))*sqrt(a^2 - 1)) - (36*(sqrt(-b^2*x^2 - 2*a*b*x -
 a^2 + 1)*abs(b) + b)^2*a^7*b^4/(b^2*x + a*b)^2 + 18*(sqrt(-b^2*x^2 - 2*a*b
*x - a^2 + 1)*abs(b) + b)^4*a^7*b^4/(b^2*x + a*b)^4 + 18*a^7*b^4 - 81*(sqrt
(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)*a^6*b^4/(b^2*x + a*b) - 108*(sqr
t(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)^3*a^6*b^4/(b^2*x + a*b)^3 - 27*
(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)^5*a^6*b^4/(b^2*x + a*b)^5 +
 120*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)^2*a^5*b^4/(b^2*x + a*b
)^2 + 81*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)^4*a^5*b^4/(b^2*x +
 a*b)^4 - 5*a^5*b^4 + 12*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)*a^
4*b^4/(b^2*x + a*b) - 42*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b)^3*
a^4*b^4/(b^2*x + a*b)^3 + 18*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b) + b
)^5*a^4*b^4/(b^2*x + a*b)^5 - 18*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*abs(b)
 + b)^2*a^3*b^4/(b^2*x + a*b)^2 - 36*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*ab
s(b) + b)^4*a^3*b^4/(b^2*x + a*b)^4 + 2*a^3*b^4 - 6*(sqrt(-b^2*x^2 - 2*a*b*
x - a^2 + 1)*abs(b) + b)*a^2*b^4/(b^2*x + a*b) + 8*(sqrt(-b^2*x^2 - 2*a*b*x
 - a^2 + 1)*abs(b) + b)^3*a^2*b^4/(b^2*x + a*b)^3 - 6*(sqrt(-b^2*x^2 - 2*a*
b*x - a^2 + 1)*abs(b) + b)^5*a^2*b^4/(b^2*x + a*b)^5 + 12*(sqrt(-b^2*x^2 -
2*a*b*x - a^2 + 1)*abs(b) + b)^2*a*b^4/(b^2*x + a*b)^2 + 12*(sqrt(-b^2*x^2
- 2*a*b*x - a^2 + 1)*abs(b) + b)^4*a*b^4/(b^2*x + a*b)^4 - 8*(sqrt(-b^2*x^2
 - 2*a*b*x - a^2 + 1)*abs(b) + b)^3*b^4/(b^2*x + a*b)^3)/((a^9*abs(b) - 3*a
^7*abs(b) + 3*a^5*abs(b) - a^3*abs(b))*((sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)
*abs(b) + b)^2*a/(b^2*x + a*b)^2 + a - 2*(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1
)*abs(b) + b)/(b^2*x + a*b))^3)) - 1/4*arcsin(b*x + a)/x^4
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\operatorname{asin}(a+b\,x)}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)/x^5,x)
```

```
[Out] int(asin(a + b*x)/x^5, x)
```

3.131 $\int x^3 \textbf{ArcSin}(a+bx)^2\,dx$

Optimal. Leaf size=343

$$\frac{4ax}{3b^3}+\frac{2a^3x}{b^3}-\frac{3(a+bx)^2}{32b^4}-\frac{3a^2(a+bx)^2}{4b^4}+\frac{2a(a+bx)^3}{9b^4}-\frac{(a+bx)^4}{32b^4}-\frac{4a\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)}{3b^4}-\frac{2a^3}{}$$

```
[Out] 4/3*a*x/b^3+2*a^3*x/b^3-3/32*(b*x+a)^2/b^4-3/4*a^2*(b*x+a)^2/b^4+2/9*a*(b*x
+a)^3/b^4-1/32*(b*x+a)^4/b^4-3/32*arcsin(b*x+a)^2/b^4-3/4*a^2*arcsin(b*x+a)
^2/b^4-1/4*a^4*arcsin(b*x+a)^2/b^4+1/4*x^4*arcsin(b*x+a)^2-4/3*a*arcsin(b*x
+a)*(1-(b*x+a)^2)^(1/2)/b^4-2*a^3*arcsin(b*x+a)*(1-(b*x+a)^2)^(1/2)/b^4+3/1
6*(b*x+a)*arcsin(b*x+a)*(1-(b*x+a)^2)^(1/2)/b^4+3/2*a^2*(b*x+a)*arcsin(b*x+
a)*(1-(b*x+a)^2)^(1/2)/b^4-2/3*a*(b*x+a)^2*arcsin(b*x+a)*(1-(b*x+a)^2)^(1/2
)/b^4+1/8*(b*x+a)^3*arcsin(b*x+a)*(1-(b*x+a)^2)^(1/2)/b^4
```

Rubi [A]
time = 0.39, antiderivative size = 343, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 8, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.667$, Rules used = {4889, 4827, 4847, 4737, 4767, 8, 4795, 30}

$$-\frac{a^4\text{ArcSin}(a+bx)^2}{4b^4}-\frac{2a^3\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)}{b^4}+\frac{2a^3x}{b^3}-\frac{3a^2\text{ArcSin}(a+bx)^2}{4b^4}+\frac{3a^2(a+bx)\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)}{2b^4}-\frac{3a^2(a+bx)^2}{4b^4}-\frac{2a(a+bx)^2\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)}{3b^4}-\frac{4a\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)}{3b^4}-\frac{3\text{ArcSin}(a+bx)^2}{32b^4}+\frac{(a+bx)^3\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)}{8b^4}+\frac{3(a+bx)\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)}{16b^4}+\frac{1}{4}x^4\text{ArcSin}(a+bx)^2+\frac{2a(a+bx)^3}{9b^4}-\frac{(a+bx)^4}{32b^4}-\frac{3(a+bx)^2}{32b^4}+\frac{4ax}{3b^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*ArcSin[a + b*x]^2,x]
```

```
[Out] (4*a*x)/(3*b^3) + (2*a^3*x)/b^3 - (3*(a + b*x)^2)/(32*b^4) - (3*a^2*(a + b*
x)^2)/(4*b^4) + (2*a*(a + b*x)^3)/(9*b^4) - (a + b*x)^4/(32*b^4) - (4*a*Sqr
t[1 - (a + b*x)^2]*ArcSin[a + b*x])/(3*b^4) - (2*a^3*Sqrt[1 - (a + b*x)^2]*
ArcSin[a + b*x])/b^4 + (3*(a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/
(16*b^4) + (3*a^2*(a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/(2*b^4)
- (2*a*(a + b*x)^2*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/(3*b^4) + ((a + b
*x)^3*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/(8*b^4) - (3*ArcSin[a + b*x]^2
)/(32*b^4) - (3*a^2*ArcSin[a + b*x]^2)/(4*b^4) - (a^4*ArcSin[a + b*x]^2)/(4
*b^4) + (x^4*ArcSin[a + b*x]^2)/4
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4827

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(e*(m + 1))), x] -
Dist[b*c*(n/(e*(m + 1))), Int[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1
)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[(((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int x^3 \sin^{-1}(a+bx)^2\,dx = \frac{\text{Subst}\left(\int \left(-\frac{a}{b}+\frac{x}{b}\right)^3 \sin^{-1}(x)^2\,dx, x, a+bx\right)}{b}$$

$$= \frac{1}{4}x^4\sin^{-1}(a+bx)^2 - \frac{1}{2}\text{Subst}\left(\int \frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^4 \sin^{-1}(x)}{\sqrt{1-x^2}}\,dx, x, a+bx\right)$$

$$= \frac{1}{4}x^4\sin^{-1}(a+bx)^2 - \frac{1}{2}\text{Subst}\left(\int \left(\frac{a^4\sin^{-1}(x)}{b^4\sqrt{1-x^2}} - \frac{4a^3x\sin^{-1}(x)}{b^4\sqrt{1-x^2}} + \frac{6a^2x^2\sin^{-1}(x)}{b^4\sqrt{1-x^2}}\right.\right.$$

$$= \frac{1}{4}x^4\sin^{-1}(a+bx)^2 - \frac{\text{Subst}\left(\int \frac{x^4\sin^{-1}(x)}{\sqrt{1-x^2}}\,dx, x, a+bx\right)}{2b^4} + \frac{(2a)\text{Subst}\left(\int \frac{x^3\sin^{-1}(x)}{\sqrt{1-x^2}}\right.}{b^4}$$

$$= -\frac{2a^3\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{b^4} + \frac{3a^2(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{2b^4}$$

$$= \frac{2a^3x}{b^3} - \frac{3a^2(a+bx)^2}{4b^4} + \frac{2a(a+bx)^3}{9b^4} - \frac{(a+bx)^4}{32b^4} - \frac{4a\sqrt{1-(a+bx)^2}\sin^{-1}(a+}{3b^4}$$

$$= \frac{4ax}{3b^3} + \frac{2a^3x}{b^3} - \frac{3(a+bx)^2}{32b^4} - \frac{3a^2(a+bx)^2}{4b^4} + \frac{2a(a+bx)^3}{9b^4} - \frac{(a+bx)^4}{32b^4} - \frac{4a\sqrt{1-}}{}$$

Mathematica [A]
time = 0.12, size = 148, normalized size = 0.43

$$\frac{bx(300a^3-78a^2bx-9bx(3+b^2x^2)+a(330+28b^2x^2))-6\sqrt{1-a^2-2abx-b^2x^2}\,(55a+50a^3-9bx-26a^2bx+14ab^2x^2-6b^3x^3)\,\text{ArcSin}(a+bx)-9(3+24a^2+8a^4-8b^4x^4)\,\text{ArcSin}(a+bx)^2}{288b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*ArcSin[a + b*x]^2,x]
```

```
[Out] (b*x*(300*a^3 - 78*a^2*b*x - 9*b*x*(3 + b^2*x^2) + a*(330 + 28*b^2*x^2)) -
6*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*(55*a + 50*a^3 - 9*b*x - 26*a^2*b*x + 1
4*a*b^2*x^2 - 6*b^3*x^3)*ArcSin[a + b*x] - 9*(3 + 24*a^2 + 8*a^4 - 8*b^4*x^
4)*ArcSin[a + b*x]^2)/(288*b^4)
```

Maple [A]
time = 0.13, size = 436, normalized size = 1.27

method	result

derivativedivides	$\frac{\frac{\arcsin(bx+a)^2\left(-1+(bx+a)^2\right)^2}{4}-\frac{\arcsin(bx+a)\left(-2(bx+a)^3\sqrt{1-(bx+a)^2}+5(bx+a)\sqrt{1-(bx+a)^2}+3\arcsin(bx+\right.}{16}}{}$
default	$\frac{\frac{\arcsin(bx+a)^2\left(-1+(bx+a)^2\right)^2}{4}-\frac{\arcsin(bx+a)\left(-2(bx+a)^3\sqrt{1-(bx+a)^2}+5(bx+a)\sqrt{1-(bx+a)^2}+3\arcsin(bx+\right.}{16}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*arcsin(b*x+a)^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/b^4*(1/4*arcsin(b*x+a)^2*(-1+(b*x+a)^2)^2-1/16*arcsin(b*x+a)*(-2*(b*x+a)^
3*(1-(b*x+a)^2)^(1/2)+5*(b*x+a)*(1-(b*x+a)^2)^(1/2)+3*arcsin(b*x+a))-5/32*a
rcsin(b*x+a)^2-1/128*(2*(b*x+a)^2-5)^2+3/4*a^2*(2*arcsin(b*x+a)^2*(b*x+a)^2
+2*arcsin(b*x+a)*(1-(b*x+a)^2)^(1/2)*(b*x+a)-arcsin(b*x+a)^2-(b*x+a)^2)-1/9
*a*(9*arcsin(b*x+a)^2*(b*x+a)^3+6*arcsin(b*x+a)*(1-(b*x+a)^2)^(1/2)*(b*x+a)
^2-27*arcsin(b*x+a)^2*(b*x+a)-2*(b*x+a)^3-42*arcsin(b*x+a)*(1-(b*x+a)^2)^(1
/2)+42*b*x+42*a)-a^3*(arcsin(b*x+a)^2*(b*x+a)-2*b*x-2*a+2*arcsin(b*x+a)*(1-
(b*x+a)^2)^(1/2))+1/2*arcsin(b*x+a)^2*(-1+(b*x+a)^2)+1/2*arcsin(b*x+a)*((b*
x+a)*(1-(b*x+a)^2)^(1/2)+arcsin(b*x+a))-1/4*(b*x+a)^2-3*a*(arcsin(b*x+a)^2*
(b*x+a)-2*b*x-2*a+2*arcsin(b*x+a)*(1-(b*x+a)^2)^(1/2)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arcsin(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/4*x^4*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))^2 + b*integr
ate(1/2*sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)*x^4*arctan2(b*x + a, sqrt(b*x
+ a + 1)*sqrt(-b*x - a + 1))/(b^2*x^2 + 2*a*b*x + a^2 - 1), x)
```

Fricas [A]
time = 3.55, size = 147, normalized size = 0.43

$$-\frac{9\,b^4x^4-28\,ab^3x^3+3\,(26\,a^2+9)b^2x^2-30\,(10\,a^3+11\,a)bx-9\,(8\,b^4x^4-8\,a^4-24\,a^2-3)\arcsin\left(bx+a\right)^2-6\,(6\,b^3x^3-14\,ab^2x^2-50\,a^3+(26\,a^2+9)bx-55\,a)\sqrt{-b^2x^2-2\,abx-a^2+1}\,\arcsin\left(bx+a\right)}{288\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arcsin(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/288*(9*b^4*x^4 - 28*a*b^3*x^3 + 3*(26*a^2 + 9)*b^2*x^2 - 30*(10*a^3 + 11
*a)*b*x - 9*(8*b^4*x^4 - 8*a^4 - 24*a^2 - 3)*arcsin(b*x + a)^2 - 6*(6*b^3*x
```

```
^3 - 14*a*b^2*x^2 - 50*a^3 + (26*a^2 + 9)*b*x - 55*a)*sqrt(-b^2*x^2 - 2*a*b
*x - a^2 + 1)*arcsin(b*x + a))/b^4
```

Sympy [A]
time = 0.46, size = 366, normalized size = 1.07

$$\begin{cases} -\frac{a^4 \operatorname{asin}^2(a+bx)}{4b^4} + \frac{25a^3x}{24b^3} - \frac{25a^3\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}(a+bx)}{24b^4} - \frac{13a^2x^2}{48b^2} + \frac{13a^2x\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}(a+bx)}{24b^3} - \frac{3a^2\operatorname{asin}^2(a+bx)}{4b^4} + \frac{7ax^3}{72b} - \frac{7ax^2\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}(a+bx)}{24b^2} + \frac{55ax}{48b^3} - \frac{55a\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}(a+bx)}{48b^4} + \frac{x^4\operatorname{asin}^2(a+bx)}{4} - \frac{x^4}{32} + \frac{x^3\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}(a+bx)}{8b} - \frac{3x^2}{32b^2} + \frac{3x\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}(a+bx)}{16b^3} - \frac{3\operatorname{asin}^2(a+bx)}{32b^4} & \text{for } b \neq 0 \\ \frac{x^4\operatorname{asin}^2(a)}{4} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*asin(b*x+a)**2,x)
```

```
[Out] Piecewise((-a**4*asin(a + b*x)**2/(4*b**4) + 25*a**3*x/(24*b**3) - 25*a**3*
sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/(24*b**4) - 13*a**2*x**
2/(48*b**2) + 13*a**2*x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)
/(24*b**3) - 3*a**2*asin(a + b*x)**2/(4*b**4) + 7*a*x**3/(72*b) - 7*a*x**2*
sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/(24*b**2) + 55*a*x/(48*
b**3) - 55*a*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/(48*b**4)
+ x**4*asin(a + b*x)**2/4 - x**4/32 + x**3*sqrt(-a**2 - 2*a*b*x - b**2*x**2
 + 1)*asin(a + b*x)/(8*b) - 3*x**2/(32*b**2) + 3*x*sqrt(-a**2 - 2*a*b*x - b
**2*x**2 + 1)*asin(a + b*x)/(16*b**3) - 3*asin(a + b*x)**2/(32*b**4), Ne(b,
 0)), (x**4*asin(a)**2/4, True))
```

Giac [A]
time = 0.40, size = 440, normalized size = 1.28

$$-\frac{(bx+a)a^3\arcsin(bx+a)^2}{b^4} - \frac{((bx+a)^2-1)(bx+a)a\arcsin(bx+a)^2}{b^4} + \frac{3((bx+a)^2-1)a^2\arcsin(bx+a)^2}{2b^4} + \frac{3\sqrt{-(bx+a)^2+1}(bx+a)a^2\arcsin(bx+a)}{2b^4} - \frac{2\sqrt{-(bx+a)^2+1}a^3\arcsin(bx+a)}{b^4} + \frac{2(bx+a)a^3}{b^4} + \frac{((bx+a)^2-1)^2\arcsin(bx+a)^2}{4b^4} - \frac{(bx+a)a\arcsin(bx+a)^2}{b^4} + \frac{3a^2\arcsin(bx+a)^2}{4b^4} - \frac{(-(bx+a)^2+1)^{\frac{3}{2}}(bx+a)\arcsin(bx+a)}{8b^4} + \frac{2(-(bx+a)^2+1)^{\frac{3}{2}}a\arcsin(bx+a)}{3b^4} + \frac{2((bx+a)^2-1)(bx+a)a}{9b^4} - \frac{3((bx+a)^2-1)a^2}{4b^4} + \frac{((bx+a)^2-1)\arcsin(bx+a)^2}{2b^4} + \frac{5\sqrt{-(bx+a)^2+1}(bx+a)\arcsin(bx+a)}{16b^4} - \frac{2\sqrt{-(bx+a)^2+1}a\arcsin(bx+a)}{b^4} - \frac{((bx+a)^2-1)^2}{32b^4} + \frac{14(bx+a)a}{9b^4} - \frac{3a^2}{8b^4} + \frac{5\arcsin(bx+a)^2}{32b^4} - \frac{5((bx+a)^2-1)}{32b^4} - \frac{17}{256b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arcsin(b*x+a)^2,x, algorithm="giac")
```

```
[Out] -(b*x + a)*a^3*arcsin(b*x + a)^2/b^4 - ((b*x + a)^2 - 1)*(b*x + a)*a*arcsin
(b*x + a)^2/b^4 + 3/2*((b*x + a)^2 - 1)*a^2*arcsin(b*x + a)^2/b^4 + 3/2*sqr
t(-(b*x + a)^2 + 1)*(b*x + a)*a^2*arcsin(b*x + a)/b^4 - 2*sqrt(-(b*x + a)^2
 + 1)*a^3*arcsin(b*x + a)/b^4 + 2*(b*x + a)*a^3/b^4 + 1/4*((b*x + a)^2 - 1)
^2*arcsin(b*x + a)^2/b^4 - (b*x + a)*a*arcsin(b*x + a)^2/b^4 + 3/4*a^2*arcs
in(b*x + a)^2/b^4 - 1/8*(-(b*x + a)^2 + 1)^(3/2)*(b*x + a)*arcsin(b*x + a)/
b^4 + 2/3*(-(b*x + a)^2 + 1)^(3/2)*a*arcsin(b*x + a)/b^4 + 2/9*((b*x + a)^2
 - 1)*(b*x + a)*a/b^4 - 3/4*((b*x + a)^2 - 1)*a^2/b^4 + 1/2*((b*x + a)^2 -
1)*arcsin(b*x + a)^2/b^4 + 5/16*sqrt(-(b*x + a)^2 + 1)*(b*x + a)*arcsin(b*x
 + a)/b^4 - 2*sqrt(-(b*x + a)^2 + 1)*a*arcsin(b*x + a)/b^4 - 1/32*((b*x + a
)^2 - 1)^2/b^4 + 14/9*(b*x + a)*a/b^4 - 3/8*a^2/b^4 + 5/32*arcsin(b*x + a)^
2/b^4 - 5/32*((b*x + a)^2 - 1)/b^4 - 17/256/b^4
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int x^3\,\mathrm{asin}{\left(a+b\,x\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*asin(a + b*x)^2,x)
[Out] int(x^3*asin(a + b*x)^2, x)
```

3.132 $\int x^2 \textbf{ArcSin}(a+bx)^2 \, dx$

Optimal. Leaf size=220

$$-\frac{4x}{9b^2}-\frac{2a^2x}{b^2}+\frac{a(a+bx)^2}{2b^3}-\frac{2(a+bx)^3}{27b^3}+\frac{4\sqrt{1-(a+bx)^2}\,\mathrm{ArcSin}(a+bx)}{9b^3}+\frac{2a^2\sqrt{1-(a+bx)^2}\,\mathrm{ArcSin}(a+$$

```
[Out] -4/9*x/b^2-2*a^2*x/b^2+1/2*a*(b*x+a)^2/b^3-2/27*(b*x+a)^3/b^3+1/2*a*arcsin(
b*x+a)^2/b^3+1/3*a^3*arcsin(b*x+a)^2/b^3+1/3*x^3*arcsin(b*x+a)^2+4/9*arcsin
(b*x+a)*(1-(b*x+a)^2)^(1/2)/b^3+2*a^2*arcsin(b*x+a)*(1-(b*x+a)^2)^(1/2)/b^3
-a*(b*x+a)*arcsin(b*x+a)*(1-(b*x+a)^2)^(1/2)/b^3+2/9*(b*x+a)^2*arcsin(b*x+a
)*(1-(b*x+a)^2)^(1/2)/b^3
```

Rubi [A]
time = 0.27, antiderivative size = 220, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 8, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.667$, Rules used = {4889, 4827, 4847, 4737, 4767, 8, 4795, 30}

$$\frac{a^3\mathrm{ArcSin}(a+bx)^2}{3b^3}+\frac{2a^2\sqrt{1-(a+bx)^2}\,\mathrm{ArcSin}(a+bx)}{b^3}-\frac{2a^2x}{b^2}+\frac{a\mathrm{ArcSin}(a+bx)^2}{2b^3}-\frac{a(a+bx)\sqrt{1-(a+bx)^2}\,\mathrm{ArcSin}(a+bx)}{b^3}+\frac{2(a+bx)^2\sqrt{1-(a+bx)^2}\,\mathrm{ArcSin}(a+bx)}{9b^3}+\frac{4\sqrt{1-(a+bx)^2}\,\mathrm{ArcSin}(a+bx)}{9b^3}+\frac{1}{3}x^3\mathrm{ArcSin}(a+bx)^2+\frac{a(a+bx)^2}{2b^3}-\frac{2(a+bx)^3}{27b^3}-\frac{4x}{9b^2}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcSin[a + b*x]^2,x]
```

```
[Out] (-4*x)/(9*b^2) - (2*a^2*x)/b^2 + (a*(a + b*x)^2)/(2*b^3) - (2*(a + b*x)^3)/
(27*b^3) + (4*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/(9*b^3) + (2*a^2*Sqrt[
1 - (a + b*x)^2]*ArcSin[a + b*x])/b^3 - (a*(a + b*x)*Sqrt[1 - (a + b*x)^2]*
ArcSin[a + b*x])/b^3 + (2*(a + b*x)^2*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]
)/(9*b^3) + (a*ArcSin[a + b*x]^2)/(2*b^3) + (a^3*ArcSin[a + b*x]^2)/(3*b^3)
 + (x^3*ArcSin[a + b*x]^2)/3
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4827

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(e*(m + 1))), x] -
Dist[b*c*(n/(e*(m + 1))), Int[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1
)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int x^2 \sin^{-1}(a+bx)^2\,dx = \frac{\text{Subst}\left(\int \left(-\frac{a}{b}+\frac{x}{b}\right)^2 \sin^{-1}(x)^2\,dx, x, a+bx\right)}{b}$$
$$= \frac{1}{3}x^3\sin^{-1}(a+bx)^2 - \frac{2}{3}\text{Subst}\left(\int \frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^3 \sin^{-1}(x)}{\sqrt{1-x^2}}\,dx, x, a+bx\right)$$
$$= \frac{1}{3}x^3\sin^{-1}(a+bx)^2 - \frac{2}{3}\text{Subst}\left(\int \left(-\frac{a^3\sin^{-1}(x)}{b^3\sqrt{1-x^2}} + \frac{3a^2x\sin^{-1}(x)}{b^3\sqrt{1-x^2}} - \frac{3ax^2\sin^{-1}(x}{b^3\sqrt{1-x^2}}\right.\right.$$
$$= \frac{1}{3}x^3\sin^{-1}(a+bx)^2 - \frac{2\text{Subst}\left(\int \frac{x^3\sin^{-1}(x)}{\sqrt{1-x^2}}\,dx, x, a+bx\right)}{3b^3} + \frac{(2a)\text{Subst}\left(\int \frac{x^2\sin^{-1}}{\sqrt{1-}}\right.}{b^3}$$
$$= \frac{2a^2\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)}{b^3} - \frac{a(a+bx)\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)}{b^3} +$$
$$= -\frac{2a^2x}{b^2} + \frac{a(a+bx)^2}{2b^3} - \frac{2(a+bx)^3}{27b^3} + \frac{4\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)}{9b^3} + \frac{2a^2\sqrt{1}}{}$$
$$= -\frac{4x}{9b^2} - \frac{2a^2x}{b^2} + \frac{a(a+bx)^2}{2b^3} - \frac{2(a+bx)^3}{27b^3} + \frac{4\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)}{9b^3} + \frac{2a}{}$$

Mathematica [A]

time = 0.10, size = 111, normalized size = 0.50

$$\frac{-bx(24+66a^2-15abx+4b^2x^2)+6\sqrt{1-a^2-2abx-b^2x^2}\,(4+11a^2-5abx+2b^2x^2)\,\text{ArcSin}(a+bx)+9(3a+2a^3+2b^3x^3)\,\text{ArcSin}(a+bx)^2}{54b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcSin[a + b*x]^2,x]
```

```
[Out] (-(b*x*(24 + 66*a^2 - 15*a*b*x + 4*b^2*x^2)) + 6*Sqrt[1 - a^2 - 2*a*b*x - b
^2*x^2]*(4 + 11*a^2 - 5*a*b*x + 2*b^2*x^2)*ArcSin[a + b*x] + 9*(3*a + 2*a^3
 + 2*b^3*x^3)*ArcSin[a + b*x]^2)/(54*b^3)
```

Maple [A]

time = 0.09, size = 231, normalized size = 1.05

method	result
derivativedivides	$\dfrac{-\frac{a\left(2\arcsin(bx+a)^2(bx+a)^2+2\arcsin(bx+a)\sqrt{1-(bx+a)^2}\,(bx+a)-\arcsin(bx+a)^2-(bx+a)^2\right)}{2}+\frac{\arcsin(bx+a)^2\left((bx+a)\right.}{3}}{}$

default	$-\frac{a\left(2\arcsin(bx+a)^2(bx+a)^2+2\arcsin(bx+a)\sqrt{1-(bx+a)^2}\,(bx+a)-\arcsin(bx+a)^2-(bx+a)^2\right)}{2}+\frac{\arcsin(bx+a)^2\left((bx+a)^2-\right.}{3}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arcsin(b*x+a)^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/b^3*(-1/2*a*(2*arcsin(b*x+a)^2*(b*x+a)^2+2*arcsin(b*x+a)*(1-(b*x+a)^2)^(1
/2)*(b*x+a)-arcsin(b*x+a)^2-(b*x+a)^2)+1/3*arcsin(b*x+a)^2*((b*x+a)^2-3)*(b
*x+a)-2/3*b*x-2/3*a+2/3*arcsin(b*x+a)*(1-(b*x+a)^2)^(1/2)+2/9*arcsin(b*x+a)
*(-1+(b*x+a)^2)*(1-(b*x+a)^2)^(1/2)-2/27*((b*x+a)^2-3)*(b*x+a)+a^2*(arcsin(
b*x+a)^2*(b*x+a)-2*b*x-2*a+2*arcsin(b*x+a)*(1-(b*x+a)^2)^(1/2))+arcsin(b*x+
a)^2*(b*x+a))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/3*x^3*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))^2 + 2*b*inte
grate(1/3*sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)*x^3*arctan2(b*x + a, sqrt(b*
x + a + 1)*sqrt(-b*x - a + 1))/(b^2*x^2 + 2*a*b*x + a^2 - 1), x)
```

Fricas [A]
time = 2.54, size = 111, normalized size = 0.50

$$-\frac{4\,b^3x^3-15\,ab^2x^2+6\,(11\,a^2+4)bx-9\,(2\,b^3x^3+2\,a^3+3\,a)\arcsin(bx+a)^2-6\,(2\,b^2x^2-5\,abx+11\,a^2+4)\sqrt{-b^2x^2-2\,abx-a^2+1}\,\arcsin(bx+a)}{54\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/54*(4*b^3*x^3 - 15*a*b^2*x^2 + 6*(11*a^2 + 4)*b*x - 9*(2*b^3*x^3 + 2*a^3
 + 3*a)*arcsin(b*x + a)^2 - 6*(2*b^2*x^2 - 5*a*b*x + 11*a^2 + 4)*sqrt(-b^2*
x^2 - 2*a*b*x - a^2 + 1)*arcsin(b*x + a))/b^3
```

Sympy [A]
time = 0.29, size = 243, normalized size = 1.10

$$\begin{cases}\frac{a^3\operatorname{asin}^2(a+bx)}{3b^3}-\frac{11a^2x}{9b^2}+\frac{11a^2\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}(a+bx)}{9b^3}+\frac{5ax^2}{18b}-\frac{5ax\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}(a+bx)}{9b^2}+\frac{a\operatorname{asin}^2(a+bx)}{2b^3}+\frac{x^3\operatorname{asin}^2(a+bx)}{3}-\frac{2x^3}{27}+\frac{2x^2\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}(a+bx)}{9b}-\frac{4x}{9b^2}+\frac{4\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}(a+bx)}{9b^3} & \text{for } b\neq 0\\ \frac{x^3\operatorname{asin}^2(a)}{3} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*asin(b*x+a)**2,x)
```

```
[Out] Piecewise((a**3*asin(a + b*x)**2/(3*b**3) - 11*a**2*x/(9*b**2) + 11*a**2*sq
rt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/(9*b**3) + 5*a*x**2/(18*b
) - 5*a*x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/(9*b**2) + a*
asin(a + b*x)**2/(2*b**3) + x**3*asin(a + b*x)**2/3 - 2*x**3/27 + 2*x**2*sq
rt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/(9*b) - 4*x/(9*b**2) + 4*
sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/(9*b**3), Ne(b, 0)), (x
**3*asin(a)**2/3, True))
```

Giac [A]
time = 0.41, size = 271, normalized size = 1.23

$$\frac{(bx+a)a^2 \arcsin(bx+a)^2}{b^3} + \frac{((bx+a)^2-1)(bx+a)\arcsin(bx+a)^2}{3\,b^3} - \frac{((bx+a)^2-1)a\arcsin(bx+a)^2}{b^3} - \frac{\sqrt{-(bx+a)^2+1}\,(bx+a)a\arcsin(bx+a)}{b^3} + \frac{2\sqrt{-(bx+a)^2+1}\,a^2\arcsin(bx+a)}{b^3} - \frac{2\,(bx+a)a^2}{b^3} + \frac{(bx+a)\arcsin(bx+a)^2}{3\,b^3} - \frac{a\arcsin(bx+a)^2}{2\,b^3} - \frac{2\left(-(bx+a)^2+1\right)^{\frac{3}{2}}\arcsin(bx+a)}{9\,b^3} - \frac{2\left((bx+a)^2-1\right)(bx+a)}{27\,b^3} + \frac{((bx+a)^2-1)a}{2\,b^3} + \frac{2\sqrt{-(bx+a)^2+1}\,\arcsin(bx+a)}{3\,b^3} - \frac{14\,(bx+a)}{27\,b^3} + \frac{a}{4\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(b*x+a)^2,x, algorithm="giac")
```

```
[Out] (b*x + a)*a^2*arcsin(b*x + a)^2/b^3 + 1/3*((b*x + a)^2 - 1)*(b*x + a)*arcsi
n(b*x + a)^2/b^3 - ((b*x + a)^2 - 1)*a*arcsin(b*x + a)^2/b^3 - sqrt(-(b*x +
 a)^2 + 1)*(b*x + a)*a*arcsin(b*x + a)/b^3 + 2*sqrt(-(b*x + a)^2 + 1)*a^2*a
rcsin(b*x + a)/b^3 - 2*(b*x + a)*a^2/b^3 + 1/3*(b*x + a)*arcsin(b*x + a)^2/
b^3 - 1/2*a*arcsin(b*x + a)^2/b^3 - 2/9*(-(b*x + a)^2 + 1)^(3/2)*arcsin(b*x
 + a)/b^3 - 2/27*((b*x + a)^2 - 1)*(b*x + a)/b^3 + 1/2*((b*x + a)^2 - 1)*a/
b^3 + 2/3*sqrt(-(b*x + a)^2 + 1)*arcsin(b*x + a)/b^3 - 14/27*(b*x + a)/b^3
+ 1/4*a/b^3
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,\mathrm{asin}(a+b\,x)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*asin(a + b*x)^2,x)
```

```
[Out] int(x^2*asin(a + b*x)^2, x)
```

3.133 $\int x\text{ArcSin}(a+bx)^2\,dx$

Optimal. Leaf size=130

$$\frac{2ax}{b}-\frac{(a+bx)^2}{4b^2}-\frac{2a\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)}{b^2}+\frac{(a+bx)\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)}{2b^2}-\frac{\text{ArcSin}(a+}{4b^2}$$

```
[Out] 2*a*x/b-1/4*(b*x+a)^2/b^2-1/4*arcsin(b*x+a)^2/b^2-1/2*a^2*arcsin(b*x+a)^2/b
^2+1/2*x^2*arcsin(b*x+a)^2-2*a*arcsin(b*x+a)*(1-(b*x+a)^2)^(1/2)/b^2+1/2*(b
*x+a)*arcsin(b*x+a)*(1-(b*x+a)^2)^(1/2)/b^2
```

Rubi [A]
time = 0.17, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.800$, Rules used = {4889, 4827, 4847, 4737, 4767, 8, 4795, 30}

$$-\frac{a^2\text{ArcSin}(a+bx)^2}{2b^2}+\frac{\sqrt{1-(a+bx)^2}\,(a+bx)\text{ArcSin}(a+bx)}{2b^2}-\frac{\text{ArcSin}(a+bx)^2}{4b^2}-\frac{2a\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)}{b^2}+\frac{1}{2}x^2\text{ArcSin}(a+bx)^2-\frac{(a+bx)^2}{4b^2}+\frac{2ax}{b}$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcSin[a + b*x]^2,x]
```

```
[Out] (2*a*x)/b - (a + b*x)^2/(4*b^2) - (2*a*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x
])/b^2 + ((a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/(2*b^2) - ArcSin
[a + b*x]^2/(4*b^2) - (a^2*ArcSin[a + b*x]^2)/(2*b^2) + (x^2*ArcSin[a + b*x
]^2)/2
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
```

```
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4827

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(e*(m + 1))), x] -
Dist[b*c*(n/(e*(m + 1))), Int[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1
)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4847

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int x\sin^{-1}(a+bx)^2\,dx = \frac{\text{Subst}\left(\int\left(-\frac{a}{b}+\frac{x}{b}\right)\sin^{-1}(x)^2\,dx,x,a+bx\right)}{b}$$
$$= \frac{1}{2}x^2\sin^{-1}(a+bx)^2 - \text{Subst}\left(\int\frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^2\sin^{-1}(x)}{\sqrt{1-x^2}}\,dx,x,a+bx\right)$$
$$= \frac{1}{2}x^2\sin^{-1}(a+bx)^2 - \text{Subst}\left(\int\left(\frac{a^2\sin^{-1}(x)}{b^2\sqrt{1-x^2}}-\frac{2ax\sin^{-1}(x)}{b^2\sqrt{1-x^2}}+\frac{x^2\sin^{-1}(x)}{b^2\sqrt{1-x^2}}\right)\,dx,x$$
$$= \frac{1}{2}x^2\sin^{-1}(a+bx)^2 - \frac{\text{Subst}\left(\int\frac{x^2\sin^{-1}(x)}{\sqrt{1-x^2}}\,dx,x,a+bx\right)}{b^2} + \frac{(2a)\text{Subst}\left(\int\frac{x\sin^{-1}(x)}{\sqrt{1-x^2}}\right.}{b^2}$$
$$= -\frac{2a\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{b^2} + \frac{(a+bx)\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{2b^2} - \frac{a^2}{}$$
$$= \frac{2ax}{b} - \frac{(a+bx)^2}{4b^2} - \frac{2a\sqrt{1-(a+bx)^2}\sin^{-1}(a+bx)}{b^2} + \frac{(a+bx)\sqrt{1-(a+bx)^2}\,\text{si}}{2b^2}$$

Mathematica [A]
time = 0.06, size = 83, normalized size = 0.64

$$\frac{bx(6a-bx)-2(3a-bx)\sqrt{1-a^2-2abx-b^2x^2}\,\text{ArcSin}(a+bx)+(-1-2a^2+2b^2x^2)\,\text{ArcSin}(a+bx)^2}{4b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcSin[a + b*x]^2,x]
```

```
[Out] (b*x*(6*a - b*x) - 2*(3*a - b*x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a
 + b*x] + (-1 - 2*a^2 + 2*b^2*x^2)*ArcSin[a + b*x]^2)/(4*b^2)
```

Maple [A]
time = 0.08, size = 124, normalized size = 0.95

method	result
derivativedivides	$\frac{\frac{\arcsin(bx+a)^2\left(-1+(bx+a)^2\right)}{2}+\frac{\arcsin(bx+a)\left((bx+a)\sqrt{1-(bx+a)^2}+\arcsin(bx+a)\right)}{2}-\frac{\arcsin(bx+a)^2}{4}-\frac{(bx+a)^2}{4}-a\left(\text{arc}\right.}{b^2}$
default	$\frac{\frac{\arcsin(bx+a)^2\left(-1+(bx+a)^2\right)}{2}+\frac{\arcsin(bx+a)\left((bx+a)\sqrt{1-(bx+a)^2}+\arcsin(bx+a)\right)}{2}-\frac{\arcsin(bx+a)^2}{4}-\frac{(bx+a)^2}{4}-a\left(\text{arc}\right.}{b^2}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arcsin(b*x+a)^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/b^2*(1/2*arcsin(b*x+a)^2*(-1+(b*x+a)^2)+1/2*arcsin(b*x+a)*((b*x+a)*(1-(b*
x+a)^2)^(1/2)+arcsin(b*x+a))-1/4*arcsin(b*x+a)^2-1/4*(b*x+a)^2-a*(arcsin(b*
x+a)^2*(b*x+a)-2*b*x-2*a+2*arcsin(b*x+a)*(1-(b*x+a)^2)^(1/2)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/2*x^2*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))^2 + b*integr
ate(sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)*x^2*arctan2(b*x + a, sqrt(b*x + a
+ 1)*sqrt(-b*x - a + 1))/(b^2*x^2 + 2*a*b*x + a^2 - 1), x)
```

Fricas [A]
time = 1.66, size = 80, normalized size = 0.62

$$-\frac{b^{2}x^{2}-6\,abx-\left(2\,b^{2}x^{2}-2\,a^{2}-1\right)\arcsin\left(bx+a\right)^{2}-2\,\sqrt{-b^{2}x^{2}-2\,abx-a^{2}+1}\,\left(bx-3\,a\right)\arcsin\left(bx+a\right)}{4\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/4*(b^2*x^2 - 6*a*b*x - (2*b^2*x^2 - 2*a^2 - 1)*arcsin(b*x + a)^2 - 2*sqr
t(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*x - 3*a)*arcsin(b*x + a))/b^2
```

Sympy [A]
time = 0.17, size = 138, normalized size = 1.06

$$\begin{cases} -\frac{a^{2}\operatorname{asin}^{2}{\left(a+bx \right)}}{2b^{2}}+\frac{3ax}{2b}-\frac{3a\sqrt{-a^{2}-2abx-b^{2}x^{2}+1}\operatorname{asin}{\left(a+bx \right)}}{2b^{2}}+\frac{x^{2}\operatorname{asin}^{2}{\left(a+bx \right)}}{2}-\frac{x^{2}}{4}+\frac{x\sqrt{-a^{2}-2abx-b^{2}x^{2}+1}\operatorname{asin}{\left(a+bx \right)}}{2b}-\frac{\operatorname{asin}^{2}{\left(a+bx \right)}}{4b^{2}} & \text{for}\: b \neq 0 \\ \frac{x^{2}\operatorname{asin}^{2}{\left(a \right)}}{2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*asin(b*x+a)**2,x)
```

```
[Out] Piecewise((-a**2*asin(a + b*x)**2/(2*b**2) + 3*a*x/(2*b) - 3*a*sqrt(-a**2 -
 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/(2*b**2) + x**2*asin(a + b*x)**2/2
- x**2/4 + x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/(2*b) - as
in(a + b*x)**2/(4*b**2), Ne(b, 0)), (x**2*asin(a)**2/2, True))
```

Giac [A]
time = 0.40, size = 139, normalized size = 1.07

$$-\frac{(bx+a)a\arcsin\left(bx+a\right)^{2}}{b^{2}}+\frac{\left((bx+a)^{2}-1\right)\arcsin\left(bx+a\right)^{2}}{2\,b^{2}}+\frac{\sqrt{-(bx+a)^{2}+1}\,(bx+a)\arcsin\left(bx+a\right)}{2\,b^{2}}-\frac{2\,\sqrt{-(bx+a)^{2}+1}\,a\arcsin\left(bx+a\right)}{b^{2}}+\frac{2\,(bx+a)a}{b^{2}}+\frac{\arcsin\left(bx+a\right)^{2}}{4\,b^{2}}-\frac{(bx+a)^{2}-1}{4\,b^{2}}-\frac{1}{8\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(b*x+a)^2,x, algorithm="giac")
```

```
[Out] -(b*x + a)*a*arcsin(b*x + a)^2/b^2 + 1/2*((b*x + a)^2 - 1)*arcsin(b*x + a)^
2/b^2 + 1/2*sqrt(-(b*x + a)^2 + 1)*(b*x + a)*arcsin(b*x + a)/b^2 - 2*sqrt(-
(b*x + a)^2 + 1)*a*arcsin(b*x + a)/b^2 + 2*(b*x + a)*a/b^2 + 1/4*arcsin(b*x
 + a)^2/b^2 - 1/4*((b*x + a)^2 - 1)/b^2 - 1/8/b^2
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int x \operatorname{asin}(a + b x)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*asin(a + b*x)^2,x)
```

```
[Out] int(x*asin(a + b*x)^2, x)
```

3.134 $\int \text{ArcSin}(a+bx)^2\,dx$

Optimal. Leaf size=47

$$-2x+\frac{2\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)}{b}+\frac{(a+bx)\text{ArcSin}(a+bx)^2}{b}$$

```
[Out] -2*x+(b*x+a)*arcsin(b*x+a)^2/b+2*arcsin(b*x+a)*(1-(b*x+a)^2)^(1/2)/b
```

Rubi [A]
time = 0.04, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {4887, 4715, 4767, 8}

$$\frac{(a+bx)\text{ArcSin}(a+bx)^2}{b}+\frac{2\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)}{b}-2x$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^2,x]
```

```
[Out] -2*x + (2*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/b + ((a + b*x)*ArcSin[a + b*x]^2)/b
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*ArcSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p + 1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d, Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n}, x]
```

Rubi steps

$$\int \sin^{-1}(a+bx)^2\,dx = \frac{\text{Subst}\left(\int \sin^{-1}(x)^2\,dx, x, a+bx\right)}{b}$$
$$= \frac{(a+bx)\sin^{-1}(a+bx)^2}{b} - \frac{2\text{Subst}\left(\int \frac{x\sin^{-1}(x)}{\sqrt{1-x^2}}\,dx, x, a+bx\right)}{b}$$
$$= \frac{2\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)}{b} + \frac{(a+bx)\sin^{-1}(a+bx)^2}{b} - \frac{2\text{Subst}\left(\int 1\,dx, x, a+bx\right)}{b}$$
$$= -2x + \frac{2\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)}{b} + \frac{(a+bx)\sin^{-1}(a+bx)^2}{b}$$

Mathematica [A]
time = 0.02, size = 49, normalized size = 1.04

$$\frac{-2(a+bx)+2\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)+(a+bx)\text{ArcSin}(a+bx)^2}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^2,x]
```

```
[Out] (-2*(a + b*x) + 2*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x] + (a + b*x)*ArcSin[
a + b*x]^2)/b
```

Maple [A]
time = 0.07, size = 48, normalized size = 1.02

method	result	size
derivativedivides	$\frac{\arcsin(bx+a)^2(bx+a)-2bx-2a+2\arcsin(bx+a)\sqrt{1-(bx+a)^2}}{b}$	48
default	$\frac{\arcsin(bx+a)^2(bx+a)-2bx-2a+2\arcsin(bx+a)\sqrt{1-(bx+a)^2}}{b}$	48

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/b*(arcsin(b*x+a)^2*(b*x+a)-2*b*x-2*a+2*arcsin(b*x+a)*(1-(b*x+a)^2)^(1/2))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] x*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))^2 + 2*b*integrate(
sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)*x*arctan2(b*x + a, sqrt(b*x + a + 1)*s
qrt(-b*x - a + 1))/(b^2*x^2 + 2*a*b*x + a^2 - 1), x)
```

Fricas [A]
time = 1.97, size = 53, normalized size = 1.13

$$\frac{(bx+a)\arcsin{(bx+a)}^2 - 2\,bx + 2\,\sqrt{-b^2x^2 - 2\,abx - a^2 + 1}\,\arcsin{(bx+a)}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] ((b*x + a)*arcsin(b*x + a)^2 - 2*b*x + 2*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)
*arcsin(b*x + a))/b
```

Sympy [A]
time = 0.11, size = 63, normalized size = 1.34

$$\begin{cases} \frac{a\,\mathrm{asin}^2{(a+bx)}}{b} + x\,\mathrm{asin}^2{(a+bx)} - 2x + \frac{2\sqrt{-a^2 - 2abx - b^2x^2 + 1}\,\mathrm{asin}{(a+bx)}}{b} & \text{for}\ b \neq 0 \\ x\,\mathrm{asin}^2{(a)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**2,x)
```

```
[Out] Piecewise((a*asin(a + b*x)**2/b + x*asin(a + b*x)**2 - 2*x + 2*sqrt(-a**2 -
 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/b, Ne(b, 0)), (x*asin(a)**2, True))
```

Giac [A]
time = 0.40, size = 52, normalized size = 1.11

$$\frac{(bx+a)\arcsin{(bx+a)}^2}{b} + \frac{2\,\sqrt{-(bx+a)^2+1}\,\arcsin{(bx+a)}}{b} - \frac{2\,(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2,x, algorithm="giac")
```

```
[Out] (b*x + a)*arcsin(b*x + a)^2/b + 2*sqrt(-(b*x + a)^2 + 1)*arcsin(b*x + a)/b
- 2*(b*x + a)/b
```

Mupad [B]
time = 0.25, size = 44, normalized size = 0.94

$$\frac{\left(\mathrm{asin}(a+b\,x)^2-2\right)\,\left(a+b\,x\right)}{b}+\frac{2\,\mathrm{asin}(a+b\,x)\,\sqrt{1-{\left(a+b\,x\right)}^2}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)^2,x)
```

```
[Out] ((asin(a + b*x)^2 - 2)*(a + b*x))/b + (2*asin(a + b*x)*(1 - (a + b*x)^2)^(1
/2))/b
```

3.135 $\int \frac{\mathbf{ArcSin}(a+bx)^2}{x}\,dx$

Optimal. Leaf size=271

$$-\frac{1}{3}i\text{ArcSin}(a+bx)^3+\text{ArcSin}(a+bx)^2\log\left(1-\frac{e^{i\text{ArcSin}(a+bx)}}{ia-\sqrt{1-a^2}}\right)+\text{ArcSin}(a+bx)^2\log\left(1-\frac{e^{i\text{ArcSin}(a+bx)}}{ia+\sqrt{1-a^2}}\right)-$$

```
[Out] -1/3*I*arcsin(b*x+a)^3+arcsin(b*x+a)^2*ln(1-(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))
/(I*a-(-a^2+1)^(1/2)))+arcsin(b*x+a)^2*ln(1-(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))
/(I*a+(-a^2+1)^(1/2)))-2*I*arcsin(b*x+a)*polylog(2,(I*(b*x+a)+(1-(b*x+a)^2)
^(1/2))/(I*a-(-a^2+1)^(1/2)))-2*I*arcsin(b*x+a)*polylog(2,(I*(b*x+a)+(1-(b*
x+a)^2)^(1/2))/(I*a+(-a^2+1)^(1/2)))+2*polylog(3,(I*(b*x+a)+(1-(b*x+a)^2)^(
1/2))/(I*a-(-a^2+1)^(1/2)))+2*polylog(3,(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))/(I*
a+(-a^2+1)^(1/2)))
```

Rubi [A]
time = 0.27, antiderivative size = 271, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 7, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.583$, Rules used = {4889, 4825, 4617, 2221, 2611, 2320, 6724}

$$-2i\text{ArcSin}(a+bx)\text{Li}_2\left(\frac{e^{i\text{ArcSin}(a+bx)}}{ia-\sqrt{1-a^2}}\right)-2i\text{ArcSin}(a+bx)\text{Li}_2\left(\frac{e^{i\text{ArcSin}(a+bx)}}{ia+\sqrt{1-a^2}}\right)+2\text{Li}_3\left(\frac{e^{i\text{ArcSin}(a+bx)}}{ia-\sqrt{1-a^2}}\right)+2\text{Li}_3\left(\frac{e^{i\text{ArcSin}(a+bx)}}{ia+\sqrt{1-a^2}}\right)+\text{ArcSin}(a+bx)^2\log\left(1-\frac{e^{i\text{ArcSin}(a+bx)}}{-\sqrt{1-a^2}+ia}\right)+\text{ArcSin}(a+bx)^2\log\left(1-\frac{e^{i\text{ArcSin}(a+bx)}}{\sqrt{1-a^2}+ia}\right)-\frac{1}{3}i\text{ArcSin}(a+bx)^3$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^2/x,x]
```

```
[Out] (-1/3*I)*ArcSin[a + b*x]^3 + ArcSin[a + b*x]^2*Log[1 - E^(I*ArcSin[a + b*x]
)/(I*a - Sqrt[1 - a^2])] + ArcSin[a + b*x]^2*Log[1 - E^(I*ArcSin[a + b*x])/
(I*a + Sqrt[1 - a^2])] - (2*I)*ArcSin[a + b*x]*PolyLog[2, E^(I*ArcSin[a + b
*x])/(I*a - Sqrt[1 - a^2])] - (2*I)*ArcSin[a + b*x]*PolyLog[2, E^(I*ArcSin[
a + b*x])/(I*a + Sqrt[1 - a^2])] + 2*PolyLog[3, E^(I*ArcSin[a + b*x])/(I*a
- Sqrt[1 - a^2])] + 2*PolyLog[3, E^(I*ArcSin[a + b*x])/(I*a + Sqrt[1 - a^2]
)]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
```

```
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 4617

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Dist[I, Int[(e + f*x)^m*(E^(I*(c + d*x))/(I*a - Rt[-a^2 + b^2, 2
] + b*E^(I*(c + d*x)))), x], x] + Dist[I, Int[(e + f*x)^m*(E^(I*(c + d*x))/
(I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x)))), x], x]) /; FreeQ[{a, b, c,
d, e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[(a + b*x)^n*(Cos[x]/(c*d + e*Sin[x])), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\sin^{-1}(a+bx)^2}{x}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)^2}{-\frac{a}{b}+\frac{x}{b}}\,dx, x, a+bx\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \frac{x^2\cos(x)}{-\frac{a}{b}+\frac{\sin(x)}{b}}\,dx, x, \sin^{-1}(a+bx)\right)}{b}$$

$$= -\frac{1}{3}i\sin^{-1}(a+bx)^3 + \frac{i\text{Subst}\left(\int \frac{e^{ix}x^2}{-\frac{ia}{b}-\frac{\sqrt{1-a^2}}{b}+\frac{e^{ix}}{b}}\,dx, x, \sin^{-1}(a+bx)\right)}{b} + \frac{i\text{Subst}}{}$$

$$= -\frac{1}{3}i\sin^{-1}(a+bx)^3 + \sin^{-1}(a+bx)^2\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + \sin^{-1}(a+bx)^2\log$$

$$= -\frac{1}{3}i\sin^{-1}(a+bx)^3 + \sin^{-1}(a+bx)^2\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + \sin^{-1}(a+bx)^2\log$$

$$= -\frac{1}{3}i\sin^{-1}(a+bx)^3 + \sin^{-1}(a+bx)^2\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + \sin^{-1}(a+bx)^2\log$$

$$= -\frac{1}{3}i\sin^{-1}(a+bx)^3 + \sin^{-1}(a+bx)^2\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + \sin^{-1}(a+bx)^2\log$$

Mathematica [A]
time = 0.03, size = 309, normalized size = 1.14

$$-\frac{1}{3}i\text{ArcSin}(a+bx)^3 + \text{ArcSin}(a+bx)^2\log\left(1+\frac{e^{i\text{ArcSin}(a+bx)}}{\left(-\frac{ia}{b}-\frac{\sqrt{1-a^2}}{b}\right)b}\right) + \text{ArcSin}(a+bx)^2\log\left(1+\frac{e^{i\text{ArcSin}(a+bx)}}{\left(-\frac{ia}{b}+\frac{\sqrt{1-a^2}}{b}\right)b}\right) - 2i\text{ArcSin}(a+bx)\text{PolyLog}\left(2,-\frac{e^{i\text{ArcSin}(a+bx)}}{\left(-\frac{ia}{b}-\frac{\sqrt{1-a^2}}{b}\right)b}\right) - 2i\text{ArcSin}(a+bx)\text{PolyLog}\left(2,-\frac{e^{i\text{ArcSin}(a+bx)}}{\left(-\frac{ia}{b}+\frac{\sqrt{1-a^2}}{b}\right)b}\right) + 2\text{PolyLog}\left(3,\frac{e^{i\text{ArcSin}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + 2\text{PolyLog}\left(3,\frac{e^{i\text{ArcSin}(a+bx)}}{ia+\sqrt{1-a^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^2/x,x]
```

```
[Out] (-1/3*I)*ArcSin[a + b*x]^3 + ArcSin[a + b*x]^2*Log[1 + E^(I*ArcSin[a + b*x]
)/((((-I)*a)/b - Sqrt[1 - a^2]/b)*b)] + ArcSin[a + b*x]^2*Log[1 + E^(I*ArcS
in[a + b*x])/((((-I)*a)/b + Sqrt[1 - a^2]/b)*b)] - (2*I)*ArcSin[a + b*x]*Po
lyLog[2, -(E^(I*ArcSin[a + b*x])/((((-I)*a)/b - Sqrt[1 - a^2]/b)*b))] - (2*
I)*ArcSin[a + b*x]*PolyLog[2, -(E^(I*ArcSin[a + b*x])/((((-I)*a)/b + Sqrt[1
 - a^2]/b)*b))] + 2*PolyLog[3, E^(I*ArcSin[a + b*x])/(I*a - Sqrt[1 - a^2])]
 + 2*PolyLog[3, E^(I*ArcSin[a + b*x])/(I*a + Sqrt[1 - a^2])]
```

Maple [F]
time = 1.90, size = 0, normalized size = 0.00

$$\int \frac{\arcsin\left(bx+a\right)^{2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)^2/x,x)
```

```
[Out] int(arcsin(b*x+a)^2/x,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2/x,x, algorithm="maxima")
```

```
[Out] integrate(arcsin(b*x + a)^2/x, x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2/x,x, algorithm="fricas")
```

```
[Out] integral(arcsin(b*x + a)^2/x, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}^{2}\left(a+bx\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**2/x,x)
```

```
[Out] Integral(asin(a + b*x)**2/x, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2/x,x, algorithm="giac")
```

```
[Out] integrate(arcsin(b*x + a)^2/x, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\operatorname{asin}(a+b\,x)^2}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)^2/x,x)
```

```
[Out] int(asin(a + b*x)^2/x, x)
```

3.136 $\int \frac{\text{ArcSin}(a+bx)^2}{x^2} dx$

Optimal. Leaf size=230

$$-\frac{\text{ArcSin}(a+bx)^2}{x}-\frac{2b\text{ArcSin}(a+bx)\log\left(1-\frac{e^{i\text{ArcSin}(a+bx)}}{ia-\sqrt{1-a^2}}\right)}{\sqrt{1-a^2}}+\frac{2b\text{ArcSin}(a+bx)\log\left(1-\frac{e^{i\text{ArcSin}(a+bx)}}{ia+\sqrt{1-a^2}}\right)}{\sqrt{1-a^2}}+$$

```
[Out] -arcsin(b*x+a)^2/x-2*b*arcsin(b*x+a)*ln(1-(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))/(
I*a-(-a^2+1)^(1/2)))/(-a^2+1)^(1/2)+2*b*arcsin(b*x+a)*ln(1-(I*(b*x+a)+(1-(b
*x+a)^2)^(1/2))/(I*a+(-a^2+1)^(1/2)))/(-a^2+1)^(1/2)+2*I*b*polylog(2,(I*(b*
x+a)+(1-(b*x+a)^2)^(1/2))/(I*a-(-a^2+1)^(1/2)))/(-a^2+1)^(1/2)-2*I*b*polylo
g(2,(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))/(I*a+(-a^2+1)^(1/2)))/(-a^2+1)^(1/2)
```

Rubi [A]
time = 0.30, antiderivative size = 208, normalized size of antiderivative = 0.90, number of steps used = 11, number of rules used = 8, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.667$, Rules used = {4889, 4827, 4857, 3404, 2296, 2221, 2317, 2438}

$$\frac{2b\text{Li}_2\left(-\frac{ie^{i\text{ArcSin}(a+bx)}}{a-\sqrt{a^2-1}}\right)}{\sqrt{a^2-1}}-\frac{2b\text{Li}_2\left(-\frac{ie^{i\text{ArcSin}(a+bx)}}{a+\sqrt{a^2-1}}\right)}{\sqrt{a^2-1}}+\frac{2ib\text{ArcSin}(a+bx)\log\left(1+\frac{ie^{i\text{ArcSin}(a+bx)}}{a-\sqrt{a^2-1}}\right)}{\sqrt{a^2-1}}-\frac{2ib\text{ArcSin}(a+bx)\log\left(1+\frac{ie^{i\text{ArcSin}(a+bx)}}{\sqrt{a^2-1}+a}\right)}{\sqrt{a^2-1}}-\frac{\text{ArcSin}(a+bx)^2}{x}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^2/x^2,x]
```

```
[Out] -(ArcSin[a + b*x]^2/x) + ((2*I)*b*ArcSin[a + b*x]*Log[1 + (I*E^(I*ArcSin[a
+ b*x]))/(a - Sqrt[-1 + a^2])])/Sqrt[-1 + a^2] - ((2*I)*b*ArcSin[a + b*x]*L
og[1 + (I*E^(I*ArcSin[a + b*x]))/(a + Sqrt[-1 + a^2])])/Sqrt[-1 + a^2] + (2
*b*PolyLog[2, ((-I)*E^(I*ArcSin[a + b*x]))/(a - Sqrt[-1 + a^2])])/Sqrt[-1 +
 a^2] - (2*b*PolyLog[2, ((-I)*E^(I*ArcSin[a + b*x]))/(a + Sqrt[-1 + a^2])])
/Sqrt[-1 + a^2]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2296

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[2*(c/q), Int[
(f + g*x)^m*(F^u/(b - q + 2*c*F^u)), x], x] - Dist[2*(c/q), Int[(f + g*x)^m
*(F^u/(b + q + 2*c*F^u)), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
```

```
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3404

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[(c + d*x)^m*(E^(I*(e + f*x))/(I*b + 2*a*E^(I*(e + f*x)
) - I*b*E^(2*I*(e + f*x)))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4827

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(e*(m + 1))), x] -
Dist[b*c*(n/(e*(m + 1))), Int[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1
)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{\sin^{-1}(a+bx)^2}{x^2}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)^2}{\left(-\frac{a}{b}+\frac{x}{b}\right)^2}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{\sin^{-1}(a+bx)^2}{x} + 2\text{Subst}\left(\int \frac{\sin^{-1}(x)}{\left(-\frac{a}{b}+\frac{x}{b}\right)\sqrt{1-x^2}}\,dx, x, a+bx\right)$$

$$= -\frac{\sin^{-1}(a+bx)^2}{x} + 2\text{Subst}\left(\int \frac{x}{-\frac{a}{b}+\frac{\sin(x)}{b}}\,dx, x, \sin^{-1}(a+bx)\right)$$

$$= -\frac{\sin^{-1}(a+bx)^2}{x} + 4\text{Subst}\left(\int \frac{e^{ix}x}{\frac{i}{b}-\frac{2ae^{ix}}{b}-\frac{ie^{2ix}}{b}}\,dx, x, \sin^{-1}(a+bx)\right)$$

$$= -\frac{\sin^{-1}(a+bx)^2}{x} - \frac{(4i)\text{Subst}\left(\int \frac{e^{ix}x}{-\frac{2a}{b}-\frac{2\sqrt{-1+a^2}}{b}-\frac{2ie^{ix}}{b}}\,dx, x, \sin^{-1}(a+bx)\right)}{\sqrt{-1+a^2}} + \frac{(4i)}{}$$

$$= -\frac{\sin^{-1}(a+bx)^2}{x} + \frac{2ib\sin^{-1}(a+bx)\log\left(1+\frac{ie^{i\sin^{-1}(a+bx)}}{a-\sqrt{-1+a^2}}\right)}{\sqrt{-1+a^2}} - \frac{2ib\sin^{-1}(a+bx)\log}{\sqrt{-}}$$

$$= -\frac{\sin^{-1}(a+bx)^2}{x} + \frac{2ib\sin^{-1}(a+bx)\log\left(1+\frac{ie^{i\sin^{-1}(a+bx)}}{a-\sqrt{-1+a^2}}\right)}{\sqrt{-1+a^2}} - \frac{2ib\sin^{-1}(a+bx)\log}{\sqrt{-}}$$

$$= -\frac{\sin^{-1}(a+bx)^2}{x} + \frac{2ib\sin^{-1}(a+bx)\log\left(1+\frac{ie^{i\sin^{-1}(a+bx)}}{a-\sqrt{-1+a^2}}\right)}{\sqrt{-1+a^2}} - \frac{2ib\sin^{-1}(a+bx)\log}{\sqrt{-}}$$

Mathematica [A]

time = 0.09, size = 208, normalized size = 0.90

$$\frac{-\sqrt{-1+a^2}\,\text{ArcSin}(a+bx)^2 + 2ibx\text{ArcSin}(a+bx)\left(\log\left(\frac{a-\sqrt{-1+a^2}+ie^{i\text{ArcSin}(a+bx)}}{a-\sqrt{-1+a^2}}\right) - \log\left(\frac{a+\sqrt{-1+a^2}+ie^{i\text{ArcSin}(a+bx)}}{a+\sqrt{-1+a^2}}\right)\right) + 2bx\text{PolyLog}\left(2, \frac{ie^{i\text{ArcSin}(a+bx)}}{-a+\sqrt{-1+a^2}}\right) - 2bx\text{PolyLog}\left(2, -\frac{ie^{i\text{ArcSin}(a+bx)}}{a+\sqrt{-1+a^2}}\right)}{\sqrt{-1+a^2}\,x}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^2/x^2,x]
[Out] (-(Sqrt[-1 + a^2]*ArcSin[a + b*x]^2) + (2*I)*b*x*ArcSin[a + b*x]*(Log[(a -
Sqrt[-1 + a^2] + I*E^(I*ArcSin[a + b*x]))/(a - Sqrt[-1 + a^2])] - Log[(a +
```

```
Sqrt[-1 + a^2] + I*E^(I*ArcSin[a + b*x]))/(a + Sqrt[-1 + a^2])]) + 2*b*x*Po
lyLog[2, (I*E^(I*ArcSin[a + b*x]))/(-a + Sqrt[-1 + a^2])] - 2*b*x*PolyLog[2
, ((-I)*E^(I*ArcSin[a + b*x]))/(a + Sqrt[-1 + a^2])])/(Sqrt[-1 + a^2]*x)
```

Maple [A]
time = 0.71, size = 313, normalized size = 1.36

method	result
derivativedivides	$b\left(-\frac{\arcsin(bx+a)^2}{bx}-\frac{2\arcsin(bx+a)\sqrt{-a^2+1}\left(\ln\left(\frac{ia+\sqrt{-a^2+1}-i(bx+a)-\sqrt{1-(bx+a)^2}}{ia+\sqrt{-a^2+1}}\right)-\right.}{a^2-1}\right.$
default	$b\left(-\frac{\arcsin(bx+a)^2}{bx}-\frac{2\arcsin(bx+a)\sqrt{-a^2+1}\left(\ln\left(\frac{ia+\sqrt{-a^2+1}-i(bx+a)-\sqrt{1-(bx+a)^2}}{ia+\sqrt{-a^2+1}}\right)-\right.}{a^2-1}\right.$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)^2/x^2,x,method=_RETURNVERBOSE)
```

```
[Out] b*(-arcsin(b*x+a)^2/b/x-2*arcsin(b*x+a)*(-a^2+1)^(1/2)*(ln((I*a+(-a^2+1)^(1
/2)-I*(b*x+a)-(1-(b*x+a)^2)^(1/2))/(I*a+(-a^2+1)^(1/2)))-ln((I*a-(-a^2+1)^(
1/2)-I*(b*x+a)-(1-(b*x+a)^2)^(1/2))/(I*a-(-a^2+1)^(1/2))))/(a^2-1)-2*I*(-a^
2+1)^(1/2)/(a^2-1)*dilog((I*a-(-a^2+1)^(1/2)-I*(b*x+a)-(1-(b*x+a)^2)^(1/2))
/(I*a-(-a^2+1)^(1/2)))+2*I*(-a^2+1)^(1/2)/(a^2-1)*dilog((I*a+(-a^2+1)^(1/2)
-I*(b*x+a)-(1-(b*x+a)^2)^(1/2))/(I*a+(-a^2+1)^(1/2))))
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2/x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a-1>0)', see `assume?` for more det
ails)Is
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2/x^2,x, algorithm="fricas")
[Out] integral(arcsin(b*x + a)^2/x^2, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}^2(a+bx)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**2/x**2,x)
[Out] Integral(asin(a + b*x)**2/x**2, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2/x^2,x, algorithm="giac")
[Out] integrate(arcsin(b*x + a)^2/x^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\operatorname{asin}(a+b\,x)^2}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)^2/x^2,x)
[Out] int(asin(a + b*x)^2/x^2, x)
```

3.137 $\int \frac{\text{ArcSin}(a+bx)^2}{x^3}\,dx$

Optimal. Leaf size=272

$$-\frac{b\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)}{(1-a^2)\,x}-\frac{\text{ArcSin}(a+bx)^2}{2x^2}-\frac{iab^2\text{ArcSin}(a+bx)\log\left(1+\frac{ie^{i\text{ArcSin}(a+bx)}}{a-\sqrt{-1+a^2}}\right)}{(-1+a^2)^{3/2}}+\frac{iab^2}{}$$

```
[Out] -1/2*arcsin(b*x+a)^2/x^2+b^2*ln(x)/(-a^2+1)-I*a*b^2*arcsin(b*x+a)*ln(1+I*(I
*(b*x+a)+(1-(b*x+a)^2)^(1/2))/(a-(a^2-1)^(1/2)))/(a^2-1)^(3/2)+I*a*b^2*arcs
in(b*x+a)*ln(1+I*(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))/(a+(a^2-1)^(1/2)))/(a^2-1)
^(3/2)-a*b^2*polylog(2,-I*(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))/(a-(a^2-1)^(1/2))
)/(a^2-1)^(3/2)+a*b^2*polylog(2,-I*(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))/(a+(a^2-
1)^(1/2)))/(a^2-1)^(3/2)-b*arcsin(b*x+a)*(1-(b*x+a)^2)^(1/2)/(-a^2+1)/x
```

Rubi [A]
time = 0.40, antiderivative size = 272, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 11, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.917$, Rules used = {4889, 4827, 4857, 3405, 3404, 2296, 2221, 2317, 2438, 2747, 31}

$$-\frac{ab^2\text{Li}_2\left(-\frac{ie^{i\text{ArcSin}(a+bx)}}{a-\sqrt{a^2-1}}\right)}{(a^2-1)^{3/2}}+\frac{ab^2\text{Li}_2\left(-\frac{ie^{i\text{ArcSin}(a+bx)}}{a+\sqrt{a^2-1}}\right)}{(a^2-1)^{3/2}}-\frac{iab^2\text{ArcSin}(a+bx)\log\left(1+\frac{ie^{i\text{ArcSin}(a+bx)}}{a-\sqrt{a^2-1}}\right)}{(a^2-1)^{3/2}}+\frac{iab^2\text{ArcSin}(a+bx)\log\left(1+\frac{ie^{i\text{ArcSin}(a+bx)}}{\sqrt{a^2-1}+a}\right)}{(a^2-1)^{3/2}}-\frac{b\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)}{(1-a^2)\,x}+\frac{b^2\log(x)}{1-a^2}-\frac{\text{ArcSin}(a+bx)^2}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^2/x^3,x]
```

```
[Out] -((b*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/((1 - a^2)*x)) - ArcSin[a + b*x
]^2/(2*x^2) - (I*a*b^2*ArcSin[a + b*x]*Log[1 + (I*E^(I*ArcSin[a + b*x]))/(a
 - Sqrt[-1 + a^2])])/(-1 + a^2)^(3/2) + (I*a*b^2*ArcSin[a + b*x]*Log[1 + (I
*E^(I*ArcSin[a + b*x]))/(a + Sqrt[-1 + a^2])])/(-1 + a^2)^(3/2) + (b^2*Log[
x])/(1 - a^2) - (a*b^2*PolyLog[2, ((-I)*E^(I*ArcSin[a + b*x]))/(a - Sqrt[-1
 + a^2])])/(-1 + a^2)^(3/2) + (a*b^2*PolyLog[2, ((-I)*E^(I*ArcSin[a + b*x])
)/(a + Sqrt[-1 + a^2])])/(-1 + a^2)^(3/2)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2296

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[2*(c/q), Int[
(f + g*x)^m*(F^u/(b - q + 2*c*F^u)), x], x] - Dist[2*(c/q), Int[(f + g*x)^m
*(F^u/(b + q + 2*c*F^u)), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2747

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rule 3404

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[(c + d*x)^m*(E^(I*(e + f*x))/(I*b + 2*a*E^(I*(e + f*x)
) - I*b*E^(2*I*(e + f*x)))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3405

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[b*(c + d*x)^m*(Cos[e + f*x]/(f*(a^2 - b^2)*(a + b*Sin[e + f
*x]))), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[b*d*(m/(f*(a^2 - b^2))), Int[(c + d*x)^(m - 1)*(Cos[e + f*x]/(a
+ b*Sin[e + f*x])), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 4827

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(e*(m + 1))), x] -
Dist[b*c*(n/(e*(m + 1))), Int[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1
```

```
)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{\sin^{-1}(a+bx)^2}{x^3}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)^2}{\left(-\frac{a}{b}+\frac{x}{b}\right)^3}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{\sin^{-1}(a+bx)^2}{2x^2} + \text{Subst}\left(\int \frac{\sin^{-1}(x)}{\left(-\frac{a}{b}+\frac{x}{b}\right)^2\sqrt{1-x^2}}\,dx, x, a+bx\right)$$

$$= -\frac{\sin^{-1}(a+bx)^2}{2x^2} + \text{Subst}\left(\int \frac{x}{\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)^2}\,dx, x, \sin^{-1}(a+bx)\right)$$

$$= -\frac{b\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)}{(1-a^2)\,x} - \frac{\sin^{-1}(a+bx)^2}{2x^2} + \frac{b\text{Subst}\left(\int \frac{\cos(x)}{-\frac{a}{b}+\frac{\sin(x)}{b}}\,dx, x, \sin^{-}\right.}{1-a^2}$$

$$= -\frac{b\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)}{(1-a^2)\,x} - \frac{\sin^{-1}(a+bx)^2}{2x^2} + \frac{(2ab)\text{Subst}\left(\int \frac{e^{ix}x}{\frac{i}{b}-\frac{2ae^{ix}}{b}-\frac{ie^{2ix}}{b}}\,dx\right.}{1-a^2}$$

$$= -\frac{b\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)}{(1-a^2)\,x} - \frac{\sin^{-1}(a+bx)^2}{2x^2} + \frac{b^2\log(x)}{1-a^2} + \frac{(2iab)\text{Subst}\left(\int \right.}{}$$

$$= -\frac{b\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)}{(1-a^2)\,x} - \frac{\sin^{-1}(a+bx)^2}{2x^2} - \frac{iab^2\sin^{-1}(a+bx)\log\left(1+\frac{i}{a-}\right.}{(-1+a^2)^{3/2}}$$

$$= -\frac{b\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)}{(1-a^2)\,x} - \frac{\sin^{-1}(a+bx)^2}{2x^2} - \frac{iab^2\sin^{-1}(a+bx)\log\left(1+\frac{i}{a-}\right.}{(-1+a^2)^{3/2}}$$

$$= -\frac{b\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)}{(1-a^2)\,x} - \frac{\sin^{-1}(a+bx)^2}{2x^2} - \frac{iab^2\sin^{-1}(a+bx)\log\left(1+\frac{i}{a-}\right.}{(-1+a^2)^{3/2}}$$

Mathematica [A]
time = 0.09, size = 314, normalized size = 1.15

$$\frac{2\sqrt{-1+a^2}\,bx\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)+\sqrt{-1+a^2}\,\text{ArcSin}(a+bx)^2-a^2\sqrt{-1+a^2}\,\text{ArcSin}(a+bx)^2-2iab^2x^2\text{ArcSin}(a+bx)\log\left(\frac{a-\sqrt{-1+a^2}+ie^{i\text{ArcSin}(a+bx)}}{a-\sqrt{-1+a^2}}\right)+2iab^2x^2\text{ArcSin}(a+bx)\log\left(\frac{a+\sqrt{-1+a^2}+ie^{i\text{ArcSin}(a+bx)}}{a+\sqrt{-1+a^2}}\right)-2\sqrt{-1+a^2}\,b^2x^2\log(x)-2ab^2x^2\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(a+bx)}}{-a+\sqrt{-1+a^2}}\right)+2ab^2x^2\text{PolyLog}\left(2,-\frac{ie^{i\text{ArcSin}(a+bx)}}{a+\sqrt{-1+a^2}}\right)}{2\left(-1+a^2\right)^{3/2}x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^2/x^3,x]
```

```
[Out] (2*Sqrt[-1 + a^2]*b*x*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x] + Sqrt[-1 + a^2
]*ArcSin[a + b*x]^2 - a^2*Sqrt[-1 + a^2]*ArcSin[a + b*x]^2 - (2*I)*a*b^2*x^
2*ArcSin[a + b*x]*Log[(a - Sqrt[-1 + a^2] + I*E^(I*ArcSin[a + b*x]))/(a - S
qrt[-1 + a^2])] + (2*I)*a*b^2*x^2*ArcSin[a + b*x]*Log[(a + Sqrt[-1 + a^2] +
 I*E^(I*ArcSin[a + b*x]))/(a + Sqrt[-1 + a^2])] - 2*Sqrt[-1 + a^2]*b^2*x^2*
Log[x] - 2*a*b^2*x^2*PolyLog[2, (I*E^(I*ArcSin[a + b*x]))/(-a + Sqrt[-1 + a
^2])] + 2*a*b^2*x^2*PolyLog[2, ((-I)*E^(I*ArcSin[a + b*x]))/(a + Sqrt[-1 +
a^2])])/(2*(-1 + a^2)^(3/2)*x^2)
```

Maple [A]
time = 1.22, size = 521, normalized size = 1.92

method	result
derivativedivides	$b^2\left(-\frac{\arcsin(bx+a)\left(2i(bx+a)^2-\arcsin(bx+a)-2(bx+a)\sqrt{1-(bx+a)^2}+a^2\arcsin(bx+a)+2ia^2+2a\sqrt{1-\right.}{2(a^2-1)b^2x^2}\right.$
default	$b^2\left(-\frac{\arcsin(bx+a)\left(2i(bx+a)^2-\arcsin(bx+a)-2(bx+a)\sqrt{1-(bx+a)^2}+a^2\arcsin(bx+a)+2ia^2+2a\sqrt{1-\right.}{2(a^2-1)b^2x^2}\right.$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)^2/x^3,x,method=_RETURNVERBOSE)
```

```
[Out] b^2*(-1/2*arcsin(b*x+a)*(2*I*(b*x+a)^2-arcsin(b*x+a)-2*(b*x+a)*(1-(b*x+a)^2
)^(1/2)+a^2*arcsin(b*x+a)+2*I*a^2+2*a*(1-(b*x+a)^2)^(1/2)-4*I*a*(b*x+a))/(a
^2-1)/b^2/x^2+2/(a^2-1)*ln(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))-1/(a^2-1)*ln(I*(I
*(b*x+a)+(1-(b*x+a)^2)^(1/2))^2+2*a*(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))-I)-I*(-
a^2+1)^(1/2)/(a^2-1)^2*dilog((I*a+(-a^2+1)^(1/2)-I*(b*x+a)-(1-(b*x+a)^2)^(1
/2))/(I*a+(-a^2+1)^(1/2)))*a+(-a^2+1)^(1/2)/(a^2-1)^2*a*arcsin(b*x+a)*ln((I
*a+(-a^2+1)^(1/2)-I*(b*x+a)-(1-(b*x+a)^2)^(1/2))/(I*a+(-a^2+1)^(1/2)))-(-a^
2+1)^(1/2)/(a^2-1)^2*a*arcsin(b*x+a)*ln((I*a-(-a^2+1)^(1/2)-I*(b*x+a)-(1-(b
*x+a)^2)^(1/2))/(I*a-(-a^2+1)^(1/2)))+I*(-a^2+1)^(1/2)/(a^2-1)^2*dilog((I*a
-(-a^2+1)^(1/2)-I*(b*x+a)-(1-(b*x+a)^2)^(1/2))/(I*a-(-a^2+1)^(1/2)))*a)
```

Maxima [F(-2)]

time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2/x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a-1>0)', see `assume?` for more det
ails)Is
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2/x^3,x, algorithm="fricas")
```

```
[Out] integral(arcsin(b*x + a)^2/x^3, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}^2(a+bx)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**2/x**3,x)
```

```
[Out] Integral(asin(a + b*x)**2/x**3, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2/x^3,x, algorithm="giac")
```

```
[Out] integrate(arcsin(b*x + a)^2/x^3, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\operatorname{asin}(a+b\,x)^2}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)^2/x^3,x)
```

```
[Out] int(asin(a + b*x)^2/x^3, x)
```

3.138 $\int x^2 \mathbf{ArcSin}(a+bx)^3 \, dx$

Optimal. Leaf size=371

$$-\frac{14\sqrt{1-(a+bx)^2}}{9b^3}-\frac{6a^2\sqrt{1-(a+bx)^2}}{b^3}+\frac{3a(a+bx)\sqrt{1-(a+bx)^2}}{4b^3}+\frac{2(1-(a+bx)^2)^{3/2}}{27b^3}-\frac{3a\text{ArcSin}(}{4b^3}$$

```
[Out] 2/27*(1-(b*x+a)^2)^(3/2)/b^3-3/4*a*arcsin(b*x+a)/b^3-4/3*(b*x+a)*arcsin(b*x
+a)/b^3-6*a^2*(b*x+a)*arcsin(b*x+a)/b^3+3/2*a*(b*x+a)^2*arcsin(b*x+a)/b^3-2
/9*(b*x+a)^3*arcsin(b*x+a)/b^3+1/2*a*arcsin(b*x+a)^3/b^3+1/3*a^3*arcsin(b*x
+a)^3/b^3+1/3*x^3*arcsin(b*x+a)^3-14/9*(1-(b*x+a)^2)^(1/2)/b^3-6*a^2*(1-(b*
x+a)^2)^(1/2)/b^3+3/4*a*(b*x+a)*(1-(b*x+a)^2)^(1/2)/b^3+2/3*arcsin(b*x+a)^2
*(1-(b*x+a)^2)^(1/2)/b^3+3*a^2*arcsin(b*x+a)^2*(1-(b*x+a)^2)^(1/2)/b^3-3/2*
a*(b*x+a)*arcsin(b*x+a)^2*(1-(b*x+a)^2)^(1/2)/b^3+1/3*(b*x+a)^2*arcsin(b*x+
a)^2*(1-(b*x+a)^2)^(1/2)/b^3
```

Rubi [A]
time = 0.31, antiderivative size = 371, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 11, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.917$, Rules used = {4889, 4827, 4857, 3398, 3377, 2718, 3392, 30, 2715, 8, 2713}

$$\frac{a^3\text{ArcSin}(a+bx)^3}{3b^3}-\frac{6a^2(a+bx)\text{ArcSin}(a+bx)}{b^3}+\frac{3a^2\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)^2}{b^3}-\frac{6a^2\sqrt{1-(a+bx)^2}}{b^3}-\frac{2(a+bx)^3\text{ArcSin}(a+bx)}{9b^3}+\frac{\sqrt{1-(a+bx)^2}\,(a+bx)^2\text{ArcSin}(a+bx)^2}{3b^3}+\frac{3a(a+bx)^2\text{ArcSin}(a+bx)}{2b^3}-\frac{3a\sqrt{1-(a+bx)^2}\,(a+bx)\text{ArcSin}(a+bx)^2}{2b^3}-\frac{4(a+bx)\text{ArcSin}(a+bx)}{3b^3}+\frac{a\text{ArcSin}(a+bx)^3}{2b^3}+\frac{2\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)^2}{3b^3}-\frac{3a\text{ArcSin}(a+bx)}{4b^3}+\frac{1}{3}x^3\text{ArcSin}(a+bx)^3+\frac{3a\sqrt{1-(a+bx)^2}\,(a+bx)}{4b^3}+\frac{2(1-(a+bx)^2)^{3/2}}{27b^3}-\frac{14\sqrt{1-(a+bx)^2}}{9b^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcSin[a + b*x]^3,x]
```

```
[Out] (-14*Sqrt[1 - (a + b*x)^2])/(9*b^3) - (6*a^2*Sqrt[1 - (a + b*x)^2])/b^3 + (
3*a*(a + b*x)*Sqrt[1 - (a + b*x)^2])/(4*b^3) + (2*(1 - (a + b*x)^2)^(3/2))/
(27*b^3) - (3*a*ArcSin[a + b*x])/(4*b^3) - (4*(a + b*x)*ArcSin[a + b*x])/(3
*b^3) - (6*a^2*(a + b*x)*ArcSin[a + b*x])/b^3 + (3*a*(a + b*x)^2*ArcSin[a +
 b*x])/(2*b^3) - (2*(a + b*x)^3*ArcSin[a + b*x])/(9*b^3) + (2*Sqrt[1 - (a +
 b*x)^2]*ArcSin[a + b*x]^2)/(3*b^3) + (3*a^2*Sqrt[1 - (a + b*x)^2]*ArcSin[a
 + b*x]^2)/b^3 - (3*a*(a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^2)/(2
*b^3) + ((a + b*x)^2*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^2)/(3*b^3) + (a*
ArcSin[a + b*x]^3)/(2*b^3) + (a^3*ArcSin[a + b*x]^3)/(3*b^3) + (x^3*ArcSin[
a + b*x]^3)/3
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2713

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> Dist[-d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
&& IGtQ[(n - 1)/2, 0]
```

Rule 2715

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(-b)*Cos[c + d*
x]*((b*Sin[c + d*x])^(n - 1)/(d*n)), x] + Dist[b^2*((n - 1)/n), Int[(b*Sin[
c + d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2
*n]
```

Rule 2718

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> Simp[-Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3377

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
-(c + d*x)^m)*(Cos[e + f*x]/f), x] + Dist[d*(m/f), Int[(c + d*x)^(m - 1)*Co
s[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3392

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[d*m*(c + d*x)^(m - 1)*((b*Sin[e + f*x])^n/(f^2*n^2)), x] + (Dist
[b^2*((n - 1)/n), Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[d
^2*m*((m - 1)/(f^2*n^2)), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[b*(c + d*x)^m*Cos[e + f*x]*((b*Sin[e + f*x])^(n - 1)/(f*n)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3398

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rule 4827

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(e*(m + 1))), x] -
Dist[b*c*(n/(e*(m + 1))), Int[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1
)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
```

```
&& NeQ[m, -1]
```

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\begin{aligned}
\int x^2 \sin^{-1}(a+bx)^3\,dx &= \frac{\text{Subst}\left(\int \left(-\frac{a}{b}+\frac{x}{b}\right)^2 \sin^{-1}(x)^3\,dx, x, a+bx\right)}{b}\\
&= \frac{1}{3}x^3\sin^{-1}(a+bx)^3 - \text{Subst}\left(\int \frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^3 \sin^{-1}(x)^2}{\sqrt{1-x^2}}\,dx, x, a+bx\right)\\
&= \frac{1}{3}x^3\sin^{-1}(a+bx)^3 - \text{Subst}\left(\int x^2\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)^3\,dx, x, \sin^{-1}(a+bx)\right)\\
&= \frac{1}{3}x^3\sin^{-1}(a+bx)^3 - \text{Subst}\left(\int \left(-\frac{a^3x^2}{b^3}+\frac{3a^2x^2\sin(x)}{b^3}-\frac{3ax^2\sin^2(x)}{b^3}+\frac{x^2\sin^3}{b^3}\right.\right.\\
&= \frac{a^3\sin^{-1}(a+bx)^3}{3b^3}+\frac{1}{3}x^3\sin^{-1}(a+bx)^3-\frac{\text{Subst}\left(\int x^2\sin^3(x)\,dx, x, \sin^{-1}(a+bx)\right)}{b^3}\\
&= \frac{3a(a+bx)^2\sin^{-1}(a+bx)}{2b^3}-\frac{2(a+bx)^3\sin^{-1}(a+bx)}{9b^3}+\frac{3a^2\sqrt{1-(a+bx)^2}\,\sin^{-}}{b^3}\\
&= \frac{3a(a+bx)\sqrt{1-(a+bx)^2}}{4b^3}-\frac{6a^2(a+bx)\sin^{-1}(a+bx)}{b^3}+\frac{3a(a+bx)^2\sin^{-1}(a+}{2b^3}\\
&= -\frac{2\sqrt{1-(a+bx)^2}}{9b^3}-\frac{6a^2\sqrt{1-(a+bx)^2}}{b^3}+\frac{3a(a+bx)\sqrt{1-(a+bx)^2}}{4b^3}+\frac{2(1}{}\\
&= -\frac{14\sqrt{1-(a+bx)^2}}{9b^3}-\frac{6a^2\sqrt{1-(a+bx)^2}}{b^3}+\frac{3a(a+bx)\sqrt{1-(a+bx)^2}}{4b^3}+\frac{2(}{}
\end{aligned}$$

Mathematica [A]

time = 0.14, size = 181, normalized size = 0.49

$$\frac{-\sqrt{1-a^2-2abx-b^2x^2}\,(160+575a^2-65abx+8b^2x^2)-3(170a^3+132a^2bx+a(75-30b^2x^2)+8bx(6+b^2x^2))\,\mathrm{ArcSin}(a+bx)+18\sqrt{1-a^2-2abx-b^2x^2}\,(4+11a^2-5abx+2b^2x^2)\,\mathrm{ArcSin}(a+bx)^2+18(3a+2a^3+2b^3x^3)\,\mathrm{ArcSin}(a+bx)^3}{108b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcSin[a + b*x]^3,x]
```

```
[Out] (-(Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*(160 + 575*a^2 - 65*a*b*x + 8*b^2*x^2)
) - 3*(170*a^3 + 132*a^2*b*x + a*(75 - 30*b^2*x^2) + 8*b*x*(6 + b^2*x^2))*A
rcSin[a + b*x] + 18*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*(4 + 11*a^2 - 5*a*b*x
 + 2*b^2*x^2)*ArcSin[a + b*x]^2 + 18*(3*a + 2*a^3 + 2*b^3*x^3)*ArcSin[a + b
*x]^3)/(108*b^3)
```

Maple [A]
time = 0.11, size = 344, normalized size = 0.93

method	result
derivativedivides	$-\frac{a\left(4\arcsin(bx+a)^3(bx+a)^2+6\arcsin(bx+a)^2\sqrt{1-(bx+a)^2}\,(bx+a)-2\arcsin(bx+a)^3-6\arcsin(bx+a)(bx+a)^2-3(bx+a)\sqrt{}\right.}{4}$
default	$-\frac{a\left(4\arcsin(bx+a)^3(bx+a)^2+6\arcsin(bx+a)^2\sqrt{1-(bx+a)^2}\,(bx+a)-2\arcsin(bx+a)^3-6\arcsin(bx+a)(bx+a)^2-3(bx+a)\sqrt{}\right.}{4}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arcsin(b*x+a)^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/b^3*(-1/4*a*(4*arcsin(b*x+a)^3*(b*x+a)^2+6*arcsin(b*x+a)^2*(1-(b*x+a)^2)^
(1/2)*(b*x+a)-2*arcsin(b*x+a)^3-6*arcsin(b*x+a)*(b*x+a)^2-3*(b*x+a)*(1-(b*x
+a)^2)^(1/2)+3*arcsin(b*x+a))+1/3*arcsin(b*x+a)^3*((b*x+a)^2-3)*(b*x+a)+arc
sin(b*x+a)^2*(1-(b*x+a)^2)^(1/2)-14/9*(1-(b*x+a)^2)^(1/2)-2*(b*x+a)*arcsin(
b*x+a)+1/3*arcsin(b*x+a)^2*(-1+(b*x+a)^2)*(1-(b*x+a)^2)^(1/2)-2/9*arcsin(b*
x+a)*((b*x+a)^2-3)*(b*x+a)-2/27*(-1+(b*x+a)^2)*(1-(b*x+a)^2)^(1/2)+a^2*(arc
sin(b*x+a)^3*(b*x+a)+3*arcsin(b*x+a)^2*(1-(b*x+a)^2)^(1/2)-6*(1-(b*x+a)^2)^
(1/2)-6*(b*x+a)*arcsin(b*x+a))+arcsin(b*x+a)^3*(b*x+a))
```

Maple [F]

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/3*x^3*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))^3 + b*integr
ate(sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)*x^3*arctan2(b*x + a, sqrt(b*x + a
+ 1)*sqrt(-b*x - a + 1))^2/(b^2*x^2 + 2*a*b*x + a^2 - 1), x)
```

Fricas [A]
time = 2.28, size = 152, normalized size = 0.41

$$\frac{18\,(2\,b^3x^3+2\,a^3+3\,a)\arcsin(bx+a)^3-3\,(8\,b^3x^3-30\,ab^2x^2+170\,a^3+12\,(11\,a^2+4)bx+75\,a)\arcsin(bx+a)-\left(8\,b^2x^2-65\,abx-18\,(2\,b^2x^2-5\,abx+11\,a^2+4)\arcsin(bx+a)^2+575\,a^2+160\right)\sqrt{-b^2x^2-2\,abx-a^2+1}}{108\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/108*(18*(2*b^3*x^3 + 2*a^3 + 3*a)*arcsin(b*x + a)^3 - 3*(8*b^3*x^3 - 30*a
*b^2*x^2 + 170*a^3 + 12*(11*a^2 + 4)*b*x + 75*a)*arcsin(b*x + a) - (8*b^2*x
^2 - 65*a*b*x - 18*(2*b^2*x^2 - 5*a*b*x + 11*a^2 + 4)*arcsin(b*x + a)^2 + 5
75*a^2 + 160)*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1))/b^3
```

Sympy [A]
time = 0.47, size = 432, normalized size = 1.16

$$\begin{cases} \frac{a^3\operatorname{asin}^3(a+bx)}{3b^3}-\frac{85a^3\operatorname{asin}(a+bx)}{18b^3}-\frac{11a^2x\operatorname{asin}(a+bx)}{3b^2}+\frac{11a^2\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}^2(a+bx)}{6b^3}-\frac{575a^2\sqrt{-a^2-2abx-b^2x^2+1}}{108b^3}+\frac{5ax^2\operatorname{asin}(a+bx)}{6b}-\frac{5ax\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}^2(a+bx)}{6b^2}+\frac{65ax\sqrt{-a^2-2abx-b^2x^2+1}}{108b^2}+\frac{a\operatorname{asin}^3(a+bx)}{2b^3}-\frac{25a\operatorname{asin}(a+bx)}{12b^3}+\frac{x^3\operatorname{asin}^3(a+bx)}{3}-\frac{2x^3\operatorname{asin}(a+bx)}{9}+\frac{x^2\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}^2(a+bx)}{3b}-\frac{2x^2\sqrt{-a^2-2abx-b^2x^2+1}}{27b}-\frac{4x\operatorname{asin}(a+bx)}{3b^2}+\frac{2\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}^2(a+bx)}{3b^3}-\frac{40\sqrt{-a^2-2abx-b^2x^2+1}}{27b^3} & \text{for}\: b\neq 0 \\ \frac{x^3\operatorname{asin}^3(a)}{3} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*asin(b*x+a)**3,x)
```

```
[Out] Piecewise((a**3*asin(a + b*x)**3/(3*b**3) - 85*a**3*asin(a + b*x)/(18*b**3)
 - 11*a**2*x*asin(a + b*x)/(3*b**2) + 11*a**2*sqrt(-a**2 - 2*a*b*x - b**2*x
**2 + 1)*asin(a + b*x)**2/(6*b**3) - 575*a**2*sqrt(-a**2 - 2*a*b*x - b**2*x
**2 + 1)/(108*b**3) + 5*a*x**2*asin(a + b*x)/(6*b) - 5*a*x*sqrt(-a**2 - 2*a
*b*x - b**2*x**2 + 1)*asin(a + b*x)**2/(6*b**2) + 65*a*x*sqrt(-a**2 - 2*a*b
*x - b**2*x**2 + 1)/(108*b**2) + a*asin(a + b*x)**3/(2*b**3) - 25*a*asin(a
+ b*x)/(12*b**3) + x**3*asin(a + b*x)**3/3 - 2*x**3*asin(a + b*x)/9 + x**2*
sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)**2/(3*b) - 2*x**2*sqrt(
-a**2 - 2*a*b*x - b**2*x**2 + 1)/(27*b) - 4*x*asin(a + b*x)/(3*b**2) + 2*sq
rt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)**2/(3*b**3) - 40*sqrt(-a*
*2 - 2*a*b*x - b**2*x**2 + 1)/(27*b**3), Ne(b, 0)), (x**3*asin(a)**3/3, Tru
e))
```

Giac [A]
time = 0.42, size = 389, normalized size = 1.05

$$\frac{(bx+a)a^2\arcsin(bx+a)^3}{b^3}+\frac{((bx+a)^2-1)(bx+a)\arcsin(bx+a)^3}{3\,b^3}-\frac{((bx+a)^2-1)a\arcsin(bx+a)^3}{b^3}-\frac{3\sqrt{-(bx+a)^2+1}\,(bx+a)a\arcsin(bx+a)^2}{2\,b^3}+\frac{3\sqrt{-(bx+a)^2+1}\,a^2\arcsin(bx+a)^2}{b^3}-\frac{6\,(bx+a)a^2\arcsin(bx+a)}{b^3}+\frac{(bx+a)\arcsin(bx+a)^3}{3\,b^3}-\frac{a\arcsin(bx+a)^3}{2\,b^3}-\frac{(-(bx+a)^2+1)^{\frac{3}{2}}\arcsin(bx+a)^2}{3\,b^3}-\frac{2\,((bx+a)^2-1)(bx+a)\arcsin(bx+a)}{9\,b^3}+\frac{3\,((bx+a)^2-1)a\arcsin(bx+a)}{2\,b^3}+\frac{3\sqrt{-(bx+a)^2+1}\,(bx+a)a}{4\,b^3}-\frac{6\sqrt{-(bx+a)^2+1}\,a^2}{b^3}+\frac{\sqrt{-(bx+a)^2+1}\,\arcsin(bx+a)^2}{b^3}-\frac{14\,(bx+a)\arcsin(bx+a)}{9\,b^3}+\frac{3\,a\arcsin(bx+a)}{4\,b^3}+\frac{2\,(-(bx+a)^2+1)^{\frac{3}{2}}}{27\,b^3}-\frac{14\sqrt{-(bx+a)^2+1}}{9\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(b*x+a)^3,x, algorithm="giac")
```

```
[Out] (b*x + a)*a^2*arcsin(b*x + a)^3/b^3 + 1/3*((b*x + a)^2 - 1)*(b*x + a)*arcsi
n(b*x + a)^3/b^3 - ((b*x + a)^2 - 1)*a*arcsin(b*x + a)^3/b^3 - 3/2*sqrt(-(b
*x + a)^2 + 1)*(b*x + a)*a*arcsin(b*x + a)^2/b^3 + 3*sqrt(-(b*x + a)^2 + 1)
*a^2*arcsin(b*x + a)^2/b^3 - 6*(b*x + a)*a^2*arcsin(b*x + a)/b^3 + 1/3*(b*x
 + a)*arcsin(b*x + a)^3/b^3 - 1/2*a*arcsin(b*x + a)^3/b^3 - 1/3*(-(b*x + a)
^2 + 1)^(3/2)*arcsin(b*x + a)^2/b^3 - 2/9*((b*x + a)^2 - 1)*(b*x + a)*arcsi
n(b*x + a)/b^3 + 3/2*((b*x + a)^2 - 1)*a*arcsin(b*x + a)/b^3 + 3/4*sqrt(-(b
*x + a)^2 + 1)*(b*x + a)*a/b^3 - 6*sqrt(-(b*x + a)^2 + 1)*a^2/b^3 + sqrt(-(
b*x + a)^2 + 1)*arcsin(b*x + a)^2/b^3 - 14/9*(b*x + a)*arcsin(b*x + a)/b^3
+ 3/4*a*arcsin(b*x + a)/b^3 + 2/27*(-(b*x + a)^2 + 1)^(3/2)/b^3 - 14/9*sqrt
(-(b*x + a)^2 + 1)/b^3
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int x^2 \operatorname{asin}(a + b\,x)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*asin(a + b*x)^3,x)
```

```
[Out] int(x^2*asin(a + b*x)^3, x)
```

3.139 $\int x\textbf{ArcSin}(a+bx)^3\,dx$

Optimal. Leaf size=211

$$\frac{6a\sqrt{1-(a+bx)^2}}{b^2}-\frac{3(a+bx)\sqrt{1-(a+bx)^2}}{8b^2}+\frac{3\text{ArcSin}(a+bx)}{8b^2}+\frac{6a(a+bx)\text{ArcSin}(a+bx)}{b^2}-\frac{3(a+bx)^2}{}$$

[Out] 3/8*arcsin(b*x+a)/b^2+6*a*(b*x+a)*arcsin(b*x+a)/b^2-3/4*(b*x+a)^2*arcsin(b*x+a)/b^2-1/4*arcsin(b*x+a)^3/b^2-1/2*a^2*arcsin(b*x+a)^3/b^2+1/2*x^2*arcsin(b*x+a)^3+6*a*(1-(b*x+a)^2)^(1/2)/b^2-3/8*(b*x+a)*(1-(b*x+a)^2)^(1/2)/b^2-3*a*arcsin(b*x+a)^2*(1-(b*x+a)^2)^(1/2)/b^2+3/4*(b*x+a)*arcsin(b*x+a)^2*(1-(b*x+a)^2)^(1/2)/b^2

Rubi [A]
time = 0.22, antiderivative size = 211, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 10, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 1.000$, Rules used = {4889, 4827, 4857, 3398, 3377, 2718, 3392, 30, 2715, 8}

$$-\frac{a^2\text{ArcSin}(a+bx)^3}{2b^2}-\frac{\text{ArcSin}(a+bx)^3}{4b^2}+\frac{3(a+bx)\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)^2}{4b^2}-\frac{3a\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)^2}{b^2}-\frac{3(a+bx)^2\text{ArcSin}(a+bx)}{4b^2}+\frac{6a(a+bx)\text{ArcSin}(a+bx)}{b^2}+\frac{3\text{ArcSin}(a+bx)}{8b^2}+\frac{1}{2}x^2\text{ArcSin}(a+bx)^3-\frac{3(a+bx)\sqrt{1-(a+bx)^2}}{8b^2}+\frac{6a\sqrt{1-(a+bx)^2}}{b^2}$$

Antiderivative was successfully verified.

[In] Int[x*ArcSin[a + b*x]^3,x]

[Out] (6*a*Sqrt[1 - (a + b*x)^2])/b^2 - (3*(a + b*x)*Sqrt[1 - (a + b*x)^2])/(8*b^2) + (3*ArcSin[a + b*x])/(8*b^2) + (6*a*(a + b*x)*ArcSin[a + b*x])/b^2 - (3*(a + b*x)^2*ArcSin[a + b*x])/(4*b^2) - (3*a*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^2)/b^2 + (3*(a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^2)/(4*b^2) - ArcSin[a + b*x]^3/(4*b^2) - (a^2*ArcSin[a + b*x]^3)/(2*b^2) + (x^2*ArcSin[a + b*x]^3)/2

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && NeQ[m, -1]
```

Rule 2715

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(-b)*Cos[c + d*x]*((b*Sin[c + d*x])^(n - 1)/(d*n)), x] + Dist[b^2*((n - 1)/n), Int[(b*Sin[c + d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n]
```

Rule 2718

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> Simp[-Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3377

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
-(c + d*x)^m)*(Cos[e + f*x]/f), x] + Dist[d*(m/f), Int[(c + d*x)^(m - 1)*Co
s[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3392

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[d*m*(c + d*x)^(m - 1)*((b*Sin[e + f*x])^n/(f^2*n^2)), x] + (Dist
[b^2*((n - 1)/n), Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[d
^2*m*((m - 1)/(f^2*n^2)), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[b*(c + d*x)^m*Cos[e + f*x]*((b*Sin[e + f*x])^(n - 1)/(f*n)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3398

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rule 4827

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(e*(m + 1))), x] -
Dist[b*c*(n/(e*(m + 1))), Int[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1
)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
```

```
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int x\sin^{-1}(a+bx)^3\,dx = \frac{\text{Subst}\left(\int\left(-\frac{a}{b}+\frac{x}{b}\right)\sin^{-1}(x)^3\,dx, x, a+bx\right)}{b}$$
$$= \frac{1}{2}x^2\sin^{-1}(a+bx)^3 - \frac{3}{2}\text{Subst}\left(\int\frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^2\sin^{-1}(x)^2}{\sqrt{1-x^2}}\,dx, x, a+bx\right)$$
$$= \frac{1}{2}x^2\sin^{-1}(a+bx)^3 - \frac{3}{2}\text{Subst}\left(\int x^2\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)^2\,dx, x, \sin^{-1}(a+bx)\right)$$
$$= \frac{1}{2}x^2\sin^{-1}(a+bx)^3 - \frac{3}{2}\text{Subst}\left(\int\left(\frac{a^2x^2}{b^2}-\frac{2ax^2\sin(x)}{b^2}+\frac{x^2\sin^2(x)}{b^2}\right)\,dx, x, \sin^{-1}$$
$$= -\frac{a^2\sin^{-1}(a+bx)^3}{2b^2}+\frac{1}{2}x^2\sin^{-1}(a+bx)^3-\frac{3\text{Subst}\left(\int x^2\sin^2(x)\,dx, x, \sin^{-1}(a+b$$
$$= -\frac{3(a+bx)^2\sin^{-1}(a+bx)}{4b^2}-\frac{3a\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)^2}{b^2}+\frac{3(a+bx)\sqrt{1-$$
$$= -\frac{3(a+bx)\sqrt{1-(a+bx)^2}}{8b^2}+\frac{6a(a+bx)\sin^{-1}(a+bx)}{b^2}-\frac{3(a+bx)^2\sin^{-1}(a+b$$
$$= \frac{6a\sqrt{1-(a+bx)^2}}{b^2}-\frac{3(a+bx)\sqrt{1-(a+bx)^2}}{8b^2}+\frac{3\sin^{-1}(a+bx)}{8b^2}+\frac{6a(a+bx)$$

Mathematica [A]
time = 0.09, size = 135, normalized size = 0.64

$$\frac{3(15a-bx)\sqrt{1-a^2-2abx-b^2x^2}+(3+42a^2+36abx-6b^2x^2)\,\text{ArcSin}(a+bx)-6(3a-bx)\sqrt{1-a^2-2abx-b^2x^2}\,\text{ArcSin}(a+bx)^2+(-2-4a^2+4b^2x^2)\,\text{ArcSin}(a+bx)^3}{8b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcSin[a + b*x]^3,x]
```

```
[Out] (3*(15*a - b*x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2] + (3 + 42*a^2 + 36*a*b*x
- 6*b^2*x^2)*ArcSin[a + b*x] - 6*(3*a - b*x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x
^2]*ArcSin[a + b*x]^2 + (-2 - 4*a^2 + 4*b^2*x^2)*ArcSin[a + b*x]^3)/(8*b^2)
```

Maple [A]
time = 0.10, size = 185, normalized size = 0.88

method	result

derivativedivides	$\frac{\frac{\arcsin(bx+a)^3\left(-1+(bx+a)^2\right)}{2}+\frac{3\arcsin(bx+a)^2\left((bx+a)\sqrt{1-(bx+a)^2}+\arcsin(bx+a)\right)}{4}-\frac{3\arcsin(bx+a)\left(-1+(bx+a)^2\right)}{4}-$
default	$\frac{\frac{\arcsin(bx+a)^3\left(-1+(bx+a)^2\right)}{2}+\frac{3\arcsin(bx+a)^2\left((bx+a)\sqrt{1-(bx+a)^2}+\arcsin(bx+a)\right)}{4}-\frac{3\arcsin(bx+a)\left(-1+(bx+a)^2\right)}{4}-$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arcsin(b*x+a)^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/b^2*(1/2*arcsin(b*x+a)^3*(-1+(b*x+a)^2)+3/4*arcsin(b*x+a)^2*((b*x+a)*(1-(
b*x+a)^2)^(1/2)+arcsin(b*x+a))-3/4*arcsin(b*x+a)*(-1+(b*x+a)^2)-3/8*(b*x+a)
*(1-(b*x+a)^2)^(1/2)-3/8*arcsin(b*x+a)-1/2*arcsin(b*x+a)^3-a*(arcsin(b*x+a)
^3*(b*x+a)+3*arcsin(b*x+a)^2*(1-(b*x+a)^2)^(1/2)-6*(1-(b*x+a)^2)^(1/2)-6*(b
*x+a)*arcsin(b*x+a)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/2*x^2*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))^3 + 3*b*inte
grate(1/2*sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)*x^2*arctan2(b*x + a, sqrt(b*
x + a + 1)*sqrt(-b*x - a + 1))^2/(b^2*x^2 + 2*a*b*x + a^2 - 1), x)
```

Fricas [A]
time = 1.63, size = 108, normalized size = 0.51

$$\frac{2\,(2\,b^2x^2-2\,a^2-1)\arcsin\left(bx+a\right)^3-3\,(2\,b^2x^2-12\,abx-14\,a^2-1)\arcsin\left(bx+a\right)+3\,\sqrt{-b^2x^2-2\,abx-a^2+1}\,\left(2\,(bx-3\,a)\arcsin\left(bx+a\right)^2-bx+15\,a\right)}{8\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/8*(2*(2*b^2*x^2 - 2*a^2 - 1)*arcsin(b*x + a)^3 - 3*(2*b^2*x^2 - 12*a*b*x
- 14*a^2 - 1)*arcsin(b*x + a) + 3*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(2*(b*
x - 3*a)*arcsin(b*x + a)^2 - b*x + 15*a))/b^2
```

Sympy [A]
time = 0.28, size = 248, normalized size = 1.18

$$\begin{cases} -\frac{a^2\operatorname{asin}^3(a+bx)}{2b^2}+\frac{21a^2\operatorname{asin}(a+bx)}{4b^2}+\frac{9ax\operatorname{asin}(a+bx)}{2b}-\frac{9a\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}^2(a+bx)}{4b^2}+\frac{45a\sqrt{-a^2-2abx-b^2x^2+1}}{8b^2}+\frac{x^2\operatorname{asin}^3(a+bx)}{2}-\frac{3x^2\operatorname{asin}(a+bx)}{4}+\frac{3x\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}^2(a+bx)}{4b}-\frac{3x\sqrt{-a^2-2abx-b^2x^2+1}}{8b}-\frac{\operatorname{asin}^3(a+bx)}{4b^2}+\frac{3\operatorname{asin}(a+bx)}{8b^2} & \text{for } b\neq 0 \\ \frac{x^2\operatorname{asin}^3(a)}{2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*asin(b*x+a)**3,x)
```

```
[Out] Piecewise((-a**2*asin(a + b*x)**3/(2*b**2) + 21*a**2*asin(a + b*x)/(4*b**2)
 + 9*a*x*asin(a + b*x)/(2*b) - 9*a*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*as
in(a + b*x)**2/(4*b**2) + 45*a*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/(8*b**
2) + x**2*asin(a + b*x)**3/2 - 3*x**2*asin(a + b*x)/4 + 3*x*sqrt(-a**2 - 2*
a*b*x - b**2*x**2 + 1)*asin(a + b*x)**2/(4*b) - 3*x*sqrt(-a**2 - 2*a*b*x -
b**2*x**2 + 1)/(8*b) - asin(a + b*x)**3/(4*b**2) + 3*asin(a + b*x)/(8*b**2)
, Ne(b, 0)), (x**2*asin(a)**3/2, True))
```

Giac [A]
time = 0.40, size = 203, normalized size = 0.96

$$-\frac{(bx+a)a\arcsin(bx+a)^3}{b^2}+\frac{((bx+a)^2-1)\arcsin(bx+a)^3}{2\,b^2}+\frac{3\,\sqrt{-(bx+a)^2+1}\,(bx+a)\arcsin(bx+a)^2}{4\,b^2}-\frac{3\,\sqrt{-(bx+a)^2+1}\,a\arcsin(bx+a)^2}{b^2}+\frac{6\,(bx+a)a\arcsin(bx+a)}{b^2}+\frac{\arcsin(bx+a)^3}{4\,b^2}-\frac{3\,((bx+a)^2-1)\arcsin(bx+a)}{4\,b^2}-\frac{3\,\sqrt{-(bx+a)^2+1}\,(bx+a)}{8\,b^2}+\frac{6\,\sqrt{-(bx+a)^2+1}\,a}{b^2}-\frac{3\arcsin(bx+a)}{8\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(b*x+a)^3,x, algorithm="giac")
```

```
[Out] -(b*x + a)*a*arcsin(b*x + a)^3/b^2 + 1/2*((b*x + a)^2 - 1)*arcsin(b*x + a)^
3/b^2 + 3/4*sqrt(-(b*x + a)^2 + 1)*(b*x + a)*arcsin(b*x + a)^2/b^2 - 3*sqrt
(-(b*x + a)^2 + 1)*a*arcsin(b*x + a)^2/b^2 + 6*(b*x + a)*a*arcsin(b*x + a)/
b^2 + 1/4*arcsin(b*x + a)^3/b^2 - 3/4*((b*x + a)^2 - 1)*arcsin(b*x + a)/b^2
 - 3/8*sqrt(-(b*x + a)^2 + 1)*(b*x + a)/b^2 + 6*sqrt(-(b*x + a)^2 + 1)*a/b^
2 - 3/8*arcsin(b*x + a)/b^2
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int x\,\mathrm{asin}(a+b\,x)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*asin(a + b*x)^3,x)
```

```
[Out] int(x*asin(a + b*x)^3, x)
```

3.140 $\int \mathbf{ArcSin}(a+bx)^3\,dx$

Optimal. Leaf size=82

$$-\frac{6\sqrt{1-(a+bx)^2}}{b}-\frac{6(a+bx)\text{ArcSin}(a+bx)}{b}+\frac{3\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)^2}{b}+\frac{(a+bx)\text{ArcSin}(a+bx}{b}$$

```
[Out] -6*(b*x+a)*arcsin(b*x+a)/b+(b*x+a)*arcsin(b*x+a)^3/b-6*(1-(b*x+a)^2)^(1/2)/
b+3*arcsin(b*x+a)^2*(1-(b*x+a)^2)^(1/2)/b
```

Rubi [A]
time = 0.06, antiderivative size = 82, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {4887, 4715, 4767, 267}

$$\frac{(a+bx)\text{ArcSin}(a+bx)^3}{b}+\frac{3\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)^2}{b}-\frac{6(a+bx)\text{ArcSin}(a+bx)}{b}-\frac{6\sqrt{1-(a+bx)^2}}{b}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^3,x]
```

```
[Out] (-6*Sqrt[1 - (a + b*x)^2])/b - (6*(a + b*x)*ArcSin[a + b*x])/b + (3*Sqrt[1
- (a + b*x)^2]*ArcSin[a + b*x]^2)/b + ((a + b*x)*ArcSin[a + b*x]^3)/b
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
```

```
}, x]
```

Rubi steps

$$\int \sin^{-1}(a+bx)^3\,dx = \frac{\text{Subst}\left(\int \sin^{-1}(x)^3\,dx, x, a+bx\right)}{b}$$
$$= \frac{(a+bx)\sin^{-1}(a+bx)^3}{b} - \frac{3\text{Subst}\left(\int \frac{x\sin^{-1}(x)^2}{\sqrt{1-x^2}}\,dx, x, a+bx\right)}{b}$$
$$= \frac{3\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)^2}{b} + \frac{(a+bx)\sin^{-1}(a+bx)^3}{b} - \frac{6\text{Subst}\left(\int \sin^{-1}(x)\,dx\right.}{b}$$
$$= -\frac{6(a+bx)\sin^{-1}(a+bx)}{b} + \frac{3\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)^2}{b} + \frac{(a+bx)\sin^{-1}(a+}{b}$$
$$= -\frac{6\sqrt{1-(a+bx)^2}}{b} - \frac{6(a+bx)\sin^{-1}(a+bx)}{b} + \frac{3\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)^2}{b}$$

Mathematica [A]
time = 0.03, size = 74, normalized size = 0.90

$$\frac{-6\sqrt{1-(a+bx)^2} - 6(a+bx)\text{ArcSin}(a+bx) + 3\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)^2 + (a+bx)\text{ArcSin}(a+bx)^3}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^3,x]
[Out] (-6*Sqrt[1 - (a + b*x)^2] - 6*(a + b*x)*ArcSin[a + b*x] + 3*Sqrt[1 - (a + b
*x)^2]*ArcSin[a + b*x]^2 + (a + b*x)*ArcSin[a + b*x]^3)/b
```

Maple [A]
time = 0.06, size = 71, normalized size = 0.87

method	result	si
derivativedivides	$\frac{\arcsin(bx+a)^3(bx+a)+3\arcsin(bx+a)^2\sqrt{1-(bx+a)^2}-6\sqrt{1-(bx+a)^2}-6(bx+a)\arcsin(bx+a)}{b}$	71
default	$\frac{\arcsin(bx+a)^3(bx+a)+3\arcsin(bx+a)^2\sqrt{1-(bx+a)^2}-6\sqrt{1-(bx+a)^2}-6(bx+a)\arcsin(bx+a)}{b}$	71

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/b*(arcsin(b*x+a)^3*(b*x+a)+3*arcsin(b*x+a)^2*(1-(b*x+a)^2)^(1/2)-6*(1-(b*
x+a)^2)^(1/2)-6*(b*x+a)*arcsin(b*x+a))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^3,x, algorithm="maxima")
```

```
[Out] x*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))^3 + 3*b*integrate(
sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)*x*arctan2(b*x + a, sqrt(b*x + a + 1)*s
qrt(-b*x - a + 1))^2/(b^2*x^2 + 2*a*b*x + a^2 - 1), x)
```

Fricas [A]
time = 1.97, size = 66, normalized size = 0.80

$$\frac{(bx+a)\arcsin{(bx+a)}^3-6\,(bx+a)\arcsin{(bx+a)}+3\,\sqrt{-b^2x^2-2\,abx-a^2+1}\,\left(\arcsin{(bx+a)}^2-2\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^3,x, algorithm="fricas")
```

```
[Out] ((b*x + a)*arcsin(b*x + a)^3 - 6*(b*x + a)*arcsin(b*x + a) + 3*sqrt(-b^2*x^
2 - 2*a*b*x - a^2 + 1)*(arcsin(b*x + a)^2 - 2))/b
```

Sympy [A]
time = 0.15, size = 109, normalized size = 1.33

$$\begin{cases} \frac{a\operatorname{asin}^3{(a+bx)}}{b}-\frac{6a\operatorname{asin}{(a+bx)}}{b}+x\operatorname{asin}^3{(a+bx)}-6x\operatorname{asin}{(a+bx)}+\frac{3\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}^2{(a+bx)}}{b}-\frac{6\sqrt{-a^2-2abx-b^2x^2+1}}{b} & \text{for}\ b\neq 0 \\ x\operatorname{asin}^3{(a)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**3,x)
```

```
[Out] Piecewise((a*asin(a + b*x)**3/b - 6*a*asin(a + b*x)/b + x*asin(a + b*x)**3
- 6*x*asin(a + b*x) + 3*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)
**2/b - 6*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/b, Ne(b, 0)), (x*asin(a)**3
, True))
```

Giac [A]
time = 0.38, size = 78, normalized size = 0.95

$$\frac{(bx+a)\arcsin{(bx+a)}^3}{b}+\frac{3\sqrt{-(bx+a)^2+1}\arcsin{(bx+a)}^2}{b}-\frac{6\,(bx+a)\arcsin{(bx+a)}}{b}-\frac{6\sqrt{-(bx+a)^2+1}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^3,x, algorithm="giac")
```

```
[Out] (b*x + a)*arcsin(b*x + a)^3/b + 3*sqrt(-(b*x + a)^2 + 1)*arcsin(b*x + a)^2/
b - 6*(b*x + a)*arcsin(b*x + a)/b - 6*sqrt(-(b*x + a)^2 + 1)/b
```

Mupad [B]
time = 0.25, size = 59, normalized size = 0.72

$$\frac{\left(3\,\mathrm{asin}(a+b\,x)^2-6\right)\,\sqrt{1-(a+b\,x)^2}}{b}-\frac{\left(6\,\mathrm{asin}(a+b\,x)-\mathrm{asin}(a+b\,x)^3\right)\,(a+b\,x)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)^3,x)
```

```
[Out] ((3*asin(a + b*x)^2 - 6)*(1 - (a + b*x)^2)^(1/2))/b - ((6*asin(a + b*x) - a
sin(a + b*x)^3)*(a + b*x))/b
```

3.141 $\int \frac{\text{ArcSin}(a+bx)^3}{x} \, dx$

Optimal. Leaf size=365

$$-\frac{1}{4}i\text{ArcSin}(a+bx)^4+\text{ArcSin}(a+bx)^3\log\left(1-\frac{e^{i\text{ArcSin}(a+bx)}}{ia-\sqrt{1-a^2}}\right)+\text{ArcSin}(a+bx)^3\log\left(1-\frac{e^{i\text{ArcSin}(a+bx)}}{ia+\sqrt{1-a^2}}\right)-3$$

```
[Out] -1/4*I*arcsin(b*x+a)^4+arcsin(b*x+a)^3*ln(1-(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))
/(I*a-(-a^2+1)^(1/2)))+arcsin(b*x+a)^3*ln(1-(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))
/(I*a+(-a^2+1)^(1/2)))-3*I*arcsin(b*x+a)^2*polylog(2,(I*(b*x+a)+(1-(b*x+a)^
2)^(1/2))/(I*a-(-a^2+1)^(1/2)))-3*I*arcsin(b*x+a)^2*polylog(2,(I*(b*x+a)+(1
-(b*x+a)^2)^(1/2))/(I*a+(-a^2+1)^(1/2)))+6*arcsin(b*x+a)*polylog(3,(I*(b*x+
a)+(1-(b*x+a)^2)^(1/2))/(I*a-(-a^2+1)^(1/2)))+6*arcsin(b*x+a)*polylog(3,(I*
(b*x+a)+(1-(b*x+a)^2)^(1/2))/(I*a+(-a^2+1)^(1/2)))+6*I*polylog(4,(I*(b*x+a)
+(1-(b*x+a)^2)^(1/2))/(I*a-(-a^2+1)^(1/2)))+6*I*polylog(4,(I*(b*x+a)+(1-(b*
x+a)^2)^(1/2))/(I*a+(-a^2+1)^(1/2)))
```

Rubi [A]
time = 0.31, antiderivative size = 365, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 8, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667, Rules used = {4889, 4825, 4617, 2221, 2611, 6744, 2320, 6724}

$$-3i\text{ArcSin}(a+bx)^2\text{Li}_2\left(\frac{e^{i\text{ArcSin}(a+bx)}}{ia-\sqrt{1-a^2}}\right)-3i\text{ArcSin}(a+bx)^2\text{Li}_2\left(\frac{e^{i\text{ArcSin}(a+bx)}}{ia+\sqrt{1-a^2}}\right)+6\text{ArcSin}(a+bx)\text{Li}_3\left(\frac{e^{i\text{ArcSin}(a+bx)}}{ia-\sqrt{1-a^2}}\right)+6\text{ArcSin}(a+bx)\text{Li}_3\left(\frac{e^{i\text{ArcSin}(a+bx)}}{ia+\sqrt{1-a^2}}\right)+6i\text{Li}_4\left(\frac{e^{i\text{ArcSin}(a+bx)}}{ia-\sqrt{1-a^2}}\right)+6i\text{Li}_4\left(\frac{e^{i\text{ArcSin}(a+bx)}}{ia+\sqrt{1-a^2}}\right)+\text{ArcSin}(a+bx)^3\log\left(1-\frac{e^{i\text{ArcSin}(a+bx)}}{-\sqrt{1-a^2}+ia}\right)+\text{ArcSin}(a+bx)^3\log\left(1-\frac{e^{i\text{ArcSin}(a+bx)}}{\sqrt{1-a^2}+ia}\right)-\frac{1}{4}i\text{ArcSin}(a+bx)^4$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^3/x,x]
```

```
[Out] (-1/4*I)*ArcSin[a + b*x]^4 + ArcSin[a + b*x]^3*Log[1 - E^(I*ArcSin[a + b*x]
)/(I*a - Sqrt[1 - a^2])] + ArcSin[a + b*x]^3*Log[1 - E^(I*ArcSin[a + b*x])/
(I*a + Sqrt[1 - a^2])] - (3*I)*ArcSin[a + b*x]^2*PolyLog[2, E^(I*ArcSin[a +
 b*x])/(I*a - Sqrt[1 - a^2])] - (3*I)*ArcSin[a + b*x]^2*PolyLog[2, E^(I*Arc
Sin[a + b*x])/(I*a + Sqrt[1 - a^2])] + 6*ArcSin[a + b*x]*PolyLog[3, E^(I*Ar
cSin[a + b*x])/(I*a - Sqrt[1 - a^2])] + 6*ArcSin[a + b*x]*PolyLog[3, E^(I*A
rcSin[a + b*x])/(I*a + Sqrt[1 - a^2])] + (6*I)*PolyLog[4, E^(I*ArcSin[a + b
*x])/(I*a - Sqrt[1 - a^2])] + (6*I)*PolyLog[4, E^(I*ArcSin[a + b*x])/(I*a +
 Sqrt[1 - a^2])]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] && !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] && !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 4617

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Dist[I, Int[(e + f*x)^m*(E^(I*(c + d*x))/(I*a - Rt[-a^2 + b^2, 2
] + b*E^(I*(c + d*x)))), x], x] + Dist[I, Int[(e + f*x)^m*(E^(I*(c + d*x))/
(I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x)))), x], x]) /; FreeQ[{a, b, c,
d, e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[(a + b*x)^n*(Cos[x]/(c*d + e*Sin[x])), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6744

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[(e + f*x)^m*(PolyLog[n + 1, d*(F^(c*(a
```

```
+ b*x)))^p]/(b*c*p*Log[F])), x] - Dist[f*(m/(b*c*p*Log[F])), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{\sin^{-1}(a+bx)^3}{x}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)^3}{-\frac{a}{b}+\frac{x}{b}}\,dx, x, a+bx\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \frac{x^3\cos(x)}{-\frac{a}{b}+\frac{\sin(x)}{b}}\,dx, x, \sin^{-1}(a+bx)\right)}{b}$$

$$= -\frac{1}{4}i\sin^{-1}(a+bx)^4 + \frac{i\text{Subst}\left(\int \frac{e^{ix}x^3}{-\frac{ia}{b}-\frac{\sqrt{1-a^2}}{b}+\frac{e^{ix}}{b}}\,dx, x, \sin^{-1}(a+bx)\right)}{b} + \frac{i\text{Subst}\left(\right.}{}$$

$$= -\frac{1}{4}i\sin^{-1}(a+bx)^4 + \sin^{-1}(a+bx)^3\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + \sin^{-1}(a+bx)^3\log$$

$$= -\frac{1}{4}i\sin^{-1}(a+bx)^4 + \sin^{-1}(a+bx)^3\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + \sin^{-1}(a+bx)^3\log$$

$$= -\frac{1}{4}i\sin^{-1}(a+bx)^4 + \sin^{-1}(a+bx)^3\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + \sin^{-1}(a+bx)^3\log$$

$$= -\frac{1}{4}i\sin^{-1}(a+bx)^4 + \sin^{-1}(a+bx)^3\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + \sin^{-1}(a+bx)^3\log$$

$$= -\frac{1}{4}i\sin^{-1}(a+bx)^4 + \sin^{-1}(a+bx)^3\log\left(1-\frac{e^{i\sin^{-1}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + \sin^{-1}(a+bx)^3\log$$

Mathematica [A]
time = 0.03, size = 424, normalized size = 1.16

$$-\frac{1}{4}i\text{ArcSin}(a+bx)^4 + \text{ArcSin}(a+bx)^3\log\left(1+\frac{e^{i\text{ArcSin}(a+bx)}}{\left(-\frac{ia}{b}-\frac{\sqrt{1-a^2}}{b}\right)b}\right) + \text{ArcSin}(a+bx)^3\log\left(1+\frac{e^{i\text{ArcSin}(a+bx)}}{\left(-\frac{ia}{b}+\frac{\sqrt{1-a^2}}{b}\right)b}\right) - 3i\text{ArcSin}(a+bx)^2\text{PolyLog}\left(2,-\frac{e^{i\text{ArcSin}(a+bx)}}{\left(-\frac{ia}{b}-\frac{\sqrt{1-a^2}}{b}\right)b}\right) - 3i\text{ArcSin}(a+bx)^2\text{PolyLog}\left(2,-\frac{e^{i\text{ArcSin}(a+bx)}}{\left(-\frac{ia}{b}+\frac{\sqrt{1-a^2}}{b}\right)b}\right) + 6\text{ArcSin}(a+bx)\text{PolyLog}\left(3,-\frac{e^{i\text{ArcSin}(a+bx)}}{\left(-\frac{ia}{b}-\frac{\sqrt{1-a^2}}{b}\right)b}\right) + 6\text{ArcSin}(a+bx)\text{PolyLog}\left(3,-\frac{e^{i\text{ArcSin}(a+bx)}}{\left(-\frac{ia}{b}+\frac{\sqrt{1-a^2}}{b}\right)b}\right) + 6i\text{PolyLog}\left(4,\frac{e^{i\text{ArcSin}(a+bx)}}{ia-\sqrt{1-a^2}}\right) + 6i\text{PolyLog}\left(4,\frac{e^{i\text{ArcSin}(a+bx)}}{ia+\sqrt{1-a^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^3/x,x]
```

```
[Out] (-1/4*I)*ArcSin[a + b*x]^4 + ArcSin[a + b*x]^3*Log[1 + E^(I*ArcSin[a + b*x]
)/((((-I)*a)/b - Sqrt[1 - a^2]/b)*b)] + ArcSin[a + b*x]^3*Log[1 + E^(I*ArcS
in[a + b*x])/((((-I)*a)/b + Sqrt[1 - a^2]/b)*b)] - (3*I)*ArcSin[a + b*x]^2*
PolyLog[2, -(E^(I*ArcSin[a + b*x])/((((-I)*a)/b - Sqrt[1 - a^2]/b)*b))] - (
3*I)*ArcSin[a + b*x]^2*PolyLog[2, -(E^(I*ArcSin[a + b*x])/((((-I)*a)/b + Sq
rt[1 - a^2]/b)*b))] + 6*ArcSin[a + b*x]*PolyLog[3, -(E^(I*ArcSin[a + b*x])/
((((-I)*a)/b - Sqrt[1 - a^2]/b)*b))] + 6*ArcSin[a + b*x]*PolyLog[3, -(E^(I*
ArcSin[a + b*x])/((((-I)*a)/b + Sqrt[1 - a^2]/b)*b))] + (6*I)*PolyLog[4, E^
(I*ArcSin[a + b*x])/(I*a - Sqrt[1 - a^2])] + (6*I)*PolyLog[4, E^(I*ArcSin[a
 + b*x])/(I*a + Sqrt[1 - a^2])]
```

Maple [**F**]
time = 1.70, size = 0, normalized size = 0.00

$$\int \frac{\arcsin\left(bx+a\right)^{3}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)^3/x,x)
```

```
[Out] int(arcsin(b*x+a)^3/x,x)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^3/x,x, algorithm="maxima")
```

```
[Out] integrate(arcsin(b*x + a)^3/x, x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^3/x,x, algorithm="fricas")
```

```
[Out] integral(arcsin(b*x + a)^3/x, x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}^{3}\left(a+bx\right)}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**3/x,x)
```

```
[Out] Integral(asin(a + b*x)**3/x, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^3/x,x, algorithm="giac")
```

```
[Out] integrate(arcsin(b*x + a)^3/x, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\mathrm{asin}(a+b\,x)^3}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)^3/x,x)
```

```
[Out] int(asin(a + b*x)^3/x, x)
```

3.142 $\int \frac{\text{ArcSin}(a+bx)^3}{x^2}\,dx$

Optimal. Leaf size=316

$$-\frac{\text{ArcSin}(a+bx)^3}{x}+\frac{3ib\text{ArcSin}(a+bx)^2\log\left(1+\frac{ie^{i\text{ArcSin}(a+bx)}}{a-\sqrt{-1+a^2}}\right)}{\sqrt{-1+a^2}}-\frac{3ib\text{ArcSin}(a+bx)^2\log\left(1+\frac{ie^{i\text{ArcSin}(a+b}}{a+\sqrt{-1+}}\right.}{\sqrt{-1+a^2}}$$

```
[Out] -arcsin(b*x+a)^3/x+3*I*b*arcsin(b*x+a)^2*ln(1+I*(I*(b*x+a)+(1-(b*x+a)^2)^(1
/2))/(a-(a^2-1)^(1/2)))/(a^2-1)^(1/2)-3*I*b*arcsin(b*x+a)^2*ln(1+I*(I*(b*x+
a)+(1-(b*x+a)^2)^(1/2))/(a+(a^2-1)^(1/2)))/(a^2-1)^(1/2)+6*b*arcsin(b*x+a)*
polylog(2,-I*(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))/(a-(a^2-1)^(1/2)))/(a^2-1)^(1/
2)-6*b*arcsin(b*x+a)*polylog(2,-I*(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))/(a+(a^2-1
)^(1/2)))/(a^2-1)^(1/2)+6*I*b*polylog(3,-I*(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))/
(a-(a^2-1)^(1/2)))/(a^2-1)^(1/2)-6*I*b*polylog(3,-I*(I*(b*x+a)+(1-(b*x+a)^2
)^(1/2))/(a+(a^2-1)^(1/2)))/(a^2-1)^(1/2)
```

Rubi [A]
time = 0.43, antiderivative size = 316, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 9, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.750$, Rules used = {4889, 4827, 4857, 3404, 2296, 2221, 2611, 2320, 6724}

$$\frac{6b\text{ArcSin}(a+bx)\text{Li}_2\left(-\frac{ie^{i\text{ArcSin}(a+bx)}}{a-\sqrt{a^2-1}}\right)}{\sqrt{a^2-1}}-\frac{6b\text{ArcSin}(a+bx)\text{Li}_2\left(-\frac{ie^{i\text{ArcSin}(a+bx)}}{a+\sqrt{a^2-1}}\right)}{\sqrt{a^2-1}}+\frac{6ib\text{Li}_3\left(-\frac{ie^{i\text{ArcSin}(a+bx)}}{a-\sqrt{a^2-1}}\right)}{\sqrt{a^2-1}}-\frac{6ib\text{Li}_3\left(-\frac{ie^{i\text{ArcSin}(a+bx)}}{a+\sqrt{a^2-1}}\right)}{\sqrt{a^2-1}}+\frac{3ib\text{ArcSin}(a+bx)^2\log\left(1+\frac{ie^{i\text{ArcSin}(a+bx)}}{a-\sqrt{a^2-1}}\right)}{\sqrt{a^2-1}}-\frac{3ib\text{ArcSin}(a+bx)^2\log\left(1+\frac{ie^{i\text{ArcSin}(a+bx)}}{\sqrt{a^2-1}+a}\right)}{\sqrt{a^2-1}}-\frac{\text{ArcSin}(a+bx)^3}{x}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^3/x^2,x]
```

```
[Out] -(ArcSin[a + b*x]^3/x) + ((3*I)*b*ArcSin[a + b*x]^2*Log[1 + (I*E^(I*ArcSin[
a + b*x]))/(a - Sqrt[-1 + a^2])])/Sqrt[-1 + a^2] - ((3*I)*b*ArcSin[a + b*x]
^2*Log[1 + (I*E^(I*ArcSin[a + b*x]))/(a + Sqrt[-1 + a^2])])/Sqrt[-1 + a^2]
+ (6*b*ArcSin[a + b*x]*PolyLog[2, ((-I)*E^(I*ArcSin[a + b*x]))/(a - Sqrt[-1
 + a^2])])/Sqrt[-1 + a^2] - (6*b*ArcSin[a + b*x]*PolyLog[2, ((-I)*E^(I*ArcS
in[a + b*x]))/(a + Sqrt[-1 + a^2])])/Sqrt[-1 + a^2] + ((6*I)*b*PolyLog[3, (
(-I)*E^(I*ArcSin[a + b*x]))/(a - Sqrt[-1 + a^2])])/Sqrt[-1 + a^2] - ((6*I)*
b*PolyLog[3, ((-I)*E^(I*ArcSin[a + b*x]))/(a + Sqrt[-1 + a^2])])/Sqrt[-1 +
a^2]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2296

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[2*(c/q), Int[
(f + g*x)^m*(F^u/(b - q + 2*c*F^u)), x], x] - Dist[2*(c/q), Int[(f + g*x)^m
*(F^u/(b + q + 2*c*F^u)), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 3404

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[(c + d*x)^m*(E^(I*(e + f*x))/(I*b + 2*a*E^(I*(e + f*x)
) - I*b*E^(2*I*(e + f*x)))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4827

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(e*(m + 1))), x] -
Dist[b*c*(n/(e*(m + 1))), Int[(d + e*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1
)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rule 4857

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sin^{-1}(a+bx)^3}{x^2}\,dx &= \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)^3}{\left(-\frac{a}{b}+\frac{x}{b}\right)^2}\,dx, x, a+bx\right)}{b} \\
&= -\frac{\sin^{-1}(a+bx)^3}{x} + 3\text{Subst}\left(\int \frac{\sin^{-1}(x)^2}{\left(-\frac{a}{b}+\frac{x}{b}\right)\sqrt{1-x^2}}\,dx, x, a+bx\right) \\
&= -\frac{\sin^{-1}(a+bx)^3}{x} + 3\text{Subst}\left(\int \frac{x^2}{-\frac{a}{b}+\frac{\sin(x)}{b}}\,dx, x, \sin^{-1}(a+bx)\right) \\
&= -\frac{\sin^{-1}(a+bx)^3}{x} + 6\text{Subst}\left(\int \frac{e^{ix}x^2}{\frac{i}{b}-\frac{2ae^{ix}}{b}-\frac{ie^{2ix}}{b}}\,dx, x, \sin^{-1}(a+bx)\right) \\
&= -\frac{\sin^{-1}(a+bx)^3}{x} - \frac{(6i)\text{Subst}\left(\int \frac{e^{ix}x^2}{-\frac{2a}{b}-\frac{2\sqrt{-1+a^2}}{b}-\frac{2ie^{ix}}{b}}\,dx, x, \sin^{-1}(a+bx)\right)}{\sqrt{-1+a^2}} + \frac{(6i)\cdots}{\cdots} \\
&= -\frac{\sin^{-1}(a+bx)^3}{x} + \frac{3ib\sin^{-1}(a+bx)^2\log\left(1+\frac{ie^{i\sin^{-1}(a+bx)}}{a-\sqrt{-1+a^2}}\right)}{\sqrt{-1+a^2}} - \frac{3ib\sin^{-1}(a+bx)^2\cdots}{\sqrt{\cdots}} \\
&= -\frac{\sin^{-1}(a+bx)^3}{x} + \frac{3ib\sin^{-1}(a+bx)^2\log\left(1+\frac{ie^{i\sin^{-1}(a+bx)}}{a-\sqrt{-1+a^2}}\right)}{\sqrt{-1+a^2}} - \frac{3ib\sin^{-1}(a+bx)^2\cdots}{\sqrt{\cdots}} \\
&= -\frac{\sin^{-1}(a+bx)^3}{x} + \frac{3ib\sin^{-1}(a+bx)^2\log\left(1+\frac{ie^{i\sin^{-1}(a+bx)}}{a-\sqrt{-1+a^2}}\right)}{\sqrt{-1+a^2}} - \frac{3ib\sin^{-1}(a+bx)^2\cdots}{\sqrt{\cdots}} \\
&= -\frac{\sin^{-1}(a+bx)^3}{x} + \frac{3ib\sin^{-1}(a+bx)^2\log\left(1+\frac{ie^{i\sin^{-1}(a+bx)}}{a-\sqrt{-1+a^2}}\right)}{\sqrt{-1+a^2}} - \frac{3ib\sin^{-1}(a+bx)^2\cdots}{\sqrt{\cdots}}
\end{aligned}
$$

Mathematica [A]
time = 0.08, size = 309, normalized size = 0.98

$$
-\frac{\sqrt{-1+a^2}\,\text{ArcSin}(a+bx)^3 - 3ibx\text{ArcSin}(a+bx)^2\log\left(\frac{a-\sqrt{-1+a^2}+ie^{i\text{ArcSin}(a+bx)}}{a-\sqrt{-1+a^2}}\right) + 3ibx\text{ArcSin}(a+bx)^2\log\left(\frac{a+\sqrt{-1+a^2}+ie^{i\text{ArcSin}(a+bx)}}{a+\sqrt{-1+a^2}}\right) - 6bx\text{ArcSin}(a+bx)\text{PolyLog}\left(2,\frac{ie^{i\text{ArcSin}(a+bx)}}{-a+\sqrt{-1+a^2}}\right) + 6bx\text{ArcSin}(a+bx)\text{PolyLog}\left(2,-\frac{ie^{i\text{ArcSin}(a+bx)}}{a+\sqrt{-1+a^2}}\right) - 6ibx\text{PolyLog}\left(3,\frac{ie^{i\text{ArcSin}(a+bx)}}{-a+\sqrt{-1+a^2}}\right) + 6ibx\text{PolyLog}\left(3,-\frac{ie^{i\text{ArcSin}(a+bx)}}{a+\sqrt{-1+a^2}}\right)}{\sqrt{-1+a^2}\,x}
$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^3/x^2,x]
```

```
[Out] -((Sqrt[-1 + a^2]*ArcSin[a + b*x]^3 - (3*I)*b*x*ArcSin[a + b*x]^2*Log[(a -
Sqrt[-1 + a^2] + I*E^(I*ArcSin[a + b*x]))/(a - Sqrt[-1 + a^2])] + (3*I)*b*x
*ArcSin[a + b*x]^2*Log[(a + Sqrt[-1 + a^2] + I*E^(I*ArcSin[a + b*x]))/(a +
Sqrt[-1 + a^2])] - 6*b*x*ArcSin[a + b*x]*PolyLog[2, (I*E^(I*ArcSin[a + b*x]
))/(-a + Sqrt[-1 + a^2])] + 6*b*x*ArcSin[a + b*x]*PolyLog[2, ((-I)*E^(I*Arc
Sin[a + b*x]))/(a + Sqrt[-1 + a^2])] - (6*I)*b*x*PolyLog[3, (I*E^(I*ArcSin[
a + b*x]))/(-a + Sqrt[-1 + a^2])] + (6*I)*b*x*PolyLog[3, ((-I)*E^(I*ArcSin[
a + b*x]))/(a + Sqrt[-1 + a^2])])/(Sqrt[-1 + a^2]*x))
```

Maple [F]
time = 1.12, size = 0, normalized size = 0.00

$$\int \frac{\arcsin\left(bx+a\right)^{3}}{x^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)^3/x^2,x)
```

```
[Out] int(arcsin(b*x+a)^3/x^2,x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^3/x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a-1>0)', see `assume?` for more det
ails)Is
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^3/x^2,x, algorithm="fricas")
```

```
[Out] integral(arcsin(b*x + a)^3/x^2, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}^{3}{\left(a+bx \right)}}{x^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**3/x**2,x)
```

```
[Out] Integral(asin(a + b*x)**3/x**2, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^3/x^2,x, algorithm="giac")
```

```
[Out] integrate(arcsin(b*x + a)^3/x^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\mathrm{asin}(a+b\,x)^3}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)^3/x^2,x)
```

```
[Out] int(asin(a + b*x)^3/x^2, x)
```

3.143 $\int \frac{x^2}{\mathbf{ArcSin}(a+bx)} dx$

Optimal. Leaf size=60

$$\frac{\text{CosIntegral}(\text{ArcSin}(a+bx))}{4b^3}+\frac{a^2\text{CosIntegral}(\text{ArcSin}(a+bx))}{b^3}-\frac{\text{CosIntegral}(3\text{ArcSin}(a+bx))}{4b^3}-\frac{a\text{Si}(2\text{ArcS}$$

```
[Out] 1/4*Ci(arcsin(b*x+a))/b^3+a^2*Ci(arcsin(b*x+a))/b^3-1/4*Ci(3*arcsin(b*x+a))
/b^3-a*Si(2*arcsin(b*x+a))/b^3
```

Rubi [A]
time = 0.45, antiderivative size = 60, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 8, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.667$, Rules used = {4889, 4831, 6873, 12, 6874, 3383, 4491, 3380}

$$\frac{a^2\text{CosIntegral}(\text{ArcSin}(a+bx))}{b^3}+\frac{\text{CosIntegral}(\text{ArcSin}(a+bx))}{4b^3}-\frac{\text{CosIntegral}(3\text{ArcSin}(a+bx))}{4b^3}-\frac{a\text{Si}(2\text{ArcSin}(a+bx))}{b^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2/ArcSin[a + b*x],x]
```

```
[Out] CosIntegral[ArcSin[a + b*x]]/(4*b^3) + (a^2*CosIntegral[ArcSin[a + b*x]])/b
^3 - CosIntegral[3*ArcSin[a + b*x]]/(4*b^3) - (a*SinIntegral[2*ArcSin[a + b
*x]])/b^3
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4831

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_.) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Dist[1/c^(m + 1), Subst[Int[(a + b*x)^n*Cos[x]*(c*d + e*Sin[x])^m
, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{x^2}{\sin^{-1}(a+bx)}\,dx = \frac{\text{Subst}\left(\int \frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^2}{\sin^{-1}(x)}\,dx, x, a+bx\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \frac{\cos(x)\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)^2}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \frac{\cos(x)(a-\sin(x))^2}{b^2x}\,dx, x, \sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \frac{\cos(x)(a-\sin(x))^2}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b^3}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{a^2\cos(x)}{x}-\frac{2a\cos(x)\sin(x)}{x}+\frac{\cos(x)\sin^2(x)}{x}\right)\,dx, x, \sin^{-1}(a+bx)\right)}{b^3}$$
$$= \frac{\text{Subst}\left(\int \frac{\cos(x)\sin^2(x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b^3} - \frac{(2a)\text{Subst}\left(\int \frac{\cos(x)\sin(x)}{x}\,dx, x, \sin^{-1}(a+\right.}{b^3}$$
$$= \frac{a^2\text{Ci}(\sin^{-1}(a+bx))}{b^3} + \frac{\text{Subst}\left(\int \left(\frac{\cos(x)}{4x}-\frac{\cos(3x)}{4x}\right)\,dx, x, \sin^{-1}(a+bx)\right)}{b^3} - \frac{(2a)\text{Subst}}{}$$
$$= \frac{a^2\text{Ci}(\sin^{-1}(a+bx))}{b^3} + \frac{\text{Subst}\left(\int \frac{\cos(x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{4b^3} - \frac{\text{Subst}\left(\int \frac{\cos(3x)}{x}\,dx, x, \right.}{4b^3}$$
$$= \frac{\text{Ci}(\sin^{-1}(a+bx))}{4b^3} + \frac{a^2\text{Ci}(\sin^{-1}(a+bx))}{b^3} - \frac{\text{Ci}(3\sin^{-1}(a+bx))}{4b^3} - \frac{a\text{Si}(2\sin^{-1}(a+b}{b^3}$$

Mathematica [A]
time = 0.10, size = 45, normalized size = 0.75

$$-\frac{-((1+4a^2)\,\text{CosIntegral}(\text{ArcSin}(a+bx)))+\text{CosIntegral}(3\text{ArcSin}(a+bx))+4a\text{Si}(2\text{ArcSin}(a+bx))}{4b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2/ArcSin[a + b*x],x]
```

```
[Out] -1/4*(-((1 + 4*a^2)*CosIntegral[ArcSin[a + b*x]]) + CosIntegral[3*ArcSin[a
+ b*x]] + 4*a*SinIntegral[2*ArcSin[a + b*x]])/b^3
```

Maple [A]
time = 0.08, size = 49, normalized size = 0.82

method	result

derivativedivides	$\frac{-a\,\mathrm{sinIntegral}(2\arcsin(bx+a))+\frac{\mathrm{cosineIntegral}(\arcsin(bx+a))}{4}-\frac{\mathrm{cosineIntegral}(3\arcsin(bx+a))}{4}+a^2\,\mathrm{cosineIntegral}(\arcsin(bx+a)}{b^3}$
default	$\frac{-a\,\mathrm{sinIntegral}(2\arcsin(bx+a))+\frac{\mathrm{cosineIntegral}(\arcsin(bx+a))}{4}-\frac{\mathrm{cosineIntegral}(3\arcsin(bx+a))}{4}+a^2\,\mathrm{cosineIntegral}(\arcsin(bx+a)}{b^3}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/arcsin(b*x+a),x,method=_RETURNVERBOSE)
[Out] 1/b^3*(-a*Si(2*arcsin(b*x+a))+1/4*Ci(arcsin(b*x+a))-1/4*Ci(3*arcsin(b*x+a))
+a^2*Ci(arcsin(b*x+a)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/arcsin(b*x+a),x, algorithm="maxima")
[Out] integrate(x^2/arcsin(b*x + a), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/arcsin(b*x+a),x, algorithm="fricas")
[Out] integral(x^2/arcsin(b*x + a), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\operatorname{asin}(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2/asin(b*x+a),x)
[Out] Integral(x**2/asin(a + b*x), x)
```

Giac [A]
time = 0.42, size = 56, normalized size = 0.93

$$\frac{a^2\,\mathrm{Ci}\left(\arcsin\left(bx+a\right)\right)}{b^3}-\frac{a\,\mathrm{Si}\left(2\arcsin\left(bx+a\right)\right)}{b^3}-\frac{\mathrm{Ci}\left(3\arcsin\left(bx+a\right)\right)}{4\,b^3}+\frac{\mathrm{Ci}\left(\arcsin\left(bx+a\right)\right)}{4\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/arcsin(b*x+a),x, algorithm="giac")
```

```
[Out] a^2*cos_integral(arcsin(b*x + a))/b^3 - a*sin_integral(2*arcsin(b*x + a))/b
^3 - 1/4*cos_integral(3*arcsin(b*x + a))/b^3 + 1/4*cos_integral(arcsin(b*x
+ a))/b^3
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{x^2}{\mathrm{asin}\left(a+b\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/asin(a + b*x),x)
```

```
[Out] int(x^2/asin(a + b*x), x)
```

3.144 $\int \frac{x}{\mathbf{ArcSin}(a+bx)} dx$

Optimal. Leaf size=30

$$-\frac{a\text{CosIntegral}(\text{ArcSin}(a+bx))}{b^2}+\frac{\text{Si}(2\text{ArcSin}(a+bx))}{2b^2}$$

```
[Out] -a*Ci(arcsin(b*x+a))/b^2+1/2*Si(2*arcsin(b*x+a))/b^2
```

Rubi [A]
time = 0.16, antiderivative size = 30, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.800$, Rules used = {4889, 4831, 6873, 12, 6874, 3383, 4491, 3380}

$$\frac{\text{Si}(2\text{ArcSin}(a+bx))}{2b^2}-\frac{a\text{CosIntegral}(\text{ArcSin}(a+bx))}{b^2}$$

Antiderivative was successfully verified.

```
[In] Int[x/ArcSin[a + b*x],x]
```

```
[Out] -((a*CosIntegral[ArcSin[a + b*x]])/b^2) + SinIntegral[2*ArcSin[a + b*x]]/(2
*b^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4831

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_.) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Dist[1/c^(m + 1), Subst[Int[(a + b*x)^n*Cos[x]*(c*d + e*Sin[x])^m
, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{x}{\sin^{-1}(a+bx)}\,dx = \frac{\text{Subst}\left(\int \frac{-\frac{a}{b}+\frac{x}{b}}{\sin^{-1}(x)}\,dx, x, a+bx\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \frac{\cos(x)\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \frac{\cos(x)(-a+\sin(x))}{bx}\,dx, x, \sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \frac{\cos(x)(-a+\sin(x))}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b^2}$$
$$= \frac{\text{Subst}\left(\int \left(-\frac{a\cos(x)}{x}+\frac{\cos(x)\sin(x)}{x}\right)\,dx, x, \sin^{-1}(a+bx)\right)}{b^2}$$
$$= \frac{\text{Subst}\left(\int \frac{\cos(x)\sin(x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b^2} - \frac{a\text{Subst}\left(\int \frac{\cos(x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b^2}$$
$$= -\frac{a\text{Ci}(\sin^{-1}(a+bx))}{b^2} + \frac{\text{Subst}\left(\int \frac{\sin(2x)}{2x}\,dx, x, \sin^{-1}(a+bx)\right)}{b^2}$$
$$= -\frac{a\text{Ci}(\sin^{-1}(a+bx))}{b^2} + \frac{\text{Subst}\left(\int \frac{\sin(2x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{2b^2}$$
$$= -\frac{a\text{Ci}(\sin^{-1}(a+bx))}{b^2} + \frac{\text{Si}(2\sin^{-1}(a+bx))}{2b^2}$$

Mathematica [A]
time = 0.04, size = 30, normalized size = 1.00

$$-\frac{a\text{CosIntegral}(\text{ArcSin}(a+bx))}{b^2} + \frac{\text{Si}(2\text{ArcSin}(a+bx))}{2b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/ArcSin[a + b*x],x]
```

```
[Out] -((a*CosIntegral[ArcSin[a + b*x]])/b^2) + SinIntegral[2*ArcSin[a + b*x]]/(2
*b^2)
```

Maple [A]
time = 0.07, size = 27, normalized size = 0.90

method	result	size
derivativedivides	$\frac{\frac{\text{sinIntegral}(2\arcsin(bx+a))}{2} - a\,\text{cosineIntegral}(\arcsin(bx+a))}{b^2}$	27

default	$\frac{\frac{\text{sinIntegral}(2\arcsin(bx+a))}{2}-a\,\text{cosineIntegral}(\arcsin(bx+a))}{b^2}$	27

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/arcsin(b*x+a),x,method=_RETURNVERBOSE)
```

```
[Out] 1/b^2*(1/2*Si(2*arcsin(b*x+a))-a*Ci(arcsin(b*x+a)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(b*x+a),x, algorithm="maxima")
```

```
[Out] integrate(x/arcsin(b*x + a), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(b*x+a),x, algorithm="fricas")
```

```
[Out] integral(x/arcsin(b*x + a), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\operatorname{asin}(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/asin(b*x+a),x)
```

```
[Out] Integral(x/asin(a + b*x), x)
```

Giac [A]
time = 0.41, size = 28, normalized size = 0.93

$$-\frac{a\operatorname{Ci}\left(\arcsin\left(bx+a\right)\right)}{b^2}+\frac{\operatorname{Si}\left(2\arcsin\left(bx+a\right)\right)}{2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(b*x+a),x, algorithm="giac")
```

```
[Out] -a*cos_integral(arcsin(b*x + a))/b^2 + 1/2*sin_integral(2*arcsin(b*x + a))/
b^2
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x}{\mathrm{asin}\left(a+b\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/asin(a + b*x),x)
```

```
[Out] int(x/asin(a + b*x), x)
```

3.145 $\int \frac{1}{\mathbf{ArcSin}(a+bx)}\,dx$

Optimal. Leaf size=11

$$\frac{\text{CosIntegral}(\text{ArcSin}(a+bx))}{b}$$

```
[Out] Ci(arcsin(b*x+a))/b
```

Rubi [A]
time = 0.02, antiderivative size = 11, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}} = 0.375$, Rules used = {4887, 4719, 3383}

$$\frac{\text{CosIntegral}(\text{ArcSin}(a+bx))}{b}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^(-1),x]
```

```
[Out] CosIntegral[ArcSin[a + b*x]]/b
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 4719

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[-a/b + x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c
, n}, x]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\int \frac{1}{\sin^{-1}(a+bx)}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\sin^{-1}(x)}\,dx, x, a+bx\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \frac{\cos(x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\text{Ci}(\sin^{-1}(a+bx))}{b}$$

Mathematica [**A**]
time = 0.01, size = 11, normalized size = 1.00

$$\frac{\text{CosIntegral}(\text{ArcSin}(a+bx))}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^(-1),x]
[Out] CosIntegral[ArcSin[a + b*x]]/b
```

Maple [**A**]
time = 0.06, size = 12, normalized size = 1.09

method	result	size
derivativedivides	$\frac{\text{cosineIntegral}(\arcsin(bx+a))}{b}$	12
default	$\frac{\text{cosineIntegral}(\arcsin(bx+a))}{b}$	12

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/arcsin(b*x+a),x,method=_RETURNVERBOSE)
[Out] Ci(arcsin(b*x+a))/b
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a),x, algorithm="maxima")
[Out] integrate(1/arcsin(b*x + a), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a),x, algorithm="fricas")
[Out] integral(1/arcsin(b*x + a), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\operatorname{asin}(a + bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/asin(b*x+a),x)
[Out] Integral(1/asin(a + b*x), x)
```

Giac [A]
time = 0.39, size = 11, normalized size = 1.00

$$\frac{\operatorname{Ci}(\arcsin(bx + a))}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a),x, algorithm="giac")
[Out] cos_integral(arcsin(b*x + a))/b
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.09

$$\int \frac{1}{\operatorname{asin}(a + b\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/asin(a + b*x),x)
[Out] int(1/asin(a + b*x), x)
```

3.146 $\int \frac{1}{x\mathbf{ArcSin}(a+bx)}\,dx$

Optimal. Leaf size=15

$$\text{Int}\left(\frac{1}{x\text{ArcSin}(a+bx)},x\right)$$

```
[Out] Unintegrable(1/x/arcsin(b*x+a),x)
```

Rubi [A]
time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{x\text{ArcSin}(a+bx)}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/(x*ArcSin[a + b*x]),x]
[Out] Defer[Subst][Defer[Int][1/((-(a/b) + x/b)*ArcSin[x]), x], x, a + b*x]/b
```

Rubi steps

$$\int \frac{1}{x\sin^{-1}(a+bx)}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\left(-\frac{a}{b}+\frac{x}{b}\right)\sin^{-1}(x)}\,dx,x,a+bx\right)}{b}$$

Mathematica [A]
time = 0.16, size = 0, normalized size = 0.00

$$\int \frac{1}{x\text{ArcSin}(a+bx)}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/(x*ArcSin[a + b*x]),x]
[Out] Integrate[1/(x*ArcSin[a + b*x]), x]
```

Maple [A]
time = 1.76, size = 0, normalized size = 0.00

$$\int \frac{1}{x\arcsin\left(bx+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x/arcsin(b*x+a),x)
[Out] int(1/x/arcsin(b*x+a),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/arcsin(b*x+a),x, algorithm="maxima")
[Out] integrate(1/(x*arcsin(b*x + a)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/arcsin(b*x+a),x, algorithm="fricas")
[Out] integral(1/(x*arcsin(b*x + a)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x \operatorname{asin}{\left(a + bx \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/asin(b*x+a),x)
[Out] Integral(1/(x*asin(a + b*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/arcsin(b*x+a),x, algorithm="giac")
[Out] integrate(1/(x*arcsin(b*x + a)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.07

$$\int \frac{1}{x\,\mathrm{asin}\left(a+b\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x*asin(a + b*x)),x)
[Out] int(1/(x*asin(a + b*x)), x)
```

3.147 $\int \frac{x^2}{\mathbf{ArcSin}(a+bx)^2}\,dx$

Optimal. Leaf size=84

$$-\frac{x^2\sqrt{1-(a+bx)^2}}{b\text{ArcSin}(a+bx)}-\frac{2a\text{CosIntegral}(2\text{ArcSin}(a+bx))}{b^3}-\frac{(1+4a^2)\,\text{Si}(\text{ArcSin}(a+bx))}{4b^3}+\frac{3\text{Si}(3\text{ArcSin}(a+b}{4b^3}$$

```
[Out] -2*a*Ci(2*arcsin(b*x+a))/b^3-1/4*(4*a^2+1)*Si(arcsin(b*x+a))/b^3+3/4*Si(3*a
rcsin(b*x+a))/b^3-x^2*(1-(b*x+a)^2)^(1/2)/b/arcsin(b*x+a)
```

Rubi [A]
time = 0.15, antiderivative size = 161, normalized size of antiderivative = 1.92, number of steps used = 12, number of rules used = 7, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.583$, Rules used = {4889, 4829, 4717, 4809, 3380, 4727, 3383}

$$-\frac{a^2\text{Si}(\text{ArcSin}(a+bx))}{b^3}-\frac{a^2\sqrt{1-(a+bx)^2}}{b^3\text{ArcSin}(a+bx)}-\frac{2a\text{CosIntegral}(2\text{ArcSin}(a+bx))}{b^3}-\frac{\text{Si}(\text{ArcSin}(a+bx))}{4b^3}+\frac{3\text{Si}(3\text{ArcSin}(a+bx))}{4b^3}+\frac{2a(a+bx)\sqrt{1-(a+bx)^2}}{b^3\text{ArcSin}(a+bx)}-\frac{(a+bx)^2\sqrt{1-(a+bx)^2}}{b^3\text{ArcSin}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^2/ArcSin[a + b*x]^2,x]
```

```
[Out] -((a^2*Sqrt[1 - (a + b*x)^2])/(b^3*ArcSin[a + b*x])) + (2*a*(a + b*x)*Sqrt[
1 - (a + b*x)^2])/(b^3*ArcSin[a + b*x]) - ((a + b*x)^2*Sqrt[1 - (a + b*x)^2
])/(b^3*ArcSin[a + b*x]) - (2*a*CosIntegral[2*ArcSin[a + b*x]])/b^3 - SinIn
tegral[ArcSin[a + b*x]]/(4*b^3) - (a^2*SinIntegral[ArcSin[a + b*x]])/b^3 +
(3*SinIntegral[3*ArcSin[a + b*x]])/(4*b^3)
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 4717

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[Sqrt[1 - c^2
*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + Dist[c/(b*(n + 1)),
 Int[x*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4727

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] - Dist
[1/(b^2*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[x^(n + 1), Sin[-a/b
+ x/b]^(m - 1)*(m - (m + 1)*Sin[-a/b + x/b]^2), x], x], x, a + b*ArcSin[c*x
]], x] /; FreeQ[{a, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4809

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[(1/(b*c^(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x
^2)^p], Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b]^(2*p + 1), x], x, a
 + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0]
&& IGtQ[2*p + 2, 0] && IGtQ[m, 0]
```

Rule 4829

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_))^(m_.), x_Sy
mbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*ArcSin[c*x])^n, x], x] /; F
reeQ[{a, b, c, d, e}, x] && IGtQ[m, 0] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{x^2}{\sin^{-1}(a+bx)^2}\,dx = \frac{\text{Subst}\left(\int \frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^2}{\sin^{-1}(x)^2}\,dx, x, a+bx\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \left(\frac{a^2}{b^2\sin^{-1}(x)^2} - \frac{2ax}{b^2\sin^{-1}(x)^2} + \frac{x^2}{b^2\sin^{-1}(x)^2}\right)\,dx, x, a+bx\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \frac{x^2}{\sin^{-1}(x)^2}\,dx, x, a+bx\right)}{b^3} - \frac{(2a)\text{Subst}\left(\int \frac{x}{\sin^{-1}(x)^2}\,dx, x, a+bx\right)}{b^3} + \frac{a^2\text{Subst}\left(\right.}{}$$

$$= -\frac{a^2\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)} + \frac{2a(a+bx)\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)} - \frac{(a+bx)^2\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)} +$$

$$= -\frac{a^2\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)} + \frac{2a(a+bx)\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)} - \frac{(a+bx)^2\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)} -$$

$$= -\frac{a^2\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)} + \frac{2a(a+bx)\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)} - \frac{(a+bx)^2\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)} -$$

Mathematica [A]
time = 0.34, size = 86, normalized size = 1.02

$$-\frac{\frac{4b^2x^2\sqrt{1-a^2-2abx-b^2x^2}}{\text{ArcSin}(a+bx)} + 8a\text{CosIntegral}(2\text{ArcSin}(a+bx)) + (1+4a^2)\,\text{Si}(\text{ArcSin}(a+bx)) - 3\text{Si}(3\text{ArcSin}(a+bx))}{4b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2/ArcSin[a + b*x]^2,x]
```

```
[Out] -1/4*((4*b^2*x^2*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2])/ArcSin[a + b*x] + 8*a*C
osIntegral[2*ArcSin[a + b*x]] + (1 + 4*a^2)*SinIntegral[ArcSin[a + b*x]] -
3*SinIntegral[3*ArcSin[a + b*x]])/b^3
```

Maple [A]
time = 0.11, size = 149, normalized size = 1.77

method	result
derivativedivides	$\frac{-\frac{a(2\,\text{cosineIntegral}(2\arcsin(bx+a))\arcsin(bx+a)-\sin(2\arcsin(bx+a)))}{\arcsin(bx+a)} - \frac{\sqrt{1-(bx+a)^2}}{4\arcsin(bx+a)} - \frac{\text{sinIntegral}(\arcsin(bx+a))}{4} + \text{co}}{b^3}$
default	$\frac{-\frac{a(2\,\text{cosineIntegral}(2\arcsin(bx+a))\arcsin(bx+a)-\sin(2\arcsin(bx+a)))}{\arcsin(bx+a)} - \frac{\sqrt{1-(bx+a)^2}}{4\arcsin(bx+a)} - \frac{\text{sinIntegral}(\arcsin(bx+a))}{4} + \text{co}}{b^3}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/arcsin(b*x+a)^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/b^3*(-a*(2*Ci(2*arcsin(b*x+a))*arcsin(b*x+a)-sin(2*arcsin(b*x+a)))/arcsin
(b*x+a)-1/4/arcsin(b*x+a)*(1-(b*x+a)^2)^(1/2)-1/4*Si(arcsin(b*x+a))+1/4/arc
sin(b*x+a)*cos(3*arcsin(b*x+a))+3/4*Si(3*arcsin(b*x+a))-a^2*(Si(arcsin(b*x+
a))*arcsin(b*x+a)+(1-(b*x+a)^2)^(1/2))/arcsin(b*x+a))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/arcsin(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] -(sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)*x^2 - b*arctan2(b*x + a, sqrt(b*x +
a + 1)*sqrt(-b*x - a + 1))*integrate((3*b^2*x^3 + 5*a*b*x^2 + 2*(a^2 - 1)*x
)*sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)/((b^3*x^2 + 2*a*b^2*x + (a^2 - 1)*b)
*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))), x))/(b*arctan2(b*
x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)))
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/arcsin(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] integral(x^2/arcsin(b*x + a)^2, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\operatorname{asin}^2(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2/asin(b*x+a)**2,x)
```

```
[Out] Integral(x**2/asin(a + b*x)**2, x)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 169 vs. 2(78) = 156.
time = 0.43, size = 169, normalized size = 2.01

$$-\frac{a^{2}\operatorname{Si}\left(\arcsin\left(bx+a\right)\right)}{b^{3}}-\frac{2\,a\operatorname{Ci}\left(2\,\arcsin\left(bx+a\right)\right)}{b^{3}}+\frac{2\,\sqrt{-\left(bx+a\right)^{2}+1}\,\left(bx+a\right)a}{b^{3}\arcsin\left(bx+a\right)}-\frac{\sqrt{-\left(bx+a\right)^{2}+1}\,a^{2}}{b^{3}\arcsin\left(bx+a\right)}+\frac{3\,\operatorname{Si}\left(3\,\arcsin\left(bx+a\right)\right)}{4\,b^{3}}-\frac{\operatorname{Si}\left(\arcsin\left(bx+a\right)\right)}{4\,b^{3}}+\frac{\left(-\left(bx+a\right)^{2}+1\right)^{\frac{3}{2}}}{b^{3}\arcsin\left(bx+a\right)}-\frac{\sqrt{-\left(bx+a\right)^{2}+1}}{b^{3}\arcsin\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/arcsin(b*x+a)^2,x, algorithm="giac")
```

```
[Out] -a^2*sin_integral(arcsin(b*x + a))/b^3 - 2*a*cos_integral(2*arcsin(b*x + a)
)/b^3 + 2*sqrt(-(b*x + a)^2 + 1)*(b*x + a)*a/(b^3*arcsin(b*x + a)) - sqrt(-
(b*x + a)^2 + 1)*a^2/(b^3*arcsin(b*x + a)) + 3/4*sin_integral(3*arcsin(b*x
+ a))/b^3 - 1/4*sin_integral(arcsin(b*x + a))/b^3 + (-(b*x + a)^2 + 1)^(3/2
)/(b^3*arcsin(b*x + a)) - sqrt(-(b*x + a)^2 + 1)/(b^3*arcsin(b*x + a))
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^2}{\operatorname{asin}\left(a+b\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/asin(a + b*x)^2,x)
```

```
[Out] int(x^2/asin(a + b*x)^2, x)
```

3.148 $\int \frac{x}{\mathbf{ArcSin}(a+bx)^2}\,dx$

Optimal. Leaf size=55

$$-\frac{x\sqrt{1-(a+bx)^2}}{b\text{ArcSin}(a+bx)}+\frac{\text{CosIntegral}(2\text{ArcSin}(a+bx))}{b^2}+\frac{a\text{Si}(\text{ArcSin}(a+bx))}{b^2}$$

```
[Out] Ci(2*arcsin(b*x+a))/b^2+a*Si(arcsin(b*x+a))/b^2-x*(1-(b*x+a)^2)^(1/2)/b/arc
sin(b*x+a)
```

Rubi [A]
time = 0.09, antiderivative size = 87, normalized size of antiderivative = 1.58, number of steps used = 8, number of rules used = 7, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.700$, Rules used = {4889, 4829, 4717, 4809, 3380, 4727, 3383}

$$\frac{\text{CosIntegral}(2\text{ArcSin}(a+bx))}{b^2}+\frac{a\text{Si}(\text{ArcSin}(a+bx))}{b^2}+\frac{a\sqrt{1-(a+bx)^2}}{b^2\text{ArcSin}(a+bx)}-\frac{(a+bx)\sqrt{1-(a+bx)^2}}{b^2\text{ArcSin}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x/ArcSin[a + b*x]^2,x]
```

```
[Out] (a*Sqrt[1 - (a + b*x)^2])/(b^2*ArcSin[a + b*x]) - ((a + b*x)*Sqrt[1 - (a +
b*x)^2])/(b^2*ArcSin[a + b*x]) + CosIntegral[2*ArcSin[a + b*x]]/b^2 + (a*Si
nIntegral[ArcSin[a + b*x]])/b^2
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 4717

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[Sqrt[1 - c^2
*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + Dist[c/(b*(n + 1)),
 Int[x*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4727

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] - Dist
```

```
[1/(b^2*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[x^(n + 1), Sin[-a/b
+ x/b]^(m - 1)*(m - (m + 1)*Sin[-a/b + x/b]^2), x], x], x, a + b*ArcSin[c*x
]], x] /; FreeQ[{a, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4809

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[(1/(b*c^(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x
^2)^p], Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b]^(2*p + 1), x], x, a
 + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0]
&& IGtQ[2*p + 2, 0] && IGtQ[m, 0]
```

Rule 4829

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_))^(m_.), x_Sy
mbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*ArcSin[c*x])^n, x], x] /; F
reeQ[{a, b, c, d, e}, x] && IGtQ[m, 0] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{x}{\sin^{-1}(a+bx)^2}\,dx &= \frac{\text{Subst}\left(\int \frac{-\frac{a}{b}+\frac{x}{b}}{\sin^{-1}(x)^2}\,dx,x,a+bx\right)}{b}\\
&= \frac{\text{Subst}\left(\int \left(-\frac{a}{b\sin^{-1}(x)^2}+\frac{x}{b\sin^{-1}(x)^2}\right)\,dx,x,a+bx\right)}{b}\\
&= \frac{\text{Subst}\left(\int \frac{x}{\sin^{-1}(x)^2}\,dx,x,a+bx\right)}{b^2}-\frac{a\text{Subst}\left(\int \frac{1}{\sin^{-1}(x)^2}\,dx,x,a+bx\right)}{b^2}\\
&= \frac{a\sqrt{1-(a+bx)^2}}{b^2\sin^{-1}(a+bx)}-\frac{(a+bx)\sqrt{1-(a+bx)^2}}{b^2\sin^{-1}(a+bx)}+\frac{\text{Subst}\left(\int \frac{\cos(2x)}{x}\,dx,x,\sin^{-1}(a+b\right.}{b^2}\\
&= \frac{a\sqrt{1-(a+bx)^2}}{b^2\sin^{-1}(a+bx)}-\frac{(a+bx)\sqrt{1-(a+bx)^2}}{b^2\sin^{-1}(a+bx)}+\frac{\text{Ci}(2\sin^{-1}(a+bx))}{b^2}+\frac{a\text{Subst}\left(\int\right.}{}\\
&= \frac{a\sqrt{1-(a+bx)^2}}{b^2\sin^{-1}(a+bx)}-\frac{(a+bx)\sqrt{1-(a+bx)^2}}{b^2\sin^{-1}(a+bx)}+\frac{\text{Ci}(2\sin^{-1}(a+bx))}{b^2}+\frac{a\text{Si}(\sin^{-1}(}{b^2}
\end{aligned}$$

Mathematica [A]
time = 0.10, size = 63, normalized size = 1.15

$$\frac{-bx\sqrt{1-(a+bx)^2}+\text{ArcSin}(a+bx)\text{CosIntegral}(2\text{ArcSin}(a+bx))+a\text{ArcSin}(a+bx)\text{Si}(\text{ArcSin}(a+bx))}{b^2\text{ArcSin}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/ArcSin[a + b*x]^2,x]
[Out] (-(b*x*Sqrt[1 - (a + b*x)^2]) + ArcSin[a + b*x]*CosIntegral[2*ArcSin[a + b*
x]] + a*ArcSin[a + b*x]*SinIntegral[ArcSin[a + b*x]])/(b^2*ArcSin[a + b*x])
```

Maple [A]
time = 0.10, size = 72, normalized size = 1.31

method	result
derivativedivides	$\frac{-\frac{\sin(2\arcsin(bx+a))}{2\arcsin(bx+a)}+\text{cosineIntegral}(2\arcsin(bx+a))+\frac{a\left(\text{sinIntegral}(\arcsin(bx+a))\arcsin(bx+a)+\sqrt{1-(bx+a)^2}\right)}{\arcsin(bx+a)}}{b^2}$
default	$\frac{-\frac{\sin(2\arcsin(bx+a))}{2\arcsin(bx+a)}+\text{cosineIntegral}(2\arcsin(bx+a))+\frac{a\left(\text{sinIntegral}(\arcsin(bx+a))\arcsin(bx+a)+\sqrt{1-(bx+a)^2}\right)}{\arcsin(bx+a)}}{b^2}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/arcsin(b*x+a)^2,x,method=_RETURNVERBOSE)
[Out] 1/b^2*(-1/2/arcsin(b*x+a)*sin(2*arcsin(b*x+a))+Ci(2*arcsin(b*x+a))+a*(Si(ar
csin(b*x+a))*arcsin(b*x+a)+(1-(b*x+a)^2)^(1/2))/arcsin(b*x+a))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(b*x+a)^2,x, algorithm="maxima")
[Out] (b*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))*integrate((2*b^2*
x^2 + 3*a*b*x + a^2 - 1)*sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)/((b^3*x^2 + 2
*a*b^2*x + (a^2 - 1)*b)*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a +
1))), x) - sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)*x)/(b*arctan2(b*x + a, sqrt
(b*x + a + 1)*sqrt(-b*x - a + 1)))
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] integral(x/arcsin(b*x + a)^2, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\operatorname{asin}^2(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/asin(b*x+a)**2,x)
```

```
[Out] Integral(x/asin(a + b*x)**2, x)
```

Giac [A]
time = 0.42, size = 83, normalized size = 1.51

$$\frac{a\operatorname{Si}(\arcsin(bx+a))}{b^2}+\frac{\operatorname{Ci}(2\arcsin(bx+a))}{b^2}-\frac{\sqrt{-(bx+a)^2+1}\,(bx+a)}{b^2\arcsin(bx+a)}+\frac{\sqrt{-(bx+a)^2+1}\,a}{b^2\arcsin(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(b*x+a)^2,x, algorithm="giac")
```

```
[Out] a*sin_integral(arcsin(b*x + a))/b^2 + cos_integral(2*arcsin(b*x + a))/b^2 -
 sqrt(-(b*x + a)^2 + 1)*(b*x + a)/(b^2*arcsin(b*x + a)) + sqrt(-(b*x + a)^2
 + 1)*a/(b^2*arcsin(b*x + a))
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{x}{\operatorname{asin}(a+b\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/asin(a + b*x)^2,x)
```

```
[Out] int(x/asin(a + b*x)^2, x)
```

3.149 $\int \frac{1}{\mathbf{ArcSin}(a+bx)^2}\,dx$

Optimal. Leaf size=41

$$-\frac{\sqrt{1-(a+bx)^2}}{b\text{ArcSin}(a+bx)}-\frac{\text{Si}(\text{ArcSin}(a+bx))}{b}$$

```
[Out] -Si(arcsin(b*x+a))/b-(1-(b*x+a)^2)^(1/2)/b/arcsin(b*x+a)
```

Rubi [A]
time = 0.05, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {4887, 4717, 4809, 3380}

$$-\frac{\text{Si}(\text{ArcSin}(a+bx))}{b}-\frac{\sqrt{1-(a+bx)^2}}{b\text{ArcSin}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^(-2),x]
```

```
[Out] -(Sqrt[1 - (a + b*x)^2]/(b*ArcSin[a + b*x])) - SinIntegral[ArcSin[a + b*x]]
/b
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 4717

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[Sqrt[1 - c^2
*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + Dist[c/(b*(n + 1)),
 Int[x*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4809

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[(1/(b*c^(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x
^2)^p], Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b]^(2*p + 1), x], x, a
 + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0]
&& IGtQ[2*p + 2, 0] && IGtQ[m, 0]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
```

```
}, x]
```

Rubi steps

$$\int \frac{1}{\sin^{-1}(a+bx)^2}\,dx = \frac{\operatorname{Subst}\left(\int \frac{1}{\sin^{-1}(x)^2}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{\sqrt{1-(a+bx)^2}}{b\sin^{-1}(a+bx)} - \frac{\operatorname{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\sin^{-1}(x)}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{\sqrt{1-(a+bx)^2}}{b\sin^{-1}(a+bx)} - \frac{\operatorname{Subst}\left(\int \frac{\sin(x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b}$$

$$= -\frac{\sqrt{1-(a+bx)^2}}{b\sin^{-1}(a+bx)} - \frac{\operatorname{Si}(\sin^{-1}(a+bx))}{b}$$

Mathematica [A]
time = 0.05, size = 37, normalized size = 0.90

$$-\frac{\frac{\sqrt{1-(a+bx)^2}}{\operatorname{ArcSin}(a+bx)} + \operatorname{Si}(\operatorname{ArcSin}(a+bx))}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^(-2),x]
[Out] -((Sqrt[1 - (a + b*x)^2]/ArcSin[a + b*x] + SinIntegral[ArcSin[a + b*x]])/b)
```

Maple [A]
time = 0.07, size = 38, normalized size = 0.93

method	result	size
derivativedivides	$\frac{-\frac{\sqrt{1-(bx+a)^2}}{\arcsin(bx+a)}-\operatorname{sinIntegral}(\arcsin(bx+a))}{b}$	38
default	$\frac{-\frac{\sqrt{1-(bx+a)^2}}{\arcsin(bx+a)}-\operatorname{sinIntegral}(\arcsin(bx+a))}{b}$	38

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/arcsin(b*x+a)^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/b*(-1/arcsin(b*x+a)*(1-(b*x+a)^2)^(1/2)-Si(arcsin(b*x+a)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] (b*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))*integrate(sqrt(b*
x + a + 1)*(b*x + a)*sqrt(-b*x - a + 1)/((b^2*x^2 + 2*a*b*x + a^2 - 1)*arct
an2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))), x) - sqrt(b*x + a + 1)
*sqrt(-b*x - a + 1))/(b*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a +
1)))
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] integral(arcsin(b*x + a)^(-2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\operatorname{asin}^{2}\left(a + bx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/asin(b*x+a)**2,x)
```

```
[Out] Integral(asin(a + b*x)**(-2), x)
```

Giac [A]
time = 0.39, size = 39, normalized size = 0.95

$$-\frac{\operatorname{Si}\left(\arcsin\left(bx + a\right)\right)}{b} - \frac{\sqrt{-\left(bx + a\right)^{2} + 1}}{b \arcsin\left(bx + a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)^2,x, algorithm="giac")
```

```
[Out] -sin_integral(arcsin(b*x + a))/b - sqrt(-(b*x + a)^2 + 1)/(b*arcsin(b*x + a
))
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{1}{\mathrm{asin}\left(a+b\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/asin(a + b*x)^2,x)
```

```
[Out] int(1/asin(a + b*x)^2, x)
```

3.150 $\int \frac{1}{x\mathbf{ArcSin}(a+bx)^2}\,dx$

Optimal. Leaf size=15

$$\text{Int}\left(\frac{1}{x\text{ArcSin}(a+bx)^2},x\right)$$

```
[Out] Unintegrable(1/x/arcsin(b*x+a)^2,x)
```

Rubi [A]
time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{x\text{ArcSin}(a+bx)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/(x*ArcSin[a + b*x]^2),x]
[Out] Defer[Subst][Defer[Int][1/((-(a/b) + x/b)*ArcSin[x]^2), x], x, a + b*x]/b
```

Rubi steps

$$\int \frac{1}{x\sin^{-1}(a+bx)^2}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\left(-\frac{a}{b}+\frac{x}{b}\right)\sin^{-1}(x)^2}\,dx,x,a+bx\right)}{b}$$

Mathematica [A]
time = 1.93, size = 0, normalized size = 0.00

$$\int \frac{1}{x\text{ArcSin}(a+bx)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/(x*ArcSin[a + b*x]^2),x]
[Out] Integrate[1/(x*ArcSin[a + b*x]^2), x]
```

Maple [A]
time = 2.60, size = 0, normalized size = 0.00

$$\int \frac{1}{x\arcsin\left(bx+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x/arcsin(b*x+a)^2,x)
```

```
[Out] int(1/x/arcsin(b*x+a)^2,x)
```

Maxima [**A**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/arcsin(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] -(b*x*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))*integrate((a*b
*x + a^2 - 1)*sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)/((b^3*x^4 + 2*a*b^2*x^3
+ (a^2 - 1)*b*x^2)*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))),
 x) + sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))/(b*x*arctan2(b*x + a, sqrt(b*x
+ a + 1)*sqrt(-b*x - a + 1)))
```

Fricas [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/arcsin(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] integral(1/(x*arcsin(b*x + a)^2), x)
```

Sympy [**A**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x \operatorname{asin}^{2}\left(a + bx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/asin(b*x+a)**2,x)
```

```
[Out] Integral(1/(x*asin(a + b*x)**2), x)
```

Giac [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/arcsin(b*x+a)^2,x, algorithm="giac")
```

```
[Out] integrate(1/(x*arcsin(b*x + a)^2), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.07

$$\int \frac{1}{x\,\mathrm{asin}\left(a+b\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x*asin(a + b*x)^2),x)
[Out] int(1/(x*asin(a + b*x)^2), x)
```

3.151 $\int \frac{x^2}{\mathbf{ArcSin}(a+bx)^3}\,dx$

Optimal. Leaf size=176

$$-\frac{x^2\sqrt{1-(a+bx)^2}}{2b\text{ArcSin}(a+bx)^2}+\frac{a^2(a+bx)}{2b^3\text{ArcSin}(a+bx)}-\frac{2a(a+bx)^2}{b^3\text{ArcSin}(a+bx)}+\frac{9a+bx}{8b^3\text{ArcSin}(a+bx)}-\frac{(1+4a^2)\,\text{CosIntegral}(}{8b^3}$$

```
[Out] 1/2*a^2*(b*x+a)/b^3/arcsin(b*x+a)-2*a*(b*x+a)^2/b^3/arcsin(b*x+a)+1/8*(b*x+
9*a)/b^3/arcsin(b*x+a)-1/8*(4*a^2+1)*Ci(arcsin(b*x+a))/b^3+9/8*Ci(3*arcsin(
b*x+a))/b^3+2*a*Si(2*arcsin(b*x+a))/b^3-3/8*sin(3*arcsin(b*x+a))/b^3/arcsin
(b*x+a)-1/2*x^2*(1-(b*x+a)^2)^(1/2)/b/arcsin(b*x+a)^2
```

Rubi [A]
time = 0.34, antiderivative size = 263, normalized size of antiderivative = 1.49, number of steps used = 24, number of rules used = 12, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1.000, Rules used = {4889, 4829, 4717, 4807, 4719, 3383, 4729, 4731, 4491, 12, 3380, 4737}

$$-\frac{a^2\text{CosIntegral}(\text{ArcSin}(a+bx))}{2b^3}+\frac{a^2(a+bx)}{2b^3\text{ArcSin}(a+bx)}-\frac{a^2\sqrt{1-(a+bx)^2}}{2b^3\text{ArcSin}(a+bx)^2}-\frac{\text{CosIntegral}(\text{ArcSin}(a+bx))}{8b^3}+\frac{9\text{CosIntegral}(3\text{ArcSin}(a+bx))}{8b^3}+\frac{2a\text{Si}(2\text{ArcSin}(a+bx))}{b^3}+\frac{3(a+bx)^3}{2b^3\text{ArcSin}(a+bx)}-\frac{2a(a+bx)^2}{b^3\text{ArcSin}(a+bx)}-\frac{\sqrt{1-(a+bx)^2}\,(a+bx)^2}{2b^3\text{ArcSin}(a+bx)^2}-\frac{a+bx}{b^3\text{ArcSin}(a+bx)}+\frac{a\sqrt{1-(a+bx)^2}\,(a+bx)}{b^3\text{ArcSin}(a+bx)^2}+\frac{a}{b^3\text{ArcSin}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^2/ArcSin[a + b*x]^3,x]
```

```
[Out] -1/2*(a^2*Sqrt[1 - (a + b*x)^2])/(b^3*ArcSin[a + b*x]^2) + (a*(a + b*x)*Sqr
t[1 - (a + b*x)^2])/(b^3*ArcSin[a + b*x]^2) - ((a + b*x)^2*Sqrt[1 - (a + b*
x)^2])/(2*b^3*ArcSin[a + b*x]^2) + a/(b^3*ArcSin[a + b*x]) - (a + b*x)/(b^3
*ArcSin[a + b*x]) + (a^2*(a + b*x))/(2*b^3*ArcSin[a + b*x]) - (2*a*(a + b*x
)^2)/(b^3*ArcSin[a + b*x]) + (3*(a + b*x)^3)/(2*b^3*ArcSin[a + b*x]) - CosI
ntegral[ArcSin[a + b*x]]/(8*b^3) - (a^2*CosIntegral[ArcSin[a + b*x]])/(2*b^
3) + (9*CosIntegral[3*ArcSin[a + b*x]])/(8*b^3) + (2*a*SinIntegral[2*ArcSin
[a + b*x]])/b^3
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
```

```
c*f, 0]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4717

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[Sqrt[1 - c^2
*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + Dist[c/(b*(n + 1)),
 Int[x*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4719

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[-a/b + x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c
, n}, x]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + (Dis
t[c*((m + 1)/(b*(n + 1))), Int[x^(m + 1)*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[
1 - c^2*x^2]), x], x] - Dist[m/(b*c*(n + 1)), Int[x^(m - 1)*((a + b*ArcSin[
c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4829

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_))^(m_.), x_Sy
mbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*ArcSin[c*x])^n, x], x] /; F
reeQ[{a, b, c, d, e}, x] && IGtQ[m, 0] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{x^2}{\sin^{-1}(a+bx)^3}\,dx = \frac{\text{Subst}\left(\int \frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^2}{\sin^{-1}(x)^3}\,dx, x, a+bx\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \left(\frac{a^2}{b^2\sin^{-1}(x)^3} - \frac{2ax}{b^2\sin^{-1}(x)^3} + \frac{x^2}{b^2\sin^{-1}(x)^3}\right)\,dx, x, a+bx\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \frac{x^2}{\sin^{-1}(x)^3}\,dx, x, a+bx\right)}{b^3} - \frac{(2a)\text{Subst}\left(\int \frac{x}{\sin^{-1}(x)^3}\,dx, x, a+bx\right)}{b^3} + \frac{a^2\text{Subst}\left(\int\right.}{}$$

$$= -\frac{a^2\sqrt{1-(a+bx)^2}}{2b^3\sin^{-1}(a+bx)^2} + \frac{a(a+bx)\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)^2} - \frac{(a+bx)^2\sqrt{1-(a+bx)^2}}{2b^3\sin^{-1}(a+bx)^2} + -$$

$$= -\frac{a^2\sqrt{1-(a+bx)^2}}{2b^3\sin^{-1}(a+bx)^2} + \frac{a(a+bx)\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)^2} - \frac{(a+bx)^2\sqrt{1-(a+bx)^2}}{2b^3\sin^{-1}(a+bx)^2} + \frac{}{b}$$

$$= -\frac{a^2\sqrt{1-(a+bx)^2}}{2b^3\sin^{-1}(a+bx)^2} + \frac{a(a+bx)\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)^2} - \frac{(a+bx)^2\sqrt{1-(a+bx)^2}}{2b^3\sin^{-1}(a+bx)^2} + \frac{}{b}$$

$$= -\frac{a^2\sqrt{1-(a+bx)^2}}{2b^3\sin^{-1}(a+bx)^2} + \frac{a(a+bx)\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)^2} - \frac{(a+bx)^2\sqrt{1-(a+bx)^2}}{2b^3\sin^{-1}(a+bx)^2} + \frac{}{b}$$

$$= -\frac{a^2\sqrt{1-(a+bx)^2}}{2b^3\sin^{-1}(a+bx)^2} + \frac{a(a+bx)\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)^2} - \frac{(a+bx)^2\sqrt{1-(a+bx)^2}}{2b^3\sin^{-1}(a+bx)^2} + \frac{}{b}$$

$$= -\frac{a^2\sqrt{1-(a+bx)^2}}{2b^3\sin^{-1}(a+bx)^2} + \frac{a(a+bx)\sqrt{1-(a+bx)^2}}{b^3\sin^{-1}(a+bx)^2} - \frac{(a+bx)^2\sqrt{1-(a+bx)^2}}{2b^3\sin^{-1}(a+bx)^2} + \frac{}{b}$$

Mathematica [A]
time = 0.27, size = 115, normalized size = 0.65

$$\frac{\frac{4bx\left(-bx\sqrt{1-a^2-2abx-b^2x^2}+(-2+2a^2+5abx+3b^2x^2)\text{ArcSin}(a+bx)\right)}{\text{ArcSin}(a+bx)^2} - (1+4a^2)\,\text{CosIntegral}(\text{ArcSin}(a+bx)) + 9\text{CosIntegral}(3\text{ArcSin}(a+bx)) + 16a\text{Si}(2\text{ArcSin}(a+bx))}{8b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2/ArcSin[a + b*x]^3,x]
```

```
[Out] ((4*b*x*(-(b*x*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]) + (-2 + 2*a^2 + 5*a*b*x +
 3*b^2*x^2)*ArcSin[a + b*x]))/ArcSin[a + b*x]^2 - (1 + 4*a^2)*CosIntegral[A
rcSin[a + b*x]] + 9*CosIntegral[3*ArcSin[a + b*x]] + 16*a*SinIntegral[2*Arc
Sin[a + b*x]])/(8*b^3)
```

Maple [A]
time = 0.20, size = 215, normalized size = 1.22

method	result
derivativedivides	$\frac{\frac{a\left(4\,\mathrm{sinIntegral}(2\arcsin(bx+a))\arcsin(bx+a)^2+2\cos(2\arcsin(bx+a))\arcsin(bx+a)+\sin(2\arcsin(bx+a))\right)}{2\arcsin(bx+a)^2}-\frac{\sqrt{1-(bx+a)^2}}{8\arcsin(bx+a)^2}}{}$
default	$\frac{\frac{a\left(4\,\mathrm{sinIntegral}(2\arcsin(bx+a))\arcsin(bx+a)^2+2\cos(2\arcsin(bx+a))\arcsin(bx+a)+\sin(2\arcsin(bx+a))\right)}{2\arcsin(bx+a)^2}-\frac{\sqrt{1-(bx+a)^2}}{8\arcsin(bx+a)^2}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/arcsin(b*x+a)^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/b^3*(1/2*a*(4*Si(2*arcsin(b*x+a))*arcsin(b*x+a)^2+2*cos(2*arcsin(b*x+a))*
arcsin(b*x+a)+sin(2*arcsin(b*x+a)))/arcsin(b*x+a)^2-1/8/arcsin(b*x+a)^2*(1-
(b*x+a)^2)^(1/2)+1/8*(b*x+a)/arcsin(b*x+a)-1/8*Ci(arcsin(b*x+a))+1/8/arcsin
(b*x+a)^2*cos(3*arcsin(b*x+a))-3/8/arcsin(b*x+a)*sin(3*arcsin(b*x+a))+9/8*C
i(3*arcsin(b*x+a))-1/2*a^2*(Ci(arcsin(b*x+a))*arcsin(b*x+a)^2-(b*x+a)*arcsi
n(b*x+a)+(1-(b*x+a)^2)^(1/2))/arcsin(b*x+a)^2)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/arcsin(b*x+a)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)*b*x^2 + arctan2(b*x + a, sqrt(b*
x + a + 1)*sqrt(-b*x - a + 1))^2*integrate((9*b^2*x^2 + 10*a*b*x + 2*a^2 -
2)/arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)), x) - (3*b^2*x^3
+ 5*a*b*x^2 + 2*(a^2 - 1)*x)*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x -
 a + 1)))/(b^2*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))^2)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/arcsin(b*x+a)^3,x, algorithm="fricas")
```

```
[Out] integral(x^2/arcsin(b*x + a)^3, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\operatorname{asin}^3(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2/asin(b*x+a)**3,x)
```

```
[Out] Integral(x**2/asin(a + b*x)**3, x)
```

Giac [A]
time = 0.43, size = 272, normalized size = 1.55

$$-\frac{a^2\operatorname{Ci}(\arcsin(bx+a))}{2\,b^3}+\frac{(bx+a)a^2}{2\,b^3\arcsin(bx+a)}+\frac{2\,a\operatorname{Si}(2\arcsin(bx+a))}{b^3}+\frac{3\left((bx+a)^2-1\right)(bx+a)}{2\,b^3\arcsin(bx+a)}-\frac{2\left((bx+a)^2-1\right)a}{b^3\arcsin(bx+a)}+\frac{9\operatorname{Ci}(3\arcsin(bx+a))}{8\,b^3}-\frac{\operatorname{Ci}(\arcsin(bx+a))}{8\,b^3}+\frac{\sqrt{-(bx+a)^2+1}\,(bx+a)a}{b^3\arcsin(bx+a)^2}-\frac{\sqrt{-(bx+a)^2+1}\,a^2}{2\,b^3\arcsin(bx+a)^2}+\frac{bx+a}{2\,b^3\arcsin(bx+a)}-\frac{a}{b^3\arcsin(bx+a)}+\frac{\left(-(bx+a)^2+1\right)^{\frac{3}{2}}}{2\,b^3\arcsin(bx+a)^2}-\frac{\sqrt{-(bx+a)^2+1}}{2\,b^3\arcsin(bx+a)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/arcsin(b*x+a)^3,x, algorithm="giac")
```

```
[Out] -1/2*a^2*cos_integral(arcsin(b*x + a))/b^3 + 1/2*(b*x + a)*a^2/(b^3*arcsin(
b*x + a)) + 2*a*sin_integral(2*arcsin(b*x + a))/b^3 + 3/2*((b*x + a)^2 - 1)
*(b*x + a)/(b^3*arcsin(b*x + a)) - 2*((b*x + a)^2 - 1)*a/(b^3*arcsin(b*x +
a)) + 9/8*cos_integral(3*arcsin(b*x + a))/b^3 - 1/8*cos_integral(arcsin(b*x
 + a))/b^3 + sqrt(-(b*x + a)^2 + 1)*(b*x + a)*a/(b^3*arcsin(b*x + a)^2) - 1
/2*sqrt(-(b*x + a)^2 + 1)*a^2/(b^3*arcsin(b*x + a)^2) + 1/2*(b*x + a)/(b^3*
arcsin(b*x + a)) - a/(b^3*arcsin(b*x + a)) + 1/2*(-(b*x + a)^2 + 1)^(3/2)/(
b^3*arcsin(b*x + a)^2) - 1/2*sqrt(-(b*x + a)^2 + 1)/(b^3*arcsin(b*x + a)^2)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^2}{{\mathrm{asin}\left(a+b\,x\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/asin(a + b*x)^3,x)
```

```
[Out] int(x^2/asin(a + b*x)^3, x)
```

3.152 $\int \frac{x}{\mathbf{ArcSin}(a+bx)^3}\,dx$

Optimal. Leaf size=108

$$-\frac{x\sqrt{1-(a+bx)^2}}{2b\text{ArcSin}(a+bx)^2}-\frac{a(a+bx)}{2b^2\text{ArcSin}(a+bx)}-\frac{1-2(a+bx)^2}{2b^2\text{ArcSin}(a+bx)}+\frac{a\text{CosIntegral}(\text{ArcSin}(a+bx))}{2b^2}-\frac{\text{Si}(2\text{ArcSin}(a+bx))}{b^2}$$

```
[Out] -1/2*a*(b*x+a)/b^2/arcsin(b*x+a)+1/2*(-1+2*(b*x+a)^2)/b^2/arcsin(b*x+a)+1/2
*a*Ci(arcsin(b*x+a))/b^2-Si(2*arcsin(b*x+a))/b^2-1/2*x*(1-(b*x+a)^2)^(1/2)/
b/arcsin(b*x+a)^2
```

Rubi [A]
time = 0.18, antiderivative size = 151, normalized size of antiderivative = 1.40, number of steps used = 14, number of rules used = 12, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 1.200$, Rules used = {4889, 4829, 4717, 4807, 4719, 3383, 4729, 4731, 4491, 12, 3380, 4737}

$$\frac{a\text{CosIntegral}(\text{ArcSin}(a+bx))}{2b^2}-\frac{\text{Si}(2\text{ArcSin}(a+bx))}{b^2}+\frac{(a+bx)^2}{b^2\text{ArcSin}(a+bx)}-\frac{a(a+bx)}{2b^2\text{ArcSin}(a+bx)}-\frac{\sqrt{1-(a+bx)^2}\,(a+bx)}{2b^2\text{ArcSin}(a+bx)^2}-\frac{1}{2b^2\text{ArcSin}(a+bx)}+\frac{a\sqrt{1-(a+bx)^2}}{2b^2\text{ArcSin}(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[x/ArcSin[a + b*x]^3,x]
```

```
[Out] (a*Sqrt[1 - (a + b*x)^2])/(2*b^2*ArcSin[a + b*x]^2) - ((a + b*x)*Sqrt[1 - (
a + b*x)^2])/(2*b^2*ArcSin[a + b*x]^2) - 1/(2*b^2*ArcSin[a + b*x]) - (a*(a
+ b*x))/(2*b^2*ArcSin[a + b*x]) + (a + b*x)^2/(b^2*ArcSin[a + b*x]) + (a*Co
sIntegral[ArcSin[a + b*x]])/(2*b^2) - SinIntegral[2*ArcSin[a + b*x]]/b^2
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
```

```
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4717

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[Sqrt[1 - c^2
*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + Dist[c/(b*(n + 1)),
 Int[x*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4719

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[-a/b + x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c
, n}, x]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + (Dis
t[c*((m + 1)/(b*(n + 1))), Int[x^(m + 1)*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[
1 - c^2*x^2]), x], x] - Dist[m/(b*c*(n + 1)), Int[x^(m - 1)*((a + b*ArcSin[
c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4829

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_))^(m_.), x_Sy
mbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*ArcSin[c*x])^n, x], x] /; F
reeQ[{a, b, c, d, e}, x] && IGtQ[m, 0] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{x}{\sin^{-1}(a+bx)^3}\,dx = \frac{\text{Subst}\left(\int \frac{-\frac{a}{b}+\frac{x}{b}}{\sin^{-1}(x)^3}\,dx, x, a+bx\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \left(-\frac{a}{b\sin^{-1}(x)^3}+\frac{x}{b\sin^{-1}(x)^3}\right)dx, x, a+bx\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \frac{x}{\sin^{-1}(x)^3}\,dx, x, a+bx\right)}{b^2} - \frac{a\text{Subst}\left(\int \frac{1}{\sin^{-1}(x)^3}\,dx, x, a+bx\right)}{b^2}$$

$$= \frac{a\sqrt{1-(a+bx)^2}}{2b^2\sin^{-1}(a+bx)^2} - \frac{(a+bx)\sqrt{1-(a+bx)^2}}{2b^2\sin^{-1}(a+bx)^2} + \frac{\text{Subst}\left(\int \frac{1}{\sqrt{1-x^2}\,\sin^{-1}(x)^2}\,dx, x,\right.}{2b^2}$$

$$= \frac{a\sqrt{1-(a+bx)^2}}{2b^2\sin^{-1}(a+bx)^2} - \frac{(a+bx)\sqrt{1-(a+bx)^2}}{2b^2\sin^{-1}(a+bx)^2} - \frac{1}{2b^2\sin^{-1}(a+bx)} - \frac{a(a+bx}{2b^2\sin^{-1}(a+}$$

$$= \frac{a\sqrt{1-(a+bx)^2}}{2b^2\sin^{-1}(a+bx)^2} - \frac{(a+bx)\sqrt{1-(a+bx)^2}}{2b^2\sin^{-1}(a+bx)^2} - \frac{1}{2b^2\sin^{-1}(a+bx)} - \frac{a(a+bx}{2b^2\sin^{-1}(a+}$$

$$= \frac{a\sqrt{1-(a+bx)^2}}{2b^2\sin^{-1}(a+bx)^2} - \frac{(a+bx)\sqrt{1-(a+bx)^2}}{2b^2\sin^{-1}(a+bx)^2} - \frac{1}{2b^2\sin^{-1}(a+bx)} - \frac{a(a+bx}{2b^2\sin^{-1}(a+}$$

$$= \frac{a\sqrt{1-(a+bx)^2}}{2b^2\sin^{-1}(a+bx)^2} - \frac{(a+bx)\sqrt{1-(a+bx)^2}}{2b^2\sin^{-1}(a+bx)^2} - \frac{1}{2b^2\sin^{-1}(a+bx)} - \frac{a(a+bx}{2b^2\sin^{-1}(a+}$$

$$= \frac{a\sqrt{1-(a+bx)^2}}{2b^2\sin^{-1}(a+bx)^2} - \frac{(a+bx)\sqrt{1-(a+bx)^2}}{2b^2\sin^{-1}(a+bx)^2} - \frac{1}{2b^2\sin^{-1}(a+bx)} - \frac{a(a+bx}{2b^2\sin^{-1}(a+}$$

Mathematica [A]

time = 0.05, size = 121, normalized size = 1.12

$$-\frac{x\sqrt{1-a^2-2abx-b^2x^2}}{2b\text{ArcSin}(a+bx)^2} + \frac{-1+a^2+3abx+2b^2x^2}{2b^2\text{ArcSin}(a+bx)} - \frac{3a\text{CosIntegral}(\text{ArcSin}(a+bx))}{2b^2} - 2\left(-\frac{a\text{CosIntegral}(\text{ArcSin}(a+bx))}{b^2} + \frac{\text{Si}(2\text{ArcSin}(a+bx))}{2b^2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x/ArcSin[a + b*x]^3,x]
```

```
[Out] -1/2*(x*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2])/(b*ArcSin[a + b*x]^2) + (-1 + a^
2 + 3*a*b*x + 2*b^2*x^2)/(2*b^2*ArcSin[a + b*x]) - (3*a*CosIntegral[ArcSin[
a + b*x]])/(2*b^2) - 2*(-((a*CosIntegral[ArcSin[a + b*x]])/b^2) + SinIntegr
al[2*ArcSin[a + b*x]]/(2*b^2))
```

Maple [A]
time = 0.10, size = 109, normalized size = 1.01

method	result
derivativedivides	$\frac{-\frac{\sin(2\arcsin(bx+a))}{4\arcsin(bx+a)^2}-\frac{\cos(2\arcsin(bx+a))}{2\arcsin(bx+a)}-\text{sinIntegral}(2\arcsin(bx+a))+\frac{a\Big(\text{cosineIntegral}(\arcsin(bx+a))\arcsin(bx+a)^2-(bx+a)\ a}{2\arcsin(bx+a)^2}}{b^2}$
default	$\frac{-\frac{\sin(2\arcsin(bx+a))}{4\arcsin(bx+a)^2}-\frac{\cos(2\arcsin(bx+a))}{2\arcsin(bx+a)}-\text{sinIntegral}(2\arcsin(bx+a))+\frac{a\Big(\text{cosineIntegral}(\arcsin(bx+a))\arcsin(bx+a)^2-(bx+a)\ a}{2\arcsin(bx+a)^2}}{b^2}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/arcsin(b*x+a)^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/b^2*(-1/4/arcsin(b*x+a)^2*sin(2*arcsin(b*x+a))-1/2/arcsin(b*x+a)*cos(2*ar
csin(b*x+a))-Si(2*arcsin(b*x+a))+1/2*a*(Ci(arcsin(b*x+a))*arcsin(b*x+a)^2-(
b*x+a)*arcsin(b*x+a)+(1-(b*x+a)^2)^(1/2))/arcsin(b*x+a)^2)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(b*x+a)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(b*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))^2*integrate(
(4*b*x + 3*a)/arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)), x) +
sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)*b*x - (2*b^2*x^2 + 3*a*b*x + a^2 - 1)*
arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)))/(b^2*arctan2(b*x +
a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))^2)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(b*x+a)^3,x, algorithm="fricas")
```

```
[Out] integral(x/arcsin(b*x + a)^3, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\operatorname{asin}^3(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/asin(b*x+a)**3,x)
```

```
[Out] Integral(x/asin(a + b*x)**3, x)
```

Giac [A]
time = 0.42, size = 139, normalized size = 1.29

$$\frac{a\operatorname{Ci}(\arcsin(bx+a))}{2\,b^2}-\frac{(bx+a)a}{2\,b^2\arcsin(bx+a)}-\frac{\operatorname{Si}(2\arcsin(bx+a))}{b^2}+\frac{(bx+a)^2-1}{b^2\arcsin(bx+a)}-\frac{\sqrt{-(bx+a)^2+1}\,(bx+a)}{2\,b^2\arcsin(bx+a)^2}+\frac{\sqrt{-(bx+a)^2+1}\,a}{2\,b^2\arcsin(bx+a)^2}+\frac{1}{2\,b^2\arcsin(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/2*a*cos_integral(arcsin(b*x + a))/b^2 - 1/2*(b*x + a)*a/(b^2*arcsin(b*x +
 a)) - sin_integral(2*arcsin(b*x + a))/b^2 + ((b*x + a)^2 - 1)/(b^2*arcsin(
b*x + a)) - 1/2*sqrt(-(b*x + a)^2 + 1)*(b*x + a)/(b^2*arcsin(b*x + a)^2) +
1/2*sqrt(-(b*x + a)^2 + 1)*a/(b^2*arcsin(b*x + a)^2) + 1/2/(b^2*arcsin(b*x
+ a))
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x}{{\mathrm{asin}\left(a+b\,x\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/asin(a + b*x)^3,x)
```

```
[Out] int(x/asin(a + b*x)^3, x)
```

3.153 $\int \frac{1}{\textbf{ArcSin}(a+bx)^3}\,dx$

Optimal. Leaf size=65

$$-\frac{\sqrt{1-(a+bx)^2}}{2b\text{ArcSin}(a+bx)^2}+\frac{a+bx}{2b\text{ArcSin}(a+bx)}-\frac{\text{CosIntegral}(\text{ArcSin}(a+bx))}{2b}$$

```
[Out] 1/2*(b*x+a)/b/arcsin(b*x+a)-1/2*Ci(arcsin(b*x+a))/b-1/2*(1-(b*x+a)^2)^(1/2)
/b/arcsin(b*x+a)^2
```

Rubi [A]
time = 0.05, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}} = 0.625$, Rules used = {4887, 4717, 4807, 4719, 3383}

$$-\frac{\text{CosIntegral}(\text{ArcSin}(a+bx))}{2b}+\frac{a+bx}{2b\text{ArcSin}(a+bx)}-\frac{\sqrt{1-(a+bx)^2}}{2b\text{ArcSin}(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^(-3),x]
```

```
[Out] -1/2*Sqrt[1 - (a + b*x)^2]/(b*ArcSin[a + b*x]^2) + (a + b*x)/(2*b*ArcSin[a
+ b*x]) - CosIntegral[ArcSin[a + b*x]]/(2*b)
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 4717

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[Sqrt[1 - c^2
*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + Dist[c/(b*(n + 1)),
 Int[x*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4719

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[-a/b + x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c
, n}, x]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
```

```
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$
\begin{aligned}
\int \frac{1}{\sin^{-1}(a+bx)^3}\,dx &= \frac{\operatorname{Subst}\left(\int \frac{1}{\sin^{-1}(x)^3}\,dx, x, a+bx\right)}{b}\\
&= -\frac{\sqrt{1-(a+bx)^2}}{2b\sin^{-1}(a+bx)^2} - \frac{\operatorname{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\,\sin^{-1}(x)^2}\,dx, x, a+bx\right)}{2b}\\
&= -\frac{\sqrt{1-(a+bx)^2}}{2b\sin^{-1}(a+bx)^2} + \frac{a+bx}{2b\sin^{-1}(a+bx)} - \frac{\operatorname{Subst}\left(\int \frac{1}{\sin^{-1}(x)}\,dx, x, a+bx\right)}{2b}\\
&= -\frac{\sqrt{1-(a+bx)^2}}{2b\sin^{-1}(a+bx)^2} + \frac{a+bx}{2b\sin^{-1}(a+bx)} - \frac{\operatorname{Subst}\left(\int \frac{\cos(x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{2b}\\
&= -\frac{\sqrt{1-(a+bx)^2}}{2b\sin^{-1}(a+bx)^2} + \frac{a+bx}{2b\sin^{-1}(a+bx)} - \frac{\operatorname{Ci}(\sin^{-1}(a+bx))}{2b}
\end{aligned}
$$

Mathematica [A]
time = 0.05, size = 65, normalized size = 1.00

$$
-\frac{\sqrt{1-(a+bx)^2}}{2b\text{ArcSin}(a+bx)^2} + \frac{a+bx}{2b\text{ArcSin}(a+bx)} - \frac{\text{CosIntegral}(\text{ArcSin}(a+bx))}{2b}
$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^(-3),x]
```

```
[Out] -1/2*Sqrt[1 - (a + b*x)^2]/(b*ArcSin[a + b*x]^2) + (a + b*x)/(2*b*ArcSin[a
+ b*x]) - CosIntegral[ArcSin[a + b*x]]/(2*b)
```

Maple [A]
time = 0.06, size = 53, normalized size = 0.82

method	result	size
derivativedivides	$\frac{-\frac{\sqrt{1-(bx+a)^2}}{2\arcsin(bx+a)^2}+\frac{bx+a}{2\arcsin(bx+a)}-\frac{\text{cosineIntegral}(\arcsin(bx+a))}{2}}{b}$	53
default	$\frac{-\frac{\sqrt{1-(bx+a)^2}}{2\arcsin(bx+a)^2}+\frac{bx+a}{2\arcsin(bx+a)}-\frac{\text{cosineIntegral}(\arcsin(bx+a))}{2}}{b}$	53

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/arcsin(b*x+a)^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/b*(-1/2/arcsin(b*x+a)^2*(1-(b*x+a)^2)^(1/2)+1/2*(b*x+a)/arcsin(b*x+a)-1/2
*Ci(arcsin(b*x+a)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(b*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))^2*integrate(
1/arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)), x) - (b*x + a)*ar
ctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)) + sqrt(b*x + a + 1)*sq
rt(-b*x - a + 1))/(b*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))
^2)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)^3,x, algorithm="fricas")
```

```
[Out] integral(arcsin(b*x + a)^(-3), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\operatorname{asin}^3(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/asin(b*x+a)**3,x)
```

```
[Out] Integral(asin(a + b*x)**(-3), x)
```

Giac [A]
time = 0.40, size = 57, normalized size = 0.88

$$-\frac{\operatorname{Ci}\left(\arcsin\left(bx+a\right)\right)}{2\,b}+\frac{bx+a}{2\,b\arcsin\left(bx+a\right)}-\frac{\sqrt{-\left(bx+a\right)^{2}+1}}{2\,b\arcsin\left(bx+a\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)^3,x, algorithm="giac")
```

```
[Out] -1/2*cos_integral(arcsin(b*x + a))/b + 1/2*(b*x + a)/(b*arcsin(b*x + a)) -
1/2*sqrt(-(b*x + a)^2 + 1)/(b*arcsin(b*x + a)^2)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{1}{\mathrm{asin}\left(a+b\,x\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/asin(a + b*x)^3,x)
```

```
[Out] int(1/asin(a + b*x)^3, x)
```

3.154 $\int \frac{1}{x\mathbf{ArcSin}(a+bx)^3}\,dx$

Optimal. Leaf size=15

$$\operatorname{Int}\left(\frac{1}{x\operatorname{ArcSin}(a+bx)^3},x\right)$$

[Out] Unintegrable(1/x/arcsin(b*x+a)^3,x)

Rubi [A]
time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{x\operatorname{ArcSin}(a+bx)^3}\,dx$$

Verification is not applicable to the result.

[In] Int[1/(x*ArcSin[a + b*x]^3),x]

[Out] Defer[Subst][Defer[Int][1/((-(a/b) + x/b)*ArcSin[x]^3), x], x, a + b*x]/b

Rubi steps

$$\int \frac{1}{x\sin^{-1}(a+bx)^3}\,dx = \frac{\operatorname{Subst}\left(\int \frac{1}{\left(-\frac{a}{b}+\frac{x}{b}\right)\sin^{-1}(x)^3}\,dx,x,a+bx\right)}{b}$$

Mathematica [A]
time = 1.70, size = 0, normalized size = 0.00

$$\int \frac{1}{x\operatorname{ArcSin}(a+bx)^3}\,dx$$

Verification is not applicable to the result.

[In] Integrate[1/(x*ArcSin[a + b*x]^3),x]

[Out] Integrate[1/(x*ArcSin[a + b*x]^3), x]

Maple [A]
time = 2.92, size = 0, normalized size = 0.00

$$\int \frac{1}{x\arcsin\left(bx+a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x/arcsin(b*x+a)^3,x)
```

```
[Out] int(1/x/arcsin(b*x+a)^3,x)
```

Maxima [**A**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/arcsin(b*x+a)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(x^2*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))^2*integrat
e((a*b*x + 2*a^2 - 2)/(x^3*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a
 + 1))), x) + sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)*b*x + (a*b*x + a^2 - 1)*
arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)))/(b^2*x^2*arctan2(b*
x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))^2)
```

Fricas [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/arcsin(b*x+a)^3,x, algorithm="fricas")
```

```
[Out] integral(1/(x*arcsin(b*x + a)^3), x)
```

Sympy [**A**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x \operatorname{asin}^{3}{\left(a + bx \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/asin(b*x+a)**3,x)
```

```
[Out] Integral(1/(x*asin(a + b*x)**3), x)
```

Giac [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/arcsin(b*x+a)^3,x, algorithm="giac")
```

```
[Out] integrate(1/(x*arcsin(b*x + a)^3), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.07

$$\int \frac{1}{x\,\mathrm{asin}\left(a+b\,x\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x*asin(a + b*x)^3),x)
```

```
[Out] int(1/(x*asin(a + b*x)^3), x)
```

3.155 $\int x^2 \sqrt{a+b\text{ArcSin}(c+dx)}\,dx$

Optimal. Leaf size=535

$$\frac{c^2(c+dx)\sqrt{a+b\text{ArcSin}(c+dx)}}{d^3}+\frac{(c+dx)^3\sqrt{a+b\text{ArcSin}(c+dx)}}{3d^3}+\frac{c\sqrt{a+b\text{ArcSin}(c+dx)}\cos(2\text{ArcS}}{2d^3}$$

```
[Out] 1/72*cos(3*a/b)*FresnelS(6^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)
)*b^(1/2)*6^(1/2)*Pi^(1/2)/d^3-1/72*FresnelC(6^(1/2)/Pi^(1/2)*(a+b*arcsin(d
*x+c))^(1/2)/b^(1/2))*sin(3*a/b)*b^(1/2)*6^(1/2)*Pi^(1/2)/d^3-1/8*cos(a/b)*
FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*b^(1/2)*2^(1/2
)*Pi^(1/2)/d^3-1/2*c^2*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c
))^(1/2)/b^(1/2))*b^(1/2)*2^(1/2)*Pi^(1/2)/d^3+1/8*FresnelC(2^(1/2)/Pi^(1/2
)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(a/b)*b^(1/2)*2^(1/2)*Pi^(1/2)/d^3+
1/2*c^2*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(a/
b)*b^(1/2)*2^(1/2)*Pi^(1/2)/d^3-1/4*c*cos(2*a/b)*FresnelC(2*(a+b*arcsin(d*x
+c))^(1/2)/b^(1/2)/Pi^(1/2))*b^(1/2)*Pi^(1/2)/d^3-1/4*c*FresnelS(2*(a+b*arc
sin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*sin(2*a/b)*b^(1/2)*Pi^(1/2)/d^3+c^2*(d*
x+c)*(a+b*arcsin(d*x+c))^(1/2)/d^3+1/3*(d*x+c)^3*(a+b*arcsin(d*x+c))^(1/2)/
d^3+1/2*c*cos(2*arcsin(d*x+c))*(a+b*arcsin(d*x+c))^(1/2)/d^3
```

Rubi [A]
time = 1.72, antiderivative size = 535, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 12, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.667$, Rules used = {4889, 4831, 6873, 6874, 3467, 3434, 3433, 3432, 3466, 3435, 3524, 3438}

$$\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,c^2\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{d^3}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,c^2\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{d^3}+\frac{c^2(c+dx)\sqrt{a+b\text{ArcSin}(c+dx)}}{d^3}+\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{4d^3}-\frac{\sqrt{\frac{\pi}{6}}\sqrt{b}\sin\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{12d^3}-\frac{\sqrt{\pi}\sqrt{b}\,c\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{4d^3}-\frac{\sqrt{\pi}\sqrt{b}\,c\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{4d^3}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{4d^3}+\frac{\sqrt{\frac{\pi}{6}}\sqrt{b}\cos\left(\frac{3a}{b}\right)S\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{12d^3}+\frac{(c+dx)^3\sqrt{a+b\text{ArcSin}(c+dx)}}{3d^3}+\frac{c\cos(2\text{ArcSin}(c+dx))\sqrt{a+b\text{ArcSin}(c+dx)}}{2d^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (c^2*(c + d*x)*Sqrt[a + b*ArcSin[c + d*x]])/d^3 + ((c + d*x)^3*Sqrt[a + b*A
rcSin[c + d*x]])/(3*d^3) + (c*Sqrt[a + b*ArcSin[c + d*x]]*Cos[2*ArcSin[c +
d*x]])/(2*d^3) - (Sqrt[b]*c*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*Ar
cSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(4*d^3) - (Sqrt[b]*Sqrt[Pi/2]*Cos[a/b]
*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(4*d^3) - (Sqr
t[b]*c^2*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x
]])/Sqrt[b]])/d^3 + (Sqrt[b]*Sqrt[Pi/6]*Cos[(3*a)/b]*FresnelS[(Sqrt[6/Pi]*S
qrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(12*d^3) + (Sqrt[b]*Sqrt[Pi/2]*Fresne
lC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(4*d^3) + (S
qrt[b]*c^2*Sqrt[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqr
t[b]]*Sin[a/b])/d^3 - (Sqrt[b]*c*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c +
```

```
 d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(4*d^3) - (Sqrt[b]*Sqrt[Pi/6]*Fre
snelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(3*a)/b])/(12*d
^3)
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3434

```
Int[Sin[(c_) + (d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Dist[Sin[c], Int
[Cos[d*(e + f*x)^2], x], x] + Dist[Cos[c], Int[Sin[d*(e + f*x)^2], x], x] /
; FreeQ[{c, d, e, f}, x]
```

Rule 3435

```
Int[Cos[(c_) + (d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Dist[Cos[c], Int
[Cos[d*(e + f*x)^2], x], x] - Dist[Sin[c], Int[Sin[d*(e + f*x)^2], x], x] /
; FreeQ[{c, d, e, f}, x]
```

Rule 3438

```
Int[((a_.) + (b_.)*Sin[(c_.) + (d_.)*((e_.) + (f_.)*(x_))^(n_)])^(p_), x_Sy
mbol] :> Int[ExpandTrigReduce[(a + b*Sin[c + d*(e + f*x)^n])^p, x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && IGtQ[p, 1] && IGtQ[n, 1]
```

Rule 3466

```
Int[((e_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)^(n_)], x_Symbol] :> Simp[(-e^
(n - 1))*(e*x)^(m - n + 1)*(Cos[c + d*x^n]/(d*n)), x] + Dist[e^n*((m - n +
1)/(d*n)), Int[(e*x)^(m - n)*Cos[c + d*x^n], x], x] /; FreeQ[{c, d, e}, x]
&& IGtQ[n, 0] && LtQ[n, m + 1]
```

Rule 3467

```
Int[Cos[(c_.) + (d_.)*(x_)^(n_)]*((e_.)*(x_))^(m_.), x_Symbol] :> Simp[e^(n
 - 1)*(e*x)^(m - n + 1)*(Sin[c + d*x^n]/(d*n)), x] - Dist[e^n*((m - n + 1)/
(d*n)), Int[(e*x)^(m - n)*Sin[c + d*x^n], x], x] /; FreeQ[{c, d, e}, x] &&
IGtQ[n, 0] && LtQ[n, m + 1]
```

Rule 3524

```
Int[Cos[(a_.) + (b_.)*(x_)^(n_.)]*(x_)^(m_.)*Sin[(a_.) + (b_.)*(x_)^(n_.)]^
(p_.), x_Symbol] :> Simp[x^(m - n + 1)*(Sin[a + b*x^n]^(p + 1)/(b*n*(p + 1)
)), x] - Dist[(m - n + 1)/(b*n*(p + 1)), Int[x^(m - n)*Sin[a + b*x^n]^(p +
1), x], x] /; FreeQ[{a, b, p}, x] && LtQ[0, n, m + 1] && NeQ[p, -1]
```

Rule 4831

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_.) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Dist[1/c^(m + 1), Subst[Int[(a + b*x)^n*Cos[x]*(c*d + e*Sin[x])^m
, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int x^2\sqrt{a+b\sin^{-1}(c+dx)}\,dx = \frac{\text{Subst}\left(\int\left(-\frac{c}{d}+\frac{x}{d}\right)^2\sqrt{a+b\sin^{-1}(x)}\,dx,x,c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int\sqrt{a+bx}\cos(x)\left(-\frac{c}{d}+\frac{\sin(x)}{d}\right)^2dx,x,\sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{2\text{Subst}\left(\int x^2\cos\left(\frac{a-x^2}{b}\right)\left(c+\sin\left(\frac{a-x^2}{b}\right)\right)^2dx,x,\sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^3}$$

$$= \frac{2\text{Subst}\left(\int x^2\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)\left(c+\sin\left(\frac{a-x^2}{b}\right)\right)^2dx,x,\sqrt{a+b\sin^{-1}(c+dx)}\right.}{bd^3}$$

$$= \frac{2\text{Subst}\left(\int\left(c^2x^2\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)+cx^2\sin\left(\frac{2a}{b}-\frac{2x^2}{b}\right)+x^2\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)\sin^2\right.\right.}{bd^3}$$

$$= \frac{2\text{Subst}\left(\int x^2\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)\sin^2\left(\frac{a}{b}-\frac{x^2}{b}\right)dx,x,\sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^3}+$$

$$= \frac{c^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d^3}+\frac{(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{3d^3}+\frac{c\sqrt{}}{}$$

$$= \frac{c^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d^3}+\frac{(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{3d^3}+\frac{c\sqrt{}}{}$$

$$= \frac{c^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d^3}+\frac{(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{3d^3}+\frac{c\sqrt{}}{}$$

$$= \frac{c^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d^3}+\frac{(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{3d^3}+\frac{c\sqrt{}}{}$$

$$= \frac{c^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d^3}+\frac{(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{3d^3}+\frac{c\sqrt{}}{}$$

Mathematica [A]

time = 1.09, size = 473, normalized size = 0.88

$$\frac{18\sqrt{\frac{1}{b}}(c+dx)\sqrt{a+b\text{ArcSin}(c+dx)}+72\sqrt{\frac{1}{b}}c^2(c+dx)\sqrt{a+b\text{ArcSin}(c+dx)}+36\sqrt{\frac{1}{b}}c\sqrt{a+b\text{ArcSin}(c+dx)}\cos(2\text{ArcSin}(c+dx))-18c\sqrt{\pi}\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}}\right)-9(1+4c^2)\sqrt{2\pi}\cos\left(\frac{a}{b}\right)S\left(\sqrt{\frac{1}{b}}\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}\right)+\sqrt{6\pi}\cos\left(\frac{3a}{b}\right)S\left(\sqrt{\frac{1}{b}}\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}\right)+9\sqrt{2\pi}\,\text{FresnelC}\left(\sqrt{\frac{1}{b}}\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}\right)\sin\left(\frac{a}{b}\right)+36c^2\sqrt{2\pi}\,\text{FresnelC}\left(\sqrt{\frac{1}{b}}\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}\right)\sin\left(\frac{a}{b}\right)-18c\sqrt{\pi}S\left(\frac{2\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}}\right)\sin\left(\frac{2a}{b}\right)-\sqrt{6\pi}\,\text{FresnelC}\left(\sqrt{\frac{1}{b}}\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}\right)\sin\left(\frac{3a}{b}\right)-6\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}(c+dx)}\sin(3\text{ArcSin}(c+dx))}{72\sqrt{\frac{1}{b}}d^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (18*Sqrt[b^(-1)]*(c + d*x)*Sqrt[a + b*ArcSin[c + d*x]] + 72*Sqrt[b^(-1)]*c^
2*(c + d*x)*Sqrt[a + b*ArcSin[c + d*x]] + 36*Sqrt[b^(-1)]*c*Sqrt[a + b*ArcS
in[c + d*x]]*Cos[2*ArcSin[c + d*x]] - 18*c*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(
2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi]] - 9*(1 + 4*c^2)*Sqrt[
2*Pi]*Cos[a/b]*FresnelS[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]
] + Sqrt[6*Pi]*Cos[(3*a)/b]*FresnelS[Sqrt[b^(-1)]*Sqrt[6/Pi]*Sqrt[a + b*Arc
Sin[c + d*x]]] + 9*Sqrt[2*Pi]*FresnelC[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*A
rcSin[c + d*x]]]*Sin[a/b] + 36*c^2*Sqrt[2*Pi]*FresnelC[Sqrt[b^(-1)]*Sqrt[2/
Pi]*Sqrt[a + b*ArcSin[c + d*x]]]*Sin[a/b] - 18*c*Sqrt[Pi]*FresnelS[(2*Sqrt[
b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi]]*Sin[(2*a)/b] - Sqrt[6*Pi]*Fr
esnelC[Sqrt[b^(-1)]*Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]]]*Sin[(3*a)/b] -
6*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]]*Sin[3*ArcSin[c + d*x]])/(72*Sqrt
[b^(-1)]*d^3)
```

Maple [A]
time = 1.19, size = 783, normalized size = 1.46

method	result
default	$\frac{36\cos\left(\frac{a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)\sqrt{a+b\arcsin\left(dx+c\right)}\,\sqrt{2}\,\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b\,c^{2}+36\sin\left(\frac{a}{b}\right)\mathrm{Fresnel}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(d*x+c))^(1/2),x,method=_RETURNVERBOSE)
```

```
[Out] 1/72/d^3/(a+b*arcsin(d*x+c))^(1/2)*(36*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(
-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+c))^(1/2)*2^(1/2)*
Pi^(1/2)*(-1/b)^(1/2)*b*c^2+36*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1
/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+c))^(1/2)*2^(1/2)*Pi^(1/2)
*(-1/b)^(1/2)*b*c^2-9*cos(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(
a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+c))^(1/2)*2^(1/2)*Pi^(1/2)*(-2/
b)^(1/2)*b*c+9*sin(2*a/b)*(a+b*arcsin(d*x+c))^(1/2)*2^(1/2)*Pi^(1/2)*(-2/b)
^(1/2)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b
)*b*c+9*2^(1/2)*Pi^(1/2)*(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*Fr
esnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b+9*2^(1/
2)*Pi^(1/2)*(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelC(2^(1/2
```

```
)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b-cos(3*a/b)*FresnelS(
3*2^(1/2)/Pi^(1/2)/(-3/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*
x+c))^(1/2)*2^(1/2)*Pi^(1/2)*(-3/b)^(1/2)*b-sin(3*a/b)*FresnelC(3*2^(1/2)/P
i^(1/2)/(-3/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+c))^(1/2)
*2^(1/2)*Pi^(1/2)*(-3/b)^(1/2)*b-72*sin(-(a+b*arcsin(d*x+c))/b+a/b)*arcsin(
d*x+c)*b*c^2-72*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a*c^2+36*cos(-2*(a+b*arcsin
(d*x+c))/b+2*a/b)*arcsin(d*x+c)*b*c-18*sin(-(a+b*arcsin(d*x+c))/b+a/b)*arcs
in(d*x+c)*b+6*sin(-3*(a+b*arcsin(d*x+c))/b+3*a/b)*arcsin(d*x+c)*b+36*cos(-2
*(a+b*arcsin(d*x+c))/b+2*a/b)*a*c-18*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a+6*si
n(-3*(a+b*arcsin(d*x+c))/b+3*a/b)*a)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*arcsin(d*x + c) + a)*x^2, x)
```

Fricas [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int x^2 \sqrt{a + b \operatorname{asin}(c + dx)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] Integral(x**2*sqrt(a + b*asin(c + d*x)), x)
```

Giac [**C**] Result contains complex when optimal does not.
time = 1.30, size = 2255, normalized size = 4.21

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^2*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")

[Out] 1/2*sqrt(2)*sqrt(pi)*a*b^2*c^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d^3) + 1/4*I*sqrt(2)*sqrt(pi)*b^3*c^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d^3) + 1/2*sqrt(2)*sqrt(pi)*a*b^2*c^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d^3) - 1/4*I*sqrt(2)*sqrt(pi)*b^3*c^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d^3) - sqrt(pi)*a*b*c^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*sqrt(2)*b^2/sqrt(abs(b)) + sqrt(2)*b*sqrt(abs(b)))*d^3) - sqrt(pi)*a*b*c^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*sqrt(2)*b^2/sqrt(abs(b)) + sqrt(2)*b*sqrt(abs(b)))*d^3) - 1/2*I*sqrt(pi)*a*b^(3/2)*c*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/((b^2 + I*b^3/abs(b))*d^3) + 1/8*sqrt(pi)*b^(5/2)*c*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/((b^2 + I*b^3/abs(b))*d^3) + 1/8*sqrt(2)*sqrt(pi)*a*b^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d^3) + 1/16*I*sqrt(2)*sqrt(pi)*b^3*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d^3) + 1/8*sqrt(2)*sqrt(pi)*a*b^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d^3) - 1/16*I*sqrt(2)*sqrt(pi)*b^3*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d^3) + 1/2*I*sqrt(pi)*a*b^(3/2)*c*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/((b^2 - I*b^3/abs(b))*d^3) + 1/8*sqrt(pi)*b^(5/2)*c*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/((b^2 - I*b^3/abs(b))*d^3) - 1/2*I*sqrt(pi)*a*b*c*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/((b^(3/2) - I*b^(5/2)/abs(b))*d^3) - 1/4*sqrt(pi)*a*b^(3/2)*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(3*I*a/b)/((sqrt(6)*b^2 + I*sqrt(6)*b^3/abs(b))*d^3) - 1/24*I*sqrt(pi)*b^(5/2)*erf(-1/2*sqrt(6

```
)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c
) + a)*sqrt(b)/abs(b))*e^(3*I*a/b)/((sqrt(6)*b^2 + I*sqrt(6)*b^3/abs(b))*d^
3) + 1/2*I*sqrt(pi)*a*sqrt(b)*c*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) -
I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/((b + I*b^2/abs(b
))*d^3) - 1/4*sqrt(pi)*a*b^(3/2)*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) +
a)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-
3*I*a/b)/((sqrt(6)*b^2 - I*sqrt(6)*b^3/abs(b))*d^3) + 1/24*I*sqrt(pi)*b^(5/
2)*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + 1/2*I*sqrt(6)*sqr
t(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-3*I*a/b)/((sqrt(6)*b^2 - I*sqr
t(6)*b^3/abs(b))*d^3) - 1/2*I*sqrt(b*arcsin(d*x + c) + a)*c^2*e^(I*arcsin(d
*x + c))/d^3 + 1/2*I*sqrt(b*arcsin(d*x + c) + a)*c^2*e^(-I*arcsin(d*x + c))
/d^3 + 1/4*sqrt(pi)*a*b*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b
) - 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(3*I*a/b)/(
(sqrt(6)*b^(3/2) + I*sqrt(6)*b^(5/2)/abs(b))*d^3) - 1/4*sqrt(pi)*a*b*erf(-1
/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*
arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*sqrt(2)*b^2/sqrt(abs(b))
 + sqrt(2)*b*sqrt(abs(b)))*d^3) - 1/4*sqrt(pi)*a*b*erf(1/2*I*sqrt(2)*sqrt(b
*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a
)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*sqrt(2)*b^2/sqrt(abs(b)) + sqrt(2)*b*sqrt
(abs(b)))*d^3) + 1/4*sqrt(pi)*a*b*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) +
 a)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(
-3*I*a/b)/((sqrt(6)*b^(3/2) - I*sqrt(6)*b^(5/2)/abs(b))*d^3) + 1/4*sqrt(b*a
rcsin(d*x + c) + a)*c*e^(2*I*arcsin(d*x + c))/d^3 + 1/4*sqrt(b*arcsin(d*x +
 c) + a)*c*e^(-2*I*arcsin(d*x + c))/d^3 + 1/24*I*sqrt(b*arcsin(d*x + c) + a
)*e^(3*I*arcsin(d*x + c))/d^3 - 1/8*I*sqrt(b*arcsin(d*x + c) + a)*e^(I*arcs
in(d*x + c))/d^3 + 1/8*I*sqrt(b*arcsin(d*x + c)...
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,\sqrt{a+b\,\mathrm{asin}\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c + d*x))^(1/2),x)
```

```
[Out] int(x^2*(a + b*asin(c + d*x))^(1/2), x)
```

3.156 $\int x\sqrt{a+b\text{ArcSin}(c+dx)}\,dx$

Optimal. Leaf size=269

$$-\frac{c(c+dx)\sqrt{a+b\text{ArcSin}(c+dx)}}{d^2}-\frac{\sqrt{a+b\text{ArcSin}(c+dx)}\,\cos(2\text{ArcSin}(c+dx))}{4d^2}+\frac{\sqrt{b}\,\sqrt{\pi}\,\cos\left(\frac{2a}{b}\right)\text{Fres}}{}$$

```
[Out] 1/2*c*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))
*b^(1/2)*2^(1/2)*Pi^(1/2)/d^2-1/2*c*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d
*x+c))^(1/2)/b^(1/2))*sin(a/b)*b^(1/2)*2^(1/2)*Pi^(1/2)/d^2+1/8*cos(2*a/b)*
FresnelC(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*b^(1/2)*Pi^(1/2)/d^2
+1/8*FresnelS(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*sin(2*a/b)*b^(1
/2)*Pi^(1/2)/d^2-c*(d*x+c)*(a+b*arcsin(d*x+c))^(1/2)/d^2-1/4*cos(2*arcsin(d
*x+c))*(a+b*arcsin(d*x+c))^(1/2)/d^2
```

Rubi [A]
time = 0.60, antiderivative size = 269, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 10, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.625$, Rules used = {4889, 4831, 6873, 6874, 3467, 3434, 3433, 3432, 3466, 3435}

$$-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,c\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{d^2}+\frac{\sqrt{\pi}\sqrt{b}\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{8d^2}+\frac{\sqrt{\pi}\sqrt{b}\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{8d^2}+\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,c\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{d^2}-\frac{c(c+dx)\sqrt{a+b\text{ArcSin}(c+dx)}}{d^2}-\frac{\cos(2\text{ArcSin}(c+dx))\sqrt{a+b\text{ArcSin}(c+dx)}}{4d^2}$$

Antiderivative was successfully verified.

```
[In] Int[x*Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] -((c*(c + d*x)*Sqrt[a + b*ArcSin[c + d*x]])/d^2) - (Sqrt[a + b*ArcSin[c + d
*x]]*Cos[2*ArcSin[c + d*x]])/(4*d^2) + (Sqrt[b]*Sqrt[Pi]*Cos[(2*a)/b]*Fresn
elC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(8*d^2) + (Sqrt[b]
*c*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sq
rt[b]])/d^2 - (Sqrt[b]*c*Sqrt[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[
c + d*x]])/Sqrt[b]]*Sin[a/b])/d^2 + (Sqrt[b]*Sqrt[Pi]*FresnelS[(2*Sqrt[a +
b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(8*d^2)
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3434

```
Int[Sin[(c_) + (d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Dist[Sin[c], Int
[Cos[d*(e + f*x)^2], x], x] + Dist[Cos[c], Int[Sin[d*(e + f*x)^2], x], x] /
; FreeQ[{c, d, e, f}, x]
```

Rule 3435

```
Int[Cos[(c_) + (d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Dist[Cos[c], Int
[Cos[d*(e + f*x)^2], x], x] - Dist[Sin[c], Int[Sin[d*(e + f*x)^2], x], x] /
; FreeQ[{c, d, e, f}, x]
```

Rule 3466

```
Int[((e_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)^(n_)], x_Symbol] :> Simp[(-e^
(n - 1))*(e*x)^(m - n + 1)*(Cos[c + d*x^n]/(d*n)), x] + Dist[e^n*((m - n +
1)/(d*n)), Int[(e*x)^(m - n)*Cos[c + d*x^n], x], x] /; FreeQ[{c, d, e}, x]
&& IGtQ[n, 0] && LtQ[n, m + 1]
```

Rule 3467

```
Int[Cos[(c_.) + (d_.)*(x_)^(n_)]*((e_.)*(x_))^(m_.), x_Symbol] :> Simp[e^(n
 - 1)*(e*x)^(m - n + 1)*(Sin[c + d*x^n]/(d*n)), x] - Dist[e^n*((m - n + 1)/
(d*n)), Int[(e*x)^(m - n)*Sin[c + d*x^n], x], x] /; FreeQ[{c, d, e}, x] &&
IGtQ[n, 0] && LtQ[n, m + 1]
```

Rule 4831

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_.) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Dist[1/c^(m + 1), Subst[Int[(a + b*x)^n*Cos[x]*(c*d + e*Sin[x])^m
, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int x\sqrt{a+b\sin^{-1}(c+dx)}\,dx = \frac{\text{Subst}\left(\int \left(-\frac{c}{d}+\frac{x}{d}\right)\sqrt{a+b\sin^{-1}(x)}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \sqrt{a+bx}\,\cos(x)\left(-\frac{c}{d}+\frac{\sin(x)}{d}\right)dx, x, \sin^{-1}(c+dx)\right)}{d}$$

$$= -\frac{2\text{Subst}\left(\int x^2\cos\left(\frac{a-x^2}{b}\right)\left(c+\sin\left(\frac{a-x^2}{b}\right)\right)dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2}$$

$$= -\frac{2\text{Subst}\left(\int x^2\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)\left(c+\sin\left(\frac{a-x^2}{b}\right)\right)dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right.}{bd^2}$$

$$= -\frac{2\text{Subst}\left(\int \left(cx^2\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)+\frac{1}{2}x^2\sin\left(\frac{2a}{b}-\frac{2x^2}{b}\right)\right)dx, x, \sqrt{a+b\sin^{-1}(\right.}{bd^2}$$

$$= -\frac{\text{Subst}\left(\int x^2\sin\left(\frac{2a}{b}-\frac{2x^2}{b}\right)dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2} - \frac{(2c)\text{Subst}\left(\right.}{}$$

$$= -\frac{c(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d^2} - \frac{\sqrt{a+b\sin^{-1}(c+dx)}\,\cos\left(2\sin^{-1}(c-\right.}{4d^2}$$

$$= -\frac{c(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d^2} - \frac{\sqrt{a+b\sin^{-1}(c+dx)}\,\cos\left(2\sin^{-1}(c-\right.}{4d^2}$$

$$= -\frac{c(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d^2} - \frac{\sqrt{a+b\sin^{-1}(c+dx)}\,\cos\left(2\sin^{-1}(c-\right.}{4d^2}$$

Mathematica [C] Result contains complex when optimal does not.
time = 2.02, size = 256, normalized size = 0.95

$$\frac{\frac{\sqrt{\pi}\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}}\right)}{\sqrt{\frac{1}{b}}}+\frac{2\left(-((a+b\text{ArcSin}(c+dx))\cos(2\text{ArcSin}(c+dx)))-2bce^{-\frac{ia}{b}}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{3}{2},-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)-2bce^{\frac{ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{3}{2},\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)}{\sqrt{a+b\text{ArcSin}(c+dx)}}+\frac{\sqrt{\pi}\,S\left(\frac{2\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}}\right)\sin\left(\frac{2a}{b}\right)}{\sqrt{\frac{1}{b}}}}{8d^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] ((Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]
])/Sqrt[Pi]])/Sqrt[b^(-1)] + (2*(-((a + b*ArcSin[c + d*x])*Cos[2*ArcSin[c +
 d*x]]) - (2*b*c*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((-I)*(a
 + b*ArcSin[c + d*x]))/b])/E^((I*a)/b) - 2*b*c*E^((I*a)/b)*Sqrt[(I*(a + b*A
rcSin[c + d*x]))/b]*Gamma[3/2, (I*(a + b*ArcSin[c + d*x]))/b]))/Sqrt[a + b*
ArcSin[c + d*x]] + (Sqrt[Pi]*FresnelS[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c +
 d*x]])/Sqrt[Pi]]*Sin[(2*a)/b])/Sqrt[b^(-1)])/(8*d^2)
```

Maple [A]
time = 0.47, size = 396, normalized size = 1.47

method	result
default	$-\frac{8\sqrt{a+b\arcsin\left(dx+c\right)}\,\sqrt{-\frac{1}{b}}\,\sqrt{\pi}\,\sqrt{2}\,\cos\left(\frac{a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)bc+8\sqrt{a+b\arcsin}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(d*x+c))^(1/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/16/d^2/(a+b*arcsin(d*x+c))^(1/2)*(8*(a+b*arcsin(d*x+c))^(1/2)*(-1/b)^(1/
2)*Pi^(1/2)*2^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*ar
csin(d*x+c))^(1/2)/b)*b*c+8*(a+b*arcsin(d*x+c))^(1/2)*(-1/b)^(1/2)*Pi^(1/2)
*2^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c)
)^(1/2)/b)*b*c-(a+b*arcsin(d*x+c))^(1/2)*(-2/b)^(1/2)*Pi^(1/2)*2^(1/2)*cos(
2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b
)*b+(a+b*arcsin(d*x+c))^(1/2)*(-2/b)^(1/2)*Pi^(1/2)*2^(1/2)*sin(2*a/b)*Fres
nelS(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b-16*arcs
in(d*x+c)*sin(-(a+b*arcsin(d*x+c))/b+a/b)*b*c+4*arcsin(d*x+c)*cos(-2*(a+b*a
rcsin(d*x+c))/b+2*a/b)*b-16*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a*c+4*cos(-2*(a
+b*arcsin(d*x+c))/b+2*a/b)*a)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*arcsin(d*x + c) + a)*x, x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int x\sqrt{a+b\operatorname{asin}{(c+dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] Integral(x*sqrt(a + b*asin(c + d*x)), x)
```

Giac [**C**] Result contains complex when optimal does not.
time = 0.96, size = 1079, normalized size = 4.01

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(2)*sqrt(pi)*a*b^2*c*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a
)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^
(I*a/b)/((I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d^2) - 1/4*I*sqrt(2)*sqrt(
pi)*b^3*c*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2
*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^3/sqrt
(abs(b)) + b^2*sqrt(abs(b)))*d^2) - 1/2*sqrt(2)*sqrt(pi)*a*b^2*c*erf(1/2*I*
sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsi
n(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^3/sqrt(abs(b)) + b^2*sqrt
(abs(b)))*d^2) + 1/4*I*sqrt(2)*sqrt(pi)*b^3*c*erf(1/2*I*sqrt(2)*sqrt(b*arcs
in(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqr
t(abs(b))/b)*e^(-I*a/b)/((-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d^2) + sq
rt(pi)*a*b*c*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) -
1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*sqrt(
2)*b^2/sqrt(abs(b)) + sqrt(2)*b*sqrt(abs(b)))*d^2) + sqrt(pi)*a*b*c*erf(1/2
*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*ar
csin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*sqrt(2)*b^2/sqrt(abs(b))
 + sqrt(2)*b*sqrt(abs(b)))*d^2) + 1/4*I*sqrt(pi)*a*b^(3/2)*erf(-sqrt(b*arcs
in(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^
(2*I*a/b)/((b^2 + I*b^3/abs(b))*d^2) - 1/16*sqrt(pi)*b^(5/2)*erf(-sqrt(b*ar
csin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*
e^(2*I*a/b)/((b^2 + I*b^3/abs(b))*d^2) - 1/4*I*sqrt(pi)*a*b^(3/2)*erf(-sqrt
```

```
(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs
(b))*e^(-2*I*a/b)/((b^2 - I*b^3/abs(b))*d^2) - 1/16*sqrt(pi)*b^(5/2)*erf(-s
qrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/
abs(b))*e^(-2*I*a/b)/((b^2 - I*b^3/abs(b))*d^2) + 1/4*I*sqrt(pi)*a*b*erf(-s
qrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/
abs(b))*e^(-2*I*a/b)/((b^(3/2) - I*b^(5/2)/abs(b))*d^2) - 1/4*I*sqrt(pi)*a*
sqrt(b)*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c)
 + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/((b + I*b^2/abs(b))*d^2) + 1/2*I*sqrt(b*a
rcsin(d*x + c) + a)*c*e^(I*arcsin(d*x + c))/d^2 - 1/2*I*sqrt(b*arcsin(d*x +
 c) + a)*c*e^(-I*arcsin(d*x + c))/d^2 - 1/8*sqrt(b*arcsin(d*x + c) + a)*e^(
2*I*arcsin(d*x + c))/d^2 - 1/8*sqrt(b*arcsin(d*x + c) + a)*e^(-2*I*arcsin(d
*x + c))/d^2
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int x\,\sqrt{a+b\,\mathrm{asin}\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c + d*x))^(1/2),x)
```

```
[Out] int(x*(a + b*asin(c + d*x))^(1/2), x)
```

3.157 $\int \sqrt{a+b\text{ArcSin}(c+dx)}\,dx$

Optimal. Leaf size=133

$$\frac{(c+dx)\sqrt{a+b\text{ArcSin}(c+dx)}}{d}-\frac{\sqrt{b}\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{d}+\frac{\sqrt{b}\sqrt{\frac{\pi}{2}}\,\text{FresnelC}$$

```
[Out] -1/2*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*
b^(1/2)*2^(1/2)*Pi^(1/2)/d+1/2*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c)
)^(1/2)/b^(1/2))*sin(a/b)*b^(1/2)*2^(1/2)*Pi^(1/2)/d+(d*x+c)*(a+b*arcsin(d*
x+c))^(1/2)/d
```

Rubi [A]
time = 0.18, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.571$, Rules used = {4887, 4715, 4809, 3387, 3386, 3432, 3385, 3433}

$$\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{d}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{d}+\frac{(c+dx)\sqrt{a+b\text{ArcSin}(c+dx)}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] ((c + d*x)*Sqrt[a + b*ArcSin[c + d*x]])/d - (Sqrt[b]*Sqrt[Pi/2]*Cos[a/b]*Fr
esnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/d + (Sqrt[b]*Sqrt
[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])
/d
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4809

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[(1/(b*c^(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x
^2)^p], Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b]^(2*p + 1), x], x, a
 + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0]
&& IGtQ[2*p + 2, 0] && IGtQ[m, 0]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\int \sqrt{a+b\sin^{-1}(c+dx)}\,dx = \frac{\text{Subst}\left(\int \sqrt{a+b\sin^{-1}(x)}\,dx, x, c+dx\right)}{d}$$

$$= \frac{(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d} - \frac{b\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\sqrt{a+b\sin^{-1}(x)}}\,dx, \right.}{2d}$$

$$= \frac{(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d} - \frac{b\text{Subst}\left(\int \frac{\sin(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{2d}$$

$$= \frac{(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d} - \frac{\left(b\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}\right.}{2d}$$

$$= \frac{(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d} - \frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \sin\left(\frac{x^2}{b}\right)\,dx, x, \sqrt{a+b\,\text{s}}\right.}{d}$$

$$= \frac{(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d} - \frac{\sqrt{b}\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c}}{\sqrt{b}}\right.}{d}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.06, size = 129, normalized size = 0.97

$$\frac{be^{-\frac{ia}{b}}\left(\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{3}{2},-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)+e^{\frac{2ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{3}{2},\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)}{2d\sqrt{a+b\text{ArcSin}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (b*(Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((-I)*(a + b*ArcSin[c
 + d*x]))/b] + E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/
2, (I*(a + b*ArcSin[c + d*x]))/b]))/(2*d*E^((I*a)/b)*Sqrt[a + b*ArcSin[c +
d*x]])
```

Maple [A]
time = 0.28, size = 203, normalized size = 1.53

method	result

default	$-\frac{-\sqrt{2}\,\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,\sqrt{a+b\arcsin\left(dx+c\right)}\,\cos\left(\frac{a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)b-\sqrt{2}\,\sqrt{\pi}\,\sqrt{-\frac{1}{b}}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^(1/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/2/d/(a+b*arcsin(d*x+c))^(1/2)*(-2^(1/2)*Pi^(1/2)*(-1/b)^(1/2)*(a+b*arcsi
n(d*x+c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin
(d*x+c))^(1/2)/b)*b-2^(1/2)*Pi^(1/2)*(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)
*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/
b)*b+2*sin(-(a+b*arcsin(d*x+c))/b+a/b)*arcsin(d*x+c)*b+2*sin(-(a+b*arcsin(d
*x+c))/b+a/b)*a)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{a+b\operatorname{asin}\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*asin(c + d*x)), x)
```

Giac [C] Result contains complex when optimal does not.
time = 0.69, size = 563, normalized size = 4.23

$$\frac{\sqrt{2}\sqrt{\pi}ab\operatorname{erf}\left(-\frac{i\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}\sqrt{|b|}}{2b}\right)e^{\left(\frac{ia}{b}\right)}}{2\left(\frac{ib^{2}}{\sqrt{|b|}}+b\sqrt{|b|}\right)d}+\frac{i\sqrt{2}\sqrt{\pi}b^{2}\operatorname{erf}\left(-\frac{i\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}\sqrt{|b|}}{2b}\right)e^{\left(\frac{ia}{b}\right)}}{4\left(\frac{ib^{2}}{\sqrt{|b|}}+b\sqrt{|b|}\right)d}+\frac{\sqrt{2}\sqrt{\pi}ab\operatorname{erf}\left(\frac{i\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}\sqrt{|b|}}{2b}\right)e^{\left(-\frac{ia}{b}\right)}}{2\left(-\frac{ib^{2}}{\sqrt{|b|}}+b\sqrt{|b|}\right)d}-\frac{i\sqrt{2}\sqrt{\pi}b^{2}\operatorname{erf}\left(\frac{i\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}\sqrt{|b|}}{2b}\right)e^{\left(-\frac{ia}{b}\right)}}{4\left(-\frac{ib^{2}}{\sqrt{|b|}}+b\sqrt{|b|}\right)d}-\frac{\sqrt{\pi}a\operatorname{erf}\left(-\frac{i\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}\sqrt{|b|}}{2b}\right)e^{\left(\frac{ia}{b}\right)}}{d\left(\frac{i\sqrt{2}b}{\sqrt{|b|}}+\sqrt{2}\sqrt{|b|}\right)}-\frac{\sqrt{\pi}a\operatorname{erf}\left(\frac{i\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}\sqrt{|b|}}{2b}\right)e^{\left(-\frac{ia}{b}\right)}}{d\left(-\frac{i\sqrt{2}b}{\sqrt{|b|}}+\sqrt{2}\sqrt{|b|}\right)}-\frac{i\sqrt{b\arcsin\left(dx+c\right)+a}\,e^{\left(i\arcsin\left(dx+c\right)\right)}}{2d}+\frac{i\sqrt{b\arcsin\left(dx+c\right)+a}\,e^{\left(-i\arcsin\left(dx+c\right)\right)}}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*sqrt(pi)*a*b*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqr
t(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/
b)/((I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*d) + 1/4*I*sqrt(2)*sqrt(pi)*b^2*e
rf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sq
rt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^2/sqrt(abs(b)) +
b*sqrt(abs(b)))*d) + 1/2*sqrt(2)*sqrt(pi)*a*b*erf(1/2*I*sqrt(2)*sqrt(b*arcs
in(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqr
t(abs(b))/b)*e^(-I*a/b)/((-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*d) - 1/4*I*
sqrt(2)*sqrt(pi)*b^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs
(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(
(-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*d) - sqrt(pi)*a*erf(-1/2*I*sqrt(2)*s
qrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c
) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(d*(I*sqrt(2)*b/sqrt(abs(b)) + sqrt(2)*sqr
t(abs(b)))) - sqrt(pi)*a*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt
(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/
b)/(d*(-I*sqrt(2)*b/sqrt(abs(b)) + sqrt(2)*sqrt(abs(b)))) - 1/2*I*sqrt(b*ar
csin(d*x + c) + a)*e^(I*arcsin(d*x + c))/d + 1/2*I*sqrt(b*arcsin(d*x + c) +
 a)*e^(-I*arcsin(d*x + c))/d
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{a+b\,\mathrm{asin}\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^(1/2),x)
```

```
[Out] int((a + b*asin(c + d*x))^(1/2), x)
```

3.158 $\int x(a + b\mathbf{ArcSin}(c + dx))^{3/2}\,dx$

Optimal. Leaf size=343

$$-\frac{3bc\sqrt{1-(c+dx)^2}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{2d^2}-\frac{c(c+dx)(a+b\text{ArcSin}(c+dx))^{3/2}}{d^2}-\frac{(a+b\text{ArcSin}(c+dx))^{3/}}{4a}$$

```
[Out] -c*(d*x+c)*(a+b*arcsin(d*x+c))^(3/2)/d^2-1/4*(a+b*arcsin(d*x+c))^(3/2)*cos(
2*arcsin(d*x+c))/d^2+3/4*b^(3/2)*c*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*
arcsin(d*x+c))^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/d^2+3/4*b^(3/2)*c*FresnelS(2
^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2
)/d^2-3/32*b^(3/2)*cos(2*a/b)*FresnelS(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/
Pi^(1/2))*Pi^(1/2)/d^2+3/32*b^(3/2)*FresnelC(2*(a+b*arcsin(d*x+c))^(1/2)/b^
(1/2)/Pi^(1/2))*sin(2*a/b)*Pi^(1/2)/d^2+3/16*b*sin(2*arcsin(d*x+c))*(a+b*ar
csin(d*x+c))^(1/2)/d^2-3/2*b*c*(1-(d*x+c)^2)^(1/2)*(a+b*arcsin(d*x+c))^(1/2
)/d^2
```

Rubi [A]

time = 0.77, antiderivative size = 343, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 10, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.625$, Rules used = {4889, 4831, 6873, 6874, 3467, 3466, 3435, 3433, 3432, 3434}

$$\frac{3\sqrt{\pi}\,b^{3/2}\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}\,\sqrt{b}}\right)}{32d^2}+\frac{3\sqrt{\frac{\pi}{2}}\,b^{3/2}c\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{2d^2}+\frac{3\sqrt{\frac{\pi}{2}}\,b^{3/2}c\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{2d^2}-\frac{3\sqrt{\pi}\,b^{3/2}\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\,\sqrt{\pi}}\right)}{32d^2}-\frac{3bc\sqrt{1-(c+dx)^2}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{2d^2}-\frac{c(c+dx)(a+b\text{ArcSin}(c+dx))^{3/2}}{d^2}+\frac{3b\sin(2\text{ArcSin}(c+dx))\sqrt{a+b\text{ArcSin}(c+dx)}}{16d^2}-\frac{\cos(2\text{ArcSin}(c+dx))(a+b\text{ArcSin}(c+dx))^{3/2}}{4d^2}$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (-3*b*c*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(2*d^2) - (c*(c
+ d*x)*(a + b*ArcSin[c + d*x])^(3/2))/d^2 - ((a + b*ArcSin[c + d*x])^(3/2)*
Cos[2*ArcSin[c + d*x]])/(4*d^2) + (3*b^(3/2)*c*Sqrt[Pi/2]*Cos[a/b]*FresnelC
[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(2*d^2) - (3*b^(3/2)*Sq
rt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[
Pi])])/(32*d^2) + (3*b^(3/2)*c*Sqrt[Pi/2]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*A
rcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(2*d^2) + (3*b^(3/2)*Sqrt[Pi]*FresnelC[
(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(32*d^2)
+ (3*b*Sqrt[a + b*ArcSin[c + d*x]]*Sin[2*ArcSin[c + d*x]])/(16*d^2)
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3434

```
Int[Sin[(c_) + (d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Dist[Sin[c], Int
[Cos[d*(e + f*x)^2], x], x] + Dist[Cos[c], Int[Sin[d*(e + f*x)^2], x], x] /
; FreeQ[{c, d, e, f}, x]
```

Rule 3435

```
Int[Cos[(c_) + (d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Dist[Cos[c], Int
[Cos[d*(e + f*x)^2], x], x] - Dist[Sin[c], Int[Sin[d*(e + f*x)^2], x], x] /
; FreeQ[{c, d, e, f}, x]
```

Rule 3466

```
Int[((e_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)^(n_)], x_Symbol] :> Simp[(-e^
(n - 1))*(e*x)^(m - n + 1)*(Cos[c + d*x^n]/(d*n)), x] + Dist[e^n*((m - n +
1)/(d*n)), Int[(e*x)^(m - n)*Cos[c + d*x^n], x], x] /; FreeQ[{c, d, e}, x]
&& IGtQ[n, 0] && LtQ[n, m + 1]
```

Rule 3467

```
Int[Cos[(c_.) + (d_.)*(x_)^(n_)]*((e_.)*(x_))^(m_.), x_Symbol] :> Simp[e^(n
 - 1)*(e*x)^(m - n + 1)*(Sin[c + d*x^n]/(d*n)), x] - Dist[e^n*((m - n + 1)/
(d*n)), Int[(e*x)^(m - n)*Sin[c + d*x^n], x], x] /; FreeQ[{c, d, e}, x] &&
IGtQ[n, 0] && LtQ[n, m + 1]
```

Rule 4831

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_.) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Dist[1/c^(m + 1), Subst[Int[(a + b*x)^n*Cos[x]*(c*d + e*Sin[x])^m
, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int x\left(a+b\sin^{-1}(c+dx)\right)^{3/2}\,dx=\frac{\text{Subst}\left(\int\left(-\frac{c}{d}+\frac{x}{d}\right)\left(a+b\sin^{-1}(x)\right)^{3/2}\,dx,x,c+dx\right)}{d}$$

$$=\frac{\text{Subst}\left(\int(a+bx)^{3/2}\cos(x)\left(-\frac{c}{d}+\frac{\sin(x)}{d}\right)\,dx,x,\sin^{-1}(c+dx)\right)}{d}$$

$$=-\frac{2\text{Subst}\left(\int x^4\cos\left(\frac{a-x^2}{b}\right)\left(c+\sin\left(\frac{a-x^2}{b}\right)\right)\,dx,x,\sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2}$$

$$=-\frac{2\text{Subst}\left(\int x^4\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)\left(c+\sin\left(\frac{a-x^2}{b}\right)\right)\,dx,x,\sqrt{a+b\sin^{-1}(c+dx}\right.}{bd^2}$$

$$=-\frac{2\text{Subst}\left(\int\left(cx^4\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)+\frac{1}{2}x^4\sin\left(\frac{2a}{b}-\frac{2x^2}{b}\right)\right)\,dx,x,\sqrt{a+b\sin^{-1}}\right.}{bd^2}$$

$$=-\frac{\text{Subst}\left(\int x^4\sin\left(\frac{2a}{b}-\frac{2x^2}{b}\right)\,dx,x,\sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2}-\frac{(2c)\text{Subst}\left(\right.}{}$$

$$=-\frac{c(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{d^2}-\frac{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}\cos\left(2\sin^{-1}\right.}{4d^2}$$

$$=-\frac{3bc\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d^2}-\frac{c(c+dx)\left(a+b\sin^{-1}(c+\right.}{d^2}$$

$$=-\frac{3bc\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d^2}-\frac{c(c+dx)\left(a+b\sin^{-1}(c+\right.}{d^2}$$

$$=-\frac{3bc\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d^2}-\frac{c(c+dx)\left(a+b\sin^{-1}(c+\right.}{d^2}$$

Mathematica [C] Result contains complex when optimal does not.
time = 6.92, size = 635, normalized size = 1.85

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] -1/2*(a*b*c*(Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((-I)*(a + b
*ArcSin[c + d*x]))/b] + E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]
*Gamma[3/2, (I*(a + b*ArcSin[c + d*x]))/b]))/(d^2*E^((I*a)/b)*Sqrt[a + b*Ar
cSin[c + d*x]]) - (b*c*(2*Sqrt[a + b*ArcSin[c + d*x]]*(3*Sqrt[1 - (c + d*x)
^2] + 2*(c + d*x)*ArcSin[c + d*x]) - Sqrt[b^(-1)]*Sqrt[2*Pi]*FresnelC[Sqrt[
b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]]*(3*b*Cos[a/b] + 2*a*Sin[a/b
]) + Sqrt[b^(-1)]*Sqrt[2*Pi]*FresnelS[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*Ar
cSin[c + d*x]]]*(2*a*Cos[a/b] - 3*b*Sin[a/b])))/(4*d^2) + (a*(-2*Sqrt[b^(-1
)]*Sqrt[a + b*ArcSin[c + d*x]]*Cos[2*ArcSin[c + d*x]] + Sqrt[Pi]*Cos[(2*a)/
b]*FresnelC[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi]] + Sqrt[P
i]*FresnelS[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi]]*Sin[(2*a
)/b]))/(8*Sqrt[b^(-1)]*d^2) + (b*(-(Sqrt[b^(-1)]*Sqrt[Pi]*FresnelS[(2*Sqrt[
b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi]]*(3*b*Cos[(2*a)/b] + 4*a*Sin[
(2*a)/b])) + Sqrt[b^(-1)]*Sqrt[Pi]*FresnelC[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcS
in[c + d*x]])/Sqrt[Pi]]*(-4*a*Cos[(2*a)/b] + 3*b*Sin[(2*a)/b]) + 2*Sqrt[a +
 b*ArcSin[c + d*x]]*(-4*ArcSin[c + d*x]*Cos[2*ArcSin[c + d*x]] + 3*Sin[2*Ar
cSin[c + d*x]])))/(32*d^2)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 604 vs. $2(275) = 550$.
time = 0.49, size = 605, normalized size = 1.76

method	result
default	$\frac{48\sqrt{\pi}\,\sqrt{a+b\arcsin\left(dx+c\right)}\,\cos\left(\frac{a}{b}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)\sqrt{2}\,\sqrt{-\frac{1}{b}}\,b^{2}c-48\sqrt{\pi}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(d*x+c))^(3/2),x,method=_RETURNVERBOSE)
```

```
[Out] 1/64/d^2*(48*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelC(2^(1/2)/P
i^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*(-1/b)^(1/2)*b^2*
c-48*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/
(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*(-1/b)^(1/2)*b^2*c+3*(-2/
b)^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(2*a/b)*FresnelS(2*2^(1/2)/P
i^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*b^2+3*(-2/b)^(1/2
)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)
/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*b^2+64*arcsin(d*x+c)^2*s
in(-(a+b*arcsin(d*x+c))/b+a/b)*b^2*c-16*arcsin(d*x+c)^2*cos(-2*(a+b*arcsin(
d*x+c))/b+2*a/b)*b^2+128*arcsin(d*x+c)*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a*b*
```

```
c-96*arcsin(d*x+c)*cos(-(a+b*arcsin(d*x+c))/b+a/b)*b^2*c-32*arcsin(d*x+c)*c
os(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a*b-12*arcsin(d*x+c)*sin(-2*(a+b*arcsin(
d*x+c))/b+2*a/b)*b^2+64*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a^2*c-96*cos(-(a+b*
arcsin(d*x+c))/b+a/b)*a*b*c-16*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a^2-12*s
in(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a*b)/(a+b*arcsin(d*x+c))^(1/2)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(3/2)*x, x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int x(a + b \operatorname{asin}(c + dx))^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] Integral(x*(a + b*asin(c + d*x))**(3/2), x)
```

Giac [C] Result contains complex when optimal does not.
time = 1.03, size = 1987, normalized size = 5.79

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(2)*sqrt(pi)*a^2*b^2*c*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) +
 a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*
e^(I*a/b)/((I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d^2) - 1/2*I*sqrt(2)*sqr
t(pi)*a*b^3*c*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) -
 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^3/
sqrt(abs(b)) + b^2*sqrt(abs(b)))*d^2) - 1/2*sqrt(2)*sqrt(pi)*a^2*b^2*c*erf(
1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b
*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^3/sqrt(abs(b)) + b^
2*sqrt(abs(b)))*d^2) + 1/2*I*sqrt(2)*sqrt(pi)*a*b^3*c*erf(1/2*I*sqrt(2)*sqr
t(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c)
+ a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d
^2) + 1/2*I*sqrt(2)*sqrt(pi)*a*b^2*c*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x +
 c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b)
)/b)*e^(I*a/b)/((I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*d^2) - 3/8*sqrt(2)*sq
rt(pi)*b^3*c*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) -
1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^2/s
qrt(abs(b)) + b*sqrt(abs(b)))*d^2) - 1/2*I*sqrt(2)*sqrt(pi)*a*b^2*c*erf(1/2
*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*ar
csin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^2/sqrt(abs(b)) + b*sqr
t(abs(b)))*d^2) - 3/8*sqrt(2)*sqrt(pi)*b^3*c*erf(1/2*I*sqrt(2)*sqrt(b*arcsi
n(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt
(abs(b))/b)*e^(-I*a/b)/((-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*d^2) + sqrt(
pi)*a^2*b*c*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1
/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*sqrt(2
)*b^2/sqrt(abs(b)) + sqrt(2)*b*sqrt(abs(b)))*d^2) + sqrt(pi)*a^2*b*c*erf(1/
2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*a
rcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*sqrt(2)*b^2/sqrt(abs(b)
) + sqrt(2)*b*sqrt(abs(b)))*d^2) + 1/4*I*sqrt(pi)*a^2*b^(3/2)*erf(-sqrt(b*a
rcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))
*e^(2*I*a/b)/((b^2 + I*b^3/abs(b))*d^2) - 1/8*sqrt(pi)*a*b^(5/2)*erf(-sqrt(
b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(
b))*e^(2*I*a/b)/((b^2 + I*b^3/abs(b))*d^2) - 1/4*I*sqrt(pi)*a^2*b^(3/2)*erf
(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(
b)/abs(b))*e^(-2*I*a/b)/((b^2 - I*b^3/abs(b))*d^2) - 1/8*sqrt(pi)*a*b^(5/2)
*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*s
qrt(b)/abs(b))*e^(-2*I*a/b)/((b^2 - I*b^3/abs(b))*d^2) + 1/2*I*sqrt(b*arcsi
n(d*x + c) + a)*b*c*arcsin(d*x + c)*e^(I*arcsin(d*x + c))/d^2 - 1/2*I*sqrt(
b*arcsin(d*x + c) + a)*b*c*arcsin(d*x + c)*e^(-I*arcsin(d*x + c))/d^2 + 1/8
*sqrt(pi)*a*b^2*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(
d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/((b^(3/2) + I*b^(5/2)/abs(b))*d^2
) + 1/4*I*sqrt(pi)*a^2*b*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(
b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/((b^(3/2) - I*b^(5/2)/a
bs(b))*d^2) + 1/8*sqrt(pi)*a*b^2*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) +
 I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/((b^(3/2) - I*b
^(5/2)/abs(b))*d^2) - 1/4*I*sqrt(pi)*a^2*sqrt(b)*erf(-sqrt(b*arcsin(d*x + c
```

```
) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/
((b + I*b^2/abs(b))*d^2) + 3/64*I*sqrt(pi)*b^(5/2)*erf(-sqrt(b*arcsin(d*x +
 c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b
)/((b + I*b^2/abs(b))*d^2) - 3/64*I*sqrt(pi)*b^(5/2)*erf(-sqrt(b*arcsin(d*x
 + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*
a/b)/((b - I*b^2/abs(b))*d^2) - 1/8*sqrt(b*arcsin(d*x + c) + a)*b*arcsin(d*
x + c)*e^(2*I*arcsin(d*x + c))/d^2 + 1/2*I*sqrt(b*arcsin(d*x + c) + a)*a*c*
e^(I*arcsin(d*x + c))/d^2 - 3/4*sqrt(b*arcsin(d*x + c) + a)*b*c*e^(I*arcsin
(d*x + c))/d^2 - 1/2*I*sqrt(b*arcsin(d*x + c) + a)*a*c*e^(-I*arcsin(d*x + c
))/d^2 - 3/4*sqrt(b*arcsin(d*x + c) + a)*b*c*e^(-I*arcsin(d*x + c))/d^2 - 1
/8*sqrt(b*arcsin(d*x + c) + a)*b*arcsin(d*x + c)*e^(-2*I*arcsin(d*x + c))/d
^2 - 1/8*sqrt(b*arcsin(d*x + c) + a)*a*e^(2*I*arcsin(d*x + c))/d^2 - 3/32*I
*sqrt(b*arcsin(d*x + c) + a)*b*e^(2*I*arcsin(d*x + c))/d^2 - 1/8*sqrt(b*arc
sin(d*x + c) + a)*a*e^(-2*I*arcsin(d*x + c))/d^2 + 3/32*I*sqrt(b*arcsin(d*x
 + c) + a)*b*e^(-2*I*arcsin(d*x + c))/d^2
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int x\,(a+b\,\mathrm{asin}(c+d\,x))^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c + d*x))^(3/2),x)
```

```
[Out] int(x*(a + b*asin(c + d*x))^(3/2), x)
```

3.159 $\int (a+b\text{ArcSin}(c+dx))^{3/2}\,dx$

Optimal. Leaf size=175

$$\frac{3b\sqrt{1-(c+dx)^2}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{2d}+\frac{(c+dx)(a+b\text{ArcSin}(c+dx))^{3/2}}{d}-\frac{3b^{3/2}\sqrt{\frac{\pi}{2}}\,\cos\left(\frac{a}{b}\right)\text{FresnelC}}{}$$

```
[Out] (d*x+c)*(a+b*arcsin(d*x+c))^(3/2)/d-3/4*b^(3/2)*cos(a/b)*FresnelC(2^(1/2)/P
i^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/d-3/4*b^(3/2)*F
resnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2
)*Pi^(1/2)/d+3/2*b*(1-(d*x+c)^2)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/d
```

Rubi [A]
time = 0.18, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 9, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.643$, Rules used = {4887, 4715, 4767, 4719, 3387, 3386, 3432, 3385, 3433}

$$-\frac{3\sqrt{\frac{\pi}{2}}\,b^{3/2}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{2d}-\frac{3\sqrt{\frac{\pi}{2}}\,b^{3/2}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{2d}+\frac{3b\sqrt{1-(c+dx)^2}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{2d}+\frac{(c+dx)(a+b\text{ArcSin}(c+dx))^{3/2}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (3*b*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(2*d) + ((c + d*x)*
(a + b*ArcSin[c + d*x])^(3/2))/d - (3*b^(3/2)*Sqrt[Pi/2]*Cos[a/b]*FresnelC[
(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(2*d) - (3*b^(3/2)*Sqrt[
Pi/2]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/
(2*d)
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4719

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[-a/b + x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c
, n}, x]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\int \left(a+b\sin^{-1}(c+dx)\right)^{3/2}\,dx = \frac{\text{Subst}\left(\int \left(a+b\sin^{-1}(x)\right)^{3/2}\,dx, x, c+dx\right)}{d}$$

$$= \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{d} - \frac{(3b)\text{Subst}\left(\int \frac{x\sqrt{a+b\sin^{-1}(x)}}{\sqrt{1-x^2}}\,dx, x\right.}{2d}$$

$$= \frac{3b\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{3b\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{3b\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{3b\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{3b\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)}{d}$$

Mathematica [C] Result contains complex when optimal does not.
time = 2.00, size = 313, normalized size = 1.79

$$\frac{b\left(2\sqrt{a+b\text{ArcSin}(c+dx)}\left(3\sqrt{1-(c+dx)^2}+2(c+dx)\text{ArcSin}(c+dx)\right)+\frac{2ae^{-\frac{ia}{b}}\left(\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{3}{2},-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)+e^{\frac{2ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{3}{2},\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)}{\sqrt{a+b\text{ArcSin}(c+dx)}}-\sqrt{\frac{1}{b}}\sqrt{2\pi}\,\text{FresnelC}\left(\sqrt{\frac{1}{b}}\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}\right)\left(3b\cos\left(\frac{a}{b}\right)+2a\sin\left(\frac{a}{b}\right)\right)+\sqrt{\frac{1}{b}}\sqrt{2\pi}\,S\left(\sqrt{\frac{1}{b}}\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}\right)\left(2a\cos\left(\frac{a}{b}\right)-3b\sin\left(\frac{a}{b}\right)\right)\right)}{4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (b*(2*Sqrt[a + b*ArcSin[c + d*x]]*(3*Sqrt[1 - (c + d*x)^2] + 2*(c + d*x)*Ar
cSin[c + d*x]) + (2*a*(Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((
-I)*(a + b*ArcSin[c + d*x]))/b] + E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c +
 d*x]))/b]*Gamma[3/2, (I*(a + b*ArcSin[c + d*x]))/b]))/(E^((I*a)/b)*Sqrt[a
+ b*ArcSin[c + d*x]]) - Sqrt[b^(-1)]*Sqrt[2*Pi]*FresnelC[Sqrt[b^(-1)]*Sqrt[
2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]]*(3*b*Cos[a/b] + 2*a*Sin[a/b]) + Sqrt[b^(
```

```
-1)]*Sqrt[2*Pi]*FresnelS[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]
]]*(2*a*Cos[a/b] - 3*b*Sin[a/b])))/(4*d)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 303 vs. $2(139) = 278$.
time = 0.27, size = 304, normalized size = 1.74

method	result
default	$-\frac{3\sqrt{a+b\arcsin(dx+c)}\,\cos\left(\frac{a}{b}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)\sqrt{-\frac{1}{b}}\,\sqrt{\pi}\,\sqrt{2}\,b^{2}-3\sqrt{a+b}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^(3/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/4/d*(3*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/
b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)*Pi^(1/2)*2^(1/2)*b^2-3*(
a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a
+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)*Pi^(1/2)*2^(1/2)*b^2+4*arcsin(d*x+c
)^2*sin(-(a+b*arcsin(d*x+c))/b+a/b)*b^2-6*arcsin(d*x+c)*cos(-(a+b*arcsin(d*
x+c))/b+a/b)*b^2+8*arcsin(d*x+c)*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a*b-6*cos(
-(a+b*arcsin(d*x+c))/b+a/b)*a*b+4*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a^2)/(a+b
*arcsin(d*x+c))^(1/2)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int (a + b \operatorname{asin}{(c + dx)})^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**(3/2), x)
```

Giac [C] Result contains complex when optimal does not.
time = 0.89, size = 1061, normalized size = 6.06

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*sqrt(pi)*a^2*b^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)
/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(
I*a/b)/((I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d) + 1/2*I*sqrt(2)*sqrt(pi)
*a*b^3*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sq
rt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^3/sqrt(ab
s(b)) + b^2*sqrt(abs(b)))*d) + 1/2*sqrt(2)*sqrt(pi)*a^2*b^2*erf(1/2*I*sqrt(
2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x
 + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(
b)))*d) - 1/2*I*sqrt(2)*sqrt(pi)*a*b^3*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x
+ c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b
))/b)*e^(-I*a/b)/((-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d) - 1/2*I*sqrt(
2)*sqrt(pi)*a*b^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b
)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*
b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*d) + 3/8*sqrt(2)*sqrt(pi)*b^3*erf(-1/2*I
*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcs
in(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^2/sqrt(abs(b)) + b*sqrt(ab
s(b)))*d) + 1/2*I*sqrt(2)*sqrt(pi)*a*b^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*
x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs
(b))/b)*e^(-I*a/b)/((-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*d) + 3/8*sqrt(2)
*sqrt(pi)*b^3*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) -
1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^2
/sqrt(abs(b)) + b*sqrt(abs(b)))*d) - sqrt(pi)*a^2*b*erf(-1/2*I*sqrt(2)*sqrt
(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) +
 a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*sqrt(2)*b^2/sqrt(abs(b)) + sqrt(2)*b*sqrt
(abs(b)))*d) - sqrt(pi)*a^2*b*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)
/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(
```

```
-I*a/b)/((-I*sqrt(2)*b^2/sqrt(abs(b)) + sqrt(2)*b*sqrt(abs(b)))*d) - 1/2*I*
sqrt(b*arcsin(d*x + c) + a)*b*arcsin(d*x + c)*e^(I*arcsin(d*x + c))/d + 1/2
*I*sqrt(b*arcsin(d*x + c) + a)*b*arcsin(d*x + c)*e^(-I*arcsin(d*x + c))/d -
 1/2*I*sqrt(b*arcsin(d*x + c) + a)*a*e^(I*arcsin(d*x + c))/d + 3/4*sqrt(b*a
rcsin(d*x + c) + a)*b*e^(I*arcsin(d*x + c))/d + 1/2*I*sqrt(b*arcsin(d*x + c
) + a)*a*e^(-I*arcsin(d*x + c))/d + 3/4*sqrt(b*arcsin(d*x + c) + a)*b*e^(-I
*arcsin(d*x + c))/d
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int (a + b\,\mathrm{asin}(c + d\,x))^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^(3/2),x)
[Out] int((a + b*asin(c + d*x))^(3/2), x)
```

3.160 $\int x(a+b\mathbf{ArcSin}(c+dx))^{5/2}\,dx$

Optimal. Leaf size=406

$$\frac{15b^2c(c+dx)\sqrt{a+b\text{ArcSin}(c+dx)}}{4d^2}-\frac{5bc\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^{3/2}}{2d^2}-\frac{c(c+dx)(a+b\text{ArcS}}{d^2}$$

```
[Out] -c*(d*x+c)*(a+b*arcsin(d*x+c))^(5/2)/d^2-1/4*(a+b*arcsin(d*x+c))^(5/2)*cos(
2*arcsin(d*x+c))/d^2+5/16*b*(a+b*arcsin(d*x+c))^(3/2)*sin(2*arcsin(d*x+c))/
d^2-15/8*b^(5/2)*c*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(
1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/d^2+15/8*b^(5/2)*c*FresnelC(2^(1/2)/Pi^(1/2)
*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/d^2-15/128*b^
(5/2)*cos(2*a/b)*FresnelC(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*Pi^
(1/2)/d^2-15/128*b^(5/2)*FresnelS(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1
/2))*sin(2*a/b)*Pi^(1/2)/d^2-5/2*b*c*(a+b*arcsin(d*x+c))^(3/2)*(1-(d*x+c)^2
)^(1/2)/d^2+15/4*b^2*c*(d*x+c)*(a+b*arcsin(d*x+c))^(1/2)/d^2+15/64*b^2*cos(
2*arcsin(d*x+c))*(a+b*arcsin(d*x+c))^(1/2)/d^2
```

Rubi [A]

time = 0.86, antiderivative size = 406, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 10, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.625$, Rules used = {4889, 4831, 6873, 6874, 3467, 3466, 3434, 3433, 3432, 3435}

$$\frac{15\sqrt{\frac{\pi}{2}}b^{5/2}c\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{4d^2}-\frac{15\sqrt{\pi}b^{5/2}\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{128d^2}-\frac{15\sqrt{\pi}b^{5/2}\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{128d^2}-\frac{15\sqrt{\frac{\pi}{2}}b^{5/2}c\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{4d^2}+\frac{15b^2c(c+dx)\sqrt{a+b\text{ArcSin}(c+dx)}}{4d^2}+\frac{15b^2\cos(2\text{ArcSin}(c+dx))\sqrt{a+b\text{ArcSin}(c+dx)}}{64d^2}-\frac{5bc\sqrt{1-(c+dx)^2}(a+b\text{ArcSin}(c+dx))^{3/2}}{2d^2}-\frac{c(c+dx)(a+b\text{ArcSin}(c+dx))^{5/2}}{d^2}+\frac{5b\sin(2\text{ArcSin}(c+dx))(a+b\text{ArcSin}(c+dx))^{3/2}}{16d^2}-\frac{\cos(2\text{ArcSin}(c+dx))(a+b\text{ArcSin}(c+dx))^{5/2}}{4d^2}$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] (15*b^2*c*(c + d*x)*Sqrt[a + b*ArcSin[c + d*x]])/(4*d^2) - (5*b*c*Sqrt[1 -
(c + d*x)^2]*(a + b*ArcSin[c + d*x])^(3/2))/(2*d^2) - (c*(c + d*x)*(a + b*A
rcSin[c + d*x])^(5/2))/d^2 + (15*b^2*Sqrt[a + b*ArcSin[c + d*x]]*Cos[2*ArcS
in[c + d*x]])/(64*d^2) - ((a + b*ArcSin[c + d*x])^(5/2)*Cos[2*ArcSin[c + d*
x]])/(4*d^2) - (15*b^(5/2)*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*Arc
Sin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(128*d^2) - (15*b^(5/2)*c*Sqrt[Pi/2]*Co
s[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(4*d^2)
+ (15*b^(5/2)*c*Sqrt[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]
)/Sqrt[b]]*Sin[a/b])/(4*d^2) - (15*b^(5/2)*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*
ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(128*d^2) + (5*b*(a + b
*ArcSin[c + d*x])^(3/2)*Sin[2*ArcSin[c + d*x]])/(16*d^2)
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3434

```
Int[Sin[(c_) + (d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Dist[Sin[c], Int
[Cos[d*(e + f*x)^2], x], x] + Dist[Cos[c], Int[Sin[d*(e + f*x)^2], x], x] /
; FreeQ[{c, d, e, f}, x]
```

Rule 3435

```
Int[Cos[(c_) + (d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Dist[Cos[c], Int
[Cos[d*(e + f*x)^2], x], x] - Dist[Sin[c], Int[Sin[d*(e + f*x)^2], x], x] /
; FreeQ[{c, d, e, f}, x]
```

Rule 3466

```
Int[((e_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)^(n_)], x_Symbol] :> Simp[(-e^
(n - 1))*(e*x)^(m - n + 1)*(Cos[c + d*x^n]/(d*n)), x] + Dist[e^n*((m - n +
1)/(d*n)), Int[(e*x)^(m - n)*Cos[c + d*x^n], x], x] /; FreeQ[{c, d, e}, x]
&& IGtQ[n, 0] && LtQ[n, m + 1]
```

Rule 3467

```
Int[Cos[(c_.) + (d_.)*(x_)^(n_)]*((e_.)*(x_))^(m_.), x_Symbol] :> Simp[e^(n
 - 1)*(e*x)^(m - n + 1)*(Sin[c + d*x^n]/(d*n)), x] - Dist[e^n*((m - n + 1)/
(d*n)), Int[(e*x)^(m - n)*Sin[c + d*x^n], x], x] /; FreeQ[{c, d, e}, x] &&
IGtQ[n, 0] && LtQ[n, m + 1]
```

Rule 4831

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_.) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Dist[1/c^(m + 1), Subst[Int[(a + b*x)^n*Cos[x]*(c*d + e*Sin[x])^m
, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int x\left(a+b\sin^{-1}(c+dx)\right)^{5/2}\,dx=\frac{\text{Subst}\left(\int\left(-\frac{c}{d}+\frac{x}{d}\right)\left(a+b\sin^{-1}(x)\right)^{5/2}\,dx,x,c+dx\right)}{d}$$

$$=\frac{\text{Subst}\left(\int(a+bx)^{5/2}\cos(x)\left(-\frac{c}{d}+\frac{\sin(x)}{d}\right)\,dx,x,\sin^{-1}(c+dx)\right)}{d}$$

$$=-\frac{2\text{Subst}\left(\int x^6\cos\left(\frac{a-x^2}{b}\right)\left(c+\sin\left(\frac{a-x^2}{b}\right)\right)\,dx,x,\sqrt{a+b\sin^{-1}(c+dx)}\right.}{bd^2}$$

$$=-\frac{2\text{Subst}\left(\int x^6\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)\left(c+\sin\left(\frac{a-x^2}{b}\right)\right)\,dx,x,\sqrt{a+b\sin^{-1}(c+d}\right.}{bd^2}$$

$$=-\frac{2\text{Subst}\left(\int\left(cx^6\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)+\frac{1}{2}x^6\sin\left(\frac{2a}{b}-\frac{2x^2}{b}\right)\right)\,dx,x,\sqrt{a+b\sin^{-}}\right.}{bd^2}$$

$$=-\frac{\text{Subst}\left(\int x^6\sin\left(\frac{2a}{b}-\frac{2x^2}{b}\right)\,dx,x,\sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2}-\frac{(2c)\text{Subst}}{}$$

$$=-\frac{c(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{d^2}-\frac{\left(a+b\sin^{-1}(c+dx)\right)^{5/2}\cos\left(2\sin^{-}\right.}{4d^2}$$

$$=-\frac{5bc\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{2d^2}-\frac{c(c+dx)\left(a+b\sin^{-1}(c\right.}{d^2}$$

$$=\frac{15b^2c(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d^2}-\frac{5bc\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c\right.}{2d^2}$$

$$=\frac{15b^2c(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d^2}-\frac{5bc\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c\right.}{2d^2}$$

$$=\frac{15b^2c(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d^2}-\frac{5bc\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c\right.}{2d^2}$$

Mathematica [C] Result contains complex when optimal does not.
time = 8.29, size = 1083, normalized size = 2.67

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] -1/2*(a^2*b*c*(Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((-I)*(a +
 b*ArcSin[c + d*x]))/b] + E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/
b]*Gamma[3/2, (I*(a + b*ArcSin[c + d*x]))/b]))/(d^2*E^((I*a)/b)*Sqrt[a + b*
ArcSin[c + d*x]]) - (a*b*c*(2*Sqrt[a + b*ArcSin[c + d*x]]*(3*Sqrt[1 - (c +
d*x)^2] + 2*(c + d*x)*ArcSin[c + d*x]) - Sqrt[b^(-1)]*Sqrt[2*Pi]*FresnelC[S
qrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]]*(3*b*Cos[a/b] + 2*a*Sin
[a/b]) + Sqrt[b^(-1)]*Sqrt[2*Pi]*FresnelS[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a +
b*ArcSin[c + d*x]]]*(2*a*Cos[a/b] - 3*b*Sin[a/b])))/(2*d^2) - (c*((2*Sqrt[a
 + b*ArcSin[c + d*x]]*(-2*Sqrt[1 - (c + d*x)^2]*(a - 5*b*ArcSin[c + d*x]) +
 b*(c + d*x)*(-15 + 4*ArcSin[c + d*x]^2)))/Sqrt[b^(-1)] + Sqrt[2*Pi]*Fresne
lS[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]]*((-4*a^2 + 15*b^2)*
Cos[a/b] + 12*a*b*Sin[a/b]) + Sqrt[2*Pi]*FresnelC[Sqrt[b^(-1)]*Sqrt[2/Pi]*S
qrt[a + b*ArcSin[c + d*x]]]*(12*a*b*Cos[a/b] + (4*a^2 - 15*b^2)*Sin[a/b])))
/(8*Sqrt[b^(-1)]*d^2) + (a^2*(-2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]]*C
os[2*ArcSin[c + d*x]] + Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[b^(-1)]*Sqrt
[a + b*ArcSin[c + d*x]])/Sqrt[Pi]] + Sqrt[Pi]*FresnelS[(2*Sqrt[b^(-1)]*Sqrt
[a + b*ArcSin[c + d*x]])/Sqrt[Pi]]*Sin[(2*a)/b]))/(8*Sqrt[b^(-1)]*d^2) + (a
*b*(-(Sqrt[b^(-1)]*Sqrt[Pi]*FresnelS[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c +
d*x]])/Sqrt[Pi]]*(3*b*Cos[(2*a)/b] + 4*a*Sin[(2*a)/b])) + Sqrt[b^(-1)]*Sqrt
[Pi]*FresnelC[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi]]*(-4*a*
Cos[(2*a)/b] + 3*b*Sin[(2*a)/b]) + 2*Sqrt[a + b*ArcSin[c + d*x]]*(-4*ArcSin
[c + d*x]*Cos[2*ArcSin[c + d*x]] + 3*Sin[2*ArcSin[c + d*x]])))/(16*d^2) + (
Sqrt[Pi]*FresnelC[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi]]*((
16*a^2 - 15*b^2)*Cos[(2*a)/b] - 24*a*b*Sin[(2*a)/b]) - Sqrt[Pi]*FresnelS[(2
*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi]]*(-24*a*b*Cos[(2*a)/b]
+ (-16*a^2 + 15*b^2)*Sin[(2*a)/b]) - (2*Sqrt[a + b*ArcSin[c + d*x]]*(b*(-15
 + 16*ArcSin[c + d*x]^2)*Cos[2*ArcSin[c + d*x]] + 4*(a - 5*b*ArcSin[c + d*x
])*Sin[2*ArcSin[c + d*x]]))/Sqrt[b^(-1)])/(128*Sqrt[b^(-1)]*d^2)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 886 vs. $2(330) = 660$.
time = 0.52, size = 887, normalized size = 2.18

method	result

default	$-\frac{-480\sqrt{-\frac{1}{b}}\,\sqrt{2}\,\sqrt{a+b\arcsin(dx+c)}\,\cos\left(\frac{a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)\sqrt{\pi}\,b^3c-480\sqrt{-\frac{1}{b}}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(d*x+c))^(5/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/256/d^2/(a+b*arcsin(d*x+c))^(1/2)*(-480*(-1/b)^(1/2)*2^(1/2)*(a+b*arcsin
(d*x+c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(
d*x+c))^(1/2)/b)*Pi^(1/2)*b^3*c-480*(-1/b)^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c)
)^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))
^(1/2)/b)*Pi^(1/2)*b^3*c+15*(-2/b)^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*
cos(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/
2)/b)*Pi^(1/2)*b^3-15*(-2/b)^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(2*
a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*
Pi^(1/2)*b^3-256*arcsin(d*x+c)^3*sin(-(a+b*arcsin(d*x+c))/b+a/b)*b^3*c+64*a
rcsin(d*x+c)^3*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*b^3-768*arcsin(d*x+c)^2*
sin(-(a+b*arcsin(d*x+c))/b+a/b)*a*b^2*c+640*arcsin(d*x+c)^2*cos(-(a+b*arcsi
n(d*x+c))/b+a/b)*b^3*c+192*arcsin(d*x+c)^2*cos(-2*(a+b*arcsin(d*x+c))/b+2*a
/b)*a*b^2+80*arcsin(d*x+c)^2*sin(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*b^3-768*ar
csin(d*x+c)*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a^2*b*c+960*arcsin(d*x+c)*sin(-
(a+b*arcsin(d*x+c))/b+a/b)*b^3*c+1280*arcsin(d*x+c)*cos(-(a+b*arcsin(d*x+c)
)/b+a/b)*a*b^2*c+192*arcsin(d*x+c)*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a^2*
b-60*arcsin(d*x+c)*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*b^3+160*arcsin(d*x+c
)*sin(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a*b^2-256*sin(-(a+b*arcsin(d*x+c))/b+
a/b)*a^3*c+960*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a*b^2*c+640*cos(-(a+b*arcsin
(d*x+c))/b+a/b)*a^2*b*c+64*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a^3-60*cos(-
2*(a+b*arcsin(d*x+c))/b+2*a/b)*a*b^2+80*sin(-2*(a+b*arcsin(d*x+c))/b+2*a/b)
*a^2*b)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(5/2)*x, x)
```

Fricas [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x*(a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")

[Out] Exception raised: TypeError >> Error detected within library code: integ
rate: implementation incomplete (constant residues)

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int x(a+b\operatorname{asin}(c+dx))^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x*(a+b*asin(d*x+c))**(5/2),x)

[Out] Integral(x*(a + b*asin(c + d*x))**(5/2), x)

Giac [C] Result contains complex when optimal does not.
time = 1.36, size = 2671, normalized size = 6.58

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x*(a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")

```
[Out] -1/256*(128*sqrt(2)*sqrt(pi)*a^3*b^2*c*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x
 + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(
b))/b)*e^(I*a/b)/(I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b))) + 128*sqrt(2)*sqrt
(pi)*a^3*b^2*c*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) -
 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*b^3
/sqrt(abs(b)) + b^2*sqrt(abs(b))) + 384*I*sqrt(2)*sqrt(pi)*a^2*b^2*c*erf(-1
/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*
arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(I*b^2/sqrt(abs(b)) + b*sqrt
(abs(b))) - 384*I*sqrt(2)*sqrt(pi)*a^2*b^2*c*erf(1/2*I*sqrt(2)*sqrt(b*arcsi
n(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt
(abs(b))/b)*e^(-I*a/b)/(-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b))) - 128*I*sqrt(
b*arcsin(d*x + c) + a)*b^2*c*arcsin(d*x + c)^2*e^(I*arcsin(d*x + c)) + 128*
I*sqrt(b*arcsin(d*x + c) + a)*b^2*c*arcsin(d*x + c)^2*e^(-I*arcsin(d*x + c)
) - 384*I*sqrt(2)*sqrt(pi)*a^2*b*c*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c
) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/
b)*e^(I*a/b)/(I*b/sqrt(abs(b)) + sqrt(abs(b))) - 240*I*sqrt(2)*sqrt(pi)*b^3
*c*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2
)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(I*b/sqrt(abs(b)) +
 sqrt(abs(b))) + 384*I*sqrt(2)*sqrt(pi)*a^2*b*c*erf(1/2*I*sqrt(2)*sqrt(b*ar
csin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*s
qrt(abs(b))/b)*e^(-I*a/b)/(-I*b/sqrt(abs(b)) + sqrt(abs(b))) + 240*I*sqrt(2
```

)*sqrt(pi)*b^3*c*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b))
 - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*b
/sqrt(abs(b)) + sqrt(abs(b))) + 32*sqrt(b*arcsin(d*x + c) + a)*b^2*arcsin(d
*x + c)^2*e^(2*I*arcsin(d*x + c)) - 256*I*sqrt(b*arcsin(d*x + c) + a)*a*b*c
*arcsin(d*x + c)*e^(I*arcsin(d*x + c)) + 320*sqrt(b*arcsin(d*x + c) + a)*b^
2*c*arcsin(d*x + c)*e^(I*arcsin(d*x + c)) + 256*I*sqrt(b*arcsin(d*x + c) +
a)*a*b*c*arcsin(d*x + c)*e^(-I*arcsin(d*x + c)) + 320*sqrt(b*arcsin(d*x + c
) + a)*b^2*c*arcsin(d*x + c)*e^(-I*arcsin(d*x + c)) + 32*sqrt(b*arcsin(d*x
+ c) + a)*b^2*arcsin(d*x + c)^2*e^(-2*I*arcsin(d*x + c)) + 64*I*sqrt(pi)*a^
3*b*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a
)*sqrt(b)/abs(b))*e^(2*I*a/b)/(b^(3/2) + I*b^(5/2)/abs(b)) - 256*sqrt(pi)*a
^3*c*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt
(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(I*sqrt(2)*b/sqrt
(abs(b)) + sqrt(2)*sqrt(abs(b))) - 256*sqrt(pi)*a^3*c*erf(1/2*I*sqrt(2)*sqr
t(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c)
+ a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*sqrt(2)*b/sqrt(abs(b)) + sqrt(2)*sqrt(a
bs(b))) - 64*I*sqrt(pi)*a^3*b*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*
sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(b^(3/2) - I*b^(5/
2)/abs(b)) - 64*I*sqrt(pi)*a^3*sqrt(b)*erf(-sqrt(b*arcsin(d*x + c) + a)/sqr
t(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/(b + I*b^2
/abs(b)) + 96*sqrt(pi)*a^2*b^(3/2)*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b)
 - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/(b + I*b^2/abs
(b)) + 64*I*sqrt(pi)*a^3*sqrt(b)*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) +
 I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(b - I*b^2/abs(
b)) + 96*sqrt(pi)*a^2*b^(3/2)*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*
sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(b - I*b^2/abs(b))
 + 64*sqrt(b*arcsin(d*x + c) + a)*a*b*arcsin(d*x + c)*e^(2*I*arcsin(d*x + c
)) + 40*I*sqrt(b*arcsin(d*x + c) + a)*b^2*arcsin(d*x + c)*e^(2*I*arcsin(d*x
 + c)) - 128*I*sqrt(b*arcsin(d*x + c) + a)*a^2*c*e^(I*arcsin(d*x + c)) + 32
0*sqrt(b*arcsin(d*x + c) + a)*a*b*c*e^(I*arcsin(d*x + c)) + 480*I*sqrt(b*ar
csin(d*x + c) + a)*b^2*c*e^(I*arcsin(d*x + c)) + 128*I*sqrt(b*arcsin(d*x +
c) + a)*a^2*c*e^(-I*arcsin(d*x + c)) + 320*sqrt(b*arcsin(d*x + c) + a)*a*b*
c*e^(-I*arcsin(d*x + c)) - 480*I*sqrt(b*arcsin(d*x + c) + a)*b^2*c*e^(-I*ar
csin(d*x + c)) + 64*sqrt(b*arcsin(d*x + c) + a)*a*b*arcsin(d*x + c)*e^(-2*I
*arcsin(d*x + c)) - 40*I*sqrt(b*arcsin(d*x + c) + a)*b^2*arcsin(d*x + c)*e^
(-2*I*arcsin(d*x + c)) - 96*sqrt(pi)*a^2*b*erf(-sqrt(b*arcsin(d*x + c) + a)
/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/(sqrt(
b) + I*b^(3/2)/abs(b)) + 36*I*sqrt(pi)*a*b^2*erf(-sqrt(b*arcsin(d*x + c) +
a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/(sqr
t(b) + I*b^(3/2)/abs(b)) - 64*I*sqrt(pi)*a^3*erf(-sqrt(b*arcsin(d*x + c) +
a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(sq
rt(b) - I*b^(3/2)/abs(b)) - 96*sqrt(pi)*a^2*b*erf(-sqrt(b*arcsin(d*x + c) +
 a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(s
qrt(b) - I*b^(3/2)/abs(b)) - 36*I*sqrt(pi)*a*b^2*erf(-sqrt(b*arcsin(d*x + c
) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)

```
/(sqrt(b) - I*b^(3/2)/abs(b)) - 36*I*sqrt(pi)*a...
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int x\,(a+b\,\mathrm{asin}(c+d\,x))^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c + d*x))^(5/2),x)
[Out] int(x*(a + b*asin(c + d*x))^(5/2), x)
```

3.161 $\int (a+b\mathbf{ArcSin}(c+dx))^{5/2}\,dx$

Optimal. Leaf size=204

$$-\frac{15b^2(c+dx)\sqrt{a+b\text{ArcSin}(c+dx)}}{4d}+\frac{5b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^{3/2}}{2d}+\frac{(c+dx)(a+b\text{ArcSi}}{d}$$

```
[Out] (d*x+c)*(a+b*arcsin(d*x+c))^(5/2)/d+15/8*b^(5/2)*cos(a/b)*FresnelS(2^(1/2)/
Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/d-15/8*b^(5/2)
*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(a/b)*2^(1
/2)*Pi^(1/2)/d+5/2*b*(a+b*arcsin(d*x+c))^(3/2)*(1-(d*x+c)^2)^(1/2)/d-15/4*b
^2*(d*x+c)*(a+b*arcsin(d*x+c))^(1/2)/d
```

Rubi [A]

time = 0.27, antiderivative size = 204, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 9, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.643$, Rules used = {4887, 4715, 4767, 4809, 3387, 3386, 3432, 3385, 3433}

$$-\frac{15\sqrt{\frac{\pi}{2}}\,b^{5/2}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{4d}+\frac{15\sqrt{\frac{\pi}{2}}\,b^{5/2}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{4d}-\frac{15b^2(c+dx)\sqrt{a+b\text{ArcSin}(c+dx)}}{4d}+\frac{5b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^{3/2}}{2d}+\frac{(c+dx)(a+b\text{ArcSin}(c+dx))^{5/2}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] (-15*b^2*(c + d*x)*Sqrt[a + b*ArcSin[c + d*x]])/(4*d) + (5*b*Sqrt[1 - (c +
d*x)^2]*(a + b*ArcSin[c + d*x])^(3/2))/(2*d) + ((c + d*x)*(a + b*ArcSin[c +
 d*x])^(5/2))/d + (15*b^(5/2)*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt
[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(4*d) - (15*b^(5/2)*Sqrt[Pi/2]*FresnelC[
(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(4*d)
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4809

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[(1/(b*c^(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x
^2)^p], Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b]^(2*p + 1), x], x, a
 + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0]
&& IGtQ[2*p + 2, 0] && IGtQ[m, 0]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\int \left(a+b\sin^{-1}(c+dx)\right)^{5/2}\,dx = \frac{\text{Subst}\left(\int \left(a+b\sin^{-1}(x)\right)^{5/2}\,dx, x, c+dx\right)}{d}$$

$$= \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{d} - \frac{(5b)\text{Subst}\left(\int \frac{x\left(a+b\sin^{-1}(x)\right)^{3/2}}{\sqrt{1-x^2}}\,dx, x, c+\right.}{2d}$$

$$= \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{2d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx\right.}{d}$$

$$= -\frac{15b^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c\right.}{2d}$$

$$= -\frac{15b^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c\right.}{2d}$$

$$= -\frac{15b^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c\right.}{2d}$$

$$= -\frac{15b^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c\right.}{2d}$$

$$= -\frac{15b^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c\right.}{2d}$$

Mathematica [C] Result contains complex when optimal does not.
time = 2.10, size = 432, normalized size = 2.12

$$\frac{e^{-\frac{ia}{b}}\left(\frac{i(4a^2+15b^2)\left(-1+e^{\frac{2ia}{b}}\right)\sqrt{\frac{\pi}{2}}\sqrt{a+b\text{ArcSin}(c+dx)}\,\text{FresnelC}\left(\sqrt{\frac{1}{b}}\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}\right)}{\sqrt{\frac{1}{b}}}+\frac{(4a^2+15b^2)\left(1+e^{\frac{2ia}{b}}\right)\sqrt{\frac{\pi}{2}}\sqrt{a+b\text{ArcSin}(c+dx)}\,S\left(\sqrt{\frac{1}{b}}\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}\right)}{\sqrt{\frac{1}{b}}}+2b\left(e^{\frac{ia}{b}}(a+b\text{ArcSin}(c+dx))\left(-15b(c+dx)+10a\sqrt{1-c^2-2cdx-d^2x^2}+2\left(4a(c+dx)+5b\sqrt{1-c^2-2cdx-d^2x^2}\right)\text{ArcSin}(c+dx)+4b(c+dx)\text{ArcSin}(c+dx)^2\right)+2a^2\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{3}{2},-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)+2a^2e^{\frac{2ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{3}{2},\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)\right)}{8d\sqrt{a+b\text{ArcSin}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] ((I*(4*a^2 + 15*b^2)*(-1 + E^(((2*I)*a)/b))*Sqrt[Pi/2]*Sqrt[a + b*ArcSin[c
+ d*x]]*FresnelC[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]])/Sqrt
[b^(-1)] + ((4*a^2 + 15*b^2)*(1 + E^(((2*I)*a)/b))*Sqrt[Pi/2]*Sqrt[a + b*Ar
cSin[c + d*x]]*FresnelS[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]
])/Sqrt[b^(-1)] + 2*b*(E^((I*a)/b)*(a + b*ArcSin[c + d*x])*(-15*b*(c + d*x)
```

```
 + 10*a*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2] + 2*(4*a*(c + d*x) + 5*b*Sqrt[1 -
 c^2 - 2*c*d*x - d^2*x^2])*ArcSin[c + d*x] + 4*b*(c + d*x)*ArcSin[c + d*x]^
2) + 2*a^2*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((-I)*(a + b*A
rcSin[c + d*x]))/b] + 2*a^2*E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x])
)/b]*Gamma[3/2, (I*(a + b*ArcSin[c + d*x]))/b]))/(8*d*E^((I*a)/b)*Sqrt[a +
b*ArcSin[c + d*x]])
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 440 vs. $2(164) = 328$.
time = 0.30, size = 441, normalized size = 2.16

method	result
default	$-\frac{15\sqrt{a+b\arcsin\left(dx+c\right)}\,\cos\left(\frac{a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)\sqrt{-\frac{1}{b}}\,\sqrt{\pi}\,\sqrt{2}\,b^{3}+15\sqrt{a+b\arcs}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^(5/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/8/d*(15*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(-1
/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)*Pi^(1/2)*2^(1/2)*b^3+15
*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*
(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)*Pi^(1/2)*2^(1/2)*b^3+8*arcsin(d*x
+c)^3*sin(-(a+b*arcsin(d*x+c))/b+a/b)*b^3+24*arcsin(d*x+c)^2*sin(-(a+b*arcs
in(d*x+c))/b+a/b)*a*b^2-20*arcsin(d*x+c)^2*cos(-(a+b*arcsin(d*x+c))/b+a/b)*
b^3+24*arcsin(d*x+c)*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a^2*b-30*arcsin(d*x+c)
*sin(-(a+b*arcsin(d*x+c))/b+a/b)*b^3-40*arcsin(d*x+c)*cos(-(a+b*arcsin(d*x+
c))/b+a/b)*a*b^2+8*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a^3-30*sin(-(a+b*arcsin(
d*x+c))/b+a/b)*a*b^2-20*cos(-(a+b*arcsin(d*x+c))/b+a/b)*a^2*b)/(a+b*arcsin(
d*x+c))^(1/2)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(5/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >> Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int (a + b \operatorname{asin}(c + dx))^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**(5/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**(5/2), x)
```

Giac [C] Result contains complex when optimal does not.
time = 1.19, size = 1279, normalized size = 6.27

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*sqrt(pi)*a^3*b^3*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)
/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(
I*a/b)/((I*b^4/sqrt(abs(b)) + b^3*sqrt(abs(b)))*d) + 1/2*sqrt(2)*sqrt(pi)*a
^3*b^3*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqr
t(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^4/sqrt(a
bs(b)) + b^3*sqrt(abs(b)))*d) + 3/2*I*sqrt(2)*sqrt(pi)*a^2*b^3*erf(-1/2*I*s
qrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin
(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^3/sqrt(abs(b)) + b^2*sqrt(ab
s(b)))*d) - 3/2*I*sqrt(2)*sqrt(pi)*a^2*b^3*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(
d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(a
bs(b))/b)*e^(-I*a/b)/((-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d) - 3/2*I*s
qrt(2)*sqrt(pi)*a^2*b^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt
(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b
)/((I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*d) - 15/16*I*sqrt(2)*sqrt(pi)*b^4*
erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*s
qrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^2/sqrt(abs(b)) +
 b*sqrt(abs(b)))*d) + 3/2*I*sqrt(2)*sqrt(pi)*a^2*b^2*erf(1/2*I*sqrt(2)*sqrt
(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) +
 a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*d) +
 15/16*I*sqrt(2)*sqrt(pi)*b^4*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)
/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(
```

```
-I*a/b)/((-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*d) - 1/2*I*sqrt(b*arcsin(d*
x + c) + a)*b^2*arcsin(d*x + c)^2*e^(I*arcsin(d*x + c))/d + 1/2*I*sqrt(b*ar
csin(d*x + c) + a)*b^2*arcsin(d*x + c)^2*e^(-I*arcsin(d*x + c))/d - sqrt(pi
)*a^3*b*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*s
qrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*sqrt(2)*b^
2/sqrt(abs(b)) + sqrt(2)*b*sqrt(abs(b)))*d) - sqrt(pi)*a^3*b*erf(1/2*I*sqrt
(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*
x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*sqrt(2)*b^2/sqrt(abs(b)) + sqrt
(2)*b*sqrt(abs(b)))*d) - I*sqrt(b*arcsin(d*x + c) + a)*a*b*arcsin(d*x + c)*
e^(I*arcsin(d*x + c))/d + 5/4*sqrt(b*arcsin(d*x + c) + a)*b^2*arcsin(d*x +
c)*e^(I*arcsin(d*x + c))/d + I*sqrt(b*arcsin(d*x + c) + a)*a*b*arcsin(d*x +
 c)*e^(-I*arcsin(d*x + c))/d + 5/4*sqrt(b*arcsin(d*x + c) + a)*b^2*arcsin(d
*x + c)*e^(-I*arcsin(d*x + c))/d - 1/2*I*sqrt(b*arcsin(d*x + c) + a)*a^2*e^
(I*arcsin(d*x + c))/d + 5/4*sqrt(b*arcsin(d*x + c) + a)*a*b*e^(I*arcsin(d*x
 + c))/d + 15/8*I*sqrt(b*arcsin(d*x + c) + a)*b^2*e^(I*arcsin(d*x + c))/d +
 1/2*I*sqrt(b*arcsin(d*x + c) + a)*a^2*e^(-I*arcsin(d*x + c))/d + 5/4*sqrt(
b*arcsin(d*x + c) + a)*a*b*e^(-I*arcsin(d*x + c))/d - 15/8*I*sqrt(b*arcsin(
d*x + c) + a)*b^2*e^(-I*arcsin(d*x + c))/d
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (a + b\,\mathrm{asin}(c + d\,x))^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^(5/2),x)
```

```
[Out] int((a + b*asin(c + d*x))^(5/2), x)
```

3.162 $\int (a+b\mathbf{ArcSin}(c+dx))^{7/2}\,dx$

Optimal. Leaf size=243

$$-\frac{105b^3\sqrt{1-(c+dx)^2}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{8d}-\frac{35b^2(c+dx)(a+b\text{ArcSin}(c+dx))^{3/2}}{4d}+\frac{7b\sqrt{1-(c+dx)}}{}$$

```
[Out] -35/4*b^2*(d*x+c)*(a+b*arcsin(d*x+c))^(3/2)/d+(d*x+c)*(a+b*arcsin(d*x+c))^(
7/2)/d+105/16*b^(7/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c)
)^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/d+105/16*b^(7/2)*FresnelS(2^(1/2)/Pi^(1/2
)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/d+7/2*b*(a+b
*arcsin(d*x+c))^(5/2)*(1-(d*x+c)^2)^(1/2)/d-105/8*b^3*(1-(d*x+c)^2)^(1/2)*(
a+b*arcsin(d*x+c))^(1/2)/d
```

Rubi [A]
time = 0.28, antiderivative size = 243, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 9, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.643$, Rules used = {4887, 4715, 4767, 4719, 3387, 3386, 3432, 3385, 3433}

$$\frac{105\sqrt{\frac{\pi}{2}}\,b^{7/2}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{8d}+\frac{105\sqrt{\frac{\pi}{2}}\,b^{7/2}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{8d}-\frac{105b^3\sqrt{1-(c+dx)^2}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{8d}-\frac{35b^2(c+dx)(a+b\text{ArcSin}(c+dx))^{3/2}}{4d}+\frac{7b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^{5/2}}{2d}+\frac{(c+dx)(a+b\text{ArcSin}(c+dx))^{7/2}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] (-105*b^3*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(8*d) - (35*b^
2*(c + d*x)*(a + b*ArcSin[c + d*x])^(3/2))/(4*d) + (7*b*Sqrt[1 - (c + d*x)^
2]*(a + b*ArcSin[c + d*x])^(5/2))/(2*d) + ((c + d*x)*(a + b*ArcSin[c + d*x]
)^(7/2))/d + (105*b^(7/2)*Sqrt[Pi/2]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a +
 b*ArcSin[c + d*x]])/Sqrt[b]])/(8*d) + (105*b^(7/2)*Sqrt[Pi/2]*FresnelS[(Sq
rt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(8*d)
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4719

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[-a/b + x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c
, n}, x]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\int \left(a+b\sin^{-1}(c+dx)\right)^{7/2}\,dx = \frac{\text{Subst}\left(\int \left(a+b\sin^{-1}(x)\right)^{7/2}\,dx,x,c+dx\right)}{d}$$

$$= \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}{d} - \frac{(7b)\text{Subst}\left(\int \frac{x\left(a+b\sin^{-1}(x)\right)^{5/2}}{\sqrt{1-x^2}}\,dx,x,c+\right.}{2d}$$

$$= \frac{7b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{2d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx\right.}{d}$$

$$= -\frac{35b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{4d} + \frac{7b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(\right.}{2d}$$

$$= -\frac{105b^3\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d} - \frac{35b^2(c+dx)\left(a+b\sin^{-}\right.}{4d}$$

$$= -\frac{105b^3\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d} - \frac{35b^2(c+dx)\left(a+b\sin^{-}\right.}{4d}$$

$$= -\frac{105b^3\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d} - \frac{35b^2(c+dx)\left(a+b\sin^{-}\right.}{4d}$$

$$= -\frac{105b^3\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d} - \frac{35b^2(c+dx)\left(a+b\sin^{-}\right.}{4d}$$

$$= -\frac{105b^3\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d} - \frac{35b^2(c+dx)\left(a+b\sin^{-}\right.}{4d}$$

<u>**Mathematica**</u> [**C**] Result contains complex when optimal does not.
time = 3.40, size = 551, normalized size = 2.27

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] (((8*I)*a^3*(-1 + E^(((2*I)*a)/b)) + 105*b^3*(1 + E^(((2*I)*a)/b)))*Sqrt[2*
Pi]*Sqrt[a + b*ArcSin[c + d*x]]*FresnelC[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b
```

```
*ArcSin[c + d*x]]] - I*(105*b^3*(-1 + E^(((2*I)*a)/b)) + (8*I)*a^3*(1 + E^(
((2*I)*a)/b)))*Sqrt[2*Pi]*Sqrt[a + b*ArcSin[c + d*x]]*FresnelS[Sqrt[b^(-1)]
*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]] + (4*(E^((I*a)/b)*(a + b*ArcSin[c
+ d*x])*(7*(-10*a*b*(c + d*x) + 4*a^2*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2] - 1
5*b^2*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2]) + (24*a^2*(c + d*x) - 70*b^2*(c +
d*x) + 56*a*b*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2])*ArcSin[c + d*x] + 4*b*(6*a
*(c + d*x) + 7*b*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2])*ArcSin[c + d*x]^2 + 8*b
^2*(c + d*x)*ArcSin[c + d*x]^3) + 4*a^3*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))
/b]*Gamma[3/2, ((-I)*(a + b*ArcSin[c + d*x]))/b] + 4*a^3*E^(((2*I)*a)/b)*Sq
rt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, (I*(a + b*ArcSin[c + d*x]))/b]
))/Sqrt[b^(-1)])/(32*Sqrt[b^(-1)]*d*E^((I*a)/b)*Sqrt[a + b*ArcSin[c + d*x]]
)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 615 vs. $2(197) = 394$.

time = 0.29, size = 616, normalized size = 2.53

method	result
default	$-\frac{-105\cos\left(\frac{a}{b}\right)\operatorname{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)\sqrt{-\frac{1}{b}}\,\sqrt{\pi}\,\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}\,b^{4}+105\sin}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^(7/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/16/d*(-105*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d
*x+c))^(1/2)/b)*(-1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*b^4
+105*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1
/2)/b)*(-1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*b^4+16*arcsi
n(d*x+c)^4*sin(-(a+b*arcsin(d*x+c))/b+a/b)*b^4+64*arcsin(d*x+c)^3*sin(-(a+b
*arcsin(d*x+c))/b+a/b)*a*b^3-56*arcsin(d*x+c)^3*cos(-(a+b*arcsin(d*x+c))/b+
a/b)*b^4+96*arcsin(d*x+c)^2*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a^2*b^2-140*arc
sin(d*x+c)^2*sin(-(a+b*arcsin(d*x+c))/b+a/b)*b^4-168*arcsin(d*x+c)^2*cos(-(
a+b*arcsin(d*x+c))/b+a/b)*a*b^3+64*arcsin(d*x+c)*sin(-(a+b*arcsin(d*x+c))/b
+a/b)*a^3*b-280*arcsin(d*x+c)*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a*b^3-168*arc
sin(d*x+c)*cos(-(a+b*arcsin(d*x+c))/b+a/b)*a^2*b^2+210*arcsin(d*x+c)*cos(-(
a+b*arcsin(d*x+c))/b+a/b)*b^4+16*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a^4-140*si
n(-(a+b*arcsin(d*x+c))/b+a/b)*a^2*b^2-56*cos(-(a+b*arcsin(d*x+c))/b+a/b)*a^
3*b+210*cos(-(a+b*arcsin(d*x+c))/b+a/b)*a*b^3)/(a+b*arcsin(d*x+c))^(1/2)
```

Maxima [F]

time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(7/2), x)
```

Fricas [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: SystemError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**(7/2),x)
```

```
[Out] Exception raised: SystemError >> excessive stack use: stack is 3060 deep
```

Giac [**C**] Result contains complex when optimal does not.
time = 1.46, size = 2308, normalized size = 9.50

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(7/2),x, algorithm="giac")
```

```
[Out] -1/32*(16*sqrt(2)*sqrt(pi)*a^4*b^3*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c
) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/
b)*e^(I*a/b)/(I*b^4/sqrt(abs(b)) + b^3*sqrt(abs(b))) + 16*sqrt(2)*sqrt(pi)*
a^4*b^3*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sq
rt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*b^4/sqrt(a
bs(b)) + b^3*sqrt(abs(b))) - 64*sqrt(2)*sqrt(pi)*a^4*b^2*erf(-1/2*I*sqrt(2)
*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x +
 c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))
+ 32*I*sqrt(2)*sqrt(pi)*a^3*b^3*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) +
 a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*
e^(I*a/b)/(I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b))) - 64*sqrt(2)*sqrt(pi)*a^4
*b^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(
```

2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*b^3/sqrt(abs(
b)) + b^2*sqrt(abs(b))) - 32*I*sqrt(2)*sqrt(pi)*a^3*b^3*erf(1/2*I*sqrt(2)*s
qrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c
) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))
+ 16*I*sqrt(b*arcsin(d*x + c) + a)*b^3*arcsin(d*x + c)^3*e^(I*arcsin(d*x +
c)) - 16*I*sqrt(b*arcsin(d*x + c) + a)*b^3*arcsin(d*x + c)^3*e^(-I*arcsin(d
*x + c)) + 32*sqrt(2)*sqrt(pi)*a^4*b*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x +
c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b)
)/b)*e^(I*a/b)/(I*b^2/sqrt(abs(b)) + b*sqrt(abs(b))) - 128*I*sqrt(2)*sqrt(p
i)*a^3*b^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/
2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(I*b^2/sqrt
(abs(b)) + b*sqrt(abs(b))) - 72*sqrt(2)*sqrt(pi)*a^2*b^3*erf(-1/2*I*sqrt(2)
*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x +
c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(I*b^2/sqrt(abs(b)) + b*sqrt(abs(b))) +
32*sqrt(2)*sqrt(pi)*a^4*b*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqr
t(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a
/b)/(-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b))) + 128*I*sqrt(2)*sqrt(pi)*a^3*b^2
*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*s
qrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*b^2/sqrt(abs(b))
+ b*sqrt(abs(b))) - 72*sqrt(2)*sqrt(pi)*a^2*b^3*erf(1/2*I*sqrt(2)*sqrt(b*ar
csin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*s
qrt(abs(b))/b)*e^(-I*a/b)/(-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b))) + 48*I*sqr
t(b*arcsin(d*x + c) + a)*a*b^2*arcsin(d*x + c)^2*e^(I*arcsin(d*x + c)) - 56
*sqrt(b*arcsin(d*x + c) + a)*b^3*arcsin(d*x + c)^2*e^(I*arcsin(d*x + c)) -
48*I*sqrt(b*arcsin(d*x + c) + a)*a*b^2*arcsin(d*x + c)^2*e^(-I*arcsin(d*x +
c)) - 56*sqrt(b*arcsin(d*x + c) + a)*b^3*arcsin(d*x + c)^2*e^(-I*arcsin(d*
x + c)) + 96*I*sqrt(2)*sqrt(pi)*a^3*b*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x
+ c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b
))/b)*e^(I*a/b)/(I*b/sqrt(abs(b)) + sqrt(abs(b))) + 72*sqrt(2)*sqrt(pi)*a^2
*b^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt
(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(I*b/sqrt(abs(b))
+ sqrt(abs(b))) + 105*sqrt(2)*sqrt(pi)*b^4*erf(-1/2*I*sqrt(2)*sqrt(b*arcsi
n(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt
(abs(b))/b)*e^(I*a/b)/(I*b/sqrt(abs(b)) + sqrt(abs(b))) - 96*I*sqrt(2)*sqrt
(pi)*a^3*b*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2
*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*b/sqrt(
abs(b)) + sqrt(abs(b))) + 72*sqrt(2)*sqrt(pi)*a^2*b^2*erf(1/2*I*sqrt(2)*sqr
t(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c)
+ a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*b/sqrt(abs(b)) + sqrt(abs(b))) + 105*sq
rt(2)*sqrt(pi)*b^4*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b
)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I
*b/sqrt(abs(b)) + sqrt(abs(b))) + 48*I*sqrt(b*arcsin(d*x + c) + a)*a^2*b*ar
csin(d*x + c)*e^(I*arcsin(d*x + c)) - 112*sqrt(b*arcsin(d*x + c) + a)*a*b^2
*arcsin(d*x + c)*e^(I*arcsin(d*x + c)) - 140*I*sqrt(b*arcsin(d*x + c) + a)*
b^3*arcsin(d*x + c)*e^(I*arcsin(d*x + c)) - 48*I*sqrt(b*arcsin(d*x + c) + a

```
)*a^2*b*arcsin(d*x + c)*e^(-I*arcsin(d*x + c)) - 112*sqrt(b*arcsin(d*x + c)
 + a)*a*b^2*arcsin(d*x + c)*e^(-I*arcsin(d*x + c)) + 140*I*sqrt(b*arcsin(d*
x + c) + a)*b^3*arcsin(d*x + c)*e^(-I*arcsin(d*x + c)) + 32*sqrt(pi)*a^4*er
f(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqr
t(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(I*sqrt(2)*b/sqrt(abs(b)
) + sqrt(2)*sqrt(abs(b))) + 32*sqrt(pi)*a^4*erf(1/2*I*sqrt(2)*sqrt(b*arcsin
(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(
abs(b))/b)*e^(-I*a/b)/(-I*sqrt(2)*b/sqrt(abs(b)) + sqrt(2)*sqrt(abs(b))) +
16*I*sqrt(b*arcsin(d*x + c) + a)*a^3*e^(I*arcsin(d*x + c)) - 56*sqrt(b*arcs
in(d*x + c) + a)*a^2*b*e^(I*arcsin(d*x + c)) - ...
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,\mathrm{asin}(c+d\,x))^{7/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^(7/2),x)
[Out] int((a + b*asin(c + d*x))^(7/2), x)
```

3.163 $\int \frac{x^2}{\sqrt{a+b\mathbf{ArcSin}(c+dx)}}\,dx$

Optimal. Leaf size=440

$$\frac{\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{2\sqrt{b}\,d^3}+\frac{c^2\sqrt{2\pi}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+}}{\sqrt{b}}\right.}{\sqrt{b}\,d^3}$$

```
[Out] -1/12*cos(3*a/b)*FresnelC(6^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2
))*6^(1/2)*Pi^(1/2)/d^3/b^(1/2)-1/12*FresnelS(6^(1/2)/Pi^(1/2)*(a+b*arcsin(
d*x+c))^(1/2)/b^(1/2))*sin(3*a/b)*6^(1/2)*Pi^(1/2)/d^3/b^(1/2)+1/4*cos(a/b)
*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*2^(1/2)*Pi^(1
/2)/d^3/b^(1/2)+1/4*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(
1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/d^3/b^(1/2)-c*cos(2*a/b)*FresnelS(2*(a+b*ar
csin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*Pi^(1/2)/d^3/b^(1/2)+c*FresnelC(2*(a+b
*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*sin(2*a/b)*Pi^(1/2)/d^3/b^(1/2)+c^2
*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*2^(1
/2)*Pi^(1/2)/d^3/b^(1/2)+c^2*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^
(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/d^3/b^(1/2)
```

Rubi [A]
time = 0.78, antiderivative size = 440, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 9, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {4889, 4831, 6873, 6874, 3435, 3433, 3432, 3434, 4670}

$$\frac{\sqrt{2\pi}\,c^2\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}\,d^3}+\frac{\sqrt{2\pi}\,c^2\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}\,d^3}+\frac{\sqrt{\pi}\,c\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{\sqrt{b}\,d^3}+\frac{\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{2\sqrt{b}\,d^3}-\frac{\sqrt{\frac{\pi}{6}}\cos\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{2\sqrt{b}\,d^3}+\frac{\sqrt{\frac{\pi}{2}}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{2\sqrt{b}\,d^3}-\frac{\sqrt{\frac{\pi}{6}}\sin\left(\frac{3a}{b}\right)S\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{2\sqrt{b}\,d^3}-\frac{\sqrt{\pi}\,c\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{\sqrt{b}\,d^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (Sqrt[Pi/2]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt
[b]])/(2*Sqrt[b]*d^3) + (c^2*Sqrt[2*Pi]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[
a + b*ArcSin[c + d*x]])/Sqrt[b]])/(Sqrt[b]*d^3) - (Sqrt[Pi/6]*Cos[(3*a)/b]*
FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(2*Sqrt[b]*d^3)
 - (c*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[
b]*Sqrt[Pi])])/(Sqrt[b]*d^3) + (Sqrt[Pi/2]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*
ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(2*Sqrt[b]*d^3) + (c^2*Sqrt[2*Pi]*Fres
nelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(Sqrt[b]*d
^3) + (c*Sqrt[Pi]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi
])]*Sin[(2*a)/b])/(Sqrt[b]*d^3) - (Sqrt[Pi/6]*FresnelS[(Sqrt[6/Pi]*Sqrt[a +
 b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(3*a)/b])/(2*Sqrt[b]*d^3)
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3434

```
Int[Sin[(c_) + (d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Dist[Sin[c], Int
[Cos[d*(e + f*x)^2], x], x] + Dist[Cos[c], Int[Sin[d*(e + f*x)^2], x], x] /
; FreeQ[{c, d, e, f}, x]
```

Rule 3435

```
Int[Cos[(c_) + (d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Dist[Cos[c], Int
[Cos[d*(e + f*x)^2], x], x] - Dist[Sin[c], Int[Sin[d*(e + f*x)^2], x], x] /
; FreeQ[{c, d, e, f}, x]
```

Rule 4670

```
Int[Cos[w_]^(q_.)*Sin[v_]^(p_.), x_Symbol] :> Int[ExpandTrigReduce[Sin[v]^p
*Cos[w]^q, x], x] /; IGtQ[p, 0] && IGtQ[q, 0] && ((PolynomialQ[v, x] && Pol
ynomialQ[w, x]) || (BinomialQ[{v, w}, x] && IndependentQ[Cancel[v/w], x]))
```

Rule 4831

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_.) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Dist[1/c^(m + 1), Subst[Int[(a + b*x)^n*Cos[x]*(c*d + e*Sin[x])^m
, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{x^2}{\sqrt{a+b\sin^{-1}(c+dx)}}\,dx = \frac{\text{Subst}\left(\int \frac{\left(-\frac{c}{d}+\frac{x}{d}\right)^2}{\sqrt{a+b\sin^{-1}(x)}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{\cos(x)\left(-\frac{c}{d}+\frac{\sin(x)}{d}\right)^2}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{2\text{Subst}\left(\int \cos\left(\frac{a-x^2}{b}\right)\left(c+\sin\left(\frac{a-x^2}{b}\right)\right)^2\,dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^3}$$

$$= \frac{2\text{Subst}\left(\int \cos\left(\frac{a}{b}-\frac{x^2}{b}\right)\left(c+\sin\left(\frac{a-x^2}{b}\right)\right)^2\,dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^3}$$

$$= \frac{2\text{Subst}\left(\int \left(c^2\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)+c\sin\left(\frac{2a}{b}-\frac{2x^2}{b}\right)+\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)\sin^2\left(\frac{a}{b}-\frac{x^2}{b}\right.\right.}{bd^3}$$

$$= \frac{2\text{Subst}\left(\int \cos\left(\frac{a}{b}-\frac{x^2}{b}\right)\sin^2\left(\frac{a}{b}-\frac{x^2}{b}\right)\,dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^3} + \frac{(2c}{}$$

$$= \frac{2\text{Subst}\left(\int \left(-\frac{1}{4}\cos\left(\frac{3a}{b}-\frac{3x^2}{b}\right)+\frac{1}{4}\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)\right)\,dx, x, \sqrt{a+b\sin^{-1}(c+\right.}{bd^3}$$

$$= \frac{c^2\sqrt{2\pi}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}\,d^3} - \frac{c\sqrt{\pi}\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{}}{}\right.}{\sqrt{b}}$$

$$= \frac{c^2\sqrt{2\pi}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}\,d^3} - \frac{c\sqrt{\pi}\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{}}{}\right.}{\sqrt{b}}$$

$$= \frac{\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{2\sqrt{b}\,d^3} + \frac{c^2\sqrt{2\pi}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}}{}\right.}{\sqrt{b}}$$

<u>Mathematica</u> [A]

time = 0.72, size = 335, normalized size = 0.76

$$\frac{\sqrt{\frac{1}{b}}\sqrt{\pi}\left(3\sqrt{2}\,(1+4c^2)\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\sqrt{\frac{1}{b}}\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}\right)-\sqrt{6}\cos\left(\frac{3a}{b}\right)\text{FresnelC}\left(\sqrt{\frac{1}{b}}\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}\right)-12c\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}}\right)+3\sqrt{2}\,S\left(\sqrt{\frac{1}{b}}\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}\right)\sin\left(\frac{a}{b}\right)+12\sqrt{2}\,c^2S\left(\sqrt{\frac{1}{b}}\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}\right)\sin\left(\frac{a}{b}\right)+12c\text{FresnelC}\left(\frac{2\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}}\right)\sin\left(\frac{2a}{b}\right)-\sqrt{6}\,S\left(\sqrt{\frac{1}{b}}\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}\right)\sin\left(\frac{3a}{b}\right)\right)}{12d^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (Sqrt[b^(-1)]*Sqrt[Pi]*(3*Sqrt[2]*(1 + 4*c^2)*Cos[a/b]*FresnelC[Sqrt[b^(-1)
]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]] - Sqrt[6]*Cos[(3*a)/b]*FresnelC[S
qrt[b^(-1)]*Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]]] - 12*c*Cos[(2*a)/b]*Fre
snelS[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi]] + 3*Sqrt[2]*Fr
esnelS[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]]*Sin[a/b] + 12*S
qrt[2]*c^2*FresnelS[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]]*Si
n[a/b] + 12*c*FresnelC[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi
]]*Sin[(2*a)/b] - Sqrt[6]*FresnelS[Sqrt[b^(-1)]*Sqrt[6/Pi]*Sqrt[a + b*ArcSi
n[c + d*x]]]*Sin[(3*a)/b]))/(12*d^3)
```

Maple [A]
time = 0.58, size = 428, normalized size = 0.97

method	result
default	$-\frac{\sqrt{\pi}\,\sqrt{2}\,\sqrt{-\frac{3}{b}}\left(4\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)\sqrt{-\frac{1}{b}}\,\sqrt{-\frac{3}{b}}\,b\,c^2-4\sin\left(\frac{a}{b}\right)\text{S}\left(\frac{\sqrt{2}\,\sqrt{c}\right.}{}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/(a+b*arcsin(d*x+c))^(1/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/12/d^3*Pi^(1/2)*2^(1/2)*(-3/b)^(1/2)*(4*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/
2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)*(-3/b)^(1/2)*b*c^
2-4*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/
2)/b)*(-1/b)^(1/2)*(-3/b)^(1/2)*b*c^2+2*cos(2*a/b)*FresnelS(2*2^(1/2)/Pi^(1
/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-2/b)^(1/2)*(-3/b)^(1/2)*b*c
+2*sin(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^
(1/2)/b)*(-2/b)^(1/2)*(-3/b)^(1/2)*b*c+cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(
-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)*(-3/b)^(1/2)*b-sin(a/
b)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/
b)^(1/2)*(-3/b)^(1/2)*b+cos(3*a/b)*FresnelC(3*2^(1/2)/Pi^(1/2)/(-3/b)^(1/2)
*(a+b*arcsin(d*x+c))^(1/2)/b)-sin(3*a/b)*FresnelS(3*2^(1/2)/Pi^(1/2)/(-3/b)
^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(x^2/sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\sqrt{a + b\operatorname{asin}(c + dx)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2/(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] Integral(x**2/sqrt(a + b*asin(c + d*x)), x)
```

Giac [**C**] Result contains complex when optimal does not.
time = 0.69, size = 646, normalized size = 1.47

$$-\frac{\sqrt{\pi} c^2 \operatorname{erf}\left(-\frac{i\sqrt{2}\sqrt{b\arcsin(dx+c)+a}}{2\sqrt{|b|}} - \frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}\sqrt{|b|}}{2b}\right)e^{\left(\frac{ia}{b}\right)}}{d^3\left(\frac{i\sqrt{2}b}{\sqrt{|b|}}+\sqrt{2}\sqrt{|b|}\right)} - \frac{\sqrt{\pi} c^2 \operatorname{erf}\left(\frac{i\sqrt{2}\sqrt{b\arcsin(dx+c)+a}}{2\sqrt{|b|}} - \frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}\sqrt{|b|}}{2b}\right)e^{\left(-\frac{ia}{b}\right)}}{d^3\left(-\frac{i\sqrt{2}b}{\sqrt{|b|}}+\sqrt{2}\sqrt{|b|}\right)} - \frac{i\sqrt{\pi} c \operatorname{erf}\left(-\frac{\sqrt{b\arcsin(dx+c)+a}}{\sqrt{b}} + \frac{i\sqrt{b\arcsin(dx+c)+a}\sqrt{b}}{|b|}\right)e^{\left(-\frac{2ia}{b}\right)}}{2d^3\left(\sqrt{b} - \frac{ib^{\frac{3}{2}}}{|b|}\right)} + \frac{i\sqrt{\pi} c \operatorname{erf}\left(-\frac{\sqrt{b\arcsin(dx+c)+a}}{\sqrt{b}} - \frac{i\sqrt{b\arcsin(dx+c)+a}\sqrt{b}}{|b|}\right)e^{\left(\frac{2ia}{b}\right)}}{2\sqrt{b}d^3\left(\frac{ib}{|b|}+1\right)} + \frac{\sqrt{\pi}\operatorname{erf}\left(-\frac{\sqrt{6}\sqrt{b\arcsin(dx+c)+a}}{2\sqrt{b}} - \frac{i\sqrt{6}\sqrt{b\arcsin(dx+c)+a}\sqrt{b}}{2|b|}\right)e^{\left(\frac{3ia}{b}\right)}}{4\left(\sqrt{6}\sqrt{b} + \frac{i\sqrt{6}b^{\frac{3}{2}}}{|b|}\right)d^3} - \frac{\sqrt{\pi}\operatorname{erf}\left(-\frac{i\sqrt{2}\sqrt{b\arcsin(dx+c)+a}}{2\sqrt{|b|}} - \frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}\sqrt{|b|}}{2b}\right)e^{\left(\frac{ia}{b}\right)}}{4d^3\left(\frac{i\sqrt{2}b}{\sqrt{|b|}}+\sqrt{2}\sqrt{|b|}\right)} - \frac{\sqrt{\pi}\operatorname{erf}\left(\frac{i\sqrt{2}\sqrt{b\arcsin(dx+c)+a}}{2\sqrt{|b|}} - \frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}\sqrt{|b|}}{2b}\right)e^{\left(-\frac{ia}{b}\right)}}{4d^3\left(-\frac{i\sqrt{2}b}{\sqrt{|b|}}+\sqrt{2}\sqrt{|b|}\right)} + \frac{\sqrt{\pi}\operatorname{erf}\left(-\frac{\sqrt{6}\sqrt{b\arcsin(dx+c)+a}}{2\sqrt{b}} + \frac{i\sqrt{6}\sqrt{b\arcsin(dx+c)+a}\sqrt{b}}{2|b|}\right)e^{\left(-\frac{3ia}{b}\right)}}{4\left(\sqrt{6}\sqrt{b} - \frac{i\sqrt{6}b^{\frac{3}{2}}}{|b|}\right)d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] -sqrt(pi)*c^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) -
 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(d^3*(I*
sqrt(2)*b/sqrt(abs(b)) + sqrt(2)*sqrt(abs(b)))) - sqrt(pi)*c^2*erf(1/2*I*sq
rt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(
d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(d^3*(-I*sqrt(2)*b/sqrt(abs(b)) +
sqrt(2)*sqrt(abs(b)))) - 1/2*I*sqrt(pi)*c*erf(-sqrt(b*arcsin(d*x + c) + a)/
sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(d^3*(
sqrt(b) - I*b^(3/2)/abs(b))) + 1/2*I*sqrt(pi)*c*erf(-sqrt(b*arcsin(d*x + c)
 + a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/(
sqrt(b)*d^3*(I*b/abs(b) + 1)) + 1/4*sqrt(pi)*erf(-1/2*sqrt(6)*sqrt(b*arcsin
(d*x + c) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/
```

```
abs(b))*e^(3*I*a/b)/((sqrt(6)*sqrt(b) + I*sqrt(6)*b^(3/2)/abs(b))*d^3) - 1/
4*sqrt(pi)*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/
2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(d^3*(I*sqr
t(2)*b/sqrt(abs(b)) + sqrt(2)*sqrt(abs(b)))) - 1/4*sqrt(pi)*erf(1/2*I*sqrt(
2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x
 + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(d^3*(-I*sqrt(2)*b/sqrt(abs(b)) + sqr
t(2)*sqrt(abs(b)))) + 1/4*sqrt(pi)*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c)
+ a)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^
(-3*I*a/b)/((sqrt(6)*sqrt(b) - I*sqrt(6)*b^(3/2)/abs(b))*d^3)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2}{\sqrt{a+b\,\mathrm{asin}\left(c+d\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/(a + b*asin(c + d*x))^(1/2),x)
```

```
[Out] int(x^2/(a + b*asin(c + d*x))^(1/2), x)
```

3.164 $\int \frac{x}{\sqrt{a+b\mathbf{ArcSin}(c+dx)}}\,dx$

Optimal. Leaf size=211

$$-\frac{c\sqrt{2\pi}\,\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}\,d^2}+\frac{\sqrt{\pi}\,\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\,\sqrt{\pi}}\right)}{2\sqrt{b}\,d^2}-$$

```
[Out] 1/2*cos(2*a/b)*FresnelS(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*Pi^(1
/2)/d^2/b^(1/2)-1/2*FresnelC(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*
sin(2*a/b)*Pi^(1/2)/d^2/b^(1/2)-c*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*a
rcsin(d*x+c))^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/d^2/b^(1/2)-c*FresnelS(2^(1/2
)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/d^2
/b^(1/2)
```

Rubi [A]

time = 0.33, antiderivative size = 211, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {4889, 4831, 6873, 6874, 3435, 3433, 3432, 3434}

$$-\frac{\sqrt{\pi}\,\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}\,\sqrt{b}}\right)}{2\sqrt{b}\,d^2}-\frac{\sqrt{2\pi}\,c\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}\,d^2}-\frac{\sqrt{2\pi}\,c\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}\,d^2}+\frac{\sqrt{\pi}\,\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\,\sqrt{\pi}}\right)}{2\sqrt{b}\,d^2}$$

Antiderivative was successfully verified.

```
[In] Int[x/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] -((c*Sqrt[2*Pi]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/
Sqrt[b]])/(Sqrt[b]*d^2)) + (Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqrt[a + b*Ar
cSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(2*Sqrt[b]*d^2) - (c*Sqrt[2*Pi]*Fresne
lS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(Sqrt[b]*d^2
) - (Sqrt[Pi]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*
Sin[(2*a)/b])/(2*Sqrt[b]*d^2)
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3434

```
Int[Sin[(c_) + (d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Dist[Sin[c], Int
[Cos[d*(e + f*x)^2], x], x] + Dist[Cos[c], Int[Sin[d*(e + f*x)^2], x], x] /
; FreeQ[{c, d, e, f}, x]
```

Rule 3435

```
Int[Cos[(c_) + (d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Dist[Cos[c], Int
[Cos[d*(e + f*x)^2], x], x] - Dist[Sin[c], Int[Sin[d*(e + f*x)^2], x], x] /
; FreeQ[{c, d, e, f}, x]
```

Rule 4831

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_.) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Dist[1/c^(m + 1), Subst[Int[(a + b*x)^n*Cos[x]*(c*d + e*Sin[x])^m
, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{x}{\sqrt{a+b\sin^{-1}(c+dx)}}\,dx = \frac{\text{Subst}\left(\int \frac{-\frac{c}{d}+\frac{x}{d}}{\sqrt{a+b\sin^{-1}(x)}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{\cos(x)\left(-\frac{c}{d}+\frac{\sin(x)}{d}\right)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{d}$$

$$= -\frac{2\text{Subst}\left(\int \cos\left(\frac{a-x^2}{b}\right)\left(c+\sin\left(\frac{a-x^2}{b}\right)\right)\,dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2}$$

$$= -\frac{2\text{Subst}\left(\int \cos\left(\frac{a}{b}-\frac{x^2}{b}\right)\left(c+\sin\left(\frac{a-x^2}{b}\right)\right)\,dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2}$$

$$= -\frac{2\text{Subst}\left(\int \left(c\cos\left(\frac{a}{b}-\frac{x^2}{b}\right)+\frac{1}{2}\sin\left(\frac{2a}{b}-\frac{2x^2}{b}\right)\right)\,dx, x, \sqrt{a+b\sin^{-1}(c+d}$$

$$= -\frac{\text{Subst}\left(\int \sin\left(\frac{2a}{b}-\frac{2x^2}{b}\right)\,dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2} - \frac{(2c)\text{Subst}\left(\int c\right.}{}$$

$$= -\frac{\left(2c\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \cos\left(\frac{x^2}{b}\right)\,dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd^2} + \frac{\cos\left(\frac{2a}{b}\right)}{}$$

$$= -\frac{c\sqrt{2\pi}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}\,d^2} + \frac{\sqrt{\pi}\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{c}}{}\right.}{2\sqrt{}}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.41, size = 224, normalized size = 1.06

$$\frac{\frac{ice^{-\frac{ia}{b}}\left(\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)-e^{\frac{2ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)}{\sqrt{a+b\text{ArcSin}(c+dx)}}+\sqrt{\frac{1}{b}}\sqrt{\pi}\left(\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}}\right)-\text{FresnelC}\left(\frac{2\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}}\right)\sin\left(\frac{2a}{b}\right)\right)}{2d^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] ((I*c*(Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((-I)*(a + b*ArcSi
n[c + d*x]))/b] - E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma
```

```
[1/2, (I*(a + b*ArcSin[c + d*x]))/b]))/(E^((I*a)/b)*Sqrt[a + b*ArcSin[c + d
*x]]) + Sqrt[b^(-1)]*Sqrt[Pi]*(Cos[(2*a)/b]*FresnelS[(2*Sqrt[b^(-1)]*Sqrt[a
 + b*ArcSin[c + d*x]])/Sqrt[Pi]] - FresnelC[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcS
in[c + d*x]])/Sqrt[Pi]]*Sin[(2*a)/b]))/(2*d^2)
```

Maple [A]
time = 0.36, size = 208, normalized size = 0.99

method	result
default	$\frac{\sqrt{\pi}\,\sqrt{2}\,\sqrt{-\frac{2}{b}}\left(2\cos\left(\frac{a}{b}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)\sqrt{-\frac{1}{b}}\,\sqrt{-\frac{2}{b}}\,bc-2\sin\left(\frac{a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{a+}}{\sqrt{}}\right.\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(a+b*arcsin(d*x+c))^(1/2),x,method=_RETURNVERBOSE)
```

```
[Out] 1/4/d^2*Pi^(1/2)*2^(1/2)*(-2/b)^(1/2)*(2*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)
/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)*(-2/b)^(1/2)*b*c-2*
sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b
)*(-1/b)^(1/2)*(-2/b)^(1/2)*b*c-cos(2*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-2/
b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)-sin(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2
)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(x/sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\sqrt{a + b \operatorname{asin}\left(c + dx\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] Integral(x/sqrt(a + b*asin(c + d*x)), x)
```

Giac [C] Result contains complex when optimal does not.
time = 0.59, size = 306, normalized size = 1.45

$$\frac{\sqrt{\pi} c \operatorname{erf}\left(-\frac{i \sqrt{2} \sqrt{b \arcsin\left(dx + c\right) + a}}{2 \sqrt{|b|}} - \frac{\sqrt{2} \sqrt{b \arcsin\left(dx + c\right) + a} \sqrt{|b|}}{2 b}\right) e^{\left(\frac{i a}{b}\right)}}{d^{2} \left(\frac{i \sqrt{2} b}{\sqrt{|b|}} + \sqrt{2} \sqrt{|b|}\right)} + \frac{\sqrt{\pi} c \operatorname{erf}\left(\frac{i \sqrt{2} \sqrt{b \arcsin\left(dx + c\right) + a}}{2 \sqrt{|b|}} - \frac{\sqrt{2} \sqrt{b \arcsin\left(dx + c\right) + a} \sqrt{|b|}}{2 b}\right) e^{\left(-\frac{i a}{b}\right)}}{d^{2} \left(-\frac{i \sqrt{2} b}{\sqrt{|b|}} + \sqrt{2} \sqrt{|b|}\right)} + \frac{i \sqrt{\pi} \operatorname{erf}\left(-\frac{\sqrt{b \arcsin\left(dx + c\right) + a}}{\sqrt{b}} + \frac{i \sqrt{b \arcsin\left(dx + c\right) + a} \sqrt{b}}{|b|}\right) e^{\left(-\frac{2 i a}{b}\right)}}{4 d^{2} \left(\sqrt{b} - \frac{i b^{\frac{3}{2}}}{|b|}\right)} - \frac{i \sqrt{\pi} \operatorname{erf}\left(-\frac{\sqrt{b \arcsin\left(dx + c\right) + a}}{\sqrt{b}} - \frac{i \sqrt{b \arcsin\left(dx + c\right) + a} \sqrt{b}}{|b|}\right) e^{\left(\frac{2 i a}{b}\right)}}{4 \sqrt{b} d^{2} \left(\frac{i b}{|b|} + 1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] sqrt(pi)*c*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/
2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(d^2*(I*sqr
t(2)*b/sqrt(abs(b)) + sqrt(2)*sqrt(abs(b)))) + sqrt(pi)*c*erf(1/2*I*sqrt(2)
*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x +
 c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(d^2*(-I*sqrt(2)*b/sqrt(abs(b)) + sqrt(
2)*sqrt(abs(b)))) + 1/4*I*sqrt(pi)*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b)
 + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(d^2*(sqrt(b)
 - I*b^(3/2)/abs(b))) - 1/4*I*sqrt(pi)*erf(-sqrt(b*arcsin(d*x + c) + a)/sqr
t(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/(sqrt(b)*d
^2*(I*b/abs(b) + 1))
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x}{\sqrt{a + b \operatorname{asin}\left(c + d\,x\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(a + b*asin(c + d*x))^(1/2),x)
```

```
[Out] int(x/(a + b*asin(c + d*x))^(1/2), x)
```

3.165 $\int \frac{1}{\sqrt{a+b\mathbf{ArcSin}(c+dx)}}\,dx$

Optimal. Leaf size=105

$$\frac{\sqrt{2\pi}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}\,d}+\frac{\sqrt{2\pi}\,S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)\sin\left(\frac{a}{b}\right)}{\sqrt{b}\,d}$$

```
[Out] cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*2^(1/
2)*Pi^(1/2)/d/b^(1/2)+FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b
^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/d/b^(1/2)
```

Rubi [A]
time = 0.09, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {4887, 4719, 3387, 3386, 3432, 3385, 3433}

$$\frac{\sqrt{2\pi}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}\,d}+\frac{\sqrt{2\pi}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}\,d}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (Sqrt[2*Pi]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt
[b]])/(Sqrt[b]*d) + (Sqrt[2*Pi]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c +
d*x]])/Sqrt[b]]*Sin[a/b])/(Sqrt[b]*d)
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4719

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[-a/b + x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c
, n}, x]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\int \frac{1}{\sqrt{a+b\sin^{-1}(c+dx)}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\sqrt{a+b\sin^{-1}(x)}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}-\frac{x}{b}\right)}{\sqrt{x}}\,dx, x, a+b\sin^{-1}(c+dx)\right)}{bd}$$

$$= \frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\cos\left(\frac{x}{b}\right)}{\sqrt{x}}\,dx, x, a+b\sin^{-1}(c+dx)\right)}{bd} + \frac{\sin\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\sin\left(\frac{x}{b}\right)}{\sqrt{x}}\,d\right.}{}$$

$$= \frac{\left(2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \cos\left(\frac{x^2}{b}\right)\,dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd} + \frac{\left(2\sin\left(\frac{a}{b}\right)\right)\text{S}}{}$$

$$= \frac{\sqrt{2\pi}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}\,d} + \frac{\sqrt{2\pi}\,S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin}}{\sqrt{b}}\right.}{\sqrt{b}\,d}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.07, size = 131, normalized size = 1.25

$$\frac{ie^{-\frac{ia}{b}}\left(-\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2}, -\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right) + e^{\frac{2ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2}, \frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)}{2d\sqrt{a+b\text{ArcSin}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] ((I/2)*(-(Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((-I)*(a + b*Ar
cSin[c + d*x]))/b]) + E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*G
amma[1/2, (I*(a + b*ArcSin[c + d*x]))/b]))/(d*E^((I*a)/b)*Sqrt[a + b*ArcSin
[c + d*x]])
```

Maple [A]
time = 0.16, size = 94, normalized size = 0.90

method	result

default	$\frac{\sqrt{2}\,\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\left(\cos\left(\frac{a}{b}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)-\sin\left(\frac{a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right.}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right.\right.}{d}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c))^(1/2),x,method=_RETURNVERBOSE)
```

```
[Out] 2^(1/2)*Pi^(1/2)*(-1/b)^(1/2)*(cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1
/2)*(a+b*arcsin(d*x+c))^(1/2)/b)-sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b)^
(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b))/d
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a+b\,\mathrm{asin}\left(c+dx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] Integral(1/sqrt(a + b*asin(c + d*x)), x)
```

Giac [C] Result contains complex when optimal does not.
time = 0.53, size = 167, normalized size = 1.59

$$-\frac{\sqrt{\pi}\,\mathrm{erf}\left(-\frac{i\sqrt{2}\,\sqrt{b\arcsin\left(dx+c\right)+a}}{2\sqrt{|b|}}-\frac{\sqrt{2}\,\sqrt{b\arcsin\left(dx+c\right)+a}\,\sqrt{|b|}}{2b}\right)e^{\left(\frac{ia}{b}\right)}}{d\left(\frac{i\sqrt{2}\,b}{\sqrt{|b|}}+\sqrt{2}\,\sqrt{|b|}\right)}-\frac{\sqrt{\pi}\,\mathrm{erf}\left(\frac{i\sqrt{2}\,\sqrt{b\arcsin\left(dx+c\right)+a}}{2\sqrt{|b|}}-\frac{\sqrt{2}\,\sqrt{b\arcsin\left(dx+c\right)+a}\,\sqrt{|b|}}{2b}\right)e^{\left(-\frac{ia}{b}\right)}}{d\left(-\frac{i\sqrt{2}\,b}{\sqrt{|b|}}+\sqrt{2}\,\sqrt{|b|}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] -sqrt(pi)*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2
*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(d*(I*sqrt(2
)*b/sqrt(abs(b)) + sqrt(2)*sqrt(abs(b)))) - sqrt(pi)*erf(1/2*I*sqrt(2)*sqrt
(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) +
 a)*sqrt(abs(b))/b)*e^(-I*a/b)/(d*(-I*sqrt(2)*b/sqrt(abs(b)) + sqrt(2)*sqrt
(abs(b))))
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\sqrt{a+b\,\mathrm{asin}\left(c+d\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(c + d*x))^(1/2),x)
```

```
[Out] int(1/(a + b*asin(c + d*x))^(1/2), x)
```

3.166 $\int \frac{x}{(a+b\textbf{ArcSin}(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=287

$$\frac{2c\sqrt{1-(c+dx)^2}}{bd^2\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{2(c+dx)\sqrt{1-(c+dx)^2}}{bd^2\sqrt{a+b\text{ArcSin}(c+dx)}}+\frac{2\sqrt{\pi}\,\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx}}{\sqrt{b}\,\sqrt{\pi}}\right.}{b^{3/2}d^2}$$

```
[Out] 2*cos(2*a/b)*FresnelC(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*Pi^(1/2
)/b^(3/2)/d^2+2*FresnelS(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*sin(
2*a/b)*Pi^(1/2)/b^(3/2)/d^2+2*c*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arc
sin(d*x+c))^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/b^(3/2)/d^2-2*c*FresnelC(2^(1/2
)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/b^(
3/2)/d^2+2*c*(1-(d*x+c)^2)^(1/2)/b/d^2/(a+b*arcsin(d*x+c))^(1/2)-2*(d*x+c)*
(1-(d*x+c)^2)^(1/2)/b/d^2/(a+b*arcsin(d*x+c))^(1/2)
```

Rubi [A]
time = 0.36, antiderivative size = 287, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 10, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.625$, Rules used = {4889, 4829, 4717, 4809, 3387, 3386, 3432, 3385, 3433, 4727}

$$-\frac{2\sqrt{2\pi}\,c\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d^2}+\frac{2\sqrt{\pi}\,\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}\,\sqrt{b}}\right)}{b^{3/2}d^2}+\frac{2\sqrt{\pi}\,\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\,\sqrt{\pi}}\right)}{b^{3/2}d^2}+\frac{2\sqrt{2\pi}\,c\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d^2}+\frac{2c\sqrt{1-(c+dx)^2}}{bd^2\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{2(c+dx)\sqrt{1-(c+dx)^2}}{bd^2\sqrt{a+b\text{ArcSin}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[x/(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (2*c*Sqrt[1 - (c + d*x)^2])/(b*d^2*Sqrt[a + b*ArcSin[c + d*x]]) - (2*(c + d
*x)*Sqrt[1 - (c + d*x)^2])/(b*d^2*Sqrt[a + b*ArcSin[c + d*x]]) + (2*Sqrt[Pi
]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]
)/(b^(3/2)*d^2) + (2*c*Sqrt[2*Pi]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*
ArcSin[c + d*x]])/Sqrt[b]])/(b^(3/2)*d^2) - (2*c*Sqrt[2*Pi]*FresnelC[(Sqrt[
2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(b^(3/2)*d^2) + (2*Sq
rt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*
a)/b])/(b^(3/2)*d^2)
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4717

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[Sqrt[1 - c^2
*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + Dist[c/(b*(n + 1)),
 Int[x*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4727

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] - Dist
[1/(b^2*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[x^(n + 1), Sin[-a/b
+ x/b]^(m - 1)*(m - (m + 1)*Sin[-a/b + x/b]^2), x], x], x, a + b*ArcSin[c*x
]], x] /; FreeQ[{a, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4809

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[(1/(b*c^(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x
^2)^p], Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b]^(2*p + 1), x], x, a
 + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0]
&& IGtQ[2*p + 2, 0] && IGtQ[m, 0]
```

Rule 4829

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_))^(m_.), x_Sy
mbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*ArcSin[c*x])^n, x], x] /; F
reeQ[{a, b, c, d, e}, x] && IGtQ[m, 0] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{x}{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{-\frac{c}{d}+\frac{x}{d}}{\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \left(-\frac{c}{d\left(a+b\sin^{-1}(x)\right)^{3/2}}+\frac{x}{d\left(a+b\sin^{-1}(x)\right)^{3/2}}\right)\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{x}{\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx, x, c+dx\right)}{d^2} - \frac{c\text{Subst}\left(\int \frac{1}{\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx, x, c+\right.}{d^2}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{bd^2\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{bd^2\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{2\text{Subst}\left(\int \frac{\cos(2}{\sqrt{a+}}\right.}{}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{bd^2\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{bd^2\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{(2c)\text{Subst}\left(\int \frac{\text{s}}{\sqrt{a}}\right.}{}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{bd^2\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{bd^2\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{\left(2c\cos\left(\frac{a}{b}\right)\right)\text{Subs}}{}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{bd^2\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{bd^2\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{2\sqrt{\pi}\cos\left(\frac{2a}{b}\right)C}{}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{bd^2\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{bd^2\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{2\sqrt{\pi}\cos\left(\frac{2a}{b}\right)C}{}$$

<u>Mathematica</u> [C] Result contains complex when optimal does not.
time = 1.47, size = 287, normalized size = 1.00

$$\frac{2\left(\frac{1}{b}\right)^{3/2}\sqrt{\pi}\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}}\right)+\frac{ce^{-i\text{ArcSin}(c+dx)}+ce^{i\text{ArcSin}(c+dx)}-ce^{-\frac{ia}{b}}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)-ce^{\frac{ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)+2\sqrt{\frac{1}{b}}\sqrt{\pi}\sqrt{a+b\text{ArcSin}(c+dx)}\,S\left(\frac{2\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}}\right)\sin\left(\frac{2a}{b}\right)-\sin(2\text{ArcSin}(c+dx))}{b\sqrt{a+b\text{ArcSin}(c+dx)}}}{d^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (2*(b^(-1))^(3/2)*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[b^(-1)]*Sqrt[a + b
*ArcSin[c + d*x]])/Sqrt[Pi]] + (c/E^(I*ArcSin[c + d*x]) + c*E^(I*ArcSin[c +
 d*x]) - (c*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((-I)*(a + b*
ArcSin[c + d*x]))/b])/E^((I*a)/b) - c*E^((I*a)/b)*Sqrt[(I*(a + b*ArcSin[c +
 d*x]))/b]*Gamma[1/2, (I*(a + b*ArcSin[c + d*x]))/b] + 2*Sqrt[b^(-1)]*Sqrt[
Pi]*Sqrt[a + b*ArcSin[c + d*x]]*FresnelS[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[
c + d*x]])/Sqrt[Pi]]*Sin[(2*a)/b] - Sin[2*ArcSin[c + d*x]])/(b*Sqrt[a + b*A
rcSin[c + d*x]]))/d^2
```

Maple [A]
time = 0.46, size = 326, normalized size = 1.14

method	result
default	$\frac{-2\sqrt{\pi}\,\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}\,\cos\left(\frac{a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)\sqrt{-\frac{1}{b}}\,c-2\sqrt{\pi}\,\sqrt{2}\,\sqrt{a}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(a+b*arcsin(d*x+c))^(3/2),x,method=_RETURNVERBOSE)
```

```
[Out] 1/d^2/b*(-2*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelS(2^
(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)*c-2*P
i^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2
)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)*c+Pi^(1/2)*2^(1/2)
*(a+b*arcsin(d*x+c))^(1/2)*cos(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1
/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-2/b)^(1/2)-Pi^(1/2)*2^(1/2)*(a+b*arcsin(
d*x+c))^(1/2)*sin(2*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcs
in(d*x+c))^(1/2)/b)*(-2/b)^(1/2)+2*cos(-(a+b*arcsin(d*x+c))/b+a/b)*c+sin(-2
*(a+b*arcsin(d*x+c))/b+2*a/b))/(a+b*arcsin(d*x+c))^(1/2)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(x/(b*arcsin(d*x + c) + a)^(3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{(a+b\operatorname{asin}(c+dx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] Integral(x/(a + b*asin(c + d*x))**(3/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(x/(b*arcsin(d*x + c) + a)^(3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x}{(a+b\operatorname{asin}(c+d\,x))^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(a + b*asin(c + d*x))^(3/2),x)
```

```
[Out] int(x/(a + b*asin(c + d*x))^(3/2), x)
```

3.167 $\int \frac{1}{(a+b\textbf{ArcSin}(c+dx))^{3/2}} dx$

Optimal. Leaf size=144

$$-\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{2\sqrt{2\pi}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}+\frac{2\sqrt{2\pi}\,\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{\ldots}}{\ldots}\right)}{\ldots}$$

```
[Out] -2*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*2^
(1/2)*Pi^(1/2)/b^(3/2)/d+2*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1
/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/b^(3/2)/d-2*(1-(d*x+c)^2)^(1/2)/b/d/
(a+b*arcsin(d*x+c))^(1/2)
```

Rubi [A]

time = 0.18, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.571$, Rules used = {4887, 4717, 4809, 3387, 3386, 3432, 3385, 3433}

$$\frac{2\sqrt{2\pi}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}-\frac{2\sqrt{2\pi}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}-\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\text{ArcSin}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(-3/2),x]
```

```
[Out] (-2*Sqrt[1 - (c + d*x)^2])/(b*d*Sqrt[a + b*ArcSin[c + d*x]]) - (2*Sqrt[2*Pi
]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(b^(
3/2)*d) + (2*Sqrt[2*Pi]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/S
qrt[b]]*Sin[a/b])/(b^(3/2)*d)
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4717

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[Sqrt[1 - c^2
*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + Dist[c/(b*(n + 1)),
 Int[x*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4809

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[(1/(b*c^(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x
^2)^p], Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b]^(2*p + 1), x], x, a
 + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0]
&& IGtQ[2*p + 2, 0] && IGtQ[m, 0]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{2\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\sqrt{a+b\sin^{-1}(x)}}\,dx, x,\right.}{bd}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{2\text{Subst}\left(\int \frac{\sin(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{bd}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{\left(2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c\right.}{bd}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{\left(4\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \sin\left(\frac{x^2}{b}\right)\,dx, x, \sqrt{a+b}\right.}{b^2 d}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{2\sqrt{2\pi}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx}}{\sqrt{b}}\right.}{b^{3/2}d}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.19, size = 185, normalized size = 1.28

$$\frac{e^{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\left(e^{i\text{ArcSin}(c+dx)}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)+e^{\frac{ia}{b}}\left(-1-e^{2i\text{ArcSin}(c+dx)}+e^{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)\right)}{bd\sqrt{a+b\text{ArcSin}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(-3/2),x]
```

```
[Out] (E^(I*ArcSin[c + d*x])*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((
-I)*(a + b*ArcSin[c + d*x]))/b] + E^((I*a)/b)*(-1 - E^((2*I)*ArcSin[c + d*x
]) + E^((I*(a + b*ArcSin[c + d*x]))/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*
Gamma[1/2, (I*(a + b*ArcSin[c + d*x]))/b]))/(b*d*E^((I*(a + b*ArcSin[c + d*
x]))/b)*Sqrt[a + b*ArcSin[c + d*x]])
```

Maple [A]
time = 0.25, size = 170, normalized size = 1.18

method	result
default	$-\frac{2\left(-\sqrt{a+b\arcsin\left(dx+c\right)}\,\cos\left(\frac{a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)\sqrt{-\frac{1}{b}}\,\sqrt{\pi}\,\sqrt{2}-\sqrt{a+b\arcsi}}{db\sqrt{a+b\arcs}}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c))^(3/2),x,method=_RETURNVERBOSE)
```

```
[Out] -2/d/b/(a+b*arcsin(d*x+c))^(1/2)*(-(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*Fresn
elS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)
*Pi^(1/2)*2^(1/2)-(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1
/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)*Pi^(1/2)*2^(1/2)
+cos(-(a+b*arcsin(d*x+c))/b+a/b))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(-3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\,\mathrm{asin}\left(c+dx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**(-3/2), x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(-3/2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(c + d*x))^(3/2),x)
```

```
[Out] int(1/(a + b*asin(c + d*x))^(3/2), x)
```

3.168 $\int \frac{x}{(a+b\mathbf{ArcSin}(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=384

$$\frac{2c\sqrt{1-(c+dx)^2}}{3bd^2(a+b\text{ArcSin}(c+dx))^{3/2}}-\frac{2(c+dx)\sqrt{1-(c+dx)^2}}{3bd^2(a+b\text{ArcSin}(c+dx))^{3/2}}-\frac{4}{3b^2d^2\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{4c(c}{3b^2d^2\sqrt{a+b\text{A}}}$$

```
[Out] -8/3*cos(2*a/b)*FresnelS(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*Pi^(
1/2)/b^(5/2)/d^2+8/3*FresnelC(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))
*sin(2*a/b)*Pi^(1/2)/b^(5/2)/d^2+4/3*c*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)*(
a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/b^(5/2)/d^2+4/3*c*Fresne
lS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^
(1/2)/b^(5/2)/d^2+2/3*c*(1-(d*x+c)^2)^(1/2)/b/d^2/(a+b*arcsin(d*x+c))^(3/2)
-2/3*(d*x+c)*(1-(d*x+c)^2)^(1/2)/b/d^2/(a+b*arcsin(d*x+c))^(3/2)-4/3/b^2/d^
2/(a+b*arcsin(d*x+c))^(1/2)-4/3*c*(d*x+c)/b^2/d^2/(a+b*arcsin(d*x+c))^(1/2)
+8/3*(d*x+c)^2/b^2/d^2/(a+b*arcsin(d*x+c))^(1/2)
```

Rubi [A]

time = 0.62, antiderivative size = 384, normalized size of antiderivative = 1.00, number of steps used = 22, number of rules used = 15, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.938$, Rules used = {4889, 4829, 4717, 4807, 4719, 3387, 3386, 3432, 3385, 3433, 4729, 4731, 4491, 12, 4737}

$$\frac{8\sqrt{\pi}\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{3b^{5/2}d^2}+\frac{4\sqrt{2\pi}\,c\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d^2}+\frac{4\sqrt{2\pi}\,c\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d^2}-\frac{8\sqrt{\pi}\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{3b^{5/2}d^2}+\frac{8(c+dx)^2}{3b^2d^2\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{4c(c+dx)}{3b^2d^2\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{4}{3b^2d^2\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{2\sqrt{1-(c+dx)^2}(c+dx)}{3bd^2(a+b\text{ArcSin}(c+dx))^{3/2}}+\frac{2c\sqrt{1-(c+dx)^2}}{3bd^2(a+b\text{ArcSin}(c+dx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[x/(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] (2*c*Sqrt[1 - (c + d*x)^2])/(3*b*d^2*(a + b*ArcSin[c + d*x])^(3/2)) - (2*(c
 + d*x)*Sqrt[1 - (c + d*x)^2])/(3*b*d^2*(a + b*ArcSin[c + d*x])^(3/2)) - 4/
(3*b^2*d^2*Sqrt[a + b*ArcSin[c + d*x]]) - (4*c*(c + d*x))/(3*b^2*d^2*Sqrt[a
 + b*ArcSin[c + d*x]]) + (8*(c + d*x)^2)/(3*b^2*d^2*Sqrt[a + b*ArcSin[c + d
*x]]) + (4*c*Sqrt[2*Pi]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c +
 d*x]])/Sqrt[b]])/(3*b^(5/2)*d^2) - (8*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sq
rt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(3*b^(5/2)*d^2) + (4*c*Sqrt
[2*Pi]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])
/(3*b^(5/2)*d^2) + (8*Sqrt[Pi]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sq
rt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(3*b^(5/2)*d^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4717

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[Sqrt[1 - c^2
*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + Dist[c/(b*(n + 1)),
 Int[x*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4719

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[-a/b + x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c
```

```
, n}, x]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + (Dis
t[c*((m + 1)/(b*(n + 1))), Int[x^(m + 1)*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[
1 - c^2*x^2]), x], x] - Dist[m/(b*c*(n + 1)), Int[x^(m - 1)*((a + b*ArcSin[
c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4829

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_))^(m_.), x_Sy
mbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*ArcSin[c*x])^n, x], x] /; F
reeQ[{a, b, c, d, e}, x] && IGtQ[m, 0] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{x}{\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{-\frac{c}{d}+\frac{x}{d}}{\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \left(-\frac{c}{d\left(a+b\sin^{-1}(x)\right)^{5/2}}+\frac{x}{d\left(a+b\sin^{-1}(x)\right)^{5/2}}\right)\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{x}{\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx, x, c+dx\right)}{d^2} - \frac{c\text{Subst}\left(\int \frac{1}{\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx, x, c\right.}{d^2}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{2\text{Subst}\left(\int\right.}{}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{}{3b^2d^2\sqrt{a+}}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{}{3b^2d^2\sqrt{a+}}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{}{3b^2d^2\sqrt{a+}}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{}{3b^2d^2\sqrt{a+}}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{}{3b^2d^2\sqrt{a+}}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{}{3b^2d^2\sqrt{a+}}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{3bd^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{}{3b^2d^2\sqrt{a+}}$$

Mathematica [C] Result contains complex when optimal does not.
time = 1.79, size = 392, normalized size = 1.02

$$\frac{-4a\cos(2\text{ArcSin}(c+dx))-4b\text{ArcSin}(c+dx)\cos(2\text{ArcSin}(c+dx))-8\sqrt{\frac{1}{b}}\sqrt{\pi}(a+b\text{ArcSin}(c+dx))^{3/2}\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}}\right)+2bce^{-\frac{ia}{b}}\left(-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)+ce^{-i\text{ArcSin}(c+dx)}\left(-2ia+b+2iae^{2i\text{ArcSin}(c+dx)}+be^{2i\text{ArcSin}(c+dx)}+2ib\left(-1+e^{2i\text{ArcSin}(c+dx)}\right)\text{ArcSin}(c+dx)+2be^{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\left(\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)+8\sqrt{\frac{1}{b}}\sqrt{\pi}(a+b\text{ArcSin}(c+dx))^{3/2}\text{FresnelC}\left(\frac{2\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}}\right)\sin\left(\frac{2a}{b}\right)-b\sin(2\text{ArcSin}(c+dx))}{3b^2d^2(a+b\text{ArcSin}(c+dx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] (-4*a*Cos[2*ArcSin[c + d*x]] - 4*b*ArcSin[c + d*x]*Cos[2*ArcSin[c + d*x]] -
 8*Sqrt[b^(-1)]*Sqrt[Pi]*(a + b*ArcSin[c + d*x])^(3/2)*Cos[(2*a)/b]*Fresnel
S[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi]] + (2*b*c*(((-I)*(a
 + b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1/2, ((-I)*(a + b*ArcSin[c + d*x]))/b
])/E^((I*a)/b) + (c*((-2*I)*a + b + (2*I)*a*E^((2*I)*ArcSin[c + d*x]) + b*E
^((2*I)*ArcSin[c + d*x]) + (2*I)*b*(-1 + E^((2*I)*ArcSin[c + d*x]))*ArcSin[
c + d*x] + 2*b*E^((I*(a + b*ArcSin[c + d*x]))/b)*((I*(a + b*ArcSin[c + d*x]
))/b)^(3/2)*Gamma[1/2, (I*(a + b*ArcSin[c + d*x]))/b]))/E^(I*ArcSin[c + d*x
]) + 8*Sqrt[b^(-1)]*Sqrt[Pi]*(a + b*ArcSin[c + d*x])^(3/2)*FresnelC[(2*Sqrt
[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi]]*Sin[(2*a)/b] - b*Sin[2*ArcS
in[c + d*x]])/(3*b^2*d^2*(a + b*ArcSin[c + d*x])^(3/2))
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 737 vs. 2(312) = 624.
time = 0.49, size = 738, normalized size = 1.92

method	result
default	$-\frac{-4\arcsin(dx+c)\sqrt{\pi}\,\sqrt{2}\,\sqrt{a+b\arcsin(dx+c)}\,\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)\sqrt{-\frac{1}{b}}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(a+b*arcsin(d*x+c))^(5/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/3/d^2/b^2*(-4*arcsin(d*x+c)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*c
os(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)
*(-1/b)^(1/2)*b*c+4*arcsin(d*x+c)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2
)*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)
/b)*(-1/b)^(1/2)*b*c-4*arcsin(d*x+c)*2^(1/2)*Pi^(1/2)*(-2/b)^(1/2)*(a+b*arc
sin(d*x+c))^(1/2)*cos(2*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*
arcsin(d*x+c))^(1/2)/b)*b-4*arcsin(d*x+c)*2^(1/2)*Pi^(1/2)*(-2/b)^(1/2)*(a+
b*arcsin(d*x+c))^(1/2)*sin(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*
(a+b*arcsin(d*x+c))^(1/2)/b)*b-4*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)
*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/
b)*(-1/b)^(1/2)*a*c+4*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*F
```

```
resnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(
1/2)*a*c-4*2^(1/2)*Pi^(1/2)*(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(2*a/
b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*a-
4*2^(1/2)*Pi^(1/2)*(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(2*a/b)*Fresne
lC(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*a-4*arcsin(
d*x+c)*sin(-(a+b*arcsin(d*x+c))/b+a/b)*b*c+4*arcsin(d*x+c)*cos(-2*(a+b*arcs
in(d*x+c))/b+2*a/b)*b-2*cos(-(a+b*arcsin(d*x+c))/b+a/b)*b*c-4*sin(-(a+b*arc
sin(d*x+c))/b+a/b)*a*c-sin(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*b+4*cos(-2*(a+b*
arcsin(d*x+c))/b+2*a/b)*a)/(a+b*arcsin(d*x+c))^(3/2)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(x/(b*arcsin(d*x + c) + a)^(5/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\left(a + b \operatorname{asin}\left(c + d x\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*asin(d*x+c))**(5/2),x)
```

```
[Out] Integral(x/(a + b*asin(c + d*x))**(5/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(x/(b*arcsin(d*x + c) + a)^(5/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x}{(a+b\,\mathrm{asin}\,(c+d\,x))^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(a + b*asin(c + d*x))^(5/2),x)
```

```
[Out] int(x/(a + b*asin(c + d*x))^(5/2), x)
```

3.169 $\int \frac{1}{(a+b\mathbf{ArcSin}(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=179

$$-\frac{2\sqrt{1-(c+dx)^2}}{3bd(a+b\text{ArcSin}(c+dx))^{3/2}}+\frac{4(c+dx)}{3b^2d\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{4\sqrt{2\pi}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcS}}}{\sqrt{b}}\right.}{3b^{5/2}d}$$

```
[Out] -4/3*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*
2^(1/2)*Pi^(1/2)/b^(5/2)/d-4/3*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c)
)^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/b^(5/2)/d-2/3*(1-(d*x+c)^2)^(1/2
)/b/d/(a+b*arcsin(d*x+c))^(3/2)+4/3*(d*x+c)/b^2/d/(a+b*arcsin(d*x+c))^(1/2)
```

Rubi [A]
time = 0.21, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 9, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.643$, Rules used = {4887, 4717, 4807, 4719, 3387, 3386, 3432, 3385, 3433}

$$-\frac{4\sqrt{2\pi}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d}-\frac{4\sqrt{2\pi}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d}+\frac{4(c+dx)}{3b^2d\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{2\sqrt{1-(c+dx)^2}}{3bd(a+b\text{ArcSin}(c+dx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(-5/2),x]
```

```
[Out] (-2*Sqrt[1 - (c + d*x)^2])/(3*b*d*(a + b*ArcSin[c + d*x])^(3/2)) + (4*(c +
d*x))/(3*b^2*d*Sqrt[a + b*ArcSin[c + d*x]]) - (4*Sqrt[2*Pi]*Cos[a/b]*Fresne
lC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(3*b^(5/2)*d) - (4*Sq
rt[2*Pi]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b
])/(3*b^(5/2)*d)
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4717

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[Sqrt[1 - c^2
*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + Dist[c/(b*(n + 1)),
 Int[x*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4719

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[-a/b + x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c
, n}, x]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\int \frac{1}{(a+b\sin^{-1}(c+dx))^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{(a+b\sin^{-1}(x))^{5/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{3bd\,(a+b\sin^{-1}(c+dx))^{3/2}} - \frac{2\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\,(a+b\sin^{-1}(x))^{3/2}}\,dx, x, c\right.}{3bd}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{3bd\,(a+b\sin^{-1}(c+dx))^{3/2}} + \frac{4(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{4\text{Subst}\left(\int\right.}{}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{3bd\,(a+b\sin^{-1}(c+dx))^{3/2}} + \frac{4(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{4\text{Subst}\left(\int\right.}{}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{3bd\,(a+b\sin^{-1}(c+dx))^{3/2}} + \frac{4(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{\left(4\cos\left(\frac{a}{b}\right)\right)}{}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{3bd\,(a+b\sin^{-1}(c+dx))^{3/2}} + \frac{4(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{\left(8\cos\left(\frac{a}{b}\right)\right)}{}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{3bd\,(a+b\sin^{-1}(c+dx))^{3/2}} + \frac{4(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{4\sqrt{2\pi}\cos(}{}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.65, size = 238, normalized size = 1.33

$$\frac{e^{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\left(-2be^{i\text{ArcSin}(c+dx)}\left(-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)-ie^{\frac{ia}{b}}\left(2a\left(-1+e^{2i\text{ArcSin}(c+dx)}\right)+b\left(-i-2\text{ArcSin}(c+dx)+e^{2i\text{ArcSin}(c+dx)}(-i+2\text{ArcSin}(c+dx))\right)\right)-2ibe^{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\left(\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)\right)}{3b^2d(a+b\text{ArcSin}(c+dx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(-5/2),x]
```

```
[Out] (-2*b*E^(I*ArcSin[c + d*x])*(((-I)*(a + b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[
1/2, ((-I)*(a + b*ArcSin[c + d*x]))/b] - I*E^((I*a)/b)*(2*a*(-1 + E^((2*I)*
ArcSin[c + d*x])) + b*(-I - 2*ArcSin[c + d*x] + E^((2*I)*ArcSin[c + d*x])*(
```

```
-I + 2*ArcSin[c + d*x])) - (2*I)*b*E^((I*(a + b*ArcSin[c + d*x]))/b)*((I*(a
 + b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1/2, (I*(a + b*ArcSin[c + d*x]))/b]))
/(3*b^2*d*E^((I*(a + b*ArcSin[c + d*x]))/b)*(a + b*ArcSin[c + d*x])^(3/2))
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 369 vs. $2(145) = 290$.
time = 0.28, size = 370, normalized size = 2.07

method	result
default	$-\frac{2\left(2\arcsin(dx+c)\sqrt{a+b\arcsin\left(dx+c\right)}\,\cos\left(\frac{a}{b}\right)\operatorname{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)\sqrt{2}\,\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c))^(5/2),x,method=_RETURNVERBOSE)
```

```
[Out] -2/3/d/b^2*(2*arcsin(d*x+c)*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelC(2^(
1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*Pi^(1/2)*(-
1/b)^(1/2)*b-2*arcsin(d*x+c)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelS(2^
(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*Pi^(1/2)*(
-1/b)^(1/2)*b+2*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2
)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*Pi^(1/2)*(-1/b)^(1/2)*a
-2*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2
)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*Pi^(1/2)*(-1/b)^(1/2)*a+2*sin(-(a+b*
arcsin(d*x+c))/b+a/b)*arcsin(d*x+c)*b+cos(-(a+b*arcsin(d*x+c))/b+a/b)*b+2*s
in(-(a+b*arcsin(d*x+c))/b+a/b)*a)/(a+b*arcsin(d*x+c))^(3/2)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(-5/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >> Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a + b \operatorname{asin}(c + dx))^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c))**(5/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**(-5/2), x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(-5/2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{(a + b \operatorname{asin}(c + d\,x))^{5/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(c + d*x))^(5/2),x)
```

```
[Out] int(1/(a + b*asin(c + d*x))^(5/2), x)
```

3.170 $\int \frac{x}{(a+b\textbf{ArcSin}(c+dx))^{7/2}}\,dx$

Optimal. Leaf size=468

$$\frac{2c\sqrt{1-(c+dx)^2}}{5bd^2(a+b\text{ArcSin}(c+dx))^{5/2}}-\frac{2(c+dx)\sqrt{1-(c+dx)^2}}{5bd^2(a+b\text{ArcSin}(c+dx))^{5/2}}-\frac{4}{15b^2d^2(a+b\text{ArcSin}(c+dx))^{3/2}}-\frac{4}{15b^2d^2(a+$$

```
[Out] -4/15/b^2/d^2/(a+b*arcsin(d*x+c))^(3/2)-4/15*c*(d*x+c)/b^2/d^2/(a+b*arcsin(
d*x+c))^(3/2)+8/15*(d*x+c)^2/b^2/d^2/(a+b*arcsin(d*x+c))^(3/2)-32/15*cos(2*
a/b)*FresnelC(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*Pi^(1/2)/b^(7/2
)/d^2-32/15*FresnelS(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*sin(2*a/
b)*Pi^(1/2)/b^(7/2)/d^2-8/15*c*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcs
in(d*x+c))^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/b^(7/2)/d^2+8/15*c*FresnelC(2^(1
/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/b
^(7/2)/d^2+2/5*c*(1-(d*x+c)^2)^(1/2)/b/d^2/(a+b*arcsin(d*x+c))^(5/2)-2/5*(d
*x+c)*(1-(d*x+c)^2)^(1/2)/b/d^2/(a+b*arcsin(d*x+c))^(5/2)-8/15*c*(1-(d*x+c)
^2)^(1/2)/b^3/d^2/(a+b*arcsin(d*x+c))^(1/2)+32/15*(d*x+c)*(1-(d*x+c)^2)^(1/
2)/b^3/d^2/(a+b*arcsin(d*x+c))^(1/2)
```

Rubi [A]
time = 0.71, antiderivative size = 468, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 13, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.812$, Rules used = {4889, 4829, 4717, 4807, 4809, 3387, 3386, 3432, 3385, 3433, 4729, 4727, 4737}

$$\frac{8\sqrt{2\pi}c\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{15b^{7/2}d^2}-\frac{32\sqrt{\pi}\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{15b^{7/2}d^2}-\frac{32\sqrt{\pi}\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{15b^{7/2}d^2}-\frac{8\sqrt{2\pi}c\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{15b^{7/2}d^2}+\frac{32\sqrt{1-(c+dx)^2}(c+dx)}{15b^3d^2\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{8c\sqrt{1-(c+dx)^2}}{15b^3d^2\sqrt{a+b\text{ArcSin}(c+dx)}}+\frac{8(c+dx)^2}{15b^2d^2(a+b\text{ArcSin}(c+dx))^{3/2}}-\frac{4c(c+dx)}{15b^2d^2(a+b\text{ArcSin}(c+dx))^{3/2}}-\frac{4}{15b^2d^2(a+b\text{ArcSin}(c+dx))^{3/2}}-\frac{2\sqrt{1-(c+dx)^2}(c+dx)}{5bd^2(a+b\text{ArcSin}(c+dx))^{5/2}}+\frac{2c\sqrt{1-(c+dx)^2}}{5bd^2(a+b\text{ArcSin}(c+dx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[x/(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] (2*c*Sqrt[1 - (c + d*x)^2])/(5*b*d^2*(a + b*ArcSin[c + d*x])^(5/2)) - (2*(c
 + d*x)*Sqrt[1 - (c + d*x)^2])/(5*b*d^2*(a + b*ArcSin[c + d*x])^(5/2)) - 4/
(15*b^2*d^2*(a + b*ArcSin[c + d*x])^(3/2)) - (4*c*(c + d*x))/(15*b^2*d^2*(a
 + b*ArcSin[c + d*x])^(3/2)) + (8*(c + d*x)^2)/(15*b^2*d^2*(a + b*ArcSin[c
+ d*x])^(3/2)) - (8*c*Sqrt[1 - (c + d*x)^2])/(15*b^3*d^2*Sqrt[a + b*ArcSin[
c + d*x]]) + (32*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(15*b^3*d^2*Sqrt[a + b*Ar
cSin[c + d*x]]) - (32*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*ArcSin[c
 + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(15*b^(7/2)*d^2) - (8*c*Sqrt[2*Pi]*Cos[a/b]*
FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(15*b^(7/2)*d^2
) + (8*c*Sqrt[2*Pi]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[
b]]*Sin[a/b])/(15*b^(7/2)*d^2) - (32*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin
[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(15*b^(7/2)*d^2)
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4717

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[Sqrt[1 - c^2
*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + Dist[c/(b*(n + 1)),
 Int[x*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4727

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] - Dist
[1/(b^2*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[x^(n + 1), Sin[-a/b
+ x/b]^(m - 1)*(m - (m + 1)*Sin[-a/b + x/b]^2), x], x], x, a + b*ArcSin[c*x
]], x] /; FreeQ[{a, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + (Dis
```

```
t[c*((m + 1)/(b*(n + 1))), Int[x^(m + 1)*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[
1 - c^2*x^2]), x], x] - Dist[m/(b*c*(n + 1)), Int[x^(m - 1)*((a + b*ArcSin[
c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4809

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[(1/(b*c^(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x
^2)^p], Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b]^(2*p + 1), x], x, a
 + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0]
&& IGtQ[2*p + 2, 0] && IGtQ[m, 0]
```

Rule 4829

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_))^(m_.), x_Sy
mbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*ArcSin[c*x])^n, x], x] /; F
reeQ[{a, b, c, d, e}, x] && IGtQ[m, 0] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{x}{\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}\,dx = \frac{\text{Subst}\left(\int \frac{-\frac{c}{d}+\frac{x}{d}}{\left(a+b\sin^{-1}(x)\right)^{7/2}}\,dx,x,c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \left(-\frac{c}{d\left(a+b\sin^{-1}(x)\right)^{7/2}}+\frac{x}{d\left(a+b\sin^{-1}(x)\right)^{7/2}}\right)\,dx,x,c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{x}{\left(a+b\sin^{-1}(x)\right)^{7/2}}\,dx,x,c+dx\right)}{d^2} - \frac{c\text{Subst}\left(\int \frac{1}{\left(a+b\sin^{-1}(x)\right)^{7/2}}\,dx,x,c\right.}{d^2}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{2\text{Subst}\left(\int\right.}{}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{}{15b^2d^2\left(a+\right.}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{}{15b^2d^2\left(a+\right.}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{}{15b^2d^2\left(a+\right.}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{}{15b^2d^2\left(a+\right.}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{}{15b^2d^2\left(a+\right.}$$

$$= \frac{2c\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{2(c+dx)\sqrt{1-(c+dx)^2}}{5bd^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{}{15b^2d^2\left(a+\right.}$$

Mathematica [C] Result contains complex when optimal does not.
time = 1.22, size = 524, normalized size = 1.12

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[x/(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] (-(c*(-6*b^2*E^(I*ArcSin[c + d*x]) + (4*(a + b*ArcSin[c + d*x])*(E^((I*(a +
 b*ArcSin[c + d*x]))/b)*(2*a - I*b + 2*b*ArcSin[c + d*x]) - (2*I)*b*(((-I)*
(a + b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1/2, ((-I)*(a + b*ArcSin[c + d*x]))
/b]))/E^((I*a)/b) + (8*a^2 + 4*a*b*(I + 4*ArcSin[c + d*x]) + 2*b^2*(-3 + (2
*I)*ArcSin[c + d*x] + 4*ArcSin[c + d*x]^2) - 8*E^((I*(a + b*ArcSin[c + d*x]
))/b)*(a + b*ArcSin[c + d*x])^2*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[1
/2, (I*(a + b*ArcSin[c + d*x]))/b])/E^(I*ArcSin[c + d*x]))) - 2*(4*a*b*Cos[
2*ArcSin[c + d*x]] + 4*b^2*ArcSin[c + d*x]*Cos[2*ArcSin[c + d*x]] + 32*Sqrt
[b^(-1)]*Sqrt[Pi]*(a + b*ArcSin[c + d*x])^(5/2)*Cos[(2*a)/b]*FresnelC[(2*Sq
rt[b^(-1)]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[Pi]] + 32*Sqrt[b^(-1)]*Sqrt[Pi
]*(a + b*ArcSin[c + d*x])^(5/2)*FresnelS[(2*Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[
c + d*x]])/Sqrt[Pi]]*Sin[(2*a)/b] - 16*a^2*Sin[2*ArcSin[c + d*x]] + 3*b^2*S
in[2*ArcSin[c + d*x]] - 32*a*b*ArcSin[c + d*x]*Sin[2*ArcSin[c + d*x]] - 16*
b^2*ArcSin[c + d*x]^2*Sin[2*ArcSin[c + d*x]]))/(30*b^3*d^2*(a + b*ArcSin[c
+ d*x])^(5/2))
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 1255 vs. $2(384) = 768$.
time = 0.52, size = 1256, normalized size = 2.68

method	result	size
default	Expression too large to display	1256

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(a+b*arcsin(d*x+c))^(7/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/15/d^2/b^3*(-8*arcsin(d*x+c)^2*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(a/
b)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1
/2)*(-1/b)^(1/2)*b^2*c-8*arcsin(d*x+c)^2*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)
*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/
b)*2^(1/2)*(-1/b)^(1/2)*b^2*c+16*arcsin(d*x+c)^2*(a+b*arcsin(d*x+c))^(1/2)*
cos(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/
2)/b)*(-2/b)^(1/2)*2^(1/2)*Pi^(1/2)*b^2-16*arcsin(d*x+c)^2*(a+b*arcsin(d*x+
c))^(1/2)*sin(2*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d
*x+c))^(1/2)/b)*(-2/b)^(1/2)*2^(1/2)*Pi^(1/2)*b^2-16*arcsin(d*x+c)*Pi^(1/2)
*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*
(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*(-1/b)^(1/2)*a*b*c-16*arcsin(d*x+c)*Pi
```

```
^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^
(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*(-1/b)^(1/2)*a*b*c+32*arcsin(d*x
+c)*(a+b*arcsin(d*x+c))^(1/2)*cos(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-2/b)
^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-2/b)^(1/2)*2^(1/2)*Pi^(1/2)*a*b-32*ar
csin(d*x+c)*(a+b*arcsin(d*x+c))^(1/2)*sin(2*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2
)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-2/b)^(1/2)*2^(1/2)*Pi^(1/2)*a
*b-8*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/
(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*(-1/b)^(1/2)*a^2*c-8*Pi^(
1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1
/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*(-1/b)^(1/2)*a^2*c+16*(a+b*arcsin(
d*x+c))^(1/2)*cos(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcs
in(d*x+c))^(1/2)/b)*(-2/b)^(1/2)*2^(1/2)*Pi^(1/2)*a^2-16*(a+b*arcsin(d*x+c)
)^(1/2)*sin(2*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x
+c))^(1/2)/b)*(-2/b)^(1/2)*2^(1/2)*Pi^(1/2)*a^2+8*arcsin(d*x+c)^2*cos(-(a+b
*arcsin(d*x+c))/b+a/b)*b^2*c+16*arcsin(d*x+c)^2*sin(-2*(a+b*arcsin(d*x+c))/
b+2*a/b)*b^2+16*arcsin(d*x+c)*cos(-(a+b*arcsin(d*x+c))/b+a/b)*a*b*c-4*arcsi
n(d*x+c)*sin(-(a+b*arcsin(d*x+c))/b+a/b)*b^2*c+32*arcsin(d*x+c)*sin(-2*(a+b
*arcsin(d*x+c))/b+2*a/b)*a*b+4*arcsin(d*x+c)*cos(-2*(a+b*arcsin(d*x+c))/b+2
*a/b)*b^2+8*cos(-(a+b*arcsin(d*x+c))/b+a/b)*a^2*c-6*cos(-(a+b*arcsin(d*x+c)
)/b+a/b)*b^2*c-4*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a*b*c+16*sin(-2*(a+b*arcsi
n(d*x+c))/b+2*a/b)*a^2-3*sin(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*b^2+4*cos(-2*(
a+b*arcsin(d*x+c))/b+2*a/b)*a*b)/(a+b*arcsin(d*x+c))^(5/2)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="maxima")
[Out] integrate(x/(b*arcsin(d*x + c) + a)^(7/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\left(a + b \operatorname{asin}{\left(c + dx \right)}\right)^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*asin(d*x+c))**(7/2),x)
```

```
[Out] Integral(x/(a + b*asin(c + d*x))**(7/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="giac")
```

```
[Out] integrate(x/(b*arcsin(d*x + c) + a)^(7/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x}{{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^{7/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(a + b*asin(c + d*x))^(7/2),x)
```

```
[Out] int(x/(a + b*asin(c + d*x))^(7/2), x)
```

3.171 $\int \frac{1}{(a+b\mathbf{ArcSin}(c+dx))^{7/2}}\,dx$

Optimal. Leaf size=218

$$-\frac{2\sqrt{1-(c+dx)^2}}{5bd(a+b\text{ArcSin}(c+dx))^{5/2}}+\frac{4(c+dx)}{15b^2d(a+b\text{ArcSin}(c+dx))^{3/2}}+\frac{8\sqrt{1-(c+dx)^2}}{15b^3d\sqrt{a+b\text{ArcSin}(c+dx)}}+\frac{8\sqrt{2\pi}\,\cos$$

```
[Out] 4/15*(d*x+c)/b^2/d/(a+b*arcsin(d*x+c))^(3/2)+8/15*cos(a/b)*FresnelS(2^(1/2)
/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/b^(7/2)/d-8/1
5*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(a/b)*2^(
1/2)*Pi^(1/2)/b^(7/2)/d-2/5*(1-(d*x+c)^2)^(1/2)/b/d/(a+b*arcsin(d*x+c))^(5/
2)+8/15*(1-(d*x+c)^2)^(1/2)/b^3/d/(a+b*arcsin(d*x+c))^(1/2)
```

Rubi [A]
time = 0.29, antiderivative size = 218, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 9, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.643$, Rules used = {4887, 4717, 4807, 4809, 3387, 3386, 3432, 3385, 3433}

$$-\frac{8\sqrt{2\pi}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{15b^{7/2}d}+\frac{8\sqrt{2\pi}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{15b^{7/2}d}+\frac{8\sqrt{1-(c+dx)^2}}{15b^3d\sqrt{a+b\text{ArcSin}(c+dx)}}+\frac{4(c+dx)}{15b^2d(a+b\text{ArcSin}(c+dx))^{3/2}}-\frac{2\sqrt{1-(c+dx)^2}}{5bd(a+b\text{ArcSin}(c+dx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(-7/2),x]
```

```
[Out] (-2*Sqrt[1 - (c + d*x)^2])/(5*b*d*(a + b*ArcSin[c + d*x])^(5/2)) + (4*(c +
d*x))/(15*b^2*d*(a + b*ArcSin[c + d*x])^(3/2)) + (8*Sqrt[1 - (c + d*x)^2])/
(15*b^3*d*Sqrt[a + b*ArcSin[c + d*x]]) + (8*Sqrt[2*Pi]*Cos[a/b]*FresnelS[(S
qrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(15*b^(7/2)*d) - (8*Sqrt[2
*Pi]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(
15*b^(7/2)*d)
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4717

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[Sqrt[1 - c^2
*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + Dist[c/(b*(n + 1)),
 Int[x*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4809

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[(1/(b*c^(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x
^2)^p], Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b]^(2*p + 1), x], x, a
 + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0]
&& IGtQ[2*p + 2, 0] && IGtQ[m, 0]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\sin^{-1}(x)\right)^{7/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{2\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx, x, c\right.}{5bd}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4\text{Subst}\left(\right.}{}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{8\sqrt{}}{15b^3d\sqrt{a}}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{8\sqrt{}}{15b^3d\sqrt{a}}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{8\sqrt{}}{15b^3d\sqrt{a}}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{8\sqrt{}}{15b^3d\sqrt{a}}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{8\sqrt{}}{15b^3d\sqrt{a}}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.47, size = 287, normalized size = 1.32

$$\frac{-6b^2e^{i\text{ArcSin}(c+dx)}+4e^{-\frac{ia}{b}}(a+b\text{ArcSin}(c+dx))\left(e^{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}(2a+b(-i+2\text{ArcSin}(c+dx)))-2ib\left(-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)+e^{-i\text{ArcSin}(c+dx)}\left(8a^2+4ab(i+4\text{ArcSin}(c+dx))+2b^2(-3+2i\text{ArcSin}(c+dx)+4\text{ArcSin}(c+dx)^2)-8e^{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}(a+b\text{ArcSin}(c+dx))^2\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\text{Gamma}\left(\frac{1}{2},\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)}{30b^3d(a+b\text{ArcSin}(c+dx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(-7/2),x]
```

```
[Out] (-6*b^2*E^(I*ArcSin[c + d*x]) + (4*(a + b*ArcSin[c + d*x])*(E^((I*(a + b*Ar
cSin[c + d*x]))/b)*(2*a + b*(-I + 2*ArcSin[c + d*x])) - (2*I)*b*(((-I)*(a +
 b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1/2, ((-I)*(a + b*ArcSin[c + d*x]))/b])
)/E^((I*a)/b) + (8*a^2 + 4*a*b*(I + 4*ArcSin[c + d*x]) + 2*b^2*(-3 + (2*I)*
ArcSin[c + d*x] + 4*ArcSin[c + d*x]^2) - 8*E^((I*(a + b*ArcSin[c + d*x]))/b
)*(a + b*ArcSin[c + d*x])^2*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2,
(I*(a + b*ArcSin[c + d*x]))/b])/E^(I*ArcSin[c + d*x]))/(30*b^3*d*(a + b*Arc
Sin[c + d*x])^(5/2))
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 623 vs. $2(178) = 356$.
time = 0.30, size = 624, normalized size = 2.86

method	result
default	$-\frac{2\left(4\arcsin(dx+c)^2\sqrt{a+b\arcsin(dx+c)}\,\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)\cos\left(\frac{a}{b}\right)\sqrt{2}\,\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b^2+4\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c))^(7/2),x,method=_RETURNVERBOSE)
```

```
[Out] -2/15/d/b^3*(4*arcsin(d*x+c)^2*(a+b*arcsin(d*x+c))^(1/2)*FresnelS(2^(1/2)/P
i^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*cos(a/b)*2^(1/2)*Pi^(1/2)
*(-1/b)^(1/2)*b^2+4*arcsin(d*x+c)^2*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*Fres
nelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*Pi^
(1/2)*(-1/b)^(1/2)*b^2+8*arcsin(d*x+c)*(a+b*arcsin(d*x+c))^(1/2)*FresnelS(2
^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*cos(a/b)*2^(1/2)*
Pi^(1/2)*(-1/b)^(1/2)*a*b+8*arcsin(d*x+c)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b
)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/
2)*Pi^(1/2)*(-1/b)^(1/2)*a*b+4*(a+b*arcsin(d*x+c))^(1/2)*FresnelS(2^(1/2)/P
i^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*cos(a/b)*2^(1/2)*Pi^(1/2)
*(-1/b)^(1/2)*a^2+4*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^
(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*Pi^(1/2)*(-1/b)^(1/
2)*a^2-4*arcsin(d*x+c)^2*cos(-(a+b*arcsin(d*x+c))/b+a/b)*b^2-8*arcsin(d*x+c
)*cos(-(a+b*arcsin(d*x+c))/b+a/b)*a*b+2*arcsin(d*x+c)*sin(-(a+b*arcsin(d*x+
c))/b+a/b)*b^2-4*cos(-(a+b*arcsin(d*x+c))/b+a/b)*a^2+3*cos(-(a+b*arcsin(d*x
+c))/b+a/b)*b^2+2*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a*b)/(a+b*arcsin(d*x+c))^
(5/2)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(-7/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\,\mathrm{asin}\left(c+dx\right)\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c))**(7/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**(-7/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(-7/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{1}{{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^{7/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(c + d*x))^(7/2),x)
```

```
[Out] int(1/(a + b*asin(c + d*x))^(7/2), x)
```

3.172 $\int x^m(a+b\mathbf{ArcSin}(c+dx))^n\,dx$

Optimal. Leaf size=19

$$\text{Int}(x^m(a+b\text{ArcSin}(c+dx))^n,x)$$

```
[Out] Unintegrable(x^m*(a+b*arcsin(d*x+c))^n,x)
```

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int x^m(a+b\text{ArcSin}(c+dx))^n\,dx$$

Verification is not applicable to the result.

```
[In] Int[x^m*(a + b*ArcSin[c + d*x])^n,x]
```

```
[Out] Defer[Subst][Defer[Int][(-(c/d) + x/d)^m*(a + b*ArcSin[x])^n, x], x, c + d*
x]/d
```

Rubi steps

$$\int x^m\left(a+b\sin^{-1}(c+dx)\right)^n\,dx=\frac{\text{Subst}\left(\int\left(-\frac{c}{d}+\frac{x}{d}\right)^m\left(a+b\sin^{-1}(x)\right)^n\,dx,x,c+dx\right)}{d}$$

Mathematica [A]
time = 0.36, size = 0, normalized size = 0.00

$$\int x^m(a+b\text{ArcSin}(c+dx))^n\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[x^m*(a + b*ArcSin[c + d*x])^n,x]
```

```
[Out] Integrate[x^m*(a + b*ArcSin[c + d*x])^n, x]
```

Maple [A]
time = 2.01, size = 0, normalized size = 0.00

$$\int x^m(a+b\arcsin(dx+c))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a+b*arcsin(d*x+c))^n,x)
[Out] int(x^m*(a+b*arcsin(d*x+c))^n,x)
```

Maxima [**A**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(d*x+c))^n,x, algorithm="maxima")
[Out] integrate((b*arcsin(d*x + c) + a)^n*x^m, x)
```

Fricas [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(d*x+c))^n,x, algorithm="fricas")
[Out] integral((b*arcsin(d*x + c) + a)^n*x^m, x)
```

Sympy [**A**]
time = 0.00, size = 0, normalized size = 0.00

$$\int x^m(a+b\operatorname{asin}(c+dx))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(a+b*asin(d*x+c))**n,x)
[Out] Integral(x**m*(a + b*asin(c + d*x))**n, x)
```

Giac [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(d*x+c))^n,x, algorithm="giac")
[Out] Timed out
```

Mupad [**A**]
time = 0.00, size = -1, normalized size = -0.05

$$\int x^m\,{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^n \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a + b*asin(c + d*x))^n,x)
```

```
[Out] int(x^m*(a + b*asin(c + d*x))^n, x)
```

3.173 $\int x^2(a + b\mathbf{ArcSin}(c + dx))^n\,dx$

Optimal. Leaf size=611

$$-\frac{ie^{-\frac{ia}{b}}(a+b\text{ArcSin}(c+dx))^n\left(-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{-n}\text{Gamma}\left(1+n,-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)}{8d^3}-\frac{ic^2e^{-\frac{ia}{b}}(a+$$

```
[Out] -1/8*I*(a+b*arcsin(d*x+c))^n*GAMMA(1+n,-I*(a+b*arcsin(d*x+c))/b)/d^3/exp(I*
a/b)/((-I*(a+b*arcsin(d*x+c))/b)^n)-1/2*I*c^2*(a+b*arcsin(d*x+c))^n*GAMMA(1
+n,-I*(a+b*arcsin(d*x+c))/b)/d^3/exp(I*a/b)/((-I*(a+b*arcsin(d*x+c))/b)^n)+
1/8*I*exp(I*a/b)*(a+b*arcsin(d*x+c))^n*GAMMA(1+n,I*(a+b*arcsin(d*x+c))/b)/d
^3/((I*(a+b*arcsin(d*x+c))/b)^n)+1/2*I*c^2*exp(I*a/b)*(a+b*arcsin(d*x+c))^n
*GAMMA(1+n,I*(a+b*arcsin(d*x+c))/b)/d^3/((I*(a+b*arcsin(d*x+c))/b)^n)+2^(-2
-n)*c*(a+b*arcsin(d*x+c))^n*GAMMA(1+n,-2*I*(a+b*arcsin(d*x+c))/b)/d^3/exp(2
*I*a/b)/((-I*(a+b*arcsin(d*x+c))/b)^n)+2^(-2-n)*c*exp(2*I*a/b)*(a+b*arcsin(
d*x+c))^n*GAMMA(1+n,2*I*(a+b*arcsin(d*x+c))/b)/d^3/((I*(a+b*arcsin(d*x+c))/
b)^n)+1/8*I*3^(-1-n)*(a+b*arcsin(d*x+c))^n*GAMMA(1+n,-3*I*(a+b*arcsin(d*x+c
))/b)/d^3/exp(3*I*a/b)/((-I*(a+b*arcsin(d*x+c))/b)^n)-1/8*I*3^(-1-n)*exp(3*
I*a/b)*(a+b*arcsin(d*x+c))^n*GAMMA(1+n,3*I*(a+b*arcsin(d*x+c))/b)/d^3/((I*(
a+b*arcsin(d*x+c))/b)^n)
```

Rubi [A]
time = 0.86, antiderivative size = 611, normalized size of antiderivative = 1.00, number of steps used = 22, number of rules used = 9, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.562$, Rules used = {4889, 4831, 6873, 12, 6874, 3388, 2212, 4491, 3389}

Antiderivative was successfully verified.

```
[In] Int[x^2*(a + b*ArcSin[c + d*x])^n,x]
```

```
[Out] ((-1/8*I)*(a + b*ArcSin[c + d*x])^n*Gamma[1 + n, ((-I)*(a + b*ArcSin[c + d*
x]))/b])/(d^3*E^((I*a)/b)*(((-I)*(a + b*ArcSin[c + d*x]))/b)^n) - ((I/2)*c^
2*(a + b*ArcSin[c + d*x])^n*Gamma[1 + n, ((-I)*(a + b*ArcSin[c + d*x]))/b])
/(d^3*E^((I*a)/b)*(((-I)*(a + b*ArcSin[c + d*x]))/b)^n) + ((I/8)*E^((I*a)/b
)*(a + b*ArcSin[c + d*x])^n*Gamma[1 + n, (I*(a + b*ArcSin[c + d*x]))/b])/(d
^3*((I*(a + b*ArcSin[c + d*x]))/b)^n) + ((I/2)*c^2*E^((I*a)/b)*(a + b*ArcSi
n[c + d*x])^n*Gamma[1 + n, (I*(a + b*ArcSin[c + d*x]))/b])/(d^3*((I*(a + b*
ArcSin[c + d*x]))/b)^n) + (2^(-2 - n)*c*(a + b*ArcSin[c + d*x])^n*Gamma[1 +
 n, ((-2*I)*(a + b*ArcSin[c + d*x]))/b])/(d^3*E^(((2*I)*a)/b)*(((-I)*(a + b
*ArcSin[c + d*x]))/b)^n) + (2^(-2 - n)*c*E^(((2*I)*a)/b)*(a + b*ArcSin[c +
d*x])^n*Gamma[1 + n, ((2*I)*(a + b*ArcSin[c + d*x]))/b])/(d^3*((I*(a + b*Ar
cSin[c + d*x]))/b)^n) + ((I/8)*3^(-1 - n)*(a + b*ArcSin[c + d*x])^n*Gamma[1
 + n, ((-3*I)*(a + b*ArcSin[c + d*x]))/b])/(d^3*E^(((3*I)*a)/b)*(((-I)*(a +
 b*ArcSin[c + d*x]))/b)^n) - ((I/8)*3^(-1 - n)*E^(((3*I)*a)/b)*(a + b*ArcSi
```

```
n[c + d*x])^n*Gamma[1 + n, ((3*I)*(a + b*ArcSin[c + d*x]))/b])/(d^3*((I*(a
+ b*ArcSin[c + d*x]))/b)^n)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2212

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> Simp[(-F^(g*(e - c*(f/d))))*((c + d*x)^FracPart[m]/(d*((-f)*g*(Log[F]/d)
)^(IntPart[m] + 1)*((-f)*g*Log[F]*((c + d*x)/d))^FracPart[m]))*Gamma[m + 1,
 ((-f)*g*(Log[F]/d))*(c + d*x)], x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&
!IntegerQ[m]
```

Rule 3388

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3389

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4831

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_.) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Dist[1/c^(m + 1), Subst[Int[(a + b*x)^n*Cos[x]*(c*d + e*Sin[x])^m
, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int x^2\left(a+b\sin^{-1}(c+dx)\right)^n\,dx=\frac{\text{Subst}\left(\int\left(-\frac{c}{d}+\frac{x}{d}\right)^2\left(a+b\sin^{-1}(x)\right)^n\,dx,x,c+dx\right)}{d}$$

$$=\frac{\text{Subst}\left(\int(a+bx)^n\cos(x)\left(-\frac{c}{d}+\frac{\sin(x)}{d}\right)^2\,dx,x,\sin^{-1}(c+dx)\right)}{d}$$

$$=\frac{\text{Subst}\left(\int\frac{(a+bx)^n\cos(x)(c-\sin(x))^2}{d^2}\,dx,x,\sin^{-1}(c+dx)\right)}{d}$$

$$=\frac{\text{Subst}\left(\int(a+bx)^n\cos(x)(c-\sin(x))^2\,dx,x,\sin^{-1}(c+dx)\right)}{d^3}$$

$$=\frac{\text{Subst}\left(\int\left(c^2(a+bx)^n\cos(x)-2c(a+bx)^n\cos(x)\sin(x)+(a+bx)^n\cos(\right.\right.}{d^3}$$

$$=\frac{\text{Subst}\left(\int(a+bx)^n\cos(x)\sin^2(x)\,dx,x,\sin^{-1}(c+dx)\right)}{d^3}-\frac{(2c)\text{Subst}\left(\int(a+\right.}{}$$

$$=\frac{\text{Subst}\left(\int\left(\frac{1}{4}(a+bx)^n\cos(x)-\frac{1}{4}(a+bx)^n\cos(3x)\right)\,dx,x,\sin^{-1}(c+dx)\right)}{d^3}$$

$$=-\frac{ic^2e^{-\frac{ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^n\left(-\frac{i(a+b\sin^{-1}(c+dx))}{b}\right)^{-n}\Gamma\left(1+n,-\frac{i(a+b\sin\right.}{2d^3}$$

$$=-\frac{ic^2e^{-\frac{ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^n\left(-\frac{i(a+b\sin^{-1}(c+dx))}{b}\right)^{-n}\Gamma\left(1+n,-\frac{i(a+b\sin\right.}{2d^3}$$

$$=-\frac{ie^{-\frac{ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^n\left(-\frac{i(a+b\sin^{-1}(c+dx))}{b}\right)^{-n}\Gamma\left(1+n,-\frac{i(a+b\sin^{-1}(\right.}{8d^3}$$

Mathematica [F]
time = 1.11, size = 0, normalized size = 0.00

$$\int x^2(a+b\text{ArcSin}(c+dx))^n\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[x^2*(a + b*ArcSin[c + d*x])^n,x]
```

```
[Out] Integrate[x^2*(a + b*ArcSin[c + d*x])^n, x]
```

Maple [F]
time = 0.86, size = 0, normalized size = 0.00

$$\int x^2(a+b\arcsin{(dx+c)})^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(d*x+c))^n,x)
```

```
[Out] int(x^2*(a+b*arcsin(d*x+c))^n,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(d*x+c))^n,x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^n*x^2, x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(d*x+c))^n,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(d*x + c) + a)^n*x^2, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int x^2(a+b\operatorname{asin}{(c+dx)})^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(d*x+c))**n,x)
```

```
[Out] Integral(x**2*(a + b*asin(c + d*x))**n, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(d*x+c))^n,x, algorithm="giac")
[Out] integrate((b*arcsin(d*x + c) + a)^n*x^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int x^2 (a + b \operatorname{asin}(c + d x))^n dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c + d*x))^n,x)
[Out] int(x^2*(a + b*asin(c + d*x))^n, x)
```

3.174 $\int x(a+b\text{ArcSin}(c+dx))^n\,dx$

Optimal. Leaf size=301

$$\frac{ice^{-\frac{ia}{b}}(a+b\text{ArcSin}(c+dx))^n\left(-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{-n}\text{Gamma}\left(1+n,-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)}{2d^2}-\frac{ice^{\frac{ia}{b}}(a+b\text{Arc}}{}$$

```
[Out] 1/2*I*c*(a+b*arcsin(d*x+c))^n*GAMMA(1+n,-I*(a+b*arcsin(d*x+c))/b)/d^2/exp(I
*a/b)/((-I*(a+b*arcsin(d*x+c))/b)^n)-1/2*I*c*exp(I*a/b)*(a+b*arcsin(d*x+c))
^n*GAMMA(1+n,I*(a+b*arcsin(d*x+c))/b)/d^2/((I*(a+b*arcsin(d*x+c))/b)^n)-2^(
-3-n)*(a+b*arcsin(d*x+c))^n*GAMMA(1+n,-2*I*(a+b*arcsin(d*x+c))/b)/d^2/exp(2
*I*a/b)/((-I*(a+b*arcsin(d*x+c))/b)^n)-2^(-3-n)*exp(2*I*a/b)*(a+b*arcsin(d*
x+c))^n*GAMMA(1+n,2*I*(a+b*arcsin(d*x+c))/b)/d^2/((I*(a+b*arcsin(d*x+c))/b)
^n)
```

Rubi [A]

time = 0.38, antiderivative size = 301, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 9, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.643, Rules used = {4889, 4831, 6873, 12, 6874, 3388, 2212, 4491, 3389}

$$\frac{ice^{-\frac{ia}{b}}(a+b\text{ArcSin}(c+dx))^n\left(-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{-n}\text{Gamma}\left(n+1,-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)}{2d^2}-\frac{2^{-n-3}e^{-\frac{2ia}{b}}(a+b\text{ArcSin}(c+dx))^n\left(-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{-n}\text{Gamma}\left(n+1,-\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)}{d^2}-\frac{ice^{\frac{ia}{b}}(a+b\text{ArcSin}(c+dx))^n\left(\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{-n}\text{Gamma}\left(n+1,\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)}{2d^2}-\frac{2^{-n-3}e^{\frac{2ia}{b}}(a+b\text{ArcSin}(c+dx))^n\left(\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{-n}\text{Gamma}\left(n+1,\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)}{d^2}$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*ArcSin[c + d*x])^n,x]
```

```
[Out] ((I/2)*c*(a + b*ArcSin[c + d*x])^n*Gamma[1 + n, ((-I)*(a + b*ArcSin[c + d*x
]))/b])/(d^2*E^((I*a)/b)*(((-I)*(a + b*ArcSin[c + d*x]))/b)^n) - ((I/2)*c*E
^((I*a)/b)*(a + b*ArcSin[c + d*x])^n*Gamma[1 + n, (I*(a + b*ArcSin[c + d*x]
))/b])/(d^2*((I*(a + b*ArcSin[c + d*x]))/b)^n) - (2^(-3 - n)*(a + b*ArcSin[
c + d*x])^n*Gamma[1 + n, ((-2*I)*(a + b*ArcSin[c + d*x]))/b])/(d^2*E^(((2*I
)*a)/b)*(((-I)*(a + b*ArcSin[c + d*x]))/b)^n) - (2^(-3 - n)*E^(((2*I)*a)/b)
*(a + b*ArcSin[c + d*x])^n*Gamma[1 + n, ((2*I)*(a + b*ArcSin[c + d*x]))/b])
/(d^2*((I*(a + b*ArcSin[c + d*x]))/b)^n)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2212

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> Simp[(-F^(g*(e - c*(f/d))))*((c + d*x)^FracPart[m]/(d*((-f)*g*(Log[F]/d)
)^(IntPart[m] + 1)*((-f)*g*Log[F]*((c + d*x)/d))^FracPart[m]))*Gamma[m + 1,
 ((-f)*g*(Log[F]/d))*(c + d*x)], x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&
```

```
!IntegerQ[m]
```

Rule 3388

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3389

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4831

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_.) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Dist[1/c^(m + 1), Subst[Int[(a + b*x)^n*Cos[x]*(c*d + e*Sin[x])^m
, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int x\left(a+b\sin^{-1}(c+dx)\right)^n\,dx = \frac{\text{Subst}\left(\int\left(-\frac{c}{d}+\frac{x}{d}\right)\left(a+b\sin^{-1}(x)\right)^n\,dx,x,c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int(a+bx)^n\cos(x)\left(-\frac{c}{d}+\frac{\sin(x)}{d}\right)\,dx,x,\sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{\text{Subst}\left(\int\frac{(a+bx)^n\cos(x)(-c+\sin(x))}{d}\,dx,x,\sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{\text{Subst}\left(\int(a+bx)^n\cos(x)(-c+\sin(x))\,dx,x,\sin^{-1}(c+dx)\right)}{d^2}$$

$$= \frac{\text{Subst}\left(\int\left(-c(a+bx)^n\cos(x)+(a+bx)^n\cos(x)\sin(x)\right)\,dx,x,\sin^{-1}(c+dx\right.}{d^2}$$

$$= \frac{\text{Subst}\left(\int(a+bx)^n\cos(x)\sin(x)\,dx,x,\sin^{-1}(c+dx)\right)}{d^2} - \frac{c\text{Subst}\left(\int(a+bx)^n\right.}{}$$

$$= \frac{\text{Subst}\left(\int\frac{1}{2}(a+bx)^n\sin(2x)\,dx,x,\sin^{-1}(c+dx)\right)}{d^2} - \frac{c\text{Subst}\left(\int e^{-ix}(a+bx)^n\right.}{2d^2}$$

$$= \frac{ice^{-\frac{ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{-n}\Gamma\left(1+n,-\frac{i\left(a+b\sin^{-1}(c+d\right.}{b}\right.}{2d^2}$$

$$= \frac{ice^{-\frac{ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{-n}\Gamma\left(1+n,-\frac{i\left(a+b\sin^{-1}(c+d\right.}{b}\right.}{2d^2}$$

$$= \frac{ice^{-\frac{ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{-n}\Gamma\left(1+n,-\frac{i\left(a+b\sin^{-1}(c+d\right.}{b}\right.}{2d^2}$$

Mathematica [A]
time = 0.64, size = 372, normalized size = 1.24

$$\frac{2^{-3-n}(a+b\text{ArcSin}(c+dx))^n\left(\frac{(a+b\text{ArcSin}(c+dx))^2}{b^2}\right)^{-n}\left(-\left(\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^n\cos\left(\frac{2a}{b}\right)\text{Gamma}\left(1+n,-\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)-\left(-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^n\cos\left(\frac{2a}{b}\right)\text{Gamma}\left(1+n,\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)+2^{2+n}c\left(-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^n\text{Gamma}\left(1+n,\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)\left(-i\cos\left(\frac{a}{b}\right)+\sin\left(\frac{a}{b}\right)\right)+2^{2+n}c\left(\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^n\text{Gamma}\left(1+n,-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)\left(i\cos\left(\frac{a}{b}\right)+\sin\left(\frac{a}{b}\right)\right)+i\left(\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^n\text{Gamma}\left(1+n,-\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)\sin\left(\frac{2a}{b}\right)-i\left(-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^n\text{Gamma}\left(1+n,\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)\sin\left(\frac{2a}{b}\right)\right)}{d^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*ArcSin[c + d*x])^n,x]
```

```
[Out] (2^(-3 - n)*(a + b*ArcSin[c + d*x])^n*(-(((I*(a + b*ArcSin[c + d*x]))/b)^n*
Cos[(2*a)/b]*Gamma[1 + n, ((-2*I)*(a + b*ArcSin[c + d*x]))/b]) - (((-I)*(a
+ b*ArcSin[c + d*x]))/b)^n*Cos[(2*a)/b]*Gamma[1 + n, ((2*I)*(a + b*ArcSin[c
 + d*x]))/b] + 2^(2 + n)*c*(((-I)*(a + b*ArcSin[c + d*x]))/b)^n*Gamma[1 + n
, (I*(a + b*ArcSin[c + d*x]))/b]*((-I)*Cos[a/b] + Sin[a/b]) + 2^(2 + n)*c*(
(I*(a + b*ArcSin[c + d*x]))/b)^n*Gamma[1 + n, ((-I)*(a + b*ArcSin[c + d*x])
)/b]*(I*Cos[a/b] + Sin[a/b]) + I*((I*(a + b*ArcSin[c + d*x]))/b)^n*Gamma[1
+ n, ((-2*I)*(a + b*ArcSin[c + d*x]))/b]*Sin[(2*a)/b] - I*(((-I)*(a + b*Arc
```

```
Sin[c + d*x]))/b)^n*Gamma[1 + n, ((2*I)*(a + b*ArcSin[c + d*x]))/b]*Sin[(2*
a)/b]))/(d^2*((a + b*ArcSin[c + d*x])^2/b^2)^n)
```

Maple [F]
time = 0.45, size = 0, normalized size = 0.00

$$\int x(a+b\arcsin(dx+c))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(d*x+c))^n,x)
[Out] int(x*(a+b*arcsin(d*x+c))^n,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x+c))^n,x, algorithm="maxima")
[Out] integrate((b*arcsin(d*x + c) + a)^n*x, x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x+c))^n,x, algorithm="fricas")
[Out] integral((b*arcsin(d*x + c) + a)^n*x, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int x(a+b\operatorname{asin}(c+dx))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(d*x+c))**n,x)
[Out] Integral(x*(a + b*asin(c + d*x))**n, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x+c))^n,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^n*x, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int x\,(a+b\,\mathrm{asin}(c+d\,x))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c + d*x))^n,x)
```

```
[Out] int(x*(a + b*asin(c + d*x))^n, x)
```

3.175 $\int (a+b\textbf{ArcSin}(c+dx))^n\,dx$

Optimal. Leaf size=147

$$-\frac{ie^{-\frac{ia}{b}}(a+b\text{ArcSin}(c+dx))^n\left(-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{-n}\text{Gamma}\left(1+n,-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)}{2d}+\frac{ie^{\frac{ia}{b}}(a+b\text{A}}{}$$

```
[Out] -1/2*I*(a+b*arcsin(d*x+c))^n*GAMMA(1+n,-I*(a+b*arcsin(d*x+c))/b)/d/exp(I*a/
b)/((-I*(a+b*arcsin(d*x+c))/b)^n)+1/2*I*exp(I*a/b)*(a+b*arcsin(d*x+c))^n*GA
MMA(1+n,I*(a+b*arcsin(d*x+c))/b)/d/((I*(a+b*arcsin(d*x+c))/b)^n)
```

Rubi [A]
time = 0.09, antiderivative size = 147, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$, Rules used = {4887, 4719, 3388, 2212}

$$\frac{ie^{\frac{ia}{b}}(a+b\text{ArcSin}(c+dx))^n\left(\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{-n}\text{Gamma}\left(n+1,\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)}{2d}-\frac{ie^{-\frac{ia}{b}}(a+b\text{ArcSin}(c+dx))^n\left(-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{-n}\text{Gamma}\left(n+1,-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)}{2d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^n,x]
```

```
[Out] ((-1/2*I)*(a + b*ArcSin[c + d*x])^n*Gamma[1 + n, ((-I)*(a + b*ArcSin[c + d*
x]))/b])/(d*E^((I*a)/b)*(((-I)*(a + b*ArcSin[c + d*x]))/b)^n) + ((I/2)*E^((
I*a)/b)*(a + b*ArcSin[c + d*x])^n*Gamma[1 + n, (I*(a + b*ArcSin[c + d*x]))/
b])/(d*((I*(a + b*ArcSin[c + d*x]))/b)^n)
```

Rule 2212

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> Simp[(-F^(g*(e - c*(f/d))))*((c + d*x)^FracPart[m]/(d*((-f)*g*(Log[F]/d)
)^(IntPart[m] + 1)*((-f)*g*Log[F]*((c + d*x)/d))^FracPart[m]))*Gamma[m + 1,
 ((-f)*g*(Log[F]/d))*(c + d*x)], x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&
!IntegerQ[m]
```

Rule 3388

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 4719

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[-a/b + x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c
```

```
, n}, x]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\begin{aligned}\int \left(a+b\sin^{-1}(c+dx)\right)^n\,dx &= \frac{\text{Subst}\left(\int \left(a+b\sin^{-1}(x)\right)^n\,dx, x, c+dx\right)}{d}\\ &= \frac{\text{Subst}\left(\int x^n\cos\left(\frac{a}{b}-\frac{x}{b}\right)\,dx, x, a+b\sin^{-1}(c+dx)\right)}{bd}\\ &= \frac{\text{Subst}\left(\int e^{-i\left(\frac{a}{b}-\frac{x}{b}\right)}x^n\,dx, x, a+b\sin^{-1}(c+dx)\right)}{2bd}+\frac{\text{Subst}\left(\int e^{i\left(\frac{a}{b}-\frac{x}{b}\right)}x^n\,dx, x, a\right.}{2bd}\\ &= -\frac{ie^{-\frac{ia}{b}}\left(a+b\sin^{-1}(c+dx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(c+dx)\right)}{b}\right)^{-n}\Gamma\left(1+n,-\frac{i\left(a+b\sin^{-1}(c+dx\right.}{b}\right.}{2d}\end{aligned}$$

Mathematica [A]
time = 0.01, size = 159, normalized size = 1.08

$$\frac{i(a+b\text{ArcSin}(c+dx))^n\left(\frac{(a+b\text{ArcSin}(c+dx))^2}{b^2}\right)^{-n}\left(-\left(\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^n\text{Gamma}\left(1+n,-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)\left(\cos\left(\frac{a}{b}\right)-i\sin\left(\frac{a}{b}\right)\right)+\left(-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^n\text{Gamma}\left(1+n,\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)\left(\cos\left(\frac{a}{b}\right)+i\sin\left(\frac{a}{b}\right)\right)\right)}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^n,x]
```

```
[Out] ((I/2)*(a + b*ArcSin[c + d*x])^n*(-(((I*(a + b*ArcSin[c + d*x]))/b)^n*Gamma
[1 + n, ((-I)*(a + b*ArcSin[c + d*x]))/b]*(Cos[a/b] - I*Sin[a/b])) + (((-I)
*(a + b*ArcSin[c + d*x]))/b)^n*Gamma[1 + n, (I*(a + b*ArcSin[c + d*x]))/b]*
(Cos[a/b] + I*Sin[a/b])))/(d*((a + b*ArcSin[c + d*x])^2/b^2)^n)
```

Maple [F]
time = 0.10, size = 0, normalized size = 0.00

$$\int \left(a+b\arcsin\left(dx+c\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^n,x)
```

```
[Out] int((a+b*arcsin(d*x+c))^n,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^n,x, algorithm="maxima")
[Out] integrate((b*arcsin(d*x + c) + a)^n, x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^n,x, algorithm="fricas")
[Out] integral((b*arcsin(d*x + c) + a)^n, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int (a + b \operatorname{asin}(c + dx))^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**n,x)
[Out] Integral((a + b*asin(c + d*x))**n, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^n,x, algorithm="giac")
[Out] integrate((b*arcsin(d*x + c) + a)^n, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int (a + b \operatorname{asin}(c + d\,x))^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^n,x)
[Out] int((a + b*asin(c + d*x))^n, x)
```

3.176 $\int \frac{(a+b\text{ArcSin}(c+dx))^n}{x}\,dx$

Optimal. Leaf size=19

$$\text{Int}\left(\frac{(a+b\text{ArcSin}(c+dx))^n}{x},x\right)$$

```
[Out] Unintegrable((a+b*arcsin(d*x+c))^n/x,x)
```

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(a+b\text{ArcSin}(c+dx))^n}{x}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(a + b*ArcSin[c + d*x])^n/x,x]
```

```
[Out] Defer[Subst][Defer[Int][(a + b*ArcSin[x])^n/(-(c/d) + x/d), x], x, c + d*x]
/d
```

Rubi steps

$$\int \frac{(a+b\sin^{-1}(c+dx))^n}{x}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^n}{-\frac{c}{d}+\frac{x}{d}}\,dx,x,c+dx\right)}{d}$$

Mathematica [A]
time = 0.13, size = 0, normalized size = 0.00

$$\int \frac{(a+b\text{ArcSin}(c+dx))^n}{x}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^n/x,x]
```

```
[Out] Integrate[(a + b*ArcSin[c + d*x])^n/x, x]
```

Maple [A]
time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin(dx+c))^n}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^n/x,x)
```

```
[Out] int((a+b*arcsin(d*x+c))^n/x,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^n/x,x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^n/x, x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^n/x,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(d*x + c) + a)^n/x, x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}{(c + dx)})^n}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**n/x,x)
```

```
[Out] Integral((a + b*asin(c + d*x))**n/x, x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^n/x,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^n/x, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{(a+b\,\mathrm{asin}(c+d\,x))^n}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^n/x,x)
```

```
[Out] int((a + b*asin(c + d*x))^n/x, x)
```

3.177 $\int (ce+dex)^4(a+b\text{ArcSin}(c+dx))\,dx$

Optimal. Leaf size=106

$$\frac{be^4\sqrt{1-(c+dx)^2}}{5d}-\frac{2be^4\left(1-(c+dx)^2\right)^{3/2}}{15d}+\frac{be^4\left(1-(c+dx)^2\right)^{5/2}}{25d}+\frac{e^4(c+dx)^5(a+b\text{ArcSin}(c+dx))}{5d}$$

```
[Out] -2/15*b*e^4*(1-(d*x+c)^2)^(3/2)/d+1/25*b*e^4*(1-(d*x+c)^2)^(5/2)/d+1/5*e^4*
(d*x+c)^5*(a+b*arcsin(d*x+c))/d+1/5*b*e^4*(1-(d*x+c)^2)^(1/2)/d
```

Rubi [A]
time = 0.06, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.238$, Rules used = {4889, 12, 4723, 272, 45}

$$\frac{e^4(c+dx)^5(a+b\text{ArcSin}(c+dx))}{5d}+\frac{be^4\left(1-(c+dx)^2\right)^{5/2}}{25d}-\frac{2be^4\left(1-(c+dx)^2\right)^{3/2}}{15d}+\frac{be^4\sqrt{1-(c+dx)^2}}{5d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^4*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (b*e^4*Sqrt[1 - (c + d*x)^2])/(5*d) - (2*b*e^4*(1 - (c + d*x)^2)^(3/2))/(15
*d) + (b*e^4*(1 - (c + d*x)^2)^(5/2))/(25*d) + (e^4*(c + d*x)^5*(a + b*ArcS
in[c + d*x]))/(5*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
```

```
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)^4 \left(a+b\sin^{-1}(c+dx)\right) dx = \frac{\text{Subst}\left(\int e^4x^4(a+b\sin^{-1}(x))\,dx,x,c+dx\right)}{d}$$
$$= \frac{e^4\text{Subst}\left(\int x^4(a+b\sin^{-1}(x))\,dx,x,c+dx\right)}{d}$$
$$= \frac{e^4(c+dx)^5\left(a+b\sin^{-1}(c+dx)\right)}{5d} - \frac{(be^4)\,\text{Subst}\left(\int \frac{x^5}{\sqrt{1-x^2}}\,dx,x,\right.}{5d}$$
$$= \frac{e^4(c+dx)^5\left(a+b\sin^{-1}(c+dx)\right)}{5d} - \frac{(be^4)\,\text{Subst}\left(\int \frac{x^2}{\sqrt{1-x}}\,dx,x,\right.}{10d}$$
$$= \frac{e^4(c+dx)^5\left(a+b\sin^{-1}(c+dx)\right)}{5d} - \frac{(be^4)\,\text{Subst}\left(\int \left(\frac{1}{\sqrt{1-x}}-2\right.\right.}{}$$
$$= \frac{be^4\sqrt{1-(c+dx)^2}}{5d} - \frac{2be^4(1-(c+dx)^2)^{3/2}}{15d} + \frac{be^4(1-(c+dx)^2)}{25d}$$

Mathematica [A]
time = 0.08, size = 77, normalized size = 0.73

$$\frac{e^4\left(-\frac{1}{75}b\sqrt{1-(c+dx)^2}\left(-15+10(1-(c+dx)^2)-3(-1+(c+dx)^2)^2\right)+\frac{1}{5}(c+dx)^5(a+b\text{ArcSin}(c+dx))\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^4*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (e^4*(-1/75*(b*Sqrt[1 - (c + d*x)^2]*(-15 + 10*(1 - (c + d*x)^2) - 3*(-1 +
(c + d*x)^2)^2)) + ((c + d*x)^5*(a + b*ArcSin[c + d*x]))/5))/d
```

Maple [A]
time = 0.14, size = 99, normalized size = 0.93

method	result
derivativedivides	$\frac{\frac{e^4(dx+c)^5a}{5}+e^4b\left(\frac{(dx+c)^5\arcsin(dx+c)}{5}+\frac{(dx+c)^4\sqrt{1-(dx+c)^2}}{25}+\frac{4(dx+c)^2\sqrt{1-(dx+c)^2}}{75}+\frac{8\sqrt{1-(...}{}\right.}{d}$
default	$\frac{\frac{e^4(dx+c)^5a}{5}+e^4b\left(\frac{(dx+c)^5\arcsin(dx+c)}{5}+\frac{(dx+c)^4\sqrt{1-(dx+c)^2}}{25}+\frac{4(dx+c)^2\sqrt{1-(dx+c)^2}}{75}+\frac{8\sqrt{1-(...}{}\right.}{d}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^4*(a+b*arcsin(d*x+c)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(1/5*e^4*(d*x+c)^5*a+e^4*b*(1/5*(d*x+c)^5*arcsin(d*x+c)+1/25*(d*x+c)^4*
(1-(d*x+c)^2)^(1/2)+4/75*(d*x+c)^2*(1-(d*x+c)^2)^(1/2)+8/75*(1-(d*x+c)^2)^(
1/2)))
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 1270 vs. $2(88) = 176$.

time = 0.51, size = 1270, normalized size = 11.98

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4*(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/5*a*d^4*x^5*e^4 + a*c*d^3*x^4*e^4 + 2*a*c^2*d^2*x^3*e^4 + 2*a*c^3*d*x^2*e
^4 + (2*x^2*arcsin(d*x + c) + d*(3*c^2*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 -
 (c^2 - 1)*d^2))/d^3 + sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*x/d^2 - (c^2 - 1)
*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^3 - 3*sqrt(-d^2*x^2
 - 2*c*d*x - c^2 + 1)*c/d^3))*b*c^3*d*e^4 + 1/3*(6*x^3*arcsin(d*x + c) + d*
(2*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*x^2/d^2 - 15*c^3*arcsin(-(d^2*x + c*d
)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^4 - 5*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)
*c*x/d^3 + 9*(c^2 - 1)*c*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2
))/d^4 + 15*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c^2/d^4 - 4*sqrt(-d^2*x^2 -
2*c*d*x - c^2 + 1)*(c^2 - 1)/d^4))*b*c^2*d^2*e^4 + 1/24*(24*x^4*arcsin(d*x
+ c) + (6*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*x^3/d^2 - 14*sqrt(-d^2*x^2 - 2
*c*d*x - c^2 + 1)*c*x^2/d^3 + 105*c^4*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 -
(c^2 - 1)*d^2))/d^5 + 35*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c^2*x/d^4 - 90*
(c^2 - 1)*c^2*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^5 - 10
5*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c^3/d^5 - 9*sqrt(-d^2*x^2 - 2*c*d*x -
c^2 + 1)*(c^2 - 1)*x/d^4 + 9*(c^2 - 1)^2*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2
 - (c^2 - 1)*d^2))/d^5 + 55*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*(c^2 - 1)*c/
d^5)*d)*b*c*d^3*e^4 + 1/600*(120*x^5*arcsin(d*x + c) + (24*sqrt(-d^2*x^2 -
```

```
2*c*d*x - c^2 + 1)*x^4/d^2 - 54*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c*x^3/d^
3 + 126*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c^2*x^2/d^4 - 945*c^5*arcsin(-(d
^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^6 - 315*sqrt(-d^2*x^2 - 2*c*d*
x - c^2 + 1)*c^3*x/d^5 - 32*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*(c^2 - 1)*x^
2/d^4 + 1050*(c^2 - 1)*c^3*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d
^2))/d^6 + 945*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c^4/d^6 + 161*sqrt(-d^2*x
^2 - 2*c*d*x - c^2 + 1)*(c^2 - 1)*c*x/d^5 - 225*(c^2 - 1)^2*c*arcsin(-(d^2*
x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^6 - 735*sqrt(-d^2*x^2 - 2*c*d*x -
 c^2 + 1)*(c^2 - 1)*c^2/d^6 + 64*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*(c^2 -
1)^2/d^6)*d)*b*d^4*e^4 + a*c^4*x*e^4 + ((d*x + c)*arcsin(d*x + c) + sqrt(-(
d*x + c)^2 + 1))*b*c^4*e^4/d
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 220 vs. $2(88) = 176$.
time = 2.65, size = 220, normalized size = 2.08

$$\frac{15\,(bd^5x^5 + 5\,bcd^4x^4 + 10\,bc^2d^3x^3 + 10\,bc^3d^2x^2 + 5\,bc^4dx + bc^5)\arcsin\left(dx + c\right)e^4 + (3\,bd^4x^4 + 12\,bcd^3x^3 + 3\,bc^4 + 2\,(9\,bc^2 + 2\,b)d^2x^2 + 4\,bc^2 + 4\,(3\,bc^3 + 2\,bc)dx + 8\,b)\sqrt{-d^2x^2 - 2\,cdx - c^2 + 1}\,e^4 + 15\,(ad^5x^5 + 5\,acd^4x^4 + 10\,ac^2d^3x^3 + 10\,ac^3d^2x^2 + 5\,ac^4dx)e^4}{75\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4*(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/75*(15*(b*d^5*x^5 + 5*b*c*d^4*x^4 + 10*b*c^2*d^3*x^3 + 10*b*c^3*d^2*x^2 +
 5*b*c^4*d*x + b*c^5)*arcsin(d*x + c)*e^4 + (3*b*d^4*x^4 + 12*b*c*d^3*x^3 +
 3*b*c^4 + 2*(9*b*c^2 + 2*b)*d^2*x^2 + 4*b*c^2 + 4*(3*b*c^3 + 2*b*c)*d*x +
8*b)*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*e^4 + 15*(a*d^5*x^5 + 5*a*c*d^4*x^4
 + 10*a*c^2*d^3*x^3 + 10*a*c^3*d^2*x^2 + 5*a*c^4*d*x)*e^4)/d
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 527 vs. $2(85) = 170$.
time = 0.48, size = 527, normalized size = 4.97

$$\begin{cases} ac^4e^4x + 2ac^3de^4x^2 + 2ac^2d^2e^4x^3 + acd^3e^4x^4 + \frac{ad^4e^4x^5}{5} + \frac{bc^5e^4\operatorname{asin}(c+dx)}{5d} + bc^4e^4x\operatorname{asin}(c+dx) + \frac{bc^4e^4\sqrt{-c^2-2cdx-d^2x^2+1}}{25d} + 2bc^3de^4x^2\operatorname{asin}(c+dx) + \frac{4bc^3e^4x\sqrt{-c^2-2cdx-d^2x^2+1}}{25} + 2bc^2d^2e^4x^3\operatorname{asin}(c+dx) + \frac{6bc^2de^4x^2\sqrt{-c^2-2cdx-d^2x^2+1}}{25} + \frac{4bc^2e^4\sqrt{-c^2-2cdx-d^2x^2+1}}{75d} + bcd^3e^4x^4\operatorname{asin}(c+dx) + \frac{4bcd^2e^4x^3\sqrt{-c^2-2cdx-d^2x^2+1}}{25} + \frac{8bce^4x\sqrt{-c^2-2cdx-d^2x^2+1}}{75} + \frac{bd^4e^4x^5\operatorname{asin}(c+dx)}{5} + \frac{bd^3e^4x^4\sqrt{-c^2-2cdx-d^2x^2+1}}{25} + \frac{4bde^4x^2\sqrt{-c^2-2cdx-d^2x^2+1}}{75} + \frac{8be^4\sqrt{-c^2-2cdx-d^2x^2+1}}{75d} & \text{for}\ d \neq 0 \\ c^4e^4x(a + b\operatorname{asin}(c)) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**4*(a+b*asin(d*x+c)),x)
```

```
[Out] Piecewise((a*c**4*e**4*x + 2*a*c**3*d*e**4*x**2 + 2*a*c**2*d**2*e**4*x**3 +
 a*c*d**3*e**4*x**4 + a*d**4*e**4*x**5/5 + b*c**5*e**4*asin(c + d*x)/(5*d)
+ b*c**4*e**4*x*asin(c + d*x) + b*c**4*e**4*sqrt(-c**2 - 2*c*d*x - d**2*x**
2 + 1)/(25*d) + 2*b*c**3*d*e**4*x**2*asin(c + d*x) + 4*b*c**3*e**4*x*sqrt(-
c**2 - 2*c*d*x - d**2*x**2 + 1)/25 + 2*b*c**2*d**2*e**4*x**3*asin(c + d*x)
+ 6*b*c**2*d*e**4*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/25 + 4*b*c**2*
e**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(75*d) + b*c*d**3*e**4*x**4*asin
(c + d*x) + 4*b*c*d**2*e**4*x**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/25 +
 8*b*c*e**4*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/75 + b*d**4*e**4*x**5*a
sin(c + d*x)/5 + b*d**3*e**4*x**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/25
```

```
+ 4*b*d*e**4*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/75 + 8*b*e**4*sqrt(
-c**2 - 2*c*d*x - d**2*x**2 + 1)/(75*d), Ne(d, 0)), (c**4*e**4*x*(a + b*asi
n(c)), True))
```

Giac [A]
time = 0.42, size = 174, normalized size = 1.64

$$\frac{(dx+c)^5ae^4}{5\,d}+\frac{\left((dx+c)^2-1\right)^2(dx+c)be^4\arcsin\left(dx+c\right)}{5\,d}+\frac{2\left((dx+c)^2-1\right)(dx+c)be^4\arcsin\left(dx+c\right)}{5\,d}+\frac{\left((dx+c)^2-1\right)^2\sqrt{-(dx+c)^2+1}\,be^4}{25\,d}+\frac{(dx+c)be^4\arcsin\left(dx+c\right)}{5\,d}-\frac{2\left(-(dx+c)^2+1\right)^{\frac{3}{2}}be^4}{15\,d}+\frac{\sqrt{-(dx+c)^2+1}\,be^4}{5\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4*(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/5*(d*x + c)^5*a*e^4/d + 1/5*((d*x + c)^2 - 1)^2*(d*x + c)*b*e^4*arcsin(d*
x + c)/d + 2/5*((d*x + c)^2 - 1)*(d*x + c)*b*e^4*arcsin(d*x + c)/d + 1/25*(
(d*x + c)^2 - 1)^2*sqrt(-(d*x + c)^2 + 1)*b*e^4/d + 1/5*(d*x + c)*b*e^4*arc
sin(d*x + c)/d - 2/15*(-(d*x + c)^2 + 1)^(3/2)*b*e^4/d + 1/5*sqrt(-(d*x + c
)^2 + 1)*b*e^4/d
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int (c\,e+d\,e\,x)^4\,\left(a+b\,\mathrm{asin}(c+d\,x)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^4*(a + b*asin(c + d*x)),x)
```

```
[Out] int((c*e + d*e*x)^4*(a + b*asin(c + d*x)), x)
```

3.178 $\int (ce+dex)^3(a+b\textbf{ArcSin}(c+dx))\,dx$

Optimal. Leaf size=109

$$\frac{3be^3(c+dx)\sqrt{1-(c+dx)^2}}{32d}+\frac{be^3(c+dx)^3\sqrt{1-(c+dx)^2}}{16d}-\frac{3be^3\text{ArcSin}(c+dx)}{32d}+\frac{e^3(c+dx)^4(a+b\text{ArcSi}}{4d}$$

```
[Out] -3/32*b*e^3*arcsin(d*x+c)/d+1/4*e^3*(d*x+c)^4*(a+b*arcsin(d*x+c))/d+3/32*b*
e^3*(d*x+c)*(1-(d*x+c)^2)^(1/2)/d+1/16*b*e^3*(d*x+c)^3*(1-(d*x+c)^2)^(1/2)/
d
```

Rubi [A]

time = 0.05, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.238$, Rules used = {4889, 12, 4723, 327, 222}

$$\frac{e^3(c+dx)^4(a+b\text{ArcSin}(c+dx))}{4d}-\frac{3be^3\text{ArcSin}(c+dx)}{32d}+\frac{be^3\sqrt{1-(c+dx)^2}\,(c+dx)^3}{16d}+\frac{3be^3\sqrt{1-(c+dx)^2}\,(c+dx)}{32d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (3*b*e^3*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(32*d) + (b*e^3*(c + d*x)^3*Sqrt[
1 - (c + d*x)^2])/(16*d) - (3*b*e^3*ArcSin[c + d*x])/(32*d) + (e^3*(c + d*x
)^4*(a + b*ArcSin[c + d*x]))/(4*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
```

```
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\begin{aligned}
\int (ce+dex)^3 \left(a+b\sin^{-1}(c+dx)\right) dx &= \frac{\text{Subst}\left(\int e^3x^3(a+b\sin^{-1}(x))\, dx, x, c+dx\right)}{d}\\
&= \frac{e^3\text{Subst}\left(\int x^3(a+b\sin^{-1}(x))\, dx, x, c+dx\right)}{d}\\
&= \frac{e^3(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)}{4d} - \frac{(be^3)\,\text{Subst}\left(\int \frac{x^4}{\sqrt{1-x^2}}\, dx,
\end{aligned}$$

$$\begin{aligned}
&= \frac{be^3(c+dx)^3\sqrt{1-(c+dx)^2}}{16d} + \frac{e^3(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)}{4d}\\
&= \frac{3be^3(c+dx)\sqrt{1-(c+dx)^2}}{32d} + \frac{be^3(c+dx)^3\sqrt{1-(c+dx)^2}}{16d} +\\
&= \frac{3be^3(c+dx)\sqrt{1-(c+dx)^2}}{32d} + \frac{be^3(c+dx)^3\sqrt{1-(c+dx)^2}}{16d} -
\end{aligned}$$

Mathematica [A]
time = 0.06, size = 87, normalized size = 0.80

$$\frac{e^3\left(3b(c+dx)\sqrt{1-(c+dx)^2}+2b(c+dx)^3\sqrt{1-(c+dx)^2}-3b\text{ArcSin}(c+dx)+8(c+dx)^4(a+b\text{ArcSin}(c+dx))\right)}{32d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^3*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (e^3*(3*b*(c + d*x)*Sqrt[1 - (c + d*x)^2] + 2*b*(c + d*x)^3*Sqrt[1 - (c + d
*x)^2] - 3*b*ArcSin[c + d*x] + 8*(c + d*x)^4*(a + b*ArcSin[c + d*x])))/(32*
d)
```

Maple [A]
time = 0.11, size = 90, normalized size = 0.83

method	result
derivativedivides	$\frac{\frac{e^3(dx+c)^4a}{4}+e^3b\left(\frac{(dx+c)^4\arcsin(dx+c)}{4}+\frac{(dx+c)^3\sqrt{1-(dx+c)^2}}{16}+\frac{3(dx+c)\sqrt{1-(dx+c)^2}}{32}-\frac{3\arcsin(dx+c)}{32}\right)}{d}$
default	$\frac{\frac{e^3(dx+c)^4a}{4}+e^3b\left(\frac{(dx+c)^4\arcsin(dx+c)}{4}+\frac{(dx+c)^3\sqrt{1-(dx+c)^2}}{16}+\frac{3(dx+c)\sqrt{1-(dx+c)^2}}{32}-\frac{3\arcsin(dx+c)}{32}\right)}{d}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3*(a+b*arcsin(d*x+c)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(1/4*e^3*(d*x+c)^4*a+e^3*b*(1/4*(d*x+c)^4*arcsin(d*x+c)+1/16*(d*x+c)^3*
(1-(d*x+c)^2)^(1/2)+3/32*(d*x+c)*(1-(d*x+c)^2)^(1/2)-3/32*arcsin(d*x+c)))
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 808 vs. $2(93) = 186$.
time = 0.49, size = 808, normalized size = 7.41

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/4*a*d^3*x^4*e^3 + a*c*d^2*x^3*e^3 + 3/2*a*c^2*d*x^2*e^3 + 3/4*(2*x^2*arcs
in(d*x + c) + d*(3*c^2*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))
/d^3 + sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*x/d^2 - (c^2 - 1)*arcsin(-(d^2*x
+ c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^3 - 3*sqrt(-d^2*x^2 - 2*c*d*x - c^2
 + 1)*c/d^3))*b*c^2*d*e^3 + 1/6*(6*x^3*arcsin(d*x + c) + d*(2*sqrt(-d^2*x^2
 - 2*c*d*x - c^2 + 1)*x^2/d^2 - 15*c^3*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 -
 (c^2 - 1)*d^2))/d^4 - 5*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c*x/d^3 + 9*(c^
2 - 1)*c*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^4 + 15*sqrt
(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c^2/d^4 - 4*sqrt(-d^2*x^2 - 2*c*d*x - c^2 +
1)*(c^2 - 1)/d^4))*b*c*d^2*e^3 + 1/96*(24*x^4*arcsin(d*x + c) + (6*sqrt(-d^
2*x^2 - 2*c*d*x - c^2 + 1)*x^3/d^2 - 14*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*
c*x^2/d^3 + 105*c^4*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^
5 + 35*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c^2*x/d^4 - 90*(c^2 - 1)*c^2*arcs
in(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^5 - 105*sqrt(-d^2*x^2 -
2*c*d*x - c^2 + 1)*c^3/d^5 - 9*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*(c^2 - 1)
*x/d^4 + 9*(c^2 - 1)^2*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))
/d^5 + 55*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*(c^2 - 1)*c/d^5)*d)*b*d^3*e^3
+ a*c^3*x*e^3 + ((d*x + c)*arcsin(d*x + c) + sqrt(-(d*x + c)^2 + 1))*b*c^3*
e^3/d
```

Fricas [A]
time = 2.71, size = 174, normalized size = 1.60

$$\frac{(8\,bd^4x^4+32\,bcd^3x^3+48\,bc^2d^2x^2+32\,bc^3dx+8\,bc^4-3\,b)\arcsin\left(dx+c\right)e^3+\left(2\,bd^3x^3+6\,bcd^2x^2+2\,bc^3+3\,(2\,bc^2+b)dx+3\,bc\right)\sqrt{-d^2x^2-2\,cdx-c^2+1}\,e^3+8\,(ad^4x^4+4\,acd^3x^3+6\,ac^2d^2x^2+4\,ac^3dx)e^3}{32\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/32*((8*b*d^4*x^4 + 32*b*c*d^3*x^3 + 48*b*c^2*d^2*x^2 + 32*b*c^3*d*x + 8*b
*c^4 - 3*b)*arcsin(d*x + c)*e^3 + (2*b*d^3*x^3 + 6*b*c*d^2*x^2 + 2*b*c^3 +
3*(2*b*c^2 + b)*d*x + 3*b*c)*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*e^3 + 8*(a*
d^4*x^4 + 4*a*c*d^3*x^3 + 6*a*c^2*d^2*x^2 + 4*a*c^3*d*x)*e^3)/d
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 394 vs. $2(94) = 188$.
time = 0.34, size = 394, normalized size = 3.61

$$\begin{cases} ac^3e^3x+\frac{3ac^2de^3x^2}{2}+acd^2e^3x^3+\frac{ad^3e^3x^4}{4}+\frac{bc^4e^3\operatorname{asin}(c+dx)}{4d}+bc^3e^3x\operatorname{asin}(c+dx)+\frac{bc^3e^3\sqrt{-c^2-2cdx-d^2x^2+1}}{16d}+\frac{3bc^2de^3x^2\operatorname{asin}(c+dx)}{2}+\frac{3bc^2e^3x\sqrt{-c^2-2cdx-d^2x^2+1}}{16}+bcd^2e^3x^3\operatorname{asin}(c+dx)+\frac{3bcde^3x^2\sqrt{-c^2-2cdx-d^2x^2+1}}{16}+\frac{3bce^3\sqrt{-c^2-2cdx-d^2x^2+1}}{32d}+\frac{bd^3e^3x^4\operatorname{asin}(c+dx)}{4}+\frac{bd^2e^3x^3\sqrt{-c^2-2cdx-d^2x^2+1}}{16}+\frac{3be^3x\sqrt{-c^2-2cdx-d^2x^2+1}}{32}-\frac{3be^3\operatorname{asin}(c+dx)}{32d} & \text{for}\ d\neq 0 \\ c^3e^3x(a+b\operatorname{asin}(c)) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3*(a+b*asin(d*x+c)),x)
```

```
[Out] Piecewise((a*c**3*e**3*x + 3*a*c**2*d*e**3*x**2/2 + a*c*d**2*e**3*x**3 + a*
d**3*e**3*x**4/4 + b*c**4*e**3*asin(c + d*x)/(4*d) + b*c**3*e**3*x*asin(c +
 d*x) + b*c**3*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(16*d) + 3*b*c**2
*d*e**3*x**2*asin(c + d*x)/2 + 3*b*c**2*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*
x**2 + 1)/16 + b*c*d**2*e**3*x**3*asin(c + d*x) + 3*b*c*d*e**3*x**2*sqrt(-c
**2 - 2*c*d*x - d**2*x**2 + 1)/16 + 3*b*c*e**3*sqrt(-c**2 - 2*c*d*x - d**2*
x**2 + 1)/(32*d) + b*d**3*e**3*x**4*asin(c + d*x)/4 + b*d**2*e**3*x**3*sqrt
(-c**2 - 2*c*d*x - d**2*x**2 + 1)/16 + 3*b*e**3*x*sqrt(-c**2 - 2*c*d*x - d*
*2*x**2 + 1)/32 - 3*b*e**3*asin(c + d*x)/(32*d), Ne(d, 0)), (c**3*e**3*x*(a
 + b*asin(c)), True))
```

Giac [A]
time = 0.43, size = 136, normalized size = 1.25

$$\frac{(dx+c)^4ae^3}{4\,d}+\frac{\left((dx+c)^2-1\right)^2be^3\arcsin\left(dx+c\right)}{4\,d}-\frac{\left(-(dx+c)^2+1\right)^{\frac{3}{2}}(dx+c)be^3}{16\,d}+\frac{\left((dx+c)^2-1\right)be^3\arcsin\left(dx+c\right)}{2\,d}+\frac{5\,\sqrt{-(dx+c)^2+1}\,(dx+c)be^3}{32\,d}+\frac{5\,be^3\arcsin\left(dx+c\right)}{32\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/4*(d*x + c)^4*a*e^3/d + 1/4*((d*x + c)^2 - 1)^2*b*e^3*arcsin(d*x + c)/d -
 1/16*(-(d*x + c)^2 + 1)^(3/2)*(d*x + c)*b*e^3/d + 1/2*((d*x + c)^2 - 1)*b*
e^3*arcsin(d*x + c)/d + 5/32*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*b*e^3/d + 5/3
2*b*e^3*arcsin(d*x + c)/d
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int (c\,e+d\,e\,x)^3\,(a+b\,\mathrm{asin}(c+d\,x))\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^3*(a + b*asin(c + d*x)),x)
[Out] int((c*e + d*e*x)^3*(a + b*asin(c + d*x)), x)
```

3.179 $\int (ce+dex)^2(a+b\text{ArcSin}(c+dx))\,dx$

Optimal. Leaf size=80

$$\frac{be^2\sqrt{1-(c+dx)^2}}{3d}-\frac{be^2\left(1-(c+dx)^2\right)^{3/2}}{9d}+\frac{e^2(c+dx)^3(a+b\text{ArcSin}(c+dx))}{3d}$$

```
[Out] -1/9*b*e^2*(1-(d*x+c)^2)^(3/2)/d+1/3*e^2*(d*x+c)^3*(a+b*arcsin(d*x+c))/d+1/
3*b*e^2*(1-(d*x+c)^2)^(1/2)/d
```

Rubi [A]
time = 0.05, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {4889, 12, 4723, 272, 45}

$$\frac{e^2(c+dx)^3(a+b\text{ArcSin}(c+dx))}{3d}-\frac{be^2\left(1-(c+dx)^2\right)^{3/2}}{9d}+\frac{be^2\sqrt{1-(c+dx)^2}}{3d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (b*e^2*Sqrt[1 - (c + d*x)^2])/(3*d) - (b*e^2*(1 - (c + d*x)^2)^(3/2))/(9*d)
 + (e^2*(c + d*x)^3*(a + b*ArcSin[c + d*x]))/(3*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
```

```
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)^2 \left(a+b\sin^{-1}(c+dx)\right)\,dx = \frac{\text{Subst}\left(\int e^2x^2(a+b\sin^{-1}(x))\,dx,x,c+dx\right)}{d}$$
$$= \frac{e^2\text{Subst}\left(\int x^2(a+b\sin^{-1}(x))\,dx,x,c+dx\right)}{d}$$
$$= \frac{e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)}{3d} - \frac{(be^2)\,\text{Subst}\left(\int \frac{x^3}{\sqrt{1-x^2}}\,dx,x,\right.}{3d}$$
$$= \frac{e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)}{3d} - \frac{(be^2)\,\text{Subst}\left(\int \frac{x}{\sqrt{1-x}}\,dx,x,\right.}{6d}$$
$$= \frac{e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)}{3d} - \frac{(be^2)\,\text{Subst}\left(\int \left(\frac{1}{\sqrt{1-x}}-\sqrt{}\right.\right.}{6d}$$
$$= \frac{be^2\sqrt{1-(c+dx)^2}}{3d} - \frac{be^2\left(1-(c+dx)^2\right)^{3/2}}{9d} + \frac{e^2(c+dx)^3\left(a+b\,\text{s}\right.}{3d}$$

Mathematica [A]
time = 0.04, size = 64, normalized size = 0.80

$$\frac{e^2\left(b(2+c^2+2cdx+d^2x^2)\sqrt{1-(c+dx)^2}+3(c+dx)^3(a+b\text{ArcSin}(c+dx))\right)}{9d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (e^2*(b*(2 + c^2 + 2*c*d*x + d^2*x^2)*Sqrt[1 - (c + d*x)^2] + 3*(c + d*x)^3
*(a + b*ArcSin[c + d*x])))/(9*d)
```

Maple [A]
time = 0.11, size = 77, normalized size = 0.96

method	result	size
derivativedivides	$\frac{\frac{e^2(dx+c)^3a}{3}+e^2b\left(\frac{(dx+c)^3\arcsin(dx+c)}{3}+\frac{(dx+c)^2\sqrt{1-(dx+c)^2}}{9}+\frac{2\sqrt{1-(dx+c)^2}}{9}\right)}{d}$	77
default	$\frac{\frac{e^2(dx+c)^3a}{3}+e^2b\left(\frac{(dx+c)^3\arcsin(dx+c)}{3}+\frac{(dx+c)^2\sqrt{1-(dx+c)^2}}{9}+\frac{2\sqrt{1-(dx+c)^2}}{9}\right)}{d}$	77

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2*(a+b*arcsin(d*x+c)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(1/3*e^2*(d*x+c)^3*a+e^2*b*(1/3*(d*x+c)^3*arcsin(d*x+c)+1/9*(d*x+c)^2*(
1-(d*x+c)^2)^(1/2)+2/9*(1-(d*x+c)^2)^(1/2)))
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 451 vs. $2(67) = 134$.
time = 0.48, size = 451, normalized size = 5.64

$$\frac{1}{3}ad^2x^3e^2+acdx^2e^2+\frac{1}{2}\left(2x^2\arcsin(dx+c)+d\left(\frac{3c^2\arcsin\left(-\frac{d^2x+cd}{\sqrt{c^2d^2-(c^2-1)d^2}}\right)}{d^3}+\frac{\sqrt{-d^2x^2-2cdx-c^2+1}\,x}{d^2}-\frac{(c^2-1)\arcsin\left(-\frac{d^2x+cd}{\sqrt{c^2d^2-(c^2-1)d^2}}\right)}{d^3}-\frac{3\sqrt{-d^2x^2-2cdx-c^2+1}\,c}{d^3}\right)\right)bcde^2+\frac{1}{18}\left(6x^3\arcsin(dx+c)+d\left(\frac{2\sqrt{-d^2x^2-2cdx-c^2+1}\,x^2}{d^2}-\frac{15c^3\arcsin\left(-\frac{d^2x+cd}{\sqrt{c^2d^2-(c^2-1)d^2}}\right)}{d^4}-\frac{5\sqrt{-d^2x^2-2cdx-c^2+1}\,cx}{d^3}+\frac{9(c^2-1)c\arcsin\left(-\frac{d^2x+cd}{\sqrt{c^2d^2-(c^2-1)d^2}}\right)}{d^4}+\frac{15\sqrt{-d^2x^2-2cdx-c^2+1}\,c^2}{d^4}-\frac{4\sqrt{-d^2x^2-2cdx-c^2+1}\,(c^2-1)}{d^4}\right)\right)bd^2e^2+ac^2xe^2+\frac{\left((dx+c)\arcsin(dx+c)+\sqrt{-(dx+c)^2+1}\right)bc^2e^2}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/3*a*d^2*x^3*e^2 + a*c*d*x^2*e^2 + 1/2*(2*x^2*arcsin(d*x + c) + d*(3*c^2*a
rcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^3 + sqrt(-d^2*x^2 - 2
*c*d*x - c^2 + 1)*x/d^2 - (c^2 - 1)*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c
^2 - 1)*d^2))/d^3 - 3*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c/d^3))*b*c*d*e^2
+ 1/18*(6*x^3*arcsin(d*x + c) + d*(2*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*x^2
/d^2 - 15*c^3*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^4 - 5*
sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c*x/d^3 + 9*(c^2 - 1)*c*arcsin(-(d^2*x +
 c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^4 + 15*sqrt(-d^2*x^2 - 2*c*d*x - c^2
 + 1)*c^2/d^4 - 4*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*(c^2 - 1)/d^4))*b*d^2*
e^2 + a*c^2*x*e^2 + ((d*x + c)*arcsin(d*x + c) + sqrt(-(d*x + c)^2 + 1))*b*
c^2*e^2/d
```

Fricas [A]
time = 3.38, size = 127, normalized size = 1.59

$$\frac{3\left(bd^3x^3+3\,bcd^2x^2+3\,bc^2dx+bc^3\right)\arcsin(dx+c)\,e^2+\left(bd^2x^2+2\,bcdx+bc^2+2\,b\right)\sqrt{-d^2x^2-2\,cdx-c^2+1}\,e^2+3\left(ad^3x^3+3\,acd^2x^2+3\,ac^2dx\right)e^2}{9\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/9*(3*(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3)*arcsin(d*x + c)*e^
2 + (b*d^2*x^2 + 2*b*c*d*x + b*c^2 + 2*b)*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1
)*e^2 + 3*(a*d^3*x^3 + 3*a*c*d^2*x^2 + 3*a*c^2*d*x)*e^2)/d
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 258 vs. $2(63) = 126$.
time = 0.18, size = 258, normalized size = 3.22

$$\begin{cases} ac^2e^2x + acde^2x^2 + \frac{ad^2e^2x^3}{3} + \frac{bc^3e^2\operatorname{asin}(c+dx)}{3d} + bc^2e^2x\operatorname{asin}(c+dx) + \frac{bc^2e^2\sqrt{-c^2-2cdx-d^2x^2+1}}{9d} + bcde^2x^2\operatorname{asin}(c+dx) + \frac{2bce^2x\sqrt{-c^2-2cdx-d^2x^2+1}}{9} + \frac{bd^2e^2x^3\operatorname{asin}(c+dx)}{3} + \frac{bde^2x^2\sqrt{-c^2-2cdx-d^2x^2+1}}{9} + \frac{2be^2\sqrt{-c^2-2cdx-d^2x^2+1}}{9d} & \text{for } d \neq 0 \\ c^2e^2x(a+b\operatorname{asin}(c)) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2*(a+b*asin(d*x+c)),x)
```

```
[Out] Piecewise((a*c**2*e**2*x + a*c*d*e**2*x**2 + a*d**2*e**2*x**3/3 + b*c**3*e*
*2*asin(c + d*x)/(3*d) + b*c**2*e**2*x*asin(c + d*x) + b*c**2*e**2*sqrt(-c*
*2 - 2*c*d*x - d**2*x**2 + 1)/(9*d) + b*c*d*e**2*x**2*asin(c + d*x) + 2*b*c
*e**2*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/9 + b*d**2*e**2*x**3*asin(c +
 d*x)/3 + b*d*e**2*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/9 + 2*b*e**2*
sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(9*d), Ne(d, 0)), (c**2*e**2*x*(a + b
*asin(c)), True))
```

Giac [A]
time = 0.41, size = 110, normalized size = 1.38

$$\frac{(dx+c)^3ae^2}{3\,d} + \frac{\left((dx+c)^2-1\right)(dx+c)be^2\arcsin(dx+c)}{3\,d} + \frac{(dx+c)be^2\arcsin(dx+c)}{3\,d} - \frac{\left(-(dx+c)^2+1\right)^{\frac{3}{2}}be^2}{9\,d} + \frac{\sqrt{-(dx+c)^2+1}\,be^2}{3\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/3*(d*x + c)^3*a*e^2/d + 1/3*((d*x + c)^2 - 1)*(d*x + c)*b*e^2*arcsin(d*x
+ c)/d + 1/3*(d*x + c)*b*e^2*arcsin(d*x + c)/d - 1/9*(-(d*x + c)^2 + 1)^(3/
2)*b*e^2/d + 1/3*sqrt(-(d*x + c)^2 + 1)*b*e^2/d
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int (c\,e+d\,e\,x)^2\,(a+b\operatorname{asin}(c+d\,x))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^2*(a + b*asin(c + d*x)),x)
```

```
[Out] int((c*e + d*e*x)^2*(a + b*asin(c + d*x)), x)
```

3.180 $\int (ce+dex)(a+b\mathbf{ArcSin}(c+dx))\,dx$

Optimal. Leaf size=70

$$\frac{be(c+dx)\sqrt{1-(c+dx)^2}}{4d}-\frac{be\text{ArcSin}(c+dx)}{4d}+\frac{e(c+dx)^2(a+b\text{ArcSin}(c+dx))}{2d}$$

```
[Out] -1/4*b*e*arcsin(d*x+c)/d+1/2*e*(d*x+c)^2*(a+b*arcsin(d*x+c))/d+1/4*b*e*(d*x
+c)*(1-(d*x+c)^2)^(1/2)/d
```

Rubi [A]
time = 0.03, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$, Rules used = {4889, 12, 4723, 327, 222}

$$\frac{e(c+dx)^2(a+b\text{ArcSin}(c+dx))}{2d}-\frac{be\text{ArcSin}(c+dx)}{4d}+\frac{be\sqrt{1-(c+dx)^2}\,(c+dx)}{4d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (b*e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(4*d) - (b*e*ArcSin[c + d*x])/(4*d) +
 (e*(c + d*x)^2*(a + b*ArcSin[c + d*x]))/(2*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
```

```
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)\left(a+b\sin^{-1}(c+dx)\right)\,dx = \frac{\text{Subst}\left(\int ex(a+b\sin^{-1}(x))\,dx,x,c+dx\right)}{d}$$
$$= \frac{e\text{Subst}\left(\int x(a+b\sin^{-1}(x))\,dx,x,c+dx\right)}{d}$$
$$= \frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)}{2d} - \frac{(be)\text{Subst}\left(\int \frac{x^2}{\sqrt{1-x^2}}\,dx,x,c+\right.}{2d}$$
$$= \frac{be(c+dx)\sqrt{1-(c+dx)^2}}{4d} + \frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)}{2d} - \frac{(b}{}$$
$$= \frac{be(c+dx)\sqrt{1-(c+dx)^2}}{4d} - \frac{be\sin^{-1}(c+dx)}{4d} + \frac{e(c+dx)^2\left(a+b\right.}{2d}$$

Mathematica [A]
time = 0.05, size = 59, normalized size = 0.84

$$\frac{e\left(b(c+dx)\sqrt{1-(c+dx)^2}-b\text{ArcSin}(c+dx)+2(c+dx)^2(a+b\text{ArcSin}(c+dx))\right)}{4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (e*(b*(c + d*x)*Sqrt[1 - (c + d*x)^2] - b*ArcSin[c + d*x] + 2*(c + d*x)^2*(
a + b*ArcSin[c + d*x])))/(4*d)
```

Maple [A]
time = 0.01, size = 64, normalized size = 0.91

method	result	size

derivativedivides	$\frac{\frac{e(dx+c)^2 a}{2}+eb\left(\frac{(dx+c)^2 \arcsin(dx+c)}{2}+\frac{(dx+c)\sqrt{1-(dx+c)^2}}{4}-\frac{\arcsin(dx+c)}{4}\right)}{d}$	64
default	$\frac{\frac{e(dx+c)^2 a}{2}+eb\left(\frac{(dx+c)^2 \arcsin(dx+c)}{2}+\frac{(dx+c)\sqrt{1-(dx+c)^2}}{4}-\frac{\arcsin(dx+c)}{4}\right)}{d}$	64

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)*(a+b*arcsin(d*x+c)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(1/2*e*(d*x+c)^2*a+e*b*(1/2*(d*x+c)^2*arcsin(d*x+c)+1/4*(d*x+c)*(1-(d*x
+c)^2)^(1/2)-1/4*arcsin(d*x+c)))
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 208 vs. $2(65) = 130$.
time = 0.47, size = 208, normalized size = 2.97

$$\frac{1}{2}\,adx^2e+\frac{1}{4}\left(2\,x^2\arcsin\left(dx+c\right)+d\left(\frac{3\,c^2\arcsin\left(-\frac{d^2x+cd}{\sqrt{c^2d^2-(c^2-1)d^2}}\right)}{d^3}+\frac{\sqrt{-d^2x^2-2\,cdx-c^2+1}\,x}{d^2}-\frac{(c^2-1)\arcsin\left(-\frac{d^2x+cd}{\sqrt{c^2d^2-(c^2-1)d^2}}\right)}{d^3}-\frac{3\,\sqrt{-d^2x^2-2\,cdx-c^2+1}\,c}{d^3}\right)\right)bde+acxe+\frac{\left((dx+c)\arcsin\left(dx+c\right)+\sqrt{-(dx+c)^2+1}\right)bce}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/2*a*d*x^2*e + 1/4*(2*x^2*arcsin(d*x + c) + d*(3*c^2*arcsin(-(d^2*x + c*d)
/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^3 + sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*x/
d^2 - (c^2 - 1)*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^3 -
3*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c/d^3))*b*d*e + a*c*x*e + ((d*x + c)*a
rcsin(d*x + c) + sqrt(-(d*x + c)^2 + 1))*b*c*e/d
```

Fricas [A]
time = 3.30, size = 92, normalized size = 1.31

$$\frac{(2\,bd^2x^2+4\,bcdx+2\,bc^2-b)\arcsin\left(dx+c\right)e+\sqrt{-d^2x^2-2\,cdx-c^2+1}\,(bdx+bc)e+2\,(ad^2x^2+2\,acdx)e}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/4*((2*b*d^2*x^2 + 4*b*c*d*x + 2*b*c^2 - b)*arcsin(d*x + c)*e + sqrt(-d^2*
x^2 - 2*c*d*x - c^2 + 1)*(b*d*x + b*c)*e + 2*(a*d^2*x^2 + 2*a*c*d*x)*e)/d
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 148 vs. $2(58) = 116$.
time = 0.12, size = 148, normalized size = 2.11

$$\begin{cases} acex+\frac{adex^2}{2}+\frac{bc^2e\operatorname{asin}(c+dx)}{2d}+bcex\operatorname{asin}\left(c+dx\right)+\frac{bce\sqrt{-c^2-2cdx-d^2x^2+1}}{4d}+\frac{bdex^2\operatorname{asin}(c+dx)}{2}+\frac{bex\sqrt{-c^2-2cdx-d^2x^2+1}}{4}-\frac{be\operatorname{asin}(c+dx)}{4d} & \text{for}\ d\neq 0\\ cex(a+b\operatorname{asin}\left(c\right)) & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*asin(d*x+c)),x)
```

```
[Out] Piecewise((a*c*e*x + a*d*e*x**2/2 + b*c**2*e*asin(c + d*x)/(2*d) + b*c*e*x*
asin(c + d*x) + b*c*e*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(4*d) + b*d*e*x
**2*asin(c + d*x)/2 + b*e*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/4 - b*e*a
sin(c + d*x)/(4*d), Ne(d, 0)), (c*e*x*(a + b*asin(c)), True))
```

Giac [A]
time = 0.40, size = 77, normalized size = 1.10

$$\frac{\left((dx+c)^2-1\right)be \arcsin\left(dx+c\right)}{2\,d}+\frac{\sqrt{-(dx+c)^2+1}\,(dx+c)be}{4\,d}+\frac{\left((dx+c)^2-1\right)ae}{2\,d}+\frac{be \arcsin\left(dx+c\right)}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/2*((d*x + c)^2 - 1)*b*e*arcsin(d*x + c)/d + 1/4*sqrt(-(d*x + c)^2 + 1)*(d
*x + c)*b*e/d + 1/2*((d*x + c)^2 - 1)*a*e/d + 1/4*b*e*arcsin(d*x + c)/d
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int (c\,e+d\,e\,x)\,\left(a+b\,\mathrm{asin}(c+d\,x)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)*(a + b*asin(c + d*x)),x)
```

```
[Out] int((c*e + d*e*x)*(a + b*asin(c + d*x)), x)
```

3.181 $\int (a+b\text{ArcSin}(c+dx))\,dx$

Optimal. Leaf size=40

$$ax+\frac{b\sqrt{1-(c+dx)^2}}{d}+\frac{b(c+dx)\text{ArcSin}(c+dx)}{d}$$

```
[Out] a*x+b*(d*x+c)*arcsin(d*x+c)/d+b*(1-(d*x+c)^2)^(1/2)/d
```

Rubi [A]
time = 0.02, antiderivative size = 40, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}=0.300$, Rules used = {4887, 4715, 267}

$$ax+\frac{b(c+dx)\text{ArcSin}(c+dx)}{d}+\frac{b\sqrt{1-(c+dx)^2}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[a + b*ArcSin[c + d*x],x]
```

```
[Out] a*x + (b*Sqrt[1 - (c + d*x)^2])/d + (b*(c + d*x)*ArcSin[c + d*x])/d
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$
\begin{aligned}
\int (a+b\sin^{-1}(c+dx))\, dx &= ax+b\int \sin^{-1}(c+dx)\,dx \\
&= ax+\frac{b\text{Subst}\left(\int \sin^{-1}(x)\,dx,x,c+dx\right)}{d} \\
&= ax+\frac{b(c+dx)\sin^{-1}(c+dx)}{d}-\frac{b\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}}\,dx,x,c+dx\right)}{d} \\
&= ax+\frac{b\sqrt{1-(c+dx)^2}}{d}+\frac{b(c+dx)\sin^{-1}(c+dx)}{d}
\end{aligned}
$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 159 vs. 2(40) = 80.
time = 0.25, size = 159, normalized size = 3.98

$$
ax+bx\text{ArcSin}(c+dx)+\frac{b\left(2d\sqrt{1-c^2-2cdx-d^2x^2}+2cd\text{ArcTan}\left(\frac{\sqrt{-d^2}\,x-\sqrt{1-c^2-2cdx-d^2x^2}}{c}\right)+c\sqrt{-d^2}\,\log\left(-1+2cdx+2d^2x^2+2\sqrt{-d^2}\,x\sqrt{1-c^2-2cdx-d^2x^2}\right)\right)}{2d^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*ArcSin[c + d*x],x]
```

```
[Out] a*x + b*x*ArcSin[c + d*x] + (b*(2*d*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2] + 2*c
*d*ArcTan[(Sqrt[-d^2]*x - Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2])/c] + c*Sqrt[-d
^2]*Log[-1 + 2*c*d*x + 2*d^2*x^2 + 2*Sqrt[-d^2]*x*Sqrt[1 - c^2 - 2*c*d*x -
d^2*x^2]]))/(2*d^2)
```

Maple [A]
time = 0.06, size = 36, normalized size = 0.90

method	result	size
default	$ax+\frac{b\left((dx+c)\arcsin(dx+c)+\sqrt{1-(dx+c)^2}\right)}{d}$	36
derivativedivides	$\frac{(dx+c)a+b\left((dx+c)\arcsin(dx+c)+\sqrt{1-(dx+c)^2}\right)}{d}$	41

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a+b*arcsin(d*x+c),x,method=_RETURNVERBOSE)
```

```
[Out] a*x+b/d*((d*x+c)*arcsin(d*x+c)+(1-(d*x+c)^2)^(1/2))
```

Maxima [A]
time = 0.47, size = 35, normalized size = 0.88

$$ax+\frac{\left((dx+c)\arcsin\left(dx+c\right)+\sqrt{-\left(dx+c\right)^{2}+1}\right)b}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(d*x+c),x, algorithm="maxima")
```

```
[Out] a*x + ((d*x + c)*arcsin(d*x + c) + sqrt(-(d*x + c)^2 + 1))*b/d
```

Fricas [A]
time = 3.07, size = 48, normalized size = 1.20

$$\frac{adx+(bdx+bc)\arcsin\left(dx+c\right)+\sqrt{-d^{2}x^{2}-2\,cdx-c^{2}+1}\,b}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(d*x+c),x, algorithm="fricas")
```

```
[Out] (a*d*x + (b*d*x + b*c)*arcsin(d*x + c) + sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)
*b)/d
```

Sympy [A]
time = 0.07, size = 51, normalized size = 1.28

$$ax+b\left(\begin{cases}\frac{c\,\mathrm{asin}\,(c+dx)}{d}+x\,\mathrm{asin}\,(c+dx)+\frac{\sqrt{-c^{2}-2cdx-d^{2}x^{2}+1}}{d} & \text{for}\ d\neq 0\\ x\,\mathrm{asin}\,(c) & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*asin(d*x+c),x)
```

```
[Out] a*x + b*Piecewise((c*asin(c + d*x)/d + x*asin(c + d*x) + sqrt(-c**2 - 2*c*d
*x - d**2*x**2 + 1)/d, Ne(d, 0)), (x*asin(c), True))
```

Giac [A]
time = 0.40, size = 35, normalized size = 0.88

$$ax+\frac{\left((dx+c)\arcsin\left(dx+c\right)+\sqrt{-\left(dx+c\right)^{2}+1}\right)b}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(d*x+c),x, algorithm="giac")
```

```
[Out] a*x + ((d*x + c)*arcsin(d*x + c) + sqrt(-(d*x + c)^2 + 1))*b/d
```

Mupad [B]
time = 0.61, size = 92, normalized size = 2.30

$$a\,x+b\,x\,\mathrm{asin}(c+d\,x)+\frac{b\,\sqrt{-c^2-2\,c\,d\,x-d^2\,x^2+1}}{d}+\frac{b\,c\,\ln\left(\sqrt{-c^2-2\,c\,d\,x-d^2\,x^2+1}-\frac{x\,d^2+c\,d}{\sqrt{-d^2}}\right)}{\sqrt{-d^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a + b*asin(c + d*x),x)
```

```
[Out] a*x + b*x*asin(c + d*x) + (b*(1 - d^2*x^2 - 2*c*d*x - c^2)^(1/2))/d + (b*c*
log((1 - d^2*x^2 - 2*c*d*x - c^2)^(1/2) - (c*d + d^2*x)/(-d^2)^(1/2)))/(-d^
2)^(1/2)
```

3.182 $\int \frac{a+b\mathbf{ArcSin}(c+dx)}{ce+dex}\,dx$

Optimal. Leaf size=89

$$-\frac{i(a+b\text{ArcSin}(c+dx))^2}{2bde}+\frac{(a+b\text{ArcSin}(c+dx))\log\left(1-e^{2i\text{ArcSin}(c+dx)}\right)}{de}-\frac{ib\text{PolyLog}\left(2,e^{2i\text{ArcSin}(c+dx)}\right)}{2de}$$

```
[Out] -1/2*I*(a+b*arcsin(d*x+c))^2/b/d/e+(a+b*arcsin(d*x+c))*ln(1-(I*(d*x+c)+(1-(
d*x+c)^2)^(1/2))^2)/d/e-1/2*I*b*polylog(2,(I*(d*x+c)+(1-(d*x+c)^2)^(1/2))^2
)/d/e
```

Rubi [A]
time = 0.07, antiderivative size = 89, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$, Rules used = {4889, 12, 4721, 3798, 2221, 2317, 2438}

$$-\frac{i(a+b\text{ArcSin}(c+dx))^2}{2bde}+\frac{\log\left(1-e^{2i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))}{de}-\frac{ib\text{Li}_2\left(e^{2i\text{ArcSin}(c+dx)}\right)}{2de}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])/(c*e + d*e*x),x]
```

```
[Out] ((-1/2*I)*(a + b*ArcSin[c + d*x])^2)/(b*d*e) + ((a + b*ArcSin[c + d*x])*Log
[1 - E^((2*I)*ArcSin[c + d*x])])/(d*e) - ((I/2)*b*PolyLog[2, E^((2*I)*ArcSi
n[c + d*x])])/(d*e)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3798

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[I*((c + d*x)^(m + 1)/(d*(m + 1))), x] - Dist[2*I, Int[(c + d*x)^m
*E^(2*I*k*Pi)*(E^(2*I*(e + f*x))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x)))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n*Cot[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[(((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}(c+dx)}{ce+dex}\,dx &= \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{ex}\,dx, x, c+dx\right)}{d}\\
&= \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{x}\,dx, x, c+dx\right)}{de}\\
&= \frac{\text{Subst}\left(\int (a+bx)\cot(x)\,dx, x, \sin^{-1}(c+dx)\right)}{de}\\
&= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^2}{2bde} - \frac{(2i)\text{Subst}\left(\int \frac{e^{2ix}(a+bx)}{1-e^{2ix}}\,dx, x, \sin^{-1}(c+dx)\right)}{de}\\
&= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^2}{2bde} + \frac{\left(a+b\sin^{-1}(c+dx)\right)\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{b\text{Sub}}{}\\
&= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^2}{2bde} + \frac{\left(a+b\sin^{-1}(c+dx)\right)\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} + \frac{(ib)\text{S}}{}\\
&= -\frac{i\left(a+b\sin^{-1}(c+dx)\right)^2}{2bde} + \frac{\left(a+b\sin^{-1}(c+dx)\right)\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{ib\text{Li}_2}{}
\end{aligned}$$

Mathematica [A]

time = 0.04, size = 71, normalized size = 0.80

$$\frac{b\text{ArcSin}(c+dx)\log\left(1-e^{2i\text{ArcSin}(c+dx)}\right)+a\log(c+dx)-\frac{1}{2}ib\left(\text{ArcSin}(c+dx)^2+\text{PolyLog}\left(2,e^{2i\text{ArcSin}(c+dx)}\right)\right)}{de}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])/(c*e + d*e*x),x]
```

```
[Out] (b*ArcSin[c + d*x]*Log[1 - E^((2*I)*ArcSin[c + d*x])] + a*Log[c + d*x] - (I
/2)*b*(ArcSin[c + d*x]^2 + PolyLog[2, E^((2*I)*ArcSin[c + d*x])]))/(d*e)
```

Maple [A]
time = 0.35, size = 168, normalized size = 1.89

method	result
derivativedivides	$\frac{\frac{a\ln(dx+c)}{e}-\frac{ib\arcsin(dx+c)^2}{2e}+\frac{b\arcsin(dx+c)\ln\left(1+i(dx+c)+\sqrt{1-(dx+c)^2}\right)}{e}+\frac{b\arcsin(dx+c)\ln\left(1-i(dx+c)-\sqrt{1-\right.}{e}}{d}$
default	$\frac{\frac{a\ln(dx+c)}{e}-\frac{ib\arcsin(dx+c)^2}{2e}+\frac{b\arcsin(dx+c)\ln\left(1+i(dx+c)+\sqrt{1-(dx+c)^2}\right)}{e}+\frac{b\arcsin(dx+c)\ln\left(1-i(dx+c)-\sqrt{1-\right.}{e}}{d}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))/(d*e*x+c*e),x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(a/e*ln(d*x+c)-1/2*I*b/e*arcsin(d*x+c)^2+b/e*arcsin(d*x+c)*ln(1+I*(d*x+
c)+(1-(d*x+c)^2)^(1/2))+b/e*arcsin(d*x+c)*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2
))-I*b/e*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-I*b/e*polylog(2,-I*(d*x+c
)-(1-(d*x+c)^2)^(1/2)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e),x, algorithm="maxima")
```

```
[Out] b*integrate(arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))/(d*x*e +
 c*e), x) + a*e^(-1)*log(d*x*e + c*e)/d
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e),x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(d*x + c) + a)*e^(-1)/(d*x + c), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a}{c+dx}\,dx + \int \frac{b\,\mathrm{asin}\,(c+dx)}{c+dx}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))/(d*e*x+c*e),x)
```

```
[Out] (Integral(a/(c + d*x), x) + Integral(b*asin(c + d*x)/(c + d*x), x))/e
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)/(d*e*x + c*e), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\mathrm{asin}(c+d\,x)}{c\,e+d\,e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))/(c*e + d*e*x),x)
```

```
[Out] int((a + b*asin(c + d*x))/(c*e + d*e*x), x)
```

3.183 $\int \frac{a+b\text{ArcSin}(c+dx)}{(ce+dex)^2}\,dx$

Optimal. Leaf size=51

$$-\frac{a+b\text{ArcSin}(c+dx)}{de^2(c+dx)}-\frac{b\tanh^{-1}\left(\sqrt{1-(c+dx)^2}\right)}{de^2}$$

```
[Out] (-a-b*arcsin(d*x+c))/d/e^2/(d*x+c)-b*arctanh((1-(d*x+c)^2)^(1/2))/d/e^2
```

Rubi [A]
time = 0.04, antiderivative size = 51, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {4889, 12, 4723, 272, 65, 212}

$$-\frac{a+b\text{ArcSin}(c+dx)}{de^2(c+dx)}-\frac{b\tanh^{-1}\left(\sqrt{1-(c+dx)^2}\right)}{de^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^2,x]
```

```
[Out] -((a + b*ArcSin[c + d*x])/(d*e^2*(c + d*x))) - (b*ArcTanh[Sqrt[1 - (c + d*x
)^2]])/(d*e^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 212

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1/(Rt[a, 2]*Rt[-b, 2]))*
ArcTanh[Rt[-b, 2]*(x/Rt[a, 2])], x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
```

```
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$
\begin{aligned}
\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^2}\,dx &= \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{e^2x^2}\,dx, x, c+dx\right)}{d}\\
&= \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{x^2}\,dx, x, c+dx\right)}{de^2}\\
&= -\frac{a+b\sin^{-1}(c+dx)}{de^2(c+dx)} + \frac{b\text{Subst}\left(\int \frac{1}{x\sqrt{1-x^2}}\,dx, x, c+dx\right)}{de^2}\\
&= -\frac{a+b\sin^{-1}(c+dx)}{de^2(c+dx)} + \frac{b\text{Subst}\left(\int \frac{1}{\sqrt{1-x}\,x}\,dx, x, (c+dx)^2\right)}{2de^2}\\
&= -\frac{a+b\sin^{-1}(c+dx)}{de^2(c+dx)} - \frac{b\text{Subst}\left(\int \frac{1}{1-x^2}\,dx, x, \sqrt{1-(c+dx)^2}\right)}{de^2}\\
&= -\frac{a+b\sin^{-1}(c+dx)}{de^2(c+dx)} - \frac{b\tanh^{-1}\left(\sqrt{1-(c+dx)^2}\right)}{de^2}
\end{aligned}
$$

Mathematica [A]
time = 0.02, size = 45, normalized size = 0.88

$$
-\frac{\frac{a+b\text{ArcSin}(c+dx)}{c+dx} + b\tanh^{-1}\left(\sqrt{1-(c+dx)^2}\right)}{de^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^2,x]
```

```
[Out] -(((a + b*ArcSin[c + d*x])/(c + d*x) + b*ArcTanh[Sqrt[1 - (c + d*x)^2]])/(d
*e^2))
```

Maple [A]
time = 0.12, size = 56, normalized size = 1.10

method	result	size
derivativedivides	$\frac{-\frac{a}{e^2(dx+c)}+\frac{b\left(-\frac{\arcsin(dx+c)}{dx+c}-\operatorname{arctanh}\left(\frac{1}{\sqrt{1-(dx+c)^2}}\right)\right)}{e^2}}{d}$	56
default	$\frac{-\frac{a}{e^2(dx+c)}+\frac{b\left(-\frac{\arcsin(dx+c)}{dx+c}-\operatorname{arctanh}\left(\frac{1}{\sqrt{1-(dx+c)^2}}\right)\right)}{e^2}}{d}$	56

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))/(d*e*x+c*e)^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(-a/e^2/(d*x+c)+b/e^2*(-1/(d*x+c)*arcsin(d*x+c)-arctanh(1/(1-(d*x+c)^2)
^(1/2))))
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 111 vs. $2(47) = 94$.
time = 0.49, size = 111, normalized size = 2.18

$$-b\left(\frac{e^{(-2)}\log\left(\frac{2\sqrt{-d^2x^2-2\,cdx-c^2+1}}{|d^2xe^2+cde^2|}+\frac{2}{|d^2xe^2+cde^2|}\right)}{d}+\frac{\arcsin\left(dx+c\right)}{d^2xe^2+cde^2}\right)-\frac{a}{d^2xe^2+cde^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^2,x, algorithm="maxima")
```

```
[Out] -b*(e^(-2)*log(2*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)/abs(d^2*x*e^2 + c*d*e^2
) + 2/abs(d^2*x*e^2 + c*d*e^2))/d + arcsin(d*x + c)/(d^2*x*e^2 + c*d*e^2))
- a/(d^2*x*e^2 + c*d*e^2)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 97 vs. $2(47) = 94$.
time = 3.22, size = 97, normalized size = 1.90

$$-\frac{\left(2\,b\arcsin\left(dx+c\right)+\left(bdx+bc\right)\log\left(\sqrt{-d^2x^2-2\,cdx-c^2+1}+1\right)-\left(bdx+bc\right)\log\left(\sqrt{-d^2x^2-2\,cdx-c^2+1}-1\right)+2\,a\right)e^{(-2)}}{2\left(d^2x+cd\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(2*b*arcsin(d*x + c) + (b*d*x + b*c)*log(sqrt(-d^2*x^2 - 2*c*d*x - c^2
 + 1) + 1) - (b*d*x + b*c)*log(sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1) - 1) + 2*
a)*e^(-2)/(d^2*x + c*d)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a}{c^2+2cdx+d^2x^2}\,dx + \int \frac{b\,\mathrm{asin}\,(c+dx)}{c^2+2cdx+d^2x^2}\,dx}{e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))/(d*e*x+c*e)**2,x)
```

```
[Out] (Integral(a/(c**2 + 2*c*d*x + d**2*x**2), x) + Integral(b*asin(c + d*x)/(c*
*2 + 2*c*d*x + d**2*x**2), x))/e**2
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 108 vs. 2(49) = 98.
time = 0.42, size = 108, normalized size = 2.12

$$-\frac{1}{2}\,bde^2\left(\frac{\log\left(\sqrt{-\frac{(dex+ce)^2}{e^2}+1}+1\right)-\log\left(-\sqrt{-\frac{(dex+ce)^2}{e^2}+1}+1\right)}{d^2e^4}+\frac{2\,\arcsin\,(dx+c)}{(dex+ce)d^2e^3}\right)-\frac{a}{(dex+ce)de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^2,x, algorithm="giac")
```

```
[Out] -1/2*b*d*e^2*((log(sqrt(-(d*e*x + c*e)^2/e^2 + 1) + 1) - log(-sqrt(-(d*e*x
+ c*e)^2/e^2 + 1) + 1))/(d^2*e^4) + 2*arcsin(d*x + c)/((d*e*x + c*e)*d^2*e^
3)) - a/((d*e*x + c*e)*d*e)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{a+b\,\mathrm{asin}(c+d\,x)}{{(c\,e+d\,e\,x)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))/(c*e + d*e*x)^2,x)
```

```
[Out] int((a + b*asin(c + d*x))/(c*e + d*e*x)^2, x)
```

3.184 $\int \frac{a+b\text{ArcSin}(c+dx)}{(ce+dex)^3}\,dx$

Optimal. Leaf size=61

$$-\frac{b\sqrt{1-(c+dx)^2}}{2de^3(c+dx)}-\frac{a+b\text{ArcSin}(c+dx)}{2de^3(c+dx)^2}$$

```
[Out] 1/2*(-a-b*arcsin(d*x+c))/d/e^3/(d*x+c)^2-1/2*b*(1-(d*x+c)^2)^(1/2)/d/e^3/(d
*x+c)
```

Rubi [A]
time = 0.04, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.190, Rules used = {4889, 12, 4723, 270}

$$-\frac{a+b\text{ArcSin}(c+dx)}{2de^3(c+dx)^2}-\frac{b\sqrt{1-(c+dx)^2}}{2de^3(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^3,x]
```

```
[Out] -1/2*(b*Sqrt[1 - (c + d*x)^2])/(d*e^3*(c + d*x)) - (a + b*ArcSin[c + d*x])/
(2*d*e^3*(c + d*x)^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c*
x)^(m + 1)*((a + b*x^n)^(p + 1)/(a*c*(m + 1))), x] /; FreeQ[{a, b, c, m, n,
 p}, x] && EqQ[(m + 1)/n + p + 1, 0] && NeQ[m, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
```

```
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$
\begin{aligned}
\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^3}\,dx &= \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{e^3x^3}\,dx,x,c+dx\right)}{d}\\
&= \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{x^3}\,dx,x,c+dx\right)}{de^3}\\
&= -\frac{a+b\sin^{-1}(c+dx)}{2de^3(c+dx)^2}+\frac{b\text{Subst}\left(\int \frac{1}{x^2\sqrt{1-x^2}}\,dx,x,c+dx\right)}{2de^3}\\
&= -\frac{b\sqrt{1-(c+dx)^2}}{2de^3(c+dx)}-\frac{a+b\sin^{-1}(c+dx)}{2de^3(c+dx)^2}
\end{aligned}
$$

Mathematica [A]
time = 0.04, size = 49, normalized size = 0.80

$$-\frac{a+b(c+dx)\sqrt{1-(c+dx)^2}+b\text{ArcSin}(c+dx)}{2de^3(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^3,x]
```

```
[Out] -1/2*(a + b*(c + d*x)*Sqrt[1 - (c + d*x)^2] + b*ArcSin[c + d*x])/(d*e^3*(c
+ d*x)^2)
```

Maple [A]
time = 0.12, size = 62, normalized size = 1.02

method	result	size
derivativedivides	$\frac{-\frac{a}{2e^3(dx+c)^2}+\frac{b\left(-\frac{\arcsin(dx+c)}{2(dx+c)^2}-\frac{\sqrt{1-(dx+c)^2}}{2(dx+c)}\right)}{e^3}}{d}$	62
default	$\frac{-\frac{a}{2e^3(dx+c)^2}+\frac{b\left(-\frac{\arcsin(dx+c)}{2(dx+c)^2}-\frac{\sqrt{1-(dx+c)^2}}{2(dx+c)}\right)}{e^3}}{d}$	62

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))/(d*e*x+c*e)^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(-1/2*a/e^3/(d*x+c)^2+b/e^3*(-1/2/(d*x+c)^2*arcsin(d*x+c)-1/2/(d*x+c)*(
1-(d*x+c)^2)^(1/2)))
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 112 vs. $2(53) = 106$.
time = 0.48, size = 112, normalized size = 1.84

$$-\frac{1}{2}b\left(\frac{\sqrt{-d^2x^2-2\,cdx-c^2+1}\,d}{d^3xe^3+cd^2e^3}+\frac{\arcsin\left(dx+c\right)}{d^3x^2e^3+2\,cd^2xe^3+c^2de^3}\right)-\frac{a}{2\left(d^3x^2e^3+2\,cd^2xe^3+c^2de^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^3,x, algorithm="maxima")
```

```
[Out] -1/2*b*(sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*d/(d^3*x*e^3 + c*d^2*e^3) + arcs
in(d*x + c)/(d^3*x^2*e^3 + 2*c*d^2*x*e^3 + c^2*d*e^3)) - 1/2*a/(d^3*x^2*e^3
 + 2*c*d^2*x*e^3 + c^2*d*e^3)
```

Fricas [A]
time = 2.57, size = 95, normalized size = 1.56

$$\frac{\left(ad^2x^2+2\,acdx-bc^2\arcsin\left(dx+c\right)-\left(bc^2dx+bc^3\right)\sqrt{-d^2x^2-2\,cdx-c^2+1}\right)e^{(-3)}}{2\left(c^2d^3x^2+2\,c^3d^2x+c^4d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(a*d^2*x^2 + 2*a*c*d*x - b*c^2*arcsin(d*x + c) - (b*c^2*d*x + b*c^3)*sq
rt(-d^2*x^2 - 2*c*d*x - c^2 + 1))*e^(-3)/(c^2*d^3*x^2 + 2*c^3*d^2*x + c^4*d
)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx+\int \frac{b\operatorname{asin}\left(c+dx\right)}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))/(d*e*x+c*e)**3,x)
```

```
[Out] (Integral(a/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integral(
b*asin(c + d*x)/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x))/e**3
```

Giac [**B**] Leaf count of result is larger than twice the leaf count of optimal. 231 vs. 2(55) = 110.
time = 0.41, size = 231, normalized size = 3.79

$$-\frac{b\arcsin\left(dx+c\right)}{4\,de^3}-\frac{\left(dx+c\right)^2b\arcsin\left(dx+c\right)}{8\,de^3\left(\sqrt{-\left(dx+c\right)^2+1}+1\right)^2}-\frac{b\left(\sqrt{-\left(dx+c\right)^2+1}+1\right)^2\arcsin\left(dx+c\right)}{8\left(dx+c\right)^2de^3}-\frac{a}{4\,de^3}-\frac{\left(dx+c\right)^2a}{8\,de^3\left(\sqrt{-\left(dx+c\right)^2+1}+1\right)^2}+\frac{\left(dx+c\right)b}{4\,de^3\left(\sqrt{-\left(dx+c\right)^2+1}+1\right)}-\frac{b\left(\sqrt{-\left(dx+c\right)^2+1}+1\right)}{4\left(dx+c\right)de^3}-\frac{a\left(\sqrt{-\left(dx+c\right)^2+1}+1\right)^2}{8\left(dx+c\right)^2de^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^3,x, algorithm="giac")
```

```
[Out] -1/4*b*arcsin(d*x + c)/(d*e^3) - 1/8*(d*x + c)^2*b*arcsin(d*x + c)/(d*e^3*(
sqrt(-(d*x + c)^2 + 1) + 1)^2) - 1/8*b*(sqrt(-(d*x + c)^2 + 1) + 1)^2*arcsi
n(d*x + c)/((d*x + c)^2*d*e^3) - 1/4*a/(d*e^3) - 1/8*(d*x + c)^2*a/(d*e^3*(
sqrt(-(d*x + c)^2 + 1) + 1)^2) + 1/4*(d*x + c)*b/(d*e^3*(sqrt(-(d*x + c)^2
+ 1) + 1)) - 1/4*b*(sqrt(-(d*x + c)^2 + 1) + 1)/((d*x + c)*d*e^3) - 1/8*a*(
sqrt(-(d*x + c)^2 + 1) + 1)^2/((d*x + c)^2*d*e^3)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{a+b\,\mathrm{asin}(c+d\,x)}{{\left(c\,e+d\,e\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))/(c*e + d*e*x)^3,x)
```

```
[Out] int((a + b*asin(c + d*x))/(c*e + d*e*x)^3, x)
```

3.185 $\int \frac{a+b\text{ArcSin}(c+dx)}{(ce+dex)^4}\,dx$

Optimal. Leaf size=88

$$-\frac{b\sqrt{1-(c+dx)^2}}{6de^4(c+dx)^2}-\frac{a+b\text{ArcSin}(c+dx)}{3de^4(c+dx)^3}-\frac{b\tanh^{-1}\left(\sqrt{1-(c+dx)^2}\right)}{6de^4}$$

```
[Out] 1/3*(-a-b*arcsin(d*x+c))/d/e^4/(d*x+c)^3-1/6*b*arctanh((1-(d*x+c)^2)^(1/2))
/d/e^4-1/6*b*(1-(d*x+c)^2)^(1/2)/d/e^4/(d*x+c)^2
```

Rubi [A]
time = 0.05, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$, Rules used = {4889, 12, 4723, 272, 44, 65, 212}

$$-\frac{a+b\text{ArcSin}(c+dx)}{3de^4(c+dx)^3}-\frac{b\sqrt{1-(c+dx)^2}}{6de^4(c+dx)^2}-\frac{b\tanh^{-1}\left(\sqrt{1-(c+dx)^2}\right)}{6de^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^4,x]
```

```
[Out] -1/6*(b*Sqrt[1 - (c + d*x)^2])/(d*e^4*(c + d*x)^2) - (a + b*ArcSin[c + d*x]
)/(3*d*e^4*(c + d*x)^3) - (b*ArcTanh[Sqrt[1 - (c + d*x)^2]])/(6*d*e^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] - Dist[d*((
m + n + 2)/((b*c - a*d)*(m + 1))), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, -1] &&  !Int
egerQ[n] && LtQ[n, 0]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 212

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1/(Rt[a, 2]*Rt[-b, 2]))*
ArcTanh[Rt[-b, 2]*(x/Rt[a, 2])], x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^4}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{e^4x^4}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{x^4}\,dx, x, c+dx\right)}{de^4}$$

$$= -\frac{a+b\sin^{-1}(c+dx)}{3de^4(c+dx)^3} + \frac{b\text{Subst}\left(\int \frac{1}{x^3\sqrt{1-x^2}}\,dx, x, c+dx\right)}{3de^4}$$

$$= -\frac{a+b\sin^{-1}(c+dx)}{3de^4(c+dx)^3} + \frac{b\text{Subst}\left(\int \frac{1}{\sqrt{1-x}\,x^2}\,dx, x, (c+dx)^2\right)}{6de^4}$$

$$= -\frac{b\sqrt{1-(c+dx)^2}}{6de^4(c+dx)^2} - \frac{a+b\sin^{-1}(c+dx)}{3de^4(c+dx)^3} + \frac{b\text{Subst}\left(\int \frac{1}{\sqrt{1-x}\,x}\,dx, x, (c+d\right.}{12de^4}$$

$$= -\frac{b\sqrt{1-(c+dx)^2}}{6de^4(c+dx)^2} - \frac{a+b\sin^{-1}(c+dx)}{3de^4(c+dx)^3} - \frac{b\text{Subst}\left(\int \frac{1}{1-x^2}\,dx, x, \sqrt{1-(c+\right.}{6de^4}$$

$$= -\frac{b\sqrt{1-(c+dx)^2}}{6de^4(c+dx)^2} - \frac{a+b\sin^{-1}(c+dx)}{3de^4(c+dx)^3} - \frac{b\tanh^{-1}\left(\sqrt{1-(c+dx)^2}\right)}{6de^4}$$

Mathematica [A]
time = 0.06, size = 86, normalized size = 0.98

$$-\frac{2a+b(c+dx)\sqrt{1-c^2-2cdx-d^2x^2}+2b\text{ArcSin}(c+dx)+b(c+dx)^3\tanh^{-1}\left(\sqrt{1-(c+dx)^2}\right)}{6de^4(c+dx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^4,x]
```

```
[Out] -1/6*(2*a + b*(c + d*x)*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2] + 2*b*ArcSin[c +
d*x] + b*(c + d*x)^3*ArcTanh[Sqrt[1 - (c + d*x)^2]])/(d*e^4*(c + d*x)^3)
```

Maple [A]
time = 0.12, size = 78, normalized size = 0.89

method	result	size

derivativedivides	$\frac{-\frac{a}{3e^4(dx+c)^3}+\frac{b\left(-\frac{\arcsin(dx+c)}{3(dx+c)^3}-\frac{\sqrt{1-(dx+c)^2}}{6(dx+c)^2}-\frac{\operatorname{arctanh}\left(\frac{1}{\sqrt{1-(dx+c)^2}}\right)}{6}\right)}{e^4}}{d}$	78
default	$\frac{-\frac{a}{3e^4(dx+c)^3}+\frac{b\left(-\frac{\arcsin(dx+c)}{3(dx+c)^3}-\frac{\sqrt{1-(dx+c)^2}}{6(dx+c)^2}-\frac{\operatorname{arctanh}\left(\frac{1}{\sqrt{1-(dx+c)^2}}\right)}{6}\right)}{e^4}}{d}$	78

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))/(d*e*x+c*e)^4,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(-1/3*a/e^4/(d*x+c)^3+b/e^4*(-1/3/(d*x+c)^3*arcsin(d*x+c)-1/6/(d*x+c)^2
*(1-(d*x+c)^2)^(1/2)-1/6*arctanh(1/(1-(d*x+c)^2)^(1/2))))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^4,x, algorithm="maxima")
```

```
[Out] -1/3*(3*(d^4*x^3*e^4 + 3*c*d^3*x^2*e^4 + 3*c^2*d^2*x*e^4 + c^3*d*e^4)*integ
rate(1/3*e^(1/2*log(d*x + c + 1) + 1/2*log(-d*x - c + 1))/(d^7*x^7*e^4 + 7*
c*d^6*x^6*e^4 + (21*c^2*e^4 - e^4)*d^5*x^5 + 5*(7*c^3*e^4 - c*e^4)*d^4*x^4
+ c^7*e^4 + 5*(7*c^4*e^4 - 2*c^2*e^4)*d^3*x^3 - c^5*e^4 + (21*c^5*e^4 - 10*
c^3*e^4)*d^2*x^2 + (7*c^6*e^4 - 5*c^4*e^4)*d*x + (d^5*x^5*e^4 + 5*c*d^4*x^4
*e^4 + (10*c^2*e^4 - e^4)*d^3*x^3 + c^5*e^4 + (10*c^3*e^4 - 3*c*e^4)*d^2*x^
2 - c^3*e^4 + (5*c^4*e^4 - 3*c^2*e^4)*d*x)*e^(log(d*x + c + 1) + log(-d*x -
 c + 1))), x) + arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))*b/(
d^4*x^3*e^4 + 3*c*d^3*x^2*e^4 + 3*c^2*d^2*x*e^4 + c^3*d*e^4) - 1/3*a/(d^4*x
^3*e^4 + 3*c*d^3*x^2*e^4 + 3*c^2*d^2*x*e^4 + c^3*d*e^4)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 199 vs. $2(75) = 150$.
time = 2.13, size = 199, normalized size = 2.26

$$-\frac{\left(4\,b\arcsin\left(dx+c\right)+\left(bd^3x^3+3\,bcd^2x^2+3\,bc^2dx+bc^3\right)\log\left(\sqrt{-d^2x^2-2\,cdx-c^2+1}+1\right)-\left(bd^3x^3+3\,bcd^2x^2+3\,bc^2dx+bc^3\right)\log\left(\sqrt{-d^2x^2-2\,cdx-c^2+1}-1\right)+2\,\sqrt{-d^2x^2-2\,cdx-c^2+1}\,(bdx+bc)+4\,a\right)e^{(-4)}}{12\left(d^4x^3+3\,cd^3x^2+3\,c^2d^2x+c^3d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^4,x, algorithm="fricas")
```

```
[Out] -1/12*(4*b*arcsin(d*x + c) + (b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c
^3)*log(sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1) + 1) - (b*d^3*x^3 + 3*b*c*d^2*x^
2 + 3*b*c^2*d*x + b*c^3)*log(sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1) - 1) + 2*sq
rt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*(b*d*x + b*c) + 4*a)*e^(-4)/(d^4*x^3 + 3*c
*d^3*x^2 + 3*c^2*d^2*x + c^3*d)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a}{c^4+4c^3dx+6c^2d^2x^2+4cd^3x^3+d^4x^4}\,dx+\int \frac{b\operatorname{asin}(c+dx)}{c^4+4c^3dx+6c^2d^2x^2+4cd^3x^3+d^4x^4}\,dx}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))/(d*e*x+c*e)**4,x)
```

```
[Out] (Integral(a/(c**4 + 4*c**3*d*x + 6*c**2*d**2*x**2 + 4*c*d**3*x**3 + d**4*x*
*4), x) + Integral(b*asin(c + d*x)/(c**4 + 4*c**3*d*x + 6*c**2*d**2*x**2 +
4*c*d**3*x**3 + d**4*x**4), x))/e**4
```

Giac [**B**] Leaf count of result is larger than twice the leaf count of optimal. 388 vs. 2(78) = 156.
time = 0.69, size = 388, normalized size = 4.41

$$-\frac{(dx+c)^3b\arcsin(dx+c)}{24de^4\left(\sqrt{-(dx+c)^2+1}+1\right)^3}-\frac{(dx+c)b\arcsin(dx+c)}{8de^4\left(\sqrt{-(dx+c)^2+1}+1\right)}-\frac{b\left(\sqrt{-(dx+c)^2+1}+1\right)\arcsin(dx+c)}{8(dx+c)de^4}-\frac{b\left(\sqrt{-(dx+c)^2+1}+1\right)^3\arcsin(dx+c)}{24(dx+c)^3de^4}-\frac{b\log\left(\sqrt{-(dx+c)^2+1}+1\right)}{6de^4}+\frac{b\log(|dx+c|)}{6de^4}-\frac{(dx+c)^3a}{24de^4\left(\sqrt{-(dx+c)^2+1}+1\right)^3}+\frac{(dx+c)^2b}{24de^4\left(\sqrt{-(dx+c)^2+1}+1\right)^2}-\frac{(dx+c)a}{8de^4\left(\sqrt{-(dx+c)^2+1}+1\right)}-\frac{a\left(\sqrt{-(dx+c)^2+1}+1\right)}{8(dx+c)de^4}-\frac{b\left(\sqrt{-(dx+c)^2+1}+1\right)^2}{24(dx+c)^2de^4}-\frac{a\left(\sqrt{-(dx+c)^2+1}+1\right)^3}{24(dx+c)^3de^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^4,x, algorithm="giac")
```

```
[Out] -1/24*(d*x + c)^3*b*arcsin(d*x + c)/(d*e^4*(sqrt(-(d*x + c)^2 + 1) + 1)^3)
- 1/8*(d*x + c)*b*arcsin(d*x + c)/(d*e^4*(sqrt(-(d*x + c)^2 + 1) + 1)) - 1/
8*b*(sqrt(-(d*x + c)^2 + 1) + 1)*arcsin(d*x + c)/((d*x + c)*d*e^4) - 1/24*b
*(sqrt(-(d*x + c)^2 + 1) + 1)^3*arcsin(d*x + c)/((d*x + c)^3*d*e^4) - 1/6*b
*log(sqrt(-(d*x + c)^2 + 1) + 1)/(d*e^4) + 1/6*b*log(abs(d*x + c))/(d*e^4)
- 1/24*(d*x + c)^3*a/(d*e^4*(sqrt(-(d*x + c)^2 + 1) + 1)^3) + 1/24*(d*x + c
)^2*b/(d*e^4*(sqrt(-(d*x + c)^2 + 1) + 1)^2) - 1/8*(d*x + c)*a/(d*e^4*(sqrt
(-(d*x + c)^2 + 1) + 1)) - 1/8*a*(sqrt(-(d*x + c)^2 + 1) + 1)/((d*x + c)*d*
e^4) - 1/24*b*(sqrt(-(d*x + c)^2 + 1) + 1)^2/((d*x + c)^2*d*e^4) - 1/24*a*(
sqrt(-(d*x + c)^2 + 1) + 1)^3/((d*x + c)^3*d*e^4)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\operatorname{asin}(c+d\,x)}{{(c\,e+d\,e\,x)}^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))/(c*e + d*e*x)^4,x)
[Out] int((a + b*asin(c + d*x))/(c*e + d*e*x)^4, x)
```

3.186 $\int \frac{a+b\text{ArcSin}(c+dx)}{(ce+dex)^5} dx$

Optimal. Leaf size=94

$$-\frac{b\sqrt{1-(c+dx)^2}}{12de^5(c+dx)^3}-\frac{b\sqrt{1-(c+dx)^2}}{6de^5(c+dx)}-\frac{a+b\text{ArcSin}(c+dx)}{4de^5(c+dx)^4}$$

```
[Out] 1/4*(-a-b*arcsin(d*x+c))/d/e^5/(d*x+c)^4-1/12*b*(1-(d*x+c)^2)^(1/2)/d/e^5/(
d*x+c)^3-1/6*b*(1-(d*x+c)^2)^(1/2)/d/e^5/(d*x+c)
```

Rubi [A]
time = 0.05, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.238$, Rules used = {4889, 12, 4723, 277, 270}

$$-\frac{a+b\text{ArcSin}(c+dx)}{4de^5(c+dx)^4}-\frac{b\sqrt{1-(c+dx)^2}}{6de^5(c+dx)}-\frac{b\sqrt{1-(c+dx)^2}}{12de^5(c+dx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^5,x]
```

```
[Out] -1/12*(b*Sqrt[1 - (c + d*x)^2])/(d*e^5*(c + d*x)^3) - (b*Sqrt[1 - (c + d*x)
^2])/(6*d*e^5*(c + d*x)) - (a + b*ArcSin[c + d*x])/(4*d*e^5*(c + d*x)^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c*
x)^(m + 1)*((a + b*x^n)^(p + 1)/(a*c*(m + 1))), x] /; FreeQ[{a, b, c, m, n,
 p}, x] && EqQ[(m + 1)/n + p + 1, 0] && NeQ[m, -1]
```

Rule 277

```
Int[(x_)^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[x^(m + 1)*((
a + b*x^n)^(p + 1)/(a*(m + 1))), x] - Dist[b*((m + n*(p + 1) + 1)/(a*(m + 1
))), Int[x^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, m, n, p}, x] && IL
tQ[Simplify[(m + 1)/n + p + 1], 0] && NeQ[m, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
```

```
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^5}\,dx &= \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{e^5x^5}\,dx, x, c+dx\right)}{d}\\
&= \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{x^5}\,dx, x, c+dx\right)}{de^5}\\
&= -\frac{a+b\sin^{-1}(c+dx)}{4de^5(c+dx)^4} + \frac{b\text{Subst}\left(\int \frac{1}{x^4\sqrt{1-x^2}}\,dx, x, c+dx\right)}{4de^5}\\
&= -\frac{b\sqrt{1-(c+dx)^2}}{12de^5(c+dx)^3} - \frac{a+b\sin^{-1}(c+dx)}{4de^5(c+dx)^4} + \frac{b\text{Subst}\left(\int \frac{1}{x^2\sqrt{1-x^2}}\,dx, x, c+dx\right)}{6de^5}\\
&= -\frac{b\sqrt{1-(c+dx)^2}}{12de^5(c+dx)^3} - \frac{b\sqrt{1-(c+dx)^2}}{6de^5(c+dx)} - \frac{a+b\sin^{-1}(c+dx)}{4de^5(c+dx)^4}
\end{aligned}$$

Mathematica [A]
time = 0.05, size = 63, normalized size = 0.67

$$-\frac{b(c+dx)\sqrt{1-(c+dx)^2}\,(1+2(c+dx)^2)+3(a+b\text{ArcSin}(c+dx))}{12de^5(c+dx)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^5,x]
```

```
[Out] -1/12*(b*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(1 + 2*(c + d*x)^2) + 3*(a + b*Arc
Sin[c + d*x]))/(d*e^5*(c + d*x)^4)
```

Maple [A]
time = 0.12, size = 84, normalized size = 0.89

method	result	size
derivativedivides	$\frac{-\frac{a}{4e^5(dx+c)^4}+\frac{b\left(-\frac{\arcsin(dx+c)}{4(dx+c)^4}-\frac{\sqrt{1-(dx+c)^2}}{12(dx+c)^3}-\frac{\sqrt{1-(dx+c)^2}}{6(dx+c)}\right)}{e^5}}{d}$	84
default	$\frac{-\frac{a}{4e^5(dx+c)^4}+\frac{b\left(-\frac{\arcsin(dx+c)}{4(dx+c)^4}-\frac{\sqrt{1-(dx+c)^2}}{12(dx+c)^3}-\frac{\sqrt{1-(dx+c)^2}}{6(dx+c)}\right)}{e^5}}{d}$	84

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))/(d*e*x+c*e)^5,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(-1/4*a/e^5/(d*x+c)^4+b/e^5*(-1/4/(d*x+c)^4*arcsin(d*x+c)-1/12/(d*x+c)^
3*(1-(d*x+c)^2)^(1/2)-1/6/(d*x+c)*(1-(d*x+c)^2)^(1/2)))
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 249 vs. $2(81) = 162$.
time = 0.51, size = 249, normalized size = 2.65

$$\frac{1}{12}\,b\left(\frac{(2\,d^4x^4+8\,cd^3x^3+2\,c^4+(12\,c^2d^2-d^2)x^2-c^2+2\,(4\,c^3d-cd)x-1)d}{(d^5x^3e^5+3\,cd^4x^2e^5+3\,c^2d^3xe^5+c^3d^2e^5)\sqrt{dx+c+1}\,\sqrt{-dx-c+1}}-\frac{3\,\arcsin\left(dx+c\right)}{d^5x^4e^5+4\,cd^4x^3e^5+6\,c^2d^3x^2e^5+4\,c^3d^2xe^5+c^4de^5}\right)-\frac{a}{4\,(d^5x^4e^5+4\,cd^4x^3e^5+6\,c^2d^3x^2e^5+4\,c^3d^2xe^5+c^4de^5)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^5,x, algorithm="maxima")
```

```
[Out] 1/12*b*((2*d^4*x^4 + 8*c*d^3*x^3 + 2*c^4 + (12*c^2*d^2 - d^2)*x^2 - c^2 + 2
*(4*c^3*d - c*d)*x - 1)*d/((d^5*x^3*e^5 + 3*c*d^4*x^2*e^5 + 3*c^2*d^3*x*e^5
 + c^3*d^2*e^5)*sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) - 3*arcsin(d*x + c)/(
d^5*x^4*e^5 + 4*c*d^4*x^3*e^5 + 6*c^2*d^3*x^2*e^5 + 4*c^3*d^2*x*e^5 + c^4*d
*e^5)) - 1/4*a/(d^5*x^4*e^5 + 4*c*d^4*x^3*e^5 + 6*c^2*d^3*x^2*e^5 + 4*c^3*d
^2*x*e^5 + c^4*d*e^5)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 180 vs. $2(81) = 162$.
time = 1.86, size = 180, normalized size = 1.91

$$\frac{\left(3\,ad^4x^4+12\,acd^3x^3+18\,ac^2d^2x^2+12\,ac^3dx-3\,bc^4\arcsin\left(dx+c\right)-(2\,bc^4d^3x^3+6\,bc^5d^2x^2+2\,bc^7+bc^5+(6\,bc^6+bc^4)dx)\sqrt{-d^2x^2-2\,cdx-c^2+1}\right)e^{(-5)}}{12\,(c^4d^5x^4+4\,c^5d^4x^3+6\,c^6d^3x^2+4\,c^7d^2x+c^8d)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^5,x, algorithm="fricas")
```

```
[Out] 1/12*(3*a*d^4*x^4 + 12*a*c*d^3*x^3 + 18*a*c^2*d^2*x^2 + 12*a*c^3*d*x - 3*b*
c^4*arcsin(d*x + c) - (2*b*c^4*d^3*x^3 + 6*b*c^5*d^2*x^2 + 2*b*c^7 + b*c^5
```

```
+ (6*b*c^6 + b*c^4)*d*x)*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1))*e^(-5)/(c^4*d^
5*x^4 + 4*c^5*d^4*x^3 + 6*c^6*d^3*x^2 + 4*c^7*d^2*x + c^8*d)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a}{c^5+5c^4dx+10c^3d^2x^2+10c^2d^3x^3+5cd^4x^4+d^5x^5}\,dx+\int \frac{b\,\mathrm{asin}\,(c+dx)}{c^5+5c^4dx+10c^3d^2x^2+10c^2d^3x^3+5cd^4x^4+d^5x^5}\,dx}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))/(d*e*x+c*e)**5,x)
```

```
[Out] (Integral(a/(c**5 + 5*c**4*d*x + 10*c**3*d**2*x**2 + 10*c**2*d**3*x**3 + 5*
c*d**4*x**4 + d**5*x**5), x) + Integral(b*asin(c + d*x)/(c**5 + 5*c**4*d*x
+ 10*c**3*d**2*x**2 + 10*c**2*d**3*x**3 + 5*c*d**4*x**4 + d**5*x**5), x))/e
**5
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 447 vs. 2(84) = 168.
time = 0.45, size = 447, normalized size = 4.76

$$-\frac{1}{192}de^2\left(\frac{18\,b\arcsin\,(dx+c)}{d^2e^7}+\frac{3\,(dx+c)^4b\arcsin\,(dx+c)}{d^2e^7\left(\sqrt{-(dx+c)^2+1}+1\right)^4}+\frac{12\,(dx+c)^2b\arcsin\,(dx+c)}{d^2e^7\left(\sqrt{-(dx+c)^2+1}+1\right)^2}+\frac{12\,b\left(\sqrt{-(dx+c)^2+1}+1\right)^2\arcsin\,(dx+c)}{(dx+c)^2d^2e^7}+\frac{3\,b\left(\sqrt{-(dx+c)^2+1}+1\right)^4\arcsin\,(dx+c)}{(dx+c)^4d^2e^7}+\frac{18\,a}{d^2e^7}+\frac{3\,(dx+c)^4a}{d^2e^7\left(\sqrt{-(dx+c)^2+1}+1\right)^4}-\frac{2\,(dx+c)^3b}{d^2e^7\left(\sqrt{-(dx+c)^2+1}+1\right)^3}+\frac{12\,(dx+c)^2a}{d^2e^7\left(\sqrt{-(dx+c)^2+1}+1\right)^2}-\frac{18\,(dx+c)b}{d^2e^7\left(\sqrt{-(dx+c)^2+1}+1\right)}+\frac{18\,b\left(\sqrt{-(dx+c)^2+1}+1\right)}{(dx+c)d^2e^7}+\frac{12\,a\left(\sqrt{-(dx+c)^2+1}+1\right)^2}{(dx+c)^2d^2e^7}+\frac{2\,b\left(\sqrt{-(dx+c)^2+1}+1\right)^3}{(dx+c)^3d^2e^7}+\frac{3\,a\left(\sqrt{-(dx+c)^2+1}+1\right)^4}{(dx+c)^4d^2e^7}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^5,x, algorithm="giac")
```

```
[Out] -1/192*d*e^2*(18*b*arcsin(d*x + c)/(d^2*e^7) + 3*(d*x + c)^4*b*arcsin(d*x +
 c)/(d^2*e^7*(sqrt(-(d*x + c)^2 + 1) + 1)^4) + 12*(d*x + c)^2*b*arcsin(d*x
+ c)/(d^2*e^7*(sqrt(-(d*x + c)^2 + 1) + 1)^2) + 12*b*(sqrt(-(d*x + c)^2 + 1
) + 1)^2*arcsin(d*x + c)/((d*x + c)^2*d^2*e^7) + 3*b*(sqrt(-(d*x + c)^2 + 1
) + 1)^4*arcsin(d*x + c)/((d*x + c)^4*d^2*e^7) + 18*a/(d^2*e^7) + 3*(d*x +
c)^4*a/(d^2*e^7*(sqrt(-(d*x + c)^2 + 1) + 1)^4) - 2*(d*x + c)^3*b/(d^2*e^7*
(sqrt(-(d*x + c)^2 + 1) + 1)^3) + 12*(d*x + c)^2*a/(d^2*e^7*(sqrt(-(d*x + c
)^2 + 1) + 1)^2) - 18*(d*x + c)*b/(d^2*e^7*(sqrt(-(d*x + c)^2 + 1) + 1)) +
18*b*(sqrt(-(d*x + c)^2 + 1) + 1)/((d*x + c)*d^2*e^7) + 12*a*(sqrt(-(d*x +
c)^2 + 1) + 1)^2/((d*x + c)^2*d^2*e^7) + 2*b*(sqrt(-(d*x + c)^2 + 1) + 1)^3
/((d*x + c)^3*d^2*e^7) + 3*a*(sqrt(-(d*x + c)^2 + 1) + 1)^4/((d*x + c)^4*d^
2*e^7))
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\mathrm{asin}(c+d\,x)}{{\left(c\,e+d\,e\,x\right)}^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))/(c*e + d*e*x)^5,x)
```

```
[Out] int((a + b*asin(c + d*x))/(c*e + d*e*x)^5, x)
```

3.187 $\int \frac{a+b\text{ArcSin}(c+dx)}{(ce+dex)^6}\,dx$

Optimal. Leaf size=121

$$-\frac{b\sqrt{1-(c+dx)^2}}{20de^6(c+dx)^4}-\frac{3b\sqrt{1-(c+dx)^2}}{40de^6(c+dx)^2}-\frac{a+b\text{ArcSin}(c+dx)}{5de^6(c+dx)^5}-\frac{3b\tanh^{-1}\left(\sqrt{1-(c+dx)^2}\right)}{40de^6}$$

```
[Out] 1/5*(-a-b*arcsin(d*x+c))/d/e^6/(d*x+c)^5-3/40*b*arctanh((1-(d*x+c)^2)^(1/2)
)/d/e^6-1/20*b*(1-(d*x+c)^2)^(1/2)/d/e^6/(d*x+c)^4-3/40*b*(1-(d*x+c)^2)^(1/
2)/d/e^6/(d*x+c)^2
```

Rubi [A]
time = 0.07, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4889, 12, 4723, 272, 44, 65, 212}

$$-\frac{a+b\text{ArcSin}(c+dx)}{5de^6(c+dx)^5}-\frac{3b\sqrt{1-(c+dx)^2}}{40de^6(c+dx)^2}-\frac{b\sqrt{1-(c+dx)^2}}{20de^6(c+dx)^4}-\frac{3b\tanh^{-1}\left(\sqrt{1-(c+dx)^2}\right)}{40de^6}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^6,x]
```

```
[Out] -1/20*(b*Sqrt[1 - (c + d*x)^2])/(d*e^6*(c + d*x)^4) - (3*b*Sqrt[1 - (c + d*
x)^2])/(40*d*e^6*(c + d*x)^2) - (a + b*ArcSin[c + d*x])/(5*d*e^6*(c + d*x)^
5) - (3*b*ArcTanh[Sqrt[1 - (c + d*x)^2]])/(40*d*e^6)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] - Dist[d*((
m + n + 2)/((b*c - a*d)*(m + 1))), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, -1] &&  !Int
egerQ[n] && LtQ[n, 0]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
```

```
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 212

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1/(Rt[a, 2]*Rt[-b, 2]))*
ArcTanh[Rt[-b, 2]*(x/Rt[a, 2])], x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^6}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{e^6x^6}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{x^6}\,dx, x, c+dx\right)}{de^6}$$

$$= -\frac{a+b\sin^{-1}(c+dx)}{5de^6(c+dx)^5} + \frac{b\text{Subst}\left(\int \frac{1}{x^5\sqrt{1-x^2}}\,dx, x, c+dx\right)}{5de^6}$$

$$= -\frac{a+b\sin^{-1}(c+dx)}{5de^6(c+dx)^5} + \frac{b\text{Subst}\left(\int \frac{1}{\sqrt{1-x}\,x^3}\,dx, x, (c+dx)^2\right)}{10de^6}$$

$$= -\frac{b\sqrt{1-(c+dx)^2}}{20de^6(c+dx)^4} - \frac{a+b\sin^{-1}(c+dx)}{5de^6(c+dx)^5} + \frac{(3b)\text{Subst}\left(\int \frac{1}{\sqrt{1-x}\,x^2}\,dx, x, (c\right.}{40de^6}$$

$$= -\frac{b\sqrt{1-(c+dx)^2}}{20de^6(c+dx)^4} - \frac{3b\sqrt{1-(c+dx)^2}}{40de^6(c+dx)^2} - \frac{a+b\sin^{-1}(c+dx)}{5de^6(c+dx)^5} + \frac{(3b)\text{Subst}\left(\right.}{}$$

$$= -\frac{b\sqrt{1-(c+dx)^2}}{20de^6(c+dx)^4} - \frac{3b\sqrt{1-(c+dx)^2}}{40de^6(c+dx)^2} - \frac{a+b\sin^{-1}(c+dx)}{5de^6(c+dx)^5} - \frac{(3b)\text{Subst}\left(\right.}{}$$

$$= -\frac{b\sqrt{1-(c+dx)^2}}{20de^6(c+dx)^4} - \frac{3b\sqrt{1-(c+dx)^2}}{40de^6(c+dx)^2} - \frac{a+b\sin^{-1}(c+dx)}{5de^6(c+dx)^5} - \frac{3b\tanh^{-1}\left(\right.}{}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 3 in optimal.
time = 0.06, size = 65, normalized size = 0.54

$$-\frac{\frac{a+b\text{ArcSin}(c+dx)}{(c+dx)^5} + b\sqrt{1-(c+dx)^2}\;{}_2F_1\left(\frac{1}{2},3;\frac{3}{2};1-(c+dx)^2\right)}{5de^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^6,x]
```

```
[Out] -1/5*((a + b*ArcSin[c + d*x])/(c + d*x)^5 + b*Sqrt[1 - (c + d*x)^2]*Hyperge
ometric2F1[1/2, 3, 3/2, 1 - (c + d*x)^2])/(d*e^6)
```

Maple [A]
time = 0.12, size = 100, normalized size = 0.83

method	result
derivativedivides	$\frac{-\frac{a}{5e^6(dx+c)^5}+\frac{b\left(-\frac{\arcsin(dx+c)}{5(dx+c)^5}-\frac{\sqrt{1-(dx+c)^2}}{20(dx+c)^4}-\frac{3\sqrt{1-(dx+c)^2}}{40(dx+c)^2}-\frac{3\,\mathrm{arctanh}\left(\frac{1}{\sqrt{1-(dx+c)^2}}\right)}{40}\right)}{e^6}}{d}$
default	$\frac{-\frac{a}{5e^6(dx+c)^5}+\frac{b\left(-\frac{\arcsin(dx+c)}{5(dx+c)^5}-\frac{\sqrt{1-(dx+c)^2}}{20(dx+c)^4}-\frac{3\sqrt{1-(dx+c)^2}}{40(dx+c)^2}-\frac{3\,\mathrm{arctanh}\left(\frac{1}{\sqrt{1-(dx+c)^2}}\right)}{40}\right)}{e^6}}{d}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))/(d*e*x+c*e)^6,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(-1/5*a/e^6/(d*x+c)^5+b/e^6*(-1/5/(d*x+c)^5*arcsin(d*x+c)-1/20/(d*x+c)^
4*(1-(d*x+c)^2)^(1/2)-3/40/(d*x+c)^2*(1-(d*x+c)^2)^(1/2)-3/40*arctanh(1/(1-
(d*x+c)^2)^(1/2))))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^6,x, algorithm="maxima")
```

```
[Out] -1/5*(5*(d^6*x^5*e^6 + 5*c*d^5*x^4*e^6 + 10*c^2*d^4*x^3*e^6 + 10*c^3*d^3*x^
2*e^6 + 5*c^4*d^2*x*e^6 + c^5*d*e^6)*integrate(1/5*e^(1/2*log(d*x + c + 1)
+ 1/2*log(-d*x - c + 1))/(d^9*x^9*e^6 + 9*c*d^8*x^8*e^6 + (36*c^2*e^6 - e^6
)*d^7*x^7 + 7*(12*c^3*e^6 - c*e^6)*d^6*x^6 + 21*(6*c^4*e^6 - c^2*e^6)*d^5*x
^5 + c^9*e^6 + 7*(18*c^5*e^6 - 5*c^3*e^6)*d^4*x^4 - c^7*e^6 + 7*(12*c^6*e^6
 - 5*c^4*e^6)*d^3*x^3 + 3*(12*c^7*e^6 - 7*c^5*e^6)*d^2*x^2 + (9*c^8*e^6 - 7
*c^6*e^6)*d*x + (d^7*x^7*e^6 + 7*c*d^6*x^6*e^6 + (21*c^2*e^6 - e^6)*d^5*x^5
 + 5*(7*c^3*e^6 - c*e^6)*d^4*x^4 + c^7*e^6 + 5*(7*c^4*e^6 - 2*c^2*e^6)*d^3*
x^3 - c^5*e^6 + (21*c^5*e^6 - 10*c^3*e^6)*d^2*x^2 + (7*c^6*e^6 - 5*c^4*e^6)
*d*x)*e^(log(d*x + c + 1) + log(-d*x - c + 1))), x) + arctan2(d*x + c, sqrt
(d*x + c + 1)*sqrt(-d*x - c + 1)))*b/(d^6*x^5*e^6 + 5*c*d^5*x^4*e^6 + 10*c^
2*d^4*x^3*e^6 + 10*c^3*d^3*x^2*e^6 + 5*c^4*d^2*x*e^6 + c^5*d*e^6) - 1/5*a/(
```

```
d^6*x^5*e^6 + 5*c*d^5*x^4*e^6 + 10*c^2*d^4*x^3*e^6 + 10*c^3*d^3*x^2*e^6 + 5
*c^4*d^2*x*e^6 + c^5*d*e^6)
```

Fricas [**B**] Leaf count of result is larger than twice the leaf count of optimal. 305 vs. $2(103) = 206$.
time = 1.94, size = 305, normalized size = 2.52

$$-\frac{\left(16 b \arcsin\left(dx+c\right)+3 \left(b d^5 x^5+5 b c d^4 x^4+10 b c^2 d^3 x^3+10 b c^3 d^2 x^2+5 b c^4 d x+b c^5\right) \log\left(\sqrt{-d^2 x^2-2 c d x-c^2+1}+1\right)-3 \left(b d^5 x^5+5 b c d^4 x^4+10 b c^2 d^3 x^3+10 b c^3 d^2 x^2+5 b c^4 d x+b c^5\right) \log\left(\sqrt{-d^2 x^2-2 c d x-c^2+1}-1\right)+2 \left(3 b d^3 x^3+9 b c d^2 x^2+3 b c^3+\left(9 b c^2+2 b\right) d x+2 b c\right) \sqrt{-d^2 x^2-2 c d x-c^2+1}+16 a\right) e^{(-6)}}{80 \left(d^6 x^5+5 c d^5 x^4+10 c^2 d^4 x^3+10 c^3 d^3 x^2+5 c^4 d^2 x+c^5 d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^6,x, algorithm="fricas")
```

```
[Out] -1/80*(16*b*arcsin(d*x + c) + 3*(b*d^5*x^5 + 5*b*c*d^4*x^4 + 10*b*c^2*d^3*x
^3 + 10*b*c^3*d^2*x^2 + 5*b*c^4*d*x + b*c^5)*log(sqrt(-d^2*x^2 - 2*c*d*x -
c^2 + 1) + 1) - 3*(b*d^5*x^5 + 5*b*c*d^4*x^4 + 10*b*c^2*d^3*x^3 + 10*b*c^3*
d^2*x^2 + 5*b*c^4*d*x + b*c^5)*log(sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1) - 1)
+ 2*(3*b*d^3*x^3 + 9*b*c*d^2*x^2 + 3*b*c^3 + (9*b*c^2 + 2*b)*d*x + 2*b*c)*s
qrt(-d^2*x^2 - 2*c*d*x - c^2 + 1) + 16*a)*e^(-6)/(d^6*x^5 + 5*c*d^5*x^4 + 1
0*c^2*d^4*x^3 + 10*c^3*d^3*x^2 + 5*c^4*d^2*x + c^5*d)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a}{c^6+6c^5dx+15c^4d^2x^2+20c^3d^3x^3+15c^2d^4x^4+6cd^5x^5+d^6x^6}\,dx+\int \frac{b \operatorname{asin}\left(c+dx\right)}{c^6+6c^5dx+15c^4d^2x^2+20c^3d^3x^3+15c^2d^4x^4+6cd^5x^5+d^6x^6}\,dx}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))/(d*e*x+c*e)**6,x)
```

```
[Out] (Integral(a/(c**6 + 6*c**5*d*x + 15*c**4*d**2*x**2 + 20*c**3*d**3*x**3 + 15
*c**2*d**4*x**4 + 6*c*d**5*x**5 + d**6*x**6), x) + Integral(b*asin(c + d*x)
/(c**6 + 6*c**5*d*x + 15*c**4*d**2*x**2 + 20*c**3*d**3*x**3 + 15*c**2*d**4*
x**4 + 6*c*d**5*x**5 + d**6*x**6), x))/e**6
```

Giac [**B**] Leaf count of result is larger than twice the leaf count of optimal. 598 vs. $2(107) = 214$.
time = 0.77, size = 598, normalized size = 4.94

$$-\frac{(dx+c)^5 b \arcsin\left(dx+c\right)}{160\,de^6\left(\sqrt{-(dx+c)^2+1}+1\right)^5}-\frac{(dx+c)^3 b \arcsin\left(dx+c\right)}{32\,de^6\left(\sqrt{-(dx+c)^2+1}+1\right)^3}-\frac{(dx+c) b \arcsin\left(dx+c\right)}{16\,de^6\left(\sqrt{-(dx+c)^2+1}+1\right)}-\frac{b\left(\sqrt{-(dx+c)^2+1}+1\right)\arcsin\left(dx+c\right)}{16\,(dx+c)de^6}-\frac{b\left(\sqrt{-(dx+c)^2+1}+1\right)^3\arcsin\left(dx+c\right)}{32\,(dx+c)^3de^6}-\frac{b\left(\sqrt{-(dx+c)^2+1}+1\right)^5\arcsin\left(dx+c\right)}{160\,(dx+c)^5de^6}-\frac{3\,b\log\left(\sqrt{-(dx+c)^2+1}+1\right)}{40\,de^6}+\frac{3\,b\log\left(|dx+c|\right)}{40\,de^6}-\frac{(dx+c)^5 a}{160\,de^6\left(\sqrt{-(dx+c)^2+1}+1\right)^5}+\frac{(dx+c)^4 b}{320\,de^6\left(\sqrt{-(dx+c)^2+1}+1\right)^4}-\frac{(dx+c)^3 a}{32\,de^6\left(\sqrt{-(dx+c)^2+1}+1\right)^3}+\frac{(dx+c)^2 b}{40\,de^6\left(\sqrt{-(dx+c)^2+1}+1\right)^2}-\frac{(dx+c) a}{16\,de^6\left(\sqrt{-(dx+c)^2+1}+1\right)}-\frac{a\left(\sqrt{-(dx+c)^2+1}+1\right)}{16\,(dx+c)de^6}-\frac{b\left(\sqrt{-(dx+c)^2+1}+1\right)^2}{40\,(dx+c)^2de^6}-\frac{a\left(\sqrt{-(dx+c)^2+1}+1\right)^3}{32\,(dx+c)^3de^6}-\frac{b\left(\sqrt{-(dx+c)^2+1}+1\right)^4}{320\,(dx+c)^4de^6}-\frac{a\left(\sqrt{-(dx+c)^2+1}+1\right)^5}{160\,(dx+c)^5de^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^6,x, algorithm="giac")
```

```
[Out] -1/160*(d*x + c)^5*b*arcsin(d*x + c)/(d*e^6*(sqrt(-(d*x + c)^2 + 1) + 1)^5)
 - 1/32*(d*x + c)^3*b*arcsin(d*x + c)/(d*e^6*(sqrt(-(d*x + c)^2 + 1) + 1)^3
) - 1/16*(d*x + c)*b*arcsin(d*x + c)/(d*e^6*(sqrt(-(d*x + c)^2 + 1) + 1)) -
```

```
 1/16*b*(sqrt(-(d*x + c)^2 + 1) + 1)*arcsin(d*x + c)/((d*x + c)*d*e^6) - 1/
32*b*(sqrt(-(d*x + c)^2 + 1) + 1)^3*arcsin(d*x + c)/((d*x + c)^3*d*e^6) - 1
/160*b*(sqrt(-(d*x + c)^2 + 1) + 1)^5*arcsin(d*x + c)/((d*x + c)^5*d*e^6) -
 3/40*b*log(sqrt(-(d*x + c)^2 + 1) + 1)/(d*e^6) + 3/40*b*log(abs(d*x + c))/
(d*e^6) - 1/160*(d*x + c)^5*a/(d*e^6*(sqrt(-(d*x + c)^2 + 1) + 1)^5) + 1/32
0*(d*x + c)^4*b/(d*e^6*(sqrt(-(d*x + c)^2 + 1) + 1)^4) - 1/32*(d*x + c)^3*a
/(d*e^6*(sqrt(-(d*x + c)^2 + 1) + 1)^3) + 1/40*(d*x + c)^2*b/(d*e^6*(sqrt(-
(d*x + c)^2 + 1) + 1)^2) - 1/16*(d*x + c)*a/(d*e^6*(sqrt(-(d*x + c)^2 + 1)
+ 1)) - 1/16*a*(sqrt(-(d*x + c)^2 + 1) + 1)/((d*x + c)*d*e^6) - 1/40*b*(sqr
t(-(d*x + c)^2 + 1) + 1)^2/((d*x + c)^2*d*e^6) - 1/32*a*(sqrt(-(d*x + c)^2
+ 1) + 1)^3/((d*x + c)^3*d*e^6) - 1/320*b*(sqrt(-(d*x + c)^2 + 1) + 1)^4/((
d*x + c)^4*d*e^6) - 1/160*a*(sqrt(-(d*x + c)^2 + 1) + 1)^5/((d*x + c)^5*d*e
^6)
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\mathrm{asin}(c+d\,x)}{{(c\,e+d\,e\,x)}^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))/(c*e + d*e*x)^6,x)
```

```
[Out] int((a + b*asin(c + d*x))/(c*e + d*e*x)^6, x)
```

3.188 $\int (ce+dex)^4(a+b\textbf{ArcSin}(c+dx))^2\,dx$

Optimal. Leaf size=203

$$-\frac{16}{75}b^2e^4x-\frac{8b^2e^4(c+dx)^3}{225d}-\frac{2b^2e^4(c+dx)^5}{125d}+\frac{16be^4\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))}{75d}+\frac{8be^4(c+dx)^2\sqrt{}}{}$$

```
[Out] -16/75*b^2*e^4*x-8/225*b^2*e^4*(d*x+c)^3/d-2/125*b^2*e^4*(d*x+c)^5/d+1/5*e^
4*(d*x+c)^5*(a+b*arcsin(d*x+c))^2/d+16/75*b*e^4*(a+b*arcsin(d*x+c))*(1-(d*x
+c)^2)^(1/2)/d+8/75*b*e^4*(d*x+c)^2*(a+b*arcsin(d*x+c))*(1-(d*x+c)^2)^(1/2)
/d+2/25*b*e^4*(d*x+c)^4*(a+b*arcsin(d*x+c))*(1-(d*x+c)^2)^(1/2)/d
```

Rubi [A]
time = 0.22, antiderivative size = 203, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.304$, Rules used = {4889, 12, 4723, 4795, 4767, 8, 30}

$$\frac{e^4(c+dx)^5(a+b\text{ArcSin}(c+dx))^2}{5d}+\frac{2be^4\sqrt{1-(c+dx)^2}\,(c+dx)^4(a+b\text{ArcSin}(c+dx))}{25d}+\frac{8be^4\sqrt{1-(c+dx)^2}\,(c+dx)^2(a+b\text{ArcSin}(c+dx))}{75d}+\frac{16be^4\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))}{75d}-\frac{2b^2e^4(c+dx)^5}{125d}-\frac{8b^2e^4(c+dx)^3}{225d}-\frac{16}{75}b^2e^4x$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^4*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (-16*b^2*e^4*x)/75 - (8*b^2*e^4*(c + d*x)^3)/(225*d) - (2*b^2*e^4*(c + d*x)
^5)/(125*d) + (16*b*e^4*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(75*
d) + (8*b*e^4*(c + d*x)^2*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(7
5*d) + (2*b*e^4*(c + d*x)^4*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/
(25*d) + (e^4*(c + d*x)^5*(a + b*ArcSin[c + d*x])^2)/(5*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
```

```
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)^4 \left(a+b\sin^{-1}(c+dx)\right)^2 \, dx = \frac{\text{Subst}\left(\int e^4x^4(a+b\sin^{-1}(x))^2 \, dx, x, c+dx\right)}{d}$$

$$= \frac{e^4\text{Subst}\left(\int x^4(a+b\sin^{-1}(x))^2 \, dx, x, c+dx\right)}{d}$$

$$= \frac{e^4(c+dx)^5 \left(a+b\sin^{-1}(c+dx)\right)^2}{5d} - \frac{(2be^4)\,\text{Subst}\left(\int \frac{x^5(a+b\sin^{-1}(}{\sqrt{1-x^2}}\right.}{5d}$$

$$= \frac{2be^4(c+dx)^4\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))}{25d} + \frac{e^4(c+dx}{}$$

$$= -\frac{2b^2e^4(c+dx)^5}{125d} + \frac{8be^4(c+dx)^2\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c}{75d}$$

$$= -\frac{8b^2e^4(c+dx)^3}{225d} - \frac{2b^2e^4(c+dx)^5}{125d} + \frac{16be^4\sqrt{1-(c+dx)^2}\,(a+}{75d}$$

$$= -\frac{16}{75}b^2e^4x - \frac{8b^2e^4(c+dx)^3}{225d} - \frac{2b^2e^4(c+dx)^5}{125d} + \frac{16be^4\sqrt{1-(c-}}{}$$

Mathematica [A]

time = 0.29, size = 164, normalized size = 0.81

$$\frac{e^4\left((c+dx)^5(a+b\text{ArcSin}(c+dx))^2-\frac{2}{25}b\left(\frac{20}{9}b(c+dx)^3+b(c+dx)^5-\frac{20}{3}(c+dx)^2\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))-5(c+dx)^4\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))+\frac{40}{3}\left(bdx-\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))\right)\right)\right)}{5d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^4*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (e^4*((c + d*x)^5*(a + b*ArcSin[c + d*x])^2 - (2*b*((20*b*(c + d*x)^3)/9 +
b*(c + d*x)^5 - (20*(c + d*x)^2*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x
]))/3 - 5*(c + d*x)^4*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]) + (40*(
b*d*x - Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])))/3))/25))/(5*d)
```

Maple [A]

time = 0.14, size = 194, normalized size = 0.96

method	result
derivativedivides	$\frac{\frac{e^4(dx+c)^5a^2}{5}+e^4b^2\left(\frac{(dx+c)^5\arcsin(dx+c)^2}{5}+\frac{2\arcsin(dx+c)\left(3(dx+c)^4+4(dx+c)^2+8\right)\sqrt{1-(dx+c)^2}}{75}-\frac{2(dx+c)^5}{125}-\frac{8(}{}\right.}{}$

default	$\frac{\frac{e^4(dx+c)^5a^2}{5}+e^4b^2\left(\frac{(dx+c)^5\arcsin(dx+c)^2}{5}+\frac{2\arcsin(dx+c)\left(3(dx+c)^4+4(dx+c)^2+8\right)\sqrt{1-(dx+c)^2}}{75}-\frac{2(dx+c)^5}{125}-\frac{8(dx}{22}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^4*(a+b*arcsin(d*x+c))^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(1/5*e^4*(d*x+c)^5*a^2+e^4*b^2*(1/5*(d*x+c)^5*arcsin(d*x+c)^2+2/75*arcs
in(d*x+c)*(3*(d*x+c)^4+4*(d*x+c)^2+8)*(1-(d*x+c)^2)^(1/2)-2/125*(d*x+c)^5-8
/225*(d*x+c)^3-16/75*d*x-16/75*c)+2*e^4*a*b*(1/5*(d*x+c)^5*arcsin(d*x+c)+1/
25*(d*x+c)^4*(1-(d*x+c)^2)^(1/2)+4/75*(d*x+c)^2*(1-(d*x+c)^2)^(1/2)+8/75*(1
-(d*x+c)^2)^(1/2)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4*(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] 1/5*a^2*d^4*x^5*e^4 + a^2*c*d^3*x^4*e^4 + 2*a^2*c^2*d^2*x^3*e^4 + 2*a^2*c^3
*d*x^2*e^4 + 2*(2*x^2*arcsin(d*x + c) + d*(3*c^2*arcsin(-(d^2*x + c*d)/sqrt
(c^2*d^2 - (c^2 - 1)*d^2))/d^3 + sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*x/d^2 -
 (c^2 - 1)*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^3 - 3*sqr
t(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c/d^3))*a*b*c^3*d*e^4 + 2/3*(6*x^3*arcsin(d
*x + c) + d*(2*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*x^2/d^2 - 15*c^3*arcsin(-
(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^4 - 5*sqrt(-d^2*x^2 - 2*c*d*
x - c^2 + 1)*c*x/d^3 + 9*(c^2 - 1)*c*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (
c^2 - 1)*d^2))/d^4 + 15*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c^2/d^4 - 4*sqrt
(-d^2*x^2 - 2*c*d*x - c^2 + 1)*(c^2 - 1)/d^4))*a*b*c^2*d^2*e^4 + 1/12*(24*x
^4*arcsin(d*x + c) + (6*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*x^3/d^2 - 14*sqr
t(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c*x^2/d^3 + 105*c^4*arcsin(-(d^2*x + c*d)/s
qrt(c^2*d^2 - (c^2 - 1)*d^2))/d^5 + 35*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c
^2*x/d^4 - 90*(c^2 - 1)*c^2*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*
d^2))/d^5 - 105*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c^3/d^5 - 9*sqrt(-d^2*x^
2 - 2*c*d*x - c^2 + 1)*(c^2 - 1)*x/d^4 + 9*(c^2 - 1)^2*arcsin(-(d^2*x + c*d
)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^5 + 55*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1
)*(c^2 - 1)*c/d^5)*d)*a*b*c*d^3*e^4 + 1/300*(120*x^5*arcsin(d*x + c) + (24*
sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*x^4/d^2 - 54*sqrt(-d^2*x^2 - 2*c*d*x - c
^2 + 1)*c*x^3/d^3 + 126*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c^2*x^2/d^4 - 94
5*c^5*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^6 - 315*sqrt(-
d^2*x^2 - 2*c*d*x - c^2 + 1)*c^3*x/d^5 - 32*sqrt(-d^2*x^2 - 2*c*d*x - c^2 +
 1)*(c^2 - 1)*x^2/d^4 + 1050*(c^2 - 1)*c^3*arcsin(-(d^2*x + c*d)/sqrt(c^2*d
```

```
^2 - (c^2 - 1)*d^2))/d^6 + 945*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c^4/d^6 +
 161*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*(c^2 - 1)*c*x/d^5 - 225*(c^2 - 1)^2
*c*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^6 - 735*sqrt(-d^2
*x^2 - 2*c*d*x - c^2 + 1)*(c^2 - 1)*c^2/d^6 + 64*sqrt(-d^2*x^2 - 2*c*d*x -
c^2 + 1)*(c^2 - 1)^2/d^6)*d)*a*b*d^4*e^4 + a^2*c^4*x*e^4 + 2*((d*x + c)*arc
sin(d*x + c) + sqrt(-(d*x + c)^2 + 1))*a*b*c^4*e^4/d + 1/5*(b^2*d^4*x^5*e^4
 + 5*b^2*c*d^3*x^4*e^4 + 10*b^2*c^2*d^2*x^3*e^4 + 10*b^2*c^3*d*x^2*e^4 + 5*
b^2*c^4*x*e^4)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2 + i
ntegrate(2/5*(b^2*d^5*x^5*e^4 + 5*b^2*c*d^4*x^4*e^4 + 10*b^2*c^2*d^3*x^3*e^
4 + 10*b^2*c^3*d^2*x^2*e^4 + 5*b^2*c^4*d*x*e^4)*sqrt(d*x + c + 1)*sqrt(-d*x
 - c + 1)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))/(d^2*x^2 +
 2*c*d*x + c^2 - 1), x)
```

Fricas [**B**] Leaf count of result is larger than twice the leaf count of optimal. 496 vs. $2(176) = 352$.
time = 2.79, size = 496, normalized size = 2.44

$$\frac{225\left(b^2d^5x^5+5b^2cd^4x^4+10b^2c^2d^3x^3+10b^2c^3d^2x^2+5b^2c^4dx+b^2c^5\right)\arcsin\left(dx+c\right)^2e^4+450\left(abd^5x^5+5abcd^4x^4+10abc^2d^3x^3+10abc^3d^2x^2+5abc^4dx+abc^5\right)\arcsin\left(dx+c\right)e^4+\left(9\left(25a^2-2b^2\right)d^5x^5+45\left(25a^2-2b^2\right)cd^4x^4+10\left(9\left(25a^2-2b^2\right)c^2-4b^2\right)d^3x^3+30\left(3\left(25a^2-2b^2\right)c^3-4b^2c\right)d^2x^2+15\left(3\left(25a^2-2b^2\right)c^4-8b^2c^2-16b^2\right)dx\right)e^4+30\sqrt{-d^2x^2-2cdx-c^2+1}\left(\left(3b^2d^4x^4+12b^2cd^3x^3+3b^2c^4+2\left(9b^2c^2+2b^2\right)d^2x^2+4b^2c^2+4\left(3b^2c^3+2b^2c\right)dx+8b^2\right)\arcsin\left(dx+c\right)e^4+\left(3abd^4x^4+12abcd^3x^3+3abc^4+2\left(9abc^2+2ab\right)d^2x^2+4abc^2+4\left(3abc^3+2abc\right)dx+8ab\right)e^4\right)}{1125d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4*(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] 1/1125*(225*(b^2*d^5*x^5 + 5*b^2*c*d^4*x^4 + 10*b^2*c^2*d^3*x^3 + 10*b^2*c^
3*d^2*x^2 + 5*b^2*c^4*d*x + b^2*c^5)*arcsin(d*x + c)^2*e^4 + 450*(a*b*d^5*x
^5 + 5*a*b*c*d^4*x^4 + 10*a*b*c^2*d^3*x^3 + 10*a*b*c^3*d^2*x^2 + 5*a*b*c^4*
d*x + a*b*c^5)*arcsin(d*x + c)*e^4 + (9*(25*a^2 - 2*b^2)*d^5*x^5 + 45*(25*a
^2 - 2*b^2)*c*d^4*x^4 + 10*(9*(25*a^2 - 2*b^2)*c^2 - 4*b^2)*d^3*x^3 + 30*(3
*(25*a^2 - 2*b^2)*c^3 - 4*b^2*c)*d^2*x^2 + 15*(3*(25*a^2 - 2*b^2)*c^4 - 8*b
^2*c^2 - 16*b^2)*d*x)*e^4 + 30*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*((3*b^2*d
^4*x^4 + 12*b^2*c*d^3*x^3 + 3*b^2*c^4 + 2*(9*b^2*c^2 + 2*b^2)*d^2*x^2 + 4*b
^2*c^2 + 4*(3*b^2*c^3 + 2*b^2*c)*d*x + 8*b^2)*arcsin(d*x + c)*e^4 + (3*a*b*
d^4*x^4 + 12*a*b*c*d^3*x^3 + 3*a*b*c^4 + 2*(9*a*b*c^2 + 2*a*b)*d^2*x^2 + 4*
a*b*c^2 + 4*(3*a*b*c^3 + 2*a*b*c)*d*x + 8*a*b)*e^4))/d
```

Sympy [**B**] Leaf count of result is larger than twice the leaf count of optimal. 1268 vs. $2(184) = 368$.
time = 0.81, size = 1268, normalized size = 6.25

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**4*(a+b*asin(d*x+c))**2,x)
```

```
[Out] Piecewise((a**2*c**4*e**4*x + 2*a**2*c**3*d*e**4*x**2 + 2*a**2*c**2*d**2*e*
*4*x**3 + a**2*c*d**3*e**4*x**4 + a**2*d**4*e**4*x**5/5 + 2*a*b*c**5*e**4*a
sin(c + d*x)/(5*d) + 2*a*b*c**4*e**4*x*asin(c + d*x) + 2*a*b*c**4*e**4*sqrt
```

```
(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(25*d) + 4*a*b*c**3*d*e**4*x**2*asin(c +
d*x) + 8*a*b*c**3*e**4*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/25 + 4*a*b*c
**2*d**2*e**4*x**3*asin(c + d*x) + 12*a*b*c**2*d*e**4*x**2*sqrt(-c**2 - 2*c
*d*x - d**2*x**2 + 1)/25 + 8*a*b*c**2*e**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2
 + 1)/(75*d) + 2*a*b*c*d**3*e**4*x**4*asin(c + d*x) + 8*a*b*c*d**2*e**4*x**
3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/25 + 16*a*b*c*e**4*x*sqrt(-c**2 - 2
*c*d*x - d**2*x**2 + 1)/75 + 2*a*b*d**4*e**4*x**5*asin(c + d*x)/5 + 2*a*b*d
**3*e**4*x**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/25 + 8*a*b*d*e**4*x**2*
sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/75 + 16*a*b*e**4*sqrt(-c**2 - 2*c*d*x
 - d**2*x**2 + 1)/(75*d) + b**2*c**5*e**4*asin(c + d*x)**2/(5*d) + b**2*c**
4*e**4*x*asin(c + d*x)**2 - 2*b**2*c**4*e**4*x/25 + 2*b**2*c**4*e**4*sqrt(-
c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/(25*d) + 2*b**2*c**3*d*e**4*x
**2*asin(c + d*x)**2 - 4*b**2*c**3*d*e**4*x**2/25 + 8*b**2*c**3*e**4*x*sqrt
(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/25 + 2*b**2*c**2*d**2*e**4*
x**3*asin(c + d*x)**2 - 4*b**2*c**2*d**2*e**4*x**3/25 + 12*b**2*c**2*d*e**4
*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/25 - 8*b**2*c**2*
e**4*x/75 + 8*b**2*c**2*e**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c +
 d*x)/(75*d) + b**2*c*d**3*e**4*x**4*asin(c + d*x)**2 - 2*b**2*c*d**3*e**4*
x**4/25 + 8*b**2*c*d**2*e**4*x**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asi
n(c + d*x)/25 - 8*b**2*c*d*e**4*x**2/75 + 16*b**2*c*e**4*x*sqrt(-c**2 - 2*c
*d*x - d**2*x**2 + 1)*asin(c + d*x)/75 + b**2*d**4*e**4*x**5*asin(c + d*x)*
*2/5 - 2*b**2*d**4*e**4*x**5/125 + 2*b**2*d**3*e**4*x**4*sqrt(-c**2 - 2*c*d
*x - d**2*x**2 + 1)*asin(c + d*x)/25 - 8*b**2*d**2*e**4*x**3/225 + 8*b**2*d
*e**4*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/75 - 16*b**2
*e**4*x/75 + 16*b**2*e**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*
x)/(75*d), Ne(d, 0)), (c**4*e**4*x*(a + b*asin(c))**2, True))
```

Giac [**B**] Leaf count of result is larger than twice the leaf count of optimal. 443 vs. $2(183) = 366$.

time = 0.44, size = 443, normalized size = 2.18

$$\frac{(dx+c)^5a^2e^4}{5d}+\frac{((dx+c)^2-1)^2(dx+c)b^2e^4\arcsin(dx+c)^2}{5d}+\frac{2((dx+c)^2-1)^2(dx+c)abe^4\arcsin(dx+c)}{5d}+\frac{2((dx+c)^2-1)(dx+c)b^2e^4\arcsin(dx+c)^2}{5d}+\frac{2((dx+c)^2-1)^2\sqrt{-(dx+c)^2+1}\,b^2e^4\arcsin(dx+c)}{25d}-\frac{2((dx+c)^2-1)^2(dx+c)b^2e^4}{125d}+\frac{4((dx+c)^2-1)(dx+c)abe^4\arcsin(dx+c)}{5d}+\frac{(dx+c)b^2e^4\arcsin(dx+c)^2}{5d}+\frac{2((dx+c)^2-1)^2\sqrt{-(dx+c)^2+1}\,abe^4}{25d}-\frac{4(-(dx+c)^2+1)^{\frac{3}{2}}b^2e^4\arcsin(dx+c)}{15d}-\frac{76((dx+c)^2-1)(dx+c)b^2e^4}{1125d}+\frac{2(dx+c)abe^4\arcsin(dx+c)}{5d}-\frac{4(-(dx+c)^2+1)^{\frac{3}{2}}abe^4}{15d}+\frac{2\sqrt{-(dx+c)^2+1}\,b^2e^4\arcsin(dx+c)}{5d}-\frac{298(dx+c)b^2e^4}{1125d}+\frac{2\sqrt{-(dx+c)^2+1}\,abe^4}{5d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4*(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] 1/5*(d*x + c)^5*a^2*e^4/d + 1/5*((d*x + c)^2 - 1)^2*(d*x + c)*b^2*e^4*arcsi
n(d*x + c)^2/d + 2/5*((d*x + c)^2 - 1)^2*(d*x + c)*a*b*e^4*arcsin(d*x + c)/
d + 2/5*((d*x + c)^2 - 1)*(d*x + c)*b^2*e^4*arcsin(d*x + c)^2/d + 2/25*((d*
x + c)^2 - 1)^2*sqrt(-(d*x + c)^2 + 1)*b^2*e^4*arcsin(d*x + c)/d - 2/125*((
d*x + c)^2 - 1)^2*(d*x + c)*b^2*e^4/d + 4/5*((d*x + c)^2 - 1)*(d*x + c)*a*b
*e^4*arcsin(d*x + c)/d + 1/5*(d*x + c)*b^2*e^4*arcsin(d*x + c)^2/d + 2/25*(
(d*x + c)^2 - 1)^2*sqrt(-(d*x + c)^2 + 1)*a*b*e^4/d - 4/15*(-(d*x + c)^2 +
1)^(3/2)*b^2*e^4*arcsin(d*x + c)/d - 76/1125*((d*x + c)^2 - 1)*(d*x + c)*b^
2*e^4/d + 2/5*(d*x + c)*a*b*e^4*arcsin(d*x + c)/d - 4/15*(-(d*x + c)^2 + 1)
```

```
^(3/2)*a*b*e^4/d + 2/5*sqrt(-(d*x + c)^2 + 1)*b^2*e^4*arcsin(d*x + c)/d - 2
98/1125*(d*x + c)*b^2*e^4/d + 2/5*sqrt(-(d*x + c)^2 + 1)*a*b*e^4/d
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int (c\,e+d\,e\,x)^4\,(a+b\,\mathrm{asin}(c+d\,x))^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^4*(a + b*asin(c + d*x))^2,x)
[Out] int((c*e + d*e*x)^4*(a + b*asin(c + d*x))^2, x)
```

3.189 $\int (ce+dex)^3(a+b\textbf{ArcSin}(c+dx))^2\,dx$

Optimal. Leaf size=176

$$-\frac{3b^2e^3(c+dx)^2}{32d}-\frac{b^2e^3(c+dx)^4}{32d}+\frac{3be^3(c+dx)\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))}{16d}+\frac{be^3(c+dx)^3\sqrt{1-(c+dx)^2}}{}$$

```
[Out] -3/32*b^2*e^3*(d*x+c)^2/d-1/32*b^2*e^3*(d*x+c)^4/d-3/32*e^3*(a+b*arcsin(d*x
+c))^2/d+1/4*e^3*(d*x+c)^4*(a+b*arcsin(d*x+c))^2/d+3/16*b*e^3*(d*x+c)*(a+b*
arcsin(d*x+c))*(1-(d*x+c)^2)^(1/2)/d+1/8*b*e^3*(d*x+c)^3*(a+b*arcsin(d*x+c)
)*(1-(d*x+c)^2)^(1/2)/d
```

Rubi [A]
time = 0.19, antiderivative size = 176, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.261$, Rules used = {4889, 12, 4723, 4795, 4737, 30}

$$\frac{e^3(c+dx)^4(a+b\text{ArcSin}(c+dx))^2}{4d}+\frac{be^3\sqrt{1-(c+dx)^2}\,(c+dx)^3(a+b\text{ArcSin}(c+dx))}{8d}+\frac{3be^3\sqrt{1-(c+dx)^2}\,(c+dx)(a+b\text{ArcSin}(c+dx))}{16d}-\frac{3e^3(a+b\text{ArcSin}(c+dx))^2}{32d}-\frac{b^2e^3(c+dx)^4}{32d}-\frac{3b^2e^3(c+dx)^2}{32d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (-3*b^2*e^3*(c + d*x)^2)/(32*d) - (b^2*e^3*(c + d*x)^4)/(32*d) + (3*b*e^3*(
c + d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(16*d) + (b*e^3*(c
+ d*x)^3*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(8*d) - (3*e^3*(a +
 b*ArcSin[c + d*x])^2)/(32*d) + (e^3*(c + d*x)^4*(a + b*ArcSin[c + d*x])^2)
/(4*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && NeQ[n, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Dist[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m, 1] && NeQ[m + 2*p + 1, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)^3 \left(a+b\sin^{-1}(c+dx)\right)^2 dx = \frac{\text{Subst}\left(\int e^3x^3(a+b\sin^{-1}(x))^2\, dx, x, c+dx\right)}{d}$$

$$= \frac{e^3\text{Subst}\left(\int x^3(a+b\sin^{-1}(x))^2\, dx, x, c+dx\right)}{d}$$

$$= \frac{e^3(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)^2}{4d} - \frac{(be^3)\,\text{Subst}\left(\int \frac{x^4(a+b\sin^{-1}(x)}{\sqrt{1-x^2}}\right.}{2d}$$

$$= \frac{be^3(c+dx)^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{8d} + \frac{e^3(c+dx)}{}$$

$$= -\frac{b^2e^3(c+dx)^4}{32d} + \frac{3be^3(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+\right.}{16d}$$

$$= -\frac{3b^2e^3(c+dx)^2}{32d} - \frac{b^2e^3(c+dx)^4}{32d} + \frac{3be^3(c+dx)\sqrt{1-(c+dx)}}{16d}$$

Mathematica [A]

time = 0.14, size = 142, normalized size = 0.81

$$\frac{e^3\left((c+dx)^4(a+b\text{ArcSin}(c+dx))^2+\frac{1}{8}\left(-b^2(c+dx)^4+4b(c+dx)^3\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))-3\left(b^2(c+dx)^2-2b(c+dx)\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))+(a+b\text{ArcSin}(c+dx))^2\right)\right)\right)}{4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^3*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (e^3*((c + d*x)^4*(a + b*ArcSin[c + d*x])^2 + (-(b^2*(c + d*x)^4) + 4*b*(c
+ d*x)^3*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]) - 3*(b^2*(c + d*x)^2
 - 2*b*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]) + (a + b*Arc
Sin[c + d*x])^2))/8))/(4*d)
```

Maple [A]
time = 0.12, size = 203, normalized size = 1.15

method	result
derivativedivides	$\frac{\frac{e^3(dx+c)^4a^2}{4}+e^3b^2\left(\frac{(dx+c)^4\arcsin(dx+c)^2}{4}-\frac{\arcsin(dx+c)\left(-2(dx+c)^3\sqrt{1-(dx+c)^2}-3(dx+c)\sqrt{1-(dx+c)^2}\right.}{16}\right.}{}$
default	$\frac{\frac{e^3(dx+c)^4a^2}{4}+e^3b^2\left(\frac{(dx+c)^4\arcsin(dx+c)^2}{4}-\frac{\arcsin(dx+c)\left(-2(dx+c)^3\sqrt{1-(dx+c)^2}-3(dx+c)\sqrt{1-(dx+c)^2}\right.}{16}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(1/4*e^3*(d*x+c)^4*a^2+e^3*b^2*(1/4*(d*x+c)^4*arcsin(d*x+c)^2-1/16*arcs
in(d*x+c)*(-2*(d*x+c)^3*(1-(d*x+c)^2)^(1/2)-3*(d*x+c)*(1-(d*x+c)^2)^(1/2)+3
*arcsin(d*x+c))+3/32*arcsin(d*x+c)^2-1/128*(2*(d*x+c)^2+3)^2)+2*e^3*a*b*(1/
4*(d*x+c)^4*arcsin(d*x+c)+1/16*(d*x+c)^3*(1-(d*x+c)^2)^(1/2)+3/32*(d*x+c)*(
1-(d*x+c)^2)^(1/2)-3/32*arcsin(d*x+c)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] 1/4*a^2*d^3*x^4*e^3 + a^2*c*d^2*x^3*e^3 + 3/2*a^2*c^2*d*x^2*e^3 + 3/2*(2*x^
2*arcsin(d*x + c) + d*(3*c^2*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)
```

```
*d^2))/d^3 + sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*x/d^2 - (c^2 - 1)*arcsin(-(
d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^3 - 3*sqrt(-d^2*x^2 - 2*c*d*x
 - c^2 + 1)*c/d^3))*a*b*c^2*d*e^3 + 1/3*(6*x^3*arcsin(d*x + c) + d*(2*sqrt(
-d^2*x^2 - 2*c*d*x - c^2 + 1)*x^2/d^2 - 15*c^3*arcsin(-(d^2*x + c*d)/sqrt(c
^2*d^2 - (c^2 - 1)*d^2))/d^4 - 5*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c*x/d^3
 + 9*(c^2 - 1)*c*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^4 +
 15*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c^2/d^4 - 4*sqrt(-d^2*x^2 - 2*c*d*x
- c^2 + 1)*(c^2 - 1)/d^4))*a*b*c*d^2*e^3 + 1/48*(24*x^4*arcsin(d*x + c) + (
6*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*x^3/d^2 - 14*sqrt(-d^2*x^2 - 2*c*d*x -
 c^2 + 1)*c*x^2/d^3 + 105*c^4*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1
)*d^2))/d^5 + 35*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c^2*x/d^4 - 90*(c^2 - 1
)*c^2*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^5 - 105*sqrt(-
d^2*x^2 - 2*c*d*x - c^2 + 1)*c^3/d^5 - 9*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)
*(c^2 - 1)*x/d^4 + 9*(c^2 - 1)^2*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2
- 1)*d^2))/d^5 + 55*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*(c^2 - 1)*c/d^5)*d)*
a*b*d^3*e^3 + a^2*c^3*x*e^3 + 2*((d*x + c)*arcsin(d*x + c) + sqrt(-(d*x + c
)^2 + 1))*a*b*c^3*e^3/d + 1/4*(b^2*d^3*x^4*e^3 + 4*b^2*c*d^2*x^3*e^3 + 6*b^
2*c^2*d*x^2*e^3 + 4*b^2*c^3*x*e^3)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(
-d*x - c + 1))^2 + integrate(1/2*(b^2*d^4*x^4*e^3 + 4*b^2*c*d^3*x^3*e^3 + 6
*b^2*c^2*d^2*x^2*e^3 + 4*b^2*c^3*d*x*e^3)*sqrt(d*x + c + 1)*sqrt(-d*x - c +
 1)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))/(d^2*x^2 + 2*c*d
*x + c^2 - 1), x)
```

Fricas [**B**] Leaf count of result is larger than twice the leaf count of optimal. 382 vs. $2(154) = 308$.
time = 2.26, size = 382, normalized size = 2.17

$$\frac{(8\,b^2d^4x^4 + 32\,b^2cd^3x^3 + 48\,b^2c^2d^2x^2 + 32\,b^2c^3dx + 8\,b^2c^4 - 3\,b^2)\arcsin(dx+c)^2e^3 + 2\,(8\,abd^4x^4 + 32\,abcd^3x^3 + 48\,abc^2d^2x^2 + 32\,abc^3dx + 8\,abc^4 - 3\,ab)\arcsin(dx+c)\,e^3 + ((8\,a^2 - b^2)d^4x^4 + 4\,(8\,a^2 - b^2)cd^3x^3 + 3\,(2\,(8\,a^2 - b^2)c^2 - b^2)d^2x^2 + 2\,(2\,(8\,a^2 - b^2)c^3 - 3\,b^2c)dx)e^3 + 2\,\sqrt{-d^2x^2 - 2\,cdx - c^2 + 1}\,((2\,b^2d^3x^3 + 6\,b^2cd^2x^2 + 2\,b^2c^3 + 3\,b^2c + 3\,(2\,b^2c^2 + b^2)dx)\arcsin(dx+c)\,e^3 + (2\,abd^3x^3 + 6\,abcd^2x^2 + 2\,abc^3 + 3\,abc + 3\,(2\,abc^2 + ab)dx)e^3)}{32\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] 1/32*((8*b^2*d^4*x^4 + 32*b^2*c*d^3*x^3 + 48*b^2*c^2*d^2*x^2 + 32*b^2*c^3*d
*x + 8*b^2*c^4 - 3*b^2)*arcsin(d*x + c)^2*e^3 + 2*(8*a*b*d^4*x^4 + 32*a*b*c
*d^3*x^3 + 48*a*b*c^2*d^2*x^2 + 32*a*b*c^3*d*x + 8*a*b*c^4 - 3*a*b)*arcsin(
d*x + c)*e^3 + ((8*a^2 - b^2)*d^4*x^4 + 4*(8*a^2 - b^2)*c*d^3*x^3 + 3*(2*(8
*a^2 - b^2)*c^2 - b^2)*d^2*x^2 + 2*(2*(8*a^2 - b^2)*c^3 - 3*b^2*c)*d*x)*e^3
 + 2*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*((2*b^2*d^3*x^3 + 6*b^2*c*d^2*x^2 +
 2*b^2*c^3 + 3*b^2*c + 3*(2*b^2*c^2 + b^2)*d*x)*arcsin(d*x + c)*e^3 + (2*a*
b*d^3*x^3 + 6*a*b*c*d^2*x^2 + 2*a*b*c^3 + 3*a*b*c + 3*(2*a*b*c^2 + a*b)*d*x
)*e^3))/d
```

Sympy [**B**] Leaf count of result is larger than twice the leaf count of optimal. 916 vs. $2(155) = 310$.
time = 0.58, size = 916, normalized size = 5.20

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3*(a+b*asin(d*x+c))**2,x)
```

```
[Out] Piecewise((a**2*c**3*e**3*x + 3*a**2*c**2*d*e**3*x**2/2 + a**2*c*d**2*e**3*
x**3 + a**2*d**3*e**3*x**4/4 + a*b*c**4*e**3*asin(c + d*x)/(2*d) + 2*a*b*c*
*3*e**3*x*asin(c + d*x) + a*b*c**3*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 +
1)/(8*d) + 3*a*b*c**2*d*e**3*x**2*asin(c + d*x) + 3*a*b*c**2*e**3*x*sqrt(-c
**2 - 2*c*d*x - d**2*x**2 + 1)/8 + 2*a*b*c*d**2*e**3*x**3*asin(c + d*x) + 3
*a*b*c*d*e**3*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/8 + 3*a*b*c*e**3*s
qrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(16*d) + a*b*d**3*e**3*x**4*asin(c + d
*x)/2 + a*b*d**2*e**3*x**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/8 + 3*a*b*
e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/16 - 3*a*b*e**3*asin(c + d*x)/
(16*d) + b**2*c**4*e**3*asin(c + d*x)**2/(4*d) + b**2*c**3*e**3*x*asin(c +
d*x)**2 - b**2*c**3*e**3*x/8 + b**2*c**3*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x
**2 + 1)*asin(c + d*x)/(8*d) + 3*b**2*c**2*d*e**3*x**2*asin(c + d*x)**2/2 -
 3*b**2*c**2*d*e**3*x**2/16 + 3*b**2*c**2*e**3*x*sqrt(-c**2 - 2*c*d*x - d**
2*x**2 + 1)*asin(c + d*x)/8 + b**2*c*d**2*e**3*x**3*asin(c + d*x)**2 - b**2
*c*d**2*e**3*x**3/8 + 3*b**2*c*d*e**3*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2
 + 1)*asin(c + d*x)/8 - 3*b**2*c*e**3*x/16 + 3*b**2*c*e**3*sqrt(-c**2 - 2*c
*d*x - d**2*x**2 + 1)*asin(c + d*x)/(16*d) + b**2*d**3*e**3*x**4*asin(c + d
*x)**2/4 - b**2*d**3*e**3*x**4/32 + b**2*d**2*e**3*x**3*sqrt(-c**2 - 2*c*d*
x - d**2*x**2 + 1)*asin(c + d*x)/8 - 3*b**2*d*e**3*x**2/32 + 3*b**2*e**3*x*
sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/16 - 3*b**2*e**3*asin(c
 + d*x)**2/(32*d), Ne(d, 0)), (c**3*e**3*x*(a + b*asin(c))**2, True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 342 vs. 2(160) = 320.
time = 0.44, size = 342, normalized size = 1.94

$$\frac{(dx+c)^4a^2e^3}{4\,d}+\frac{\left((dx+c)^2-1\right)^2b^2e^3\arcsin\left(dx+c\right)^2}{4\,d}-\frac{\left(-(dx+c)^2+1\right)^{\frac{3}{2}}(dx+c)b^2e^3\arcsin\left(dx+c\right)}{8\,d}+\frac{\left((dx+c)^2-1\right)^2abe^3\arcsin\left(dx+c\right)}{2\,d}+\frac{\left((dx+c)^2-1\right)b^2e^3\arcsin\left(dx+c\right)^2}{2\,d}-\frac{\left(-(dx+c)^2+1\right)^{\frac{3}{2}}(dx+c)abe^3}{8\,d}+\frac{5\sqrt{-(dx+c)^2+1}\,(dx+c)b^2e^3\arcsin\left(dx+c\right)}{16\,d}-\frac{\left((dx+c)^2-1\right)^2b^2e^3}{32\,d}+\frac{\left((dx+c)^2-1\right)abe^3\arcsin\left(dx+c\right)}{d}+\frac{5\,b^2e^3\arcsin\left(dx+c\right)^2}{32\,d}+\frac{5\sqrt{-(dx+c)^2+1}\,(dx+c)abe^3}{16\,d}-\frac{5\left((dx+c)^2-1\right)b^2e^3}{32\,d}+\frac{5\,abe^3\arcsin\left(dx+c\right)}{16\,d}-\frac{17\,b^2e^3}{256\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] 1/4*(d*x + c)^4*a^2*e^3/d + 1/4*((d*x + c)^2 - 1)^2*b^2*e^3*arcsin(d*x + c)
^2/d - 1/8*(-(d*x + c)^2 + 1)^(3/2)*(d*x + c)*b^2*e^3*arcsin(d*x + c)/d + 1
/2*((d*x + c)^2 - 1)^2*a*b*e^3*arcsin(d*x + c)/d + 1/2*((d*x + c)^2 - 1)*b^
2*e^3*arcsin(d*x + c)^2/d - 1/8*(-(d*x + c)^2 + 1)^(3/2)*(d*x + c)*a*b*e^3/
d + 5/16*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*b^2*e^3*arcsin(d*x + c)/d - 1/32*
((d*x + c)^2 - 1)^2*b^2*e^3/d + ((d*x + c)^2 - 1)*a*b*e^3*arcsin(d*x + c)/d
 + 5/32*b^2*e^3*arcsin(d*x + c)^2/d + 5/16*sqrt(-(d*x + c)^2 + 1)*(d*x + c)
*a*b*e^3/d - 5/32*((d*x + c)^2 - 1)*b^2*e^3/d + 5/16*a*b*e^3*arcsin(d*x + c
)/d - 17/256*b^2*e^3/d
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.01

$$\int (ce + dex)^3 (a + b\,\mathrm{asin}(c + dx))^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^3*(a + b*asin(c + d*x))^2,x)
[Out] int((c*e + d*e*x)^3*(a + b*asin(c + d*x))^2, x)
```

3.190 $\int (ce+dex)^2(a+b\mathbf{ArcSin}(c+dx))^2\,dx$

Optimal. Leaf size=140

$$-\frac{4}{9}b^2e^2x-\frac{2b^2e^2(c+dx)^3}{27d}+\frac{4be^2\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))}{9d}+\frac{2be^2(c+dx)^2\sqrt{1-(c+dx)^2}\,(a+}{9d}$$

```
[Out] -4/9*b^2*e^2*x-2/27*b^2*e^2*(d*x+c)^3/d+1/3*e^2*(d*x+c)^3*(a+b*arcsin(d*x+c
))^2/d+4/9*b*e^2*(a+b*arcsin(d*x+c))*(1-(d*x+c)^2)^(1/2)/d+2/9*b*e^2*(d*x+c
)^2*(a+b*arcsin(d*x+c))*(1-(d*x+c)^2)^(1/2)/d
```

Rubi [A]
time = 0.14, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.304$, Rules used = {4889, 12, 4723, 4795, 4767, 8, 30}

$$\frac{e^2(c+dx)^3(a+b\text{ArcSin}(c+dx))^2}{3d}+\frac{2be^2\sqrt{1-(c+dx)^2}\,(c+dx)^2(a+b\text{ArcSin}(c+dx))}{9d}+\frac{4be^2\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))}{9d}-\frac{2b^2e^2(c+dx)^3}{27d}-\frac{4}{9}b^2e^2x$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (-4*b^2*e^2*x)/9 - (2*b^2*e^2*(c + d*x)^3)/(27*d) + (4*b*e^2*Sqrt[1 - (c +
d*x)^2]*(a + b*ArcSin[c + d*x]))/(9*d) + (2*b*e^2*(c + d*x)^2*Sqrt[1 - (c +
 d*x)^2]*(a + b*ArcSin[c + d*x]))/(9*d) + (e^2*(c + d*x)^3*(a + b*ArcSin[c
+ d*x])^2)/(3*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)^2\left(a+b\sin^{-1}(c+dx)\right)^2\,dx = \frac{\text{Subst}\left(\int e^2x^2\left(a+b\sin^{-1}(x)\right)^2\,dx,x,c+dx\right)}{d}$$

$$= \frac{e^2\text{Subst}\left(\int x^2\left(a+b\sin^{-1}(x)\right)^2\,dx,x,c+dx\right)}{d}$$

$$= \frac{e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)^2}{3d} - \frac{(2be^2)\,\text{Subst}\left(\int \frac{x^3(a+b\sin^{-1}(}{\sqrt{1-x^2}}\right.}{3d}$$

$$= \frac{2be^2(c+dx)^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{9d} + \frac{e^2(c+dx}{}$$

$$= -\frac{2b^2e^2(c+dx)^3}{27d} + \frac{4be^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{9d} +$$

$$= -\frac{4}{9}b^2e^2x - \frac{2b^2e^2(c+dx)^3}{27d} + \frac{4be^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c\right.}{9d}$$

Mathematica [A]
time = 0.14, size = 112, normalized size = 0.80

$$\frac{e^2\left((c+dx)^3(a+b\text{ArcSin}(c+dx))^2-\frac{2}{9}b\left(6bdx+b(c+dx)^3-6\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))-3(c+dx)^2\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))\right)\right)}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (e^2*((c + d*x)^3*(a + b*ArcSin[c + d*x])^2 - (2*b*(6*b*d*x + b*(c + d*x)^3
 - 6*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]) - 3*(c + d*x)^2*Sqrt[1 -
 (c + d*x)^2]*(a + b*ArcSin[c + d*x])))/9))/(3*d)
```

Maple [A]
time = 0.11, size = 152, normalized size = 1.09

method	result
derivativedivides	$\frac{\frac{e^2(dx+c)^3a^2}{3}+e^2b^2\left(\frac{(dx+c)^3\arcsin(dx+c)^2}{3}+\frac{2\arcsin(dx+c)\left((dx+c)^2+2\right)\sqrt{1-(dx+c)^2}}{9}-\frac{2(dx+c)^3}{27}-\frac{4dx}{9}-\frac{4c}{9}\right)+2e^2}{d}$
default	$\frac{\frac{e^2(dx+c)^3a^2}{3}+e^2b^2\left(\frac{(dx+c)^3\arcsin(dx+c)^2}{3}+\frac{2\arcsin(dx+c)\left((dx+c)^2+2\right)\sqrt{1-(dx+c)^2}}{9}-\frac{2(dx+c)^3}{27}-\frac{4dx}{9}-\frac{4c}{9}\right)+2e^2}{d}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(1/3*e^2*(d*x+c)^3*a^2+e^2*b^2*(1/3*(d*x+c)^3*arcsin(d*x+c)^2+2/9*arcsi
n(d*x+c)*((d*x+c)^2+2)*(1-(d*x+c)^2)^(1/2)-2/27*(d*x+c)^3-4/9*d*x-4/9*c)+2*
e^2*a*b*(1/3*(d*x+c)^3*arcsin(d*x+c)+1/9*(d*x+c)^2*(1-(d*x+c)^2)^(1/2)+2/9*
(1-(d*x+c)^2)^(1/2)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] 1/3*a^2*d^2*x^3*e^2 + a^2*c*d*x^2*e^2 + (2*x^2*arcsin(d*x + c) + d*(3*c^2*a
rcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^3 + sqrt(-d^2*x^2 - 2
*c*d*x - c^2 + 1)*x/d^2 - (c^2 - 1)*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c
^2 - 1)*d^2))/d^3 - 3*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c/d^3))*a*b*c*d*e^
```

```
2 + 1/9*(6*x^3*arcsin(d*x + c) + d*(2*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*x^
2/d^2 - 15*c^3*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^4 - 5
*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c*x/d^3 + 9*(c^2 - 1)*c*arcsin(-(d^2*x
+ c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^4 + 15*sqrt(-d^2*x^2 - 2*c*d*x - c^
2 + 1)*c^2/d^4 - 4*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*(c^2 - 1)/d^4))*a*b*d
^2*e^2 + a^2*c^2*x*e^2 + 2*((d*x + c)*arcsin(d*x + c) + sqrt(-(d*x + c)^2 +
 1))*a*b*c^2*e^2/d + 1/3*(b^2*d^2*x^3*e^2 + 3*b^2*c*d*x^2*e^2 + 3*b^2*c^2*x
*e^2)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2 + integrate(
2/3*(b^2*d^3*x^3*e^2 + 3*b^2*c*d^2*x^2*e^2 + 3*b^2*c^2*d*x*e^2)*sqrt(d*x +
c + 1)*sqrt(-d*x - c + 1)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c
+ 1))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 266 vs. $2(121) = 242$.
time = 1.40, size = 266, normalized size = 1.90

$$\frac{9\left(b^2d^3x^3+3b^2cd^2x^2+3b^2c^2dx+b^2c^3\right)\arcsin\left(dx+c\right)^2e^2+18\left(abd^3x^3+3abcd^2x^2+3abc^2dx+abc^3\right)\arcsin\left(dx+c\right)e^2+\left((9a^2-2b^2)d^3x^3+3(9a^2-2b^2)cd^2x^2+3\left((9a^2-2b^2)c^2-4b^2\right)dx\right)e^2+6\sqrt{-d^2x^2-2cdx-c^2+1}\left(\left(b^2d^2x^2+2b^2cdx+b^2c^2+2b^2\right)\arcsin\left(dx+c\right)e^2+\left(abd^2x^2+2abcdx+abc^2+2ab\right)e^2\right)}{27d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] 1/27*(9*(b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*arcsin(d*
x + c)^2*e^2 + 18*(a*b*d^3*x^3 + 3*a*b*c*d^2*x^2 + 3*a*b*c^2*d*x + a*b*c^3)
*arcsin(d*x + c)*e^2 + ((9*a^2 - 2*b^2)*d^3*x^3 + 3*(9*a^2 - 2*b^2)*c*d^2*x
^2 + 3*((9*a^2 - 2*b^2)*c^2 - 4*b^2)*d*x)*e^2 + 6*sqrt(-d^2*x^2 - 2*c*d*x -
 c^2 + 1)*((b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2 + 2*b^2)*arcsin(d*x + c)*e^
2 + (a*b*d^2*x^2 + 2*a*b*c*d*x + a*b*c^2 + 2*a*b)*e^2))/d
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 610 vs. $2(126) = 252$.
time = 0.39, size = 610, normalized size = 4.36

$$\begin{cases} a^2c^2e^2x + a^2cde^2x^2 + \frac{a^2d^2e^2x^3}{3} + \frac{2abc^3e^2\operatorname{asin}(c+dx)}{3d} + 2abc^2e^2x\operatorname{asin}(c+dx) + \frac{2abc^2e^2\sqrt{-c^2-2cdx-d^2x^2+1}}{9d} + 2abcde^2x^2\operatorname{asin}(c+dx) + \frac{4abce^2x\sqrt{-c^2-2cdx-d^2x^2+1}}{9} + \frac{2abd^2e^2x^3\operatorname{asin}(c+dx)}{3} + \frac{2abde^2x^2\sqrt{-c^2-2cdx-d^2x^2+1}}{9} + \frac{4abe^2\sqrt{-c^2-2cdx-d^2x^2+1}}{9d} + \frac{b^2c^3e^2\operatorname{asin}^2(c+dx)}{3d} + b^2c^2e^2x\operatorname{asin}^2(c+dx) - \frac{2b^2c^2e^2x}{9} + \frac{2b^2c^2e^2\sqrt{-c^2-2cdx-d^2x^2+1}\operatorname{asin}(c+dx)}{9d} + b^2cde^2x^2\operatorname{asin}^2(c+dx) - \frac{2b^2cde^2x^2}{9} + \frac{4b^2ce^2x\sqrt{-c^2-2cdx-d^2x^2+1}\operatorname{asin}(c+dx)}{9} + \frac{b^2d^2e^2x^3\operatorname{asin}^2(c+dx)}{3} - \frac{2b^2d^2e^2x^3}{27} + \frac{2b^2de^2x^2\sqrt{-c^2-2cdx-d^2x^2+1}\operatorname{asin}(c+dx)}{9} - \frac{4b^2e^2x}{9} + \frac{4b^2e^2\sqrt{-c^2-2cdx-d^2x^2+1}\operatorname{asin}(c+dx)}{9d} & \text{for}\: d \neq 0 \\ c^2e^2x\left(a + b\operatorname{asin}(c)\right)^2 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2*(a+b*asin(d*x+c))**2,x)
```

```
[Out] Piecewise((a**2*c**2*e**2*x + a**2*c*d*e**2*x**2 + a**2*d**2*e**2*x**3/3 +
2*a*b*c**3*e**2*asin(c + d*x)/(3*d) + 2*a*b*c**2*e**2*x*asin(c + d*x) + 2*a
*b*c**2*e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(9*d) + 2*a*b*c*d*e**2*x
**2*asin(c + d*x) + 4*a*b*c*e**2*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/9
+ 2*a*b*d**2*e**2*x**3*asin(c + d*x)/3 + 2*a*b*d*e**2*x**2*sqrt(-c**2 - 2*c
*d*x - d**2*x**2 + 1)/9 + 4*a*b*e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/
(9*d) + b**2*c**3*e**2*asin(c + d*x)**2/(3*d) + b**2*c**2*e**2*x*asin(c + d
*x)**2 - 2*b**2*c**2*e**2*x/9 + 2*b**2*c**2*e**2*sqrt(-c**2 - 2*c*d*x - d**
2*x**2 + 1)*asin(c + d*x)/(9*d) + b**2*c*d*e**2*x**2*asin(c + d*x)**2 - 2*b
```

```
**2*c*d*e**2*x**2/9 + 4*b**2*c*e**2*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)
*asin(c + d*x)/9 + b**2*d**2*e**2*x**3*asin(c + d*x)**2/3 - 2*b**2*d**2*e**
2*x**3/27 + 2*b**2*d*e**2*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c
 + d*x)/9 - 4*b**2*e**2*x/9 + 4*b**2*e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2
+ 1)*asin(c + d*x)/(9*d), Ne(d, 0)), (c**2*e**2*x*(a + b*asin(c))**2, True)
)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 274 vs. 2(126) = 252.
time = 0.46, size = 274, normalized size = 1.96

$$\frac{\left((dx+c)^2-1\right)(dx+c)b^2e^2\arcsin\left(dx+c\right)^2}{3\,d}+\frac{(dx+c)^3a^2e^2}{3\,d}+\frac{2\left((dx+c)^2-1\right)(dx+c)abe^2\arcsin\left(dx+c\right)}{3\,d}+\frac{(dx+c)b^2e^2\arcsin\left(dx+c\right)^2}{3\,d}-\frac{2\left(-(dx+c)^2+1\right)^{\frac{3}{2}}b^2e^2\arcsin\left(dx+c\right)}{9\,d}-\frac{2\left((dx+c)^2-1\right)(dx+c)b^2e^2}{27\,d}+\frac{2\,(dx+c)abe^2\arcsin\left(dx+c\right)}{3\,d}-\frac{2\left(-(dx+c)^2+1\right)^{\frac{3}{2}}abe^2}{9\,d}+\frac{2\sqrt{-(dx+c)^2+1}\,b^2e^2\arcsin\left(dx+c\right)}{3\,d}-\frac{14\,(dx+c)b^2e^2}{27\,d}+\frac{2\sqrt{-(dx+c)^2+1}\,abe^2}{3\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] 1/3*((d*x + c)^2 - 1)*(d*x + c)*b^2*e^2*arcsin(d*x + c)^2/d + 1/3*(d*x + c)
^3*a^2*e^2/d + 2/3*((d*x + c)^2 - 1)*(d*x + c)*a*b*e^2*arcsin(d*x + c)/d +
1/3*(d*x + c)*b^2*e^2*arcsin(d*x + c)^2/d - 2/9*(-(d*x + c)^2 + 1)^(3/2)*b^
2*e^2*arcsin(d*x + c)/d - 2/27*((d*x + c)^2 - 1)*(d*x + c)*b^2*e^2/d + 2/3*
(d*x + c)*a*b*e^2*arcsin(d*x + c)/d - 2/9*(-(d*x + c)^2 + 1)^(3/2)*a*b*e^2/
d + 2/3*sqrt(-(d*x + c)^2 + 1)*b^2*e^2*arcsin(d*x + c)/d - 14/27*(d*x + c)*
b^2*e^2/d + 2/3*sqrt(-(d*x + c)^2 + 1)*a*b*e^2/d
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int {\left(c\,e+d\,e\,x\right)}^2\,{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^2*(a + b*asin(c + d*x))^2,x)
```

```
[Out] int((c*e + d*e*x)^2*(a + b*asin(c + d*x))^2, x)
```

3.191 $\int (ce+dex)(a+b\mathbf{ArcSin}(c+dx))^2\,dx$

Optimal. Leaf size=105

$$-\frac{b^2e(c+dx)^2}{4d}+\frac{be(c+dx)\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))}{2d}-\frac{e(a+b\text{ArcSin}(c+dx))^2}{4d}+\frac{e(c+dx)^2(a$$

[Out] -1/4*b^2*e*(d*x+c)^2/d-1/4*e*(a+b*arcsin(d*x+c))^2/d+1/2*e*(d*x+c)^2*(a+b*a
rcsin(d*x+c))^2/d+1/2*b*e*(d*x+c)*(a+b*arcsin(d*x+c))*(1-(d*x+c)^2)^(1/2)/d

Rubi [A]
time = 0.10, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$,
Rules used = {4889, 12, 4723, 4795, 4737, 30}

$$\frac{e(c+dx)^2(a+b\text{ArcSin}(c+dx))^2}{2d}+\frac{be\sqrt{1-(c+dx)^2}\,(c+dx)(a+b\text{ArcSin}(c+dx))}{2d}-\frac{e(a+b\text{ArcSin}(c+dx))^2}{4d}-\frac{b^2e(c+dx)^2}{4d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] -1/4*(b^2*e*(c + d*x)^2)/d + (b*e*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*Ar
cSin[c + d*x]))/(2*d) - (e*(a + b*ArcSin[c + d*x])^2)/(4*d) + (e*(c + d*x)^
2*(a + b*ArcSin[c + d*x])^2)/(2*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
```

```
+ e, 0] && NeQ[n, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^2\,dx = \frac{\text{Subst}\left(\int ex(a+b\sin^{-1}(x))^2\,dx,x,c+dx\right)}{d}$$

$$= \frac{e\text{Subst}\left(\int x(a+b\sin^{-1}(x))^2\,dx,x,c+dx\right)}{d}$$

$$= \frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)^2}{2d} - \frac{(be)\text{Subst}\left(\int \frac{x^2(a+b\sin^{-1}(x))}{\sqrt{1-x^2}}\,dx,\right.}{d}$$

$$= \frac{be(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{2d} + \frac{e(c+dx)^2(a+}{}$$

$$= -\frac{b^2e(c+dx)^2}{4d} + \frac{be(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{2d}$$

Mathematica [A]
time = 0.05, size = 86, normalized size = 0.82

$$-\frac{e\left(b^2(c+dx)^2-2b(c+dx)\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))+(a+b\text{ArcSin}(c+dx))^2-2(c+dx)^2(a+b\text{ArcSin}(c+dx))^2\right)}{4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] -1/4*(e*(b^2*(c + d*x)^2 - 2*b*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSi
n[c + d*x]) + (a + b*ArcSin[c + d*x])^2 - 2*(c + d*x)^2*(a + b*ArcSin[c + d
*x])^2))/d
```

Maple [A]
time = 0.05, size = 146, normalized size = 1.39

method	result
derivativedivides	$\frac{\frac{e(dx+c)^2a^2}{2}+e\,b^2\left(\frac{\left((dx+c)^2-1\right)\arcsin(dx+c)^2}{2}+\frac{\arcsin(dx+c)\left((dx+c)\sqrt{1-(dx+c)^2}+\arcsin(dx+c)\right)}{2}-\frac{\arcsin(dx+c)^2}{4}\right.}{d}$
default	$\frac{\frac{e(dx+c)^2a^2}{2}+e\,b^2\left(\frac{\left((dx+c)^2-1\right)\arcsin(dx+c)^2}{2}+\frac{\arcsin(dx+c)\left((dx+c)\sqrt{1-(dx+c)^2}+\arcsin(dx+c)\right)}{2}-\frac{\arcsin(dx+c)^2}{4}\right.}{d}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)*(a+b*arcsin(d*x+c))^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(1/2*e*(d*x+c)^2*a^2+e*b^2*(1/2*((d*x+c)^2-1)*arcsin(d*x+c)^2+1/2*arcsi
n(d*x+c)*((d*x+c)*(1-(d*x+c)^2)^(1/2)+arcsin(d*x+c))-1/4*arcsin(d*x+c)^2-1/
4*(d*x+c)^2)+2*e*a*b*(1/2*(d*x+c)^2*arcsin(d*x+c)+1/4*(d*x+c)*(1-(d*x+c)^2)
^(1/2)-1/4*arcsin(d*x+c)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] 1/2*a^2*d*x^2*e + 1/2*(2*x^2*arcsin(d*x + c) + d*(3*c^2*arcsin(-(d^2*x + c*
d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^3 + sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*
x/d^2 - (c^2 - 1)*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^3
- 3*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c/d^3))*a*b*d*e + a^2*c*x*e + 2*((d*
x + c)*arcsin(d*x + c) + sqrt(-(d*x + c)^2 + 1))*a*b*c*e/d + 1/2*(b^2*d*x^2
*e + 2*b^2*c*x*e)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2
+ integrate((b^2*d^2*x^2*e + 2*b^2*c*d*x*e)*sqrt(d*x + c + 1)*sqrt(-d*x - c
 + 1)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))/(d^2*x^2 + 2*c
*d*x + c^2 - 1), x)
```

Fricas [**A**]
time = 2.11, size = 186, normalized size = 1.77

$$\frac{\left(2 b^{2} d^{2} x^{2}+4 b^{2} c d x+2 b^{2} c^{2}-b^{2}\right) \arcsin \left(d x+c\right)^{2} e+2 \left(2 a b d^{2} x^{2}+4 a b c d x+2 a b c^{2}-a b\right) \arcsin \left(d x+c\right) e+\left(\left(2 a^{2}-b^{2}\right) d^{2} x^{2}+2 \left(2 a^{2}-b^{2}\right) c d x\right) e+2 \sqrt{-d^{2} x^{2}-2 c d x-c^{2}+1} \left(\left(b^{2} d x+b^{2} c\right) \arcsin \left(d x+c\right) e+\left(a b d x+a b c\right) e\right)}{4 d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] 1/4*((2*b^2*d^2*x^2 + 4*b^2*c*d*x + 2*b^2*c^2 - b^2)*arcsin(d*x + c)^2*e +
2*(2*a*b*d^2*x^2 + 4*a*b*c*d*x + 2*a*b*c^2 - a*b)*arcsin(d*x + c)*e + ((2*a
^2 - b^2)*d^2*x^2 + 2*(2*a^2 - b^2)*c*d*x)*e + 2*sqrt(-d^2*x^2 - 2*c*d*x -
c^2 + 1)*((b^2*d*x + b^2*c)*arcsin(d*x + c)*e + (a*b*d*x + a*b*c)*e))/d
```

Sympy [**B**] Leaf count of result is larger than twice the leaf count of optimal. 335 vs. 2(88) = 176.
time = 0.20, size = 335, normalized size = 3.19

$$\begin{cases} a^{2} c e x + \frac{a^{2} d e x^{2}}{2} + \frac{a b c^{2} e \operatorname{asin}{\left(c + d x \right)}}{d} + 2 a b c e x \operatorname{asin}{\left(c + d x \right)} + \frac{a b c e \sqrt{- c^{2} - 2 c d x - d^{2} x^{2} + 1}}{2 d} + a b d e x^{2} \operatorname{asin}{\left(c + d x \right)} + \frac{a b e x \sqrt{- c^{2} - 2 c d x - d^{2} x^{2} + 1}}{2} - \frac{a b e \operatorname{asin}{\left(c + d x \right)}}{2 d} + \frac{b^{2} c^{2} e \operatorname{asin}^{2}{\left(c + d x \right)}}{2 d} + b^{2} c e x \operatorname{asin}^{2}{\left(c + d x \right)} - \frac{b^{2} c e x}{2} + \frac{b^{2} c e \sqrt{- c^{2} - 2 c d x - d^{2} x^{2} + 1} \operatorname{asin}{\left(c + d x \right)}}{2 d} + \frac{b^{2} d e x^{2} \operatorname{asin}^{2}{\left(c + d x \right)}}{2} - \frac{b^{2} d e x^{2}}{4} + \frac{b^{2} e x \sqrt{- c^{2} - 2 c d x - d^{2} x^{2} + 1} \operatorname{asin}{\left(c + d x \right)}}{2} - \frac{b^{2} e \operatorname{asin}^{2}{\left(c + d x \right)}}{4 d} & \text{for}\: d \neq 0 \\ c e x \left(a + b \operatorname{asin}{\left(c \right)}\right)^{2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*asin(d*x+c))**2,x)
```

```
[Out] Piecewise((a**2*c*e*x + a**2*d*e*x**2/2 + a*b*c**2*e*asin(c + d*x)/d + 2*a*
b*c*e*x*asin(c + d*x) + a*b*c*e*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(2*d)
 + a*b*d*e*x**2*asin(c + d*x) + a*b*e*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 +
1)/2 - a*b*e*asin(c + d*x)/(2*d) + b**2*c**2*e*asin(c + d*x)**2/(2*d) + b**
2*c*e*x*asin(c + d*x)**2 - b**2*c*e*x/2 + b**2*c*e*sqrt(-c**2 - 2*c*d*x - d
**2*x**2 + 1)*asin(c + d*x)/(2*d) + b**2*d*e*x**2*asin(c + d*x)**2/2 - b**2
*d*e*x**2/4 + b**2*e*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/
2 - b**2*e*asin(c + d*x)**2/(4*d), Ne(d, 0)), (c*e*x*(a + b*asin(c))**2, Tr
ue))
```

Giac [**A**]
time = 0.43, size = 184, normalized size = 1.75

$$\frac{\left(\left(d x+c\right)^{2}-1\right) b^{2} e \arcsin \left(d x+c\right)^{2}}{2 d}+\frac{\sqrt{-\left(d x+c\right)^{2}+1} \left(d x+c\right) b^{2} e \arcsin \left(d x+c\right)}{2 d}+\frac{\left(\left(d x+c\right)^{2}-1\right) a b e \arcsin \left(d x+c\right)}{d}+\frac{b^{2} e \arcsin \left(d x+c\right)^{2}}{4 d}+\frac{\sqrt{-\left(d x+c\right)^{2}+1} \left(d x+c\right) a b e}{2 d}+\frac{\left(\left(d x+c\right)^{2}-1\right) a^{2} e}{2 d}-\frac{\left(\left(d x+c\right)^{2}-1\right) b^{2} e}{4 d}+\frac{a b e \arcsin \left(d x+c\right)}{2 d}-\frac{b^{2} e}{8 d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] 1/2*((d*x + c)^2 - 1)*b^2*e*arcsin(d*x + c)^2/d + 1/2*sqrt(-(d*x + c)^2 + 1
)*(d*x + c)*b^2*e*arcsin(d*x + c)/d + ((d*x + c)^2 - 1)*a*b*e*arcsin(d*x +
c)/d + 1/4*b^2*e*arcsin(d*x + c)^2/d + 1/2*sqrt(-(d*x + c)^2 + 1)*(d*x + c)
*a*b*e/d + 1/2*((d*x + c)^2 - 1)*a^2*e/d - 1/4*((d*x + c)^2 - 1)*b^2*e/d +
1/2*a*b*e*arcsin(d*x + c)/d - 1/8*b^2*e/d
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int (c\,e+d\,e\,x)\,\left(a+b\,\mathrm{asin}(c+d\,x)\right)^2 \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)*(a + b*asin(c + d*x))^2,x)
[Out] int((c*e + d*e*x)*(a + b*asin(c + d*x))^2, x)
```

3.192 $\int (a+b\text{ArcSin}(c+dx))^2\,dx$

Optimal. Leaf size=59

$$-2b^2x+\frac{2b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))}{d}+\frac{(c+dx)(a+b\text{ArcSin}(c+dx))^2}{d}$$

```
[Out] -2*b^2*x+(d*x+c)*(a+b*arcsin(d*x+c))^2/d+2*b*(a+b*arcsin(d*x+c))*(1-(d*x+c)
^2)^(1/2)/d
```

Rubi [A]
time = 0.05, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4887, 4715, 4767, 8}

$$\frac{2b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))}{d}+\frac{(c+dx)(a+b\text{ArcSin}(c+dx))^2}{d}-2b^2x$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] -2*b^2*x + (2*b*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/d + ((c + d*
x)*(a + b*ArcSin[c + d*x])^2)/d
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
```

```
}, x]
```

Rubi steps

$$\int \left(a+b\sin^{-1}(c+dx)\right)^2\,dx=\frac{\text{Subst}\left(\int \left(a+b\sin^{-1}(x)\right)^2\,dx,x,c+dx\right)}{d}$$
$$=\frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^2}{d}-\frac{(2b)\text{Subst}\left(\int \frac{x\left(a+b\sin^{-1}(x)\right)}{\sqrt{1-x^2}}\,dx,x,c+dx\right)}{d}$$
$$=\frac{2b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{d}+\frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^2}{d}-$$
$$=-2b^2x+\frac{2b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{d}+\frac{(c+dx)\left(a+b\sin^{-1}(c\right.}{d}$$

Mathematica [A]
time = 0.07, size = 61, normalized size = 1.03

$$\frac{-2b^2(c+dx)+2b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))+(c+dx)(a+b\text{ArcSin}(c+dx))^2}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (-2*b^2*(c + d*x) + 2*b*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]) + (c
+ d*x)*(a + b*ArcSin[c + d*x])^2)/d
```

Maple [A]
time = 0.05, size = 92, normalized size = 1.56

method	result
derivativedivides	$\frac{(dx+c)a^2+b^2\left((dx+c)\arcsin(dx+c)^2-2dx-2c+2\arcsin(dx+c)\sqrt{1-(dx+c)^2}\right)+2ab\left((dx+c)\arcsin(dx+c)+\right.}{d}$
default	$\frac{(dx+c)a^2+b^2\left((dx+c)\arcsin(dx+c)^2-2dx-2c+2\arcsin(dx+c)\sqrt{1-(dx+c)^2}\right)+2ab\left((dx+c)\arcsin(dx+c)+\right.}{d}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*((d*x+c)*a^2+b^2*((d*x+c)*arcsin(d*x+c)^2-2*d*x-2*c+2*arcsin(d*x+c)*(1-
(d*x+c)^2)^(1/2))+2*a*b*((d*x+c)*arcsin(d*x+c)+(1-(d*x+c)^2)^(1/2)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] (x*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2 + 2*d*integrate
(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)*x*arctan2(d*x + c, sqrt(d*x + c + 1)*
sqrt(-d*x - c + 1))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x))*b^2 + a^2*x + 2*((d*
x + c)*arcsin(d*x + c) + sqrt(-(d*x + c)^2 + 1))*a*b/d
```

Fricas [A]
time = 2.81, size = 94, normalized size = 1.59

$$\frac{(a^2-2\,b^2)dx+(b^2dx+b^2c)\arcsin\left(dx+c\right)^2+2\left(abdx+abc\right)\arcsin\left(dx+c\right)+2\sqrt{-d^2x^2-2\,cdx-c^2+1}\left(b^2\arcsin\left(dx+c\right)+ab\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] ((a^2 - 2*b^2)*d*x + (b^2*d*x + b^2*c)*arcsin(d*x + c)^2 + 2*(a*b*d*x + a*b
*c)*arcsin(d*x + c) + 2*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*(b^2*arcsin(d*x
+ c) + a*b))/d
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 143 vs. $2(51) = 102$.
time = 0.18, size = 143, normalized size = 2.42

$$\begin{cases} a^2x+\frac{2abc\operatorname{asin}\left(c+dx\right)}{d}+2abx\operatorname{asin}\left(c+dx\right)+\frac{2ab\sqrt{-c^2-2cdx-d^2x^2+1}}{d}+\frac{b^2c\operatorname{asin}^2\left(c+dx\right)}{d}+b^2x\operatorname{asin}^2\left(c+dx\right)-2b^2x+\frac{2b^2\sqrt{-c^2-2cdx-d^2x^2+1}\operatorname{asin}\left(c+dx\right)}{d} & \text{for}\ d\neq 0\\ x\left(a+b\operatorname{asin}\left(c\right)\right)^2 & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**2,x)
```

```
[Out] Piecewise((a**2*x + 2*a*b*c*asin(c + d*x)/d + 2*a*b*x*asin(c + d*x) + 2*a*b
*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/d + b**2*c*asin(c + d*x)**2/d + b**2
*x*asin(c + d*x)**2 - 2*b**2*x + 2*b**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 +
1)*asin(c + d*x)/d, Ne(d, 0)), (x*(a + b*asin(c))**2, True))
```

Giac [A]
time = 0.41, size = 111, normalized size = 1.88

$$\frac{(dx+c)b^2\arcsin\left(dx+c\right)^2}{d}+\frac{2\left(dx+c\right)ab\arcsin\left(dx+c\right)}{d}+\frac{2\sqrt{-(dx+c)^2+1}\,b^2\arcsin\left(dx+c\right)}{d}+\frac{(dx+c)a^2}{d}-\frac{2\left(dx+c\right)b^2}{d}+\frac{2\sqrt{-(dx+c)^2+1}\,ab}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] (d*x + c)*b^2*arcsin(d*x + c)^2/d + 2*(d*x + c)*a*b*arcsin(d*x + c)/d + 2*s
qrt(-(d*x + c)^2 + 1)*b^2*arcsin(d*x + c)/d + (d*x + c)*a^2/d - 2*(d*x + c)
*b^2/d + 2*sqrt(-(d*x + c)^2 + 1)*a*b/d
```

Mupad [B]
time = 0.48, size = 88, normalized size = 1.49

$$a^2\,x+\frac{b^2\,\left({\mathrm{asin}\left(c+d\,x\right)}^2-2\right)\,\left(c+d\,x\right)}{d}+\frac{2\,a\,b\,\left(\sqrt{1-{\left(c+d\,x\right)}^2}+\mathrm{asin}\left(c+d\,x\right)\,\left(c+d\,x\right)\right)}{d}+\frac{2\,b^2\,\mathrm{asin}\left(c+d\,x\right)\,\sqrt{1-{\left(c+d\,x\right)}^2}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^2,x)
```

```
[Out] a^2*x + (b^2*(asin(c + d*x)^2 - 2)*(c + d*x))/d + (2*a*b*((1 - (c + d*x)^2)
^(1/2) + asin(c + d*x)*(c + d*x)))/d + (2*b^2*asin(c + d*x)*(1 - (c + d*x)^
2)^(1/2))/d
```

3.193 $\int \frac{(a+b\mathbf{ArcSin}(c+dx))^2}{ce+dex}\,dx$

Optimal. Leaf size=126

$$-\frac{i(a+b\text{ArcSin}(c+dx))^3}{3bde}+\frac{(a+b\text{ArcSin}(c+dx))^2\log\left(1-e^{2i\text{ArcSin}(c+dx)}\right)}{de}-\frac{ib(a+b\text{ArcSin}(c+dx))\text{PolyLog}}{de}$$

```
[Out] -1/3*I*(a+b*arcsin(d*x+c))^3/b/d/e+(a+b*arcsin(d*x+c))^2*ln(1-(I*(d*x+c)+(1
-(d*x+c)^2)^(1/2))^2)/d/e-I*b*(a+b*arcsin(d*x+c))*polylog(2,(I*(d*x+c)+(1-(
d*x+c)^2)^(1/2))^2)/d/e+1/2*b^2*polylog(3,(I*(d*x+c)+(1-(d*x+c)^2)^(1/2))^2
)/d/e
```

Rubi [A]
time = 0.13, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.348$, Rules used = {4889, 12, 4721, 3798, 2221, 2611, 2320, 6724}

$$-\frac{ib\text{Li}_2\left(e^{2i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))}{de}-\frac{i(a+b\text{ArcSin}(c+dx))^3}{3bde}+\frac{\log\left(1-e^{2i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))^2}{de}+\frac{b^2\text{Li}_3\left(e^{2i\text{ArcSin}(c+dx)}\right)}{2de}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x),x]
```

```
[Out] ((-1/3*I)*(a + b*ArcSin[c + d*x])^3)/(b*d*e) + ((a + b*ArcSin[c + d*x])^2*L
og[1 - E^((2*I)*ArcSin[c + d*x])])/(d*e) - (I*b*(a + b*ArcSin[c + d*x])*Pol
yLog[2, E^((2*I)*ArcSin[c + d*x])])/(d*e) + (b^2*PolyLog[3, E^((2*I)*ArcSin
[c + d*x])])/(2*d*e)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
```

```
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 3798

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[I*((c + d*x)^(m + 1)/(d*(m + 1))), x] - Dist[2*I, Int[(c + d*x)^m
*E^(2*I*k*Pi)*(E^(2*I*(e + f*x))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x)))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n*Cot[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\sin^{-1}(c+dx))^2}{ce+dex}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^2}{ex}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^2}{x}\,dx, x, c+dx\right)}{de}$$

$$= \frac{\text{Subst}\left(\int (a+bx)^2\cot(x)\,dx, x, \sin^{-1}(c+dx)\right)}{de}$$

$$= -\frac{i(a+b\sin^{-1}(c+dx))^3}{3bde} - \frac{(2i)\text{Subst}\left(\int \frac{e^{2ix}(a+bx)^2}{1-e^{2ix}}\,dx, x, \sin^{-1}(c+dx)\right)}{de}$$

$$= -\frac{i(a+b\sin^{-1}(c+dx))^3}{3bde} + \frac{(a+b\sin^{-1}(c+dx))^2\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{(}{}$$

$$= -\frac{i(a+b\sin^{-1}(c+dx))^3}{3bde} + \frac{(a+b\sin^{-1}(c+dx))^2\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{i}{}$$

$$= -\frac{i(a+b\sin^{-1}(c+dx))^3}{3bde} + \frac{(a+b\sin^{-1}(c+dx))^2\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{i}{}$$

$$= -\frac{i(a+b\sin^{-1}(c+dx))^3}{3bde} + \frac{(a+b\sin^{-1}(c+dx))^2\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{i}{}$$

Mathematica [A]
time = 0.11, size = 170, normalized size = 1.35

$$\frac{2ab\text{ArcSin}(c+dx)\log\left(1-e^{2i\text{ArcSin}(c+dx)}\right)+a^2\log(c+dx)-iab\left(\text{ArcSin}(c+dx)^2+\text{PolyLog}\left(2,e^{2i\text{ArcSin}(c+dx)}\right)\right)+b^2\left(-\frac{i\pi^3}{24}+\frac{1}{3}i\text{ArcSin}(c+dx)^3+\text{ArcSin}(c+dx)^2\log\left(1-e^{-2i\text{ArcSin}(c+dx)}\right)+i\text{ArcSin}(c+dx)\text{PolyLog}\left(2,e^{-2i\text{ArcSin}(c+dx)}\right)+\frac{1}{2}\text{PolyLog}\left(3,e^{-2i\text{ArcSin}(c+dx)}\right)\right)}{de}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x),x]
```

```
[Out] (2*a*b*ArcSin[c + d*x]*Log[1 - E^((2*I)*ArcSin[c + d*x])] + a^2*Log[c + d*x
] - I*a*b*(ArcSin[c + d*x]^2 + PolyLog[2, E^((2*I)*ArcSin[c + d*x])]) + b^2
*((-1/24*I)*Pi^3 + (I/3)*ArcSin[c + d*x]^3 + ArcSin[c + d*x]^2*Log[1 - E^((
-2*I)*ArcSin[c + d*x])] + I*ArcSin[c + d*x]*PolyLog[2, E^((-2*I)*ArcSin[c +
 d*x])] + PolyLog[3, E^((-2*I)*ArcSin[c + d*x])]/2))/(d*e)
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 419 vs. 2(156) = 312.
time = 0.20, size = 420, normalized size = 3.33

method	result

derivativedivides	$\frac{\frac{a^2\ln(dx+c)}{e}-\frac{ib^2\arcsin(dx+c)^3}{3e}+\frac{b^2\arcsin(dx+c)^2\ln\left(1+i(dx+c)+\sqrt{1-(dx+c)^2}\right)}{e}-\frac{2ib^2\arcsin(dx+c)\operatorname{polylog}\left(2,-i(d\right.}{}}{}$
default	$\frac{\frac{a^2\ln(dx+c)}{e}-\frac{ib^2\arcsin(dx+c)^3}{3e}+\frac{b^2\arcsin(dx+c)^2\ln\left(1+i(dx+c)+\sqrt{1-(dx+c)^2}\right)}{e}-\frac{2ib^2\arcsin(dx+c)\operatorname{polylog}\left(2,-i(d\right.}{}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e),x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(a^2/e*ln(d*x+c)-1/3*I*b^2/e*arcsin(d*x+c)^3+b^2/e*arcsin(d*x+c)^2*ln(1
+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-2*I*b^2/e*arcsin(d*x+c)*polylog(2,-I*(d*x+c
)-(1-(d*x+c)^2)^(1/2))+2*b^2/e*polylog(3,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+b^
2/e*arcsin(d*x+c)^2*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-2*I*b^2/e*arcsin(d*
x+c)*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+2*b^2/e*polylog(3,I*(d*x+c)+(
1-(d*x+c)^2)^(1/2))-I*a*b/e*arcsin(d*x+c)^2+2*a*b/e*arcsin(d*x+c)*ln(1+I*(d
*x+c)+(1-(d*x+c)^2)^(1/2))+2*a*b/e*arcsin(d*x+c)*ln(1-I*(d*x+c)-(1-(d*x+c)^
2)^(1/2))-2*I*a*b/e*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-2*I*a*b/e*poly
log(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e),x, algorithm="maxima")
```

```
[Out] a^2*e^(-1)*log(d*x*e + c*e)/d + integrate((b^2*arctan2(d*x + c, sqrt(d*x +
c + 1)*sqrt(-d*x - c + 1))^2 + 2*a*b*arctan2(d*x + c, sqrt(d*x + c + 1)*sqr
t(-d*x - c + 1)))/(d*x*e + c*e), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e),x, algorithm="fricas")
```

```
[Out] integral((b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2)*e^(-1)/(d*x
+ c), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a^2}{c+dx}\,dx + \int \frac{b^2 \operatorname{asin}^2(c+dx)}{c+dx}\,dx + \int \frac{2ab \operatorname{asin}(c+dx)}{c+dx}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**2/(d*e*x+c*e),x)
```

```
[Out] (Integral(a**2/(c + d*x), x) + Integral(b**2*asin(c + d*x)**2/(c + d*x), x)
 + Integral(2*a*b*asin(c + d*x)/(c + d*x), x))/e
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^2/(d*e*x + c*e), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\operatorname{asin}(c+d\,x))^2}{c\,e+d\,e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^2/(c*e + d*e*x),x)
```

```
[Out] int((a + b*asin(c + d*x))^2/(c*e + d*e*x), x)
```

3.194 $\int \frac{(a+b\text{ArcSin}(c+dx))^2}{(ce+dex)^2} \, dx$

Optimal. Leaf size=116

$$-\frac{(a+b\text{ArcSin}(c+dx))^2}{de^2(c+dx)}-\frac{4b(a+b\text{ArcSin}(c+dx))\tanh^{-1}\left(e^{i\text{ArcSin}(c+dx)}\right)}{de^2}+\frac{2ib^2\text{PolyLog}\left(2,-e^{i\text{ArcSin}(c+dx)}\right)}{de^2}$$

```
[Out] -(a+b*arcsin(d*x+c))^2/d/e^2/(d*x+c)-4*b*(a+b*arcsin(d*x+c))*arctanh(I*(d*x
+c)+(1-(d*x+c)^2)^(1/2))/d/e^2+2*I*b^2*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(
1/2))/d/e^2-2*I*b^2*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))/d/e^2
```

Rubi [A]
time = 0.12, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.304$, Rules used = {4889, 12, 4723, 4803, 4268, 2317, 2438}

$$-\frac{(a+b\text{ArcSin}(c+dx))^2}{de^2(c+dx)}-\frac{4b\tanh^{-1}\left(e^{i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))}{de^2}+\frac{2ib^2\text{Li}_2\left(-e^{i\text{ArcSin}(c+dx)}\right)}{de^2}-\frac{2ib^2\text{Li}_2\left(e^{i\text{ArcSin}(c+dx)}\right)}{de^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^2,x]
```

```
[Out] -((a + b*ArcSin[c + d*x])^2/(d*e^2*(c + d*x))) - (4*b*(a + b*ArcSin[c + d*x
])*ArcTanh[E^(I*ArcSin[c + d*x])])/(d*e^2) + ((2*I)*b^2*PolyLog[2, -E^(I*Ar
cSin[c + d*x])])/(d*e^2) - ((2*I)*b^2*PolyLog[2, E^(I*ArcSin[c + d*x])])/(d
*e^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4268

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[-
2*(c + d*x)^m*(ArcTanh[E^(I*(e + f*x))]/f), x] + (-Dist[d*(m/f), Int[(c + d
```

```
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[d*(m/f), Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4803

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[(1/c^(m + 1))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*
x^2]], Subst[Int[(a + b*x)^n*Sin[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a,
 b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(a+b\sin^{-1}(c+dx))^2}{(ce+dex)^2}\,dx &= \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^2}{e^2x^2}\,dx, x, c+dx\right)}{d} \\
&= \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^2}{x^2}\,dx, x, c+dx\right)}{de^2} \\
&= -\frac{(a+b\sin^{-1}(c+dx))^2}{de^2(c+dx)} + \frac{(2b)\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{x\sqrt{1-x^2}}\,dx, x, c+dx\right)}{de^2} \\
&= -\frac{(a+b\sin^{-1}(c+dx))^2}{de^2(c+dx)} + \frac{(2b)\text{Subst}\left(\int (a+bx)\csc(x)\,dx, x, \sin^{-1}(c+dx)\right)}{de^2} \\
&= -\frac{(a+b\sin^{-1}(c+dx))^2}{de^2(c+dx)} - \frac{4b(a+b\sin^{-1}(c+dx))\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)}{de^2} - \\
&= -\frac{(a+b\sin^{-1}(c+dx))^2}{de^2(c+dx)} - \frac{4b(a+b\sin^{-1}(c+dx))\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)}{de^2} + \\
&= -\frac{(a+b\sin^{-1}(c+dx))^2}{de^2(c+dx)} - \frac{4b(a+b\sin^{-1}(c+dx))\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)}{de^2} +
\end{aligned}
$$

Mathematica [A]
time = 0.41, size = 176, normalized size = 1.52

$$\frac{-\frac{a^2}{c+dx} - 2ab\left(\frac{\text{ArcSin}(c+dx)}{c+dx} + \log\left(\frac{1}{2}(c+dx)\csc\left(\frac{1}{2}\text{ArcSin}(c+dx)\right)\right) - \log\left(\sin\left(\frac{1}{2}\text{ArcSin}(c+dx)\right)\right)\right) + b^2\left(\text{ArcSin}(c+dx)\left(-\frac{\text{ArcSin}(c+dx)}{c+dx} + 2\log\left(1-e^{i\text{ArcSin}(c+dx)}\right) - 2\log\left(1+e^{i\text{ArcSin}(c+dx)}\right)\right) + 2i\text{PolyLog}\left(2, -e^{i\text{ArcSin}(c+dx)}\right) - 2i\text{PolyLog}\left(2, e^{i\text{ArcSin}(c+dx)}\right)\right)}{de^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^2,x]
```

```
[Out] (-(a^2/(c + d*x)) - 2*a*b*(ArcSin[c + d*x]/(c + d*x) + Log[((c + d*x)*Csc[A
rcSin[c + d*x]/2])/2] - Log[Sin[ArcSin[c + d*x]/2]]) + b^2*(ArcSin[c + d*x]
*(-(ArcSin[c + d*x]/(c + d*x)) + 2*Log[1 - E^(I*ArcSin[c + d*x])] - 2*Log[1
 + E^(I*ArcSin[c + d*x])]) + (2*I)*PolyLog[2, -E^(I*ArcSin[c + d*x])] - (2*
I)*PolyLog[2, E^(I*ArcSin[c + d*x])]))/(d*e^2)
```

Maple [A]
time = 0.15, size = 229, normalized size = 1.97

method	result

derivativedivides	$\frac{-\frac{a^2}{e^2(dx+c)}-\frac{b^2\arcsin(dx+c)^2}{e^2(dx+c)}+\frac{2b^2\arcsin(dx+c)\ln\left(1-i(dx+c)-\sqrt{1-(dx+c)^2}\right)}{e^2}-\frac{2b^2\arcsin(dx+c)\ln\left(1+i(dx+c)+\sqrt{\right.}}{e^2}}{}$
default	$\frac{-\frac{a^2}{e^2(dx+c)}-\frac{b^2\arcsin(dx+c)^2}{e^2(dx+c)}+\frac{2b^2\arcsin(dx+c)\ln\left(1-i(dx+c)-\sqrt{1-(dx+c)^2}\right)}{e^2}-\frac{2b^2\arcsin(dx+c)\ln\left(1+i(dx+c)+\sqrt{\right.}}{e^2}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(-a^2/e^2/(d*x+c)-b^2/e^2/(d*x+c)*arcsin(d*x+c)^2+2*b^2/e^2*arcsin(d*x+
c)*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-2*b^2/e^2*arcsin(d*x+c)*ln(1+I*(d*x+
c)+(1-(d*x+c)^2)^(1/2))+2*I*b^2/e^2*dilog(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-
2*I*b^2/e^2*dilog(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+2*a*b/e^2*(-1/(d*x+c)*ar
csin(d*x+c)-arctanh(1/(1-(d*x+c)^2)^(1/2))))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^2,x, algorithm="maxima")
```

```
[Out] -2*a*b*(e^(-2)*log(2*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)/abs(d^2*x*e^2 + c*d
*e^2) + 2/abs(d^2*x*e^2 + c*d*e^2))/d + arcsin(d*x + c)/(d^2*x*e^2 + c*d*e^
2)) - (arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2 + 2*(d^2*x*
e^2 + c*d*e^2)*integrate(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)*arctan2(d*x +
 c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))/(d^3*x^3*e^2 + 3*c*d^2*x^2*e^2 +
c^3*e^2 + (3*c^2*e^2 - e^2)*d*x - c*e^2), x))*b^2/(d^2*x*e^2 + c*d*e^2) - a
^2/(d^2*x*e^2 + c*d*e^2)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2)*e^(-2)/(d^2*
x^2 + 2*c*d*x + c^2), x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a^2}{c^2+2cdx+d^2x^2}\,dx + \int \frac{b^2 \operatorname{asin}^2(c+dx)}{c^2+2cdx+d^2x^2}\,dx + \int \frac{2ab \operatorname{asin}(c+dx)}{c^2+2cdx+d^2x^2}\,dx}{e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**2/(d*e*x+c*e)**2,x)
```

```
[Out] (Integral(a**2/(c**2 + 2*c*d*x + d**2*x**2), x) + Integral(b**2*asin(c + d*
x)**2/(c**2 + 2*c*d*x + d**2*x**2), x) + Integral(2*a*b*asin(c + d*x)/(c**2
 + 2*c*d*x + d**2*x**2), x))/e**2
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^2/(d*e*x + c*e)^2, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^2}{{\left(c\,e+d\,e\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^2/(c*e + d*e*x)^2,x)
```

```
[Out] int((a + b*asin(c + d*x))^2/(c*e + d*e*x)^2, x)
```

3.195 $\int \frac{(a+b\text{ArcSin}(c+dx))^2}{(ce+dex)^3}\,dx$

Optimal. Leaf size=87

$$-\frac{b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))}{de^3(c+dx)}-\frac{(a+b\text{ArcSin}(c+dx))^2}{2de^3(c+dx)^2}+\frac{b^2\log(c+dx)}{de^3}$$

```
[Out] -1/2*(a+b*arcsin(d*x+c))^2/d/e^3/(d*x+c)^2+b^2*ln(d*x+c)/d/e^3-b*(a+b*arcsi
n(d*x+c))*(1-(d*x+c)^2)^(1/2)/d/e^3/(d*x+c)
```

Rubi [A]
time = 0.10, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {4889, 12, 4723, 4771, 29}

$$-\frac{b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))}{de^3(c+dx)}-\frac{(a+b\text{ArcSin}(c+dx))^2}{2de^3(c+dx)^2}+\frac{b^2\log(c+dx)}{de^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^3,x]
```

```
[Out] -((b*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(d*e^3*(c + d*x))) - (a
 + b*ArcSin[c + d*x])^2/(2*d*e^3*(c + d*x)^2) + (b^2*Log[c + d*x])/(d*e^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4771

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*x)^(m + 1)*(d + e*x^2)^(p + 1)*((a + b
*ArcSin[c*x])^n/(d*f*(m + 1))), x] - Dist[b*c*(n/(f*(m + 1)))*Simp[(d + e*x
^2)^p/(1 - c^2*x^2)^p], Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*Ar
```

```
cSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d, e, f, m, p}, x] && EqQ[c^2
*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] && NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+b\sin^{-1}(c+dx))^2}{(ce+dex)^3}\,dx &= \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^2}{e^3x^3}\,dx,x,c+dx\right)}{d}\\ &= \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^2}{x^3}\,dx,x,c+dx\right)}{de^3}\\ &= -\frac{(a+b\sin^{-1}(c+dx))^2}{2de^3(c+dx)^2}+\frac{b\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{x^2\sqrt{1-x^2}}\,dx,x,c+dx\right)}{de^3}\\ &= -\frac{b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))}{de^3(c+dx)}-\frac{(a+b\sin^{-1}(c+dx))^2}{2de^3(c+dx)^2}+\frac{b^2\text{Subs}}{}\\ &= -\frac{b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))}{de^3(c+dx)}-\frac{(a+b\sin^{-1}(c+dx))^2}{2de^3(c+dx)^2}+\frac{b^2\log(}{d}\end{aligned}$$

Mathematica [A]
time = 0.16, size = 126, normalized size = 1.45

$$-\frac{a\left(a+2b(c+dx)\sqrt{1-c^2-2cdx-d^2x^2}\right)+2b\left(a+b(c+dx)\sqrt{1-c^2-2cdx-d^2x^2}\right)\text{ArcSin}(c+dx)+b^2\text{ArcSin}(c+dx)^2-2b^2(c+dx)^2\log(c+dx)}{2de^3(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^3,x]
```

```
[Out] -1/2*(a*(a + 2*b*(c + d*x)*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2]) + 2*b*(a + b*
(c + d*x)*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2])*ArcSin[c + d*x] + b^2*ArcSin[c
 + d*x]^2 - 2*b^2*(c + d*x)^2*Log[c + d*x])/(d*e^3*(c + d*x)^2)
```

Maple [A]
time = 0.17, size = 136, normalized size = 1.56

method	result

derivativedivides	$\frac{-\frac{a^2}{2e^3(dx+c)^2}-\frac{b^2\arcsin(dx+c)^2}{2e^3(dx+c)^2}-\frac{b^2\arcsin(dx+c)\sqrt{1-(dx+c)^2}}{e^3(dx+c)}+\frac{b^2\ln(dx+c)}{e^3}+\frac{2ab\left(-\frac{\arcsin(dx+c)}{2(dx+c)^2}-\frac{\sqrt{1-(dx+}}{2(dx+c)}\right.}{e^3}}{d}$
default	$\frac{-\frac{a^2}{2e^3(dx+c)^2}-\frac{b^2\arcsin(dx+c)^2}{2e^3(dx+c)^2}-\frac{b^2\arcsin(dx+c)\sqrt{1-(dx+c)^2}}{e^3(dx+c)}+\frac{b^2\ln(dx+c)}{e^3}+\frac{2ab\left(-\frac{\arcsin(dx+c)}{2(dx+c)^2}-\frac{\sqrt{1-(dx+}}{2(dx+c)}\right.}{e^3}}{d}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(-1/2*a^2/e^3/(d*x+c)^2-1/2*b^2/e^3/(d*x+c)^2*arcsin(d*x+c)^2-b^2/e^3/(
d*x+c)*arcsin(d*x+c)*(1-(d*x+c)^2)^(1/2)+b^2/e^3*ln(d*x+c)+2*a*b/e^3*(-1/2/
(d*x+c)^2*arcsin(d*x+c)-1/2/(d*x+c)*(1-(d*x+c)^2)^(1/2)))
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 222 vs. $2(80) = 160$.
time = 0.50, size = 222, normalized size = 2.55

$$-\left(\frac{\sqrt{-d^2x^2-2\,cdx-c^2+1}\,d\arcsin\left(dx+c\right)}{d^3xe^3+cd^2e^3}-\frac{e^{(-3)}\log\left(dx+c\right)}{d}\right)b^2-ab\left(\frac{\sqrt{-d^2x^2-2\,cdx-c^2+1}\,d}{d^3xe^3+cd^2e^3}+\frac{\arcsin\left(dx+c\right)}{d^3x^2e^3+2\,cd^2xe^3+c^2de^3}\right)-\frac{b^2\arcsin\left(dx+c\right)^2}{2\left(d^3x^2e^3+2\,cd^2xe^3+c^2de^3\right)}-\frac{a^2}{2\left(d^3x^2e^3+2\,cd^2xe^3+c^2de^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^3,x, algorithm="maxima")
```

```
[Out] -(sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*d*arcsin(d*x + c)/(d^3*x*e^3 + c*d^2*e
^3) - e^(-3)*log(d*x + c)/d)*b^2 - a*b*(sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*
d/(d^3*x*e^3 + c*d^2*e^3) + arcsin(d*x + c)/(d^3*x^2*e^3 + 2*c*d^2*x*e^3 +
c^2*d*e^3)) - 1/2*b^2*arcsin(d*x + c)^2/(d^3*x^2*e^3 + 2*c*d^2*x*e^3 + c^2*
d*e^3) - 1/2*a^2/(d^3*x^2*e^3 + 2*c*d^2*x*e^3 + c^2*d*e^3)
```

Fricas [A]
time = 1.62, size = 139, normalized size = 1.60

$$-\frac{\left(b^2\arcsin\left(dx+c\right)^2+2\,ab\arcsin\left(dx+c\right)+a^2-2\left(b^2d^2x^2+2\,b^2cdx+b^2c^2\right)\log\left(dx+c\right)+2\left(abdx+abc+\left(b^2dx+b^2c\right)\arcsin\left(dx+c\right)\right)\sqrt{-d^2x^2-2\,cdx-c^2+1}\right)e^{(-3)}}{2\left(d^3x^2+2\,cd^2x+c^2d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^3,x, algorithm="fricas")
```

```
[Out] -1/2*(b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2 - 2*(b^2*d^2*x^2
+ 2*b^2*c*d*x + b^2*c^2)*log(d*x + c) + 2*(a*b*d*x + a*b*c + (b^2*d*x + b^2
*c)*arcsin(d*x + c))*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1))*e^(-3)/(d^3*x^2 +
2*c*d^2*x + c^2*d)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a^2}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx+\int \frac{b^2\operatorname{asin}^2(c+dx)}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx+\int \frac{2ab\operatorname{asin}(c+dx)}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**2/(d*e*x+c*e)**3,x)
```

```
[Out] (Integral(a**2/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integr
al(b**2*asin(c + d*x)**2/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x
) + Integral(2*a*b*asin(c + d*x)/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*
x**3), x))/e**3
```

Giac [**B**] Leaf count of result is larger than twice the leaf count of optimal. 510 vs. 2(83) = 166.
time = 0.49, size = 510, normalized size = 5.86

$$-\frac{b^2\arcsin(dx+c)^2}{4de^3}-\frac{(dx+c)^2b^2\arcsin(dx+c)^2}{8de^3\left(\sqrt{-(dx+c)^2+1}+1\right)^2}-\frac{b^2\left(\sqrt{-(dx+c)^2+1}+1\right)^2\arcsin(dx+c)^2}{8(dx+c)^2de^3}-\frac{ab\arcsin(dx+c)}{2de^3}-\frac{(dx+c)^2ab\arcsin(dx+c)}{4de^3\left(\sqrt{-(dx+c)^2+1}+1\right)^2}+\frac{(dx+c)b^2\arcsin(dx+c)}{2de^3\left(\sqrt{-(dx+c)^2+1}+1\right)}-\frac{b^2\left(\sqrt{-(dx+c)^2+1}+1\right)\arcsin(dx+c)}{2(dx+c)de^3}-\frac{ab\left(\sqrt{-(dx+c)^2+1}+1\right)^2\arcsin(dx+c)}{4(dx+c)^2de^3}+\frac{2b^2\log(2)}{de^3}-\frac{b^2\log\left(2\sqrt{-(dx+c)^2+1}+2\right)}{de^3}+\frac{b^2\log\left(\sqrt{-(dx+c)^2+1}+1\right)}{de^3}+\frac{b^2\log(|dx+c|)}{de^3}-\frac{a^2}{4de^3}-\frac{(dx+c)^2a^2}{8de^3\left(\sqrt{-(dx+c)^2+1}+1\right)^2}+\frac{(dx+c)ab}{2de^3\left(\sqrt{-(dx+c)^2+1}+1\right)}-\frac{ab\left(\sqrt{-(dx+c)^2+1}+1\right)}{2(dx+c)de^3}-\frac{a^2\left(\sqrt{-(dx+c)^2+1}+1\right)^2}{8(dx+c)^2de^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^3,x, algorithm="giac")
```

```
[Out] -1/4*b^2*arcsin(d*x + c)^2/(d*e^3) - 1/8*(d*x + c)^2*b^2*arcsin(d*x + c)^2/
(d*e^3*(sqrt(-(d*x + c)^2 + 1) + 1)^2) - 1/8*b^2*(sqrt(-(d*x + c)^2 + 1) +
1)^2*arcsin(d*x + c)^2/((d*x + c)^2*d*e^3) - 1/2*a*b*arcsin(d*x + c)/(d*e^3
) - 1/4*(d*x + c)^2*a*b*arcsin(d*x + c)/(d*e^3*(sqrt(-(d*x + c)^2 + 1) + 1)
^2) + 1/2*(d*x + c)*b^2*arcsin(d*x + c)/(d*e^3*(sqrt(-(d*x + c)^2 + 1) + 1)
) - 1/2*b^2*(sqrt(-(d*x + c)^2 + 1) + 1)*arcsin(d*x + c)/((d*x + c)*d*e^3)
- 1/4*a*b*(sqrt(-(d*x + c)^2 + 1) + 1)^2*arcsin(d*x + c)/((d*x + c)^2*d*e^3
) + 2*b^2*log(2)/(d*e^3) - b^2*log(2*sqrt(-(d*x + c)^2 + 1) + 2)/(d*e^3) +
b^2*log(sqrt(-(d*x + c)^2 + 1) + 1)/(d*e^3) + b^2*log(abs(d*x + c))/(d*e^3)
 - 1/4*a^2/(d*e^3) - 1/8*(d*x + c)^2*a^2/(d*e^3*(sqrt(-(d*x + c)^2 + 1) + 1
)^2) + 1/2*(d*x + c)*a*b/(d*e^3*(sqrt(-(d*x + c)^2 + 1) + 1)) - 1/2*a*b*(sq
rt(-(d*x + c)^2 + 1) + 1)/((d*x + c)*d*e^3) - 1/8*a^2*(sqrt(-(d*x + c)^2 +
1) + 1)^2/((d*x + c)^2*d*e^3)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+b\operatorname{asin}(c+d\,x)\right)^2}{\left(c\,e+d\,e\,x\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^2/(c*e + d*e*x)^3,x)
```

```
[Out] int((a + b*asin(c + d*x))^2/(c*e + d*e*x)^3, x)
```

3.196 $\int \frac{(a+b\text{ArcSin}(c+dx))^2}{(ce+dex)^4} dx$

Optimal. Leaf size=187

$$-\frac{b^2}{3de^4(c+dx)}-\frac{b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))}{3de^4(c+dx)^2}-\frac{(a+b\text{ArcSin}(c+dx))^2}{3de^4(c+dx)^3}-\frac{2b(a+b\text{ArcSin}(c+dx)}{3d}$$

```
[Out] -1/3*b^2/d/e^4/(d*x+c)-1/3*(a+b*arcsin(d*x+c))^2/d/e^4/(d*x+c)^3-2/3*b*(a+b
*arcsin(d*x+c))*arctanh(I*(d*x+c)+(1-(d*x+c)^2)^(1/2))/d/e^4+1/3*I*b^2*poly
log(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))/d/e^4-1/3*I*b^2*polylog(2,I*(d*x+c)+(
1-(d*x+c)^2)^(1/2))/d/e^4-1/3*b*(a+b*arcsin(d*x+c))*(1-(d*x+c)^2)^(1/2)/d/e
^4/(d*x+c)^2
```

Rubi [A]
time = 0.17, antiderivative size = 187, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 9, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.391$, Rules used = {4889, 12, 4723, 4789, 4803, 4268, 2317, 2438, 30}

$$-\frac{b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))}{3de^4(c+dx)^2}-\frac{(a+b\text{ArcSin}(c+dx))^2}{3de^4(c+dx)^3}-\frac{2b\tanh^{-1}\left(e^{i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))}{3de^4}+\frac{ib^2\text{Li}_2\left(-e^{i\text{ArcSin}(c+dx)}\right)}{3de^4}-\frac{ib^2\text{Li}_2\left(e^{i\text{ArcSin}(c+dx)}\right)}{3de^4}-\frac{b^2}{3de^4(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^4,x]
```

```
[Out] -1/3*b^2/(d*e^4*(c + d*x)) - (b*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x
]))/(3*d*e^4*(c + d*x)^2) - (a + b*ArcSin[c + d*x])^2/(3*d*e^4*(c + d*x)^3)
 - (2*b*(a + b*ArcSin[c + d*x])*ArcTanh[E^(I*ArcSin[c + d*x])])/(3*d*e^4) +
 ((I/3)*b^2*PolyLog[2, -E^(I*ArcSin[c + d*x])])/(d*e^4) - ((I/3)*b^2*PolyLo
g[2, E^(I*ArcSin[c + d*x])])/(d*e^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4268

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[-
2*(c + d*x)^m*(ArcTanh[E^(I*(e + f*x))]/f), x] + (-Dist[d*(m/f), Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[d*(m/f), Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4789

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*x)^(m + 1)*(d + e*x^2)^(p + 1)*((a + b
*ArcSin[c*x])^n/(d*f*(m + 1))), x] + (Dist[c^2*((m + 2*p + 3)/(f^2*(m + 1))
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[b*c
*(n/(f*(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)^(m + 1)*(1
- c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c
, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && ILtQ[m, -1]
```

Rule 4803

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[(1/c^(m + 1))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*
x^2]], Subst[Int[(a + b*x)^n*Sin[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a,
 b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{(a+b\sin^{-1}(c+dx))^2}{(ce+dex)^4}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^2}{e^4x^4}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^2}{x^4}\,dx, x, c+dx\right)}{de^4}$$

$$= -\frac{(a+b\sin^{-1}(c+dx))^2}{3de^4(c+dx)^3} + \frac{(2b)\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{x^3\sqrt{1-x^2}}\,dx, x, c+dx\right)}{3de^4}$$

$$= -\frac{b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))}{3de^4(c+dx)^2} - \frac{(a+b\sin^{-1}(c+dx))^2}{3de^4(c+dx)^3} + \frac{b\text{Subst}\Big(}{}$$

$$= -\frac{b^2}{3de^4(c+dx)} - \frac{b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))}{3de^4(c+dx)^2} - \frac{(a+b\sin^{-1}(c+d}{3de^4(c+dx)^3}$$

$$= -\frac{b^2}{3de^4(c+dx)} - \frac{b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))}{3de^4(c+dx)^2} - \frac{(a+b\sin^{-1}(c+d}{3de^4(c+dx)^3}$$

$$= -\frac{b^2}{3de^4(c+dx)} - \frac{b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))}{3de^4(c+dx)^2} - \frac{(a+b\sin^{-1}(c+d}{3de^4(c+dx)^3}$$

$$= -\frac{b^2}{3de^4(c+dx)} - \frac{b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))}{3de^4(c+dx)^2} - \frac{(a+b\sin^{-1}(c+d}{3de^4(c+dx)^3}$$

Mathematica [A]
time = 1.45, size = 246, normalized size = 1.32

$$-\frac{4a^2+8ab\text{ArcSin}(c+dx)-4ib^2(c+dx)^3\text{PolyLog}\left(2,-e^{i\text{ArcSin}(c+dx)}\right)+2ab\sin(2\text{ArcSin}(c+dx))+ab\left(\log\left(\cos\left(\frac{1}{2}\text{ArcSin}(c+dx)\right)\right)-\log\left(\sin\left(\frac{1}{2}\text{ArcSin}(c+dx)\right)\right)\right)(3(c+dx)-\sin(3\text{ArcSin}(c+dx)))+b^2\left(4(c+dx)^2+4\text{ArcSin}(c+dx)^2+4i(c+dx)^3\text{PolyLog}\left(2,e^{i\text{ArcSin}(c+dx)}\right)+\text{ArcSin}(c+dx)\left(2\sin(2\text{ArcSin}(c+dx))+\left(\log\left(1-e^{i\text{ArcSin}(c+dx)}\right)-\log\left(1+e^{i\text{ArcSin}(c+dx)}\right)\right)(-3(c+dx)+\sin(3\text{ArcSin}(c+dx)))\right)\right)}{12de^4(c+dx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^4,x]
```

```
[Out] -1/12*(4*a^2 + 8*a*b*ArcSin[c + d*x] - (4*I)*b^2*(c + d*x)^3*PolyLog[2, -E^
(I*ArcSin[c + d*x])] + 2*a*b*Sin[2*ArcSin[c + d*x]] + a*b*(Log[Cos[ArcSin[c
 + d*x]/2]] - Log[Sin[ArcSin[c + d*x]/2]])*(3*(c + d*x) - Sin[3*ArcSin[c +
d*x]]) + b^2*(4*(c + d*x)^2 + 4*ArcSin[c + d*x]^2 + (4*I)*(c + d*x)^3*PolyL
og[2, E^(I*ArcSin[c + d*x])] + ArcSin[c + d*x]*(2*Sin[2*ArcSin[c + d*x]] +
(Log[1 - E^(I*ArcSin[c + d*x])] - Log[1 + E^(I*ArcSin[c + d*x])])*(-3*(c +
d*x) + Sin[3*ArcSin[c + d*x]]))))/(d*e^4*(c + d*x)^3)
```

Maple [A]
time = 0.59, size = 300, normalized size = 1.60

method	result
derivativedivides	$\frac{-\frac{a^2}{3e^4(dx+c)^3}-\frac{b^2\arcsin(dx+c)\sqrt{1-(dx+c)^2}}{3e^4(dx+c)^2}-\frac{b^2\arcsin(dx+c)^2}{3e^4(dx+c)^3}-\frac{b^2}{3e^4(dx+c)}-\frac{b^2\arcsin(dx+c)\ln\left(1+i(dx+c)+\sqrt{1}\right.}{3e^4}}{}$
default	$\frac{-\frac{a^2}{3e^4(dx+c)^3}-\frac{b^2\arcsin(dx+c)\sqrt{1-(dx+c)^2}}{3e^4(dx+c)^2}-\frac{b^2\arcsin(dx+c)^2}{3e^4(dx+c)^3}-\frac{b^2}{3e^4(dx+c)}-\frac{b^2\arcsin(dx+c)\ln\left(1+i(dx+c)+\sqrt{1}\right.}{3e^4}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^4,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(-1/3*a^2/e^4/(d*x+c)^3-1/3*b^2/e^4/(d*x+c)^2*arcsin(d*x+c)*(1-(d*x+c)^
2)^(1/2)-1/3*b^2/e^4/(d*x+c)^3*arcsin(d*x+c)^2-1/3*b^2/e^4/(d*x+c)-1/3*b^2/
e^4*arcsin(d*x+c)*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+1/3*I*b^2/e^4*polylog
(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+1/3*b^2/e^4*arcsin(d*x+c)*ln(1-I*(d*x+c)
-(1-(d*x+c)^2)^(1/2))-1/3*I*b^2/e^4*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2)
)+2*a*b/e^4*(-1/3/(d*x+c)^3*arcsin(d*x+c)-1/6/(d*x+c)^2*(1-(d*x+c)^2)^(1/2)
-1/6*arctanh(1/(1-(d*x+c)^2)^(1/2))))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^4,x, algorithm="maxima")
```

```
[Out] -1/3*a^2/(d^4*x^3*e^4 + 3*c*d^3*x^2*e^4 + 3*c^2*d^2*x*e^4 + c^3*d*e^4) - 1/
3*(b^2*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2 + 3*(d^4*x^
3*e^4 + 3*c*d^3*x^2*e^4 + 3*c^2*d^2*x*e^4 + c^3*d*e^4)*integrate(2/3*((b^2*
d*x + b^2*c)*sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)*arctan2(d*x + c, sqrt(d*x
 + c + 1)*sqrt(-d*x - c + 1)) - 3*(a*b*d^2*x^2 + 2*a*b*c*d*x + a*b*c^2 - a*
b)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^6*x^6*e^4 + 6
*c*d^5*x^5*e^4 + (15*c^2*e^4 - e^4)*d^4*x^4 + 4*(5*c^3*e^4 - c*e^4)*d^3*x^3
 + c^6*e^4 + 3*(5*c^4*e^4 - 2*c^2*e^4)*d^2*x^2 - c^4*e^4 + 2*(3*c^5*e^4 - 2
```

```
*c^3*e^4)*d*x), x))/(d^4*x^3*e^4 + 3*c*d^3*x^2*e^4 + 3*c^2*d^2*x*e^4 + c^3*
d*e^4)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^4,x, algorithm="fricas")
```

```
[Out] integral((b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2)*e^(-4)/(d^4*
x^4 + 4*c*d^3*x^3 + 6*c^2*d^2*x^2 + 4*c^3*d*x + c^4), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a^2}{c^4+4c^3dx+6c^2d^2x^2+4cd^3x^3+d^4x^4}\,dx + \int \frac{b^2\operatorname{asin}^2(c+dx)}{c^4+4c^3dx+6c^2d^2x^2+4cd^3x^3+d^4x^4}\,dx + \int \frac{2ab\operatorname{asin}(c+dx)}{c^4+4c^3dx+6c^2d^2x^2+4cd^3x^3+d^4x^4}\,dx}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**2/(d*e*x+c*e)**4,x)
```

```
[Out] (Integral(a**2/(c**4 + 4*c**3*d*x + 6*c**2*d**2*x**2 + 4*c*d**3*x**3 + d**4
*x**4), x) + Integral(b**2*asin(c + d*x)**2/(c**4 + 4*c**3*d*x + 6*c**2*d**
2*x**2 + 4*c*d**3*x**3 + d**4*x**4), x) + Integral(2*a*b*asin(c + d*x)/(c**
4 + 4*c**3*d*x + 6*c**2*d**2*x**2 + 4*c*d**3*x**3 + d**4*x**4), x))/e**4
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^4,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^2/(d*e*x + c*e)^4, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^2}{{\left(c\,e+d\,e\,x\right)}^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^2/(c*e + d*e*x)^4,x)
```

```
[Out] int((a + b*asin(c + d*x))^2/(c*e + d*e*x)^4, x)
```

3.197 $\int (ce+dex)^4(a+b\text{ArcSin}(c+dx))^3\,dx$

Optimal. Leaf size=338

$$-\frac{16}{25}ab^2e^4x-\frac{298b^3e^4\sqrt{1-(c+dx)^2}}{375d}+\frac{76b^3e^4\left(1-(c+dx)^2\right)^{3/2}}{1125d}-\frac{6b^3e^4\left(1-(c+dx)^2\right)^{5/2}}{625d}-\frac{16b^3e^4(c+dx)\text{A}}{25}$$

```
[Out] -16/25*a*b^2*e^4*x+76/1125*b^3*e^4*(1-(d*x+c)^2)^(3/2)/d-6/625*b^3*e^4*(1-(
d*x+c)^2)^(5/2)/d-16/25*b^3*e^4*(d*x+c)*arcsin(d*x+c)/d-8/75*b^2*e^4*(d*x+c
)^3*(a+b*arcsin(d*x+c))/d-6/125*b^2*e^4*(d*x+c)^5*(a+b*arcsin(d*x+c))/d+1/5
*e^4*(d*x+c)^5*(a+b*arcsin(d*x+c))^3/d-298/375*b^3*e^4*(1-(d*x+c)^2)^(1/2)/
d+8/25*b*e^4*(a+b*arcsin(d*x+c))^2*(1-(d*x+c)^2)^(1/2)/d+4/25*b*e^4*(d*x+c)
^2*(a+b*arcsin(d*x+c))^2*(1-(d*x+c)^2)^(1/2)/d+3/25*b*e^4*(d*x+c)^4*(a+b*ar
csin(d*x+c))^2*(1-(d*x+c)^2)^(1/2)/d
```

Rubi [A]
time = 0.34, antiderivative size = 338, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 9, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.391$, Rules used = {4889, 12, 4723, 4795, 4767, 4715, 267, 272, 45}

$$-\frac{6b^2e^4(c+dx)^5(a+b\text{ArcSin}(c+dx))}{125d}-\frac{8b^2e^4(c+dx)^3(a+b\text{ArcSin}(c+dx))}{75d}+\frac{e^4(c+dx)^5(a+b\text{ArcSin}(c+dx))^3}{5d}+\frac{3be^4\sqrt{1-(c+dx)^2}\,(c+dx)^4(a+b\text{ArcSin}(c+dx))^2}{25d}+\frac{4be^4\sqrt{1-(c+dx)^2}\,(c+dx)^2(a+b\text{ArcSin}(c+dx))^2}{25d}+\frac{8be^4\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^2}{25d}-\frac{16}{25}ab^2e^4x-\frac{16b^3e^4(c+dx)\text{ArcSin}(c+dx)}{25d}-\frac{6b^3e^4\left(1-(c+dx)^2\right)^{5/2}}{625d}+\frac{76b^3e^4\left(1-(c+dx)^2\right)^{3/2}}{1125d}-\frac{298b^3e^4\sqrt{1-(c+dx)^2}}{375d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^4*(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] (-16*a*b^2*e^4*x)/25 - (298*b^3*e^4*Sqrt[1 - (c + d*x)^2])/(375*d) + (76*b^
3*e^4*(1 - (c + d*x)^2)^(3/2))/(1125*d) - (6*b^3*e^4*(1 - (c + d*x)^2)^(5/2
))/(625*d) - (16*b^3*e^4*(c + d*x)*ArcSin[c + d*x])/(25*d) - (8*b^2*e^4*(c
+ d*x)^3*(a + b*ArcSin[c + d*x]))/(75*d) - (6*b^2*e^4*(c + d*x)^5*(a + b*Ar
cSin[c + d*x]))/(125*d) + (8*b*e^4*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c +
d*x])^2)/(25*d) + (4*b*e^4*(c + d*x)^2*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[
c + d*x])^2)/(25*d) + (3*b*e^4*(c + d*x)^4*Sqrt[1 - (c + d*x)^2]*(a + b*Arc
Sin[c + d*x])^2)/(25*d) + (e^4*(c + d*x)^5*(a + b*ArcSin[c + d*x])^3)/(5*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)^4 \left(a+b\sin^{-1}(c+dx)\right)^3 \, dx = \frac{\text{Subst}\left(\int e^4x^4(a+b\sin^{-1}(x))^3 \, dx, x, c+dx\right)}{d}$$

$$= \frac{e^4\text{Subst}\left(\int x^4(a+b\sin^{-1}(x))^3 \, dx, x, c+dx\right)}{d}$$

$$= \frac{e^4(c+dx)^5\left(a+b\sin^{-1}(c+dx)\right)^3}{5d} - \frac{(3be^4)\,\text{Subst}\left(\int \frac{x^5(a+b\sin^{-1}(\ldots}{\sqrt{1-x^2}} \ldots\right.}{5d}$$

$$= \frac{3be^4(c+dx)^4\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{25d} + \frac{e^4(c+d\ldots}{\ldots}$$

$$= -\frac{6b^2e^4(c+dx)^5\left(a+b\sin^{-1}(c+dx)\right)}{125d} + \frac{4be^4(c+dx)^2\sqrt{1-(c\ldots}}{\ldots}$$

$$= -\frac{8b^2e^4(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)}{75d} - \frac{6b^2e^4(c+dx)^5\left(a+b\sin\ldots\right.}{125d}$$

$$= -\frac{16}{25}ab^2e^4x - \frac{8b^2e^4(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)}{75d} - \frac{6b^2e^4(c+\ldots}{\ldots}$$

$$= -\frac{16}{25}ab^2e^4x - \frac{6b^3e^4\sqrt{1-(c+dx)^2}}{125d} + \frac{4b^3e^4\left(1-(c+dx)^2\right)^{3/2}}{125d} \ldots$$

$$= -\frac{16}{25}ab^2e^4x - \frac{298b^3e^4\sqrt{1-(c+dx)^2}}{375d} + \frac{76b^3e^4\left(1-(c+dx)^2\right)^{3\ldots}}{1125d}$$

Mathematica [A]
time = 0.61, size = 307, normalized size = 0.91

$$\frac{e^4\left((c+dx)^5(a+b\text{ArcSin}(c+dx))^3-\frac{1}{25}b\left(\frac{40}{9}b^2(2+c^2+2cdx+d^2x^2)\sqrt{1-(c+dx)^2}-\frac{2}{5}b^2\sqrt{1-(c+dx)^2}\left(-15+10(1-(c+dx)^2)-3(-1+(c+dx)^2)^2\right)+\frac{40}{3}b(c+dx)^3(a+b\text{ArcSin}(c+dx))+6b(c+dx)^5(a+b\text{ArcSin}(c+dx))-40\sqrt{1-(c+dx)^2}(a+b\text{ArcSin}(c+dx))^2-20(c+dx)^2\sqrt{1-(c+dx)^2}(a+b\text{ArcSin}(c+dx))^2-15(c+dx)^4\sqrt{1-(c+dx)^2}(a+b\text{ArcSin}(c+dx))^2+80b\left(adx+b\sqrt{1-(c+dx)^2}+b(c+dx)\text{ArcSin}(c+dx)\right)\right)\right)}{5d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^4*(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] (e^4*((c + d*x)^5*(a + b*ArcSin[c + d*x])^3 - (b*((40*b^2*(2 + c^2 + 2*c*d*
x + d^2*x^2)*Sqrt[1 - (c + d*x)^2])/9 - (2*b^2*Sqrt[1 - (c + d*x)^2]*(-15 +
 10*(1 - (c + d*x)^2) - 3*(-1 + (c + d*x)^2)^2))/5 + (40*b*(c + d*x)^3*(a +
 b*ArcSin[c + d*x]))/3 + 6*b*(c + d*x)^5*(a + b*ArcSin[c + d*x]) - 40*Sqrt[
1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^2 - 20*(c + d*x)^2*Sqrt[1 - (c + d
*x)^2]*(a + b*ArcSin[c + d*x])^2 - 15*(c + d*x)^4*Sqrt[1 - (c + d*x)^2]*(a
+ b*ArcSin[c + d*x])^2 + 80*b*(a*d*x + b*Sqrt[1 - (c + d*x)^2] + b*(c + d*x
)*ArcSin[c + d*x]))/25))/(5*d)
```

Maple [A]
time = 0.11, size = 383, normalized size = 1.13

method	result
derivativedivides	$\frac{\frac{e^4(dx+c)^5a^3}{5}+e^4b^3\left(\frac{(dx+c)^5\arcsin(dx+c)^3}{5}+\frac{\arcsin(dx+c)^2\left(3(dx+c)^4+4(dx+c)^2+8\right)\sqrt{1-(dx+c)^2}}{25}-\frac{6(dx+c)^5\arcsin(}{125}\right.}{}$
default	$\frac{\frac{e^4(dx+c)^5a^3}{5}+e^4b^3\left(\frac{(dx+c)^5\arcsin(dx+c)^3}{5}+\frac{\arcsin(dx+c)^2\left(3(dx+c)^4+4(dx+c)^2+8\right)\sqrt{1-(dx+c)^2}}{25}-\frac{6(dx+c)^5\arcsin(}{125}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^4*(a+b*arcsin(d*x+c))^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(1/5*e^4*(d*x+c)^5*a^3+e^4*b^3*(1/5*(d*x+c)^5*arcsin(d*x+c)^3+1/25*arcs
in(d*x+c)^2*(3*(d*x+c)^4+4*(d*x+c)^2+8)*(1-(d*x+c)^2)^(1/2)-6/125*(d*x+c)^5
*arcsin(d*x+c)-2/625*(3*(d*x+c)^4+4*(d*x+c)^2+8)*(1-(d*x+c)^2)^(1/2)-8/75*(
d*x+c)^3*arcsin(d*x+c)-8/225*((d*x+c)^2+2)*(1-(d*x+c)^2)^(1/2)-16/25*(1-(d*
x+c)^2)^(1/2)-16/25*(d*x+c)*arcsin(d*x+c))+3*e^4*a*b^2*(1/5*(d*x+c)^5*arcsi
n(d*x+c)^2+2/75*arcsin(d*x+c)*(3*(d*x+c)^4+4*(d*x+c)^2+8)*(1-(d*x+c)^2)^(1/
2)-2/125*(d*x+c)^5-8/225*(d*x+c)^3-16/75*d*x-16/75*c)+3*e^4*a^2*b*(1/5*(d*x
+c)^5*arcsin(d*x+c)+1/25*(d*x+c)^4*(1-(d*x+c)^2)^(1/2)+4/75*(d*x+c)^2*(1-(d
*x+c)^2)^(1/2)+8/75*(1-(d*x+c)^2)^(1/2)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4*(a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] 1/5*a^3*d^4*x^5*e^4 + a^3*c*d^3*x^4*e^4 + 2*a^3*c^2*d^2*x^3*e^4 + 2*a^3*c^3
*d*x^2*e^4 + 3*(2*x^2*arcsin(d*x + c) + d*(3*c^2*arcsin(-(d^2*x + c*d)/sqrt
```

```
(c^2*d^2 - (c^2 - 1)*d^2))/d^3 + sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*x/d^2 -
 (c^2 - 1)*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^3 - 3*sqr
t(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c/d^3))*a^2*b*c^3*d*e^4 + (6*x^3*arcsin(d*x
 + c) + d*(2*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*x^2/d^2 - 15*c^3*arcsin(-(d
^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^4 - 5*sqrt(-d^2*x^2 - 2*c*d*x
- c^2 + 1)*c*x/d^3 + 9*(c^2 - 1)*c*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^
2 - 1)*d^2))/d^4 + 15*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c^2/d^4 - 4*sqrt(-
d^2*x^2 - 2*c*d*x - c^2 + 1)*(c^2 - 1)/d^4))*a^2*b*c^2*d^2*e^4 + 1/8*(24*x^
4*arcsin(d*x + c) + (6*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*x^3/d^2 - 14*sqrt
(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c*x^2/d^3 + 105*c^4*arcsin(-(d^2*x + c*d)/sq
rt(c^2*d^2 - (c^2 - 1)*d^2))/d^5 + 35*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c^
2*x/d^4 - 90*(c^2 - 1)*c^2*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d
^2))/d^5 - 105*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c^3/d^5 - 9*sqrt(-d^2*x^2
 - 2*c*d*x - c^2 + 1)*(c^2 - 1)*x/d^4 + 9*(c^2 - 1)^2*arcsin(-(d^2*x + c*d)
/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^5 + 55*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)
*(c^2 - 1)*c/d^5)*d)*a^2*b*c*d^3*e^4 + 1/200*(120*x^5*arcsin(d*x + c) + (24
*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*x^4/d^2 - 54*sqrt(-d^2*x^2 - 2*c*d*x -
c^2 + 1)*c*x^3/d^3 + 126*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c^2*x^2/d^4 - 9
45*c^5*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^6 - 315*sqrt(
-d^2*x^2 - 2*c*d*x - c^2 + 1)*c^3*x/d^5 - 32*sqrt(-d^2*x^2 - 2*c*d*x - c^2
+ 1)*(c^2 - 1)*x^2/d^4 + 1050*(c^2 - 1)*c^3*arcsin(-(d^2*x + c*d)/sqrt(c^2*
d^2 - (c^2 - 1)*d^2))/d^6 + 945*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c^4/d^6
+ 161*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*(c^2 - 1)*c*x/d^5 - 225*(c^2 - 1)^
2*c*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^6 - 735*sqrt(-d^
2*x^2 - 2*c*d*x - c^2 + 1)*(c^2 - 1)*c^2/d^6 + 64*sqrt(-d^2*x^2 - 2*c*d*x -
 c^2 + 1)*(c^2 - 1)^2/d^6)*d)*a^2*b*d^4*e^4 + a^3*c^4*x*e^4 + 3*((d*x + c)*
arcsin(d*x + c) + sqrt(-(d*x + c)^2 + 1))*a^2*b*c^4*e^4/d + 1/5*(b^3*d^4*x^
5*e^4 + 5*b^3*c*d^3*x^4*e^4 + 10*b^3*c^2*d^2*x^3*e^4 + 10*b^3*c^3*d*x^2*e^4
 + 5*b^3*c^4*x*e^4)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^
3 + integrate(3/5*((b^3*d^5*x^5*e^4 + 5*b^3*c*d^4*x^4*e^4 + 10*b^3*c^2*d^3*
x^3*e^4 + 10*b^3*c^3*d^2*x^2*e^4 + 5*b^3*c^4*d*x*e^4)*sqrt(d*x + c + 1)*sqr
t(-d*x - c + 1)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2 +
5*(a*b^2*d^6*x^6*e^4 + 6*a*b^2*c*d^5*x^5*e^4 + a*b^2*c^6*e^4 + (15*a*b^2*c^
2*e^4 - a*b^2*e^4)*d^4*x^4 - a*b^2*c^4*e^4 + 4*(5*a*b^2*c^3*e^4 - a*b^2*c*e
^4)*d^3*x^3 + 3*(5*a*b^2*c^4*e^4 - 2*a*b^2*c^2*e^4)*d^2*x^2 + 2*(3*a*b^2*c^
5*e^4 - 2*a*b^2*c^3*e^4)*d*x)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x
- c + 1))^2)/(d^2*x^2 + 2*c*d*x + c^2 - 1), x)
```

Fricas [**B**] Leaf count of result is larger than twice the leaf count of optimal. 892 vs. $2(293) = 586$.
time = 1.99, size = 892, normalized size = 2.64

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4*(a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] 1/5625*(1125*(b^3*d^5*x^5 + 5*b^3*c*d^4*x^4 + 10*b^3*c^2*d^3*x^3 + 10*b^3*c
^3*d^2*x^2 + 5*b^3*c^4*d*x + b^3*c^5)*arcsin(d*x + c)^3*e^4 + 3375*(a*b^2*d
^5*x^5 + 5*a*b^2*c*d^4*x^4 + 10*a*b^2*c^2*d^3*x^3 + 10*a*b^2*c^3*d^2*x^2 +
5*a*b^2*c^4*d*x + a*b^2*c^5)*arcsin(d*x + c)^2*e^4 + 15*(9*(25*a^2*b - 2*b^
3)*d^5*x^5 + 45*(25*a^2*b - 2*b^3)*c*d^4*x^4 - 10*(4*b^3 - 9*(25*a^2*b - 2*
b^3)*c^2)*d^3*x^3 - 40*b^3*c^3 + 9*(25*a^2*b - 2*b^3)*c^5 - 30*(4*b^3*c - 3
*(25*a^2*b - 2*b^3)*c^3)*d^2*x^2 - 240*b^3*c - 15*(8*b^3*c^2 - 3*(25*a^2*b
- 2*b^3)*c^4 + 16*b^3)*d*x)*arcsin(d*x + c)*e^4 + 15*(3*(25*a^3 - 6*a*b^2)*
d^5*x^5 + 15*(25*a^3 - 6*a*b^2)*c*d^4*x^4 - 10*(4*a*b^2 - 3*(25*a^3 - 6*a*b
^2)*c^2)*d^3*x^3 - 30*(4*a*b^2*c - (25*a^3 - 6*a*b^2)*c^3)*d^2*x^2 - 15*(8*
a*b^2*c^2 - (25*a^3 - 6*a*b^2)*c^4 + 16*a*b^2)*d*x)*e^4 + sqrt(-d^2*x^2 - 2
*c*d*x - c^2 + 1)*(225*(3*b^3*d^4*x^4 + 12*b^3*c*d^3*x^3 + 3*b^3*c^4 + 4*b^
3*c^2 + 2*(9*b^3*c^2 + 2*b^3)*d^2*x^2 + 8*b^3 + 4*(3*b^3*c^3 + 2*b^3*c)*d*x
)*arcsin(d*x + c)^2*e^4 + 450*(3*a*b^2*d^4*x^4 + 12*a*b^2*c*d^3*x^3 + 3*a*b
^2*c^4 + 4*a*b^2*c^2 + 2*(9*a*b^2*c^2 + 2*a*b^2)*d^2*x^2 + 8*a*b^2 + 4*(3*a
*b^2*c^3 + 2*a*b^2*c)*d*x)*arcsin(d*x + c)*e^4 + (27*(25*a^2*b - 2*b^3)*d^4
*x^4 + 108*(25*a^2*b - 2*b^3)*c*d^3*x^3 + 27*(25*a^2*b - 2*b^3)*c^4 + 2*(45
0*a^2*b - 136*b^3 + 81*(25*a^2*b - 2*b^3)*c^2)*d^2*x^2 + 1800*a^2*b - 4144*
b^3 + 4*(225*a^2*b - 68*b^3)*c^2 + 4*(27*(25*a^2*b - 2*b^3)*c^3 + 2*(225*a^
2*b - 68*b^3)*c)*d*x)*e^4))/d
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 2518 vs. $2(306) = 612$.
time = 1.46, size = 2518, normalized size = 7.45

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**4*(a+b*asin(d*x+c))**3,x)
```

```
[Out] Piecewise((a**3*c**4*e**4*x + 2*a**3*c**3*d*e**4*x**2 + 2*a**3*c**2*d**2*e*
*4*x**3 + a**3*c*d**3*e**4*x**4 + a**3*d**4*e**4*x**5/5 + 3*a**2*b*c**5*e**
4*asin(c + d*x)/(5*d) + 3*a**2*b*c**4*e**4*x*asin(c + d*x) + 3*a**2*b*c**4*
e**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(25*d) + 6*a**2*b*c**3*d*e**4*x*
*2*asin(c + d*x) + 12*a**2*b*c**3*e**4*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 +
 1)/25 + 6*a**2*b*c**2*d**2*e**4*x**3*asin(c + d*x) + 18*a**2*b*c**2*d*e**4
*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/25 + 4*a**2*b*c**2*e**4*sqrt(-c
**2 - 2*c*d*x - d**2*x**2 + 1)/(25*d) + 3*a**2*b*c*d**3*e**4*x**4*asin(c +
d*x) + 12*a**2*b*c*d**2*e**4*x**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/25
+ 8*a**2*b*c*e**4*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/25 + 3*a**2*b*d**
4*e**4*x**5*asin(c + d*x)/5 + 3*a**2*b*d**3*e**4*x**4*sqrt(-c**2 - 2*c*d*x
- d**2*x**2 + 1)/25 + 4*a**2*b*d*e**4*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2
 + 1)/25 + 8*a**2*b*e**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(25*d) + 3*a
*b**2*c**5*e**4*asin(c + d*x)**2/(5*d) + 3*a*b**2*c**4*e**4*x*asin(c + d*x)
```

```
**2 - 6*a*b**2*c**4*e**4*x/25 + 6*a*b**2*c**4*e**4*sqrt(-c**2 - 2*c*d*x - d
**2*x**2 + 1)*asin(c + d*x)/(25*d) + 6*a*b**2*c**3*d*e**4*x**2*asin(c + d*x
)**2 - 12*a*b**2*c**3*d*e**4*x**2/25 + 24*a*b**2*c**3*e**4*x*sqrt(-c**2 - 2
*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/25 + 6*a*b**2*c**2*d**2*e**4*x**3*asi
n(c + d*x)**2 - 12*a*b**2*c**2*d**2*e**4*x**3/25 + 36*a*b**2*c**2*d*e**4*x*
*2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/25 - 8*a*b**2*c**2*e
**4*x/25 + 8*a*b**2*c**2*e**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c
+ d*x)/(25*d) + 3*a*b**2*c*d**3*e**4*x**4*asin(c + d*x)**2 - 6*a*b**2*c*d**
3*e**4*x**4/25 + 24*a*b**2*c*d**2*e**4*x**3*sqrt(-c**2 - 2*c*d*x - d**2*x**
2 + 1)*asin(c + d*x)/25 - 8*a*b**2*c*d*e**4*x**2/25 + 16*a*b**2*c*e**4*x*sq
rt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/25 + 3*a*b**2*d**4*e**4*x
**5*asin(c + d*x)**2/5 - 6*a*b**2*d**4*e**4*x**5/125 + 6*a*b**2*d**3*e**4*x
**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/25 - 8*a*b**2*d**2*
e**4*x**3/75 + 8*a*b**2*d*e**4*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*a
sin(c + d*x)/25 - 16*a*b**2*e**4*x/25 + 16*a*b**2*e**4*sqrt(-c**2 - 2*c*d*x
 - d**2*x**2 + 1)*asin(c + d*x)/(25*d) + b**3*c**5*e**4*asin(c + d*x)**3/(5
*d) - 6*b**3*c**5*e**4*asin(c + d*x)/(125*d) + b**3*c**4*e**4*x*asin(c + d*
x)**3 - 6*b**3*c**4*e**4*x*asin(c + d*x)/25 + 3*b**3*c**4*e**4*sqrt(-c**2 -
 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/(25*d) - 6*b**3*c**4*e**4*sqrt(-
c**2 - 2*c*d*x - d**2*x**2 + 1)/(625*d) + 2*b**3*c**3*d*e**4*x**2*asin(c +
d*x)**3 - 12*b**3*c**3*d*e**4*x**2*asin(c + d*x)/25 + 12*b**3*c**3*e**4*x*s
qrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/25 - 24*b**3*c**3*e**
4*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/625 - 8*b**3*c**3*e**4*asin(c + d
*x)/(75*d) + 2*b**3*c**2*d**2*e**4*x**3*asin(c + d*x)**3 - 12*b**3*c**2*d**
2*e**4*x**3*asin(c + d*x)/25 + 18*b**3*c**2*d*e**4*x**2*sqrt(-c**2 - 2*c*d*
x - d**2*x**2 + 1)*asin(c + d*x)**2/25 - 36*b**3*c**2*d*e**4*x**2*sqrt(-c**
2 - 2*c*d*x - d**2*x**2 + 1)/625 - 8*b**3*c**2*e**4*x*asin(c + d*x)/25 + 4*
b**3*c**2*e**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/(25*d
) - 272*b**3*c**2*e**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(5625*d) + b**
3*c*d**3*e**4*x**4*asin(c + d*x)**3 - 6*b**3*c*d**3*e**4*x**4*asin(c + d*x)
/25 + 12*b**3*c*d**2*e**4*x**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c
 + d*x)**2/25 - 24*b**3*c*d**2*e**4*x**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 +
 1)/625 - 8*b**3*c*d*e**4*x**2*asin(c + d*x)/25 + 8*b**3*c*e**4*x*sqrt(-c**
2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/25 - 544*b**3*c*e**4*x*sqrt(-
c**2 - 2*c*d*x - d**2*x**2 + 1)/5625 - 16*b**3*c*e**4*asin(c + d*x)/(25*d)
+ b**3*d**4*e**4*x**5*asin(c + d*x)**3/5 - 6*b**3*d**4*e**4*x**5*asin(c + d
*x)/125 + 3*b**3*d**3*e**4*x**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(
c + d*x)**2/25 - 6*b**3*d**3*e**4*x**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1
)/625 - 8*b**3*d**2*e**4*x**3*asin(c + d*x)/75 + 4*b**3*d*e**4*x**2*sqrt(-c
**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/25 - 272*b**3*d*e**4*x**2*s
qrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/5625 - 16*b**3*e**4*x*asin(c + d*x)/25
 + 8*b**3*e**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/(25*d
) - 4144*b**3*e**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(5625*d), Ne(d, 0)
), (c**4*e**4*x*(a + b*asin(c))**3, True))
```

Giac [**B**] Leaf count of result is larger than twice the leaf count of optimal. 832 vs. 2(304) = 608.
time = 0.47, size = 832, normalized size = 2.46

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4*(a+b*arcsin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] 1/5*((d*x + c)^2 - 1)^2*(d*x + c)*b^3*e^4*arcsin(d*x + c)^3/d + 1/5*(d*x +
c)^5*a^3*e^4/d + 3/5*((d*x + c)^2 - 1)^2*(d*x + c)*a*b^2*e^4*arcsin(d*x + c
)^2/d + 2/5*((d*x + c)^2 - 1)*(d*x + c)*b^3*e^4*arcsin(d*x + c)^3/d + 3/25*
((d*x + c)^2 - 1)^2*sqrt(-(d*x + c)^2 + 1)*b^3*e^4*arcsin(d*x + c)^2/d + 3/
5*((d*x + c)^2 - 1)^2*(d*x + c)*a^2*b*e^4*arcsin(d*x + c)/d - 6/125*((d*x +
 c)^2 - 1)^2*(d*x + c)*b^3*e^4*arcsin(d*x + c)/d + 6/5*((d*x + c)^2 - 1)*(d
*x + c)*a*b^2*e^4*arcsin(d*x + c)^2/d + 1/5*(d*x + c)*b^3*e^4*arcsin(d*x +
c)^3/d + 6/25*((d*x + c)^2 - 1)^2*sqrt(-(d*x + c)^2 + 1)*a*b^2*e^4*arcsin(d
*x + c)/d - 2/5*(-(d*x + c)^2 + 1)^(3/2)*b^3*e^4*arcsin(d*x + c)^2/d - 6/12
5*((d*x + c)^2 - 1)^2*(d*x + c)*a*b^2*e^4/d + 6/5*((d*x + c)^2 - 1)*(d*x +
c)*a^2*b*e^4*arcsin(d*x + c)/d - 76/375*((d*x + c)^2 - 1)*(d*x + c)*b^3*e^4
*arcsin(d*x + c)/d + 3/5*(d*x + c)*a*b^2*e^4*arcsin(d*x + c)^2/d + 3/25*((d
*x + c)^2 - 1)^2*sqrt(-(d*x + c)^2 + 1)*a^2*b*e^4/d - 6/625*((d*x + c)^2 -
1)^2*sqrt(-(d*x + c)^2 + 1)*b^3*e^4/d - 4/5*(-(d*x + c)^2 + 1)^(3/2)*a*b^2*
e^4*arcsin(d*x + c)/d + 3/5*sqrt(-(d*x + c)^2 + 1)*b^3*e^4*arcsin(d*x + c)^
2/d - 76/375*((d*x + c)^2 - 1)*(d*x + c)*a*b^2*e^4/d + 3/5*(d*x + c)*a^2*b*
e^4*arcsin(d*x + c)/d - 298/375*(d*x + c)*b^3*e^4*arcsin(d*x + c)/d - 2/5*(
-(d*x + c)^2 + 1)^(3/2)*a^2*b*e^4/d + 76/1125*(-(d*x + c)^2 + 1)^(3/2)*b^3*
e^4/d + 6/5*sqrt(-(d*x + c)^2 + 1)*a*b^2*e^4*arcsin(d*x + c)/d - 298/375*(d
*x + c)*a*b^2*e^4/d + 3/5*sqrt(-(d*x + c)^2 + 1)*a^2*b*e^4/d - 298/375*sqrt
(-(d*x + c)^2 + 1)*b^3*e^4/d
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int (c\,e + d\,e\,x)^4\,(a + b\,\mathrm{asin}(c + d\,x))^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^4*(a + b*asin(c + d*x))^3,x)
```

```
[Out] int((c*e + d*e*x)^4*(a + b*asin(c + d*x))^3, x)
```

3.198 $\int (ce+dex)^3(a+b\mathbf{ArcSin}(c+dx))^3\,dx$

Optimal. Leaf size=287

$$-\frac{45b^3e^3(c+dx)\sqrt{1-(c+dx)^2}}{256d}-\frac{3b^3e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{128d}+\frac{45b^3e^3\text{ArcSin}(c+dx)}{256d}-\frac{9b^2e^3(c+dx)^2}{}$$

```
[Out] 45/256*b^3*e^3*arcsin(d*x+c)/d-9/32*b^2*e^3*(d*x+c)^2*(a+b*arcsin(d*x+c))/d
-3/32*b^2*e^3*(d*x+c)^4*(a+b*arcsin(d*x+c))/d-3/32*e^3*(a+b*arcsin(d*x+c))^
3/d+1/4*e^3*(d*x+c)^4*(a+b*arcsin(d*x+c))^3/d-45/256*b^3*e^3*(d*x+c)*(1-(d*
x+c)^2)^(1/2)/d-3/128*b^3*e^3*(d*x+c)^3*(1-(d*x+c)^2)^(1/2)/d+9/32*b*e^3*(d
*x+c)*(a+b*arcsin(d*x+c))^2*(1-(d*x+c)^2)^(1/2)/d+3/16*b*e^3*(d*x+c)^3*(a+b
*arcsin(d*x+c))^2*(1-(d*x+c)^2)^(1/2)/d
```

Rubi [A]
time = 0.29, antiderivative size = 287, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 7, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.304$, Rules used = {4889, 12, 4723, 4795, 4737, 327, 222}

$$-\frac{3b^2e^3(c+dx)^4(a+b\text{ArcSin}(c+dx))}{32d}-\frac{9b^2e^3(c+dx)^2(a+b\text{ArcSin}(c+dx))}{32d}+\frac{e^3(c+dx)^4(a+b\text{ArcSin}(c+dx))^3}{4d}+\frac{3be^3\sqrt{1-(c+dx)^2}\,(c+dx)^3(a+b\text{ArcSin}(c+dx))^2}{16d}+\frac{9be^3\sqrt{1-(c+dx)^2}\,(c+dx)(a+b\text{ArcSin}(c+dx))^2}{32d}-\frac{3e^3(a+b\text{ArcSin}(c+dx))^3}{32d}+\frac{45b^3e^3\text{ArcSin}(c+dx)}{256d}-\frac{3b^3e^3\sqrt{1-(c+dx)^2}\,(c+dx)^3}{128d}-\frac{45b^3e^3\sqrt{1-(c+dx)^2}\,(c+dx)}{256d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3*(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] (-45*b^3*e^3*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(256*d) - (3*b^3*e^3*(c + d*x
)^3*Sqrt[1 - (c + d*x)^2])/(128*d) + (45*b^3*e^3*ArcSin[c + d*x])/(256*d) -
 (9*b^2*e^3*(c + d*x)^2*(a + b*ArcSin[c + d*x]))/(32*d) - (3*b^2*e^3*(c + d
*x)^4*(a + b*ArcSin[c + d*x]))/(32*d) + (9*b*e^3*(c + d*x)*Sqrt[1 - (c + d*
x)^2]*(a + b*ArcSin[c + d*x])^2)/(32*d) + (3*b*e^3*(c + d*x)^3*Sqrt[1 - (c
+ d*x)^2]*(a + b*ArcSin[c + d*x])^2)/(16*d) - (3*e^3*(a + b*ArcSin[c + d*x]
)^3)/(32*d) + (e^3*(c + d*x)^4*(a + b*ArcSin[c + d*x])^3)/(4*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
```

```
x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$
\begin{aligned}
\int (ce+dex)^3 \left(a+b\sin^{-1}(c+dx)\right)^3 \, dx &= \frac{\text{Subst}\left(\int e^3x^3(a+b\sin^{-1}(x))^3 \, dx, x, c+dx\right)}{d} \\
&= \frac{e^3\text{Subst}\left(\int x^3(a+b\sin^{-1}(x))^3 \, dx, x, c+dx\right)}{d} \\
&= \frac{e^3(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)^3}{4d} - \frac{(3be^3)\,\text{Subst}\left(\int \frac{x^4(a+b\sin^{-1}(}{\sqrt{1-x^2}}\right.}{4d} \\
&= \frac{3be^3(c+dx)^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{16d} + \frac{e^3(c+d}{} \\
&= -\frac{3b^2e^3(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)}{32d} + \frac{9be^3(c+dx)\sqrt{1-(c+}}{} \\
&= -\frac{3b^3e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{128d} - \frac{9b^2e^3(c+dx)^2\left(a+b\sin^{-1}(\right.}{32d} \\
&= -\frac{45b^3e^3(c+dx)\sqrt{1-(c+dx)^2}}{256d} - \frac{3b^3e^3(c+dx)^3\sqrt{1-(c+d}}{128d} \\
&= -\frac{45b^3e^3(c+dx)\sqrt{1-(c+dx)^2}}{256d} - \frac{3b^3e^3(c+dx)^3\sqrt{1-(c+d}}{128d}
\end{aligned}
$$

Mathematica [A]
time = 0.34, size = 232, normalized size = 0.81

$$\frac{e^3\left((c+dx)^4(a+b\text{ArcSin}(c+dx))^3-\frac{3}{8}\left(\frac{15}{8}b^3(c+dx)\sqrt{1-(c+dx)^2}+\frac{1}{4}b^3(c+dx)^3\sqrt{1-(c+dx)^2}-\frac{15}{8}b^3\text{ArcSin}(c+dx)+3b^2(c+dx)^2(a+b\text{ArcSin}(c+dx))+b^2(c+dx)^4(a+b\text{ArcSin}(c+dx))-3b(c+dx)\sqrt{1-(c+dx)^2}(a+b\text{ArcSin}(c+dx))^2-2b(c+dx)^3\sqrt{1-(c+dx)^2}(a+b\text{ArcSin}(c+dx))^2+(a+b\text{ArcSin}(c+dx))^3\right)\right)}{4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^3*(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] (e^3*((c + d*x)^4*(a + b*ArcSin[c + d*x])^3 - (3*((15*b^3*(c + d*x)*Sqrt[1
 - (c + d*x)^2])/8 + (b^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/4 - (15*b^3*Arc
Sin[c + d*x])/8 + 3*b^2*(c + d*x)^2*(a + b*ArcSin[c + d*x]) + b^2*(c + d*x)
^4*(a + b*ArcSin[c + d*x]) - 3*b*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*Arc
Sin[c + d*x])^2 - 2*b*(c + d*x)^3*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d
*x])^2 + (a + b*ArcSin[c + d*x])^3))/8))/(4*d)
```

Maple [A]
time = 0.12, size = 394, normalized size = 1.37

method	result
derivativedivides	$\frac{\frac{e^3(dx+c)^4a^3}{4}+e^3b^3\left(\frac{(dx+c)^4\arcsin(dx+c)^3}{4}-\frac{3\arcsin(dx+c)^2\left(-2(dx+c)^3\sqrt{1-(dx+c)^2}-3(dx+c)\sqrt{1-(dx+c}\right.}{32}\right.}{}$
default	$\frac{\frac{e^3(dx+c)^4a^3}{4}+e^3b^3\left(\frac{(dx+c)^4\arcsin(dx+c)^3}{4}-\frac{3\arcsin(dx+c)^2\left(-2(dx+c)^3\sqrt{1-(dx+c)^2}-3(dx+c)\sqrt{1-(dx+c}\right.}{32}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(1/4*e^3*(d*x+c)^4*a^3+e^3*b^3*(1/4*(d*x+c)^4*arcsin(d*x+c)^3-3/32*arcs
in(d*x+c)^2*(-2*(d*x+c)^3*(1-(d*x+c)^2)^(1/2)-3*(d*x+c)*(1-(d*x+c)^2)^(1/2)
+3*arcsin(d*x+c))-3/32*(d*x+c)^4*arcsin(d*x+c)-3/256*(d*x+c)*(2*(d*x+c)^2+3
)*(1-(d*x+c)^2)^(1/2)-27/256*arcsin(d*x+c)-9/32*((d*x+c)^2-1)*arcsin(d*x+c)
-9/64*(d*x+c)*(1-(d*x+c)^2)^(1/2)+3/16*arcsin(d*x+c)^3)+3*e^3*a*b^2*(1/4*(d
*x+c)^4*arcsin(d*x+c)^2-1/16*arcsin(d*x+c)*(-2*(d*x+c)^3*(1-(d*x+c)^2)^(1/2
)-3*(d*x+c)*(1-(d*x+c)^2)^(1/2)+3*arcsin(d*x+c))+3/32*arcsin(d*x+c)^2-1/128
*(2*(d*x+c)^2+3)^2)+3*e^3*a^2*b*(1/4*(d*x+c)^4*arcsin(d*x+c)+1/16*(d*x+c)^3
*(1-(d*x+c)^2)^(1/2)+3/32*(d*x+c)*(1-(d*x+c)^2)^(1/2)-3/32*arcsin(d*x+c)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] 1/4*a^3*d^3*x^4*e^3 + a^3*c*d^2*x^3*e^3 + 3/2*a^3*c^2*d*x^2*e^3 + 9/4*(2*x^
2*arcsin(d*x + c) + d*(3*c^2*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)
*d^2))/d^3 + sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*x/d^2 - (c^2 - 1)*arcsin(-(
d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^3 - 3*sqrt(-d^2*x^2 - 2*c*d*x
 - c^2 + 1)*c/d^3))*a^2*b*c^2*d*e^3 + 1/2*(6*x^3*arcsin(d*x + c) + d*(2*sqr
t(-d^2*x^2 - 2*c*d*x - c^2 + 1)*x^2/d^2 - 15*c^3*arcsin(-(d^2*x + c*d)/sqrt
(c^2*d^2 - (c^2 - 1)*d^2))/d^4 - 5*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c*x/d
^3 + 9*(c^2 - 1)*c*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^4
 + 15*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c^2/d^4 - 4*sqrt(-d^2*x^2 - 2*c*d*
x - c^2 + 1)*(c^2 - 1)/d^4))*a^2*b*c*d^2*e^3 + 1/32*(24*x^4*arcsin(d*x + c)
 + (6*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*x^3/d^2 - 14*sqrt(-d^2*x^2 - 2*c*d
```

```
*x - c^2 + 1)*c*x^2/d^3 + 105*c^4*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2
 - 1)*d^2))/d^5 + 35*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c^2*x/d^4 - 90*(c^2
 - 1)*c^2*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^5 - 105*sq
rt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c^3/d^5 - 9*sqrt(-d^2*x^2 - 2*c*d*x - c^2
+ 1)*(c^2 - 1)*x/d^4 + 9*(c^2 - 1)^2*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (
c^2 - 1)*d^2))/d^5 + 55*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*(c^2 - 1)*c/d^5)
*d)*a^2*b*d^3*e^3 + a^3*c^3*x*e^3 + 3*((d*x + c)*arcsin(d*x + c) + sqrt(-(d
*x + c)^2 + 1))*a^2*b*c^3*e^3/d + 1/4*(b^3*d^3*x^4*e^3 + 4*b^3*c*d^2*x^3*e^
3 + 6*b^3*c^2*d*x^2*e^3 + 4*b^3*c^3*x*e^3)*arctan2(d*x + c, sqrt(d*x + c +
1)*sqrt(-d*x - c + 1))^3 + integrate(3/4*((b^3*d^4*x^4*e^3 + 4*b^3*c*d^3*x^
3*e^3 + 6*b^3*c^2*d^2*x^2*e^3 + 4*b^3*c^3*d*x*e^3)*sqrt(d*x + c + 1)*sqrt(-
d*x - c + 1)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2 + 4*(
a*b^2*d^5*x^5*e^3 + 5*a*b^2*c*d^4*x^4*e^3 + a*b^2*c^5*e^3 + (10*a*b^2*c^2*e
^3 - a*b^2*e^3)*d^3*x^3 - a*b^2*c^3*e^3 + (10*a*b^2*c^3*e^3 - 3*a*b^2*c*e^3
)*d^2*x^2 + (5*a*b^2*c^4*e^3 - 3*a*b^2*c^2*e^3)*d*x)*arctan2(d*x + c, sqrt(
d*x + c + 1)*sqrt(-d*x - c + 1))^2)/(d^2*x^2 + 2*c*d*x + c^2 - 1), x)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 681 vs. $2(252) = 504$.
time = 1.10, size = 681, normalized size = 2.37

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] 1/256*(8*(8*b^3*d^4*x^4 + 32*b^3*c*d^3*x^3 + 48*b^3*c^2*d^2*x^2 + 32*b^3*c^
3*d*x + 8*b^3*c^4 - 3*b^3)*arcsin(d*x + c)^3*e^3 + 24*(8*a*b^2*d^4*x^4 + 32
*a*b^2*c*d^3*x^3 + 48*a*b^2*c^2*d^2*x^2 + 32*a*b^2*c^3*d*x + 8*a*b^2*c^4 -
3*a*b^2)*arcsin(d*x + c)^2*e^3 + 3*(8*(8*a^2*b - b^3)*d^4*x^4 + 32*(8*a^2*b
 - b^3)*c*d^3*x^3 - 24*b^3*c^2 + 8*(8*a^2*b - b^3)*c^4 - 24*(b^3 - 2*(8*a^2
*b - b^3)*c^2)*d^2*x^2 - 24*a^2*b + 15*b^3 - 16*(3*b^3*c - 2*(8*a^2*b - b^3
)*c^3)*d*x)*arcsin(d*x + c)*e^3 + 8*((8*a^3 - 3*a*b^2)*d^4*x^4 + 4*(8*a^3 -
 3*a*b^2)*c*d^3*x^3 - 3*(3*a*b^2 - 2*(8*a^3 - 3*a*b^2)*c^2)*d^2*x^2 - 2*(9*
a*b^2*c - 2*(8*a^3 - 3*a*b^2)*c^3)*d*x)*e^3 + 3*sqrt(-d^2*x^2 - 2*c*d*x - c
^2 + 1)*(8*(2*b^3*d^3*x^3 + 6*b^3*c*d^2*x^2 + 2*b^3*c^3 + 3*b^3*c + 3*(2*b^
3*c^2 + b^3)*d*x)*arcsin(d*x + c)^2*e^3 + 16*(2*a*b^2*d^3*x^3 + 6*a*b^2*c*d
^2*x^2 + 2*a*b^2*c^3 + 3*a*b^2*c + 3*(2*a*b^2*c^2 + a*b^2)*d*x)*arcsin(d*x
+ c)*e^3 + (2*(8*a^2*b - b^3)*d^3*x^3 + 6*(8*a^2*b - b^3)*c*d^2*x^2 + 2*(8*
a^2*b - b^3)*c^3 + 3*(8*a^2*b - 5*b^3 + 2*(8*a^2*b - b^3)*c^2)*d*x + 3*(8*a
^2*b - 5*b^3)*c)*e^3))/d
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 1828 vs. $2(260) = 520$.
time = 0.98, size = 1828, normalized size = 6.37

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3*(a+b*asin(d*x+c))**3,x)
```

```
[Out] Piecewise((a**3*c**3*e**3*x + 3*a**3*c**2*d*e**3*x**2/2 + a**3*c*d**2*e**3*
x**3 + a**3*d**3*e**3*x**4/4 + 3*a**2*b*c**4*e**3*asin(c + d*x)/(4*d) + 3*a
**2*b*c**3*e**3*x*asin(c + d*x) + 3*a**2*b*c**3*e**3*sqrt(-c**2 - 2*c*d*x -
 d**2*x**2 + 1)/(16*d) + 9*a**2*b*c**2*d*e**3*x**2*asin(c + d*x)/2 + 9*a**2
*b*c**2*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/16 + 3*a**2*b*c*d**2*e
**3*x**3*asin(c + d*x) + 9*a**2*b*c*d*e**3*x**2*sqrt(-c**2 - 2*c*d*x - d**2
*x**2 + 1)/16 + 9*a**2*b*c*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(32*d
) + 3*a**2*b*d**3*e**3*x**4*asin(c + d*x)/4 + 3*a**2*b*d**2*e**3*x**3*sqrt(
-c**2 - 2*c*d*x - d**2*x**2 + 1)/16 + 9*a**2*b*e**3*x*sqrt(-c**2 - 2*c*d*x
- d**2*x**2 + 1)/32 - 9*a**2*b*e**3*asin(c + d*x)/(32*d) + 3*a*b**2*c**4*e*
*3*asin(c + d*x)**2/(4*d) + 3*a*b**2*c**3*e**3*x*asin(c + d*x)**2 - 3*a*b**
2*c**3*e**3*x/8 + 3*a*b**2*c**3*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*
asin(c + d*x)/(8*d) + 9*a*b**2*c**2*d*e**3*x**2*asin(c + d*x)**2/2 - 9*a*b*
*2*c**2*d*e**3*x**2/16 + 9*a*b**2*c**2*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x
**2 + 1)*asin(c + d*x)/8 + 3*a*b**2*c*d**2*e**3*x**3*asin(c + d*x)**2 - 3*a
*b**2*c*d**2*e**3*x**3/8 + 9*a*b**2*c*d*e**3*x**2*sqrt(-c**2 - 2*c*d*x - d*
*2*x**2 + 1)*asin(c + d*x)/8 - 9*a*b**2*c*e**3*x/16 + 9*a*b**2*c*e**3*sqrt(
-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/(16*d) + 3*a*b**2*d**3*e**3*
x**4*asin(c + d*x)**2/4 - 3*a*b**2*d**3*e**3*x**4/32 + 3*a*b**2*d**2*e**3*x
**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/8 - 9*a*b**2*d*e**3
*x**2/32 + 9*a*b**2*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d
*x)/16 - 9*a*b**2*e**3*asin(c + d*x)**2/(32*d) + b**3*c**4*e**3*asin(c + d*
x)**3/(4*d) - 3*b**3*c**4*e**3*asin(c + d*x)/(32*d) + b**3*c**3*e**3*x*asin
(c + d*x)**3 - 3*b**3*c**3*e**3*x*asin(c + d*x)/8 + 3*b**3*c**3*e**3*sqrt(-
c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/(16*d) - 3*b**3*c**3*e**3*
sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(128*d) + 3*b**3*c**2*d*e**3*x**2*asi
n(c + d*x)**3/2 - 9*b**3*c**2*d*e**3*x**2*asin(c + d*x)/16 + 9*b**3*c**2*e*
*3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/16 - 9*b**3*c**
2*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/128 - 9*b**3*c**2*e**3*asin(
c + d*x)/(32*d) + b**3*c*d**2*e**3*x**3*asin(c + d*x)**3 - 3*b**3*c*d**2*e*
*3*x**3*asin(c + d*x)/8 + 9*b**3*c*d*e**3*x**2*sqrt(-c**2 - 2*c*d*x - d**2*
x**2 + 1)*asin(c + d*x)**2/16 - 9*b**3*c*d*e**3*x**2*sqrt(-c**2 - 2*c*d*x -
 d**2*x**2 + 1)/128 - 9*b**3*c*e**3*x*asin(c + d*x)/16 + 9*b**3*c*e**3*sqrt
(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/(32*d) - 45*b**3*c*e**3*
sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(256*d) + b**3*d**3*e**3*x**4*asin(c
+ d*x)**3/4 - 3*b**3*d**3*e**3*x**4*asin(c + d*x)/32 + 3*b**3*d**2*e**3*x**
3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/16 - 3*b**3*d**2*e
**3*x**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/128 - 9*b**3*d*e**3*x**2*asi
n(c + d*x)/32 + 9*b**3*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c
+ d*x)**2/32 - 45*b**3*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/256 - 3
*b**3*e**3*asin(c + d*x)**3/(32*d) + 45*b**3*e**3*asin(c + d*x)/(256*d), Ne
```

```
(d, 0)), (c**3*e**3*x*(a + b*asin(c))**3, True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 641 vs. 2(261) = 522.
time = 0.45, size = 641, normalized size = 2.23

$$\frac{\left((dx+c)^2-1\right)^2 b^3 e^3 \arcsin\left(dx+c\right)^3}{4\,d} - \frac{3\left(-(dx+c)^2+1\right)^{\frac{3}{2}}(dx+c)b^3e^3\arcsin\left(dx+c\right)^2}{16\,d} + \frac{(dx+c)^4a^3e^3}{4\,d} + \frac{3\left((dx+c)^2-1\right)^2ab^2e^3\arcsin\left(dx+c\right)^2}{4\,d} + \frac{\left((dx+c)^2-1\right)b^3e^3\arcsin\left(dx+c\right)^3}{2\,d} - \frac{3\left(-(dx+c)^2+1\right)^{\frac{3}{2}}(dx+c)ab^2e^3\arcsin\left(dx+c\right)}{8\,d} + \frac{15\sqrt{-(dx+c)^2+1}\,(dx+c)b^3e^3\arcsin\left(dx+c\right)^2}{32\,d} + \frac{3\left((dx+c)^2-1\right)^2a^2be^3\arcsin\left(dx+c\right)}{4\,d} - \frac{3\left((dx+c)^2-1\right)^2b^3e^3\arcsin\left(dx+c\right)}{32\,d} + \frac{3\left((dx+c)^2-1\right)ab^2e^3\arcsin\left(dx+c\right)^2}{2\,d} + \frac{5\,b^3e^3\arcsin\left(dx+c\right)^3}{32\,d} - \frac{3\left(-(dx+c)^2+1\right)^{\frac{3}{2}}(dx+c)a^2be^3}{16\,d} + \frac{3\left(-(dx+c)^2+1\right)^{\frac{3}{2}}(dx+c)b^3e^3}{128\,d} + \frac{15\sqrt{-(dx+c)^2+1}\,(dx+c)ab^2e^3\arcsin\left(dx+c\right)}{16\,d} - \frac{3\left((dx+c)^2-1\right)^2ab^2e^3}{32\,d} + \frac{3\left((dx+c)^2-1\right)a^2be^3\arcsin\left(dx+c\right)}{2\,d} - \frac{15\left((dx+c)^2-1\right)b^3e^3\arcsin\left(dx+c\right)}{32\,d} + \frac{15\,ab^2e^3\arcsin\left(dx+c\right)^2}{32\,d} + \frac{15\sqrt{-(dx+c)^2+1}\,(dx+c)a^2be^3}{32\,d} - \frac{51\sqrt{-(dx+c)^2+1}\,(dx+c)b^3e^3}{256\,d} - \frac{15\left((dx+c)^2-1\right)ab^2e^3}{32\,d} + \frac{15\,a^2be^3\arcsin\left(dx+c\right)}{32\,d} - \frac{51\,b^3e^3\arcsin\left(dx+c\right)}{256\,d} - \frac{51\,ab^2e^3}{256\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] 1/4*((d*x + c)^2 - 1)^2*b^3*e^3*arcsin(d*x + c)^3/d - 3/16*(-(d*x + c)^2 +
1)^(3/2)*(d*x + c)*b^3*e^3*arcsin(d*x + c)^2/d + 1/4*(d*x + c)^4*a^3*e^3/d
+ 3/4*((d*x + c)^2 - 1)^2*a*b^2*e^3*arcsin(d*x + c)^2/d + 1/2*((d*x + c)^2
- 1)*b^3*e^3*arcsin(d*x + c)^3/d - 3/8*(-(d*x + c)^2 + 1)^(3/2)*(d*x + c)*a
*b^2*e^3*arcsin(d*x + c)/d + 15/32*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*b^3*e^3
*arcsin(d*x + c)^2/d + 3/4*((d*x + c)^2 - 1)^2*a^2*b*e^3*arcsin(d*x + c)/d
- 3/32*((d*x + c)^2 - 1)^2*b^3*e^3*arcsin(d*x + c)/d + 3/2*((d*x + c)^2 - 1
)*a*b^2*e^3*arcsin(d*x + c)^2/d + 5/32*b^3*e^3*arcsin(d*x + c)^3/d - 3/16*(
-(d*x + c)^2 + 1)^(3/2)*(d*x + c)*a^2*b*e^3/d + 3/128*(-(d*x + c)^2 + 1)^(3
/2)*(d*x + c)*b^3*e^3/d + 15/16*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*a*b^2*e^3*
arcsin(d*x + c)/d - 3/32*((d*x + c)^2 - 1)^2*a*b^2*e^3/d + 3/2*((d*x + c)^2
 - 1)*a^2*b*e^3*arcsin(d*x + c)/d - 15/32*((d*x + c)^2 - 1)*b^3*e^3*arcsin(
d*x + c)/d + 15/32*a*b^2*e^3*arcsin(d*x + c)^2/d + 15/32*sqrt(-(d*x + c)^2
+ 1)*(d*x + c)*a^2*b*e^3/d - 51/256*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*b^3*e^
3/d - 15/32*((d*x + c)^2 - 1)*a*b^2*e^3/d + 15/32*a^2*b*e^3*arcsin(d*x + c)
/d - 51/256*b^3*e^3*arcsin(d*x + c)/d - 51/256*a*b^2*e^3/d
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (c\,e+d\,e\,x)^3\,(a+b\,\mathrm{asin}(c+d\,x))^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^3*(a + b*asin(c + d*x))^3,x)
```

```
[Out] int((c*e + d*e*x)^3*(a + b*asin(c + d*x))^3, x)
```

3.199 $\int (ce+dex)^2(a+b\mathbf{ArcSin}(c+dx))^3\,dx$

Optimal. Leaf size=235

$$-\frac{4}{3}ab^2e^2x-\frac{14b^3e^2\sqrt{1-(c+dx)^2}}{9d}+\frac{2b^3e^2(1-(c+dx)^2)^{3/2}}{27d}-\frac{4b^3e^2(c+dx)\text{ArcSin}(c+dx)}{3d}-\frac{2b^2e^2(c+dx)^3}{}$$

```
[Out] -4/3*a*b^2*e^2*x+2/27*b^3*e^2*(1-(d*x+c)^2)^(3/2)/d-4/3*b^3*e^2*(d*x+c)*arc
sin(d*x+c)/d-2/9*b^2*e^2*(d*x+c)^3*(a+b*arcsin(d*x+c))/d+1/3*e^2*(d*x+c)^3*
(a+b*arcsin(d*x+c))^3/d-14/9*b^3*e^2*(1-(d*x+c)^2)^(1/2)/d+2/3*b*e^2*(a+b*a
rcsin(d*x+c))^2*(1-(d*x+c)^2)^(1/2)/d+1/3*b*e^2*(d*x+c)^2*(a+b*arcsin(d*x+c
))^2*(1-(d*x+c)^2)^(1/2)/d
```

Rubi [A]
time = 0.23, antiderivative size = 235, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.391$, Rules used = {4889, 12, 4723, 4795, 4767, 4715, 267, 272, 45}

$$-\frac{2b^2e^2(c+dx)^3(a+b\text{ArcSin}(c+dx))}{9d}+\frac{2be^2\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^2}{3d}+\frac{be^2(c+dx)^2\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^2}{3d}+\frac{e^2(c+dx)^3(a+b\text{ArcSin}(c+dx))^3}{3d}-\frac{4}{3}ab^2e^2x-\frac{4b^3e^2(c+dx)\text{ArcSin}(c+dx)}{3d}+\frac{2b^3e^2(1-(c+dx)^2)^{3/2}}{27d}-\frac{14b^3e^2\sqrt{1-(c+dx)^2}}{9d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] (-4*a*b^2*e^2*x)/3 - (14*b^3*e^2*Sqrt[1 - (c + d*x)^2])/(9*d) + (2*b^3*e^2*
(1 - (c + d*x)^2)^(3/2))/(27*d) - (4*b^3*e^2*(c + d*x)*ArcSin[c + d*x])/(3*
d) - (2*b^2*e^2*(c + d*x)^3*(a + b*ArcSin[c + d*x]))/(9*d) + (2*b*e^2*Sqrt[
1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^2)/(3*d) + (b*e^2*(c + d*x)^2*Sqrt
[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^2)/(3*d) + (e^2*(c + d*x)^3*(a +
b*ArcSin[c + d*x])^3)/(3*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
```

```
NeQ[p, -1]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)^2 \left(a+b\sin^{-1}(c+dx)\right)^3\,dx = \frac{\text{Subst}\left(\int e^2x^2(a+b\sin^{-1}(x))^3\,dx,x,c+dx\right)}{d}$$

$$= \frac{e^2\text{Subst}\left(\int x^2(a+b\sin^{-1}(x))^3\,dx,x,c+dx\right)}{d}$$

$$= \frac{e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)^3}{3d} - \frac{(be^2)\,\text{Subst}\left(\int \frac{x^3(a+b\sin^{-1}(x))^2}{\sqrt{1-x^2}}\right.}{d}$$

$$= \frac{be^2(c+dx)^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{3d} + \frac{e^2(c+dx)^3}{}$$

$$= -\frac{2b^2e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)}{9d} + \frac{2be^2\sqrt{1-(c+dx)^2}\,(a-}{3d}$$

$$= -\frac{4}{3}ab^2e^2x - \frac{2b^2e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)}{9d} + \frac{2be^2\sqrt{1-(c}}{}$$

$$= -\frac{4}{3}ab^2e^2x - \frac{4b^3e^2(c+dx)\sin^{-1}(c+dx)}{3d} - \frac{2b^2e^2(c+dx)^3\,(a+b}{9d}$$

$$= -\frac{4}{3}ab^2e^2x - \frac{14b^3e^2\sqrt{1-(c+dx)^2}}{9d} + \frac{2b^3e^2\left(1-(c+dx)^2\right)^{3/2}}{27d} -$$

Mathematica [A]
time = 0.23, size = 199, normalized size = 0.85

$$\frac{e^2\left((c+dx)^3(a+b\text{ArcSin}(c+dx))^3-b\left(\frac{2}{9}b^2(2+c^2+2cdx+d^2x^2)\sqrt{1-(c+dx)^2}+\frac{2}{3}b(c+dx)^3(a+b\text{ArcSin}(c+dx))-2\sqrt{1-(c+dx)^2}(a+b\text{ArcSin}(c+dx))^2-(c+dx)^2\sqrt{1-(c+dx)^2}(a+b\text{ArcSin}(c+dx))^2+4b\left(adx+b\sqrt{1-(c+dx)^2}+b(c+dx)\text{ArcSin}(c+dx)\right)\right)\right)}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] (e^2*((c + d*x)^3*(a + b*ArcSin[c + d*x])^3 - b*((2*b^2*(2 + c^2 + 2*c*d*x
+ d^2*x^2)*Sqrt[1 - (c + d*x)^2])/9 + (2*b*(c + d*x)^3*(a + b*ArcSin[c + d*
x]))/3 - 2*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^2 - (c + d*x)^2*Sq
rt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^2 + 4*b*(a*d*x + b*Sqrt[1 - (c
+ d*x)^2] + b*(c + d*x)*ArcSin[c + d*x]))))/(3*d)
```

Maple [A]
time = 0.12, size = 280, normalized size = 1.19

method	result
derivativedivides	$\frac{\frac{e^2(dx+c)^3a^3}{3}+e^2b^3\left(\frac{(dx+c)^3\arcsin(dx+c)^3}{3}+\frac{\arcsin(dx+c)^2\left((dx+c)^2+2\right)\sqrt{1-(dx+c)^2}}{3}-\frac{4\sqrt{1-(dx+c)^2}}{3}\right.}{}$
default	$\frac{\frac{e^2(dx+c)^3a^3}{3}+e^2b^3\left(\frac{(dx+c)^3\arcsin(dx+c)^3}{3}+\frac{\arcsin(dx+c)^2\left((dx+c)^2+2\right)\sqrt{1-(dx+c)^2}}{3}-\frac{4\sqrt{1-(dx+c)^2}}{3}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(1/3*e^2*(d*x+c)^3*a^3+e^2*b^3*(1/3*(d*x+c)^3*arcsin(d*x+c)^3+1/3*arcsi
n(d*x+c)^2*((d*x+c)^2+2)*(1-(d*x+c)^2)^(1/2)-4/3*(1-(d*x+c)^2)^(1/2)-4/3*(d
*x+c)*arcsin(d*x+c)-2/9*(d*x+c)^3*arcsin(d*x+c)-2/27*((d*x+c)^2+2)*(1-(d*x+
c)^2)^(1/2))+3*e^2*a*b^2*(1/3*(d*x+c)^3*arcsin(d*x+c)^2+2/9*arcsin(d*x+c)*(
(d*x+c)^2+2)*(1-(d*x+c)^2)^(1/2)-2/27*(d*x+c)^3-4/9*d*x-4/9*c)+3*e^2*a^2*b*
(1/3*(d*x+c)^3*arcsin(d*x+c)+1/9*(d*x+c)^2*(1-(d*x+c)^2)^(1/2)+2/9*(1-(d*x+
c)^2)^(1/2)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] 1/3*a^3*d^2*x^3*e^2 + a^3*c*d*x^2*e^2 + 3/2*(2*x^2*arcsin(d*x + c) + d*(3*c
^2*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^3 + sqrt(-d^2*x^2
 - 2*c*d*x - c^2 + 1)*x/d^2 - (c^2 - 1)*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2
- (c^2 - 1)*d^2))/d^3 - 3*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c/d^3))*a^2*b*
c*d*e^2 + 1/6*(6*x^3*arcsin(d*x + c) + d*(2*sqrt(-d^2*x^2 - 2*c*d*x - c^2 +
 1)*x^2/d^2 - 15*c^3*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d
^4 - 5*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c*x/d^3 + 9*(c^2 - 1)*c*arcsin(-(
d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^4 + 15*sqrt(-d^2*x^2 - 2*c*d*
x - c^2 + 1)*c^2/d^4 - 4*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*(c^2 - 1)/d^4))
*a^2*b*d^2*e^2 + a^3*c^2*x*e^2 + 3*((d*x + c)*arcsin(d*x + c) + sqrt(-(d*x
+ c)^2 + 1))*a^2*b*c^2*e^2/d + 1/3*(b^3*d^2*x^3*e^2 + 3*b^3*c*d*x^2*e^2 + 3
*b^3*c^2*x*e^2)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^3 +
integrate(((b^3*d^3*x^3*e^2 + 3*b^3*c*d^2*x^2*e^2 + 3*b^3*c^2*d*x*e^2)*sqrt
(d*x + c + 1)*sqrt(-d*x - c + 1)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d
*x - c + 1))^2 + 3*(a*b^2*d^4*x^4*e^2 + 4*a*b^2*c*d^3*x^3*e^2 + a*b^2*c^4*e
```

```
^2 - a*b^2*c^2*e^2 + (6*a*b^2*c^2*e^2 - a*b^2*e^2)*d^2*x^2 + 2*(2*a*b^2*c^3
*e^2 - a*b^2*c*e^2)*d*x)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c +
 1))^2)/(d^2*x^2 + 2*c*d*x + c^2 - 1), x)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 466 vs. $2(203) = 406$.
time = 2.72, size = 466, normalized size = 1.98

$$\frac{9\left(b^3d^3x^3+3b^3cd^2x^2+3b^3c^2dx+b^3c^3\right)\arcsin\left(dx+c\right)^3e^2+27\left(ab^2d^3x^3+3ab^2cd^2x^2+3ab^2c^2dx+ab^2c^3\right)\arcsin\left(dx+c\right)^2e^2+3\left(\left(9a^2b-2b^3\right)d^3x^3+3\left(9a^2b-2b^3\right)cd^2x^2-12b^3c+\left(9a^2b-2b^3\right)c^3-3\left(4b^3-\left(9a^2b-2b^3\right)c^2\right)dx\right)\arcsin\left(dx+c\right)e^2+3\left(\left(3a^3-2ab^2\right)d^3x^3+3\left(3a^3-2ab^2\right)cd^2x^2-3\left(4ab^2-\left(3a^3-2ab^2\right)c^2\right)dx\right)e^2+\sqrt{-d^2x^2-2cdx-c^2+1}\left(9\left(b^3d^2x^2+2b^3cdx+b^3c^2+2b^3\right)\arcsin\left(dx+c\right)^2e^2+18\left(ab^2d^2x^2+2ab^2cdx+ab^2c^2+2ab^2\right)\arcsin\left(dx+c\right)e^2+\left(\left(9a^2b-2b^3\right)d^2x^2+2\left(9a^2b-2b^3\right)cdx+18a^2b-40b^3+\left(9a^2b-2b^3\right)c^2\right)e^2\right)}{27d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] 1/27*(9*(b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + 3*b^3*c^2*d*x + b^3*c^3)*arcsin(d*
x + c)^3*e^2 + 27*(a*b^2*d^3*x^3 + 3*a*b^2*c*d^2*x^2 + 3*a*b^2*c^2*d*x + a*
b^2*c^3)*arcsin(d*x + c)^2*e^2 + 3*((9*a^2*b - 2*b^3)*d^3*x^3 + 3*(9*a^2*b
- 2*b^3)*c*d^2*x^2 - 12*b^3*c + (9*a^2*b - 2*b^3)*c^3 - 3*(4*b^3 - (9*a^2*b
 - 2*b^3)*c^2)*d*x)*arcsin(d*x + c)*e^2 + 3*((3*a^3 - 2*a*b^2)*d^3*x^3 + 3*
(3*a^3 - 2*a*b^2)*c*d^2*x^2 - 3*(4*a*b^2 - (3*a^3 - 2*a*b^2)*c^2)*d*x)*e^2
+ sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*(9*(b^3*d^2*x^2 + 2*b^3*c*d*x + b^3*c^
2 + 2*b^3)*arcsin(d*x + c)^2*e^2 + 18*(a*b^2*d^2*x^2 + 2*a*b^2*c*d*x + a*b^
2*c^2 + 2*a*b^2)*arcsin(d*x + c)*e^2 + ((9*a^2*b - 2*b^3)*d^2*x^2 + 2*(9*a^
2*b - 2*b^3)*c*d*x + 18*a^2*b - 40*b^3 + (9*a^2*b - 2*b^3)*c^2)*e^2))/d
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 1173 vs. $2(211) = 422$.
time = 0.59, size = 1173, normalized size = 4.99

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2*(a+b*asin(d*x+c))**3,x)
```

```
[Out] Piecewise((a**3*c**2*e**2*x + a**3*c*d*e**2*x**2 + a**3*d**2*e**2*x**3/3 +
a**2*b*c**3*e**2*asin(c + d*x)/d + 3*a**2*b*c**2*e**2*x*asin(c + d*x) + a**
2*b*c**2*e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(3*d) + 3*a**2*b*c*d*e*
*2*x**2*asin(c + d*x) + 2*a**2*b*c*e**2*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2
+ 1)/3 + a**2*b*d**2*e**2*x**3*asin(c + d*x) + a**2*b*d*e**2*x**2*sqrt(-c**
2 - 2*c*d*x - d**2*x**2 + 1)/3 + 2*a**2*b*e**2*sqrt(-c**2 - 2*c*d*x - d**2*
x**2 + 1)/(3*d) + a*b**2*c**3*e**2*asin(c + d*x)**2/d + 3*a*b**2*c**2*e**2*
x*asin(c + d*x)**2 - 2*a*b**2*c**2*e**2*x/3 + 2*a*b**2*c**2*e**2*sqrt(-c**2
 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/(3*d) + 3*a*b**2*c*d*e**2*x**2*as
in(c + d*x)**2 - 2*a*b**2*c*d*e**2*x**2/3 + 4*a*b**2*c*e**2*x*sqrt(-c**2 -
2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/3 + a*b**2*d**2*e**2*x**3*asin(c + d
*x)**2 - 2*a*b**2*d**2*e**2*x**3/9 + 2*a*b**2*d*e**2*x**2*sqrt(-c**2 - 2*c*
d*x - d**2*x**2 + 1)*asin(c + d*x)/3 - 4*a*b**2*e**2*x/3 + 4*a*b**2*e**2*sq
```

```
rt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/(3*d) + b**3*c**3*e**2*as
in(c + d*x)**3/(3*d) - 2*b**3*c**3*e**2*asin(c + d*x)/(9*d) + b**3*c**2*e**
2*x*asin(c + d*x)**3 - 2*b**3*c**2*e**2*x*asin(c + d*x)/3 + b**3*c**2*e**2*
sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/(3*d) - 2*b**3*c**2*
e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(27*d) + b**3*c*d*e**2*x**2*asin
(c + d*x)**3 - 2*b**3*c*d*e**2*x**2*asin(c + d*x)/3 + 2*b**3*c*e**2*x*sqrt(
-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/3 - 4*b**3*c*e**2*x*sqrt(
-c**2 - 2*c*d*x - d**2*x**2 + 1)/27 - 4*b**3*c*e**2*asin(c + d*x)/(3*d) + b
**3*d**2*e**2*x**3*asin(c + d*x)**3/3 - 2*b**3*d**2*e**2*x**3*asin(c + d*x)
/9 + b**3*d*e**2*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**
2/3 - 2*b**3*d*e**2*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/27 - 4*b**3*
e**2*x*asin(c + d*x)/3 + 2*b**3*e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*
asin(c + d*x)**2/(3*d) - 40*b**3*e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)
/(27*d), Ne(d, 0)), (c**2*e**2*x*(a + b*asin(c))**3, True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 504 vs. $2(211) = 422$.
time = 0.47, size = 504, normalized size = 2.14

$$\frac{((dx+c)^2-1)(dx+c)b^3e^2\arcsin(dx+c)^3}{3d}+\frac{((dx+c)^2-1)(dx+c)ab^2e^2\arcsin(dx+c)^2}{d}+\frac{(dx+c)b^3e^2\arcsin(dx+c)^3}{3d}-\frac{(-(dx+c)^2+1)^{\frac{3}{2}}b^3e^2\arcsin(dx+c)^2}{3d}+\frac{(dx+c)^3a^3e^2}{3d}+\frac{((dx+c)^2-1)(dx+c)a^2be^2\arcsin(dx+c)}{d}-\frac{2((dx+c)^2-1)(dx+c)b^3e^2\arcsin(dx+c)}{9d}+\frac{(dx+c)ab^2e^2\arcsin(dx+c)^2}{d}-\frac{2(-(dx+c)^2+1)^{\frac{3}{2}}ab^2e^2\arcsin(dx+c)}{3d}+\frac{\sqrt{-(dx+c)^2+1}\,b^3e^2\arcsin(dx+c)^2}{d}-\frac{2((dx+c)^2-1)(dx+c)ab^2e^2}{9d}+\frac{(dx+c)a^2be^2\arcsin(dx+c)}{d}-\frac{14(dx+c)b^3e^2\arcsin(dx+c)}{9d}-\frac{(-(dx+c)^2+1)^{\frac{3}{2}}a^2be^2}{3d}+\frac{2(-(dx+c)^2+1)^{\frac{3}{2}}b^3e^2}{27d}+\frac{2\sqrt{-(dx+c)^2+1}\,ab^2e^2\arcsin(dx+c)}{d}-\frac{14(dx+c)ab^2e^2}{9d}+\frac{\sqrt{-(dx+c)^2+1}\,a^2be^2}{d}-\frac{14\sqrt{-(dx+c)^2+1}\,b^3e^2}{9d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] 1/3*((d*x + c)^2 - 1)*(d*x + c)*b^3*e^2*arcsin(d*x + c)^3/d + ((d*x + c)^2
- 1)*(d*x + c)*a*b^2*e^2*arcsin(d*x + c)^2/d + 1/3*(d*x + c)*b^3*e^2*arcsin
(d*x + c)^3/d - 1/3*(-(d*x + c)^2 + 1)^(3/2)*b^3*e^2*arcsin(d*x + c)^2/d +
1/3*(d*x + c)^3*a^3*e^2/d + ((d*x + c)^2 - 1)*(d*x + c)*a^2*b*e^2*arcsin(d*
x + c)/d - 2/9*((d*x + c)^2 - 1)*(d*x + c)*b^3*e^2*arcsin(d*x + c)/d + (d*x
 + c)*a*b^2*e^2*arcsin(d*x + c)^2/d - 2/3*(-(d*x + c)^2 + 1)^(3/2)*a*b^2*e^
2*arcsin(d*x + c)/d + sqrt(-(d*x + c)^2 + 1)*b^3*e^2*arcsin(d*x + c)^2/d -
2/9*((d*x + c)^2 - 1)*(d*x + c)*a*b^2*e^2/d + (d*x + c)*a^2*b*e^2*arcsin(d*
x + c)/d - 14/9*(d*x + c)*b^3*e^2*arcsin(d*x + c)/d - 1/3*(-(d*x + c)^2 + 1
)^(3/2)*a^2*b*e^2/d + 2/27*(-(d*x + c)^2 + 1)^(3/2)*b^3*e^2/d + 2*sqrt(-(d*
x + c)^2 + 1)*a*b^2*e^2*arcsin(d*x + c)/d - 14/9*(d*x + c)*a*b^2*e^2/d + sq
rt(-(d*x + c)^2 + 1)*a^2*b*e^2/d - 14/9*sqrt(-(d*x + c)^2 + 1)*b^3*e^2/d
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (c\,e+d\,e\,x)^2\,(a+b\,\mathrm{asin}(c+d\,x))^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^2*(a + b*asin(c + d*x))^3,x)
```

```
[Out] int((c*e + d*e*x)^2*(a + b*asin(c + d*x))^3, x)
```

3.200 $\int (ce+dex)(a+b\text{ArcSin}(c+dx))^3\,dx$

Optimal. Leaf size=165

$$-\frac{3b^3e(c+dx)\sqrt{1-(c+dx)^2}}{8d}+\frac{3b^3e\text{ArcSin}(c+dx)}{8d}-\frac{3b^2e(c+dx)^2(a+b\text{ArcSin}(c+dx))}{4d}+\frac{3be(c+dx)\sqrt{1}}{}$$

```
[Out] 3/8*b^3*e*arcsin(d*x+c)/d-3/4*b^2*e*(d*x+c)^2*(a+b*arcsin(d*x+c))/d-1/4*e*(
a+b*arcsin(d*x+c))^3/d+1/2*e*(d*x+c)^2*(a+b*arcsin(d*x+c))^3/d-3/8*b^3*e*(d
*x+c)*(1-(d*x+c)^2)^(1/2)/d+3/4*b*e*(d*x+c)*(a+b*arcsin(d*x+c))^2*(1-(d*x+c
)^2)^(1/2)/d
```

Rubi [A]
time = 0.15, antiderivative size = 165, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$, Rules used = {4889, 12, 4723, 4795, 4737, 327, 222}

$$-\frac{3b^2e(c+dx)^2(a+b\text{ArcSin}(c+dx))}{4d}+\frac{3be(c+dx)\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^2}{4d}+\frac{e(c+dx)^2(a+b\text{ArcSin}(c+dx))^3}{2d}-\frac{e(a+b\text{ArcSin}(c+dx))^3}{4d}+\frac{3b^3e\text{ArcSin}(c+dx)}{8d}-\frac{3b^3e(c+dx)\sqrt{1-(c+dx)^2}}{8d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)*(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] (-3*b^3*e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(8*d) + (3*b^3*e*ArcSin[c + d*x]
)/(8*d) - (3*b^2*e*(c + d*x)^2*(a + b*ArcSin[c + d*x]))/(4*d) + (3*b*e*(c +
 d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^2)/(4*d) - (e*(a + b*Ar
cSin[c + d*x])^3)/(4*d) + (e*(c + d*x)^2*(a + b*ArcSin[c + d*x])^3)/(2*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex) \left(a+b\sin^{-1}(c+dx)\right)^3\,dx = \frac{\text{Subst}\left(\int ex(a+b\sin^{-1}(x))^3\,dx, x, c+dx\right)}{d}$$
$$= \frac{e\text{Subst}\left(\int x(a+b\sin^{-1}(x))^3\,dx, x, c+dx\right)}{d}$$
$$= \frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)^3}{2d} - \frac{(3be)\text{Subst}\left(\int \frac{x^2(a+b\sin^{-1}(x))^2}{\sqrt{1-x^2}}\,d\right.}{2d}$$
$$= \frac{3be(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{4d} + \frac{e(c+dx)^2(a}{}$$
$$= -\frac{3b^2e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)}{4d} + \frac{3be(c+dx)\sqrt{1-(c+dx)}}{4d}$$
$$= -\frac{3b^3e(c+dx)\sqrt{1-(c+dx)^2}}{8d} - \frac{3b^2e(c+dx)^2\left(a+b\sin^{-1}(c+d\right.}{4d}$$
$$= -\frac{3b^3e(c+dx)\sqrt{1-(c+dx)^2}}{8d} + \frac{3b^3e\sin^{-1}(c+dx)}{8d} - \frac{3b^2e(c+d}{}$$

Mathematica [A]
time = 0.15, size = 137, normalized size = 0.83

$$\frac{e\left(\frac{3}{2}b^3\left(-\left((c+dx)\sqrt{1-(c+dx)^2}\right)+\text{ArcSin}(c+dx)\right)-3b^2(c+dx)^2(a+b\text{ArcSin}(c+dx))+3b(c+dx)\sqrt{1-(c+dx)^2}(a+b\text{ArcSin}(c+dx))^2-(a+b\text{ArcSin}(c+dx))^3+2(c+dx)^2(a+b\text{ArcSin}(c+dx))^3\right)}{4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)*(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] (e*((3*b^3*(-((c + d*x)*Sqrt[1 - (c + d*x)^2]) + ArcSin[c + d*x]))/2 - 3*b^
2*(c + d*x)^2*(a + b*ArcSin[c + d*x]) + 3*b*(c + d*x)*Sqrt[1 - (c + d*x)^2]
*(a + b*ArcSin[c + d*x])^2 - (a + b*ArcSin[c + d*x])^3 + 2*(c + d*x)^2*(a +
 b*ArcSin[c + d*x])^3))/(4*d)
```

Maple [A]
time = 0.05, size = 266, normalized size = 1.61

method	result

derivativedivides	$\frac{\frac{e(dx+c)^2a^3}{2}+e\,b^3\left(\frac{\left((dx+c)^2-1\right)\arcsin(dx+c)^3}{2}+\frac{3\arcsin(dx+c)^2\left((dx+c)\sqrt{1-(dx+c)^2}+\arcsin(dx+c)\right)}{4}-\frac{3\left((dx+c)^2\right.}{}\right.}{}$
default	$\frac{\frac{e(dx+c)^2a^3}{2}+e\,b^3\left(\frac{\left((dx+c)^2-1\right)\arcsin(dx+c)^3}{2}+\frac{3\arcsin(dx+c)^2\left((dx+c)\sqrt{1-(dx+c)^2}+\arcsin(dx+c)\right)}{4}-\frac{3\left((dx+c)^2\right.}{}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)*(a+b*arcsin(d*x+c))^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(1/2*e*(d*x+c)^2*a^3+e*b^3*(1/2*((d*x+c)^2-1)*arcsin(d*x+c)^3+3/4*arcsi
n(d*x+c)^2*((d*x+c)*(1-(d*x+c)^2)^(1/2)+arcsin(d*x+c))-3/4*((d*x+c)^2-1)*ar
csin(d*x+c)-3/8*(d*x+c)*(1-(d*x+c)^2)^(1/2)-3/8*arcsin(d*x+c)-1/2*arcsin(d*
x+c)^3)+3*e*a*b^2*(1/2*((d*x+c)^2-1)*arcsin(d*x+c)^2+1/2*arcsin(d*x+c)*((d*
x+c)*(1-(d*x+c)^2)^(1/2)+arcsin(d*x+c))-1/4*arcsin(d*x+c)^2-1/4*(d*x+c)^2)+
3*e*a^2*b*(1/2*(d*x+c)^2*arcsin(d*x+c)+1/4*(d*x+c)*(1-(d*x+c)^2)^(1/2)-1/4*
arcsin(d*x+c)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] 1/2*a^3*d*x^2*e + 3/4*(2*x^2*arcsin(d*x + c) + d*(3*c^2*arcsin(-(d^2*x + c*
d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^3 + sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*
x/d^2 - (c^2 - 1)*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^3
- 3*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c/d^3))*a^2*b*d*e + a^3*c*x*e + 3*((
d*x + c)*arcsin(d*x + c) + sqrt(-(d*x + c)^2 + 1))*a^2*b*c*e/d + 1/2*(b^3*d
*x^2*e + 2*b^3*c*x*e)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)
)^3 + integrate(3/2*((b^3*d^2*x^2*e + 2*b^3*c*d*x*e)*sqrt(d*x + c + 1)*sqrt
(-d*x - c + 1)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2 + 2
*(a*b^2*d^3*x^3*e + 3*a*b^2*c*d^2*x^2*e + a*b^2*c^3*e - a*b^2*c*e + (3*a*b^
2*c^2*e - a*b^2*e)*d*x)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c +
1))^2)/(d^2*x^2 + 2*c*d*x + c^2 - 1), x)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 321 vs. $2(155) = 310$.

time = 0.96, size = 321, normalized size = 1.95

$$\frac{2\,(2\,b^3d^2x^2 + 4\,b^3cdx + 2\,b^3c^2 - b^3)\arcsin\left(dx + c\right)^3 e + 6\,(2\,ab^2d^2x^2 + 4\,ab^2cdx + 2\,ab^2c^2 - ab^2)\arcsin\left(dx + c\right)^2 e + 3\,(2\,(2\,a^2b - b^3)d^2x^2 + 4\,(2\,a^2b - b^3)cdx - 2\,a^2b + b^3 + 2\,(2\,a^2b - b^3)c^2)\arcsin\left(dx + c\right)e + 2\,((2\,a^3 - 3\,ab^2)d^2x^2 + 2\,(2\,a^3 - 3\,ab^2)cdx)e + 3\,\sqrt{-d^2x^2 - 2\,cdx - c^2 + 1}\,(2\,(b^3dx + b^3c)\arcsin\left(dx + c\right)^2 e + 4\,(ab^2dx + ab^2c)\arcsin\left(dx + c\right)e + ((2\,a^2b - b^3)dx + (2\,a^2b - b^3)c)e)}{8\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] 1/8*(2*(2*b^3*d^2*x^2 + 4*b^3*c*d*x + 2*b^3*c^2 - b^3)*arcsin(d*x + c)^3*e
+ 6*(2*a*b^2*d^2*x^2 + 4*a*b^2*c*d*x + 2*a*b^2*c^2 - a*b^2)*arcsin(d*x + c)
^2*e + 3*(2*(2*a^2*b - b^3)*d^2*x^2 + 4*(2*a^2*b - b^3)*c*d*x - 2*a^2*b + b
^3 + 2*(2*a^2*b - b^3)*c^2)*arcsin(d*x + c)*e + 2*((2*a^3 - 3*a*b^2)*d^2*x^
2 + 2*(2*a^3 - 3*a*b^2)*c*d*x)*e + 3*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*(2*
(b^3*d*x + b^3*c)*arcsin(d*x + c)^2*e + 4*(a*b^2*d*x + a*b^2*c)*arcsin(d*x
+ c)*e + ((2*a^2*b - b^3)*d*x + (2*a^2*b - b^3)*c)*e))/d
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 685 vs. $2(148) = 296$.
time = 0.40, size = 685, normalized size = 4.15

$$\begin{cases} a^3cex + \frac{a^3dex^2}{2} + \frac{3a^2bc^2e\operatorname{asin}(c+dx)}{2d} + 3a^2bcex\operatorname{asin}(c+dx) + \frac{3a^2bce\sqrt{-c^2-2cdx-d^2x^2+1}}{4d} + \frac{3a^2bdex^2\operatorname{asin}(c+dx)}{2} + \frac{3a^2bex\sqrt{-c^2-2cdx-d^2x^2+1}}{4} - \frac{3a^2be\operatorname{asin}(c+dx)}{4d} + \frac{3ab^2c^2e\operatorname{asin}^2(c+dx)}{2d} + 3ab^2cex\operatorname{asin}^2(c+dx) - \frac{3ab^2cex}{2} + \frac{3ab^2ce\sqrt{-c^2-2cdx-d^2x^2+1}\operatorname{asin}(c+dx)}{2d} + \frac{3ab^2dex^2\operatorname{asin}^2(c+dx)}{2} - \frac{3ab^2dex^2}{4} + \frac{3ab^2ex\sqrt{-c^2-2cdx-d^2x^2+1}\operatorname{asin}(c+dx)}{2} - \frac{3ab^2e\operatorname{asin}^2(c+dx)}{4d} + \frac{b^3c^2e\operatorname{asin}^3(c+dx)}{2d} - \frac{3b^3c^2e\operatorname{asin}(c+dx)}{4d} + b^3cex\operatorname{asin}^3(c+dx) - \frac{3b^3cex\operatorname{asin}(c+dx)}{2} + \frac{3b^3ce\sqrt{-c^2-2cdx-d^2x^2+1}\operatorname{asin}^2(c+dx)}{4d} - \frac{3b^3ce\sqrt{-c^2-2cdx-d^2x^2+1}}{8d} + \frac{b^3dex^2\operatorname{asin}^3(c+dx)}{2} - \frac{3b^3dex^2\operatorname{asin}(c+dx)}{4} + \frac{3b^3ex\sqrt{-c^2-2cdx-d^2x^2+1}\operatorname{asin}^2(c+dx)}{4} - \frac{3b^3ex\sqrt{-c^2-2cdx-d^2x^2+1}}{8} - \frac{b^3e\operatorname{asin}^3(c+dx)}{4d} + \frac{3b^3e\operatorname{asin}(c+dx)}{8d} & \text{for}\: d \neq 0 \\ cex(a+b\operatorname{asin}(c))^3 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*asin(d*x+c))**3,x)
```

```
[Out] Piecewise((a**3*c*e*x + a**3*d*e*x**2/2 + 3*a**2*b*c**2*e*asin(c + d*x)/(2*
d) + 3*a**2*b*c*e*x*asin(c + d*x) + 3*a**2*b*c*e*sqrt(-c**2 - 2*c*d*x - d**
2*x**2 + 1)/(4*d) + 3*a**2*b*d*e*x**2*asin(c + d*x)/2 + 3*a**2*b*e*x*sqrt(-
c**2 - 2*c*d*x - d**2*x**2 + 1)/4 - 3*a**2*b*e*asin(c + d*x)/(4*d) + 3*a*b*
*2*c**2*e*asin(c + d*x)**2/(2*d) + 3*a*b**2*c*e*x*asin(c + d*x)**2 - 3*a*b*
*2*c*e*x/2 + 3*a*b**2*c*e*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*
x)/(2*d) + 3*a*b**2*d*e*x**2*asin(c + d*x)**2/2 - 3*a*b**2*d*e*x**2/4 + 3*a
*b**2*e*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/2 - 3*a*b**2*
e*asin(c + d*x)**2/(4*d) + b**3*c**2*e*asin(c + d*x)**3/(2*d) - 3*b**3*c**2
*e*asin(c + d*x)/(4*d) + b**3*c*e*x*asin(c + d*x)**3 - 3*b**3*c*e*x*asin(c
+ d*x)/2 + 3*b**3*c*e*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**
2/(4*d) - 3*b**3*c*e*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(8*d) + b**3*d*e
*x**2*asin(c + d*x)**3/2 - 3*b**3*d*e*x**2*asin(c + d*x)/4 + 3*b**3*e*x*sqr
t(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/4 - 3*b**3*e*x*sqrt(-c*
*2 - 2*c*d*x - d**2*x**2 + 1)/8 - b**3*e*asin(c + d*x)**3/(4*d) + 3*b**3*e*
asin(c + d*x)/(8*d), Ne(d, 0)), (c*e*x*(a + b*asin(c))**3, True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 340 vs. $2(149) = 298$.
time = 0.46, size = 340, normalized size = 2.06

$$\frac{\left((dx+c)^2-1\right)b^3e\arcsin\left(dx+c\right)^3}{2\,d} + \frac{3\,\sqrt{-(dx+c)^2+1}\,(dx+c)b^3e\arcsin\left(dx+c\right)^2}{4\,d} + \frac{3\,\left((dx+c)^2-1\right)ab^2e\arcsin\left(dx+c\right)^2}{2\,d} + \frac{b^3e\arcsin\left(dx+c\right)^3}{4\,d} + \frac{3\,\sqrt{-(dx+c)^2+1}\,(dx+c)ab^2e\arcsin\left(dx+c\right)}{2\,d} + \frac{3\,\left((dx+c)^2-1\right)a^2be\arcsin\left(dx+c\right)}{2\,d} - \frac{3\,\left((dx+c)^2-1\right)b^3e\arcsin\left(dx+c\right)}{4\,d} + \frac{3\,ab^2e\arcsin\left(dx+c\right)^2}{4\,d} + \frac{3\,\sqrt{-(dx+c)^2+1}\,(dx+c)a^2be}{4\,d} - \frac{3\,\sqrt{-(dx+c)^2+1}\,(dx+c)b^3e}{8\,d} + \frac{\left((dx+c)^2-1\right)a^3e}{2\,d} - \frac{3\,\left((dx+c)^2-1\right)ab^2e}{4\,d} + \frac{3\,a^2be\arcsin\left(dx+c\right)}{4\,d} - \frac{3\,b^3e\arcsin\left(dx+c\right)}{8\,d} - \frac{3\,ab^2e}{8\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] 1/2*((d*x + c)^2 - 1)*b^3*e*arcsin(d*x + c)^3/d + 3/4*sqrt(-(d*x + c)^2 + 1
)*(d*x + c)*b^3*e*arcsin(d*x + c)^2/d + 3/2*((d*x + c)^2 - 1)*a*b^2*e*arcsi
n(d*x + c)^2/d + 1/4*b^3*e*arcsin(d*x + c)^3/d + 3/2*sqrt(-(d*x + c)^2 + 1)
*(d*x + c)*a*b^2*e*arcsin(d*x + c)/d + 3/2*((d*x + c)^2 - 1)*a^2*b*e*arcsin
(d*x + c)/d - 3/4*((d*x + c)^2 - 1)*b^3*e*arcsin(d*x + c)/d + 3/4*a*b^2*e*a
rcsin(d*x + c)^2/d + 3/4*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*a^2*b*e/d - 3/8*s
qrt(-(d*x + c)^2 + 1)*(d*x + c)*b^3*e/d + 1/2*((d*x + c)^2 - 1)*a^3*e/d - 3
/4*((d*x + c)^2 - 1)*a*b^2*e/d + 3/4*a^2*b*e*arcsin(d*x + c)/d - 3/8*b^3*e*
arcsin(d*x + c)/d - 3/8*a*b^2*e/d
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int (c\,e+d\,e\,x)\,\left(a+b\,\mathrm{asin}(c+d\,x)\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)*(a + b*asin(c + d*x))^3,x)
```

```
[Out] int((c*e + d*e*x)*(a + b*asin(c + d*x))^3, x)
```

3.201 $\int (a+b\mathbf{ArcSin}(c+dx))^3 \, dx$

Optimal. Leaf size=104

$$-6ab^2x-\frac{6b^3\sqrt{1-(c+dx)^2}}{d}-\frac{6b^3(c+dx)\text{ArcSin}(c+dx)}{d}+\frac{3b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^2}{d}+\frac{(c-$$

[Out] -6*a*b^2*x-6*b^3*(d*x+c)*arcsin(d*x+c)/d+(d*x+c)*(a+b*arcsin(d*x+c))^3/d-6*b^3*(1-(d*x+c)^2)^(1/2)/d+3*b*(a+b*arcsin(d*x+c))^2*(1-(d*x+c)^2)^(1/2)/d

Rubi [A]
time = 0.08, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$, Rules used = {4887, 4715, 4767, 267}

$$\frac{3b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^2}{d}+\frac{(c+dx)(a+b\text{ArcSin}(c+dx))^3}{d}-6ab^2x-\frac{6b^3(c+dx)\text{ArcSin}(c+dx)}{d}-\frac{6b^3\sqrt{1-(c+dx)^2}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] -6*a*b^2*x - (6*b^3*Sqrt[1 - (c + d*x)^2])/d - (6*b^3*(c + d*x)*ArcSin[c + d*x])/d + (3*b*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^2)/d + ((c + d*x)*(a + b*ArcSin[c + d*x])^3)/d
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] && NeQ[p, -1]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*ArcSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p + 1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\int \left(a+b\sin^{-1}(c+dx)\right)^3\,dx = \frac{\text{Subst}\left(\int (a+b\sin^{-1}(x))^3\,dx, x, c+dx\right)}{d}$$
$$= \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^3}{d} - \frac{(3b)\text{Subst}\left(\int \frac{x(a+b\sin^{-1}(x))^2}{\sqrt{1-x^2}}\,dx, x, c+dx\right)}{d}$$
$$= \frac{3b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^3}{d}$$
$$= -6ab^2x + \frac{3b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{d} + \frac{(c+dx)\left(a+b\sin^{-1}(\right.}{d}$$
$$= -6ab^2x - \frac{6b^3(c+dx)\sin^{-1}(c+dx)}{d} + \frac{3b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+d\right.}{d}$$
$$= -6ab^2x - \frac{6b^3\sqrt{1-(c+dx)^2}}{d} - \frac{6b^3(c+dx)\sin^{-1}(c+dx)}{d} + \frac{3b\sqrt{1-(c+}{}$$

Mathematica [A]
time = 0.05, size = 96, normalized size = 0.92

$$\frac{3b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^2+(c+dx)(a+b\text{ArcSin}(c+dx))^3-6b^2\left(a(c+dx)+b\sqrt{1-(c+dx)^2}+b(c+dx)\text{ArcSin}(c+dx)\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] (3*b*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^2 + (c + d*x)*(a + b*Arc
Sin[c + d*x])^3 - 6*b^2*(a*(c + d*x) + b*Sqrt[1 - (c + d*x)^2] + b*(c + d*x
)*ArcSin[c + d*x]))/d
```

Maple [A]
time = 0.04, size = 166, normalized size = 1.60

method	result
derivativedivides	$\frac{(dx+c)a^3+b^3\left((dx+c)\arcsin(dx+c)^3+3\arcsin(dx+c)^2\sqrt{1-(dx+c)^2}-6\sqrt{1-(dx+c)^2}-6(dx+c)\operatorname{arcs}\right.}{}$

default	$\frac{(dx+c)a^3+b^3\left((dx+c)\arcsin(dx+c)^3+3\arcsin(dx+c)^2\sqrt{1-(dx+c)^2}-6\sqrt{1-(dx+c)^2}-6(dx+c)\arcsin\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*((d*x+c)*a^3+b^3*((d*x+c)*arcsin(d*x+c)^3+3*arcsin(d*x+c)^2*(1-(d*x+c)^
2)^(1/2)-6*(1-(d*x+c)^2)^(1/2)-6*(d*x+c)*arcsin(d*x+c))+3*a*b^2*((d*x+c)*ar
csin(d*x+c)^2-2*d*x-2*c+2*arcsin(d*x+c)*(1-(d*x+c)^2)^(1/2))+3*a^2*b*((d*x+
c)*arcsin(d*x+c)+(1-(d*x+c)^2)^(1/2)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] b^3*x*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^3 + a^3*x + 3*
((d*x + c)*arcsin(d*x + c) + sqrt(-(d*x + c)^2 + 1))*a^2*b/d + integrate(3*
(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)*b^3*d*x*arctan2(d*x + c, sqrt(d*x + c
 + 1)*sqrt(-d*x - c + 1))^2 + (a*b^2*d^2*x^2 + 2*a*b^2*c*d*x + a*b^2*c^2 -
a*b^2)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2)/(d^2*x^2 +
 2*c*d*x + c^2 - 1), x)
```

Fricas [A]
time = 2.17, size = 158, normalized size = 1.52

$$\frac{(b^3dx+b^3c)\arcsin(dx+c)^3+(a^3-6\,ab^2)dx+3\,(ab^2dx+ab^2c)\arcsin(dx+c)^2+3\,((a^2b-2\,b^3)dx+(a^2b-2\,b^3)c)\arcsin(dx+c)+3\,\left(b^3\arcsin(dx+c)^2+2\,ab^2\arcsin(dx+c)+a^2b-2\,b^3\right)\sqrt{-d^2x^2-2\,cdx-c^2+1}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] ((b^3*d*x + b^3*c)*arcsin(d*x + c)^3 + (a^3 - 6*a*b^2)*d*x + 3*(a*b^2*d*x +
 a*b^2*c)*arcsin(d*x + c)^2 + 3*((a^2*b - 2*b^3)*d*x + (a^2*b - 2*b^3)*c)*a
rcsin(d*x + c) + 3*(b^3*arcsin(d*x + c)^2 + 2*a*b^2*arcsin(d*x + c) + a^2*b
 - 2*b^3)*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1))/d
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 282 vs. $2(92) = 184$.
time = 0.19, size = 282, normalized size = 2.71

$$\begin{cases} a^3x+\frac{3a^2bc\operatorname{asin}(c+dx)}{d}+3a^2bx\operatorname{asin}(c+dx)+\frac{3a^2b\sqrt{-c^2-2cdx-d^2x^2+1}}{d}+\frac{3ab^2c\operatorname{asin}^2(c+dx)}{d}+3ab^2x\operatorname{asin}^2(c+dx)-6ab^2x+\frac{6ab^2\sqrt{-c^2-2cdx-d^2x^2+1}\operatorname{asin}(c+dx)}{d}+\frac{b^3c\operatorname{asin}^3(c+dx)}{d}-\frac{6b^3c\operatorname{asin}(c+dx)}{d}+b^3x\operatorname{asin}^3(c+dx)-6b^3x\operatorname{asin}(c+dx)+\frac{3b^3\sqrt{-c^2-2cdx-d^2x^2+1}\operatorname{asin}^2(c+dx)}{d}-\frac{6b^3\sqrt{-c^2-2cdx-d^2x^2+1}}{d} & \text{for}\ d\neq 0\\ x(a+b\operatorname{asin}(c))^3 & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**3,x)
```

```
[Out] Piecewise((a**3*x + 3*a**2*b*c*asin(c + d*x)/d + 3*a**2*b*x*asin(c + d*x) +
 3*a**2*b*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/d + 3*a*b**2*c*asin(c + d*x
)**2/d + 3*a*b**2*x*asin(c + d*x)**2 - 6*a*b**2*x + 6*a*b**2*sqrt(-c**2 - 2
*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/d + b**3*c*asin(c + d*x)**3/d - 6*b**
3*c*asin(c + d*x)/d + b**3*x*asin(c + d*x)**3 - 6*b**3*x*asin(c + d*x) + 3*
b**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/d - 6*b**3*sqrt
(-c**2 - 2*c*d*x - d**2*x**2 + 1)/d, Ne(d, 0)), (x*(a + b*asin(c))**3, True
))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 208 vs. $2(100) = 200$.

time = 0.41, size = 208, normalized size = 2.00

$$\frac{(dx+c)b^3\arcsin(dx+c)^3}{d}+\frac{3(dx+c)ab^2\arcsin(dx+c)^2}{d}+\frac{3\sqrt{-(dx+c)^2+1}\,b^3\arcsin(dx+c)^2}{d}+\frac{3(dx+c)a^2b\arcsin(dx+c)}{d}-\frac{6(dx+c)b^3\arcsin(dx+c)}{d}+\frac{6\sqrt{-(dx+c)^2+1}\,ab^2\arcsin(dx+c)}{d}+\frac{(dx+c)a^3}{d}-\frac{6(dx+c)ab^2}{d}+\frac{3\sqrt{-(dx+c)^2+1}\,a^2b}{d}-\frac{6\sqrt{-(dx+c)^2+1}\,b^3}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] (d*x + c)*b^3*arcsin(d*x + c)^3/d + 3*(d*x + c)*a*b^2*arcsin(d*x + c)^2/d +
 3*sqrt(-(d*x + c)^2 + 1)*b^3*arcsin(d*x + c)^2/d + 3*(d*x + c)*a^2*b*arcsi
n(d*x + c)/d - 6*(d*x + c)*b^3*arcsin(d*x + c)/d + 6*sqrt(-(d*x + c)^2 + 1)
*a*b^2*arcsin(d*x + c)/d + (d*x + c)*a^3/d - 6*(d*x + c)*a*b^2/d + 3*sqrt(-
(d*x + c)^2 + 1)*a^2*b/d - 6*sqrt(-(d*x + c)^2 + 1)*b^3/d
```

Mupad [B]

time = 0.50, size = 152, normalized size = 1.46

$$a^3\,x-\frac{b^3\,\left(6\,\mathrm{asin}(c+d\,x)-\mathrm{asin}(c+d\,x)^3\right)\,\left(c+d\,x\right)}{d}+\frac{3\,a\,b^2\,\left(2\,\mathrm{asin}(c+d\,x)\,\sqrt{1-(c+d\,x)^2}+\left(\mathrm{asin}(c+d\,x)^2-2\right)\,\left(c+d\,x\right)\right)}{d}+\frac{3\,a^2\,b\,\left(\sqrt{1-(c+d\,x)^2}+\mathrm{asin}(c+d\,x)\,\left(c+d\,x\right)\right)}{d}+\frac{b^3\,\left(3\,\mathrm{asin}(c+d\,x)^2-6\right)\,\sqrt{1-(c+d\,x)^2}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^3,x)
```

```
[Out] a^3*x - (b^3*(6*asin(c + d*x) - asin(c + d*x)^3)*(c + d*x))/d + (3*a*b^2*(2
*asin(c + d*x)*(1 - (c + d*x)^2)^(1/2) + (asin(c + d*x)^2 - 2)*(c + d*x)))/
d + (3*a^2*b*((1 - (c + d*x)^2)^(1/2) + asin(c + d*x)*(c + d*x)))/d + (b^3*
(3*asin(c + d*x)^2 - 6)*(1 - (c + d*x)^2)^(1/2))/d
```

3.202 $\int \frac{(a+b\text{ArcSin}(c+dx))^3}{ce+dex}\,dx$

Optimal. Leaf size=169

$$-\frac{i(a+b\text{ArcSin}(c+dx))^4}{4bde}+\frac{(a+b\text{ArcSin}(c+dx))^3\log\left(1-e^{2i\text{ArcSin}(c+dx)}\right)}{de}-\frac{3ib(a+b\text{ArcSin}(c+dx))^2\text{PolyI}}{2de}$$

```
[Out] -1/4*I*(a+b*arcsin(d*x+c))^4/b/d/e+(a+b*arcsin(d*x+c))^3*ln(1-(I*(d*x+c)+(1
-(d*x+c)^2)^(1/2))^2)/d/e-3/2*I*b*(a+b*arcsin(d*x+c))^2*polylog(2,(I*(d*x+c
)+(1-(d*x+c)^2)^(1/2))^2)/d/e+3/2*b^2*(a+b*arcsin(d*x+c))*polylog(3,(I*(d*x
+c)+(1-(d*x+c)^2)^(1/2))^2)/d/e+3/4*I*b^3*polylog(4,(I*(d*x+c)+(1-(d*x+c)^2
)^(1/2))^2)/d/e
```

Rubi [A]
time = 0.15, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 9, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.391$, Rules used = {4889, 12, 4721, 3798, 2221, 2611, 6744, 2320, 6724}

$$\frac{3b^2\text{Li}_3\left(e^{2i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))}{2de}-\frac{3ib\text{Li}_2\left(e^{2i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))^2}{2de}-\frac{i(a+b\text{ArcSin}(c+dx))^4}{4bde}+\frac{\log\left(1-e^{2i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))^3}{de}+\frac{3ib^3\text{Li}_4\left(e^{2i\text{ArcSin}(c+dx)}\right)}{4de}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x),x]
```

```
[Out] ((-1/4*I)*(a + b*ArcSin[c + d*x])^4)/(b*d*e) + ((a + b*ArcSin[c + d*x])^3*L
og[1 - E^((2*I)*ArcSin[c + d*x])])/(d*e) - (((3*I)/2)*b*(a + b*ArcSin[c + d
*x])^2*PolyLog[2, E^((2*I)*ArcSin[c + d*x])])/(d*e) + (3*b^2*(a + b*ArcSin[
c + d*x])*PolyLog[3, E^((2*I)*ArcSin[c + d*x])])/(2*d*e) + (((3*I)/4)*b^3*P
olyLog[4, E^((2*I)*ArcSin[c + d*x])])/(d*e)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
```

```
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 3798

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[I*((c + d*x)^(m + 1)/(d*(m + 1))), x] - Dist[2*I, Int[(c + d*x)^m
*E^(2*I*k*Pi)*(E^(2*I*(e + f*x))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x)))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n*Cot[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6744

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[(e + f*x)^m*(PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p]/(b*c*p*Log[F])), x] - Dist[f*(m/(b*c*p*Log[F])), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+b\sin^{-1}(c+dx))^3}{ce+dex}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^3}{ex}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^3}{x}\,dx, x, c+dx\right)}{de}$$

$$= \frac{\text{Subst}\left(\int (a+bx)^3\cot(x)\,dx, x, \sin^{-1}(c+dx)\right)}{de}$$

$$= -\frac{i(a+b\sin^{-1}(c+dx))^4}{4bde} - \frac{(2i)\text{Subst}\left(\int \frac{e^{2ix}(a+bx)^3}{1-e^{2ix}}\,dx, x, \sin^{-1}(c+dx)\right)}{de}$$

$$= -\frac{i(a+b\sin^{-1}(c+dx))^4}{4bde} + \frac{(a+b\sin^{-1}(c+dx))^3\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{(\cdots}{\cdots}$$

$$= -\frac{i(a+b\sin^{-1}(c+dx))^4}{4bde} + \frac{(a+b\sin^{-1}(c+dx))^3\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{3\cdots}{\cdots}$$

$$= -\frac{i(a+b\sin^{-1}(c+dx))^4}{4bde} + \frac{(a+b\sin^{-1}(c+dx))^3\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{3\cdots}{\cdots}$$

$$= -\frac{i(a+b\sin^{-1}(c+dx))^4}{4bde} + \frac{(a+b\sin^{-1}(c+dx))^3\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{3\cdots}{\cdots}$$

$$= -\frac{i(a+b\sin^{-1}(c+dx))^4}{4bde} + \frac{(a+b\sin^{-1}(c+dx))^3\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - \frac{3\cdots}{\cdots}$$

Mathematica [A]
time = 0.12, size = 304, normalized size = 1.80

$$-\frac{i\left(8ab^2\pi^3+b^3\pi^4+96a^2b\text{ArcSin}(c+dx)^2-64ab^2\text{ArcSin}(c+dx)^3-16b^3\text{ArcSin}(c+dx)^4+192iab^2\text{ArcSin}(c+dx)^2\log\left(1-e^{-2i\text{ArcSin}(c+dx)}\right)+64ib^3\text{ArcSin}(c+dx)^3\log\left(1-e^{-2i\text{ArcSin}(c+dx)}\right)+192ia^2b\text{ArcSin}(c+dx)\log\left(1-e^{2i\text{ArcSin}(c+dx)}\right)+64ia^3\log(c+dx)-96b^2\text{ArcSin}(c+dx)(2a+b\text{ArcSin}(c+dx))\text{PolyLog}\left(2,e^{-2i\text{ArcSin}(c+dx)}\right)+96a^2b\text{PolyLog}\left(2,e^{2i\text{ArcSin}(c+dx)}\right)+96iab^2\text{PolyLog}\left(3,e^{-2i\text{ArcSin}(c+dx)}\right)+96ib^3\text{ArcSin}(c+dx)\text{PolyLog}\left(3,e^{-2i\text{ArcSin}(c+dx)}\right)+48b^3\text{PolyLog}\left(4,e^{-2i\text{ArcSin}(c+dx)}\right)\right)}{64de}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x),x]
```

```
[Out] ((-1/64*I)*(8*a*b^2*Pi^3 + b^3*Pi^4 + 96*a^2*b*ArcSin[c + d*x]^2 - 64*a*b^2
*ArcSin[c + d*x]^3 - 16*b^3*ArcSin[c + d*x]^4 + (192*I)*a*b^2*ArcSin[c + d*
x]^2*Log[1 - E^((-2*I)*ArcSin[c + d*x])] + (64*I)*b^3*ArcSin[c + d*x]^3*Log
[1 - E^((-2*I)*ArcSin[c + d*x])] + (192*I)*a^2*b*ArcSin[c + d*x]*Log[1 - E^
((2*I)*ArcSin[c + d*x])] + (64*I)*a^3*Log[c + d*x] - 96*b^2*ArcSin[c + d*x]
*(2*a + b*ArcSin[c + d*x])*PolyLog[2, E^((-2*I)*ArcSin[c + d*x])] + 96*a^2*
b*PolyLog[2, E^((2*I)*ArcSin[c + d*x])] + (96*I)*a*b^2*PolyLog[3, E^((-2*I)
*ArcSin[c + d*x])] + (96*I)*b^3*ArcSin[c + d*x]*PolyLog[3, E^((-2*I)*ArcSin
[c + d*x])] + 48*b^3*PolyLog[4, E^((-2*I)*ArcSin[c + d*x])]))/(d*e)
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 765 vs. $2(206) = 412$.
time = 0.22, size = 766, normalized size = 4.53

method	result
derivativedivides	$\frac{\frac{a^3 \ln(dx+c)}{e} - \frac{i b^3 \arcsin(dx+c)^4}{4e} + \frac{b^3 \arcsin(dx+c)^3 \ln\left(1+i(dx+c)+\sqrt{1-(dx+c)^2}\right)}{e} - \frac{3 i a^2 b \operatorname{polylog}\left(2, -i(dx+c) - \sqrt{1\right.}}{e}}{}$
default	$\frac{\frac{a^3 \ln(dx+c)}{e} - \frac{i b^3 \arcsin(dx+c)^4}{4e} + \frac{b^3 \arcsin(dx+c)^3 \ln\left(1+i(dx+c)+\sqrt{1-(dx+c)^2}\right)}{e} - \frac{3 i a^2 b \operatorname{polylog}\left(2, -i(dx+c) - \sqrt{1\right.}}{e}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^3/(d*e*x+c*e),x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(a^3/e*ln(d*x+c)-6*I*a*b^2/e*arcsin(d*x+c)*polylog(2,-I*(d*x+c)-(1-(d*x
+c)^2)^(1/2))+b^3/e*arcsin(d*x+c)^3*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-3*I
*b^3/e*arcsin(d*x+c)^2*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+6*b^3/e*ar
csin(d*x+c)*polylog(3,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-3*I*b^3/e*arcsin(d*x+
c)^2*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+b^3/e*arcsin(d*x+c)^3*ln(1-I*
(d*x+c)-(1-(d*x+c)^2)^(1/2))-3*I*a^2*b/e*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^
(1/2))+6*b^3/e*arcsin(d*x+c)*polylog(3,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-1/4*I
*b^3/e*arcsin(d*x+c)^4+6*I*b^3/e*polylog(4,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+
3*a*b^2/e*arcsin(d*x+c)^2*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-I*a*b^2/e*arc
sin(d*x+c)^3+6*a*b^2/e*polylog(3,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+3*a*b^2/e*
arcsin(d*x+c)^2*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+6*I*b^3/e*polylog(4,I*(
d*x+c)+(1-(d*x+c)^2)^(1/2))+6*a*b^2/e*polylog(3,I*(d*x+c)+(1-(d*x+c)^2)^(1/
2))-3/2*I*a^2*b/e*arcsin(d*x+c)^2+3*a^2*b/e*arcsin(d*x+c)*ln(1+I*(d*x+c)+(1
-(d*x+c)^2)^(1/2))+3*a^2*b/e*arcsin(d*x+c)*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/
2))-6*I*a*b^2/e*arcsin(d*x+c)*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-3*I*
a^2*b/e*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e),x, algorithm="maxima")
```

```
[Out] a^3*e^(-1)*log(d*x*e + c*e)/d + integrate((b^3*arctan2(d*x + c, sqrt(d*x +
c + 1)*sqrt(-d*x - c + 1))^3 + 3*a*b^2*arctan2(d*x + c, sqrt(d*x + c + 1)*s
qrt(-d*x - c + 1))^2 + 3*a^2*b*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x
 - c + 1)))/(d*x*e + c*e), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e),x, algorithm="fricas")
```

```
[Out] integral((b^3*arcsin(d*x + c)^3 + 3*a*b^2*arcsin(d*x + c)^2 + 3*a^2*b*arcsi
n(d*x + c) + a^3)*e^(-1)/(d*x + c), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a^3}{c+dx}\,dx + \int \frac{b^3 \operatorname{asin}^3(c+dx)}{c+dx}\,dx + \int \frac{3ab^2 \operatorname{asin}^2(c+dx)}{c+dx}\,dx + \int \frac{3a^2 b \operatorname{asin}(c+dx)}{c+dx}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**3/(d*e*x+c*e),x)
```

```
[Out] (Integral(a**3/(c + d*x), x) + Integral(b**3*asin(c + d*x)**3/(c + d*x), x)
 + Integral(3*a*b**2*asin(c + d*x)**2/(c + d*x), x) + Integral(3*a**2*b*asi
n(c + d*x)/(c + d*x), x))/e
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^3/(d*e*x + c*e), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^3}{c\,e+d\,e\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^3/(c*e + d*e*x),x)
```

```
[Out] int((a + b*asin(c + d*x))^3/(c*e + d*e*x), x)
```

3.203 $\int \frac{(a+b\mathbf{ArcSin}(c+dx))^3}{(ce+dex)^2}\,dx$

Optimal. Leaf size=190

$$-\frac{(a+b\text{ArcSin}(c+dx))^3}{de^2(c+dx)}-\frac{6b(a+b\text{ArcSin}(c+dx))^2\tanh^{-1}\left(e^{i\text{ArcSin}(c+dx)}\right)}{de^2}+\frac{6ib^2(a+b\text{ArcSin}(c+dx))\text{Pol}}{de^2}$$

```
[Out] -(a+b*arcsin(d*x+c))^3/d/e^2/(d*x+c)-6*b*(a+b*arcsin(d*x+c))^2*arctanh(I*(d
*x+c)+(1-(d*x+c)^2)^(1/2))/d/e^2+6*I*b^2*(a+b*arcsin(d*x+c))*polylog(2,-I*(
d*x+c)-(1-(d*x+c)^2)^(1/2))/d/e^2-6*I*b^2*(a+b*arcsin(d*x+c))*polylog(2,I*(
d*x+c)+(1-(d*x+c)^2)^(1/2))/d/e^2-6*b^3*polylog(3,-I*(d*x+c)-(1-(d*x+c)^2)^
(1/2))/d/e^2+6*b^3*polylog(3,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))/d/e^2
```

Rubi [A]

time = 0.18, antiderivative size = 190, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.348$, Rules used = {4889, 12, 4723, 4803, 4268, 2611, 2320, 6724}

$$\frac{6ib^2\text{Li}_2\left(-e^{i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))}{de^2}-\frac{6ib^2\text{Li}_2\left(e^{i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))}{de^2}-\frac{(a+b\text{ArcSin}(c+dx))^3}{de^2(c+dx)}-\frac{6b\tanh^{-1}\left(e^{i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))^2}{de^2}-\frac{6b^3\text{Li}_3\left(-e^{i\text{ArcSin}(c+dx)}\right)}{de^2}+\frac{6b^3\text{Li}_3\left(e^{i\text{ArcSin}(c+dx)}\right)}{de^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x)^2,x]
```

```
[Out] -((a + b*ArcSin[c + d*x])^3/(d*e^2*(c + d*x))) - (6*b*(a + b*ArcSin[c + d*x
])^2*ArcTanh[E^(I*ArcSin[c + d*x])])/(d*e^2) + ((6*I)*b^2*(a + b*ArcSin[c +
 d*x])*PolyLog[2, -E^(I*ArcSin[c + d*x])])/(d*e^2) - ((6*I)*b^2*(a + b*ArcS
in[c + d*x])*PolyLog[2, E^(I*ArcSin[c + d*x])])/(d*e^2) - (6*b^3*PolyLog[3,
 -E^(I*ArcSin[c + d*x])])/(d*e^2) + (6*b^3*PolyLog[3, E^(I*ArcSin[c + d*x])
])/(d*e^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
```

```
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 4268

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[-
2*(c + d*x)^m*(ArcTanh[E^(I*(e + f*x))]/f), x] + (-Dist[d*(m/f), Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[d*(m/f), Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4803

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[(1/c^(m + 1))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*
x^2]], Subst[Int[(a + b*x)^n*Sin[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a,
 b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{(ce+dex)^2}\,dx = \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^3}{e^2x^2}\,dx,x,c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^3}{x^2}\,dx,x,c+dx\right)}{de^2}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{de^2(c+dx)} + \frac{(3b)\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^2}{x\sqrt{1-x^2}}\,dx,x,c+dx\right)}{de^2}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{de^2(c+dx)} + \frac{(3b)\text{Subst}\left(\int (a+bx)^2\csc(x)\,dx,x,\sin^{-1}(c+dx)\right)}{de^2}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{de^2(c+dx)} - \frac{6b\left(a+b\sin^{-1}(c+dx)\right)^2\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)}{de^2} -$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{de^2(c+dx)} - \frac{6b\left(a+b\sin^{-1}(c+dx)\right)^2\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)}{de^2} +$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{de^2(c+dx)} - \frac{6b\left(a+b\sin^{-1}(c+dx)\right)^2\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)}{de^2} +$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{de^2(c+dx)} - \frac{6b\left(a+b\sin^{-1}(c+dx)\right)^2\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)}{de^2} +$$

Mathematica [A]
time = 0.52, size = 342, normalized size = 1.80

$$-\frac{\frac{a^3}{c+dx}+\frac{3a^2b\text{ArcSin}(c+dx)}{c+dx}+\frac{3ab^2\text{ArcSin}(c+dx)^2}{c+dx}+\frac{b^3\text{ArcSin}(c+dx)^3}{c+dx}-6ab^2\text{ArcSin}(c+dx)\log\left(1-e^{i\text{ArcSin}(c+dx)}\right)-3b^3\text{ArcSin}(c+dx)^2\log\left(1-e^{i\text{ArcSin}(c+dx)}\right)+6ab^2\text{ArcSin}(c+dx)\log\left(1+e^{i\text{ArcSin}(c+dx)}\right)+3b^3\text{ArcSin}(c+dx)^2\log\left(1+e^{i\text{ArcSin}(c+dx)}\right)-3a^2b\log(c+dx)+3a^2b\log\left(1+\sqrt{1-c^2-2cdx-d^2x^2}\right)-6ib^2(a+b\text{ArcSin}(c+dx))\text{PolyLog}\left(2,-e^{i\text{ArcSin}(c+dx)}\right)+6ib^2(a+b\text{ArcSin}(c+dx))\text{PolyLog}\left(2,e^{i\text{ArcSin}(c+dx)}\right)+6b^3\text{PolyLog}\left(3,-e^{i\text{ArcSin}(c+dx)}\right)-6b^3\text{PolyLog}\left(3,e^{i\text{ArcSin}(c+dx)}\right)}{de^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x)^2,x]
```

```
[Out] -((a^3/(c + d*x) + (3*a^2*b*ArcSin[c + d*x])/(c + d*x) + (3*a*b^2*ArcSin[c
+ d*x]^2)/(c + d*x) + (b^3*ArcSin[c + d*x]^3)/(c + d*x) - 6*a*b^2*ArcSin[c
+ d*x]*Log[1 - E^(I*ArcSin[c + d*x])] - 3*b^3*ArcSin[c + d*x]^2*Log[1 - E^(
I*ArcSin[c + d*x])] + 6*a*b^2*ArcSin[c + d*x]*Log[1 + E^(I*ArcSin[c + d*x])
] + 3*b^3*ArcSin[c + d*x]^2*Log[1 + E^(I*ArcSin[c + d*x])] - 3*a^2*b*Log[c
+ d*x] + 3*a^2*b*Log[1 + Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2]] - (6*I)*b^2*(a
+ b*ArcSin[c + d*x])*PolyLog[2, -E^(I*ArcSin[c + d*x])] + (6*I)*b^2*(a + b*
ArcSin[c + d*x])*PolyLog[2, E^(I*ArcSin[c + d*x])] + 6*b^3*PolyLog[3, -E^(I
*ArcSin[c + d*x])] - 6*b^3*PolyLog[3, E^(I*ArcSin[c + d*x])])/(d*e^2))
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 486 vs. $2(238) = 476$.
time = 0.37, size = 487, normalized size = 2.56

method	result
derivativedivides	$\frac{-\frac{a^3}{e^2(dx+c)} - \frac{b^3 \arcsin(dx+c)^3}{e^2(dx+c)} - \frac{3b^3 \arcsin(dx+c)^2 \ln\left(1+i(dx+c)+\sqrt{1-(dx+c)^2}\right)}{e^2} + \frac{6ib^3 \arcsin(dx+c) \operatorname{polylog}\left(2,-i(dx+\right.}{e^2}}{}$
default	$\frac{-\frac{a^3}{e^2(dx+c)} - \frac{b^3 \arcsin(dx+c)^3}{e^2(dx+c)} - \frac{3b^3 \arcsin(dx+c)^2 \ln\left(1+i(dx+c)+\sqrt{1-(dx+c)^2}\right)}{e^2} + \frac{6ib^3 \arcsin(dx+c) \operatorname{polylog}\left(2,-i(dx+\right.}{e^2}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(-a^3/e^2/(d*x+c)-b^3/e^2/(d*x+c)*arcsin(d*x+c)^3-3*b^3/e^2*arcsin(d*x+
c)^2*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+6*I*b^3/e^2*arcsin(d*x+c)*polylog(
2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-6*b^3/e^2*polylog(3,-I*(d*x+c)-(1-(d*x+c)
^2)^(1/2))+3*b^3/e^2*arcsin(d*x+c)^2*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-6*
I*b^3/e^2*arcsin(d*x+c)*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+6*b^3/e^2*
polylog(3,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-3*a*b^2/e^2/(d*x+c)*arcsin(d*x+c)^
2+6*a*b^2/e^2*arcsin(d*x+c)*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-6*a*b^2/e^2
*arcsin(d*x+c)*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+6*I*a*b^2/e^2*dilog(1+I*
(d*x+c)+(1-(d*x+c)^2)^(1/2))-6*I*a*b^2/e^2*dilog(1-I*(d*x+c)-(1-(d*x+c)^2)^
(1/2))+3*a^2*b/e^2*(-1/(d*x+c)*arcsin(d*x+c)-arctanh(1/(1-(d*x+c)^2)^(1/2))
))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^2,x, algorithm="maxima")
```

```
[Out] -3*a^2*b*(e^(-2)*log(2*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)/abs(d^2*x*e^2 + c
*d*e^2) + 2/abs(d^2*x*e^2 + c*d*e^2))/d + arcsin(d*x + c)/(d^2*x*e^2 + c*d*
e^2)) - a^3/(d^2*x*e^2 + c*d*e^2) - (b^3*arctan2(d*x + c, sqrt(d*x + c + 1)
*sqrt(-d*x - c + 1))^3 + (d^2*x*e^2 + c*d*e^2)*integrate(3*((b^3*d*x + b^3*
c)*sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)*arctan2(d*x + c, sqrt(d*x + c + 1)*
sqrt(-d*x - c + 1))^2 - (a*b^2*d^2*x^2 + 2*a*b^2*c*d*x + a*b^2*c^2 - a*b^2)
*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2)/(d^4*x^4*e^2 + 4
```

```
*c*d^3*x^3*e^2 + (6*c^2*e^2 - e^2)*d^2*x^2 + c^4*e^2 + 2*(2*c^3*e^2 - c*e^2
)*d*x - c^2*e^2), x))/(d^2*x*e^2 + c*d*e^2)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^2,x, algorithm="fricas")
[Out] integral((b^3*arcsin(d*x + c)^3 + 3*a*b^2*arcsin(d*x + c)^2 + 3*a^2*b*arcsi
n(d*x + c) + a^3)*e^(-2)/(d^2*x^2 + 2*c*d*x + c^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a^3}{c^2+2cdx+d^2x^2}\,dx + \int \frac{b^3\operatorname{asin}^3(c+dx)}{c^2+2cdx+d^2x^2}\,dx + \int \frac{3ab^2\operatorname{asin}^2(c+dx)}{c^2+2cdx+d^2x^2}\,dx + \int \frac{3a^2b\operatorname{asin}(c+dx)}{c^2+2cdx+d^2x^2}\,dx}{e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**3/(d*e*x+c*e)**2,x)
[Out] (Integral(a**3/(c**2 + 2*c*d*x + d**2*x**2), x) + Integral(b**3*asin(c + d*
x)**3/(c**2 + 2*c*d*x + d**2*x**2), x) + Integral(3*a*b**2*asin(c + d*x)**2
/(c**2 + 2*c*d*x + d**2*x**2), x) + Integral(3*a**2*b*asin(c + d*x)/(c**2 +
 2*c*d*x + d**2*x**2), x))/e**2
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^2,x, algorithm="giac")
[Out] integrate((b*arcsin(d*x + c) + a)^3/(d*e*x + c*e)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^3}{{\left(c\,e+d\,e\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^3/(c*e + d*e*x)^2,x)
[Out] int((a + b*asin(c + d*x))^3/(c*e + d*e*x)^2, x)
```

3.204 $\int \frac{(a+b\text{ArcSin}(c+dx))^3}{(ce+dex)^3}\,dx$

Optimal. Leaf size=167

$$-\frac{3ib(a+b\text{ArcSin}(c+dx))^2}{2de^3}-\frac{3b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^2}{2de^3(c+dx)}-\frac{(a+b\text{ArcSin}(c+dx))^3}{2de^3(c+dx)^2}+\frac{3b^2(a+$$

```
[Out] -3/2*I*b*(a+b*arcsin(d*x+c))^2/d/e^3-1/2*(a+b*arcsin(d*x+c))^3/d/e^3/(d*x+c
)^2+3*b^2*(a+b*arcsin(d*x+c))*ln(1-(I*(d*x+c)+(1-(d*x+c)^2)^(1/2))^2)/d/e^3
-3/2*I*b^3*polylog(2,(I*(d*x+c)+(1-(d*x+c)^2)^(1/2))^2)/d/e^3-3/2*b*(a+b*ar
csin(d*x+c))^2*(1-(d*x+c)^2)^(1/2)/d/e^3/(d*x+c)
```

Rubi [A]
time = 0.18, antiderivative size = 167, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 9, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.391$, Rules used = {4889, 12, 4723, 4771, 4721, 3798, 2221, 2317, 2438}

$$\frac{3b^2\log\left(1-e^{2i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))}{de^3}-\frac{3b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^2}{2de^3(c+dx)}-\frac{3ib(a+b\text{ArcSin}(c+dx))^2}{2de^3}-\frac{(a+b\text{ArcSin}(c+dx))^3}{2de^3(c+dx)^2}-\frac{3ib^3\text{Li}_2\left(e^{2i\text{ArcSin}(c+dx)}\right)}{2de^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x)^3,x]
```

```
[Out] (((-3*I)/2)*b*(a + b*ArcSin[c + d*x])^2)/(d*e^3) - (3*b*Sqrt[1 - (c + d*x)^
2]*(a + b*ArcSin[c + d*x])^2)/(2*d*e^3*(c + d*x)) - (a + b*ArcSin[c + d*x])
^3/(2*d*e^3*(c + d*x)^2) + (3*b^2*(a + b*ArcSin[c + d*x])*Log[1 - E^((2*I)*
ArcSin[c + d*x])])/(d*e^3) - (((3*I)/2)*b^3*PolyLog[2, E^((2*I)*ArcSin[c +
d*x])])/(d*e^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
```

```
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3798

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[I*((c + d*x)^(m + 1)/(d*(m + 1))), x] - Dist[2*I, Int[(c + d*x)^m
*E^(2*I*k*Pi)*(E^(2*I*(e + f*x))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x)))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n*Cot[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4771

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*x)^(m + 1)*(d + e*x^2)^(p + 1)*((a + b
*ArcSin[c*x])^n/(d*f*(m + 1))), x] - Dist[b*c*(n/(f*(m + 1)))*Simp[(d + e*x
^2)^p/(1 - c^2*x^2)^p], Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*Ar
cSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d, e, f, m, p}, x] && EqQ[c^2
*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] && NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{(a+b\sin^{-1}(c+dx))^3}{(ce+dex)^3}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^3}{e^3x^3}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^3}{x^3}\,dx, x, c+dx\right)}{de^3}$$

$$= -\frac{(a+b\sin^{-1}(c+dx))^3}{2de^3(c+dx)^2} + \frac{(3b)\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^2}{x^2\sqrt{1-x^2}}\,dx, x, c+dx\right)}{2de^3}$$

$$= -\frac{3b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))^2}{2de^3(c+dx)} - \frac{(a+b\sin^{-1}(c+dx))^3}{2de^3(c+dx)^2} + \frac{(3b^2)\,\text{S}}{}$$

$$= -\frac{3b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))^2}{2de^3(c+dx)} - \frac{(a+b\sin^{-1}(c+dx))^3}{2de^3(c+dx)^2} + \frac{(3b^2)\,\text{S}}{}$$

$$= -\frac{3ib(a+b\sin^{-1}(c+dx))^2}{2de^3} - \frac{3b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))^2}{2de^3(c+dx)} - \frac{(a}{}$$

$$= -\frac{3ib(a+b\sin^{-1}(c+dx))^2}{2de^3} - \frac{3b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))^2}{2de^3(c+dx)} - \frac{(a}{}$$

$$= -\frac{3ib(a+b\sin^{-1}(c+dx))^2}{2de^3} - \frac{3b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))^2}{2de^3(c+dx)} - \frac{(a}{}$$

$$= -\frac{3ib(a+b\sin^{-1}(c+dx))^2}{2de^3} - \frac{3b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))^2}{2de^3(c+dx)} - \frac{(a}{}$$

Mathematica [A]
time = 0.51, size = 248, normalized size = 1.49

$$-\frac{3b^2\left(a+b(c+dx)\left(ic+idx+\sqrt{1-c^2-2cdx-d^2x^2}\right)\right)\text{ArcSin}(c+dx)^2+b^3\text{ArcSin}(c+dx)^3+3b\text{ArcSin}(c+dx)\left(a\left(a+2b(c+dx)\sqrt{1-c^2-2cdx-d^2x^2}\right)-2b^2(c+dx)^2\log\left(1-e^{2i\text{ArcSin}(c+dx)}\right)\right)+a\left(a\left(a+3b(c+dx)\sqrt{1-c^2-2cdx-d^2x^2}\right)-6b^2(c+dx)^2\log(c+dx)\right)+3ib^3(c+dx)^2\text{PolyLog}\left(2,e^{2i\text{ArcSin}(c+dx)}\right)}{2de^3(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x)^3,x]
```

```
[Out] -1/2*(3*b^2*(a + b*(c + d*x)*(I*c + I*d*x + Sqrt[1 - c^2 - 2*c*d*x - d^2*x^
2]))*ArcSin[c + d*x]^2 + b^3*ArcSin[c + d*x]^3 + 3*b*ArcSin[c + d*x]*(a*(a
+ 2*b*(c + d*x)*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2]) - 2*b^2*(c + d*x)^2*Log[
1 - E^((2*I)*ArcSin[c + d*x])]) + a*(a*(a + 3*b*(c + d*x)*Sqrt[1 - c^2 - 2*
c*d*x - d^2*x^2]) - 6*b^2*(c + d*x)^2*Log[c + d*x]) + (3*I)*b^3*(c + d*x)^2
*PolyLog[2, E^((2*I)*ArcSin[c + d*x])])/(d*e^3*(c + d*x)^2)
```

Maple [**B**] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 363 vs. 2(179) = 358.
time = 0.38, size = 364, normalized size = 2.18

method	result
derivativedivides	$\frac{-\frac{a^3}{2e^3(dx+c)^2}-\frac{3ib^3\arcsin(dx+c)^2}{2e^3}-\frac{3b^3\arcsin(dx+c)^2\sqrt{1-(dx+c)^2}}{2e^3(dx+c)}-\frac{b^3\arcsin(dx+c)^3}{2e^3(dx+c)^2}+\frac{3b^3\arcsin(dx+c)\ln\left(1+i(dx\right.}{}}{}$
default	$\frac{-\frac{a^3}{2e^3(dx+c)^2}-\frac{3ib^3\arcsin(dx+c)^2}{2e^3}-\frac{3b^3\arcsin(dx+c)^2\sqrt{1-(dx+c)^2}}{2e^3(dx+c)}-\frac{b^3\arcsin(dx+c)^3}{2e^3(dx+c)^2}+\frac{3b^3\arcsin(dx+c)\ln\left(1+i(dx\right.}{}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(-1/2*a^3/e^3/(d*x+c)^2-3/2*I*b^3/e^3*arcsin(d*x+c)^2-3/2*b^3/e^3*arcsi
n(d*x+c)^2/(d*x+c)*(1-(d*x+c)^2)^(1/2)-1/2*b^3/e^3*arcsin(d*x+c)^3/(d*x+c)^
2+3*b^3/e^3*arcsin(d*x+c)*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+3*b^3/e^3*arc
sin(d*x+c)*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-3*I*b^3/e^3*polylog(2,-I*(d*
x+c)-(1-(d*x+c)^2)^(1/2))-3*I*b^3/e^3*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/
2))-3/2*a*b^2/e^3*arcsin(d*x+c)^2/(d*x+c)^2-3*a*b^2/e^3/(d*x+c)*arcsin(d*x+
c)*(1-(d*x+c)^2)^(1/2)+3*a*b^2/e^3*ln(d*x+c)+3*a^2*b/e^3*(-1/2/(d*x+c)^2*ar
csin(d*x+c)-1/2/(d*x+c)*(1-(d*x+c)^2)^(1/2)))
```

Maxima [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^3,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^3,x, algorithm="fricas")
```

```
[Out] integral((b^3*arcsin(d*x + c)^3 + 3*a*b^2*arcsin(d*x + c)^2 + 3*a^2*b*arcsi
n(d*x + c) + a^3)*e^(-3)/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a^3}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx + \int \frac{b^3\operatorname{asin}^3(c+dx)}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx + \int \frac{3ab^2\operatorname{asin}^2(c+dx)}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx + \int \frac{3a^2b\operatorname{asin}(c+dx)}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**3/(d*e*x+c*e)**3,x)
```

```
[Out] (Integral(a**3/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integr
al(b**3*asin(c + d*x)**3/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x
) + Integral(3*a*b**2*asin(c + d*x)**2/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 +
 d**3*x**3), x) + Integral(3*a**2*b*asin(c + d*x)/(c**3 + 3*c**2*d*x + 3*c*
d**2*x**2 + d**3*x**3), x))/e**3
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^3,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^3/(d*e*x + c*e)^3, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(a+b\operatorname{asin}(c+d\,x)\right)}^3}{{\left(c\,e+d\,e\,x\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^3/(c*e + d*e*x)^3,x)
```

```
[Out] int((a + b*asin(c + d*x))^3/(c*e + d*e*x)^3, x)
```

3.205 $\int \frac{(a+b\text{ArcSin}(c+dx))^3}{(ce+dex)^4}\,dx$

Optimal. Leaf size=291

$$-\frac{b^2(a+b\text{ArcSin}(c+dx))}{de^4(c+dx)}-\frac{b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^2}{2de^4(c+dx)^2}-\frac{(a+b\text{ArcSin}(c+dx))^3}{3de^4(c+dx)^3}-\frac{b(a+b\text{Ar}}{}$$

```
[Out] -b^2*(a+b*arcsin(d*x+c))/d/e^4/(d*x+c)-1/3*(a+b*arcsin(d*x+c))^3/d/e^4/(d*x
+c)^3-b*(a+b*arcsin(d*x+c))^2*arctanh(I*(d*x+c)+(1-(d*x+c)^2)^(1/2))/d/e^4-
b^3*arctanh((1-(d*x+c)^2)^(1/2))/d/e^4+I*b^2*(a+b*arcsin(d*x+c))*polylog(2,
-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))/d/e^4-I*b^2*(a+b*arcsin(d*x+c))*polylog(2,I
*(d*x+c)+(1-(d*x+c)^2)^(1/2))/d/e^4-b^3*polylog(3,-I*(d*x+c)-(1-(d*x+c)^2)^
(1/2))/d/e^4+b^3*polylog(3,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))/d/e^4-1/2*b*(a+b*
arcsin(d*x+c))^2*(1-(d*x+c)^2)^(1/2)/d/e^4/(d*x+c)^2
```

Rubi [A]
time = 0.29, antiderivative size = 291, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 12, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.522$, Rules used = {4889, 12, 4723, 4789, 4803, 4268, 2611, 2320, 6724, 272, 65, 212}

$$\frac{ib^2\text{Li}_2\left(-e^{i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))}{de^4}-\frac{ib^2\text{Li}_2\left(e^{i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))}{de^4}-\frac{b^2(a+b\text{ArcSin}(c+dx))}{de^4(c+dx)}-\frac{b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^2}{2de^4(c+dx)^2}-\frac{(a+b\text{ArcSin}(c+dx))^3}{3de^4(c+dx)^3}-\frac{b\tanh^{-1}\left(e^{i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))^2}{de^4}-\frac{b^3\text{Li}_3\left(-e^{i\text{ArcSin}(c+dx)}\right)}{de^4}+\frac{b^3\text{Li}_3\left(e^{i\text{ArcSin}(c+dx)}\right)}{de^4}-\frac{b^3\tanh^{-1}\left(\sqrt{1-(c+dx)^2}\right)}{de^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x)^4,x]
```

```
[Out] -((b^2*(a + b*ArcSin[c + d*x]))/(d*e^4*(c + d*x))) - (b*Sqrt[1 - (c + d*x)^
2]*(a + b*ArcSin[c + d*x])^2)/(2*d*e^4*(c + d*x)^2) - (a + b*ArcSin[c + d*x
])^3/(3*d*e^4*(c + d*x)^3) - (b*(a + b*ArcSin[c + d*x])^2*ArcTanh[E^(I*ArcS
in[c + d*x])])/(d*e^4) - (b^3*ArcTanh[Sqrt[1 - (c + d*x)^2]])/(d*e^4) + (I*
b^2*(a + b*ArcSin[c + d*x])*PolyLog[2, -E^(I*ArcSin[c + d*x])])/(d*e^4) - (
I*b^2*(a + b*ArcSin[c + d*x])*PolyLog[2, E^(I*ArcSin[c + d*x])])/(d*e^4) -
(b^3*PolyLog[3, -E^(I*ArcSin[c + d*x])])/(d*e^4) + (b^3*PolyLog[3, E^(I*Arc
Sin[c + d*x])])/(d*e^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
```

```
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 212

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1/(Rt[a, 2]*Rt[-b, 2]))*
ArcTanh[Rt[-b, 2]*(x/Rt[a, 2])], x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 4268

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[-
2*(c + d*x)^m*(ArcTanh[E^(I*(e + f*x))]/f), x] + (-Dist[d*(m/f), Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[d*(m/f), Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4789

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*x)^(m + 1)*(d + e*x^2)^(p + 1)*((a + b
*ArcSin[c*x])^n/(d*f*(m + 1))), x] + (Dist[c^2*((m + 2*p + 3)/(f^2*(m + 1))
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[b*c
*(n/(f*(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)^(m + 1)*(1
- c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c
, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && ILtQ[m, -1]
```

Rule 4803

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[(1/c^(m + 1))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*
x^2]], Subst[Int[(a + b*x)^n*Sin[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a,
 b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{(ce+dex)^4}\,dx = \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^3}{e^4x^4}\,dx,x,c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^3}{x^4}\,dx,x,c+dx\right)}{de^4}$$

$$= -\frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{3de^4(c+dx)^3} + \frac{b\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^2}{x^3\sqrt{1-x^2}}\,dx,x,c+dx\right)}{de^4}$$

$$= -\frac{b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^4(c+dx)^2} - \frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{3de^4(c+dx)^3} + \frac{b\text{Subst}}{}$$

$$= -\frac{b^2\left(a+b\sin^{-1}(c+dx)\right)}{de^4(c+dx)} - \frac{b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^4(c+dx)^2} - \frac{(a+b}{3a}$$

$$= -\frac{b^2\left(a+b\sin^{-1}(c+dx)\right)}{de^4(c+dx)} - \frac{b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^4(c+dx)^2} - \frac{(a+b}{3a}$$

$$= -\frac{b^2\left(a+b\sin^{-1}(c+dx)\right)}{de^4(c+dx)} - \frac{b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^4(c+dx)^2} - \frac{(a+b}{3a}$$

$$= -\frac{b^2\left(a+b\sin^{-1}(c+dx)\right)}{de^4(c+dx)} - \frac{b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^4(c+dx)^2} - \frac{(a+b}{3a}$$

$$= -\frac{b^2\left(a+b\sin^{-1}(c+dx)\right)}{de^4(c+dx)} - \frac{b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{2de^4(c+dx)^2} - \frac{(a+b}{3a}$$

Mathematica [B] Both result and optimal contain complex but leaf count is larger than twice the leaf count of optimal. 732 vs. 2(291) = 582.
time = 7.23, size = 732, normalized size = 2.52

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x)^4,x]
```

```
[Out] -1/3*a^3/(d*e^4*(c + d*x)^3) - (a^2*b*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2])/(2
*d*e^4*(c + d*x)^2) - (a^2*b*ArcSin[c + d*x])/(d*e^4*(c + d*x)^3) + (a^2*b*
Log[c + d*x])/(2*d*e^4) - (a^2*b*Log[1 + Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2]]
)/(2*d*e^4) + (a*b^2*((8*I)*PolyLog[2, -E^(I*ArcSin[c + d*x])] - (2*(2 + 4*
```

```
ArcSin[c + d*x]^2 - 2*Cos[2*ArcSin[c + d*x]] - 3*(c + d*x)*ArcSin[c + d*x]*
Log[1 - E^(I*ArcSin[c + d*x])] + 3*(c + d*x)*ArcSin[c + d*x]*Log[1 + E^(I*A
rcSin[c + d*x])] + (4*I)*(c + d*x)^3*PolyLog[2, E^(I*ArcSin[c + d*x])] + 2*
ArcSin[c + d*x]*Sin[2*ArcSin[c + d*x]] + ArcSin[c + d*x]*Log[1 - E^(I*ArcSi
n[c + d*x])]*Sin[3*ArcSin[c + d*x]] - ArcSin[c + d*x]*Log[1 + E^(I*ArcSin[c
 + d*x])]*Sin[3*ArcSin[c + d*x]]))/(c + d*x)^3))/(8*d*e^4) + (b^3*(-24*ArcS
in[c + d*x]*Cot[ArcSin[c + d*x]/2] - 4*ArcSin[c + d*x]^3*Cot[ArcSin[c + d*x
]/2] - 6*ArcSin[c + d*x]^2*Csc[ArcSin[c + d*x]/2]^2 - (c + d*x)*ArcSin[c +
d*x]^3*Csc[ArcSin[c + d*x]/2]^4 + 24*ArcSin[c + d*x]^2*Log[1 - E^(I*ArcSin[
c + d*x])] - 24*ArcSin[c + d*x]^2*Log[1 + E^(I*ArcSin[c + d*x])] + 48*Log[T
an[ArcSin[c + d*x]/2]] + (48*I)*ArcSin[c + d*x]*PolyLog[2, -E^(I*ArcSin[c +
 d*x])] - (48*I)*ArcSin[c + d*x]*PolyLog[2, E^(I*ArcSin[c + d*x])] - 48*Pol
yLog[3, -E^(I*ArcSin[c + d*x])] + 48*PolyLog[3, E^(I*ArcSin[c + d*x])] + 6*
ArcSin[c + d*x]^2*Sec[ArcSin[c + d*x]/2]^2 - (16*ArcSin[c + d*x]^3*Sin[ArcS
in[c + d*x]/2]^4)/(c + d*x)^3 - 24*ArcSin[c + d*x]*Tan[ArcSin[c + d*x]/2] -
 4*ArcSin[c + d*x]^3*Tan[ArcSin[c + d*x]/2]))/(48*d*e^4)
```

Maple [A]
time = 0.60, size = 646, normalized size = 2.22

method	result
derivativedivides	$\frac{-\frac{a^3}{3e^4(dx+c)^3}-\frac{b^3\arcsin(dx+c)^2\sqrt{1-(dx+c)^2}}{2e^4(dx+c)^2}-\frac{b^3\arcsin(dx+c)^3}{3e^4(dx+c)^3}-\frac{b^3\arcsin(dx+c)}{e^4(dx+c)}-\frac{b^3\arcsin(dx+c)^2\ln\left(1+i(dx+c)\right.}{2e^4}$
default	$\frac{-\frac{a^3}{3e^4(dx+c)^3}-\frac{b^3\arcsin(dx+c)^2\sqrt{1-(dx+c)^2}}{2e^4(dx+c)^2}-\frac{b^3\arcsin(dx+c)^3}{3e^4(dx+c)^3}-\frac{b^3\arcsin(dx+c)}{e^4(dx+c)}-\frac{b^3\arcsin(dx+c)^2\ln\left(1+i(dx+c)\right.}{2e^4}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^4,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(-1/3*a^3/e^4/(d*x+c)^3-1/2*b^3/e^4/(d*x+c)^2*arcsin(d*x+c)^2*(1-(d*x+c
)^2)^(1/2)-1/3*b^3/e^4/(d*x+c)^3*arcsin(d*x+c)^3-b^3/e^4/(d*x+c)*arcsin(d*x
+c)-1/2*b^3/e^4*arcsin(d*x+c)^2*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-I*a*b^2
/e^4*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-b^3/e^4*polylog(3,-I*(d*x+c)-
(1-(d*x+c)^2)^(1/2))+1/2*b^3/e^4*arcsin(d*x+c)^2*ln(1-I*(d*x+c)-(1-(d*x+c)^
```

```
2)^(1/2))+I*a*b^2/e^4*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+b^3/e^4*pol
ylog(3,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-2*b^3/e^4*arctanh(I*(d*x+c)+(1-(d*x+c
)^2)^(1/2))-a*b^2/e^4/(d*x+c)^2*arcsin(d*x+c)*(1-(d*x+c)^2)^(1/2)-a*b^2/e^4
/(d*x+c)^3*arcsin(d*x+c)^2-a*b^2/e^4/(d*x+c)-a*b^2/e^4*arcsin(d*x+c)*ln(1+I
*(d*x+c)+(1-(d*x+c)^2)^(1/2))+I*b^3/e^4*arcsin(d*x+c)*polylog(2,-I*(d*x+c)-
(1-(d*x+c)^2)^(1/2))+a*b^2/e^4*arcsin(d*x+c)*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(
1/2))-I*b^3/e^4*arcsin(d*x+c)*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+3*a^
2*b/e^4*(-1/3/(d*x+c)^3*arcsin(d*x+c)-1/6/(d*x+c)^2*(1-(d*x+c)^2)^(1/2)-1/6
*arctanh(1/(1-(d*x+c)^2)^(1/2))))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^4,x, algorithm="maxima")
```

```
[Out] -1/3*a^3/(d^4*x^3*e^4 + 3*c*d^3*x^2*e^4 + 3*c^2*d^2*x*e^4 + c^3*d*e^4) - 1/
3*(b^3*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^3 + 3*(d^4*x^
3*e^4 + 3*c*d^3*x^2*e^4 + 3*c^2*d^2*x*e^4 + c^3*d*e^4)*integrate(((b^3*d*x
+ b^3*c)*sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)*arctan2(d*x + c, sqrt(d*x + c
 + 1)*sqrt(-d*x - c + 1))^2 - 3*(a*b^2*d^2*x^2 + 2*a*b^2*c*d*x + a*b^2*c^2
- a*b^2)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2 - 3*(a^2*
b*d^2*x^2 + 2*a^2*b*c*d*x + a^2*b*c^2 - a^2*b)*arctan2(d*x + c, sqrt(d*x +
c + 1)*sqrt(-d*x - c + 1)))/(d^6*x^6*e^4 + 6*c*d^5*x^5*e^4 + (15*c^2*e^4 -
e^4)*d^4*x^4 + 4*(5*c^3*e^4 - c*e^4)*d^3*x^3 + c^6*e^4 + 3*(5*c^4*e^4 - 2*c
^2*e^4)*d^2*x^2 - c^4*e^4 + 2*(3*c^5*e^4 - 2*c^3*e^4)*d*x), x))/(d^4*x^3*e^
4 + 3*c*d^3*x^2*e^4 + 3*c^2*d^2*x*e^4 + c^3*d*e^4)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^4,x, algorithm="fricas")
```

```
[Out] integral((b^3*arcsin(d*x + c)^3 + 3*a*b^2*arcsin(d*x + c)^2 + 3*a^2*b*arcsi
n(d*x + c) + a^3)*e^(-4)/(d^4*x^4 + 4*c*d^3*x^3 + 6*c^2*d^2*x^2 + 4*c^3*d*x
 + c^4), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a^{3}}{c^{4}+4c^{3}dx+6c^{2}d^{2}x^{2}+4cd^{3}x^{3}+d^{4}x^{4}}\,dx + \int \frac{b^{3}\operatorname{asin}^{3}(c+dx)}{c^{4}+4c^{3}dx+6c^{2}d^{2}x^{2}+4cd^{3}x^{3}+d^{4}x^{4}}\,dx + \int \frac{3ab^{2}\operatorname{asin}^{2}(c+dx)}{c^{4}+4c^{3}dx+6c^{2}d^{2}x^{2}+4cd^{3}x^{3}+d^{4}x^{4}}\,dx + \int \frac{3a^{2}b\operatorname{asin}(c+dx)}{c^{4}+4c^{3}dx+6c^{2}d^{2}x^{2}+4cd^{3}x^{3}+d^{4}x^{4}}\,dx}{e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**3/(d*e*x+c*e)**4,x)
```

```
[Out] (Integral(a**3/(c**4 + 4*c**3*d*x + 6*c**2*d**2*x**2 + 4*c*d**3*x**3 + d**4
*x**4), x) + Integral(b**3*asin(c + d*x)**3/(c**4 + 4*c**3*d*x + 6*c**2*d**
2*x**2 + 4*c*d**3*x**3 + d**4*x**4), x) + Integral(3*a*b**2*asin(c + d*x)**
2/(c**4 + 4*c**3*d*x + 6*c**2*d**2*x**2 + 4*c*d**3*x**3 + d**4*x**4), x) +
Integral(3*a**2*b*asin(c + d*x)/(c**4 + 4*c**3*d*x + 6*c**2*d**2*x**2 + 4*c
*d**3*x**3 + d**4*x**4), x))/e**4
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^4,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^3/(d*e*x + c*e)^4, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\mathrm{asin}(c + d\,x))^3}{(c\,e + d\,e\,x)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^3/(c*e + d*e*x)^4,x)
```

```
[Out] int((a + b*asin(c + d*x))^3/(c*e + d*e*x)^4, x)
```

3.206 $\int (ce+dex)^3(a+b\mathbf{ArcSin}(c+dx))^4\,dx$

Optimal. Leaf size=357

$$\frac{45b^4e^3(c+dx)^2}{128d}+\frac{3b^4e^3(c+dx)^4}{128d}-\frac{45b^3e^3(c+dx)\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))}{64d}-\frac{3b^3e^3(c+dx)^3\sqrt{1}}{}$$

```
[Out] 45/128*b^4*e^3*(d*x+c)^2/d+3/128*b^4*e^3*(d*x+c)^4/d+45/128*b^2*e^3*(a+b*ar
csin(d*x+c))^2/d-9/16*b^2*e^3*(d*x+c)^2*(a+b*arcsin(d*x+c))^2/d-3/16*b^2*e^
3*(d*x+c)^4*(a+b*arcsin(d*x+c))^2/d-3/32*e^3*(a+b*arcsin(d*x+c))^4/d+1/4*e^
3*(d*x+c)^4*(a+b*arcsin(d*x+c))^4/d-45/64*b^3*e^3*(d*x+c)*(a+b*arcsin(d*x+c
))*(1-(d*x+c)^2)^(1/2)/d-3/32*b^3*e^3*(d*x+c)^3*(a+b*arcsin(d*x+c))*(1-(d*x
+c)^2)^(1/2)/d+3/8*b*e^3*(d*x+c)*(a+b*arcsin(d*x+c))^3*(1-(d*x+c)^2)^(1/2)/
d+1/4*b*e^3*(d*x+c)^3*(a+b*arcsin(d*x+c))^3*(1-(d*x+c)^2)^(1/2)/d
```

Rubi [A]

time = 0.44, antiderivative size = 357, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.261$, Rules used = {4889, 12, 4723, 4795, 4737, 30}

$$-\frac{3b^3e^3(c+dx)^3\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))}{32d}-\frac{45b^3e^3(c+dx)\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))}{64d}-\frac{3b^2e^3(c+dx)^4(a+b\text{ArcSin}(c+dx))^2}{16d}+\frac{45b^2e^3(a+b\text{ArcSin}(c+dx))^2}{128d}-\frac{9b^2e^3(c+dx)^2(a+b\text{ArcSin}(c+dx))^2}{16d}+\frac{be^3(c+dx)^3\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^3}{4d}+\frac{3be^3(c+dx)\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^3}{8d}+\frac{e^3(c+dx)^4(a+b\text{ArcSin}(c+dx))^4}{4d}-\frac{3e^3(a+b\text{ArcSin}(c+dx))^4}{32d}+\frac{3b^4e^3(c+dx)^4}{128d}+\frac{45b^4e^3(c+dx)^2}{128d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3*(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] (45*b^4*e^3*(c + d*x)^2)/(128*d) + (3*b^4*e^3*(c + d*x)^4)/(128*d) - (45*b^
3*e^3*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(64*d) - (3*
b^3*e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(32*d) +
 (45*b^2*e^3*(a + b*ArcSin[c + d*x])^2)/(128*d) - (9*b^2*e^3*(c + d*x)^2*(a
 + b*ArcSin[c + d*x])^2)/(16*d) - (3*b^2*e^3*(c + d*x)^4*(a + b*ArcSin[c +
d*x])^2)/(16*d) + (3*b*e^3*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c
+ d*x])^3)/(8*d) + (b*e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c
 + d*x])^3)/(4*d) - (3*e^3*(a + b*ArcSin[c + d*x])^4)/(32*d) + (e^3*(c + d*
x)^4*(a + b*ArcSin[c + d*x])^4)/(4*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)^3 \left(a+b\sin^{-1}(c+dx)\right)^4 \, dx = \frac{\text{Subst}\left(\int e^3x^3(a+b\sin^{-1}(x))^4 \, dx, x, c+dx\right)}{d}$$

$$= \frac{e^3\text{Subst}\left(\int x^3(a+b\sin^{-1}(x))^4 \, dx, x, c+dx\right)}{d}$$

$$= \frac{e^3(c+dx)^4 \left(a+b\sin^{-1}(c+dx)\right)^4}{4d} - \frac{(be^3)\,\text{Subst}\left(\int \frac{x^4(a+b\sin^{-1}(x))^3}{\sqrt{1-x^2}}\right.}{d}$$

$$= \frac{be^3(c+dx)^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^3}{4d} + \frac{e^3(c+dx)^4}{}$$

$$= -\frac{3b^2e^3(c+dx)^4\left(a+b\sin^{-1}(c+dx)\right)^2}{16d} + \frac{3be^3(c+dx)\sqrt{1-(c+}}{}$$

$$= -\frac{3b^3e^3(c+dx)^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{32d} - \frac{9b^2e^3(c}{}$$

$$= \frac{3b^4e^3(c+dx)^4}{128d} - \frac{45b^3e^3(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+\right.}{64d}$$

$$= \frac{45b^4e^3(c+dx)^2}{128d} + \frac{3b^4e^3(c+dx)^4}{128d} - \frac{45b^3e^3(c+dx)\sqrt{1-(c+dx}}{64d}$$

Mathematica [A]
time = 0.33, size = 287, normalized size = 0.80

$$\frac{e^3\left(\frac{45}{4}b^4(c+dx)^2+\frac{3}{4}b^4(c+dx)^4-\frac{45}{2}b^3(c+dx)\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))-3b^3(c+dx)^3\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))+\frac{45}{4}b^2(a+b\text{ArcSin}(c+dx))^2-18b^2(c+dx)^2(a+b\text{ArcSin}(c+dx))^2-6b^2(c+dx)^4(a+b\text{ArcSin}(c+dx))^2+12b(c+dx)\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^3+8b(c+dx)^3\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^3-3(a+b\text{ArcSin}(c+dx))^4+8(c+dx)^4(a+b\text{ArcSin}(c+dx))^4\right)}{32d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^3*(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] (e^3*((45*b^4*(c + d*x)^2)/4 + (3*b^4*(c + d*x)^4)/4 - (45*b^3*(c + d*x)*Sq
rt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/2 - 3*b^3*(c + d*x)^3*Sqrt[1 -
 (c + d*x)^2]*(a + b*ArcSin[c + d*x]) + (45*b^2*(a + b*ArcSin[c + d*x])^2)/
4 - 18*b^2*(c + d*x)^2*(a + b*ArcSin[c + d*x])^2 - 6*b^2*(c + d*x)^4*(a + b
*ArcSin[c + d*x])^2 + 12*b*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c
+ d*x])^3 + 8*b*(c + d*x)^3*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^3
 - 3*(a + b*ArcSin[c + d*x])^4 + 8*(c + d*x)^4*(a + b*ArcSin[c + d*x])^4))/
(32*d)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 656 vs. $2(327) = 654$.
time = 0.12, size = 657, normalized size = 1.84 Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^4,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(1/4*e^3*(d*x+c)^4*a^4+e^3*b^4*(1/4*(d*x+c)^4*arcsin(d*x+c)^4-1/8*arcsi
n(d*x+c)^3*(-2*(d*x+c)^3*(1-(d*x+c)^2)^(1/2)-3*(d*x+c)*(1-(d*x+c)^2)^(1/2)+
3*arcsin(d*x+c))-3/16*(d*x+c)^4*arcsin(d*x+c)^2+3/64*arcsin(d*x+c)*(-2*(d*x
+c)^3*(1-(d*x+c)^2)^(1/2)-3*(d*x+c)*(1-(d*x+c)^2)^(1/2)+3*arcsin(d*x+c))+27
/128*arcsin(d*x+c)^2+3/512*(2*(d*x+c)^2+3)^2-9/16*((d*x+c)^2-1)*arcsin(d*x+
c)^2-9/16*arcsin(d*x+c)*((d*x+c)*(1-(d*x+c)^2)^(1/2)+arcsin(d*x+c))+9/32*(d
*x+c)^2+9/32*arcsin(d*x+c)^4)+4*e^3*a*b^3*(1/4*(d*x+c)^4*arcsin(d*x+c)^3-3/
32*arcsin(d*x+c)^2*(-2*(d*x+c)^3*(1-(d*x+c)^2)^(1/2)-3*(d*x+c)*(1-(d*x+c)^2
)^(1/2)+3*arcsin(d*x+c))-3/32*(d*x+c)^4*arcsin(d*x+c)-3/256*(d*x+c)*(2*(d*x
+c)^2+3)*(1-(d*x+c)^2)^(1/2)-27/256*arcsin(d*x+c)-9/32*((d*x+c)^2-1)*arcsin
(d*x+c)-9/64*(d*x+c)*(1-(d*x+c)^2)^(1/2)+3/16*arcsin(d*x+c)^3)+6*e^3*a^2*b^
2*(1/4*(d*x+c)^4*arcsin(d*x+c)^2-1/16*arcsin(d*x+c)*(-2*(d*x+c)^3*(1-(d*x+c
)^2)^(1/2)-3*(d*x+c)*(1-(d*x+c)^2)^(1/2)+3*arcsin(d*x+c))+3/32*arcsin(d*x+c
)^2-1/128*(2*(d*x+c)^2+3)^2)+4*e^3*a^3*b*(1/4*(d*x+c)^4*arcsin(d*x+c)+1/16*
(d*x+c)^3*(1-(d*x+c)^2)^(1/2)+3/32*(d*x+c)*(1-(d*x+c)^2)^(1/2)-3/32*arcsin(
d*x+c)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^4,x, algorithm="maxima")
```

```
[Out] 1/4*a^4*d^3*x^4*e^3 + a^4*c*d^2*x^3*e^3 + 3/2*a^4*c^2*d*x^2*e^3 + 3*(2*x^2*
arcsin(d*x + c) + d*(3*c^2*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d
^2))/d^3 + sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*x/d^2 - (c^2 - 1)*arcsin(-(d^
2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^3 - 3*sqrt(-d^2*x^2 - 2*c*d*x -
 c^2 + 1)*c/d^3))*a^3*b*c^2*d*e^3 + 2/3*(6*x^3*arcsin(d*x + c) + d*(2*sqrt(
-d^2*x^2 - 2*c*d*x - c^2 + 1)*x^2/d^2 - 15*c^3*arcsin(-(d^2*x + c*d)/sqrt(c
^2*d^2 - (c^2 - 1)*d^2))/d^4 - 5*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c*x/d^3
 + 9*(c^2 - 1)*c*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^4 +
 15*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c^2/d^4 - 4*sqrt(-d^2*x^2 - 2*c*d*x
- c^2 + 1)*(c^2 - 1)/d^4))*a^3*b*c*d^2*e^3 + 1/24*(24*x^4*arcsin(d*x + c) +
 (6*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*x^3/d^2 - 14*sqrt(-d^2*x^2 - 2*c*d*x
 - c^2 + 1)*c*x^2/d^3 + 105*c^4*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 -
 1)*d^2))/d^5 + 35*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c^2*x/d^4 - 90*(c^2 -
 1)*c^2*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^5 - 105*sqrt
(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c^3/d^5 - 9*sqrt(-d^2*x^2 - 2*c*d*x - c^2 +
1)*(c^2 - 1)*x/d^4 + 9*(c^2 - 1)^2*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^
2 - 1)*d^2))/d^5 + 55*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*(c^2 - 1)*c/d^5)*d
```

```
)*a^3*b*d^3*e^3 + a^4*c^3*x*e^3 + 4*((d*x + c)*arcsin(d*x + c) + sqrt(-(d*x
 + c)^2 + 1))*a^3*b*c^3*e^3/d + 1/4*(b^4*d^3*x^4*e^3 + 4*b^4*c*d^2*x^3*e^3
+ 6*b^4*c^2*d*x^2*e^3 + 4*b^4*c^3*x*e^3)*arctan2(d*x + c, sqrt(d*x + c + 1)
*sqrt(-d*x - c + 1))^4 + integrate(((b^4*d^4*x^4*e^3 + 4*b^4*c*d^3*x^3*e^3
+ 6*b^4*c^2*d^2*x^2*e^3 + 4*b^4*c^3*d*x*e^3)*sqrt(d*x + c + 1)*sqrt(-d*x -
c + 1)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^3 + 4*(a*b^3*
d^5*x^5*e^3 + 5*a*b^3*c*d^4*x^4*e^3 + a*b^3*c^5*e^3 - a*b^3*c^3*e^3 + (10*a
*b^3*c^2*e^3 - a*b^3*e^3)*d^3*x^3 + (10*a*b^3*c^3*e^3 - 3*a*b^3*c*e^3)*d^2*
x^2 + (5*a*b^3*c^4*e^3 - 3*a*b^3*c^2*e^3)*d*x)*arctan2(d*x + c, sqrt(d*x +
c + 1)*sqrt(-d*x - c + 1))^3 + 6*(a^2*b^2*d^5*x^5*e^3 + 5*a^2*b^2*c*d^4*x^4
*e^3 + a^2*b^2*c^5*e^3 - a^2*b^2*c^3*e^3 + (10*a^2*b^2*c^2*e^3 - a^2*b^2*e^
3)*d^3*x^3 + (10*a^2*b^2*c^3*e^3 - 3*a^2*b^2*c*e^3)*d^2*x^2 + (5*a^2*b^2*c^
4*e^3 - 3*a^2*b^2*c^2*e^3)*d*x)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*
x - c + 1))^2)/(d^2*x^2 + 2*c*d*x + c^2 - 1), x)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 1032 vs. $2(316) = 632$.
time = 1.23, size = 1032, normalized size = 2.89

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^4,x, algorithm="fricas")
```

```
[Out] 1/128*(4*(8*b^4*d^4*x^4 + 32*b^4*c*d^3*x^3 + 48*b^4*c^2*d^2*x^2 + 32*b^4*c^
3*d*x + 8*b^4*c^4 - 3*b^4)*arcsin(d*x + c)^4*e^3 + 16*(8*a*b^3*d^4*x^4 + 32
*a*b^3*c*d^3*x^3 + 48*a*b^3*c^2*d^2*x^2 + 32*a*b^3*c^3*d*x + 8*a*b^3*c^4 -
3*a*b^3)*arcsin(d*x + c)^3*e^3 + 3*(8*(8*a^2*b^2 - b^4)*d^4*x^4 + 32*(8*a^2
*b^2 - b^4)*c*d^3*x^3 - 24*b^4*c^2 + 8*(8*a^2*b^2 - b^4)*c^4 - 24*(b^4 - 2*
(8*a^2*b^2 - b^4)*c^2)*d^2*x^2 - 24*a^2*b^2 + 15*b^4 - 16*(3*b^4*c - 2*(8*a
^2*b^2 - b^4)*c^3)*d*x)*arcsin(d*x + c)^2*e^3 + 2*(8*(8*a^3*b - 3*a*b^3)*d^
4*x^4 + 32*(8*a^3*b - 3*a*b^3)*c*d^3*x^3 - 72*a*b^3*c^2 + 8*(8*a^3*b - 3*a*
b^3)*c^4 - 24*(3*a*b^3 - 2*(8*a^3*b - 3*a*b^3)*c^2)*d^2*x^2 - 24*a^3*b + 45
*a*b^3 - 16*(9*a*b^3*c - 2*(8*a^3*b - 3*a*b^3)*c^3)*d*x)*arcsin(d*x + c)*e^
3 + ((32*a^4 - 24*a^2*b^2 + 3*b^4)*d^4*x^4 + 4*(32*a^4 - 24*a^2*b^2 + 3*b^4
)*c*d^3*x^3 - 3*(24*a^2*b^2 - 15*b^4 - 2*(32*a^4 - 24*a^2*b^2 + 3*b^4)*c^2)
*d^2*x^2 + 2*(2*(32*a^4 - 24*a^2*b^2 + 3*b^4)*c^3 - 9*(8*a^2*b^2 - 5*b^4)*c
)*d*x)*e^3 + 2*(8*(2*b^4*d^3*x^3 + 6*b^4*c*d^2*x^2 + 2*b^4*c^3 + 3*b^4*c +
3*(2*b^4*c^2 + b^4)*d*x)*arcsin(d*x + c)^3*e^3 + 24*(2*a*b^3*d^3*x^3 + 6*a*
b^3*c*d^2*x^2 + 2*a*b^3*c^3 + 3*a*b^3*c + 3*(2*a*b^3*c^2 + a*b^3)*d*x)*arcs
in(d*x + c)^2*e^3 + 3*(2*(8*a^2*b^2 - b^4)*d^3*x^3 + 6*(8*a^2*b^2 - b^4)*c*
d^2*x^2 + 2*(8*a^2*b^2 - b^4)*c^3 + 3*(8*a^2*b^2 - 5*b^4 + 2*(8*a^2*b^2 - b
^4)*c^2)*d*x + 3*(8*a^2*b^2 - 5*b^4)*c)*arcsin(d*x + c)*e^3 + (2*(8*a^3*b -
 3*a*b^3)*d^3*x^3 + 6*(8*a^3*b - 3*a*b^3)*c*d^2*x^2 + 2*(8*a^3*b - 3*a*b^3)
*c^3 + 3*(8*a^3*b - 15*a*b^3 + 2*(8*a^3*b - 3*a*b^3)*c^2)*d*x + 3*(8*a^3*b
- 15*a*b^3)*c)*e^3)*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1))/d
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 2876 vs. $2(325) = 650$.

time = 1.54, size = 2876, normalized size = 8.06

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3*(a+b*asin(d*x+c))**4,x)
```

```
[Out] Piecewise((a**4*c**3*e**3*x + 3*a**4*c**2*d*e**3*x**2/2 + a**4*c*d**2*e**3*
x**3 + a**4*d**3*e**3*x**4/4 + a**3*b*c**4*e**3*asin(c + d*x)/d + 4*a**3*b*
c**3*e**3*x*asin(c + d*x) + a**3*b*c**3*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x*
*2 + 1)/(4*d) + 6*a**3*b*c**2*d*e**3*x**2*asin(c + d*x) + 3*a**3*b*c**2*e**
3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/4 + 4*a**3*b*c*d**2*e**3*x**3*asi
n(c + d*x) + 3*a**3*b*c*d*e**3*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/4
 + 3*a**3*b*c*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(8*d) + a**3*b*d**
3*e**3*x**4*asin(c + d*x) + a**3*b*d**2*e**3*x**3*sqrt(-c**2 - 2*c*d*x - d*
*2*x**2 + 1)/4 + 3*a**3*b*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/8 -
3*a**3*b*e**3*asin(c + d*x)/(8*d) + 3*a**2*b**2*c**4*e**3*asin(c + d*x)**2/
(2*d) + 6*a**2*b**2*c**3*e**3*x*asin(c + d*x)**2 - 3*a**2*b**2*c**3*e**3*x/
4 + 3*a**2*b**2*c**3*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*
x)/(4*d) + 9*a**2*b**2*c**2*d*e**3*x**2*asin(c + d*x)**2 - 9*a**2*b**2*c**2
*d*e**3*x**2/8 + 9*a**2*b**2*c**2*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 +
 1)*asin(c + d*x)/4 + 6*a**2*b**2*c*d**2*e**3*x**3*asin(c + d*x)**2 - 3*a**
2*b**2*c*d**2*e**3*x**3/4 + 9*a**2*b**2*c*d*e**3*x**2*sqrt(-c**2 - 2*c*d*x
- d**2*x**2 + 1)*asin(c + d*x)/4 - 9*a**2*b**2*c*e**3*x/8 + 9*a**2*b**2*c*e
**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/(8*d) + 3*a**2*b**2
*d**3*e**3*x**4*asin(c + d*x)**2/2 - 3*a**2*b**2*d**3*e**3*x**4/16 + 3*a**2
*b**2*d**2*e**3*x**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/4
- 9*a**2*b**2*d*e**3*x**2/16 + 9*a**2*b**2*e**3*x*sqrt(-c**2 - 2*c*d*x - d*
*2*x**2 + 1)*asin(c + d*x)/8 - 9*a**2*b**2*e**3*asin(c + d*x)**2/(16*d) + a
*b**3*c**4*e**3*asin(c + d*x)**3/d - 3*a*b**3*c**4*e**3*asin(c + d*x)/(8*d)
 + 4*a*b**3*c**3*e**3*x*asin(c + d*x)**3 - 3*a*b**3*c**3*e**3*x*asin(c + d*
x)/2 + 3*a*b**3*c**3*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*
x)**2/(4*d) - 3*a*b**3*c**3*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(32*
d) + 6*a*b**3*c**2*d*e**3*x**2*asin(c + d*x)**3 - 9*a*b**3*c**2*d*e**3*x**2
*asin(c + d*x)/4 + 9*a*b**3*c**2*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 +
1)*asin(c + d*x)**2/4 - 9*a*b**3*c**2*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x*
*2 + 1)/32 - 9*a*b**3*c**2*e**3*asin(c + d*x)/(8*d) + 4*a*b**3*c*d**2*e**3*
x**3*asin(c + d*x)**3 - 3*a*b**3*c*d**2*e**3*x**3*asin(c + d*x)/2 + 9*a*b**
3*c*d*e**3*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/4 -
9*a*b**3*c*d*e**3*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/32 - 9*a*b**3*
c*e**3*x*asin(c + d*x)/4 + 9*a*b**3*c*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2
 + 1)*asin(c + d*x)**2/(8*d) - 45*a*b**3*c*e**3*sqrt(-c**2 - 2*c*d*x - d**2
*x**2 + 1)/(64*d) + a*b**3*d**3*e**3*x**4*asin(c + d*x)**3 - 3*a*b**3*d**3*
```

e**3*x**4*asin(c + d*x)/8 + 3*a*b**3*d**2*e**3*x**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/4 - 3*a*b**3*d**2*e**3*x**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/32 - 9*a*b**3*d*e**3*x**2*asin(c + d*x)/8 + 9*a*b**3*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/8 - 45*a*b**3*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/64 - 3*a*b**3*e**3*asin(c + d*x)**3/(8*d) + 45*a*b**3*e**3*asin(c + d*x)/(64*d) + b**4*c**4*e**3*asin(c + d*x)**4/(4*d) - 3*b**4*c**4*e**3*asin(c + d*x)**2/(16*d) + b**4*c**3*e**3*x*asin(c + d*x)**4 - 3*b**4*c**3*e**3*x*asin(c + d*x)**2/4 + 3*b**4*c**3*e**3*x/32 + b**4*c**3*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**3/(4*d) - 3*b**4*c**3*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/(32*d) + 3*b**4*c**2*d*e**3*x**2*asin(c + d*x)**4/2 - 9*b**4*c**2*d*e**3*x**2*asin(c + d*x)**2/8 + 9*b**4*c**2*d*e**3*x**2/64 + 3*b**4*c**2*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**3/4 - 9*b**4*c**2*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/32 - 9*b**4*c**2*e**3*asin(c + d*x)**2/(16*d) + b**4*c*d**2*e**3*x**3*asin(c + d*x)**4 - 3*b**4*c*d**2*e**3*x**3*asin(c + d*x)**2/4 + 3*b**4*c*d**2*e**3*x**3/32 + 3*b**4*c*d*e**3*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**3/4 - 9*b**4*c*d*e**3*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/32 - 9*b**4*c*e**3*x*asin(c + d*x)**2/8 + 45*b**4*c*e**3*x/64 + 3*b**4*c*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**3/(8*d) - 45*b**4*c*e**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/(64*d) + b**4*d**3*e**3*x**4*asin(c + d*x)**4/4 - 3*b**4*d**3*e**3*x**4*asin(c + d*x)**2/16 + 3*b**4*d**3*e**3*x**4/128 + b**4*d**2*e**3*x**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**3/4 - 3*b**4*d**2*e**3*x**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/32 - 9*b**4*d*e**3*x**2*asin(c + d*x)**2/16 + 45*b**4*d*e**3*x**2/128 + 3*b**4*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**3/8 - 45*b**4*e**3*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/64 - 3*b**4*e**3*asin(c + d*x)**4/(32*d) + 45*b**4*e**3*asin(c + d*x)**2/(128*d), Ne(d, 0)), (c**3*e**3*x*(a + b*asin(c))**4, True))

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 1016 vs. $2(327) = 654$.
time = 0.48, size = 1016, normalized size = 2.85

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^4,x, algorithm="giac")

[Out] 1/4*((d*x + c)^2 - 1)^2*b^4*e^3*arcsin(d*x + c)^4/d - 1/4*(-(d*x + c)^2 + 1)^(3/2)*(d*x + c)*b^4*e^3*arcsin(d*x + c)^3/d + ((d*x + c)^2 - 1)^2*a*b^3*e^3*arcsin(d*x + c)^3/d + 1/2*((d*x + c)^2 - 1)*b^4*e^3*arcsin(d*x + c)^4/d - 3/4*(-(d*x + c)^2 + 1)^(3/2)*(d*x + c)*a*b^3*e^3*arcsin(d*x + c)^2/d + 5/8*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*b^4*e^3*arcsin(d*x + c)^3/d + 1/4*(d*x +

```
 c)^4*a^4*e^3/d + 3/2*((d*x + c)^2 - 1)^2*a^2*b^2*e^3*arcsin(d*x + c)^2/d -
 3/16*((d*x + c)^2 - 1)^2*b^4*e^3*arcsin(d*x + c)^2/d + 2*((d*x + c)^2 - 1)
*a*b^3*e^3*arcsin(d*x + c)^3/d + 5/32*b^4*e^3*arcsin(d*x + c)^4/d - 3/4*(-(
d*x + c)^2 + 1)^(3/2)*(d*x + c)*a^2*b^2*e^3*arcsin(d*x + c)/d + 3/32*(-(d*x
 + c)^2 + 1)^(3/2)*(d*x + c)*b^4*e^3*arcsin(d*x + c)/d + 15/8*sqrt(-(d*x +
c)^2 + 1)*(d*x + c)*a*b^3*e^3*arcsin(d*x + c)^2/d + ((d*x + c)^2 - 1)^2*a^3
*b*e^3*arcsin(d*x + c)/d - 3/8*((d*x + c)^2 - 1)^2*a*b^3*e^3*arcsin(d*x + c
)/d + 3*((d*x + c)^2 - 1)*a^2*b^2*e^3*arcsin(d*x + c)^2/d - 15/16*((d*x + c
)^2 - 1)*b^4*e^3*arcsin(d*x + c)^2/d + 5/8*a*b^3*e^3*arcsin(d*x + c)^3/d -
1/4*(-(d*x + c)^2 + 1)^(3/2)*(d*x + c)*a^3*b*e^3/d + 3/32*(-(d*x + c)^2 + 1
)^(3/2)*(d*x + c)*a*b^3*e^3/d + 15/8*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*a^2*b
^2*e^3*arcsin(d*x + c)/d - 51/64*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*b^4*e^3*a
rcsin(d*x + c)/d - 3/16*((d*x + c)^2 - 1)^2*a^2*b^2*e^3/d + 3/128*((d*x + c
)^2 - 1)^2*b^4*e^3/d + 2*((d*x + c)^2 - 1)*a^3*b*e^3*arcsin(d*x + c)/d - 15
/8*((d*x + c)^2 - 1)*a*b^3*e^3*arcsin(d*x + c)/d + 15/16*a^2*b^2*e^3*arcsin
(d*x + c)^2/d - 51/128*b^4*e^3*arcsin(d*x + c)^2/d + 5/8*sqrt(-(d*x + c)^2
+ 1)*(d*x + c)*a^3*b*e^3/d - 51/64*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*a*b^3*e
^3/d - 15/16*((d*x + c)^2 - 1)*a^2*b^2*e^3/d + 51/128*((d*x + c)^2 - 1)*b^4
*e^3/d + 5/8*a^3*b*e^3*arcsin(d*x + c)/d - 51/64*a*b^3*e^3*arcsin(d*x + c)/
d - 51/128*a^2*b^2*e^3/d + 195/1024*b^4*e^3/d
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.00

$$\int (c\,e+d\,e\,x)^3\,(a+b\,\mathrm{asin}(c+d\,x))^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^3*(a + b*asin(c + d*x))^4,x)
[Out] int((c*e + d*e*x)^3*(a + b*asin(c + d*x))^4, x)
```

3.207 $\int (ce+dex)^2(a+b\mathbf{ArcSin}(c+dx))^4\,dx$

Optimal. Leaf size=289

$$\frac{160}{27}b^4e^2x+\frac{8b^4e^2(c+dx)^3}{81d}-\frac{160b^3e^2\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))}{27d}-\frac{8b^3e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{27d}$$

```
[Out] 160/27*b^4*e^2*x+8/81*b^4*e^2*(d*x+c)^3/d-8/3*b^2*e^2*(d*x+c)*(a+b*arcsin(d
*x+c))^2/d-4/9*b^2*e^2*(d*x+c)^3*(a+b*arcsin(d*x+c))^2/d+1/3*e^2*(d*x+c)^3*
(a+b*arcsin(d*x+c))^4/d-160/27*b^3*e^2*(a+b*arcsin(d*x+c))*(1-(d*x+c)^2)^(1
/2)/d-8/27*b^3*e^2*(d*x+c)^2*(a+b*arcsin(d*x+c))*(1-(d*x+c)^2)^(1/2)/d+8/9*
b*e^2*(a+b*arcsin(d*x+c))^3*(1-(d*x+c)^2)^(1/2)/d+4/9*b*e^2*(d*x+c)^2*(a+b*
arcsin(d*x+c))^3*(1-(d*x+c)^2)^(1/2)/d
```

Rubi [A]
time = 0.33, antiderivative size = 289, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 8, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.348$, Rules used = {4889, 12, 4723, 4795, 4767, 4715, 8, 30}

$$-\frac{160b^3e^2\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))}{27d}-\frac{8b^3e^2(c+dx)^2\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))}{27d}-\frac{4b^2e^2(c+dx)^3(a+b\text{ArcSin}(c+dx))^2}{9d}-\frac{8b^2e^2(c+dx)(a+b\text{ArcSin}(c+dx))^2}{3d}+\frac{8be^2\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^3}{9d}+\frac{4be^2(c+dx)^2\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^3}{9d}+\frac{e^2(c+dx)^3(a+b\text{ArcSin}(c+dx))^4}{3d}+\frac{8b^4e^2(c+dx)^3}{81d}+\frac{160}{27}b^4e^2x$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] (160*b^4*e^2*x)/27 + (8*b^4*e^2*(c + d*x)^3)/(81*d) - (160*b^3*e^2*Sqrt[1 -
 (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(27*d) - (8*b^3*e^2*(c + d*x)^2*Sqrt
[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/(27*d) - (8*b^2*e^2*(c + d*x)*(a
 + b*ArcSin[c + d*x])^2)/(3*d) - (4*b^2*e^2*(c + d*x)^3*(a + b*ArcSin[c + d
*x])^2)/(9*d) + (8*b*e^2*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^3)/(
9*d) + (4*b*e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^3
)/(9*d) + (e^2*(c + d*x)^3*(a + b*ArcSin[c + d*x])^4)/(3*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)^2 \left(a+b\sin^{-1}(c+dx)\right)^4 \, dx = \frac{\text{Subst}\left(\int e^2x^2(a+b\sin^{-1}(x))^4 \, dx, x, c+dx\right)}{d}$$

$$= \frac{e^2\text{Subst}\left(\int x^2(a+b\sin^{-1}(x))^4 \, dx, x, c+dx\right)}{d}$$

$$= \frac{e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)^4}{3d} - \frac{(4be^2)\,\text{Subst}\left(\int \frac{x^3(a+b\sin^{-1}(x)}{\sqrt{1-x^2}}\right.}{3d}$$

$$= \frac{4be^2(c+dx)^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^3}{9d} + \frac{e^2(c+dx)}{}$$

$$= -\frac{4b^2e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)^2}{9d} + \frac{8be^2\sqrt{1-(c+dx)^2}\,(a}{9d}$$

$$= -\frac{8b^3e^2(c+dx)^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{27d} - \frac{8b^2e^2(c}{}$$

$$= \frac{8b^4e^2(c+dx)^3}{81d} - \frac{160b^3e^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{27d} -$$

$$= \frac{160}{27}b^4e^2x + \frac{8b^4e^2(c+dx)^3}{81d} - \frac{160b^3e^2\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}}{27d}$$

Mathematica [A]
time = 0.43, size = 235, normalized size = 0.81

$$\frac{e^2\left(\frac{1}{3}(c+dx)^3(a+b\text{ArcSin}(c+dx))^4-\frac{4}{9}b\left(-\frac{2}{9}b^3(c+dx)^3+\frac{2}{3}b^2(c+dx)^2\sqrt{1-(c+dx)^2}(a+b\text{ArcSin}(c+dx))+6b(c+dx)(a+b\text{ArcSin}(c+dx))^2+b(c+dx)^3(a+b\text{ArcSin}(c+dx))^2-2\sqrt{1-(c+dx)^2}(a+b\text{ArcSin}(c+dx))^3-(c+dx)^2\sqrt{1-(c+dx)^2}(a+b\text{ArcSin}(c+dx))^3-\frac{40}{3}b^2\left(bdx-\sqrt{1-(c+dx)^2}(a+b\text{ArcSin}(c+dx))\right)\right)\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] (e^2*(((c + d*x)^3*(a + b*ArcSin[c + d*x])^4)/3 - (4*b*((-2*b^3*(c + d*x)^3
)/9 + (2*b^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/3 +
 6*b*(c + d*x)*(a + b*ArcSin[c + d*x])^2 + b*(c + d*x)^3*(a + b*ArcSin[c +
d*x])^2 - 2*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^3 - (c + d*x)^2*S
qrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^3 - (40*b^2*(b*d*x - Sqrt[1 -
(c + d*x)^2]*(a + b*ArcSin[c + d*x])))/3))/9))/d
```

Maple [A]
time = 0.12, size = 440, normalized size = 1.52

method	result
derivativedivides	$\frac{\frac{e^2(dx+c)^3a^4}{3}+e^2b^4\left(\frac{(dx+c)^3\arcsin(dx+c)^4}{3}+\frac{4\arcsin(dx+c)^3\left((dx+c)^2+2\right)\sqrt{1-(dx+c)^2}}{9}-\frac{8(dx+c)\arcsin(dx+c)^2}{3}+\right.}{}$
default	$\frac{\frac{e^2(dx+c)^3a^4}{3}+e^2b^4\left(\frac{(dx+c)^3\arcsin(dx+c)^4}{3}+\frac{4\arcsin(dx+c)^3\left((dx+c)^2+2\right)\sqrt{1-(dx+c)^2}}{9}-\frac{8(dx+c)\arcsin(dx+c)^2}{3}+\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^4,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(1/3*e^2*(d*x+c)^3*a^4+e^2*b^4*(1/3*(d*x+c)^3*arcsin(d*x+c)^4+4/9*arcsi
n(d*x+c)^3*((d*x+c)^2+2)*(1-(d*x+c)^2)^(1/2)-8/3*(d*x+c)*arcsin(d*x+c)^2+16
0/27*d*x+160/27*c-16/3*arcsin(d*x+c)*(1-(d*x+c)^2)^(1/2)-4/9*(d*x+c)^3*arcs
in(d*x+c)^2-8/27*arcsin(d*x+c)*((d*x+c)^2+2)*(1-(d*x+c)^2)^(1/2)+8/81*(d*x+
c)^3)+4*e^2*a*b^3*(1/3*(d*x+c)^3*arcsin(d*x+c)^3+1/3*arcsin(d*x+c)^2*((d*x+
c)^2+2)*(1-(d*x+c)^2)^(1/2)-4/3*(1-(d*x+c)^2)^(1/2)-4/3*(d*x+c)*arcsin(d*x+
c)-2/9*(d*x+c)^3*arcsin(d*x+c)-2/27*((d*x+c)^2+2)*(1-(d*x+c)^2)^(1/2))+6*e^
2*a^2*b^2*(1/3*(d*x+c)^3*arcsin(d*x+c)^2+2/9*arcsin(d*x+c)*((d*x+c)^2+2)*(1
-(d*x+c)^2)^(1/2)-2/27*(d*x+c)^3-4/9*d*x-4/9*c)+4*e^2*a^3*b*(1/3*(d*x+c)^3*
arcsin(d*x+c)+1/9*(d*x+c)^2*(1-(d*x+c)^2)^(1/2)+2/9*(1-(d*x+c)^2)^(1/2)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^4,x, algorithm="maxima")
```

```
[Out] 1/3*a^4*d^2*x^3*e^2 + a^4*c*d*x^2*e^2 + 2*(2*x^2*arcsin(d*x + c) + d*(3*c^2
*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^3 + sqrt(-d^2*x^2 -
 2*c*d*x - c^2 + 1)*x/d^2 - (c^2 - 1)*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 -
(c^2 - 1)*d^2))/d^3 - 3*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c/d^3))*a^3*b*c*
d*e^2 + 2/9*(6*x^3*arcsin(d*x + c) + d*(2*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1
)*x^2/d^2 - 15*c^3*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^4
 - 5*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c*x/d^3 + 9*(c^2 - 1)*c*arcsin(-(d^
2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^4 + 15*sqrt(-d^2*x^2 - 2*c*d*x
- c^2 + 1)*c^2/d^4 - 4*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*(c^2 - 1)/d^4))*a
^3*b*d^2*e^2 + a^4*c^2*x*e^2 + 4*((d*x + c)*arcsin(d*x + c) + sqrt(-(d*x +
c)^2 + 1))*a^3*b*c^2*e^2/d + 1/3*(b^4*d^2*x^3*e^2 + 3*b^4*c*d*x^2*e^2 + 3*b
^4*c^2*x*e^2)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^4 + in
```

```
tegrate(2/3*(2*(b^4*d^3*x^3*e^2 + 3*b^4*c*d^2*x^2*e^2 + 3*b^4*c^2*d*x*e^2)*
sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqr
t(-d*x - c + 1))^3 + 6*(a*b^3*d^4*x^4*e^2 + 4*a*b^3*c*d^3*x^3*e^2 + a*b^3*c
^4*e^2 - a*b^3*c^2*e^2 + (6*a*b^3*c^2*e^2 - a*b^3*e^2)*d^2*x^2 + 2*(2*a*b^3
*c^3*e^2 - a*b^3*c*e^2)*d*x)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x -
 c + 1))^3 + 9*(a^2*b^2*d^4*x^4*e^2 + 4*a^2*b^2*c*d^3*x^3*e^2 + a^2*b^2*c^4
*e^2 - a^2*b^2*c^2*e^2 + (6*a^2*b^2*c^2*e^2 - a^2*b^2*e^2)*d^2*x^2 + 2*(2*a
^2*b^2*c^3*e^2 - a^2*b^2*c*e^2)*d*x)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqr
t(-d*x - c + 1))^2)/(d^2*x^2 + 2*c*d*x + c^2 - 1), x)
```

Fricas [**B**] Leaf count of result is larger than twice the leaf count of optimal. 697 vs. $2(254) = 508$.
time = 1.50, size = 697, normalized size = 2.41

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^4,x, algorithm="fricas")
```

```
[Out] 1/81*(27*(b^4*d^3*x^3 + 3*b^4*c*d^2*x^2 + 3*b^4*c^2*d*x + b^4*c^3)*arcsin(d
*x + c)^4*e^2 + 108*(a*b^3*d^3*x^3 + 3*a*b^3*c*d^2*x^2 + 3*a*b^3*c^2*d*x +
a*b^3*c^3)*arcsin(d*x + c)^3*e^2 + 18*((9*a^2*b^2 - 2*b^4)*d^3*x^3 + 3*(9*a
^2*b^2 - 2*b^4)*c*d^2*x^2 - 12*b^4*c + (9*a^2*b^2 - 2*b^4)*c^3 - 3*(4*b^4 -
 (9*a^2*b^2 - 2*b^4)*c^2)*d*x)*arcsin(d*x + c)^2*e^2 + 36*((3*a^3*b - 2*a*b
^3)*d^3*x^3 + 3*(3*a^3*b - 2*a*b^3)*c*d^2*x^2 - 12*a*b^3*c + (3*a^3*b - 2*a
*b^3)*c^3 - 3*(4*a*b^3 - (3*a^3*b - 2*a*b^3)*c^2)*d*x)*arcsin(d*x + c)*e^2
+ ((27*a^4 - 36*a^2*b^2 + 8*b^4)*d^3*x^3 + 3*(27*a^4 - 36*a^2*b^2 + 8*b^4)*
c*d^2*x^2 - 3*(72*a^2*b^2 - 160*b^4 - (27*a^4 - 36*a^2*b^2 + 8*b^4)*c^2)*d*
x)*e^2 + 12*(3*(b^4*d^2*x^2 + 2*b^4*c*d*x + b^4*c^2 + 2*b^4)*arcsin(d*x + c
)^3*e^2 + 9*(a*b^3*d^2*x^2 + 2*a*b^3*c*d*x + a*b^3*c^2 + 2*a*b^3)*arcsin(d*
x + c)^2*e^2 + ((9*a^2*b^2 - 2*b^4)*d^2*x^2 + 18*a^2*b^2 - 40*b^4 + 2*(9*a^
2*b^2 - 2*b^4)*c*d*x + (9*a^2*b^2 - 2*b^4)*c^2)*arcsin(d*x + c)*e^2 + ((3*a
^3*b - 2*a*b^3)*d^2*x^2 + 6*a^3*b - 40*a*b^3 + 2*(3*a^3*b - 2*a*b^3)*c*d*x
+ (3*a^3*b - 2*a*b^3)*c^2)*e^2)*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1))/d
```

Sympy [**B**] Leaf count of result is larger than twice the leaf count of optimal. 1889 vs. $2(264) = 528$.
time = 0.92, size = 1889, normalized size = 6.54

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2*(a+b*asin(d*x+c))**4,x)
```

```
[Out] Piecewise((a**4*c**2*e**2*x + a**4*c*d*e**2*x**2 + a**4*d**2*e**2*x**3/3 +
4*a**3*b*c**3*e**2*asin(c + d*x)/(3*d) + 4*a**3*b*c**2*e**2*x*asin(c + d*x)
```

```
 + 4*a**3*b*c**2*e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(9*d) + 4*a**3*
b*c*d*e**2*x**2*asin(c + d*x) + 8*a**3*b*c*e**2*x*sqrt(-c**2 - 2*c*d*x - d*
*2*x**2 + 1)/9 + 4*a**3*b*d**2*e**2*x**3*asin(c + d*x)/3 + 4*a**3*b*d*e**2*
x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/9 + 8*a**3*b*e**2*sqrt(-c**2 - 2
*c*d*x - d**2*x**2 + 1)/(9*d) + 2*a**2*b**2*c**3*e**2*asin(c + d*x)**2/d +
6*a**2*b**2*c**2*e**2*x*asin(c + d*x)**2 - 4*a**2*b**2*c**2*e**2*x/3 + 4*a*
*2*b**2*c**2*e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/(3*d)
 + 6*a**2*b**2*c*d*e**2*x**2*asin(c + d*x)**2 - 4*a**2*b**2*c*d*e**2*x**2/3
 + 8*a**2*b**2*c*e**2*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)
/3 + 2*a**2*b**2*d**2*e**2*x**3*asin(c + d*x)**2 - 4*a**2*b**2*d**2*e**2*x*
*3/9 + 4*a**2*b**2*d*e**2*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c
 + d*x)/3 - 8*a**2*b**2*e**2*x/3 + 8*a**2*b**2*e**2*sqrt(-c**2 - 2*c*d*x -
d**2*x**2 + 1)*asin(c + d*x)/(3*d) + 4*a*b**3*c**3*e**2*asin(c + d*x)**3/(3
*d) - 8*a*b**3*c**3*e**2*asin(c + d*x)/(9*d) + 4*a*b**3*c**2*e**2*x*asin(c
+ d*x)**3 - 8*a*b**3*c**2*e**2*x*asin(c + d*x)/3 + 4*a*b**3*c**2*e**2*sqrt(
-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/(3*d) - 8*a*b**3*c**2*e**
2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(27*d) + 4*a*b**3*c*d*e**2*x**2*asi
n(c + d*x)**3 - 8*a*b**3*c*d*e**2*x**2*asin(c + d*x)/3 + 8*a*b**3*c*e**2*x*
sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/3 - 16*a*b**3*c*e**2
*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/27 - 16*a*b**3*c*e**2*asin(c + d*x
)/(3*d) + 4*a*b**3*d**2*e**2*x**3*asin(c + d*x)**3/3 - 8*a*b**3*d**2*e**2*x
**3*asin(c + d*x)/9 + 4*a*b**3*d*e**2*x**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2
 + 1)*asin(c + d*x)**2/3 - 8*a*b**3*d*e**2*x**2*sqrt(-c**2 - 2*c*d*x - d**2
*x**2 + 1)/27 - 16*a*b**3*e**2*x*asin(c + d*x)/3 + 8*a*b**3*e**2*sqrt(-c**2
 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/(3*d) - 160*a*b**3*e**2*sqrt(-
c**2 - 2*c*d*x - d**2*x**2 + 1)/(27*d) + b**4*c**3*e**2*asin(c + d*x)**4/(3
*d) - 4*b**4*c**3*e**2*asin(c + d*x)**2/(9*d) + b**4*c**2*e**2*x*asin(c + d
*x)**4 - 4*b**4*c**2*e**2*x*asin(c + d*x)**2/3 + 8*b**4*c**2*e**2*x/27 + 4*
b**4*c**2*e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**3/(9*d)
 - 8*b**4*c**2*e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/(27
*d) + b**4*c*d*e**2*x**2*asin(c + d*x)**4 - 4*b**4*c*d*e**2*x**2*asin(c + d
*x)**2/3 + 8*b**4*c*d*e**2*x**2/27 + 8*b**4*c*e**2*x*sqrt(-c**2 - 2*c*d*x -
 d**2*x**2 + 1)*asin(c + d*x)**3/9 - 16*b**4*c*e**2*x*sqrt(-c**2 - 2*c*d*x
- d**2*x**2 + 1)*asin(c + d*x)/27 - 8*b**4*c*e**2*asin(c + d*x)**2/(3*d) +
b**4*d**2*e**2*x**3*asin(c + d*x)**4/3 - 4*b**4*d**2*e**2*x**3*asin(c + d*x
)**2/9 + 8*b**4*d**2*e**2*x**3/81 + 4*b**4*d*e**2*x**2*sqrt(-c**2 - 2*c*d*x
 - d**2*x**2 + 1)*asin(c + d*x)**3/9 - 8*b**4*d*e**2*x**2*sqrt(-c**2 - 2*c*
d*x - d**2*x**2 + 1)*asin(c + d*x)/27 - 8*b**4*e**2*x*asin(c + d*x)**2/3 +
160*b**4*e**2*x/27 + 8*b**4*e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin
(c + d*x)**3/(9*d) - 160*b**4*e**2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*as
in(c + d*x)/(27*d), Ne(d, 0)), (c**2*e**2*x*(a + b*asin(c))**4, True))
```

Giac [**B**] Leaf count of result is larger than twice the leaf count of optimal. 809 vs. 2(263) = 526.

time = 0.48, size = 809, normalized size = 2.80

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^4,x, algorithm="giac")
```

```
[Out] 1/3*((d*x + c)^2 - 1)*(d*x + c)*b^4*e^2*arcsin(d*x + c)^4/d + 4/3*((d*x + c
)^2 - 1)*(d*x + c)*a*b^3*e^2*arcsin(d*x + c)^3/d + 1/3*(d*x + c)*b^4*e^2*ar
csin(d*x + c)^4/d - 4/9*(-(d*x + c)^2 + 1)^(3/2)*b^4*e^2*arcsin(d*x + c)^3/
d + 2*((d*x + c)^2 - 1)*(d*x + c)*a^2*b^2*e^2*arcsin(d*x + c)^2/d - 4/9*((d
*x + c)^2 - 1)*(d*x + c)*b^4*e^2*arcsin(d*x + c)^2/d + 4/3*(d*x + c)*a*b^3*
e^2*arcsin(d*x + c)^3/d - 4/3*(-(d*x + c)^2 + 1)^(3/2)*a*b^3*e^2*arcsin(d*x
 + c)^2/d + 4/3*sqrt(-(d*x + c)^2 + 1)*b^4*e^2*arcsin(d*x + c)^3/d + 1/3*(d
*x + c)^3*a^4*e^2/d + 4/3*((d*x + c)^2 - 1)*(d*x + c)*a^3*b*e^2*arcsin(d*x
+ c)/d - 8/9*((d*x + c)^2 - 1)*(d*x + c)*a*b^3*e^2*arcsin(d*x + c)/d + 2*(d
*x + c)*a^2*b^2*e^2*arcsin(d*x + c)^2/d - 28/9*(d*x + c)*b^4*e^2*arcsin(d*x
 + c)^2/d - 4/3*(-(d*x + c)^2 + 1)^(3/2)*a^2*b^2*e^2*arcsin(d*x + c)/d + 8/
27*(-(d*x + c)^2 + 1)^(3/2)*b^4*e^2*arcsin(d*x + c)/d + 4*sqrt(-(d*x + c)^2
 + 1)*a*b^3*e^2*arcsin(d*x + c)^2/d - 4/9*((d*x + c)^2 - 1)*(d*x + c)*a^2*b
^2*e^2/d + 8/81*((d*x + c)^2 - 1)*(d*x + c)*b^4*e^2/d + 4/3*(d*x + c)*a^3*b
*e^2*arcsin(d*x + c)/d - 56/9*(d*x + c)*a*b^3*e^2*arcsin(d*x + c)/d - 4/9*(
-(d*x + c)^2 + 1)^(3/2)*a^3*b*e^2/d + 8/27*(-(d*x + c)^2 + 1)^(3/2)*a*b^3*e
^2/d + 4*sqrt(-(d*x + c)^2 + 1)*a^2*b^2*e^2*arcsin(d*x + c)/d - 56/9*sqrt(-
(d*x + c)^2 + 1)*b^4*e^2*arcsin(d*x + c)/d - 28/9*(d*x + c)*a^2*b^2*e^2/d +
 488/81*(d*x + c)*b^4*e^2/d + 4/3*sqrt(-(d*x + c)^2 + 1)*a^3*b*e^2/d - 56/9
*sqrt(-(d*x + c)^2 + 1)*a*b^3*e^2/d
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (c\,e+d\,e\,x)^2\,\left(a+b\,\mathrm{asin}(c+d\,x)\right)^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^2*(a + b*asin(c + d*x))^4,x)
```

```
[Out] int((c*e + d*e*x)^2*(a + b*asin(c + d*x))^4, x)
```

3.208 $\int (ce+dex)(a+b\text{ArcSin}(c+dx))^4\,dx$

Optimal. Leaf size=198

$$\frac{3b^4e(c+dx)^2}{4d}-\frac{3b^3e(c+dx)\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))}{2d}+\frac{3b^2e(a+b\text{ArcSin}(c+dx))^2}{4d}-\frac{3b^2e(c-$$

```
[Out] 3/4*b^4*e*(d*x+c)^2/d+3/4*b^2*e*(a+b*arcsin(d*x+c))^2/d-3/2*b^2*e*(d*x+c)^2
*(a+b*arcsin(d*x+c))^2/d-1/4*e*(a+b*arcsin(d*x+c))^4/d+1/2*e*(d*x+c)^2*(a+b
*arcsin(d*x+c))^4/d-3/2*b^3*e*(d*x+c)*(a+b*arcsin(d*x+c))*(1-(d*x+c)^2)^(1/
2)/d+b*e*(d*x+c)*(a+b*arcsin(d*x+c))^3*(1-(d*x+c)^2)^(1/2)/d
```

Rubi [A]
time = 0.22, antiderivative size = 198, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {4889, 12, 4723, 4795, 4737, 30}

$$-\frac{3b^3e(c+dx)\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))}{2d}-\frac{3b^2e(c+dx)^2(a+b\text{ArcSin}(c+dx))^2}{2d}+\frac{3b^2e(a+b\text{ArcSin}(c+dx))^2}{4d}+\frac{be(c+dx)\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^3}{d}+\frac{e(c+dx)^2(a+b\text{ArcSin}(c+dx))^4}{2d}-\frac{e(a+b\text{ArcSin}(c+dx))^4}{4d}+\frac{3b^4e(c+dx)^2}{4d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)*(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] (3*b^4*e*(c + d*x)^2)/(4*d) - (3*b^3*e*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a +
 b*ArcSin[c + d*x]))/(2*d) + (3*b^2*e*(a + b*ArcSin[c + d*x])^2)/(4*d) - (3
*b^2*e*(c + d*x)^2*(a + b*ArcSin[c + d*x])^2)/(2*d) + (b*e*(c + d*x)*Sqrt[1
 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^3)/d - (e*(a + b*ArcSin[c + d*x])^4
)/(4*d) + (e*(c + d*x)^2*(a + b*ArcSin[c + d*x])^4)/(2*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^4\,dx = \frac{\text{Subst}\left(\int ex(a+b\sin^{-1}(x))^4\,dx,x,c+dx\right)}{d}$$
$$= \frac{e\text{Subst}\left(\int x(a+b\sin^{-1}(x))^4\,dx,x,c+dx\right)}{d}$$
$$= \frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)^4}{2d} - \frac{(2be)\text{Subst}\left(\int \frac{x^2(a+b\sin^{-1}(x))^3}{\sqrt{1-x^2}}\right.}{d}$$
$$= \frac{be(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^3}{d} + \frac{e(c+dx)^2(a}{}$$
$$= -\frac{3b^2e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)^2}{2d} + \frac{be(c+dx)\sqrt{1-(c+dx}}{}$$
$$= -\frac{3b^3e(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{2d} - \frac{3b^2e(c+}{}$$
$$= \frac{3b^4e(c+dx)^2}{4d} - \frac{3b^3e(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx\right.}{2d}$$

Mathematica [A]
time = 0.18, size = 163, normalized size = 0.82

$$-\frac{e\left(-4b(c+dx)\sqrt{1-(c+dx)^2}(a+b\text{ArcSin}(c+dx))^3+(a+b\text{ArcSin}(c+dx))^4-2(c+dx)^2(a+b\text{ArcSin}(c+dx))^4+3b^2\left(-b^2(c+dx)^2+2b(c+dx)\sqrt{1-(c+dx)^2}(a+b\text{ArcSin}(c+dx))-(a+b\text{ArcSin}(c+dx))^2+2(c+dx)^2(a+b\text{ArcSin}(c+dx))^2\right)\right)}{4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)*(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] -1/4*(e*(-4*b*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^3 + (
a + b*ArcSin[c + d*x])^4 - 2*(c + d*x)^2*(a + b*ArcSin[c + d*x])^4 + 3*b^2*
(-(b^2*(c + d*x)^2) + 2*b*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c +
 d*x]) - (a + b*ArcSin[c + d*x])^2 + 2*(c + d*x)^2*(a + b*ArcSin[c + d*x])^
2)))/d
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 411 vs. $2(182) = 364$.
time = 0.06, size = 412, normalized size = 2.08

method	result

derivativedivides	$\frac{\frac{e(dx+c)^2a^4}{2}+e\,b^4\left(\frac{((dx+c)^2-1)\arcsin(dx+c)^4}{2}+\arcsin(dx+c)^3\left((dx+c)\sqrt{1-(dx+c)^2}+\arcsin(dx+c)\right)-\frac{3((dx+c)}{}\right.}{}$
default	$\frac{\frac{e(dx+c)^2a^4}{2}+e\,b^4\left(\frac{((dx+c)^2-1)\arcsin(dx+c)^4}{2}+\arcsin(dx+c)^3\left((dx+c)\sqrt{1-(dx+c)^2}+\arcsin(dx+c)\right)-\frac{3((dx+c)}{}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)*(a+b*arcsin(d*x+c))^4,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(1/2*e*(d*x+c)^2*a^4+e*b^4*(1/2*((d*x+c)^2-1)*arcsin(d*x+c)^4+arcsin(d*
x+c)^3*((d*x+c)*(1-(d*x+c)^2)^(1/2)+arcsin(d*x+c))-3/2*((d*x+c)^2-1)*arcsin
(d*x+c)^2-3/2*arcsin(d*x+c)*((d*x+c)*(1-(d*x+c)^2)^(1/2)+arcsin(d*x+c))+3/4
*arcsin(d*x+c)^2+3/4*(d*x+c)^2-3/4*arcsin(d*x+c)^4)+4*e*a*b^3*(1/2*((d*x+c)
^2-1)*arcsin(d*x+c)^3+3/4*arcsin(d*x+c)^2*((d*x+c)*(1-(d*x+c)^2)^(1/2)+arcs
in(d*x+c))-3/4*((d*x+c)^2-1)*arcsin(d*x+c)-3/8*(d*x+c)*(1-(d*x+c)^2)^(1/2)-
3/8*arcsin(d*x+c)-1/2*arcsin(d*x+c)^3)+6*e*a^2*b^2*(1/2*((d*x+c)^2-1)*arcsi
n(d*x+c)^2+1/2*arcsin(d*x+c)*((d*x+c)*(1-(d*x+c)^2)^(1/2)+arcsin(d*x+c))-1/
4*arcsin(d*x+c)^2-1/4*(d*x+c)^2)+4*e*a^3*b*(1/2*(d*x+c)^2*arcsin(d*x+c)+1/4
*(d*x+c)*(1-(d*x+c)^2)^(1/2)-1/4*arcsin(d*x+c)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^4,x, algorithm="maxima")
```

```
[Out] 1/2*a^4*d*x^2*e + (2*x^2*arcsin(d*x + c) + d*(3*c^2*arcsin(-(d^2*x + c*d)/s
qrt(c^2*d^2 - (c^2 - 1)*d^2))/d^3 + sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*x/d^
2 - (c^2 - 1)*arcsin(-(d^2*x + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^3 - 3*
sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*c/d^3))*a^3*b*d*e + a^4*c*x*e + 4*((d*x
+ c)*arcsin(d*x + c) + sqrt(-(d*x + c)^2 + 1))*a^3*b*c*e/d + 1/2*(b^4*d*x^2
*e + 2*b^4*c*x*e)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^4
+ integrate(2*((b^4*d^2*x^2*e + 2*b^4*c*d*x*e)*sqrt(d*x + c + 1)*sqrt(-d*x
- c + 1)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^3 + 2*(a*b^
3*d^3*x^3*e + 3*a*b^3*c*d^2*x^2*e + a*b^3*c^3*e - a*b^3*c*e + (3*a*b^3*c^2*
e - a*b^3*e)*d*x)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^3
+ 3*(a^2*b^2*d^3*x^3*e + 3*a^2*b^2*c*d^2*x^2*e + a^2*b^2*c^3*e - a^2*b^2*c*
```

```
e + (3*a^2*b^2*c^2*e - a^2*b^2*e)*d*x)*arctan2(d*x + c, sqrt(d*x + c + 1)*s
qrt(-d*x - c + 1))^2)/(d^2*x^2 + 2*c*d*x + c^2 - 1), x)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 471 vs. $2(189) = 378$.
time = 2.15, size = 471, normalized size = 2.38

$$\frac{(2b^4d^2x^2+4b^4cdx+2b^4c^2-b^4)\arcsin(dx+c)^4e+4(2ab^3d^2x^2+4ab^3cdx+2ab^3c^2-ab^3)\arcsin(dx+c)^3e+3\left(2(2a^2b^2-b^4)d^2x^2-2a^2b^2+b^4+4(2a^2b^2-b^4)cdx+2(2a^2b^2-b^4)c^2\right)\arcsin(dx+c)^2e+2\left(2(2a^3b-3ab^3)d^2x^2-2a^3b+3ab^3+4(2a^3b-3ab^3)cdx+2(2a^3b-3ab^3)c^2\right)\arcsin(dx+c)e+\left((2a^4-6a^2b^2+3b^4)d^2x^2+2(2a^4-6a^2b^2+3b^4)cdx\right)e+2\left(2(b^4dx+b^4c)\arcsin(dx+c)^3e+6(ab^3dx+ab^3c)\arcsin(dx+c)^2e+3\left((2a^2b^2-b^4)dx+(2a^2b^2-b^4)c\right)\arcsin(dx+c)e+\left((2a^3b-3ab^3)dx+(2a^3b-3ab^3)c\right)e\right)\sqrt{-d^2x^2-2cdx-c^2+1}}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^4,x, algorithm="fricas")
```

```
[Out] 1/4*((2*b^4*d^2*x^2 + 4*b^4*c*d*x + 2*b^4*c^2 - b^4)*arcsin(d*x + c)^4*e +
4*(2*a*b^3*d^2*x^2 + 4*a*b^3*c*d*x + 2*a*b^3*c^2 - a*b^3)*arcsin(d*x + c)^3
*e + 3*(2*(2*a^2*b^2 - b^4)*d^2*x^2 - 2*a^2*b^2 + b^4 + 4*(2*a^2*b^2 - b^4)
*c*d*x + 2*(2*a^2*b^2 - b^4)*c^2)*arcsin(d*x + c)^2*e + 2*(2*(2*a^3*b - 3*a
*b^3)*d^2*x^2 - 2*a^3*b + 3*a*b^3 + 4*(2*a^3*b - 3*a*b^3)*c*d*x + 2*(2*a^3*
b - 3*a*b^3)*c^2)*arcsin(d*x + c)*e + ((2*a^4 - 6*a^2*b^2 + 3*b^4)*d^2*x^2
+ 2*(2*a^4 - 6*a^2*b^2 + 3*b^4)*c*d*x)*e + 2*(2*(b^4*d*x + b^4*c)*arcsin(d*
x + c)^3*e + 6*(a*b^3*d*x + a*b^3*c)*arcsin(d*x + c)^2*e + 3*((2*a^2*b^2 -
b^4)*d*x + (2*a^2*b^2 - b^4)*c)*arcsin(d*x + c)*e + ((2*a^3*b - 3*a*b^3)*d*
x + (2*a^3*b - 3*a*b^3)*c)*e)*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1))/d
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 1027 vs. $2(178) = 356$.
time = 0.60, size = 1027, normalized size = 5.19

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*asin(d*x+c))**4,x)
```

```
[Out] Piecewise((a**4*c*e*x + a**4*d*e*x**2/2 + 2*a**3*b*c**2*e*asin(c + d*x)/d +
 4*a**3*b*c*e*x*asin(c + d*x) + a**3*b*c*e*sqrt(-c**2 - 2*c*d*x - d**2*x**2
 + 1)/d + 2*a**3*b*d*e*x**2*asin(c + d*x) + a**3*b*e*x*sqrt(-c**2 - 2*c*d*x
 - d**2*x**2 + 1) - a**3*b*e*asin(c + d*x)/d + 3*a**2*b**2*c**2*e*asin(c +
d*x)**2/d + 6*a**2*b**2*c*e*x*asin(c + d*x)**2 - 3*a**2*b**2*c*e*x + 3*a**2
*b**2*c*e*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/d + 3*a**2*b*
*2*d*e*x**2*asin(c + d*x)**2 - 3*a**2*b**2*d*e*x**2/2 + 3*a**2*b**2*e*x*sqr
t(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x) - 3*a**2*b**2*e*asin(c + d
*x)**2/(2*d) + 2*a*b**3*c**2*e*asin(c + d*x)**3/d - 3*a*b**3*c**2*e*asin(c
+ d*x)/d + 4*a*b**3*c*e*x*asin(c + d*x)**3 - 6*a*b**3*c*e*x*asin(c + d*x) +
 3*a*b**3*c*e*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/d - 3*
a*b**3*c*e*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/(2*d) + 2*a*b**3*d*e*x**2*
asin(c + d*x)**3 - 3*a*b**3*d*e*x**2*asin(c + d*x) + 3*a*b**3*e*x*sqrt(-c**
2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2 - 3*a*b**3*e*x*sqrt(-c**2 - 2
```

```
*c*d*x - d**2*x**2 + 1)/2 - a*b**3*e*asin(c + d*x)**3/d + 3*a*b**3*e*asin(c
 + d*x)/(2*d) + b**4*c**2*e*asin(c + d*x)**4/(2*d) - 3*b**4*c**2*e*asin(c +
 d*x)**2/(2*d) + b**4*c*e*x*asin(c + d*x)**4 - 3*b**4*c*e*x*asin(c + d*x)**
2 + 3*b**4*c*e*x/2 + b**4*c*e*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c
+ d*x)**3/d - 3*b**4*c*e*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x
)/(2*d) + b**4*d*e*x**2*asin(c + d*x)**4/2 - 3*b**4*d*e*x**2*asin(c + d*x)*
*2/2 + 3*b**4*d*e*x**2/4 + b**4*e*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*a
sin(c + d*x)**3 - 3*b**4*e*x*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c +
 d*x)/2 - b**4*e*asin(c + d*x)**4/(4*d) + 3*b**4*e*asin(c + d*x)**2/(4*d),
Ne(d, 0)), (c*e*x*(a + b*asin(c))**4, True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 533 vs. 2(182) = 364.
time = 0.47, size = 533, normalized size = 2.69

$$\frac{\left((dx+c)^2-1\right)b^4e\arcsin\left(dx+c\right)^4}{2\,d}+\frac{\sqrt{-(dx+c)^2+1}\,(dx+c)b^4e\arcsin\left(dx+c\right)^3}{d}+\frac{2\left((dx+c)^2-1\right)ab^3e\arcsin\left(dx+c\right)^3}{d}+\frac{b^4e\arcsin\left(dx+c\right)^4}{4\,d}+\frac{3\sqrt{-(dx+c)^2+1}\,(dx+c)ab^3e\arcsin\left(dx+c\right)^2}{d}+\frac{3\left((dx+c)^2-1\right)a^2b^2e\arcsin\left(dx+c\right)^2}{d}-\frac{3\left((dx+c)^2-1\right)b^4e\arcsin\left(dx+c\right)^2}{2\,d}+\frac{ab^3e\arcsin\left(dx+c\right)^3}{d}+\frac{3\sqrt{-(dx+c)^2+1}\,(dx+c)a^2b^2e\arcsin\left(dx+c\right)}{d}-\frac{3\sqrt{-(dx+c)^2+1}\,(dx+c)b^4e\arcsin\left(dx+c\right)}{2\,d}+\frac{2\left((dx+c)^2-1\right)a^3be\arcsin\left(dx+c\right)}{d}-\frac{3\left((dx+c)^2-1\right)ab^3e\arcsin\left(dx+c\right)}{d}+\frac{3\,a^2b^2e\arcsin\left(dx+c\right)^2}{2\,d}-\frac{3\,b^4e\arcsin\left(dx+c\right)^2}{4\,d}+\frac{\sqrt{-(dx+c)^2+1}\,(dx+c)a^3be}{d}-\frac{3\sqrt{-(dx+c)^2+1}\,(dx+c)ab^3e}{2\,d}+\frac{\left((dx+c)^2-1\right)a^4e}{2\,d}-\frac{3\left((dx+c)^2-1\right)a^2b^2e}{2\,d}+\frac{3\left((dx+c)^2-1\right)b^4e}{4\,d}+\frac{a^3be\arcsin\left(dx+c\right)}{d}-\frac{3\,ab^3e\arcsin\left(dx+c\right)}{2\,d}-\frac{3\,a^2b^2e}{4\,d}+\frac{3\,b^4e}{8\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^4,x, algorithm="giac")
```

```
[Out] 1/2*((d*x + c)^2 - 1)*b^4*e*arcsin(d*x + c)^4/d + sqrt(-(d*x + c)^2 + 1)*(d
*x + c)*b^4*e*arcsin(d*x + c)^3/d + 2*((d*x + c)^2 - 1)*a*b^3*e*arcsin(d*x
+ c)^3/d + 1/4*b^4*e*arcsin(d*x + c)^4/d + 3*sqrt(-(d*x + c)^2 + 1)*(d*x +
c)*a*b^3*e*arcsin(d*x + c)^2/d + 3*((d*x + c)^2 - 1)*a^2*b^2*e*arcsin(d*x +
 c)^2/d - 3/2*((d*x + c)^2 - 1)*b^4*e*arcsin(d*x + c)^2/d + a*b^3*e*arcsin(
d*x + c)^3/d + 3*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*a^2*b^2*e*arcsin(d*x + c)
/d - 3/2*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*b^4*e*arcsin(d*x + c)/d + 2*((d*x
 + c)^2 - 1)*a^3*b*e*arcsin(d*x + c)/d - 3*((d*x + c)^2 - 1)*a*b^3*e*arcsin
(d*x + c)/d + 3/2*a^2*b^2*e*arcsin(d*x + c)^2/d - 3/4*b^4*e*arcsin(d*x + c)
^2/d + sqrt(-(d*x + c)^2 + 1)*(d*x + c)*a^3*b*e/d - 3/2*sqrt(-(d*x + c)^2 +
 1)*(d*x + c)*a*b^3*e/d + 1/2*((d*x + c)^2 - 1)*a^4*e/d - 3/2*((d*x + c)^2
- 1)*a^2*b^2*e/d + 3/4*((d*x + c)^2 - 1)*b^4*e/d + a^3*b*e*arcsin(d*x + c)/
d - 3/2*a*b^3*e*arcsin(d*x + c)/d - 3/4*a^2*b^2*e/d + 3/8*b^4*e/d
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int (c\,e+d\,e\,x)\,\left(a+b\,\mathrm{asin}(c+d\,x)\right)^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)*(a + b*asin(c + d*x))^4,x)
```

```
[Out] int((c*e + d*e*x)*(a + b*asin(c + d*x))^4, x)
```

3.209 $\int (a + b\mathbf{ArcSin}(c + dx))^4 \, dx$

Optimal. Leaf size=119

$$24b^4x - \frac{24b^3\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))}{d} - \frac{12b^2(c+dx)(a+b\text{ArcSin}(c+dx))^2}{d} + \frac{4b\sqrt{1-(c+dx)^2}$$

```
[Out] 24*b^4*x-12*b^2*(d*x+c)*(a+b*arcsin(d*x+c))^2/d+(d*x+c)*(a+b*arcsin(d*x+c))
^4/d-24*b^3*(a+b*arcsin(d*x+c))*(1-(d*x+c)^2)^(1/2)/d+4*b*(a+b*arcsin(d*x+c
))^3*(1-(d*x+c)^2)^(1/2)/d
```

Rubi [A]
time = 0.11, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$, Rules used = {4887, 4715, 4767, 8}

$$-\frac{24b^3\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))}{d} - \frac{12b^2(c+dx)(a+b\text{ArcSin}(c+dx))^2}{d} + \frac{4b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^3}{d} + \frac{(c+dx)(a+b\text{ArcSin}(c+dx))^4}{d} + 24b^4x$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] 24*b^4*x - (24*b^3*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x]))/d - (12*b
^2*(c + d*x)*(a + b*ArcSin[c + d*x])^2)/d + (4*b*Sqrt[1 - (c + d*x)^2]*(a +
 b*ArcSin[c + d*x])^3)/d + ((c + d*x)*(a + b*ArcSin[c + d*x])^4)/d
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
```

```
}, x]
```

Rubi steps

$$\int \left(a+b\sin^{-1}(c+dx)\right)^4\,dx=\frac{\text{Subst}\left(\int \left(a+b\sin^{-1}(x)\right)^4\,dx,x,c+dx\right)}{d}$$
$$=\frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^4}{d}-\frac{(4b)\text{Subst}\left(\int \frac{x\left(a+b\sin^{-1}(x)\right)^3}{\sqrt{1-x^2}}\,dx,x,c+dx\right)}{d}$$
$$=\frac{4b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^3}{d}+\frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^4}{d}-$$
$$=-\frac{12b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^2}{d}+\frac{4b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+d\right.}{d}$$
$$=-\frac{24b^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{d}-\frac{12b^2(c+dx)\left(a+b\sin^{-1}(c+\right.}{d}$$
$$=24b^4x-\frac{24b^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)}{d}-\frac{12b^2(c+dx)\left(a+b\sin\right.}{d}$$

Mathematica [A]
time = 0.10, size = 115, normalized size = 0.97

$$\frac{4b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^3+(c+dx)(a+b\text{ArcSin}(c+dx))^4-12b^2\left(-2b^2(c+dx)+2b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))+(c+dx)(a+b\text{ArcSin}(c+dx))^2\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^4,x]
[Out] (4*b*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^3 + (c + d*x)*(a + b*Arc
Sin[c + d*x])^4 - 12*b^2*(-2*b^2*(c + d*x) + 2*b*Sqrt[1 - (c + d*x)^2]*(a +
 b*ArcSin[c + d*x]) + (c + d*x)*(a + b*ArcSin[c + d*x])^2))/d
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 254 vs. 2(115) = 230.
time = 0.07, size = 255, normalized size = 2.14

method	result
derivativedivides	$\frac{(dx+c)a^4+b^4\left((dx+c)\arcsin(dx+c)^4+4\arcsin(dx+c)^3\sqrt{1-(dx+c)^2}-12(dx+c)\arcsin(dx+c)^2+24dx+24c-24\right.}{}$

default	$\frac{(dx+c)a^4+b^4\left((dx+c)\arcsin(dx+c)^4+4\arcsin(dx+c)^3\sqrt{1-(dx+c)^2}-12(dx+c)\arcsin(dx+c)^2+24dx+24c-2\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^4,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*((d*x+c)*a^4+b^4*((d*x+c)*arcsin(d*x+c)^4+4*arcsin(d*x+c)^3*(1-(d*x+c)^
2)^(1/2)-12*(d*x+c)*arcsin(d*x+c)^2+24*d*x+24*c-24*arcsin(d*x+c)*(1-(d*x+c)
^2)^(1/2))+4*a*b^3*((d*x+c)*arcsin(d*x+c)^3+3*arcsin(d*x+c)^2*(1-(d*x+c)^2)
^(1/2)-6*(1-(d*x+c)^2)^(1/2)-6*(d*x+c)*arcsin(d*x+c))+6*a^2*b^2*((d*x+c)*ar
csin(d*x+c)^2-2*d*x-2*c+2*arcsin(d*x+c)*(1-(d*x+c)^2)^(1/2))+4*a^3*b*((d*x+
c)*arcsin(d*x+c)+(1-(d*x+c)^2)^(1/2)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4,x, algorithm="maxima")
```

```
[Out] b^4*x*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^4 + a^4*x + 4*
((d*x + c)*arcsin(d*x + c) + sqrt(-(d*x + c)^2 + 1))*a^3*b/d + integrate(2*
(2*sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)*b^4*d*x*arctan2(d*x + c, sqrt(d*x +
 c + 1)*sqrt(-d*x - c + 1))^3 + 2*(a*b^3*d^2*x^2 + 2*a*b^3*c*d*x + a*b^3*c^
2 - a*b^3)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^3 + 3*(a^
2*b^2*d^2*x^2 + 2*a^2*b^2*c*d*x + a^2*b^2*c^2 - a^2*b^2)*arctan2(d*x + c, s
qrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2)/(d^2*x^2 + 2*c*d*x + c^2 - 1), x)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 233 vs. $2(115) = 230$.
time = 1.87, size = 233, normalized size = 1.96

$$\frac{(b^4dx+b^4c)\arcsin(dx+c)^4+4(ab^3dx+ab^3c)\arcsin(dx+c)^3+(a^4-12a^2b^2+24b^4)dx+6((a^2b^2-2b^4)dx+(a^2b^2-2b^4)c)\arcsin(dx+c)^2+4((a^3b-6ab^3)dx+(a^3b-6ab^3)c)\arcsin(dx+c)+4\left(b^4\arcsin(dx+c)^3+3ab^3\arcsin(dx+c)^2+a^3b-6ab^3+3(a^2b^2-2b^4)\arcsin(dx+c)\right)\sqrt{-d^2x^2-2cdx-c^2+1}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4,x, algorithm="fricas")
```

```
[Out] ((b^4*d*x + b^4*c)*arcsin(d*x + c)^4 + 4*(a*b^3*d*x + a*b^3*c)*arcsin(d*x +
 c)^3 + (a^4 - 12*a^2*b^2 + 24*b^4)*d*x + 6*((a^2*b^2 - 2*b^4)*d*x + (a^2*b
^2 - 2*b^4)*c)*arcsin(d*x + c)^2 + 4*((a^3*b - 6*a*b^3)*d*x + (a^3*b - 6*a*
b^3)*c)*arcsin(d*x + c) + 4*(b^4*arcsin(d*x + c)^3 + 3*a*b^3*arcsin(d*x + c
)^2 + a^3*b - 6*a*b^3 + 3*(a^2*b^2 - 2*b^4)*arcsin(d*x + c))*sqrt(-d^2*x^2
- 2*c*d*x - c^2 + 1))/d
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 444 vs. 2(105) = 210.
time = 0.33, size = 444, normalized size = 3.73

$$\begin{cases} a^4x + \frac{4a^3bc\operatorname{asin}(c+dx)}{d} + 4a^3bx\operatorname{asin}(c+dx) + \frac{4a^3b\sqrt{-c^2-2cdx-d^2x^2+1}}{d} + \frac{6a^2b^2c\operatorname{asin}^2(c+dx)}{d} + 6a^2b^2x\operatorname{asin}^2(c+dx) - 12a^2b^2x + \frac{12a^2b^2\sqrt{-c^2-2cdx-d^2x^2+1}\operatorname{asin}(c+dx)}{d} + \frac{4ab^3c\operatorname{asin}^3(c+dx)}{d} - \frac{24ab^3c\operatorname{asin}(c+dx)}{d} + 4ab^3x\operatorname{asin}^3(c+dx) - 24ab^3x\operatorname{asin}(c+dx) + \frac{12ab^3\sqrt{-c^2-2cdx-d^2x^2+1}\operatorname{asin}^2(c+dx)}{d} - \frac{24ab^3\sqrt{-c^2-2cdx-d^2x^2+1}}{d} + \frac{b^4c\operatorname{asin}^4(c+dx)}{d} - \frac{12b^4c\operatorname{asin}^2(c+dx)}{d} + b^4x\operatorname{asin}^4(c+dx) - 12b^4x\operatorname{asin}^2(c+dx) + 24b^4x + \frac{4b^4\sqrt{-c^2-2cdx-d^2x^2+1}\operatorname{asin}^3(c+dx)}{d} - \frac{24b^4\sqrt{-c^2-2cdx-d^2x^2+1}\operatorname{asin}(c+dx)}{d} & \text{for } d \neq 0 \\ x(a+b\operatorname{asin}(c))^4 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**4,x)
```

```
[Out] Piecewise((a**4*x + 4*a**3*b*c*asin(c + d*x)/d + 4*a**3*b*x*asin(c + d*x) +
 4*a**3*b*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/d + 6*a**2*b**2*c*asin(c +
d*x)**2/d + 6*a**2*b**2*x*asin(c + d*x)**2 - 12*a**2*b**2*x + 12*a**2*b**2*
sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/d + 4*a*b**3*c*asin(c +
 d*x)**3/d - 24*a*b**3*c*asin(c + d*x)/d + 4*a*b**3*x*asin(c + d*x)**3 - 24
*a*b**3*x*asin(c + d*x) + 12*a*b**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*a
sin(c + d*x)**2/d - 24*a*b**3*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/d + b**
4*c*asin(c + d*x)**4/d - 12*b**4*c*asin(c + d*x)**2/d + b**4*x*asin(c + d*x
)**4 - 12*b**4*x*asin(c + d*x)**2 + 24*b**4*x + 4*b**4*sqrt(-c**2 - 2*c*d*x
 - d**2*x**2 + 1)*asin(c + d*x)**3/d - 24*b**4*sqrt(-c**2 - 2*c*d*x - d**2*
x**2 + 1)*asin(c + d*x)/d, Ne(d, 0)), (x*(a + b*asin(c))**4, True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 329 vs. 2(115) = 230.
time = 0.43, size = 329, normalized size = 2.76

$$\frac{(dx+c)b^4\arcsin(dx+c)^4}{d} + \frac{4(dx+c)ab^3\arcsin(dx+c)^3}{d} + \frac{4\sqrt{-(dx+c)^2+1}\,b^4\arcsin(dx+c)^3}{d} + \frac{6(dx+c)a^2b^2\arcsin(dx+c)^2}{d} - \frac{12(dx+c)b^4\arcsin(dx+c)^2}{d} + \frac{12\sqrt{-(dx+c)^2+1}\,ab^3\arcsin(dx+c)^2}{d} + \frac{4(dx+c)a^3b\arcsin(dx+c)}{d} - \frac{24(dx+c)ab^3\arcsin(dx+c)}{d} + \frac{12\sqrt{-(dx+c)^2+1}\,a^2b^2\arcsin(dx+c)}{d} - \frac{24\sqrt{-(dx+c)^2+1}\,b^4\arcsin(dx+c)}{d} + \frac{(dx+c)a^4}{d} - \frac{12(dx+c)a^2b^2}{d} + \frac{24(dx+c)b^4}{d} + \frac{4\sqrt{-(dx+c)^2+1}\,a^3b}{d} - \frac{24\sqrt{-(dx+c)^2+1}\,ab^3}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4,x, algorithm="giac")
```

```
[Out] (d*x + c)*b^4*arcsin(d*x + c)^4/d + 4*(d*x + c)*a*b^3*arcsin(d*x + c)^3/d +
 4*sqrt(-(d*x + c)^2 + 1)*b^4*arcsin(d*x + c)^3/d + 6*(d*x + c)*a^2*b^2*arc
sin(d*x + c)^2/d - 12*(d*x + c)*b^4*arcsin(d*x + c)^2/d + 12*sqrt(-(d*x + c
)^2 + 1)*a*b^3*arcsin(d*x + c)^2/d + 4*(d*x + c)*a^3*b*arcsin(d*x + c)/d -
24*(d*x + c)*a*b^3*arcsin(d*x + c)/d + 12*sqrt(-(d*x + c)^2 + 1)*a^2*b^2*ar
csin(d*x + c)/d - 24*sqrt(-(d*x + c)^2 + 1)*b^4*arcsin(d*x + c)/d + (d*x +
c)*a^4/d - 12*(d*x + c)*a^2*b^2/d + 24*(d*x + c)*b^4/d + 4*sqrt(-(d*x + c)^
2 + 1)*a^3*b/d - 24*sqrt(-(d*x + c)^2 + 1)*a*b^3/d
```

Mupad [B]
time = 0.58, size = 229, normalized size = 1.92

$$a^4x + \frac{b^4(c+dx)\left(\operatorname{asin}(c+dx)^4 - 12\operatorname{asin}(c+dx)^2 + 24\right)}{d} - \frac{b^4\left(24\operatorname{asin}(c+dx) - 4\operatorname{asin}(c+dx)^3\right)\sqrt{1-(c+dx)^2}}{d} + \frac{6a^2b^2\left(2\operatorname{asin}(c+dx)\sqrt{1-(c+dx)^2} + \left(\operatorname{asin}(c+dx)^2-2\right)(c+dx)\right)}{d} + \frac{4a^3b\left(\sqrt{1-(c+dx)^2} + \operatorname{asin}(c+dx)\,(c+dx)\right)}{d} + \frac{4ab^3\left(3\operatorname{asin}(c+dx)^2-6\right)\sqrt{1-(c+dx)^2}}{d} - \frac{4ab^3\left(6\operatorname{asin}(c+dx) - \operatorname{asin}(c+dx)^3\right)(c+dx)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^4,x)

[Out] a^4*x + (b^4*(c + d*x)*(asin(c + d*x)^4 - 12*asin(c + d*x)^2 + 24))/d - (b^
4*(24*asin(c + d*x) - 4*asin(c + d*x)^3)*(1 - (c + d*x)^2)^(1/2))/d + (6*a^
2*b^2*(2*asin(c + d*x)*(1 - (c + d*x)^2)^(1/2) + (asin(c + d*x)^2 - 2)*(c +
 d*x)))/d + (4*a^3*b*((1 - (c + d*x)^2)^(1/2) + asin(c + d*x)*(c + d*x)))/d
 + (4*a*b^3*(3*asin(c + d*x)^2 - 6)*(1 - (c + d*x)^2)^(1/2))/d - (4*a*b^3*(
6*asin(c + d*x) - asin(c + d*x)^3)*(c + d*x))/d
```

3.210 $\int \frac{(a+b\mathbf{ArcSin}(c+dx))^4}{ce+dex}\,dx$

Optimal. Leaf size=202

$$-\frac{i(a+b\text{ArcSin}(c+dx))^5}{5bde}+\frac{(a+b\text{ArcSin}(c+dx))^4\log\left(1-e^{2i\text{ArcSin}(c+dx)}\right)}{de}-\frac{2ib(a+b\text{ArcSin}(c+dx))^3\text{PolyL}}{de}$$

```
[Out] -1/5*I*(a+b*arcsin(d*x+c))^5/b/d/e+(a+b*arcsin(d*x+c))^4*ln(1-(I*(d*x+c)+(1
-(d*x+c)^2)^(1/2))^2)/d/e-2*I*b*(a+b*arcsin(d*x+c))^3*polylog(2,(I*(d*x+c)+
(1-(d*x+c)^2)^(1/2))^2)/d/e+3*b^2*(a+b*arcsin(d*x+c))^2*polylog(3,(I*(d*x+c
)+(1-(d*x+c)^2)^(1/2))^2)/d/e+3*I*b^3*(a+b*arcsin(d*x+c))*polylog(4,(I*(d*x
+c)+(1-(d*x+c)^2)^(1/2))^2)/d/e-3/2*b^4*polylog(5,(I*(d*x+c)+(1-(d*x+c)^2)^
(1/2))^2)/d/e
```

Rubi [A]
time = 0.18, antiderivative size = 202, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 9, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.391$, Rules used = {4889, 12, 4721, 3798, 2221, 2611, 6744, 2320, 6724}

$$\frac{3ib^3\text{Li}_4\left(e^{2i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))}{de}+\frac{3b^2\text{Li}_3\left(e^{2i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))^2}{de}-\frac{2ib\text{Li}_2\left(e^{2i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))^3}{de}-\frac{i(a+b\text{ArcSin}(c+dx))^5}{5bde}+\frac{\log\left(1-e^{2i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))^4}{de}-\frac{3b^4\text{Li}_5\left(e^{2i\text{ArcSin}(c+dx)}\right)}{2de}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x),x]
```

```
[Out] ((-1/5*I)*(a + b*ArcSin[c + d*x])^5)/(b*d*e) + ((a + b*ArcSin[c + d*x])^4*L
og[1 - E^((2*I)*ArcSin[c + d*x])])/(d*e) - ((2*I)*b*(a + b*ArcSin[c + d*x])
^3*PolyLog[2, E^((2*I)*ArcSin[c + d*x])])/(d*e) + (3*b^2*(a + b*ArcSin[c +
d*x])^2*PolyLog[3, E^((2*I)*ArcSin[c + d*x])])/(d*e) + ((3*I)*b^3*(a + b*Ar
cSin[c + d*x])*PolyLog[4, E^((2*I)*ArcSin[c + d*x])])/(d*e) - (3*b^4*PolyLo
g[5, E^((2*I)*ArcSin[c + d*x])])/(2*d*e)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 3798

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[I*((c + d*x)^(m + 1)/(d*(m + 1))), x] - Dist[2*I, Int[(c + d*x)^m
*E^(2*I*k*Pi)*(E^(2*I*(e + f*x))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x)))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n*Cot[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6744

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[(e + f*x)^m*(PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p]/(b*c*p*Log[F])), x] - Dist[f*(m/(b*c*p*Log[F])), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(a+b\sin^{-1}(c+dx))^4}{ce+dex}\,dx &= \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^4}{ex}\,dx, x, c+dx\right)}{d}\\
&= \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^4}{x}\,dx, x, c+dx\right)}{de}\\
&= \frac{\text{Subst}\left(\int (a+bx)^4\cot(x)\,dx, x, \sin^{-1}(c+dx)\right)}{de}\\
&= -\frac{i(a+b\sin^{-1}(c+dx))^5}{5bde} - \frac{(2i)\text{Subst}\left(\int \frac{e^{2ix}(a+bx)^4}{1-e^{2ix}}\,dx, x, \sin^{-1}(c+dx)\right)}{de}\\
&= -\frac{i(a+b\sin^{-1}(c+dx))^5}{5bde} + \frac{(a+b\sin^{-1}(c+dx))^4\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - (\\
&= -\frac{i(a+b\sin^{-1}(c+dx))^5}{5bde} + \frac{(a+b\sin^{-1}(c+dx))^4\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - 2\\
&= -\frac{i(a+b\sin^{-1}(c+dx))^5}{5bde} + \frac{(a+b\sin^{-1}(c+dx))^4\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - 2\\
&= -\frac{i(a+b\sin^{-1}(c+dx))^5}{5bde} + \frac{(a+b\sin^{-1}(c+dx))^4\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - 2\\
&= -\frac{i(a+b\sin^{-1}(c+dx))^5}{5bde} + \frac{(a+b\sin^{-1}(c+dx))^4\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - 2\\
&= -\frac{i(a+b\sin^{-1}(c+dx))^5}{5bde} + \frac{(a+b\sin^{-1}(c+dx))^4\log\left(1-e^{2i\sin^{-1}(c+dx)}\right)}{de} - 2
\end{aligned}
$$

Mathematica [**B**] Both result and optimal contain complex but leaf count is larger than twice the leaf count of optimal. 439 vs. 2(202) = 404.
time = 0.25, size = 439, normalized size = 2.17

$$
\frac{16a^4\log(c+dx)+64a^3b\left(\text{ArcSin}(c+dx)\log\left(1-e^{2i\text{ArcSin}(c+dx)}\right)-\frac{1}{2}i\left(\text{ArcSin}(c+dx)^2+\text{PolyLog}\left(2,e^{2i\text{ArcSin}(c+dx)}\right)\right)\right)+4a^2b^2\left(-i\pi^3+8i\text{ArcSin}(c+dx)^3+24\text{ArcSin}(c+dx)^2\log\left(1-e^{-2i\text{ArcSin}(c+dx)}\right)+24i\text{ArcSin}(c+dx)\text{PolyLog}\left(2,e^{-2i\text{ArcSin}(c+dx)}\right)+12\text{PolyLog}\left(3,e^{-2i\text{ArcSin}(c+dx)}\right)\right)-iab^3\left(\pi^4-16\text{ArcSin}(c+dx)^4+64i\text{ArcSin}(c+dx)^3\log\left(1-e^{-2i\text{ArcSin}(c+dx)}\right)-96\text{ArcSin}(c+dx)^2\text{PolyLog}\left(2,e^{-2i\text{ArcSin}(c+dx)}\right)+96i\text{ArcSin}(c+dx)\text{PolyLog}\left(3,e^{-2i\text{ArcSin}(c+dx)}\right)+48\text{PolyLog}\left(4,e^{-2i\text{ArcSin}(c+dx)}\right)\right)+16b^4\left(-\frac{i\pi^5}{160}+\frac{1}{5}i\text{ArcSin}(c+dx)^5+\text{ArcSin}(c+dx)^4\log\left(1-e^{-2i\text{ArcSin}(c+dx)}\right)+2i\text{ArcSin}(c+dx)^3\text{PolyLog}\left(2,e^{-2i\text{ArcSin}(c+dx)}\right)+3\text{ArcSin}(c+dx)^2\text{PolyLog}\left(3,e^{-2i\text{ArcSin}(c+dx)}\right)-3i\text{ArcSin}(c+dx)\text{PolyLog}\left(4,e^{-2i\text{ArcSin}(c+dx)}\right)-\frac{3}{2}\text{PolyLog}\left(5,e^{-2i\text{ArcSin}(c+dx)}\right)\right)}{16de}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x),x]
```

```
[Out] (16*a^4*Log[c + d*x] + 64*a^3*b*(ArcSin[c + d*x]*Log[1 - E^((2*I)*ArcSin[c
+ d*x])] - (I/2)*(ArcSin[c + d*x]^2 + PolyLog[2, E^((2*I)*ArcSin[c + d*x])]
)) + 4*a^2*b^2*((-I)*Pi^3 + (8*I)*ArcSin[c + d*x]^3 + 24*ArcSin[c + d*x]^2*
Log[1 - E^((-2*I)*ArcSin[c + d*x])] + (24*I)*ArcSin[c + d*x]*PolyLog[2, E^(
```

```
(-2*I)*ArcSin[c + d*x])] + 12*PolyLog[3, E^((-2*I)*ArcSin[c + d*x])]) - I*a
*b^3*(Pi^4 - 16*ArcSin[c + d*x]^4 + (64*I)*ArcSin[c + d*x]^3*Log[1 - E^((-2
*I)*ArcSin[c + d*x])] - 96*ArcSin[c + d*x]^2*PolyLog[2, E^((-2*I)*ArcSin[c
+ d*x])] + (96*I)*ArcSin[c + d*x]*PolyLog[3, E^((-2*I)*ArcSin[c + d*x])] +
48*PolyLog[4, E^((-2*I)*ArcSin[c + d*x])]) + 16*b^4*((-1/160*I)*Pi^5 + (I/5
)*ArcSin[c + d*x]^5 + ArcSin[c + d*x]^4*Log[1 - E^((-2*I)*ArcSin[c + d*x])]
 + (2*I)*ArcSin[c + d*x]^3*PolyLog[2, E^((-2*I)*ArcSin[c + d*x])] + 3*ArcSi
n[c + d*x]^2*PolyLog[3, E^((-2*I)*ArcSin[c + d*x])] - (3*I)*ArcSin[c + d*x]
*PolyLog[4, E^((-2*I)*ArcSin[c + d*x])] - (3*PolyLog[5, E^((-2*I)*ArcSin[c
+ d*x])])/2))/(16*d*e)
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 1199 vs. 2(255) = 510.
time = 0.19, size = 1200, normalized size = 5.94

method	result	size
derivativedivides	Expression too large to display	1200
default	Expression too large to display	1200

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^4/(d*e*x+c*e),x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(-12*I*a^2*b^2/e*arcsin(d*x+c)*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2)
)+6*a^2*b^2/e*arcsin(d*x+c)^2*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+6*a^2*b^2
/e*arcsin(d*x+c)^2*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-2*I*a^2*b^2/e*arcsin
(d*x+c)^3+4*a*b^3/e*arcsin(d*x+c)^3*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+24*
a*b^3/e*arcsin(d*x+c)*polylog(3,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+4*a*b^3/e*a
rcsin(d*x+c)^3*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+24*a*b^3/e*arcsin(d*x+c)
*polylog(3,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-I*a*b^3/e*arcsin(d*x+c)^4+24*I*a*
b^3/e*polylog(4,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+24*I*a*b^3/e*polylog(4,I*(d
*x+c)+(1-(d*x+c)^2)^(1/2))-4*I*b^4/e*arcsin(d*x+c)^3*polylog(2,I*(d*x+c)+(1
-(d*x+c)^2)^(1/2))+24*I*b^4/e*arcsin(d*x+c)*polylog(4,I*(d*x+c)+(1-(d*x+c)^
2)^(1/2))-4*I*b^4/e*arcsin(d*x+c)^3*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2
))+24*I*b^4/e*arcsin(d*x+c)*polylog(4,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+4*a^3
*b/e*arcsin(d*x+c)*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+4*a^3*b/e*arcsin(d*x
+c)*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-2*I*a^3*b/e*arcsin(d*x+c)^2-4*I*a^3
*b/e*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-4*I*a^3*b/e*polylog(2,-I*(d*x
+c)-(1-(d*x+c)^2)^(1/2))-12*I*a^2*b^2/e*arcsin(d*x+c)*polylog(2,I*(d*x+c)+(
1-(d*x+c)^2)^(1/2))-12*I*a*b^3/e*arcsin(d*x+c)^2*polylog(2,-I*(d*x+c)-(1-(d
*x+c)^2)^(1/2))-12*I*a*b^3/e*arcsin(d*x+c)^2*polylog(2,I*(d*x+c)+(1-(d*x+c)
^2)^(1/2))-24*b^4/e*polylog(5,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-24*b^4/e*poly
log(5,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+a^4/e*ln(d*x+c)+b^4/e*arcsin(d*x+c)^4*
ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+12*b^4/e*arcsin(d*x+c)^2*polylog(3,-I*(
d*x+c)-(1-(d*x+c)^2)^(1/2))+b^4/e*arcsin(d*x+c)^4*ln(1-I*(d*x+c)-(1-(d*x+c)
^2)^(1/2))+12*b^4/e*arcsin(d*x+c)^2*polylog(3,I*(d*x+c)+(1-(d*x+c)^2)^(1/2)
```

```
)-1/5*I*b^4/e*arcsin(d*x+c)^5+12*a^2*b^2/e*polylog(3,-I*(d*x+c)-(1-(d*x+c)^
2)^(1/2))+12*a^2*b^2/e*polylog(3,I*(d*x+c)+(1-(d*x+c)^2)^(1/2)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e),x, algorithm="maxima")
```

```
[Out] a^4*e^(-1)*log(d*x*e + c*e)/d + integrate((b^4*arctan2(d*x + c, sqrt(d*x +
c + 1)*sqrt(-d*x - c + 1))^4 + 4*a*b^3*arctan2(d*x + c, sqrt(d*x + c + 1)*s
qrt(-d*x - c + 1))^3 + 6*a^2*b^2*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d
*x - c + 1))^2 + 4*a^3*b*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c +
 1)))/(d*x*e + c*e), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e),x, algorithm="fricas")
```

```
[Out] integral((b^4*arcsin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6*a^2*b^2*arc
sin(d*x + c)^2 + 4*a^3*b*arcsin(d*x + c) + a^4)*e^(-1)/(d*x + c), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a^4}{c+dx}\,dx + \int \frac{b^4 \operatorname{asin}^4(c+dx)}{c+dx}\,dx + \int \frac{4ab^3 \operatorname{asin}^3(c+dx)}{c+dx}\,dx + \int \frac{6a^2b^2 \operatorname{asin}^2(c+dx)}{c+dx}\,dx + \int \frac{4a^3b \operatorname{asin}(c+dx)}{c+dx}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**4/(d*e*x+c*e),x)
```

```
[Out] (Integral(a**4/(c + d*x), x) + Integral(b**4*asin(c + d*x)**4/(c + d*x), x)
 + Integral(4*a*b**3*asin(c + d*x)**3/(c + d*x), x) + Integral(6*a**2*b**2*
asin(c + d*x)**2/(c + d*x), x) + Integral(4*a**3*b*asin(c + d*x)/(c + d*x),
 x))/e
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^4/(d*e*x + c*e), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\mathrm{asin}(c + d\,x))^4}{c\,e + d\,e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^4/(c*e + d*e*x),x)
```

```
[Out] int((a + b*asin(c + d*x))^4/(c*e + d*e*x), x)
```

3.211 $\int \frac{(a+b\text{ArcSin}(c+dx))^4}{(ce+dex)^2}\,dx$

Optimal. Leaf size=270

$$-\frac{(a+b\text{ArcSin}(c+dx))^4}{de^2(c+dx)}-\frac{8b(a+b\text{ArcSin}(c+dx))^3\tanh^{-1}\left(e^{i\text{ArcSin}(c+dx)}\right)}{de^2}+\frac{12ib^2(a+b\text{ArcSin}(c+dx))^2\text{Po}}{de^2}$$

```
[Out] -(a+b*arcsin(d*x+c))^4/d/e^2/(d*x+c)-8*b*(a+b*arcsin(d*x+c))^3*arctanh(I*(d
*x+c)+(1-(d*x+c)^2)^(1/2))/d/e^2+12*I*b^2*(a+b*arcsin(d*x+c))^2*polylog(2,-
I*(d*x+c)-(1-(d*x+c)^2)^(1/2))/d/e^2-12*I*b^2*(a+b*arcsin(d*x+c))^2*polylog
(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))/d/e^2-24*b^3*(a+b*arcsin(d*x+c))*polylog(
3,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))/d/e^2+24*b^3*(a+b*arcsin(d*x+c))*polylog(
3,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))/d/e^2-24*I*b^4*polylog(4,-I*(d*x+c)-(1-(d*
x+c)^2)^(1/2))/d/e^2+24*I*b^4*polylog(4,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))/d/e^
2
```

Rubi [A]
time = 0.22, antiderivative size = 270, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 9, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.391, Rules used = {4889, 12, 4723, 4803, 4268, 2611, 6744, 2320, 6724}

$$-\frac{24b^3\text{Li}_3\left(-e^{i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))}{de^2}+\frac{24b^3\text{Li}_3\left(e^{i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))}{de^2}+\frac{12ib^2\text{Li}_2\left(-e^{i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))^2}{de^2}-\frac{12ib^2\text{Li}_2\left(e^{i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))^2}{de^2}-\frac{(a+b\text{ArcSin}(c+dx))^4}{de^2(c+dx)}-\frac{8b\tanh^{-1}\left(e^{i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))^3}{de^2}-\frac{24ib^4\text{Li}_4\left(-e^{i\text{ArcSin}(c+dx)}\right)}{de^2}+\frac{24ib^4\text{Li}_4\left(e^{i\text{ArcSin}(c+dx)}\right)}{de^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x)^2,x]
```

```
[Out] -((a + b*ArcSin[c + d*x])^4/(d*e^2*(c + d*x))) - (8*b*(a + b*ArcSin[c + d*x
])^3*ArcTanh[E^(I*ArcSin[c + d*x])])/(d*e^2) + ((12*I)*b^2*(a + b*ArcSin[c
+ d*x])^2*PolyLog[2, -E^(I*ArcSin[c + d*x])])/(d*e^2) - ((12*I)*b^2*(a + b*
ArcSin[c + d*x])^2*PolyLog[2, E^(I*ArcSin[c + d*x])])/(d*e^2) - (24*b^3*(a
+ b*ArcSin[c + d*x])*PolyLog[3, -E^(I*ArcSin[c + d*x])])/(d*e^2) + (24*b^3*
(a + b*ArcSin[c + d*x])*PolyLog[3, E^(I*ArcSin[c + d*x])])/(d*e^2) - ((24*I
)*b^4*PolyLog[4, -E^(I*ArcSin[c + d*x])])/(d*e^2) + ((24*I)*b^4*PolyLog[4,
E^(I*ArcSin[c + d*x])])/(d*e^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
```

```
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 4268

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[-
2*(c + d*x)^m*(ArcTanh[E^(I*(e + f*x))]/f), x] + (-Dist[d*(m/f), Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[d*(m/f), Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4803

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[(1/c^(m + 1))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*
x^2]], Subst[Int[(a + b*x)^n*Sin[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a,
 b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6744

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[(e + f*x)^m*(PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p]/(b*c*p*Log[F])), x] - Dist[f*(m/(b*c*p*Log[F])), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+b\sin^{-1}(c+dx))^4}{(ce+dex)^2}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^4}{e^2x^2}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^4}{x^2}\,dx, x, c+dx\right)}{de^2}$$

$$= -\frac{(a+b\sin^{-1}(c+dx))^4}{de^2(c+dx)} + \frac{(4b)\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^3}{x\sqrt{1-x^2}}\,dx, x, c+dx\right)}{de^2}$$

$$= -\frac{(a+b\sin^{-1}(c+dx))^4}{de^2(c+dx)} + \frac{(4b)\text{Subst}\left(\int (a+bx)^3\csc(x)\,dx, x, \sin^{-1}(c+dx)\right)}{de^2}$$

$$= -\frac{(a+b\sin^{-1}(c+dx))^4}{de^2(c+dx)} - \frac{8b(a+b\sin^{-1}(c+dx))^3\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)}{de^2} - \cdots$$

$$= -\frac{(a+b\sin^{-1}(c+dx))^4}{de^2(c+dx)} - \frac{8b(a+b\sin^{-1}(c+dx))^3\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)}{de^2} + \cdots$$

$$= -\frac{(a+b\sin^{-1}(c+dx))^4}{de^2(c+dx)} - \frac{8b(a+b\sin^{-1}(c+dx))^3\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)}{de^2} + \cdots$$

$$= -\frac{(a+b\sin^{-1}(c+dx))^4}{de^2(c+dx)} - \frac{8b(a+b\sin^{-1}(c+dx))^3\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)}{de^2} + \cdots$$

$$= -\frac{(a+b\sin^{-1}(c+dx))^4}{de^2(c+dx)} - \frac{8b(a+b\sin^{-1}(c+dx))^3\tanh^{-1}\left(e^{i\sin^{-1}(c+dx)}\right)}{de^2} + \cdots$$

Mathematica [B] Both result and optimal contain complex but leaf count is larger than twice the leaf count of optimal. 575 vs. $2(270) = 540$.
time = 1.17, size = 575, normalized size = 2.13

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x)^2,x]
```

```
[Out] (-(a^4/(c + d*x)) - 4*a^3*b*(ArcSin[c + d*x]/(c + d*x) + Log[((c + d*x)*Csc
[ArcSin[c + d*x]/2])/2] - Log[Sin[ArcSin[c + d*x]/2]]) + 6*a^2*b^2*(ArcSin[
c + d*x]*(-(ArcSin[c + d*x]/(c + d*x)) + 2*Log[1 - E^(I*ArcSin[c + d*x])] -
 2*Log[1 + E^(I*ArcSin[c + d*x])]) + (2*I)*PolyLog[2, -E^(I*ArcSin[c + d*x]
)] - (2*I)*PolyLog[2, E^(I*ArcSin[c + d*x])]) + 4*a*b^3*(-(ArcSin[c + d*x]^
3/(c + d*x)) + 3*ArcSin[c + d*x]^2*Log[1 - E^(I*ArcSin[c + d*x])] - 3*ArcSi
n[c + d*x]^2*Log[1 + E^(I*ArcSin[c + d*x])] + (6*I)*ArcSin[c + d*x]*PolyLog
[2, -E^(I*ArcSin[c + d*x])] - (6*I)*ArcSin[c + d*x]*PolyLog[2, E^(I*ArcSin[
c + d*x])] - 6*PolyLog[3, -E^(I*ArcSin[c + d*x])] + 6*PolyLog[3, E^(I*ArcSi
n[c + d*x])]) + b^4*((-1/2*I)*Pi^4 + I*ArcSin[c + d*x]^4 - ArcSin[c + d*x]^
4/(c + d*x) + 4*ArcSin[c + d*x]^3*Log[1 - E^((-I)*ArcSin[c + d*x])] - 4*Arc
Sin[c + d*x]^3*Log[1 + E^(I*ArcSin[c + d*x])] + (12*I)*ArcSin[c + d*x]^2*Po
lyLog[2, E^((-I)*ArcSin[c + d*x])] + (12*I)*ArcSin[c + d*x]^2*PolyLog[2, -E
^(I*ArcSin[c + d*x])] + 24*ArcSin[c + d*x]*PolyLog[3, E^((-I)*ArcSin[c + d*
x])] - 24*ArcSin[c + d*x]*PolyLog[3, -E^(I*ArcSin[c + d*x])] - (24*I)*PolyL
og[4, E^((-I)*ArcSin[c + d*x])] - (24*I)*PolyLog[4, -E^(I*ArcSin[c + d*x])]
))/(d*e^2)
```

Maple [**B**] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 838 vs. $2(336) = 672$.
time = 0.36, size = 839, normalized size = 3.11 Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(-a^4/e^2/(d*x+c)-b^4/e^2/(d*x+c)*arcsin(d*x+c)^4-4*b^4/e^2*arcsin(d*x+
c)^3*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+4*b^4/e^2*arcsin(d*x+c)^3*ln(1-I*(
d*x+c)-(1-(d*x+c)^2)^(1/2))-24*b^4/e^2*arcsin(d*x+c)*polylog(3,-I*(d*x+c)-(
1-(d*x+c)^2)^(1/2))+24*b^4/e^2*arcsin(d*x+c)*polylog(3,I*(d*x+c)+(1-(d*x+c)
^2)^(1/2))+24*I*b^4/e^2*polylog(4,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-12*I*a^2*b
^2/e^2*dilog(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-12*I*b^4/e^2*arcsin(d*x+c)^2*
polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+12*I*a^2*b^2/e^2*dilog(1+I*(d*x+c)
+(1-(d*x+c)^2)^(1/2))-4*a*b^3/e^2/(d*x+c)*arcsin(d*x+c)^3-12*a*b^3/e^2*arcs
in(d*x+c)^2*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-24*I*b^4/e^2*polylog(4,-I*(
d*x+c)-(1-(d*x+c)^2)^(1/2))-24*a*b^3/e^2*polylog(3,-I*(d*x+c)-(1-(d*x+c)^2)
^(1/2))+12*a*b^3/e^2*arcsin(d*x+c)^2*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-24
*I*a*b^3/e^2*arcsin(d*x+c)*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+24*a*b^
3/e^2*polylog(3,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-6*a^2*b^2/e^2/(d*x+c)*arcsin
(d*x+c)^2+12*a^2*b^2/e^2*arcsin(d*x+c)*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-
12*a^2*b^2/e^2*arcsin(d*x+c)*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+24*I*a*b^3
/e^2*arcsin(d*x+c)*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+12*I*b^4/e^2*a
rcsin(d*x+c)^2*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+4*a^3*b/e^2*(-1/(d
*x+c)*arcsin(d*x+c)-arctanh(1/(1-(d*x+c)^2)^(1/2))))
```

Maxima [**F**]

time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^2,x, algorithm="maxima")
```

```
[Out] -4*a^3*b*(e^(-2)*log(2*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)/abs(d^2*x*e^2 + c
*d*e^2) + 2/abs(d^2*x*e^2 + c*d*e^2))/d + arcsin(d*x + c)/(d^2*x*e^2 + c*d*
e^2)) - a^4/(d^2*x*e^2 + c*d*e^2) - (b^4*arctan2(d*x + c, sqrt(d*x + c + 1)
*sqrt(-d*x - c + 1))^4 + (d^2*x*e^2 + c*d*e^2)*integrate(2*(2*(b^4*d*x + b^
4*c)*sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)*arctan2(d*x + c, sqrt(d*x + c + 1
)*sqrt(-d*x - c + 1))^3 - 2*(a*b^3*d^2*x^2 + 2*a*b^3*c*d*x + a*b^3*c^2 - a*
b^3)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^3 - 3*(a^2*b^2*
d^2*x^2 + 2*a^2*b^2*c*d*x + a^2*b^2*c^2 - a^2*b^2)*arctan2(d*x + c, sqrt(d*
x + c + 1)*sqrt(-d*x - c + 1))^2)/(d^4*x^4*e^2 + 4*c*d^3*x^3*e^2 + (6*c^2*e
^2 - e^2)*d^2*x^2 + c^4*e^2 + 2*(2*c^3*e^2 - c*e^2)*d*x - c^2*e^2), x))/(d^
2*x*e^2 + c*d*e^2)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^2,x, algorithm="fricas")
```

```
[Out] integral((b^4*arcsin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6*a^2*b^2*arc
sin(d*x + c)^2 + 4*a^3*b*arcsin(d*x + c) + a^4)*e^(-2)/(d^2*x^2 + 2*c*d*x +
 c^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a^4}{c^2+2cdx+d^2x^2}\,dx + \int \frac{b^4\operatorname{asin}^4(c+dx)}{c^2+2cdx+d^2x^2}\,dx + \int \frac{4ab^3\operatorname{asin}^3(c+dx)}{c^2+2cdx+d^2x^2}\,dx + \int \frac{6a^2b^2\operatorname{asin}^2(c+dx)}{c^2+2cdx+d^2x^2}\,dx + \int \frac{4a^3b\operatorname{asin}(c+dx)}{c^2+2cdx+d^2x^2}\,dx}{e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**4/(d*e*x+c*e)**2,x)
```

```
[Out] (Integral(a**4/(c**2 + 2*c*d*x + d**2*x**2), x) + Integral(b**4*asin(c + d*
x)**4/(c**2 + 2*c*d*x + d**2*x**2), x) + Integral(4*a*b**3*asin(c + d*x)**3
/(c**2 + 2*c*d*x + d**2*x**2), x) + Integral(6*a**2*b**2*asin(c + d*x)**2/(
c**2 + 2*c*d*x + d**2*x**2), x) + Integral(4*a**3*b*asin(c + d*x)/(c**2 + 2
*c*d*x + d**2*x**2), x))/e**2
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^2,x, algorithm="giac")
[Out] integrate((b*arcsin(d*x + c) + a)^4/(d*e*x + c*e)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b \operatorname{asin}(c + d x))^4}{(c e + d e x)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^4/(c*e + d*e*x)^2,x)
[Out] int((a + b*asin(c + d*x))^4/(c*e + d*e*x)^2, x)
```

3.212 $\int \frac{(a+b\text{ArcSin}(c+dx))^4}{(ce+dex)^3}\,dx$

Optimal. Leaf size=198

$$-\frac{2ib(a+b\text{ArcSin}(c+dx))^3}{de^3}-\frac{2b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^3}{de^3(c+dx)}-\frac{(a+b\text{ArcSin}(c+dx))^4}{2de^3(c+dx)^2}+\frac{6b^2(a+$$

```
[Out] -2*I*b*(a+b*arcsin(d*x+c))^3/d/e^3-1/2*(a+b*arcsin(d*x+c))^4/d/e^3/(d*x+c)^
2+6*b^2*(a+b*arcsin(d*x+c))^2*ln(1-(I*(d*x+c)+(1-(d*x+c)^2)^(1/2))^2)/d/e^3
-6*I*b^3*(a+b*arcsin(d*x+c))*polylog(2,(I*(d*x+c)+(1-(d*x+c)^2)^(1/2))^2)/d
/e^3+3*b^4*polylog(3,(I*(d*x+c)+(1-(d*x+c)^2)^(1/2))^2)/d/e^3-2*b*(a+b*arcs
in(d*x+c))^3*(1-(d*x+c)^2)^(1/2)/d/e^3/(d*x+c)
```

Rubi [A]

time = 0.22, antiderivative size = 198, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 10, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.435$, Rules used = {4889, 12, 4723, 4771, 4721, 3798, 2221, 2611, 2320, 6724}

$$-\frac{6ib^3\text{Li}_2\left(e^{2i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))}{de^3}+\frac{6b^2\log\left(1-e^{2i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))^2}{de^3}-\frac{2b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^3}{de^3(c+dx)}-\frac{2ib(a+b\text{ArcSin}(c+dx))^3}{de^3}-\frac{(a+b\text{ArcSin}(c+dx))^4}{2de^3(c+dx)^2}+\frac{3b^4\text{Li}_3\left(e^{2i\text{ArcSin}(c+dx)}\right)}{de^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x)^3,x]
```

```
[Out] ((-2*I)*b*(a + b*ArcSin[c + d*x])^3)/(d*e^3) - (2*b*Sqrt[1 - (c + d*x)^2]*(
a + b*ArcSin[c + d*x])^3)/(d*e^3*(c + d*x)) - (a + b*ArcSin[c + d*x])^4/(2*
d*e^3*(c + d*x)^2) + (6*b^2*(a + b*ArcSin[c + d*x])^2*Log[1 - E^((2*I)*ArcS
in[c + d*x])])/(d*e^3) - ((6*I)*b^3*(a + b*ArcSin[c + d*x])*PolyLog[2, E^((
2*I)*ArcSin[c + d*x])])/(d*e^3) + (3*b^4*PolyLog[3, E^((2*I)*ArcSin[c + d*x
])])/(d*e^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 3798

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[I*((c + d*x)^(m + 1)/(d*(m + 1))), x] - Dist[2*I, Int[(c + d*x)^m
*E^(2*I*k*Pi)*(E^(2*I*(e + f*x))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x)))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n*Cot[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4771

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*x)^(m + 1)*(d + e*x^2)^(p + 1)*((a + b
*ArcSin[c*x])^n/(d*f*(m + 1))), x] - Dist[b*c*(n/(f*(m + 1)))*Simp[(d + e*x
^2)^p/(1 - c^2*x^2)^p], Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*Ar
cSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d, e, f, m, p}, x] && EqQ[c^2
*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] && NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
```

```
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\sin^{-1}(c+dx))^4}{(ce+dex)^3}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^4}{e^3x^3}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^4}{x^3}\,dx, x, c+dx\right)}{de^3}$$

$$= -\frac{(a+b\sin^{-1}(c+dx))^4}{2de^3(c+dx)^2} + \frac{(2b)\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^3}{x^2\sqrt{1-x^2}}\,dx, x, c+dx\right)}{de^3}$$

$$= -\frac{2b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))^3}{de^3(c+dx)} - \frac{(a+b\sin^{-1}(c+dx))^4}{2de^3(c+dx)^2} + \frac{(6b^2)\,\mathrm{S}}{}$$

$$= -\frac{2b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))^3}{de^3(c+dx)} - \frac{(a+b\sin^{-1}(c+dx))^4}{2de^3(c+dx)^2} + \frac{(6b^2)\,\mathrm{S}}{}$$

$$= -\frac{2ib(a+b\sin^{-1}(c+dx))^3}{de^3} - \frac{2b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))^3}{de^3(c+dx)} - \frac{(a}{}$$

$$= -\frac{2ib(a+b\sin^{-1}(c+dx))^3}{de^3} - \frac{2b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))^3}{de^3(c+dx)} - \frac{(a}{}$$

$$= -\frac{2ib(a+b\sin^{-1}(c+dx))^3}{de^3} - \frac{2b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))^3}{de^3(c+dx)} - \frac{(a}{}$$

$$= -\frac{2ib(a+b\sin^{-1}(c+dx))^3}{de^3} - \frac{2b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))^3}{de^3(c+dx)} - \frac{(a}{}$$

$$= -\frac{2ib(a+b\sin^{-1}(c+dx))^3}{de^3} - \frac{2b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))^3}{de^3(c+dx)} - \frac{(a}{}$$

Mathematica [A]
time = 0.85, size = 385, normalized size = 1.94

$$\frac{-\frac{2a^4}{(c+dx)^2} - \frac{8a^3b\sqrt{1-(c+dx)^2}}{c+dx} - \frac{8a^3b\text{ArcSin}(c+dx)}{(c+dx)^2} - \frac{2b^4\text{ArcSin}(c+dx)^4}{(c+dx)^2} + 24a^2b^2\left(-\frac{\sqrt{1-(c+dx)^2}\,\text{ArcSin}(c+dx)}{c+dx} - \frac{\text{ArcSin}(c+dx)^2}{2(c+dx)^2} + \log(c+dx)\right) + 8ab^3\left(-\frac{3\sqrt{1-(c+dx)^2}\,\text{ArcSin}(c+dx)^2}{c+dx} - \frac{\text{ArcSin}(c+dx)^3}{(c+dx)^2} + 6\text{ArcSin}(c+dx)\log\left(1-e^{2i\text{ArcSin}(c+dx)}\right) - 3i\left(\text{ArcSin}(c+dx)^2 + \text{PolyLog}\left(2, e^{2i\text{ArcSin}(c+dx)}\right)\right)\right) + b^4\left(-i\pi^3 + 8i\text{ArcSin}(c+dx)^3 - \frac{8\sqrt{1-(c+dx)^2}\,\text{ArcSin}(c+dx)^3}{c+dx} + 24\text{ArcSin}(c+dx)^2\log\left(1-e^{-2i\text{ArcSin}(c+dx)}\right) + 24i\text{ArcSin}(c+dx)\text{PolyLog}\left(2, e^{-2i\text{ArcSin}(c+dx)}\right) + 12\text{PolyLog}\left(3, e^{-2i\text{ArcSin}(c+dx)}\right)\right)}{4de^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x)^3,x]
```

```
[Out] ((-2*a^4)/(c + d*x)^2 - (8*a^3*b*Sqrt[1 - (c + d*x)^2])/(c + d*x) - (8*a^3*
b*ArcSin[c + d*x])/(c + d*x)^2 - (2*b^4*ArcSin[c + d*x]^4)/(c + d*x)^2 + 24
*a^2*b^2*(-((Sqrt[1 - (c + d*x)^2]*ArcSin[c + d*x])/(c + d*x)) - ArcSin[c +
 d*x]^2/(2*(c + d*x)^2) + Log[c + d*x]) + 8*a*b^3*((-3*Sqrt[1 - (c + d*x)^2
]*ArcSin[c + d*x]^2)/(c + d*x) - ArcSin[c + d*x]^3/(c + d*x)^2 + 6*ArcSin[c
 + d*x]*Log[1 - E^((2*I)*ArcSin[c + d*x])] - (3*I)*(ArcSin[c + d*x]^2 + Pol
yLog[2, E^((2*I)*ArcSin[c + d*x])])) + b^4*((-I)*Pi^3 + (8*I)*ArcSin[c + d*
x]^3 - (8*Sqrt[1 - (c + d*x)^2]*ArcSin[c + d*x]^3)/(c + d*x) + 24*ArcSin[c
+ d*x]^2*Log[1 - E^((-2*I)*ArcSin[c + d*x])] + (24*I)*ArcSin[c + d*x]*PolyL
og[2, E^((-2*I)*ArcSin[c + d*x])] + 12*PolyLog[3, E^((-2*I)*ArcSin[c + d*x]
)]))/(4*d*e^3)
```

Maple [**B**] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 680 vs. $2(228) = 456$.
time = 0.38, size = 681, normalized size = 3.44

method	result
derivativedivides	$\frac{-\frac{a^4}{2e^3(dx+c)^2}-\frac{12iab^3\,\mathrm{polylog}\left(2,i(dx+c)+\sqrt{1-(dx+c)^2}\right)}{e^3}-\frac{2b^4\arcsin(dx+c)^3\sqrt{1-(dx+c)^2}}{e^3(dx+c)}-\frac{b^4\arcsin(d}{2e^3(dx+}$
default	$\frac{-\frac{a^4}{2e^3(dx+c)^2}-\frac{12iab^3\,\mathrm{polylog}\left(2,i(dx+c)+\sqrt{1-(dx+c)^2}\right)}{e^3}-\frac{2b^4\arcsin(dx+c)^3\sqrt{1-(dx+c)^2}}{e^3(dx+c)}-\frac{b^4\arcsin(d}{2e^3(dx+}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(-1/2*a^4/e^3/(d*x+c)^2-12*I*a*b^3/e^3*polylog(2,I*(d*x+c)+(1-(d*x+c)^2
)^(1/2))-2*b^4/e^3*arcsin(d*x+c)^3/(d*x+c)*(1-(d*x+c)^2)^(1/2)-1/2*b^4/e^3*
arcsin(d*x+c)^4/(d*x+c)^2+6*b^4/e^3*arcsin(d*x+c)^2*ln(1+I*(d*x+c)+(1-(d*x+
c)^2)^(1/2))-12*I*a*b^3/e^3*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+12*b^
4/e^3*polylog(3,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+6*b^4/e^3*arcsin(d*x+c)^2*l
n(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-6*I*a*b^3/e^3*arcsin(d*x+c)^2+12*b^4/e^3
*polylog(3,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-12*I*b^4/e^3*arcsin(d*x+c)*polylo
g(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-6*a*b^3/e^3*arcsin(d*x+c)^2/(d*x+c)*(1-(
d*x+c)^2)^(1/2)-2*a*b^3/e^3*arcsin(d*x+c)^3/(d*x+c)^2+12*a*b^3/e^3*arcsin(d
*x+c)*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+12*a*b^3/e^3*arcsin(d*x+c)*ln(1-I
*(d*x+c)-(1-(d*x+c)^2)^(1/2))-2*I*b^4/e^3*arcsin(d*x+c)^3-12*I*b^4/e^3*arcs
in(d*x+c)*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-3*a^2*b^2/e^3*arcsin(d*
```

```
x+c)^2/(d*x+c)^2-6*a^2*b^2/e^3/(d*x+c)*arcsin(d*x+c)*(1-(d*x+c)^2)^(1/2)+6*
a^2*b^2/e^3*ln(d*x+c)+4*a^3*b/e^3*(-1/2/(d*x+c)^2*arcsin(d*x+c)-1/2/(d*x+c)
*(1-(d*x+c)^2)^(1/2)))
```

Maxima [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^3,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^3,x, algorithm="fricas")
```

```
[Out] integral((b^4*arcsin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6*a^2*b^2*arc
sin(d*x + c)^2 + 4*a^3*b*arcsin(d*x + c) + a^4)*e^(-3)/(d^3*x^3 + 3*c*d^2*x
^2 + 3*c^2*d*x + c^3), x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a^4}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx + \int \frac{b^4\operatorname{asin}^4(c+dx)}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx + \int \frac{4ab^3\operatorname{asin}^3(c+dx)}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx + \int \frac{6a^2b^2\operatorname{asin}^2(c+dx)}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx + \int \frac{4a^3b\operatorname{asin}(c+dx)}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**4/(d*e*x+c*e)**3,x)
```

```
[Out] (Integral(a**4/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integr
al(b**4*asin(c + d*x)**4/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x
) + Integral(4*a*b**3*asin(c + d*x)**3/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 +
 d**3*x**3), x) + Integral(6*a**2*b**2*asin(c + d*x)**2/(c**3 + 3*c**2*d*x
+ 3*c*d**2*x**2 + d**3*x**3), x) + Integral(4*a**3*b*asin(c + d*x)/(c**3 +
3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x))/e**3
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^3,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^4/(d*e*x + c*e)^3, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)^4}{\left(c\,e+d\,e\,x\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^4/(c*e + d*e*x)^3,x)
```

```
[Out] int((a + b*asin(c + d*x))^4/(c*e + d*e*x)^3, x)
```

3.213 $\int \frac{(a+b\text{ArcSin}(c+dx))^4}{(ce+dex)^4}\,dx$

Optimal. Leaf size=439

$$-\frac{2b^2(a+b\text{ArcSin}(c+dx))^2}{de^4(c+dx)}-\frac{2b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^3}{3de^4(c+dx)^2}-\frac{(a+b\text{ArcSin}(c+dx))^4}{3de^4(c+dx)^3}-\frac{8b^3(a+}{}$$

```
[Out] -2*b^2*(a+b*arcsin(d*x+c))^2/d/e^4/(d*x+c)-1/3*(a+b*arcsin(d*x+c))^4/d/e^4/
(d*x+c)^3-8*b^3*(a+b*arcsin(d*x+c))*arctanh(I*(d*x+c)+(1-(d*x+c)^2)^(1/2))/
d/e^4-4/3*b*(a+b*arcsin(d*x+c))^3*arctanh(I*(d*x+c)+(1-(d*x+c)^2)^(1/2))/d/
e^4+4*I*b^4*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))/d/e^4+2*I*b^2*(a+b*ar
csin(d*x+c))^2*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))/d/e^4-4*I*b^4*poly
log(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))/d/e^4-2*I*b^2*(a+b*arcsin(d*x+c))^2*po
lylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))/d/e^4-4*b^3*(a+b*arcsin(d*x+c))*poly
log(3,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))/d/e^4+4*b^3*(a+b*arcsin(d*x+c))*polyl
og(3,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))/d/e^4-4*I*b^4*polylog(4,-I*(d*x+c)-(1-(
d*x+c)^2)^(1/2))/d/e^4+4*I*b^4*polylog(4,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))/d/e
^4-2/3*b*(a+b*arcsin(d*x+c))^3*(1-(d*x+c)^2)^(1/2)/d/e^4/(d*x+c)^2
```

Rubi [A]

time = 0.40, antiderivative size = 439, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 12, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.522$, Rules used = {4889, 12, 4723, 4789, 4803, 4268, 2611, 6744, 2320, 6724, 2317, 2438}

$$-\frac{4b^3\text{Li}_3\left(-e^{i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))}{de^4}+\frac{4b^3\text{Li}_3\left(e^{i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))}{de^4}-\frac{8b^3\tanh^{-1}\left(e^{i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))}{de^4}+\frac{2ib^2\text{Li}_2\left(-e^{i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))^2}{de^4}-\frac{2ib^2\text{Li}_2\left(e^{i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))^2}{de^4}-\frac{2b^2(a+b\text{ArcSin}(c+dx))^2}{de^4(c+dx)}-\frac{2b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^3}{3de^4(c+dx)^2}-\frac{(a+b\text{ArcSin}(c+dx))^4}{3de^4(c+dx)^3}-\frac{4b\tanh^{-1}\left(e^{i\text{ArcSin}(c+dx)}\right)(a+b\text{ArcSin}(c+dx))^3}{3de^4}+\frac{4ib^4\text{Li}_2\left(-e^{i\text{ArcSin}(c+dx)}\right)}{de^4}-\frac{4ib^4\text{Li}_2\left(e^{i\text{ArcSin}(c+dx)}\right)}{de^4}-\frac{4ib^4\text{Li}_4\left(-e^{i\text{ArcSin}(c+dx)}\right)}{de^4}+\frac{4ib^4\text{Li}_4\left(e^{i\text{ArcSin}(c+dx)}\right)}{de^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x)^4,x]
```

```
[Out] (-2*b^2*(a + b*ArcSin[c + d*x])^2)/(d*e^4*(c + d*x)) - (2*b*Sqrt[1 - (c + d
*x)^2]*(a + b*ArcSin[c + d*x])^3)/(3*d*e^4*(c + d*x)^2) - (a + b*ArcSin[c +
 d*x])^4/(3*d*e^4*(c + d*x)^3) - (8*b^3*(a + b*ArcSin[c + d*x])*ArcTanh[E^(
I*ArcSin[c + d*x])])/(d*e^4) - (4*b*(a + b*ArcSin[c + d*x])^3*ArcTanh[E^(I*
ArcSin[c + d*x])])/(3*d*e^4) + ((4*I)*b^4*PolyLog[2, -E^(I*ArcSin[c + d*x])
])/(d*e^4) + ((2*I)*b^2*(a + b*ArcSin[c + d*x])^2*PolyLog[2, -E^(I*ArcSin[c
 + d*x])])/(d*e^4) - ((4*I)*b^4*PolyLog[2, E^(I*ArcSin[c + d*x])])/(d*e^4)
- ((2*I)*b^2*(a + b*ArcSin[c + d*x])^2*PolyLog[2, E^(I*ArcSin[c + d*x])])/(
d*e^4) - (4*b^3*(a + b*ArcSin[c + d*x])*PolyLog[3, -E^(I*ArcSin[c + d*x])])
/(d*e^4) + (4*b^3*(a + b*ArcSin[c + d*x])*PolyLog[3, E^(I*ArcSin[c + d*x])]
)/(d*e^4) - ((4*I)*b^4*PolyLog[4, -E^(I*ArcSin[c + d*x])])/(d*e^4) + ((4*I)
*b^4*PolyLog[4, E^(I*ArcSin[c + d*x])])/(d*e^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 4268

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[-
2*(c + d*x)^m*(ArcTanh[E^(I*(e + f*x))]/f), x] + (-Dist[d*(m/f), Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[d*(m/f), Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4789

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*x)^(m + 1)*(d + e*x^2)^(p + 1)*((a + b
*ArcSin[c*x])^n/(d*f*(m + 1))), x] + (Dist[c^2*((m + 2*p + 3)/(f^2*(m + 1))
```

```
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[b*c
*(n/(f*(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)^(m + 1)*(1
- c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c
, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && ILtQ[m, -1]
```

Rule 4803

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[(1/c^(m + 1))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*
x^2]], Subst[Int[(a + b*x)^n*Sin[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a,
 b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6744

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[(e + f*x)^m*(PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p]/(b*c*p*Log[F])), x] - Dist[f*(m/(b*c*p*Log[F])), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+b\sin^{-1}(c+dx))^4}{(ce+dex)^4}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^4}{e^4x^4}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^4}{x^4}\,dx, x, c+dx\right)}{de^4}$$

$$= -\frac{(a+b\sin^{-1}(c+dx))^4}{3de^4(c+dx)^3} + \frac{(4b)\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^3}{x^3\sqrt{1-x^2}}\,dx, x, c+dx\right)}{3de^4}$$

$$= -\frac{2b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))^3}{3de^4(c+dx)^2} - \frac{(a+b\sin^{-1}(c+dx))^4}{3de^4(c+dx)^3} + \frac{(2b)S}{}$$

$$= -\frac{2b^2(a+b\sin^{-1}(c+dx))^2}{de^4(c+dx)} - \frac{2b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))^3}{3de^4(c+dx)^2} - (a$$

$$= -\frac{2b^2(a+b\sin^{-1}(c+dx))^2}{de^4(c+dx)} - \frac{2b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))^3}{3de^4(c+dx)^2} - (a$$

$$= -\frac{2b^2(a+b\sin^{-1}(c+dx))^2}{de^4(c+dx)} - \frac{2b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))^3}{3de^4(c+dx)^2} - (a$$

$$= -\frac{2b^2(a+b\sin^{-1}(c+dx))^2}{de^4(c+dx)} - \frac{2b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))^3}{3de^4(c+dx)^2} - (a$$

$$= -\frac{2b^2(a+b\sin^{-1}(c+dx))^2}{de^4(c+dx)} - \frac{2b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))^3}{3de^4(c+dx)^2} - (a$$

$$= -\frac{2b^2(a+b\sin^{-1}(c+dx))^2}{de^4(c+dx)} - \frac{2b\sqrt{1-(c+dx)^2}\,(a+b\sin^{-1}(c+dx))^3}{3de^4(c+dx)^2} - (a$$

Mathematica [B] Both result and optimal contain complex but leaf count is larger than twice the leaf count of optimal. 1274 vs. $2(439) = 878$.
time = 9.14, size = 1274, normalized size = 2.90

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x)^4,x]
```

```
[Out] -1/3*a^4/(d*e^4*(c + d*x)^3) + (a^2*b^2*((8*I)*PolyLog[2, -E^(I*ArcSin[c +
d*x])] - (2*(2 + 4*ArcSin[c + d*x]^2 - 2*Cos[2*ArcSin[c + d*x]] - 3*(c + d*
```

```
x)*ArcSin[c + d*x]*Log[1 - E^(I*ArcSin[c + d*x])] + 3*(c + d*x)*ArcSin[c +
d*x]*Log[1 + E^(I*ArcSin[c + d*x])] + (4*I)*(c + d*x)^3*PolyLog[2, E^(I*Arc
Sin[c + d*x])] + 2*ArcSin[c + d*x]*Sin[2*ArcSin[c + d*x]] + ArcSin[c + d*x]
*Log[1 - E^(I*ArcSin[c + d*x])]*Sin[3*ArcSin[c + d*x]] - ArcSin[c + d*x]*Lo
g[1 + E^(I*ArcSin[c + d*x])]*Sin[3*ArcSin[c + d*x]]))/(c + d*x)^3))/(4*d*e^
4) + (a*b^3*(-24*ArcSin[c + d*x]*Cot[ArcSin[c + d*x]/2] - 4*ArcSin[c + d*x]
^3*Cot[ArcSin[c + d*x]/2] - 6*ArcSin[c + d*x]^2*Csc[ArcSin[c + d*x]/2]^2 -
(c + d*x)*ArcSin[c + d*x]^3*Csc[ArcSin[c + d*x]/2]^4 + 24*ArcSin[c + d*x]^2
*Log[1 - E^(I*ArcSin[c + d*x])] - 24*ArcSin[c + d*x]^2*Log[1 + E^(I*ArcSin[
c + d*x])] + 48*Log[Tan[ArcSin[c + d*x]/2]] + (48*I)*ArcSin[c + d*x]*PolyLo
g[2, -E^(I*ArcSin[c + d*x])] - (48*I)*ArcSin[c + d*x]*PolyLog[2, E^(I*ArcSi
n[c + d*x])] - 48*PolyLog[3, -E^(I*ArcSin[c + d*x])] + 48*PolyLog[3, E^(I*A
rcSin[c + d*x])] + 6*ArcSin[c + d*x]^2*Sec[ArcSin[c + d*x]/2]^2 - (16*ArcSi
n[c + d*x]^3*Sin[ArcSin[c + d*x]/2]^4)/(c + d*x)^3 - 24*ArcSin[c + d*x]*Tan
[ArcSin[c + d*x]/2] - 4*ArcSin[c + d*x]^3*Tan[ArcSin[c + d*x]/2]))/(12*d*e^
4) + (b^4*((-2*I)*Pi^4 + (4*I)*ArcSin[c + d*x]^4 - 24*ArcSin[c + d*x]^2*Cot
[ArcSin[c + d*x]/2] - 2*ArcSin[c + d*x]^4*Cot[ArcSin[c + d*x]/2] - 4*ArcSin
[c + d*x]^3*Csc[ArcSin[c + d*x]/2]^2 - ((c + d*x)*ArcSin[c + d*x]^4*Csc[Arc
Sin[c + d*x]/2]^4)/2 + 16*ArcSin[c + d*x]^3*Log[1 - E^((-I)*ArcSin[c + d*x]
)] + 96*ArcSin[c + d*x]*Log[1 - E^(I*ArcSin[c + d*x])] - 96*ArcSin[c + d*x]
*Log[1 + E^(I*ArcSin[c + d*x])] - 16*ArcSin[c + d*x]^3*Log[1 + E^(I*ArcSin[
c + d*x])] + (48*I)*ArcSin[c + d*x]^2*PolyLog[2, E^((-I)*ArcSin[c + d*x])]
+ (48*I)*(2 + ArcSin[c + d*x]^2)*PolyLog[2, -E^(I*ArcSin[c + d*x])] - (96*I
)*PolyLog[2, E^(I*ArcSin[c + d*x])] + 96*ArcSin[c + d*x]*PolyLog[3, E^((-I)
*ArcSin[c + d*x])] - 96*ArcSin[c + d*x]*PolyLog[3, -E^(I*ArcSin[c + d*x])]
- (96*I)*PolyLog[4, E^((-I)*ArcSin[c + d*x])] - (96*I)*PolyLog[4, -E^(I*Arc
Sin[c + d*x])] + 4*ArcSin[c + d*x]^3*Sec[ArcSin[c + d*x]/2]^2 - (8*ArcSin[c
 + d*x]^4*Sin[ArcSin[c + d*x]/2]^4)/(c + d*x)^3 - 24*ArcSin[c + d*x]^2*Tan[
ArcSin[c + d*x]/2] - 2*ArcSin[c + d*x]^4*Tan[ArcSin[c + d*x]/2]))/(24*d*e^4
) + (4*a^3*b*(-1/12*(ArcSin[c + d*x]*Cot[ArcSin[c + d*x]/2]) - Csc[ArcSin[c
 + d*x]/2]^2/24 - (ArcSin[c + d*x]*Cot[ArcSin[c + d*x]/2]*Csc[ArcSin[c + d*
x]/2]^2)/24 - Log[Cos[ArcSin[c + d*x]/2]]/6 + Log[Sin[ArcSin[c + d*x]/2]]/6
 + Sec[ArcSin[c + d*x]/2]^2/24 - (ArcSin[c + d*x]*Tan[ArcSin[c + d*x]/2])/1
2 - (ArcSin[c + d*x]*Sec[ArcSin[c + d*x]/2]^2*Tan[ArcSin[c + d*x]/2])/24))/
(d*e^4)
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 1211 vs. $2(525) = 1050$.
time = 0.58, size = 1212, normalized size = 2.76

method	result	size
derivativedivides	Expression too large to display	1212
default	Expression too large to display	1212

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^4,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(-2*a*b^3/e^4/(d*x+c)^2*arcsin(d*x+c)^2*(1-(d*x+c)^2)^(1/2)+4*I*a*b^3/e
^4*arcsin(d*x+c)*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-4*I*a*b^3/e^4*ar
csin(d*x+c)*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-2*a^2*b^2/e^4/(d*x+c)^
2*arcsin(d*x+c)*(1-(d*x+c)^2)^(1/2)-2*a^2*b^2/e^4/(d*x+c)+4*a^3*b/e^4*(-1/3
/(d*x+c)^3*arcsin(d*x+c)-1/6/(d*x+c)^2*(1-(d*x+c)^2)^(1/2)-1/6*arctanh(1/(1
-(d*x+c)^2)^(1/2)))-4*a*b^3/e^4*polylog(3,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+4
*a*b^3/e^4*polylog(3,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-8*a*b^3/e^4*arctanh(I*(
d*x+c)+(1-(d*x+c)^2)^(1/2))+4*b^4/e^4*arcsin(d*x+c)*ln(1-I*(d*x+c)-(1-(d*x+
c)^2)^(1/2))-4*I*b^4/e^4*polylog(4,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+4*I*b^4/
e^4*polylog(4,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))+4*I*b^4/e^4*polylog(2,-I*(d*x+
c)-(1-(d*x+c)^2)^(1/2))-4*I*b^4/e^4*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2)
)-1/3*b^4/e^4/(d*x+c)^3*arcsin(d*x+c)^4-2*b^4/e^4/(d*x+c)*arcsin(d*x+c)^2-2
/3*b^4/e^4*arcsin(d*x+c)^3*ln(1+I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-4*b^4/e^4*ar
csin(d*x+c)*polylog(3,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+2/3*b^4/e^4*arcsin(d*
x+c)^3*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))+4*b^4/e^4*arcsin(d*x+c)*polylog(
3,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-4*b^4/e^4*arcsin(d*x+c)*ln(1+I*(d*x+c)+(1-
(d*x+c)^2)^(1/2))-1/3*a^4/e^4/(d*x+c)^3-4/3*a*b^3/e^4/(d*x+c)^3*arcsin(d*x+
c)^3-4*a*b^3/e^4/(d*x+c)*arcsin(d*x+c)-2*a*b^3/e^4*arcsin(d*x+c)^2*ln(1+I*(
d*x+c)+(1-(d*x+c)^2)^(1/2))+2*a*b^3/e^4*arcsin(d*x+c)^2*ln(1-I*(d*x+c)-(1-(
d*x+c)^2)^(1/2))-2/3*b^4/e^4/(d*x+c)^2*arcsin(d*x+c)^3*(1-(d*x+c)^2)^(1/2)+
2*I*b^4/e^4*arcsin(d*x+c)^2*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-2*I*b
^4/e^4*arcsin(d*x+c)^2*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2))-2*a^2*b^2/e
^4/(d*x+c)^3*arcsin(d*x+c)^2-2*a^2*b^2/e^4*arcsin(d*x+c)*ln(1+I*(d*x+c)+(1-
(d*x+c)^2)^(1/2))+2*a^2*b^2/e^4*arcsin(d*x+c)*ln(1-I*(d*x+c)-(1-(d*x+c)^2)^
(1/2))+2*I*a^2*b^2/e^4*polylog(2,-I*(d*x+c)-(1-(d*x+c)^2)^(1/2))-2*I*a^2*b^
2/e^4*polylog(2,I*(d*x+c)+(1-(d*x+c)^2)^(1/2)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^4,x, algorithm="maxima")
```

```
[Out] -1/3*a^4/(d^4*x^3*e^4 + 3*c*d^3*x^2*e^4 + 3*c^2*d^2*x*e^4 + c^3*d*e^4) - 1/
3*(b^4*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^4 + 3*(d^4*x^
3*e^4 + 3*c*d^3*x^2*e^4 + 3*c^2*d^2*x*e^4 + c^3*d*e^4)*integrate(2/3*(2*(b^
4*d*x + b^4*c)*sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)*arctan2(d*x + c, sqrt(d
*x + c + 1)*sqrt(-d*x - c + 1))^3 - 6*(a*b^3*d^2*x^2 + 2*a*b^3*c*d*x + a*b^
3*c^2 - a*b^3)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^3 - 9
*(a^2*b^2*d^2*x^2 + 2*a^2*b^2*c*d*x + a^2*b^2*c^2 - a^2*b^2)*arctan2(d*x +
c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2 - 6*(a^3*b*d^2*x^2 + 2*a^3*b*c*d
*x + a^3*b*c^2 - a^3*b)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c +
```

```
1)))/(d^6*x^6*e^4 + 6*c*d^5*x^5*e^4 + (15*c^2*e^4 - e^4)*d^4*x^4 + 4*(5*c^3
*e^4 - c*e^4)*d^3*x^3 + c^6*e^4 + 3*(5*c^4*e^4 - 2*c^2*e^4)*d^2*x^2 - c^4*e
^4 + 2*(3*c^5*e^4 - 2*c^3*e^4)*d*x), x))/(d^4*x^3*e^4 + 3*c*d^3*x^2*e^4 + 3
*c^2*d^2*x*e^4 + c^3*d*e^4)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^4,x, algorithm="fricas")
```

```
[Out] integral((b^4*arcsin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6*a^2*b^2*arc
sin(d*x + c)^2 + 4*a^3*b*arcsin(d*x + c) + a^4)*e^(-4)/(d^4*x^4 + 4*c*d^3*x
^3 + 6*c^2*d^2*x^2 + 4*c^3*d*x + c^4), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a^4}{c^4+4c^3dx+6c^2d^2x^2+4cd^3x^3+d^4x^4}\,dx + \int \frac{b^4\operatorname{asin}^4(c+dx)}{c^4+4c^3dx+6c^2d^2x^2+4cd^3x^3+d^4x^4}\,dx + \int \frac{4ab^3\operatorname{asin}^3(c+dx)}{c^4+4c^3dx+6c^2d^2x^2+4cd^3x^3+d^4x^4}\,dx + \int \frac{6a^2b^2\operatorname{asin}^2(c+dx)}{c^4+4c^3dx+6c^2d^2x^2+4cd^3x^3+d^4x^4}\,dx + \int \frac{4a^3b\operatorname{asin}(c+dx)}{c^4+4c^3dx+6c^2d^2x^2+4cd^3x^3+d^4x^4}\,dx}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**4/(d*e*x+c*e)**4,x)
```

```
[Out] (Integral(a**4/(c**4 + 4*c**3*d*x + 6*c**2*d**2*x**2 + 4*c*d**3*x**3 + d**4
*x**4), x) + Integral(b**4*asin(c + d*x)**4/(c**4 + 4*c**3*d*x + 6*c**2*d**
2*x**2 + 4*c*d**3*x**3 + d**4*x**4), x) + Integral(4*a*b**3*asin(c + d*x)**
3/(c**4 + 4*c**3*d*x + 6*c**2*d**2*x**2 + 4*c*d**3*x**3 + d**4*x**4), x) +
Integral(6*a**2*b**2*asin(c + d*x)**2/(c**4 + 4*c**3*d*x + 6*c**2*d**2*x**2
 + 4*c*d**3*x**3 + d**4*x**4), x) + Integral(4*a**3*b*asin(c + d*x)/(c**4 +
 4*c**3*d*x + 6*c**2*d**2*x**2 + 4*c*d**3*x**3 + d**4*x**4), x))/e**4
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^4,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^4/(d*e*x + c*e)^4, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^4}{{\left(c\,e+d\,e\,x\right)}^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^4/(c*e + d*e*x)^4,x)
[Out] int((a + b*asin(c + d*x))^4/(c*e + d*e*x)^4, x)
```

3.214 $\int (a+b\mathbf{ArcSin}(c+dx))^5\,dx$

Optimal. Leaf size=164

$$120ab^4x+\frac{120b^5\sqrt{1-(c+dx)^2}}{d}+\frac{120b^5(c+dx)\text{ArcSin}(c+dx)}{d}-\frac{60b^3\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx)}{d}$$

```
[Out] 120*a*b^4*x+120*b^5*(d*x+c)*arcsin(d*x+c)/d-20*b^2*(d*x+c)*(a+b*arcsin(d*x+
c))^3/d+(d*x+c)*(a+b*arcsin(d*x+c))^5/d+120*b^5*(1-(d*x+c)^2)^(1/2)/d-60*b^
3*(a+b*arcsin(d*x+c))^2*(1-(d*x+c)^2)^(1/2)/d+5*b*(a+b*arcsin(d*x+c))^4*(1-
(d*x+c)^2)^(1/2)/d
```

Rubi [A]
time = 0.14, antiderivative size = 164, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$, Rules used = {4887, 4715, 4767, 267}

$$-\frac{60b^3\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^2}{d}-\frac{20b^2(c+dx)(a+b\text{ArcSin}(c+dx))^3}{d}+\frac{5b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^4}{d}+\frac{(c+dx)(a+b\text{ArcSin}(c+dx))^5}{d}+120ab^4x+\frac{120b^5(c+dx)\text{ArcSin}(c+dx)}{d}+\frac{120b^5\sqrt{1-(c+dx)^2}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^5,x]
```

```
[Out] 120*a*b^4*x + (120*b^5*Sqrt[1 - (c + d*x)^2])/d + (120*b^5*(c + d*x)*ArcSin
[c + d*x])/d - (60*b^3*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^2)/d -
 (20*b^2*(c + d*x)*(a + b*ArcSin[c + d*x])^3)/d + (5*b*Sqrt[1 - (c + d*x)^2
]*(a + b*ArcSin[c + d*x])^4)/d + ((c + d*x)*(a + b*ArcSin[c + d*x])^5)/d
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\int \left(a+b\sin^{-1}(c+dx)\right)^5\,dx = \frac{\text{Subst}\left(\int \left(a+b\sin^{-1}(x)\right)^5\,dx, x, c+dx\right)}{d}$$
$$= \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^5}{d} - \frac{(5b)\text{Subst}\left(\int \frac{x\left(a+b\sin^{-1}(x)\right)^4}{\sqrt{1-x^2}}\,dx, x, c+dx\right)}{d}$$
$$= \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^4}{d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^5}{d}$$
$$= -\frac{20b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^3}{d} + \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+\right.}{d}$$
$$= -\frac{60b^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{d} - \frac{20b^2(c+dx)\left(a+b\sin^{-1}(c\right.}{d}$$
$$= 120ab^4x - \frac{60b^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^2}{d} - \frac{20b^2(c+dx)(a+}{d}$$
$$= 120ab^4x + \frac{120b^5(c+dx)\sin^{-1}(c+dx)}{d} - \frac{60b^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(\right.}{d}$$
$$= 120ab^4x + \frac{120b^5\sqrt{1-(c+dx)^2}}{d} + \frac{120b^5(c+dx)\sin^{-1}(c+dx)}{d} - \frac{60b^3\sqrt{1}}{}$$

Mathematica [A]
time = 0.13, size = 150, normalized size = 0.91

$$\frac{5b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^4+(c+dx)(a+b\text{ArcSin}(c+dx))^5-20b^2\left(3b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^2+(c+dx)(a+b\text{ArcSin}(c+dx))^3-6b^2\left(a(c+dx)+b\sqrt{1-(c+dx)^2}+b(c+dx)\text{ArcSin}(c+dx)\right)\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^5,x]
```

```
[Out] (5*b*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^4 + (c + d*x)*(a + b*Arc
Sin[c + d*x])^5 - 20*b^2*(3*b*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])
^2 + (c + d*x)*(a + b*ArcSin[c + d*x])^3 - 6*b^2*(a*(c + d*x) + b*Sqrt[1 -
(c + d*x)^2] + b*(c + d*x)*ArcSin[c + d*x])))/d
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 366 vs. $2(158) = 316$.
time = 0.07, size = 367, normalized size = 2.24

method	result
derivativedivides	$\frac{(dx+c)a^5+b^5\left(\arcsin(dx+c)^5(dx+c)+5\arcsin(dx+c)^4\sqrt{1-(dx+c)^2}-20(dx+c)\arcsin(dx+c)^3-60\arcsin(dx+c\right.}{}$
default	$\frac{(dx+c)a^5+b^5\left(\arcsin(dx+c)^5(dx+c)+5\arcsin(dx+c)^4\sqrt{1-(dx+c)^2}-20(dx+c)\arcsin(dx+c)^3-60\arcsin(dx+c\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^5,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*((d*x+c)*a^5+b^5*(arcsin(d*x+c)^5*(d*x+c)+5*arcsin(d*x+c)^4*(1-(d*x+c)^
2)^(1/2)-20*(d*x+c)*arcsin(d*x+c)^3-60*arcsin(d*x+c)^2*(1-(d*x+c)^2)^(1/2)+
120*(1-(d*x+c)^2)^(1/2)+120*(d*x+c)*arcsin(d*x+c))+5*a*b^4*((d*x+c)*arcsin(
d*x+c)^4+4*arcsin(d*x+c)^3*(1-(d*x+c)^2)^(1/2)-12*(d*x+c)*arcsin(d*x+c)^2+2
4*d*x+24*c-24*arcsin(d*x+c)*(1-(d*x+c)^2)^(1/2))+10*a^2*b^3*((d*x+c)*arcsin
(d*x+c)^3+3*arcsin(d*x+c)^2*(1-(d*x+c)^2)^(1/2)-6*(1-(d*x+c)^2)^(1/2)-6*(d*
x+c)*arcsin(d*x+c))+10*a^3*b^2*((d*x+c)*arcsin(d*x+c)^2-2*d*x-2*c+2*arcsin(
d*x+c)*(1-(d*x+c)^2)^(1/2))+5*a^4*b*((d*x+c)*arcsin(d*x+c)+(1-(d*x+c)^2)^(1
/2)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^5,x, algorithm="maxima")
```

```
[Out] b^5*x*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^5 + a^5*x + 5*
((d*x + c)*arcsin(d*x + c) + sqrt(-(d*x + c)^2 + 1))*a^4*b/d + integrate(5*
(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)*b^5*d*x*arctan2(d*x + c, sqrt(d*x + c
 + 1)*sqrt(-d*x - c + 1))^4 + (a*b^4*d^2*x^2 + 2*a*b^4*c*d*x + a*b^4*c^2 -
a*b^4)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^4 + 2*(a^2*b^
3*d^2*x^2 + 2*a^2*b^3*c*d*x + a^2*b^3*c^2 - a^2*b^3)*arctan2(d*x + c, sqrt(
d*x + c + 1)*sqrt(-d*x - c + 1))^3 + 2*(a^3*b^2*d^2*x^2 + 2*a^3*b^2*c*d*x +
 a^3*b^2*c^2 - a^3*b^2)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c +
1))^2)/(d^2*x^2 + 2*c*d*x + c^2 - 1), x)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 323 vs. $2(158) = 316$.

time = 2.27, size = 323, normalized size = 1.97

$$\frac{(b^5dx+b^5c)\arcsin(dx+c)^5+5(ab^4dx+ab^4c)\arcsin(dx+c)^4+10((a^2b^3-2b^5)dx+(a^2b^3-2b^5)c)\arcsin(dx+c)^3+(a^5-20a^3b^2+120ab^4)dx+10((a^3b^2-6ab^4)dx+(a^3b^2-6ab^4)c)\arcsin(dx+c)^2+5((a^4b-12a^2b^3+24b^5)dx+(a^4b-12a^2b^3+24b^5)c)\arcsin(dx+c)+5(b^5\arcsin(dx+c)^4+4ab^4\arcsin(dx+c)^3+a^4b-12a^2b^3+24b^5+6(a^2b^3-2b^5)\arcsin(dx+c)^2+4(a^3b^2-6ab^4)\arcsin(dx+c))\sqrt{-d^2x^2-2cdx-c^2+1}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^5,x, algorithm="fricas")
```

```
[Out] ((b^5*d*x + b^5*c)*arcsin(d*x + c)^5 + 5*(a*b^4*d*x + a*b^4*c)*arcsin(d*x +
 c)^4 + 10*((a^2*b^3 - 2*b^5)*d*x + (a^2*b^3 - 2*b^5)*c)*arcsin(d*x + c)^3
+ (a^5 - 20*a^3*b^2 + 120*a*b^4)*d*x + 10*((a^3*b^2 - 6*a*b^4)*d*x + (a^3*b
^2 - 6*a*b^4)*c)*arcsin(d*x + c)^2 + 5*((a^4*b - 12*a^2*b^3 + 24*b^5)*d*x +
 (a^4*b - 12*a^2*b^3 + 24*b^5)*c)*arcsin(d*x + c) + 5*(b^5*arcsin(d*x + c)^
4 + 4*a*b^4*arcsin(d*x + c)^3 + a^4*b - 12*a^2*b^3 + 24*b^5 + 6*(a^2*b^3 -
2*b^5)*arcsin(d*x + c)^2 + 4*(a^3*b^2 - 6*a*b^4)*arcsin(d*x + c))*sqrt(-d^2
*x^2 - 2*c*d*x - c^2 + 1))/d
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 663 vs. $2(146) = 292$.
time = 0.49, size = 663, normalized size = 4.04

$$\begin{cases} a^5x+\frac{5a^4bc\,\mathrm{asin}(c+dx)}{d}+5a^4bx\,\mathrm{asin}(c+dx)+\frac{5a^4b\sqrt{-c^2-2cdx-d^2x^2+1}}{d}+\frac{10a^3b^2c\,\mathrm{asin}^2(c+dx)}{d}+10a^3b^2x\,\mathrm{asin}^2(c+dx)-20a^3b^2x+\frac{20a^3b^2\sqrt{-c^2-2cdx-d^2x^2+1}\,\mathrm{asin}(c+dx)}{d}+\frac{10a^2b^3c\,\mathrm{asin}^3(c+dx)}{d}-\frac{60a^2b^3c\,\mathrm{asin}(c+dx)}{d}+10a^2b^3x\,\mathrm{asin}^3(c+dx)-60a^2b^3x\,\mathrm{asin}(c+dx)+\frac{30a^2b^3\sqrt{-c^2-2cdx-d^2x^2+1}\,\mathrm{asin}^2(c+dx)}{d}-\frac{60a^2b^3\sqrt{-c^2-2cdx-d^2x^2+1}}{d}+\frac{5ab^4c\,\mathrm{asin}^4(c+dx)}{d}-\frac{60ab^4c\,\mathrm{asin}^2(c+dx)}{d}+5ab^4x\,\mathrm{asin}^4(c+dx)-60ab^4x\,\mathrm{asin}^2(c+dx)+120ab^4x+\frac{20ab^4\sqrt{-c^2-2cdx-d^2x^2+1}\,\mathrm{asin}^3(c+dx)}{d}-\frac{120ab^4\sqrt{-c^2-2cdx-d^2x^2+1}\,\mathrm{asin}(c+dx)}{d}+\frac{b^5c\,\mathrm{asin}^5(c+dx)}{d}-\frac{20b^5c\,\mathrm{asin}^3(c+dx)}{d}+\frac{120b^5c\,\mathrm{asin}(c+dx)}{d}+b^5x\,\mathrm{asin}^5(c+dx)-20b^5x\,\mathrm{asin}^3(c+dx)+120b^5x\,\mathrm{asin}(c+dx)+\frac{5b^5\sqrt{-c^2-2cdx-d^2x^2+1}\,\mathrm{asin}^4(c+dx)}{d}-\frac{60b^5\sqrt{-c^2-2cdx-d^2x^2+1}\,\mathrm{asin}^2(c+dx)}{d}+\frac{120b^5\sqrt{-c^2-2cdx-d^2x^2+1}}{d} & \text{for}\ d\neq 0\\ x(a+b\,\mathrm{asin}(c))^5 & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**5,x)
```

```
[Out] Piecewise((a**5*x + 5*a**4*b*c*asin(c + d*x)/d + 5*a**4*b*x*asin(c + d*x) +
 5*a**4*b*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/d + 10*a**3*b**2*c*asin(c +
 d*x)**2/d + 10*a**3*b**2*x*asin(c + d*x)**2 - 20*a**3*b**2*x + 20*a**3*b**
2*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/d + 10*a**2*b**3*c*as
in(c + d*x)**3/d - 60*a**2*b**3*c*asin(c + d*x)/d + 10*a**2*b**3*x*asin(c +
 d*x)**3 - 60*a**2*b**3*x*asin(c + d*x) + 30*a**2*b**3*sqrt(-c**2 - 2*c*d*x
 - d**2*x**2 + 1)*asin(c + d*x)**2/d - 60*a**2*b**3*sqrt(-c**2 - 2*c*d*x -
d**2*x**2 + 1)/d + 5*a*b**4*c*asin(c + d*x)**4/d - 60*a*b**4*c*asin(c + d*x
)**2/d + 5*a*b**4*x*asin(c + d*x)**4 - 60*a*b**4*x*asin(c + d*x)**2 + 120*a
*b**4*x + 20*a*b**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**3/
d - 120*a*b**4*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)/d + b**5
*c*asin(c + d*x)**5/d - 20*b**5*c*asin(c + d*x)**3/d + 120*b**5*c*asin(c +
d*x)/d + b**5*x*asin(c + d*x)**5 - 20*b**5*x*asin(c + d*x)**3 + 120*b**5*x*
asin(c + d*x) + 5*b**5*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)*
*4/d - 60*b**5*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)*asin(c + d*x)**2/d + 1
20*b**5*sqrt(-c**2 - 2*c*d*x - d**2*x**2 + 1)/d, Ne(d, 0)), (x*(a + b*asin(
c))**5, True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 482 vs. $2(158) = 316$.
time = 0.43, size = 482, normalized size = 2.94

$$\frac{(dx+c)b^5\arcsin(dx+c)^5}{d}+\frac{5(dx+c)ab^4\arcsin(dx+c)^4}{d}+\frac{5\sqrt{-(dx+c)^2+1}\,b^5\arcsin(dx+c)^4}{d}+\frac{10(dx+c)a^2b^3\arcsin(dx+c)^3}{d}-\frac{20(dx+c)b^5\arcsin(dx+c)^3}{d}+\frac{20\sqrt{-(dx+c)^2+1}\,ab^4\arcsin(dx+c)^3}{d}+\frac{10(dx+c)a^3b^2\arcsin(dx+c)^2}{d}-\frac{60(dx+c)ab^4\arcsin(dx+c)^2}{d}+\frac{30\sqrt{-(dx+c)^2+1}\,a^2b^3\arcsin(dx+c)^2}{d}-\frac{60\sqrt{-(dx+c)^2+1}\,b^5\arcsin(dx+c)^2}{d}+\frac{5(dx+c)a^4b\arcsin(dx+c)}{d}-\frac{60(dx+c)a^2b^3\arcsin(dx+c)}{d}+\frac{120(dx+c)b^5\arcsin(dx+c)}{d}+\frac{20\sqrt{-(dx+c)^2+1}\,a^3b^2\arcsin(dx+c)}{d}-\frac{120\sqrt{-(dx+c)^2+1}\,ab^4\arcsin(dx+c)}{d}+\frac{(dx+c)a^5}{d}-\frac{20(dx+c)a^3b^2}{d}+\frac{120(dx+c)ab^4}{d}+\frac{5\sqrt{-(dx+c)^2+1}\,a^4b}{d}-\frac{60\sqrt{-(dx+c)^2+1}\,a^2b^3}{d}+\frac{120\sqrt{-(dx+c)^2+1}\,b^5}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^5,x, algorithm="giac")
```

```
[Out] (d*x + c)*b^5*arcsin(d*x + c)^5/d + 5*(d*x + c)*a*b^4*arcsin(d*x + c)^4/d +
 5*sqrt(-(d*x + c)^2 + 1)*b^5*arcsin(d*x + c)^4/d + 10*(d*x + c)*a^2*b^3*ar
csin(d*x + c)^3/d - 20*(d*x + c)*b^5*arcsin(d*x + c)^3/d + 20*sqrt(-(d*x +
c)^2 + 1)*a*b^4*arcsin(d*x + c)^3/d + 10*(d*x + c)*a^3*b^2*arcsin(d*x + c)^
2/d - 60*(d*x + c)*a*b^4*arcsin(d*x + c)^2/d + 30*sqrt(-(d*x + c)^2 + 1)*a^
2*b^3*arcsin(d*x + c)^2/d - 60*sqrt(-(d*x + c)^2 + 1)*b^5*arcsin(d*x + c)^2
/d + 5*(d*x + c)*a^4*b*arcsin(d*x + c)/d - 60*(d*x + c)*a^2*b^3*arcsin(d*x
+ c)/d + 120*(d*x + c)*b^5*arcsin(d*x + c)/d + 20*sqrt(-(d*x + c)^2 + 1)*a^
3*b^2*arcsin(d*x + c)/d - 120*sqrt(-(d*x + c)^2 + 1)*a*b^4*arcsin(d*x + c)/
d + (d*x + c)*a^5/d - 20*(d*x + c)*a^3*b^2/d + 120*(d*x + c)*a*b^4/d + 5*sq
rt(-(d*x + c)^2 + 1)*a^4*b/d - 60*sqrt(-(d*x + c)^2 + 1)*a^2*b^3/d + 120*sq
rt(-(d*x + c)^2 + 1)*b^5/d
```

Mupad [B]
time = 0.67, size = 317, normalized size = 1.93

$$a^5\,x+\frac{10\,a^3\,b^2\,\left(2\,\mathrm{asin}(c+d\,x)\,\sqrt{1-{(c+d\,x)}^2}+\left({\mathrm{asin}(c+d\,x)}^2-2\right)\,(c+d\,x)\right)}{d}+\frac{5\,a^4\,b\,\left(\sqrt{1-{(c+d\,x)}^2}+\mathrm{asin}(c+d\,x)\,(c+d\,x)\right)}{d}+\frac{b^5\,(c+d\,x)\,\left({\mathrm{asin}(c+d\,x)}^5-20\,{\mathrm{asin}(c+d\,x)}^3+120\,\mathrm{asin}(c+d\,x)\right)}{d}+\frac{b^5\,\sqrt{1-{(c+d\,x)}^2}\,\left(5\,{\mathrm{asin}(c+d\,x)}^4-60\,{\mathrm{asin}(c+d\,x)}^2+120\right)}{d}+\frac{5\,a\,b^4\,(c+d\,x)\,\left({\mathrm{asin}(c+d\,x)}^4-12\,{\mathrm{asin}(c+d\,x)}^2+24\right)}{d}+\frac{10\,a^2\,b^3\,\left(3\,{\mathrm{asin}(c+d\,x)}^2-6\right)\,\sqrt{1-{(c+d\,x)}^2}}{d}-\frac{10\,a^2\,b^3\,\left(6\,\mathrm{asin}(c+d\,x)-{\mathrm{asin}(c+d\,x)}^3\right)\,(c+d\,x)}{d}-\frac{5\,a\,b^4\,\left(24\,\mathrm{asin}(c+d\,x)-4\,{\mathrm{asin}(c+d\,x)}^3\right)\,\sqrt{1-{(c+d\,x)}^2}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^5,x)
```

```
[Out] a^5*x + (10*a^3*b^2*(2*asin(c + d*x)*(1 - (c + d*x)^2)^(1/2) + (asin(c + d*
x)^2 - 2)*(c + d*x)))/d + (5*a^4*b*((1 - (c + d*x)^2)^(1/2) + asin(c + d*x)
*(c + d*x)))/d + (b^5*(c + d*x)*(120*asin(c + d*x) - 20*asin(c + d*x)^3 + a
sin(c + d*x)^5))/d + (b^5*(1 - (c + d*x)^2)^(1/2)*(5*asin(c + d*x)^4 - 60*a
sin(c + d*x)^2 + 120))/d + (5*a*b^4*(c + d*x)*(asin(c + d*x)^4 - 12*asin(c
+ d*x)^2 + 24))/d + (10*a^2*b^3*(3*asin(c + d*x)^2 - 6)*(1 - (c + d*x)^2)^(
1/2))/d - (10*a^2*b^3*(6*asin(c + d*x) - asin(c + d*x)^3)*(c + d*x))/d - (5
*a*b^4*(24*asin(c + d*x) - 4*asin(c + d*x)^3)*(1 - (c + d*x)^2)^(1/2))/d
```

3.215 $\int \frac{(ce+dex)^4}{a+b\text{ArcSin}(c+dx)}\,dx$

Optimal. Leaf size=213

$$\frac{e^4\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{8bd}-\frac{3e^4\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3(a+b\text{ArcSin}(c+dx))}{b}\right)}{16bd}+\frac{e^4\cos\left(\frac{5a}{b}\right)\text{CosInt}}{}$$

```
[Out] 1/8*e^4*Ci((a+b*arcsin(d*x+c))/b)*cos(a/b)/b/d-3/16*e^4*Ci(3*(a+b*arcsin(d*
x+c))/b)*cos(3*a/b)/b/d+1/16*e^4*Ci(5*(a+b*arcsin(d*x+c))/b)*cos(5*a/b)/b/d
+1/8*e^4*Si((a+b*arcsin(d*x+c))/b)*sin(a/b)/b/d-3/16*e^4*Si(3*(a+b*arcsin(d
*x+c))/b)*sin(3*a/b)/b/d+1/16*e^4*Si(5*(a+b*arcsin(d*x+c))/b)*sin(5*a/b)/b/
d
```

Rubi [A]
time = 0.29, antiderivative size = 213, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 7, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.304$, Rules used = {4889, 12, 4731, 4491, 3384, 3380, 3383}

$$\frac{e^4\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{8bd}-\frac{3e^4\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3(a+b\text{ArcSin}(c+dx))}{b}\right)}{16bd}+\frac{e^4\cos\left(\frac{5a}{b}\right)\text{CosIntegral}\left(\frac{5(a+b\text{ArcSin}(c+dx))}{b}\right)}{16bd}+\frac{e^4\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{8bd}-\frac{3e^4\sin\left(\frac{3a}{b}\right)\text{Si}\left(\frac{3(a+b\text{ArcSin}(c+dx))}{b}\right)}{16bd}+\frac{e^4\sin\left(\frac{5a}{b}\right)\text{Si}\left(\frac{5(a+b\text{ArcSin}(c+dx))}{b}\right)}{16bd}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^4/(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (e^4*Cos[a/b]*CosIntegral[(a + b*ArcSin[c + d*x])/b])/(8*b*d) - (3*e^4*Cos[
(3*a)/b]*CosIntegral[(3*(a + b*ArcSin[c + d*x]))/b])/(16*b*d) + (e^4*Cos[(5
*a)/b]*CosIntegral[(5*(a + b*ArcSin[c + d*x]))/b])/(16*b*d) + (e^4*Sin[a/b]
*SinIntegral[(a + b*ArcSin[c + d*x])/b])/(8*b*d) - (3*e^4*Sin[(3*a)/b]*SinI
ntegral[(3*(a + b*ArcSin[c + d*x]))/b])/(16*b*d) + (e^4*Sin[(5*a)/b]*SinInt
egral[(5*(a + b*ArcSin[c + d*x]))/b])/(16*b*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3384

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[c*(f/d) + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[c*(f/d) + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^4}{a+b\sin^{-1}(c+dx)}\,dx = \frac{\text{Subst}\left(\int \frac{e^4x^4}{a+b\sin^{-1}(x)}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^4\text{Subst}\left(\int \frac{x^4}{a+b\sin^{-1}(x)}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^4\text{Subst}\left(\int \frac{\cos(x)\sin^4(x)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{e^4\text{Subst}\left(\int \left(\frac{\cos(x)}{8(a+bx)} - \frac{3\cos(3x)}{16(a+bx)} + \frac{\cos(5x)}{16(a+bx)}\right)dx, x, \sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{e^4\text{Subst}\left(\int \frac{\cos(5x)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{16d} + \frac{e^4\text{Subst}\left(\int \frac{\cos(x)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right.}{8d}$$

$$= \frac{\left(e^4\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+x\right)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{8d} - \frac{\left(3e^4\cos\left(\frac{3a}{b}\right)\right)\text{Subst}\left(\int \right.}{}$$

$$= \frac{e^4\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)}{8bd} - \frac{3e^4\cos\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3a}{b}+3\sin^{-1}(c+dx)\right)}{16bd} + \frac{e^4}{}$$

Mathematica [A]
time = 0.24, size = 150, normalized size = 0.70

$$\frac{e^4\left(2\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)-3\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(3\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)+\cos\left(\frac{5a}{b}\right)\text{CosIntegral}\left(5\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)+2\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)-3\sin\left(\frac{3a}{b}\right)\text{Si}\left(3\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)+\sin\left(\frac{5a}{b}\right)\text{Si}\left(5\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\right)}{16bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^4/(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (e^4*(2*Cos[a/b]*CosIntegral[a/b + ArcSin[c + d*x]] - 3*Cos[(3*a)/b]*CosInt
egral[3*(a/b + ArcSin[c + d*x])] + Cos[(5*a)/b]*CosIntegral[5*(a/b + ArcSin
[c + d*x])] + 2*Sin[a/b]*SinIntegral[a/b + ArcSin[c + d*x]] - 3*Sin[(3*a)/b
]*SinIntegral[3*(a/b + ArcSin[c + d*x])] + Sin[(5*a)/b]*SinIntegral[5*(a/b
+ ArcSin[c + d*x])]))/(16*b*d)
```

Maple [A]
time = 0.12, size = 155, normalized size = 0.73

method	result
derivativedivides	$-\frac{e^4\left(3\,\text{sinIntegral}\left(3\arcsin(dx+c)+\frac{3a}{b}\right)\sin\left(\frac{3a}{b}\right)+3\,\text{cosineIntegral}\left(3\arcsin(dx+c)+\frac{3a}{b}\right)\cos\left(\frac{3a}{b}\right)-\text{sinIntegral}\left(5\arcsin(\right.\right.}{}$
default	$-\frac{e^4\left(3\,\text{sinIntegral}\left(3\arcsin(dx+c)+\frac{3a}{b}\right)\sin\left(\frac{3a}{b}\right)+3\,\text{cosineIntegral}\left(3\arcsin(dx+c)+\frac{3a}{b}\right)\cos\left(\frac{3a}{b}\right)-\text{sinIntegral}\left(5\arcsin(\right.\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^4/(a+b*arcsin(d*x+c)),x,method=_RETURNVERBOSE)
```

```
[Out] -1/16/d*e^4*(3*Si(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)+3*Ci(3*arcsin(d*x+c)+3*
a/b)*cos(3*a/b)-Si(5*arcsin(d*x+c)+5*a/b)*sin(5*a/b)-Ci(5*arcsin(d*x+c)+5*a
/b)*cos(5*a/b)-2*Si(arcsin(d*x+c)+a/b)*sin(a/b)-2*Ci(arcsin(d*x+c)+a/b)*cos
(a/b))/b
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)^4/(b*arcsin(d*x + c) + a), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral((d^4*x^4 + 4*c*d^3*x^3 + 6*c^2*d^2*x^2 + 4*c^3*d*x + c^4)*e^4/(b*a
rcsin(d*x + c) + a), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e^{4}\left(\int \frac{c^{4}}{a+b\operatorname{asin}{(c+dx)}}\,dx+\int \frac{d^{4}x^{4}}{a+b\operatorname{asin}{(c+dx)}}\,dx+\int \frac{4cd^{3}x^{3}}{a+b\operatorname{asin}{(c+dx)}}\,dx+\int \frac{6c^{2}d^{2}x^{2}}{a+b\operatorname{asin}{(c+dx)}}\,dx+\int \frac{4c^{3}dx}{a+b\operatorname{asin}{(c+dx)}}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**4/(a+b*asin(d*x+c)),x)
```

```
[Out] e**4*(Integral(c**4/(a + b*asin(c + d*x)), x) + Integral(d**4*x**4/(a + b*a
sin(c + d*x)), x) + Integral(4*c*d**3*x**3/(a + b*asin(c + d*x)), x) + Inte
gral(6*c**2*d**2*x**2/(a + b*asin(c + d*x)), x) + Integral(4*c**3*d*x/(a +
b*asin(c + d*x)), x))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 419 vs. 2(201) = 402.
time = 0.44, size = 419, normalized size = 1.97

$$\frac{e^{4}\cos\left(\frac{a}{b}\right)^{5}\operatorname{Ci}\left(\frac{5a}{b}+5\arcsin\left(dx+c\right)\right)}{bd}+\frac{e^{4}\cos\left(\frac{a}{b}\right)^{4}\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{5a}{b}+5\arcsin\left(dx+c\right)\right)}{bd}-\frac{5e^{4}\cos\left(\frac{a}{b}\right)^{3}\operatorname{Ci}\left(\frac{5a}{b}+5\arcsin\left(dx+c\right)\right)}{4bd}-\frac{3e^{4}\cos\left(\frac{a}{b}\right)^{3}\operatorname{Ci}\left(\frac{3a}{b}+3\arcsin\left(dx+c\right)\right)}{4bd}-\frac{3e^{4}\cos\left(\frac{a}{b}\right)^{2}\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{5a}{b}+5\arcsin\left(dx+c\right)\right)}{4bd}-\frac{3e^{4}\cos\left(\frac{a}{b}\right)^{2}\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{3a}{b}+3\arcsin\left(dx+c\right)\right)}{4bd}+\frac{5e^{4}\cos\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{5a}{b}+5\arcsin\left(dx+c\right)\right)}{16bd}+\frac{9e^{4}\cos\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{3a}{b}+3\arcsin\left(dx+c\right)\right)}{16bd}+\frac{e^{4}\cos\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{a}{b}+\arcsin\left(dx+c\right)\right)}{8bd}+\frac{e^{4}\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{5a}{b}+5\arcsin\left(dx+c\right)\right)}{16bd}+\frac{3e^{4}\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{3a}{b}+3\arcsin\left(dx+c\right)\right)}{16bd}+\frac{e^{4}\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a}{b}+\arcsin\left(dx+c\right)\right)}{8bd}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c)),x, algorithm="giac")

[Out] e^4*cos(a/b)^5*cos_integral(5*a/b + 5*arcsin(d*x + c))/(b*d) + e^4*cos(a/b)^4*sin(a/b)*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b*d) - 5/4*e^4*cos(a/b)^3*cos_integral(5*a/b + 5*arcsin(d*x + c))/(b*d) - 3/4*e^4*cos(a/b)^3*cos_integral(3*a/b + 3*arcsin(d*x + c))/(b*d) - 3/4*e^4*cos(a/b)^2*sin(a/b)*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b*d) - 3/4*e^4*cos(a/b)^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b*d) + 5/16*e^4*cos(a/b)*cos_integral(5*a/b + 5*arcsin(d*x + c))/(b*d) + 9/16*e^4*cos(a/b)*cos_integral(3*a/b + 3*arcsin(d*x + c))/(b*d) + 1/8*e^4*cos(a/b)*cos_integral(a/b + arcsin(d*x + c))/(b*d) + 1/16*e^4*sin(a/b)*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b*d) + 3/16*e^4*sin(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b*d) + 1/8*e^4*sin(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b*d)

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,e+d\,e\,x)^4}{a+b\,\mathrm{asin}\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((c*e + d*e*x)^4/(a + b*asin(c + d*x)),x)

[Out] int((c*e + d*e*x)^4/(a + b*asin(c + d*x)), x)

3.216 $\int \frac{(ce+dex)^3}{a+b\mathbf{ArcSin}(c+dx)}\,dx$

Optimal. Leaf size=145

$$-\frac{e^3\text{CosIntegral}\left(\frac{2(a+b\text{ArcSin}(c+dx))}{b}\right)\sin\left(\frac{2a}{b}\right)}{4bd}+\frac{e^3\text{CosIntegral}\left(\frac{4(a+b\text{ArcSin}(c+dx))}{b}\right)\sin\left(\frac{4a}{b}\right)}{8bd}+\frac{e^3\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2(a+b\text{ArcSin}(c+dx))}{b}\right)}{4bd}$$

```
[Out] 1/4*e^3*cos(2*a/b)*Si(2*(a+b*arcsin(d*x+c))/b)/b/d-1/8*e^3*cos(4*a/b)*Si(4*
(a+b*arcsin(d*x+c))/b)/b/d-1/4*e^3*Ci(2*(a+b*arcsin(d*x+c))/b)*sin(2*a/b)/b
/d+1/8*e^3*Ci(4*(a+b*arcsin(d*x+c))/b)*sin(4*a/b)/b/d
```

Rubi [A]
time = 0.22, antiderivative size = 145, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 7, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.304$, Rules used = {4889, 12, 4731, 4491, 3384, 3380, 3383}

$$-\frac{e^3\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2(a+b\text{ArcSin}(c+dx))}{b}\right)}{4bd}+\frac{e^3\sin\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4(a+b\text{ArcSin}(c+dx))}{b}\right)}{8bd}+\frac{e^3\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2(a+b\text{ArcSin}(c+dx))}{b}\right)}{4bd}-\frac{e^3\cos\left(\frac{4a}{b}\right)\text{Si}\left(\frac{4(a+b\text{ArcSin}(c+dx))}{b}\right)}{8bd}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x]),x]
```

```
[Out] -1/4*(e^3*CosIntegral[(2*(a + b*ArcSin[c + d*x]))/b]*Sin[(2*a)/b])/(b*d) +
(e^3*CosIntegral[(4*(a + b*ArcSin[c + d*x]))/b]*Sin[(4*a)/b])/(8*b*d) + (e^
3*Cos[(2*a)/b]*SinIntegral[(2*(a + b*ArcSin[c + d*x]))/b])/(4*b*d) - (e^3*C
os[(4*a)/b]*SinIntegral[(4*(a + b*ArcSin[c + d*x]))/b])/(8*b*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3384

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[c*(f/d) + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
```

```
)/d], Int[Cos[c*(f/d) + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ce+dex)^3}{a+b\sin^{-1}(c+dx)}\,dx &= \frac{\text{Subst}\left(\int \frac{e^3x^3}{a+b\sin^{-1}(x)}\,dx, x, c+dx\right)}{d}\\
&= \frac{e^3\text{Subst}\left(\int \frac{x^3}{a+b\sin^{-1}(x)}\,dx, x, c+dx\right)}{d}\\
&= \frac{e^3\text{Subst}\left(\int \frac{\cos(x)\sin^3(x)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{d}\\
&= \frac{e^3\text{Subst}\left(\int \left(\frac{\sin(2x)}{4(a+bx)}-\frac{\sin(4x)}{8(a+bx)}\right)\,dx, x, \sin^{-1}(c+dx)\right)}{d}\\
&= -\frac{e^3\text{Subst}\left(\int \frac{\sin(4x)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{8d}+\frac{e^3\text{Subst}\left(\int \frac{\sin(2x)}{a+bx}\,dx, x, \sin^{-1}(c+d\right.}{4d}\\
&= \frac{\left(e^3\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{4d}-\frac{\left(e^3\cos\left(\frac{4a}{b}\right)\right)\text{Subst}\left(\int\right.}{}\\
&= -\frac{e^3\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(c+dx)\right)\sin\left(\frac{2a}{b}\right)}{4bd}+\frac{e^3\text{Ci}\left(\frac{4a}{b}+4\sin^{-1}(c+dx)\right)\sin\left(\frac{4a}{b}\right)}{8bd}+
\end{aligned}$$

Mathematica [A]
time = 0.18, size = 109, normalized size = 0.75

$$\frac{e^3 \left(-2 \text{CosIntegral}\left(2 \left(\frac{a}{b}+\text{ArcSin}(c+d x)\right)\right) \sin \left(\frac{2 a}{b}\right)+\text{CosIntegral}\left(4 \left(\frac{a}{b}+\text{ArcSin}(c+d x)\right)\right) \sin \left(\frac{4 a}{b}\right)+2 \cos \left(\frac{2 a}{b}\right) \text{Si}\left(2 \left(\frac{a}{b}+\text{ArcSin}(c+d x)\right)\right)-\cos \left(\frac{4 a}{b}\right) \text{Si}\left(4 \left(\frac{a}{b}+\text{ArcSin}(c+d x)\right)\right)\right)}{8 b d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (e^3*(-2*CosIntegral[2*(a/b + ArcSin[c + d*x])]*Sin[(2*a)/b] + CosIntegral[
4*(a/b + ArcSin[c + d*x])]*Sin[(4*a)/b] + 2*Cos[(2*a)/b]*SinIntegral[2*(a/b
 + ArcSin[c + d*x])] - Cos[(4*a)/b]*SinIntegral[4*(a/b + ArcSin[c + d*x])])
)/(8*b*d)
```

Maple [A]
time = 0.12, size = 112, normalized size = 0.77

method	result
derivativedivides	$-\frac{e^3 (2\,\text{cosineIntegral}(2\arcsin(dx+c)+\frac{2a}{b})\sin(\frac{2a}{b})-\text{cosineIntegral}(4\arcsin(dx+c)+\frac{4a}{b})\sin(\frac{4a}{b})+\text{sinIntegral}(4\arcsin(d}{8db}$
default	$-\frac{e^3 (2\,\text{cosineIntegral}(2\arcsin(dx+c)+\frac{2a}{b})\sin(\frac{2a}{b})-\text{cosineIntegral}(4\arcsin(dx+c)+\frac{4a}{b})\sin(\frac{4a}{b})+\text{sinIntegral}(4\arcsin(d}{8db}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3/(a+b*arcsin(d*x+c)),x,method=_RETURNVERBOSE)
```

```
[Out] -1/8/d*e^3*(2*Ci(2*arcsin(d*x+c)+2*a/b)*sin(2*a/b)-Ci(4*arcsin(d*x+c)+4*a/b
)*sin(4*a/b)+Si(4*arcsin(d*x+c)+4*a/b)*cos(4*a/b)-2*Si(2*arcsin(d*x+c)+2*a/
b)*cos(2*a/b))/b
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)^3/(b*arcsin(d*x + c) + a), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral((d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3)*e^3/(b*arcsin(d*x + c) +
 a), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e^3\left(\int\frac{c^3}{a+b\,\mathrm{asin}\,(c+dx)}\,dx+\int\frac{d^3x^3}{a+b\,\mathrm{asin}\,(c+dx)}\,dx+\int\frac{3cd^2x^2}{a+b\,\mathrm{asin}\,(c+dx)}\,dx+\int\frac{3c^2dx}{a+b\,\mathrm{asin}\,(c+dx)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3/(a+b*asin(d*x+c)),x)
```

```
[Out] e**3*(Integral(c**3/(a + b*asin(c + d*x)), x) + Integral(d**3*x**3/(a + b*a
sin(c + d*x)), x) + Integral(3*c*d**2*x**2/(a + b*asin(c + d*x)), x) + Inte
gral(3*c**2*d*x/(a + b*asin(c + d*x)), x))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 277 vs. 2(137) = 274.
time = 0.44, size = 277, normalized size = 1.91

$$\frac{e^3\cos\left(\frac{a}{b}\right)^3\mathrm{Ci}\left(\frac{4a}{b}+4\arcsin\left(dx+c\right)\right)\sin\left(\frac{a}{b}\right)}{bd}-\frac{e^3\cos\left(\frac{a}{b}\right)^4\mathrm{Si}\left(\frac{4a}{b}+4\arcsin\left(dx+c\right)\right)}{bd}-\frac{e^3\cos\left(\frac{a}{b}\right)\mathrm{Ci}\left(\frac{4a}{b}+4\arcsin\left(dx+c\right)\right)\sin\left(\frac{a}{b}\right)}{2bd}-\frac{e^3\cos\left(\frac{a}{b}\right)\mathrm{Ci}\left(\frac{2a}{b}+2\arcsin\left(dx+c\right)\right)\sin\left(\frac{a}{b}\right)}{2bd}+\frac{e^3\cos\left(\frac{a}{b}\right)^2\mathrm{Si}\left(\frac{4a}{b}+4\arcsin\left(dx+c\right)\right)}{bd}+\frac{e^3\cos\left(\frac{a}{b}\right)^2\mathrm{Si}\left(\frac{2a}{b}+2\arcsin\left(dx+c\right)\right)}{2bd}-\frac{e^3\mathrm{Si}\left(\frac{4a}{b}+4\arcsin\left(dx+c\right)\right)}{8bd}-\frac{e^3\mathrm{Si}\left(\frac{2a}{b}+2\arcsin\left(dx+c\right)\right)}{4bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] e^3*cos(a/b)^3*cos_integral(4*a/b + 4*arcsin(d*x + c))*sin(a/b)/(b*d) - e^3
*cos(a/b)^4*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b*d) - 1/2*e^3*cos(a/b
)*cos_integral(4*a/b + 4*arcsin(d*x + c))*sin(a/b)/(b*d) - 1/2*e^3*cos(a/b)
*cos_integral(2*a/b + 2*arcsin(d*x + c))*sin(a/b)/(b*d) + e^3*cos(a/b)^2*si
n_integral(4*a/b + 4*arcsin(d*x + c))/(b*d) + 1/2*e^3*cos(a/b)^2*sin_integr
al(2*a/b + 2*arcsin(d*x + c))/(b*d) - 1/8*e^3*sin_integral(4*a/b + 4*arcsin
(d*x + c))/(b*d) - 1/4*e^3*sin_integral(2*a/b + 2*arcsin(d*x + c))/(b*d)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{{\left(c\,e+d\,e\,x\right)}^3}{a+b\,\mathrm{asin}\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^3/(a + b*asin(c + d*x)),x)
```

```
[Out] int((c*e + d*e*x)^3/(a + b*asin(c + d*x)), x)
```

3.217 $\int \frac{(ce+dex)^2}{a+b\mathbf{ArcSin}(c+dx)}\,dx$

Optimal. Leaf size=141

$$\frac{e^2\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{4bd}-\frac{e^2\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3(a+b\text{ArcSin}(c+dx))}{b}\right)}{4bd}+\frac{e^2\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\text{Arc}}{}\right.}{4bd}$$

```
[Out] 1/4*e^2*Ci((a+b*arcsin(d*x+c))/b)*cos(a/b)/b/d-1/4*e^2*Ci(3*(a+b*arcsin(d*x
+c))/b)*cos(3*a/b)/b/d+1/4*e^2*Si((a+b*arcsin(d*x+c))/b)*sin(a/b)/b/d-1/4*e
^2*Si(3*(a+b*arcsin(d*x+c))/b)*sin(3*a/b)/b/d
```

Rubi [A]
time = 0.18, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 7, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.304$, Rules used = {4889, 12, 4731, 4491, 3384, 3380, 3383}

$$\frac{e^2\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{4bd}-\frac{e^2\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3(a+b\text{ArcSin}(c+dx))}{b}\right)}{4bd}+\frac{e^2\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{4bd}-\frac{e^2\sin\left(\frac{3a}{b}\right)\text{Si}\left(\frac{3(a+b\text{ArcSin}(c+dx))}{b}\right)}{4bd}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (e^2*Cos[a/b]*CosIntegral[(a + b*ArcSin[c + d*x])/b])/(4*b*d) - (e^2*Cos[(3
*a)/b]*CosIntegral[(3*(a + b*ArcSin[c + d*x]))/b])/(4*b*d) + (e^2*Sin[a/b]*
SinIntegral[(a + b*ArcSin[c + d*x])/b])/(4*b*d) - (e^2*Sin[(3*a)/b]*SinInte
gral[(3*(a + b*ArcSin[c + d*x]))/b])/(4*b*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3384

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[c*(f/d) + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
```

```
)/d], Int[Cos[c*(f/d) + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ce+dex)^2}{a+b\sin^{-1}(c+dx)}\,dx &= \frac{\text{Subst}\left(\int \frac{e^2x^2}{a+b\sin^{-1}(x)}\,dx, x, c+dx\right)}{d} \\
&= \frac{e^2\text{Subst}\left(\int \frac{x^2}{a+b\sin^{-1}(x)}\,dx, x, c+dx\right)}{d} \\
&= \frac{e^2\text{Subst}\left(\int \frac{\cos(x)\sin^2(x)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{d} \\
&= \frac{e^2\text{Subst}\left(\int \left(\frac{\cos(x)}{4(a+bx)}-\frac{\cos(3x)}{4(a+bx)}\right)\,dx, x, \sin^{-1}(c+dx)\right)}{d} \\
&= \frac{e^2\text{Subst}\left(\int \frac{\cos(x)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{4d}-\frac{e^2\text{Subst}\left(\int \frac{\cos(3x)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{4d} \\
&= \frac{\left(e^2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+x\right)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{4d}-\frac{\left(e^2\cos\left(\frac{3a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos}{}\right.}{} \\
&= \frac{e^2\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)}{4bd}-\frac{e^2\cos\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3a}{b}+3\sin^{-1}(c+dx)\right)}{4bd}+\frac{e^2\,\text{si}}{}
\end{aligned}$$

Mathematica [A]
time = 0.15, size = 102, normalized size = 0.72

$$\frac{e^2\left(\cos\left(\frac{a}{b}\right)\mathrm{CosIntegral}\left(\frac{a}{b}+\mathrm{ArcSin}(c+dx)\right)-\cos\left(\frac{3a}{b}\right)\mathrm{CosIntegral}\left(3\left(\frac{a}{b}+\mathrm{ArcSin}(c+dx)\right)\right)+\sin\left(\frac{a}{b}\right)\mathrm{Si}\left(\frac{a}{b}+\mathrm{ArcSin}(c+dx)\right)-\sin\left(\frac{3a}{b}\right)\mathrm{Si}\left(3\left(\frac{a}{b}+\mathrm{ArcSin}(c+dx)\right)\right)\right)}{4bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x]),x]
[Out] (e^2*(Cos[a/b]*CosIntegral[a/b + ArcSin[c + d*x]] - Cos[(3*a)/b]*CosIntegra
l[3*(a/b + ArcSin[c + d*x])] + Sin[a/b]*SinIntegral[a/b + ArcSin[c + d*x]]
- Sin[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c + d*x])]))/(4*b*d)
```

Maple [A]
time = 0.11, size = 103, normalized size = 0.73

method	result
derivativedivides	$\frac{e^2\left(\mathrm{sinIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)+\mathrm{cosineIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)-\mathrm{sinIntegral}\left(3\arcsin(dx+c)+\frac{3a}{b}\right)\sin}{4db}$
default	$\frac{e^2\left(\mathrm{sinIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)+\mathrm{cosineIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)-\mathrm{sinIntegral}\left(3\arcsin(dx+c)+\frac{3a}{b}\right)\sin}{4db}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2/(a+b*arcsin(d*x+c)),x,method=_RETURNVERBOSE)
[Out] 1/4/d*e^2*(Si(arcsin(d*x+c)+a/b)*sin(a/b)+Ci(arcsin(d*x+c)+a/b)*cos(a/b)-Si
(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)-Ci(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b))/b
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c)),x, algorithm="maxima")
[Out] integrate((d*x*e + c*e)^2/(b*arcsin(d*x + c) + a), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c)),x, algorithm="fricas")
[Out] integral((d^2*x^2 + 2*c*d*x + c^2)*e^2/(b*arcsin(d*x + c) + a), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e^{2}\left(\int \frac{c^{2}}{a+b\operatorname{asin}{(c+dx)}}\,dx+\int \frac{d^{2}x^{2}}{a+b\operatorname{asin}{(c+dx)}}\,dx+\int \frac{2cdx}{a+b\operatorname{asin}{(c+dx)}}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2/(a+b*asin(d*x+c)),x)
```

```
[Out] e**2*(Integral(c**2/(a + b*asin(c + d*x)), x) + Integral(d**2*x**2/(a + b*a
sin(c + d*x)), x) + Integral(2*c*d*x/(a + b*asin(c + d*x)), x))
```

Giac [A]
time = 0.42, size = 203, normalized size = 1.44

$$-\frac{e^{2}\cos\left(\frac{a}{b}\right)^{3}\operatorname{Ci}\left(\frac{3a}{b}+3\arcsin\left(dx+c\right)\right)}{bd}-\frac{e^{2}\cos\left(\frac{a}{b}\right)^{2}\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{3a}{b}+3\arcsin\left(dx+c\right)\right)}{bd}+\frac{3e^{2}\cos\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{3a}{b}+3\arcsin\left(dx+c\right)\right)}{4bd}+\frac{e^{2}\cos\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{a}{b}+\arcsin\left(dx+c\right)\right)}{4bd}+\frac{e^{2}\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{3a}{b}+3\arcsin\left(dx+c\right)\right)}{4bd}+\frac{e^{2}\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a}{b}+\arcsin\left(dx+c\right)\right)}{4bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] -e^2*cos(a/b)^3*cos_integral(3*a/b + 3*arcsin(d*x + c))/(b*d) - e^2*cos(a/b
)^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b*d) + 3/4*e^2*cos(a/
b)*cos_integral(3*a/b + 3*arcsin(d*x + c))/(b*d) + 1/4*e^2*cos(a/b)*cos_int
egral(a/b + arcsin(d*x + c))/(b*d) + 1/4*e^2*sin(a/b)*sin_integral(3*a/b +
3*arcsin(d*x + c))/(b*d) + 1/4*e^2*sin(a/b)*sin_integral(a/b + arcsin(d*x +
 c))/(b*d)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,e+d\,e\,x\right)}^2}{a+b\,\mathrm{asin}\left(c+d\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^2/(a + b*asin(c + d*x)),x)
```

```
[Out] int((c*e + d*e*x)^2/(a + b*asin(c + d*x)), x)
```

3.218 $\int \frac{ce+dex}{a+b\text{ArcSin}(c+dx)}\,dx$

Optimal. Leaf size=69

$$-\frac{e\text{CosIntegral}\left(\frac{2(a+b\text{ArcSin}(c+dx))}{b}\right)\sin\left(\frac{2a}{b}\right)}{2bd}+\frac{e\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2(a+b\text{ArcSin}(c+dx))}{b}\right)}{2bd}$$

```
[Out] 1/2*e*cos(2*a/b)*Si(2*(a+b*arcsin(d*x+c))/b)/b/d-1/2*e*Ci(2*(a+b*arcsin(d*x
+c))/b)*sin(2*a/b)/b/d
```

Rubi [A]
time = 0.10, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4889, 12, 4731, 4491, 3384, 3380, 3383}

$$\frac{e\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2(a+b\text{ArcSin}(c+dx))}{b}\right)}{2bd}-\frac{e\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2(a+b\text{ArcSin}(c+dx))}{b}\right)}{2bd}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)/(a + b*ArcSin[c + d*x]),x]
```

```
[Out] -1/2*(e*CosIntegral[(2*(a + b*ArcSin[c + d*x]))/b]*Sin[(2*a)/b])/(b*d) + (e
*Cos[(2*a)/b]*SinIntegral[(2*(a + b*ArcSin[c + d*x]))/b])/(2*b*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3384

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[c*(f/d) + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[c*(f/d) + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
```

```
NeQ[d*e - c*f, 0]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$
\begin{aligned}
\int \frac{ce+dex}{a+b\sin^{-1}(c+dx)}\,dx &= \frac{\text{Subst}\left(\int \frac{ex}{a+b\sin^{-1}(x)}\,dx, x, c+dx\right)}{d}\\
&= \frac{e\text{Subst}\left(\int \frac{x}{a+b\sin^{-1}(x)}\,dx, x, c+dx\right)}{d}\\
&= \frac{e\text{Subst}\left(\int \frac{\cos(x)\sin(x)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{d}\\
&= \frac{e\text{Subst}\left(\int \frac{\sin(2x)}{2(a+bx)}\,dx, x, \sin^{-1}(c+dx)\right)}{d}\\
&= \frac{e\text{Subst}\left(\int \frac{\sin(2x)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{2d}\\
&= \frac{\left(e\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{2d} - \frac{\left(e\sin\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos
\end{aligned}
$$

$$
= -\frac{e\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(c+dx)\right)\sin\left(\frac{2a}{b}\right)}{2bd} + \frac{e\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\sin^{-1}(c+dx)\right)}{2bd}
$$

Mathematica [A]

time = 0.07, size = 61, normalized size = 0.88

$$\frac{e\left(-\text{CosIntegral}\left(\frac{2a}{b}+2\text{ArcSin}(c+dx)\right)\sin\left(\frac{2a}{b}\right)+\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\text{ArcSin}(c+dx)\right)\right)}{2bd}$$

Antiderivative was successfully verified.

[In] Integrate[(c*e + d*e*x)/(a + b*ArcSin[c + d*x]),x]

[Out] (e*(-(CosIntegral[(2*a)/b + 2*ArcSin[c + d*x]]*Sin[(2*a)/b]) + Cos[(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c + d*x]]))/(2*b*d)

Maple [A]
time = 0.04, size = 60, normalized size = 0.87

method	result	size
derivativedivides	$\frac{e\left(\text{sinIntegral}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\cos\left(\frac{2a}{b}\right)-\text{cosineIntegral}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\sin\left(\frac{2a}{b}\right)\right)}{2db}$	60
default	$\frac{e\left(\text{sinIntegral}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\cos\left(\frac{2a}{b}\right)-\text{cosineIntegral}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\sin\left(\frac{2a}{b}\right)\right)}{2db}$	60

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*e*x+c*e)/(a+b*arcsin(d*x+c)),x,method=_RETURNVERBOSE)

[Out] 1/2/d*e*(Si(2*arcsin(d*x+c)+2*a/b)*cos(2*a/b)-Ci(2*arcsin(d*x+c)+2*a/b)*sin(2*a/b))/b

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c)),x, algorithm="maxima")

[Out] integrate((d*x*e + c*e)/(b*arcsin(d*x + c) + a), x)

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c)),x, algorithm="fricas")

[Out] integral((d*x + c)*e/(b*arcsin(d*x + c) + a), x)

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$e\left(\int \frac{c}{a+b\operatorname{asin}(c+dx)}\,dx+\int \frac{dx}{a+b\operatorname{asin}(c+dx)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*asin(d*x+c)),x)
```

```
[Out] e*(Integral(c/(a + b*asin(c + d*x)), x) + Integral(d*x/(a + b*asin(c + d*x)
), x))
```

Giac [**A**]
time = 0.43, size = 95, normalized size = 1.38

$$-\frac{e\cos\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{2a}{b}+2\arcsin\left(dx+c\right)\right)\sin\left(\frac{a}{b}\right)}{bd}+\frac{e\cos\left(\frac{a}{b}\right)^{2}\operatorname{Si}\left(\frac{2a}{b}+2\arcsin\left(dx+c\right)\right)}{bd}-\frac{e\operatorname{Si}\left(\frac{2a}{b}+2\arcsin\left(dx+c\right)\right)}{2bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] -e*cos(a/b)*cos_integral(2*a/b + 2*arcsin(d*x + c))*sin(a/b)/(b*d) + e*cos(
a/b)^2*sin_integral(2*a/b + 2*arcsin(d*x + c))/(b*d) - 1/2*e*sin_integral(2
*a/b + 2*arcsin(d*x + c))/(b*d)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{c\,e+d\,e\,x}{a+b\operatorname{asin}\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)/(a + b*asin(c + d*x)),x)
```

```
[Out] int((c*e + d*e*x)/(a + b*asin(c + d*x)), x)
```

3.219 $\int \frac{1}{a+b\mathbf{ArcSin}(c+dx)}\,dx$

Optimal. Leaf size=57

$$\frac{\cos\left(\frac{a}{b}\right)\operatorname{CosIntegral}\left(\frac{a+b\operatorname{ArcSin}(c+dx)}{b}\right)}{bd}+\frac{\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a+b\operatorname{ArcSin}(c+dx)}{b}\right)}{bd}$$

```
[Out] Ci((a+b*arcsin(d*x+c))/b)*cos(a/b)/b/d+Si((a+b*arcsin(d*x+c))/b)*sin(a/b)/b
/d
```

Rubi [A]
time = 0.06, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.417$, Rules used = {4887, 4719, 3384, 3380, 3383}

$$\frac{\cos\left(\frac{a}{b}\right)\operatorname{CosIntegral}\left(\frac{a+b\operatorname{ArcSin}(c+dx)}{b}\right)}{bd}+\frac{\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a+b\operatorname{ArcSin}(c+dx)}{b}\right)}{bd}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(-1),x]
```

```
[Out] (Cos[a/b]*CosIntegral[(a + b*ArcSin[c + d*x])/b])/(b*d) + (Sin[a/b]*SinInte
gral[(a + b*ArcSin[c + d*x])/b])/(b*d)
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3384

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[c*(f/d) + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[c*(f/d) + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4719

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[-a/b + x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c
```

```
, n}, x]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{1}{a+b\sin^{-1}(c+dx)}\,dx &= \frac{\text{Subst}\left(\int \frac{1}{a+b\sin^{-1}(x)}\,dx, x, c+dx\right)}{d}\\ &= \frac{\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}-\frac{x}{b}\right)}{x}\,dx, x, a+b\sin^{-1}(c+dx)\right)}{bd}\\ &= \frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\cos\left(\frac{x}{b}\right)}{x}\,dx, x, a+b\sin^{-1}(c+dx)\right)}{bd} + \frac{\sin\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\sin\left(\frac{x}{b}\right)}{x}\,dx,\right.}{bd}\\ &= \frac{\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{bd} + \frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(c+dx)}{b}\right)}{bd}\end{aligned}$$

Mathematica [A]
time = 0.07, size = 48, normalized size = 0.84

$$\frac{\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)+\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)}{bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(-1),x]
[Out] (Cos[a/b]*CosIntegral[a/b + ArcSin[c + d*x]] + Sin[a/b]*SinIntegral[a/b + A
rcSin[c + d*x]])/(b*d)
```

Maple [A]
time = 0.09, size = 52, normalized size = 0.91

method	result	size
derivativedivides	$\frac{\frac{\text{sinIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)}{b}+\frac{\text{cosineIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)}{b}}{d}$	52
default	$\frac{\frac{\text{sinIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)}{b}+\frac{\text{cosineIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)}{b}}{d}$	52

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(Si(arcsin(d*x+c)+a/b)*sin(a/b)/b+Ci(arcsin(d*x+c)+a/b)*cos(a/b)/b)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] integrate(1/(b*arcsin(d*x + c) + a), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(1/(b*arcsin(d*x + c) + a), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{a+b\,\mathrm{asin}\,(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c)),x)
```

```
[Out] Integral(1/(a + b*asin(c + d*x)), x)
```

Giac [A]
time = 0.42, size = 53, normalized size = 0.93

$$\frac{\cos\left(\frac{a}{b}\right)\mathrm{Ci}\left(\frac{a}{b}+\arcsin\left(dx+c\right)\right)}{bd}+\frac{\sin\left(\frac{a}{b}\right)\mathrm{Si}\left(\frac{a}{b}+\arcsin\left(dx+c\right)\right)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] cos(a/b)*cos_integral(a/b + arcsin(d*x + c))/(b*d) + sin(a/b)*sin_integral(
a/b + arcsin(d*x + c))/(b*d)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{1}{a+b\,\mathrm{asin}\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(c + d*x)),x)
```

```
[Out] int(1/(a + b*asin(c + d*x)), x)
```

3.220 $\int \frac{1}{(ce+dex)(a+b\textbf{ArcSin}(c+dx))} dx$

Optimal. Leaf size=27

$$\frac{\text{Int}\left(\frac{1}{(c+dx)(a+b\text{ArcSin}(c+dx))},x\right)}{e}$$

```
[Out] Unintegrable(1/(d*x+c)/(a+b*arcsin(d*x+c)),x)/e
```

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(ce+dex)(a+b\text{ArcSin}(c+dx))} dx$$

Verification is not applicable to the result.

```
[In] Int[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])),x]
[Out] Defer[Subst][Defer[Int][1/(x*(a + b*ArcSin[x])), x], x, c + d*x]/(d*e)
```

Rubi steps

$$\begin{aligned}\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)} dx &= \frac{\text{Subst}\left(\int \frac{1}{ex(a+b\sin^{-1}(x))} dx, x, c+dx\right)}{d}\\ &= \frac{\text{Subst}\left(\int \frac{1}{x(a+b\sin^{-1}(x))} dx, x, c+dx\right)}{de}\end{aligned}$$

Mathematica [A]
time = 0.60, size = 0, normalized size = 0.00

$$\int \frac{1}{(ce+dex)(a+b\text{ArcSin}(c+dx))} dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])),x]
[Out] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])), x]
```

Maple [A]
time = 0.14, size = 0, normalized size = 0.00

$$\int \frac{1}{(dex+ce)\left(a+b\arcsin(dx+c)\right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c)),x)
```

```
[Out] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c)),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] integrate(1/((d*x*e + c*e)*(b*arcsin(d*x + c) + a)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*d*x + b*c)*arcsin(d*x + c)*e + (a*d*x + a*c)*e), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{1}{ac+adx+bc\operatorname{asin}(c+dx)+bdx\operatorname{asin}(c+dx)}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*asin(d*x+c)),x)
```

```
[Out] Integral(1/(a*c + a*d*x + b*c*asin(c + d*x) + b*d*x*asin(c + d*x)), x)/e
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(1/((d*e*x + c*e)*(b*arcsin(d*x + c) + a)), x)
```

Mupad [A]

time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{(ce + dex)\,(a + b\,\mathrm{asin}\,(c + dx))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((c*e + d*e*x)*(a + b*asin(c + d*x))),x)
[Out] int(1/((c*e + d*e*x)*(a + b*asin(c + d*x))), x)
```

3.221 $\int \frac{(ce+dex)^4}{(a+b\mathbf{ArcSin}(c+dx))^2}\,dx$

Optimal. Leaf size=258

$$-\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{bd(a+b\text{ArcSin}(c+dx))}+\frac{e^4\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)\sin\left(\frac{a}{b}\right)}{8b^2d}-\frac{9e^4\text{CosIntegral}\left(\frac{3(a+b\text{ArcSin}(c+dx}{b}\right.}{16b^2d}$$

```
[Out] -1/8*e^4*cos(a/b)*Si((a+b*arcsin(d*x+c))/b)/b^2/d+9/16*e^4*cos(3*a/b)*Si(3*
(a+b*arcsin(d*x+c))/b)/b^2/d-5/16*e^4*cos(5*a/b)*Si(5*(a+b*arcsin(d*x+c))/b
)/b^2/d+1/8*e^4*Ci((a+b*arcsin(d*x+c))/b)*sin(a/b)/b^2/d-9/16*e^4*Ci(3*(a+b
*arcsin(d*x+c))/b)*sin(3*a/b)/b^2/d+5/16*e^4*Ci(5*(a+b*arcsin(d*x+c))/b)*si
n(5*a/b)/b^2/d-e^4*(d*x+c)^4*(1-(d*x+c)^2)^(1/2)/b/d/(a+b*arcsin(d*x+c))
```

Rubi [A]
time = 0.25, antiderivative size = 258, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.261$, Rules used = {4889, 12, 4727, 3384, 3380, 3383}

$$\frac{e^4\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{8b^2d}-\frac{9e^4\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3(a+b\text{ArcSin}(c+dx))}{b}\right)}{16b^2d}+\frac{5e^4\sin\left(\frac{5a}{b}\right)\text{CosIntegral}\left(\frac{5(a+b\text{ArcSin}(c+dx))}{b}\right)}{16b^2d}-\frac{e^4\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{8b^2d}+\frac{9e^4\cos\left(\frac{3a}{b}\right)\text{Si}\left(\frac{3(a+b\text{ArcSin}(c+dx))}{b}\right)}{16b^2d}-\frac{5e^4\cos\left(\frac{5a}{b}\right)\text{Si}\left(\frac{5(a+b\text{ArcSin}(c+dx))}{b}\right)}{16b^2d}-\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{bd(a+b\text{ArcSin}(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^4/(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] -((e^4*(c + d*x)^4*Sqrt[1 - (c + d*x)^2])/(b*d*(a + b*ArcSin[c + d*x]))) +
(e^4*CosIntegral[(a + b*ArcSin[c + d*x])/b]*Sin[a/b])/(8*b^2*d) - (9*e^4*Co
sIntegral[(3*(a + b*ArcSin[c + d*x]))/b]*Sin[(3*a)/b])/(16*b^2*d) + (5*e^4*
CosIntegral[(5*(a + b*ArcSin[c + d*x]))/b]*Sin[(5*a)/b])/(16*b^2*d) - (e^4*
Cos[a/b]*SinIntegral[(a + b*ArcSin[c + d*x])/b])/(8*b^2*d) + (9*e^4*Cos[(3*
a)/b]*SinIntegral[(3*(a + b*ArcSin[c + d*x]))/b])/(16*b^2*d) - (5*e^4*Cos[(
5*a)/b]*SinIntegral[(5*(a + b*ArcSin[c + d*x]))/b])/(16*b^2*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
```

```
c*f, 0]
```

Rule 3384

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[c*(f/d) + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[c*(f/d) + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4727

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] - Dist
[1/(b^2*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[x^(n + 1), Sin[-a/b
+ x/b]^(m - 1)*(m - (m + 1)*Sin[-a/b + x/b]^2), x], x], x, a + b*ArcSin[c*x
]], x] /; FreeQ[{a, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[(((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^4}{\left(a+b\sin^{-1}(c+dx)\right)^2}\,dx = \frac{\text{Subst}\left(\int \frac{e^4x^4}{\left(a+b\sin^{-1}(x)\right)^2}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^4\text{Subst}\left(\int \frac{x^4}{\left(a+b\sin^{-1}(x)\right)^2}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} + \frac{e^4\text{Subst}\left(\int \left(-\frac{\sin(x)}{8(a+bx)} + \frac{9\sin(3x)}{16(a+bx)} - \frac{5\sin(5x)}{16(a+bx)}\right)\right.}{bd}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} - \frac{e^4\text{Subst}\left(\int \frac{\sin(x)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{8bd} - \frac{(5e}{}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} - \frac{\left(e^4\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{a+bx}\,dx, x, \sin^{-1}(c-\right.}{8bd}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} + \frac{e^4\text{Ci}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)\sin\left(\frac{a}{b}\right)}{8b^2d} - \frac{9e^4\text{Ci}\left(\frac{3a}{b}\right.}{}$$

Mathematica [A]

time = 0.86, size = 283, normalized size = 1.10

$$\frac{e^4\left(-\frac{16b(c+dx)^4\sqrt{1-(c+dx)^2}}{a+b\text{ArcSin}(c+dx)}+16\left(-3\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\sin\left(\frac{a}{b}\right)+\text{CosIntegral}\left(3\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\sin\left(\frac{3a}{b}\right)+3\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)-\cos\left(\frac{3a}{b}\right)\text{Si}\left(3\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\right)+5\left(10\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\sin\left(\frac{a}{b}\right)-5\text{CosIntegral}\left(3\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\sin\left(\frac{3a}{b}\right)+\text{CosIntegral}\left(5\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\sin\left(\frac{5a}{b}\right)-10\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)+5\cos\left(\frac{3a}{b}\right)\text{Si}\left(3\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)-\cos\left(\frac{5a}{b}\right)\text{Si}\left(5\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\right)\right)}{16b^2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^4/(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (e^4*((-16*b*(c + d*x)^4*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*x]) + 1
6*(-3*CosIntegral[a/b + ArcSin[c + d*x]]*Sin[a/b] + CosIntegral[3*(a/b + Ar
cSin[c + d*x])]*Sin[(3*a)/b] + 3*Cos[a/b]*SinIntegral[a/b + ArcSin[c + d*x]
] - Cos[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c + d*x])]) + 5*(10*CosIntegra
l[a/b + ArcSin[c + d*x]]*Sin[a/b] - 5*CosIntegral[3*(a/b + ArcSin[c + d*x])
]*Sin[(3*a)/b] + CosIntegral[5*(a/b + ArcSin[c + d*x])]*Sin[(5*a)/b] - 10*C
os[a/b]*SinIntegral[a/b + ArcSin[c + d*x]] + 5*Cos[(3*a)/b]*SinIntegral[3*(
a/b + ArcSin[c + d*x])] - Cos[(5*a)/b]*SinIntegral[5*(a/b + ArcSin[c + d*x]
)])))/(16*b^2*d)
```

Maple [A]

time = 0.28, size = 397, normalized size = 1.54

method	result
derivativedivides	$\frac{e^4\left(9\arcsin(dx+c)\,\text{sinIntegral}\left(3\arcsin(dx+c)+\frac{3a}{b}\right)\cos\left(\frac{3a}{b}\right)b-9\arcsin(dx+c)\,\text{cosineIntegral}\left(3\arcsin(dx+c)+\frac{3a}{b}\right)\sin(\right.}{}$
default	$\frac{e^4\left(9\arcsin(dx+c)\,\text{sinIntegral}\left(3\arcsin(dx+c)+\frac{3a}{b}\right)\cos\left(\frac{3a}{b}\right)b-9\arcsin(dx+c)\,\text{cosineIntegral}\left(3\arcsin(dx+c)+\frac{3a}{b}\right)\sin(\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/16/d*e^4*(9*arcsin(d*x+c)*Si(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b)*b-9*arcsin
(d*x+c)*Ci(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)*b-5*arcsin(d*x+c)*Si(5*arcsin(
d*x+c)+5*a/b)*cos(5*a/b)*b+5*arcsin(d*x+c)*Ci(5*arcsin(d*x+c)+5*a/b)*sin(5*
a/b)*b-2*arcsin(d*x+c)*Si(arcsin(d*x+c)+a/b)*cos(a/b)*b+2*arcsin(d*x+c)*Ci(
arcsin(d*x+c)+a/b)*sin(a/b)*b+9*Si(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b)*a-9*Ci
(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)*a-5*Si(5*arcsin(d*x+c)+5*a/b)*cos(5*a/b)
*a+5*Ci(5*arcsin(d*x+c)+5*a/b)*sin(5*a/b)*a-2*Si(arcsin(d*x+c)+a/b)*cos(a/b
)*a+2*Ci(arcsin(d*x+c)+a/b)*sin(a/b)*a-2*(1-(d*x+c)^2)^(1/2)*b+3*cos(3*arcs
in(d*x+c))*b-cos(5*arcsin(d*x+c))*b)/(a+b*arcsin(d*x+c))/b^2
```

Maxima [F]

time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] -((d^4*x^4*e^4 + 4*c*d^3*x^3*e^4 + 6*c^2*d^2*x^2*e^4 + 4*c^3*d*x*e^4 + c^4*
e^4)*sqrt(d*x + c + 1)*sqrt(-d*x - c + 1) - (b^2*d*arctan2(d*x + c, sqrt(d*
x + c + 1)*sqrt(-d*x - c + 1)) + a*b*d)*integrate((5*d^5*x^5*e^4 + 25*c*d^4
*x^4*e^4 + 2*(25*c^2*e^4 - 2*e^4)*d^3*x^3 + 5*c^5*e^4 + 2*(25*c^3*e^4 - 6*c
*e^4)*d^2*x^2 - 4*c^3*e^4 + (25*c^4*e^4 - 12*c^2*e^4)*d*x)*sqrt(d*x + c + 1
)*sqrt(-d*x - c + 1)/(a*b*d^2*x^2 + 2*a*b*c*d*x + a*b*c^2 - a*b + (b^2*d^2*
x^2 + 2*b^2*c*d*x + b^2*c^2 - b^2)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(
-d*x - c + 1))), x))/(b^2*d*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x -
c + 1)) + a*b*d)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] integral((d^4*x^4 + 4*c*d^3*x^3 + 6*c^2*d^2*x^2 + 4*c^3*d*x + c^4)*e^4/(b^2
*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2), x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$e^{4}\left(\int \frac{c^{4}}{a^{2} + 2ab\operatorname{asin}{\left(c + dx \right)} + b^{2}\operatorname{asin}^{2}{\left(c + dx \right)}}\, dx + \int \frac{d^{4}x^{4}}{a^{2} + 2ab\operatorname{asin}{\left(c + dx \right)} + b^{2}\operatorname{asin}^{2}{\left(c + dx \right)}}\, dx + \int \frac{4cd^{3}x^{3}}{a^{2} + 2ab\operatorname{asin}{\left(c + dx \right)} + b^{2}\operatorname{asin}^{2}{\left(c + dx \right)}}\, dx + \int \frac{6c^{2}d^{2}x^{2}}{a^{2} + 2ab\operatorname{asin}{\left(c + dx \right)} + b^{2}\operatorname{asin}^{2}{\left(c + dx \right)}}\, dx + \int \frac{4c^{3}dx}{a^{2} + 2ab\operatorname{asin}{\left(c + dx \right)} + b^{2}\operatorname{asin}^{2}{\left(c + dx \right)}}\, dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**4/(a+b*asin(d*x+c))**2,x)
```

```
[Out] e**4*(Integral(c**4/(a**2 + 2*a*b*asin(c + d*x) + b**2*asin(c + d*x)**2), x
) + Integral(d**4*x**4/(a**2 + 2*a*b*asin(c + d*x) + b**2*asin(c + d*x)**2)
, x) + Integral(4*c*d**3*x**3/(a**2 + 2*a*b*asin(c + d*x) + b**2*asin(c + d
*x)**2), x) + Integral(6*c**2*d**2*x**2/(a**2 + 2*a*b*asin(c + d*x) + b**2*
asin(c + d*x)**2), x) + Integral(4*c**3*d*x/(a**2 + 2*a*b*asin(c + d*x) + b
**2*asin(c + d*x)**2), x))
```

Giac [**B**] Leaf count of result is larger than twice the leaf count of optimal. 1401 vs. 2(244) = 488.
time = 0.51, size = 1401, normalized size = 5.43

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] 5*b*e^4*arcsin(d*x + c)*cos(a/b)^4*cos_integral(5*a/b + 5*arcsin(d*x + c))*
sin(a/b)/(b^3*d*arcsin(d*x + c) + a*b^2*d) - 5*b*e^4*arcsin(d*x + c)*cos(a/
b)^5*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2
*d) + 5*a*e^4*cos(a/b)^4*cos_integral(5*a/b + 5*arcsin(d*x + c))*sin(a/b)/(
b^3*d*arcsin(d*x + c) + a*b^2*d) - 5*a*e^4*cos(a/b)^5*sin_integral(5*a/b +
5*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) - 15/4*b*e^4*arcsin(d*
x + c)*cos(a/b)^2*cos_integral(5*a/b + 5*arcsin(d*x + c))*sin(a/b)/(b^3*d*a
rcsin(d*x + c) + a*b^2*d) - 9/4*b*e^4*arcsin(d*x + c)*cos(a/b)^2*cos_integr
al(3*a/b + 3*arcsin(d*x + c))*sin(a/b)/(b^3*d*arcsin(d*x + c) + a*b^2*d) +
25/4*b*e^4*arcsin(d*x + c)*cos(a/b)^3*sin_integral(5*a/b + 5*arcsin(d*x + c
))/(b^3*d*arcsin(d*x + c) + a*b^2*d) + 9/4*b*e^4*arcsin(d*x + c)*cos(a/b)^3
*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d)
- 15/4*a*e^4*cos(a/b)^2*cos_integral(5*a/b + 5*arcsin(d*x + c))*sin(a/b)/(b
^3*d*arcsin(d*x + c) + a*b^2*d) - 9/4*a*e^4*cos(a/b)^2*cos_integral(3*a/b +
 3*arcsin(d*x + c))*sin(a/b)/(b^3*d*arcsin(d*x + c) + a*b^2*d) + 25/4*a*e^4
*cos(a/b)^3*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c)
+ a*b^2*d) + 9/4*a*e^4*cos(a/b)^3*sin_integral(3*a/b + 3*arcsin(d*x + c))/(
b^3*d*arcsin(d*x + c) + a*b^2*d) + 5/16*b*e^4*arcsin(d*x + c)*cos_integral(
5*a/b + 5*arcsin(d*x + c))*sin(a/b)/(b^3*d*arcsin(d*x + c) + a*b^2*d) + 9/1
6*b*e^4*arcsin(d*x + c)*cos_integral(3*a/b + 3*arcsin(d*x + c))*sin(a/b)/(b
^3*d*arcsin(d*x + c) + a*b^2*d) + 1/8*b*e^4*arcsin(d*x + c)*cos_integral(a/
b + arcsin(d*x + c))*sin(a/b)/(b^3*d*arcsin(d*x + c) + a*b^2*d) - 25/16*b*e
^4*arcsin(d*x + c)*cos(a/b)*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^3*d*
arcsin(d*x + c) + a*b^2*d) - 27/16*b*e^4*arcsin(d*x + c)*cos(a/b)*sin_integ
ral(3*a/b + 3*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) - 1/8*b*e^
4*arcsin(d*x + c)*cos(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^3*d*arcsi
n(d*x + c) + a*b^2*d) - ((d*x + c)^2 - 1)^2*sqrt(-(d*x + c)^2 + 1)*b*e^4/(b
^3*d*arcsin(d*x + c) + a*b^2*d) + 5/16*a*e^4*cos_integral(5*a/b + 5*arcsin(
d*x + c))*sin(a/b)/(b^3*d*arcsin(d*x + c) + a*b^2*d) + 9/16*a*e^4*cos_integ
ral(3*a/b + 3*arcsin(d*x + c))*sin(a/b)/(b^3*d*arcsin(d*x + c) + a*b^2*d) +
 1/8*a*e^4*cos_integral(a/b + arcsin(d*x + c))*sin(a/b)/(b^3*d*arcsin(d*x +
 c) + a*b^2*d) - 25/16*a*e^4*cos(a/b)*sin_integral(5*a/b + 5*arcsin(d*x + c
))/(b^3*d*arcsin(d*x + c) + a*b^2*d) - 27/16*a*e^4*cos(a/b)*sin_integral(3*
a/b + 3*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) - 1/8*a*e^4*cos(
a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d)
+ 2*(-(d*x + c)^2 + 1)^(3/2)*b*e^4/(b^3*d*arcsin(d*x + c) + a*b^2*d) - sqrt
(-(d*x + c)^2 + 1)*b*e^4/(b^3*d*arcsin(d*x + c) + a*b^2*d)
```

Mupad [**F**]

time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,e+d\,e\,x)^4}{(a+b\,\mathrm{asin}\,(c+d\,x))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^4/(a + b*asin(c + d*x))^2,x)
[Out] int((c*e + d*e*x)^4/(a + b*asin(c + d*x))^2, x)
```

3.222 $\int \frac{(ce+dex)^3}{(a+b\mathbf{ArcSin}(c+dx))^2}\,dx$

Optimal. Leaf size=190

$$-\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{bd(a+b\text{ArcSin}(c+dx))}+\frac{e^3\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2(a+b\text{ArcSin}(c+dx))}{b}\right)}{2b^2d}-\frac{e^3\cos\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4(a+b\ldots}{\ldots}\right.}{2b^2d}$$

```
[Out] 1/2*e^3*Ci(2*(a+b*arcsin(d*x+c))/b)*cos(2*a/b)/b^2/d-1/2*e^3*Ci(4*(a+b*arcs
in(d*x+c))/b)*cos(4*a/b)/b^2/d+1/2*e^3*Si(2*(a+b*arcsin(d*x+c))/b)*sin(2*a/
b)/b^2/d-1/2*e^3*Si(4*(a+b*arcsin(d*x+c))/b)*sin(4*a/b)/b^2/d-e^3*(d*x+c)^3
*(1-(d*x+c)^2)^(1/2)/b/d/(a+b*arcsin(d*x+c))
```

Rubi [A]
time = 0.19, antiderivative size = 190, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.261$, Rules used = {4889, 12, 4727, 3384, 3380, 3383}

$$\frac{e^3\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2(a+b\text{ArcSin}(c+dx))}{b}\right)}{2b^2d}-\frac{e^3\cos\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4(a+b\text{ArcSin}(c+dx))}{b}\right)}{2b^2d}+\frac{e^3\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2(a+b\text{ArcSin}(c+dx))}{b}\right)}{2b^2d}-\frac{e^3\sin\left(\frac{4a}{b}\right)\text{Si}\left(\frac{4(a+b\text{ArcSin}(c+dx))}{b}\right)}{2b^2d}-\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{bd(a+b\text{ArcSin}(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] -((e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(b*d*(a + b*ArcSin[c + d*x]))) +
(e^3*Cos[(2*a)/b]*CosIntegral[(2*(a + b*ArcSin[c + d*x]))/b])/(2*b^2*d) - (
e^3*Cos[(4*a)/b]*CosIntegral[(4*(a + b*ArcSin[c + d*x]))/b])/(2*b^2*d) + (e
^3*Sin[(2*a)/b]*SinIntegral[(2*(a + b*ArcSin[c + d*x]))/b])/(2*b^2*d) - (e^
3*Sin[(4*a)/b]*SinIntegral[(4*(a + b*ArcSin[c + d*x]))/b])/(2*b^2*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3384

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[c*(f/d) + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[c*(f/d) + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4727

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] - Dist
[1/(b^2*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[x^(n + 1), Sin[-a/b
+ x/b]^(m - 1)*(m - (m + 1)*Sin[-a/b + x/b]^2), x], x], x, a + b*ArcSin[c*x
]], x] /; FreeQ[{a, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(ce+dex)^3}{\left(a+b\sin^{-1}(c+dx)\right)^2}\,dx &= \frac{\text{Subst}\left(\int \frac{e^3x^3}{\left(a+b\sin^{-1}(x)\right)^2}\,dx,x,c+dx\right)}{d}\\
&= \frac{e^3\text{Subst}\left(\int \frac{x^3}{\left(a+b\sin^{-1}(x)\right)^2}\,dx,x,c+dx\right)}{d}\\
&= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)}+\frac{e^3\text{Subst}\left(\int \left(\frac{\cos(2x)}{2(a+bx)}-\frac{\cos(4x)}{2(a+bx)}\right)\,dx,x,\sin^{-1}(c
\end{aligned}
$$

$$
\begin{aligned}
&= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)}+\frac{e^3\text{Subst}\left(\int \frac{\cos(2x)}{a+bx}\,dx,x,\sin^{-1}(c+dx)\right)}{2bd}-\frac{e^3
\\
&= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)}+\frac{\left(e^3\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx,x,\sin^{-1}(
\\
&= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)}+\frac{e^3\cos\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(c+dx)\right)}{2b^2d}-\frac{e^3\cos
\end{aligned}
$$

Mathematica [A]
time = 0.62, size = 220, normalized size = 1.16

$$
-\frac{e^3\left(\frac{2b(c+dx)^3\sqrt{1-(c+dx)^2}}{a+b\text{ArcSin}(c+dx)}-4\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(2\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)+\cos\left(\frac{4a}{b}\right)\text{CosIntegral}\left(4\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)+3\log(a+b\text{ArcSin}(c+dx))-4\sin\left(\frac{2a}{b}\right)\text{Si}\left(2\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)+3\left(\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(2\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)-\log(a+b\text{ArcSin}(c+dx))+\sin\left(\frac{2a}{b}\right)\text{Si}\left(2\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\right)+\sin\left(\frac{4a}{b}\right)\text{Si}\left(4\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\right)}{2b^2d}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] -1/2*(e^3*((2*b*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*x])
- 4*Cos[(2*a)/b]*CosIntegral[2*(a/b + ArcSin[c + d*x])] + Cos[(4*a)/b]*CosI
ntegral[4*(a/b + ArcSin[c + d*x])] + 3*Log[a + b*ArcSin[c + d*x]] - 4*Sin[(
2*a)/b]*SinIntegral[2*(a/b + ArcSin[c + d*x])] + 3*(Cos[(2*a)/b]*CosIntegra
l[2*(a/b + ArcSin[c + d*x])] - Log[a + b*ArcSin[c + d*x]] + Sin[(2*a)/b]*Si
nIntegral[2*(a/b + ArcSin[c + d*x])]) + Sin[(4*a)/b]*SinIntegral[4*(a/b + A
rcSin[c + d*x])]))/(b^2*d)
```

Maple [A]
time = 0.13, size = 280, normalized size = 1.47

method	result
derivativedivides	$\frac{e^3\left(4\arcsin(dx+c)\,\mathrm{sinIntegral}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\sin\left(\frac{2a}{b}\right)b+4\arcsin(dx+c)\,\mathrm{cosineIntegral}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\cos\left(\frac{2}{}\right.\right.}{}$
default	$\frac{e^3\left(4\arcsin(dx+c)\,\mathrm{sinIntegral}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\sin\left(\frac{2a}{b}\right)b+4\arcsin(dx+c)\,\mathrm{cosineIntegral}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\cos\left(\frac{2}{}\right.\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/8/d*e^3*(4*arcsin(d*x+c)*Si(2*arcsin(d*x+c)+2*a/b)*sin(2*a/b)*b+4*arcsin(
d*x+c)*Ci(2*arcsin(d*x+c)+2*a/b)*cos(2*a/b)*b-4*arcsin(d*x+c)*Si(4*arcsin(d
*x+c)+4*a/b)*sin(4*a/b)*b-4*arcsin(d*x+c)*Ci(4*arcsin(d*x+c)+4*a/b)*cos(4*a
/b)*b+4*Si(2*arcsin(d*x+c)+2*a/b)*sin(2*a/b)*a+4*Ci(2*arcsin(d*x+c)+2*a/b)*
cos(2*a/b)*a-4*Si(4*arcsin(d*x+c)+4*a/b)*sin(4*a/b)*a-4*Ci(4*arcsin(d*x+c)+
4*a/b)*cos(4*a/b)*a-2*sin(2*arcsin(d*x+c))*b+sin(4*arcsin(d*x+c))*b)/(a+b*a
rcsin(d*x+c))/b^2
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] -((d^3*x^3*e^3 + 3*c*d^2*x^2*e^3 + 3*c^2*d*x*e^3 + c^3*e^3)*sqrt(d*x + c +
1)*sqrt(-d*x - c + 1) - (b^2*d*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x
 - c + 1)) + a*b*d)*integrate((4*d^4*x^4*e^3 + 16*c*d^3*x^3*e^3 + 3*(8*c^2*
e^3 - e^3)*d^2*x^2 + 4*c^4*e^3 + 2*(8*c^3*e^3 - 3*c*e^3)*d*x - 3*c^2*e^3)*s
qrt(d*x + c + 1)*sqrt(-d*x - c + 1)/(a*b*d^2*x^2 + 2*a*b*c*d*x + a*b*c^2 -
a*b + (b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2 - b^2)*arctan2(d*x + c, sqrt(d*x
```

```
 + c + 1)*sqrt(-d*x - c + 1))), x))/(b^2*d*arctan2(d*x + c, sqrt(d*x + c +
1)*sqrt(-d*x - c + 1)) + a*b*d)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] integral((d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3)*e^3/(b^2*arcsin(d*x + c)
^2 + 2*a*b*arcsin(d*x + c) + a^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e^{3}\left(\int \frac{c^{3}}{a^{2} + 2ab\operatorname{asin}{\left(c + dx \right)} + b^{2}\operatorname{asin}^{2}{\left(c + dx \right)}}\, dx + \int \frac{d^{3}x^{3}}{a^{2} + 2ab\operatorname{asin}{\left(c + dx \right)} + b^{2}\operatorname{asin}^{2}{\left(c + dx \right)}}\, dx + \int \frac{3cd^{2}x^{2}}{a^{2} + 2ab\operatorname{asin}{\left(c + dx \right)} + b^{2}\operatorname{asin}^{2}{\left(c + dx \right)}}\, dx + \int \frac{3c^{2}dx}{a^{2} + 2ab\operatorname{asin}{\left(c + dx \right)} + b^{2}\operatorname{asin}^{2}{\left(c + dx \right)}}\, dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3/(a+b*asin(d*x+c))**2,x)
```

```
[Out] e**3*(Integral(c**3/(a**2 + 2*a*b*asin(c + d*x) + b**2*asin(c + d*x)**2), x
) + Integral(d**3*x**3/(a**2 + 2*a*b*asin(c + d*x) + b**2*asin(c + d*x)**2)
, x) + Integral(3*c*d**2*x**2/(a**2 + 2*a*b*asin(c + d*x) + b**2*asin(c + d
*x)**2), x) + Integral(3*c**2*d*x/(a**2 + 2*a*b*asin(c + d*x) + b**2*asin(c
 + d*x)**2), x))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 928 vs. 2(180) = 360.
time = 0.49, size = 928, normalized size = 4.88

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] -4*b*e^3*arcsin(d*x + c)*cos(a/b)^4*cos_integral(4*a/b + 4*arcsin(d*x + c))
/(b^3*d*arcsin(d*x + c) + a*b^2*d) - 4*b*e^3*arcsin(d*x + c)*cos(a/b)^3*sin
(a/b)*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^
2*d) - 4*a*e^3*cos(a/b)^4*cos_integral(4*a/b + 4*arcsin(d*x + c))/(b^3*d*ar
csin(d*x + c) + a*b^2*d) - 4*a*e^3*cos(a/b)^3*sin(a/b)*sin_integral(4*a/b +
 4*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) + 4*b*e^3*arcsin(d*x
+ c)*cos(a/b)^2*cos_integral(4*a/b + 4*arcsin(d*x + c))/(b^3*d*arcsin(d*x +
 c) + a*b^2*d) + b*e^3*arcsin(d*x + c)*cos(a/b)^2*cos_integral(2*a/b + 2*ar
csin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) + 2*b*e^3*arcsin(d*x + c)*
```

```
cos(a/b)*sin(a/b)*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^3*d*arcsin(d*x
 + c) + a*b^2*d) + b*e^3*arcsin(d*x + c)*cos(a/b)*sin(a/b)*sin_integral(2*a
/b + 2*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) + 4*a*e^3*cos(a/b
)^2*cos_integral(4*a/b + 4*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*
d) + a*e^3*cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(d*x + c))/(b^3*d*arcsin
(d*x + c) + a*b^2*d) + 2*a*e^3*cos(a/b)*sin(a/b)*sin_integral(4*a/b + 4*arc
sin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) + a*e^3*cos(a/b)*sin(a/b)*s
in_integral(2*a/b + 2*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) +
(-(d*x + c)^2 + 1)^(3/2)*(d*x + c)*b*e^3/(b^3*d*arcsin(d*x + c) + a*b^2*d)
- 1/2*b*e^3*arcsin(d*x + c)*cos_integral(4*a/b + 4*arcsin(d*x + c))/(b^3*d*
arcsin(d*x + c) + a*b^2*d) - 1/2*b*e^3*arcsin(d*x + c)*cos_integral(2*a/b +
 2*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) - sqrt(-(d*x + c)^2 +
 1)*(d*x + c)*b*e^3/(b^3*d*arcsin(d*x + c) + a*b^2*d) - 1/2*a*e^3*cos_integ
ral(4*a/b + 4*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) - 1/2*a*e^
3*cos_integral(2*a/b + 2*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d)
```

Mupad [**F**]

time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(c\,e+d\,e\,x)^3}{(a+b\,\mathrm{asin}\,(c+d\,x))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^3/(a + b*asin(c + d*x))^2,x)
[Out] int((c*e + d*e*x)^3/(a + b*asin(c + d*x))^2, x)
```

3.223 $\int \frac{(ce+dex)^2}{(a+b\mathbf{ArcSin}(c+dx))^2}\,dx$

Optimal. Leaf size=186

$$-\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{bd(a+b\text{ArcSin}(c+dx))}+\frac{e^2\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)\sin\left(\frac{a}{b}\right)}{4b^2d}-\frac{3e^2\text{CosIntegral}\left(\frac{3(a+b\text{ArcSin}(c+dx))}{b}\right.}{4b^2d}$$

```
[Out] -1/4*e^2*cos(a/b)*Si((a+b*arcsin(d*x+c))/b)/b^2/d+3/4*e^2*cos(3*a/b)*Si(3*(
a+b*arcsin(d*x+c))/b)/b^2/d+1/4*e^2*Ci((a+b*arcsin(d*x+c))/b)*sin(a/b)/b^2/
d-3/4*e^2*Ci(3*(a+b*arcsin(d*x+c))/b)*sin(3*a/b)/b^2/d-e^2*(d*x+c)^2*(1-(d*
x+c)^2)^(1/2)/b/d/(a+b*arcsin(d*x+c))
```

Rubi [A]
time = 0.17, antiderivative size = 186, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.261$, Rules used = {4889, 12, 4727, 3384, 3380, 3383}

$$\frac{e^2\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{4b^2d}-\frac{3e^2\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3(a+b\text{ArcSin}(c+dx))}{b}\right)}{4b^2d}-\frac{e^2\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{4b^2d}+\frac{3e^2\cos\left(\frac{3a}{b}\right)\text{Si}\left(\frac{3(a+b\text{ArcSin}(c+dx))}{b}\right)}{4b^2d}-\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{bd(a+b\text{ArcSin}(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] -((e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(b*d*(a + b*ArcSin[c + d*x]))) +
(e^2*CosIntegral[(a + b*ArcSin[c + d*x])/b]*Sin[a/b])/(4*b^2*d) - (3*e^2*Co
sIntegral[(3*(a + b*ArcSin[c + d*x]))/b]*Sin[(3*a)/b])/(4*b^2*d) - (e^2*Cos
[a/b]*SinIntegral[(a + b*ArcSin[c + d*x])/b])/(4*b^2*d) + (3*e^2*Cos[(3*a)/
b]*SinIntegral[(3*(a + b*ArcSin[c + d*x]))/b])/(4*b^2*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3384

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[c*(f/d) + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[c*(f/d) + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4727

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] - Dist
[1/(b^2*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[x^(n + 1), Sin[-a/b
+ x/b]^(m - 1)*(m - (m + 1)*Sin[-a/b + x/b]^2), x], x], x, a + b*ArcSin[c*x
]], x] /; FreeQ[{a, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(ce+dex)^2}{\left(a+b\sin^{-1}(c+dx)\right)^2}\,dx &= \frac{\text{Subst}\left(\int \frac{e^2x^2}{\left(a+b\sin^{-1}(x)\right)^2}\,dx,x,c+dx\right)}{d}\\
&= \frac{e^2\text{Subst}\left(\int \frac{x^2}{\left(a+b\sin^{-1}(x)\right)^2}\,dx,x,c+dx\right)}{d}\\
&= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)}+\frac{e^2\text{Subst}\left(\int \left(-\frac{\sin(x)}{4(a+bx)}+\frac{3\sin(3x)}{4(a+bx)}\right)\,dx,x,\sin\right.}{bd}\\
&= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)}-\frac{e^2\text{Subst}\left(\int \frac{\sin(x)}{a+bx}\,dx,x,\sin^{-1}(c+dx)\right)}{4bd}+\frac{(3}{}\\
&= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)}-\frac{\left(e^2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{a+bx}\,dx,x,\sin^{-1}(c\right.}{4bd}\\
&= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)}+\frac{e^2\text{Ci}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)\sin\left(\frac{a}{b}\right)}{4b^2d}-\frac{3e^2\text{Ci}(}{}
\end{aligned}
$$

Mathematica [A]
time = 0.55, size = 140, normalized size = 0.75

$$
\frac{e^2\left(-\frac{4b(c+dx)^2\sqrt{1-(c+dx)^2}}{a+b\text{ArcSin}(c+dx)}+\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\sin\left(\frac{a}{b}\right)-3\text{CosIntegral}\left(3\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\sin\left(\frac{3a}{b}\right)-\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)+3\cos\left(\frac{3a}{b}\right)\text{Si}\left(3\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\right)}{4b^2d}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (e^2*((-4*b*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*x]) + Co
sIntegral[a/b + ArcSin[c + d*x]]*Sin[a/b] - 3*CosIntegral[3*(a/b + ArcSin[c
 + d*x])]*Sin[(3*a)/b] - Cos[a/b]*SinIntegral[a/b + ArcSin[c + d*x]] + 3*Co
s[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c + d*x])]))/(4*b^2*d)
```

Maple [A]
time = 0.24, size = 266, normalized size = 1.43

method	result
derivativedivides	$-\frac{e^2\left(\arcsin(dx+c)\operatorname{sinIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)b-\arcsin(dx+c)\operatorname{cosineIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)b-3\operatorname{ar}\right.}{}$
default	$-\frac{e^2\left(\arcsin(dx+c)\operatorname{sinIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)b-\arcsin(dx+c)\operatorname{cosineIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)b-3\operatorname{ar}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^2,x,method=_RETURNVERBOSE)
```

```
[Out] -1/4/d*e^2*(arcsin(d*x+c)*Si(arcsin(d*x+c)+a/b)*cos(a/b)*b-arcsin(d*x+c)*Ci
(arcsin(d*x+c)+a/b)*sin(a/b)*b-3*arcsin(d*x+c)*Si(3*arcsin(d*x+c)+3*a/b)*co
s(3*a/b)*b+3*arcsin(d*x+c)*Ci(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)*b+Si(arcsin
(d*x+c)+a/b)*cos(a/b)*a-Ci(arcsin(d*x+c)+a/b)*sin(a/b)*a-3*Si(3*arcsin(d*x+
c)+3*a/b)*cos(3*a/b)*a+3*Ci(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)*a+(1-(d*x+c)^
2)^(1/2)*b-cos(3*arcsin(d*x+c))*b)/(a+b*arcsin(d*x+c))/b^2
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] -((d^2*x^2*e^2 + 2*c*d*x*e^2 + c^2*e^2)*sqrt(d*x + c + 1)*sqrt(-d*x - c + 1
) - (b^2*d*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + a*b*d)*
integrate((3*d^3*x^3*e^2 + 9*c*d^2*x^2*e^2 + 3*c^3*e^2 + (9*c^2*e^2 - 2*e^2
)*d*x - 2*c*e^2)*sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)/(a*b*d^2*x^2 + 2*a*b*
c*d*x + a*b*c^2 - a*b + (b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2 - b^2)*arctan2
(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))), x))/(b^2*d*arctan2(d*x +
c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + a*b*d)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] integral((d^2*x^2 + 2*c*d*x + c^2)*e^2/(b^2*arcsin(d*x + c)^2 + 2*a*b*arcsi
n(d*x + c) + a^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e^{2}\left(\int \frac{c^{2}}{a^{2} + 2ab\operatorname{asin}{\left(c + dx \right)} + b^{2}\operatorname{asin}^{2}{\left(c + dx \right)}}\, dx + \int \frac{d^{2}x^{2}}{a^{2} + 2ab\operatorname{asin}{\left(c + dx \right)} + b^{2}\operatorname{asin}^{2}{\left(c + dx \right)}}\, dx + \int \frac{2cdx}{a^{2} + 2ab\operatorname{asin}{\left(c + dx \right)} + b^{2}\operatorname{asin}^{2}{\left(c + dx \right)}}\, dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2/(a+b*asin(d*x+c))**2,x)
```

```
[Out] e**2*(Integral(c**2/(a**2 + 2*a*b*asin(c + d*x) + b**2*asin(c + d*x)**2), x
) + Integral(d**2*x**2/(a**2 + 2*a*b*asin(c + d*x) + b**2*asin(c + d*x)**2)
, x) + Integral(2*c*d*x/(a**2 + 2*a*b*asin(c + d*x) + b**2*asin(c + d*x)**2
), x))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 698 vs. 2(176) = 352.
time = 0.51, size = 698, normalized size = 3.75

$$-\frac{3be^{2}\arcsin\left(dx+c\right)\cos\left(\frac{a}{b}\right)^{2}\operatorname{Ci}\left(\frac{3a}{b}+3\arcsin\left(dx+c\right)\right)\sin\left(\frac{a}{b}\right)}{b^{3}d\arcsin\left(dx+c\right)+ab^{2}d}+\frac{3be^{2}\arcsin\left(dx+c\right)\cos\left(\frac{a}{b}\right)^{3}\operatorname{Si}\left(\frac{3a}{b}+3\arcsin\left(dx+c\right)\right)}{b^{3}d\arcsin\left(dx+c\right)+ab^{2}d}-\frac{3ae^{2}\cos\left(\frac{a}{b}\right)^{2}\operatorname{Ci}\left(\frac{3a}{b}+3\arcsin\left(dx+c\right)\right)\sin\left(\frac{a}{b}\right)}{b^{3}d\arcsin\left(dx+c\right)+ab^{2}d}+\frac{3ae^{2}\cos\left(\frac{a}{b}\right)^{3}\operatorname{Si}\left(\frac{3a}{b}+3\arcsin\left(dx+c\right)\right)}{b^{3}d\arcsin\left(dx+c\right)+ab^{2}d}+\frac{3be^{2}\arcsin\left(dx+c\right)\operatorname{Ci}\left(\frac{3a}{b}+3\arcsin\left(dx+c\right)\right)\sin\left(\frac{a}{b}\right)}{4\left(b^{3}d\arcsin\left(dx+c\right)+ab^{2}d\right)}+\frac{be^{2}\arcsin\left(dx+c\right)\operatorname{Ci}\left(\frac{a}{b}+\arcsin\left(dx+c\right)\right)\sin\left(\frac{a}{b}\right)}{4\left(b^{3}d\arcsin\left(dx+c\right)+ab^{2}d\right)}-\frac{9be^{2}\arcsin\left(dx+c\right)\cos\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{3a}{b}+3\arcsin\left(dx+c\right)\right)}{4\left(b^{3}d\arcsin\left(dx+c\right)+ab^{2}d\right)}-\frac{be^{2}\arcsin\left(dx+c\right)\cos\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a}{b}+\arcsin\left(dx+c\right)\right)}{4\left(b^{3}d\arcsin\left(dx+c\right)+ab^{2}d\right)}+\frac{3ae^{2}\operatorname{Ci}\left(\frac{3a}{b}+3\arcsin\left(dx+c\right)\right)\sin\left(\frac{a}{b}\right)}{4\left(b^{3}d\arcsin\left(dx+c\right)+ab^{2}d\right)}+\frac{ae^{2}\operatorname{Ci}\left(\frac{a}{b}+\arcsin\left(dx+c\right)\right)\sin\left(\frac{a}{b}\right)}{4\left(b^{3}d\arcsin\left(dx+c\right)+ab^{2}d\right)}-\frac{9ae^{2}\cos\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{3a}{b}+3\arcsin\left(dx+c\right)\right)}{4\left(b^{3}d\arcsin\left(dx+c\right)+ab^{2}d\right)}-\frac{ae^{2}\cos\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a}{b}+\arcsin\left(dx+c\right)\right)}{4\left(b^{3}d\arcsin\left(dx+c\right)+ab^{2}d\right)}+\frac{\left(-\left(dx+c\right)^{2}+1\right)^{\frac{3}{2}}be^{2}}{b^{3}d\arcsin\left(dx+c\right)+ab^{2}d}-\frac{\sqrt{-\left(dx+c\right)^{2}+1}\,be^{2}}{b^{3}d\arcsin\left(dx+c\right)+ab^{2}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] -3*b*e^2*arcsin(d*x + c)*cos(a/b)^2*cos_integral(3*a/b + 3*arcsin(d*x + c))
*sin(a/b)/(b^3*d*arcsin(d*x + c) + a*b^2*d) + 3*b*e^2*arcsin(d*x + c)*cos(a
/b)^3*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^
2*d) - 3*a*e^2*cos(a/b)^2*cos_integral(3*a/b + 3*arcsin(d*x + c))*sin(a/b)/
(b^3*d*arcsin(d*x + c) + a*b^2*d) + 3*a*e^2*cos(a/b)^3*sin_integral(3*a/b +
 3*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) + 3/4*b*e^2*arcsin(d*
x + c)*cos_integral(3*a/b + 3*arcsin(d*x + c))*sin(a/b)/(b^3*d*arcsin(d*x +
 c) + a*b^2*d) + 1/4*b*e^2*arcsin(d*x + c)*cos_integral(a/b + arcsin(d*x +
c))*sin(a/b)/(b^3*d*arcsin(d*x + c) + a*b^2*d) - 9/4*b*e^2*arcsin(d*x + c)*
cos(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a
*b^2*d) - 1/4*b*e^2*arcsin(d*x + c)*cos(a/b)*sin_integral(a/b + arcsin(d*x
+ c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) + 3/4*a*e^2*cos_integral(3*a/b + 3*
```

```
arcsin(d*x + c))*sin(a/b)/(b^3*d*arcsin(d*x + c) + a*b^2*d) + 1/4*a*e^2*cos
_integral(a/b + arcsin(d*x + c))*sin(a/b)/(b^3*d*arcsin(d*x + c) + a*b^2*d)
 - 9/4*a*e^2*cos(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^3*d*arcsin
(d*x + c) + a*b^2*d) - 1/4*a*e^2*cos(a/b)*sin_integral(a/b + arcsin(d*x + c
))/(b^3*d*arcsin(d*x + c) + a*b^2*d) + (-(d*x + c)^2 + 1)^(3/2)*b*e^2/(b^3*
d*arcsin(d*x + c) + a*b^2*d) - sqrt(-(d*x + c)^2 + 1)*b*e^2/(b^3*d*arcsin(d
*x + c) + a*b^2*d)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(c\,e+d\,e\,x)^2}{(a+b\,\mathrm{asin}\,(c+d\,x))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^2/(a + b*asin(c + d*x))^2,x)
```

```
[Out] int((c*e + d*e*x)^2/(a + b*asin(c + d*x))^2, x)
```

3.224 $\int \frac{ce+dex}{(a+b\mathbf{ArcSin}(c+dx))^2}\,dx$

Optimal. Leaf size=104

$$-\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{bd(a+b\text{ArcSin}(c+dx))}+\frac{e\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2(a+b\text{ArcSin}(c+dx))}{b}\right)}{b^2d}+\frac{e\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2(a+b\text{ArcSin}(c+dx))}{b}\right)}{b^2d}$$

```
[Out] e*Ci(2*(a+b*arcsin(d*x+c))/b)*cos(2*a/b)/b^2/d+e*Si(2*(a+b*arcsin(d*x+c))/b
)*sin(2*a/b)/b^2/d-e*(d*x+c)*(1-(d*x+c)^2)^(1/2)/b/d/(a+b*arcsin(d*x+c))
```

Rubi [A]
time = 0.10, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {4889, 12, 4727, 3384, 3380, 3383}

$$\frac{e\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2(a+b\text{ArcSin}(c+dx))}{b}\right)}{b^2d}+\frac{e\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2(a+b\text{ArcSin}(c+dx))}{b}\right)}{b^2d}-\frac{e\sqrt{1-(c+dx)^2}\,(c+dx)}{bd(a+b\text{ArcSin}(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)/(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] -((e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(b*d*(a + b*ArcSin[c + d*x]))) + (e*C
os[(2*a)/b]*CosIntegral[(2*(a + b*ArcSin[c + d*x]))/b])/(b^2*d) + (e*Sin[(2
*a)/b]*SinIntegral[(2*(a + b*ArcSin[c + d*x]))/b])/(b^2*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3384

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[c*(f/d) + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
```

```
)/d], Int[Cos[c*(f/d) + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4727

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] - Dist
[1/(b^2*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[x^(n + 1), Sin[-a/b
+ x/b]^(m - 1)*(m - (m + 1)*Sin[-a/b + x/b]^2), x], x], x, a + b*ArcSin[c*x
]], x] /; FreeQ[{a, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{ce+dex}{\left(a+b\sin^{-1}(c+dx)\right)^2}\,dx = \frac{\text{Subst}\left(\int \frac{ex}{(a+b\sin^{-1}(x))^2}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e\text{Subst}\left(\int \frac{x}{(a+b\sin^{-1}(x))^2}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} + \frac{e\text{Subst}\left(\int \frac{\cos(2x)}{a+bx}\,dx, x, \sin^{-1}(c+dx)\right)}{bd}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} + \frac{\left(e\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx, x, \sin^{-1}(c+\right.}{bd}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} + \frac{e\cos\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(c+dx)\right)}{b^2d} + \frac{e\sin\left(\frac{2a}{b}\right.}{}$$

Mathematica [A]
time = 0.22, size = 99, normalized size = 0.95

$$\frac{e\left(-\frac{b(c+dx)\sqrt{1-c^2-2cdx-d^2x^2}}{a+b\text{ArcSin}(c+dx)}+\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(2\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)+\sin\left(\frac{2a}{b}\right)\text{Si}\left(2\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\right)}{b^2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)/(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (e*(-((b*(c + d*x)*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2])/(a + b*ArcSin[c + d*x
])) + Cos[(2*a)/b]*CosIntegral[2*(a/b + ArcSin[c + d*x])] + Sin[(2*a)/b]*Si
nIntegral[2*(a/b + ArcSin[c + d*x])]))/(b^2*d)
```

Maple [A]
time = 0.04, size = 151, normalized size = 1.45

method	result
derivativedivides	$\frac{e\left(2\arcsin(dx+c)\,\text{sinIntegral}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\sin\left(\frac{2a}{b}\right)b+2\arcsin(dx+c)\,\text{cosineIntegral}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\cos\left(\frac{2a}{b}\right.\right.}{2d(a+b\arcs}$
default	$\frac{e\left(2\arcsin(dx+c)\,\text{sinIntegral}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\sin\left(\frac{2a}{b}\right)b+2\arcsin(dx+c)\,\text{cosineIntegral}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\cos\left(\frac{2a}{b}\right.\right.}{2d(a+b\arcs}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)/(a+b*arcsin(d*x+c))^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/2/d*e*(2*arcsin(d*x+c)*Si(2*arcsin(d*x+c)+2*a/b)*sin(2*a/b)*b+2*arcsin(d*
x+c)*Ci(2*arcsin(d*x+c)+2*a/b)*cos(2*a/b)*b+2*Si(2*arcsin(d*x+c)+2*a/b)*sin
(2*a/b)*a+2*Ci(2*arcsin(d*x+c)+2*a/b)*cos(2*a/b)*a-sin(2*arcsin(d*x+c))*b)/
(a+b*arcsin(d*x+c))/b^2
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] -((d*x*e + c*e)*sqrt(d*x + c + 1)*sqrt(-d*x - c + 1) - (b^2*d*arctan2(d*x +
 c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + a*b*d)*integrate((2*d^2*x^2*e +
 4*c*d*x*e + 2*c^2*e - e)*sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)/(a*b*d^2*x^2
 + 2*a*b*c*d*x + a*b*c^2 - a*b + (b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2 - b^2
)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))), x))/(b^2*d*arcta
n2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + a*b*d)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] integral((d*x + c)*e/(b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2),
 x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e\left(\int \frac{c}{a^2+2ab\operatorname{asin}(c+dx)+b^2\operatorname{asin}^2(c+dx)}\,dx+\int \frac{dx}{a^2+2ab\operatorname{asin}(c+dx)+b^2\operatorname{asin}^2(c+dx)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*asin(d*x+c))**2,x)
```

```
[Out] e*(Integral(c/(a**2 + 2*a*b*asin(c + d*x) + b**2*asin(c + d*x)**2), x) + In
tegral(d*x/(a**2 + 2*a*b*asin(c + d*x) + b**2*asin(c + d*x)**2), x))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 341 vs. 2(102) = 204.
time = 0.48, size = 341, normalized size = 3.28

$$\frac{2\,be\arcsin(dx+c)\cos\left(\frac{a}{b}\right)^2\operatorname{Ci}\left(\frac{2\,a}{b}+2\,\arcsin(dx+c)\right)}{b^3d\arcsin(dx+c)+ab^2d}+\frac{2\,be\arcsin(dx+c)\cos\left(\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{2\,a}{b}+2\,\arcsin(dx+c)\right)}{b^3d\arcsin(dx+c)+ab^2d}+\frac{2\,ae\cos\left(\frac{a}{b}\right)^2\operatorname{Ci}\left(\frac{2\,a}{b}+2\,\arcsin(dx+c)\right)}{b^3d\arcsin(dx+c)+ab^2d}+\frac{2\,ae\cos\left(\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{2\,a}{b}+2\,\arcsin(dx+c)\right)}{b^3d\arcsin(dx+c)+ab^2d}-\frac{be\arcsin(dx+c)\operatorname{Ci}\left(\frac{2\,a}{b}+2\,\arcsin(dx+c)\right)}{b^3d\arcsin(dx+c)+ab^2d}-\frac{\sqrt{-(dx+c)^2+1}\,(dx+c)be}{b^3d\arcsin(dx+c)+ab^2d}-\frac{ae\operatorname{Ci}\left(\frac{2\,a}{b}+2\,\arcsin(dx+c)\right)}{b^3d\arcsin(dx+c)+ab^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] 2*b*e*arcsin(d*x + c)*cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(d*x + c))/(b
^3*d*arcsin(d*x + c) + a*b^2*d) + 2*b*e*arcsin(d*x + c)*cos(a/b)*sin(a/b)*s
in_integral(2*a/b + 2*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) +
2*a*e*cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(d*x + c))/(b^3*d*arcsin(d*x
+ c) + a*b^2*d) + 2*a*e*cos(a/b)*sin(a/b)*sin_integral(2*a/b + 2*arcsin(d*x
 + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) - b*e*arcsin(d*x + c)*cos_integral
(2*a/b + 2*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) - sqrt(-(d*x
+ c)^2 + 1)*(d*x + c)*b*e/(b^3*d*arcsin(d*x + c) + a*b^2*d) - a*e*cos_integ
ral(2*a/b + 2*arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{c\,e+d\,e\,x}{{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)/(a + b*asin(c + d*x))^2,x)
```

```
[Out] int((c*e + d*e*x)/(a + b*asin(c + d*x))^2, x)
```

3.225 $\int \frac{1}{(a+b\mathbf{ArcSin}(c+dx))^2}\,dx$

Optimal. Leaf size=93

$$-\frac{\sqrt{1-(c+dx)^2}}{bd(a+b\text{ArcSin}(c+dx))}+\frac{\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)\sin\left(\frac{a}{b}\right)}{b^2d}-\frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{b^2d}$$

```
[Out] -cos(a/b)*Si((a+b*arcsin(d*x+c))/b)/b^2/d+Ci((a+b*arcsin(d*x+c))/b)*sin(a/b
)/b^2/d-(1-(d*x+c)^2)^(1/2)/b/d/(a+b*arcsin(d*x+c))
```

Rubi [A]
time = 0.12, antiderivative size = 93, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {4887, 4717, 4809, 3384, 3380, 3383}

$$\frac{\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{b^2d}-\frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{b^2d}-\frac{\sqrt{1-(c+dx)^2}}{bd(a+b\text{ArcSin}(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(-2),x]
```

```
[Out] -(Sqrt[1 - (c + d*x)^2]/(b*d*(a + b*ArcSin[c + d*x]))) + (CosIntegral[(a +
b*ArcSin[c + d*x])/b]*Sin[a/b])/(b^2*d) - (Cos[a/b]*SinIntegral[(a + b*ArcS
in[c + d*x])/b])/(b^2*d)
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3384

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[c*(f/d) + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[c*(f/d) + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4717

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[Sqrt[1 - c^2
*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + Dist[c/(b*(n + 1)),
 Int[x*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4809

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[(1/(b*c^(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x
^2)^p], Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b]^(2*p + 1), x], x, a
 + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0]
&& IGtQ[2*p + 2, 0] && IGtQ[m, 0]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^2}\,dx = \frac{\text{Subst}\left(\int \frac{1}{(a+b\sin^{-1}(x))^2}\,dx,x,c+dx\right)}{d}$$
$$= -\frac{\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} - \frac{\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\,(a+b\sin^{-1}(x))}\,dx,x,c+dx\right)}{bd}$$
$$= -\frac{\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} - \frac{\text{Subst}\left(\int \frac{\sin(x)}{a+bx}\,dx,x,\sin^{-1}(c+dx)\right)}{bd}$$
$$= -\frac{\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} - \frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{a+bx}\,dx,x,\sin^{-1}(c+dx)\right)}{bd} +$$
$$= -\frac{\sqrt{1-(c+dx)^2}}{bd\left(a+b\sin^{-1}(c+dx)\right)} + \frac{\text{Ci}\left(\frac{a}{b}+\sin^{-1}(c+dx)\right)\sin\left(\frac{a}{b}\right)}{b^2d} - \frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{s}\right.}{b^2 d}$$

Mathematica [A]
time = 0.06, size = 79, normalized size = 0.85

$$\frac{-\frac{b\sqrt{1-(c+dx)^2}}{a+b\text{ArcSin}(c+dx)} + \text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\sin\left(\frac{a}{b}\right) - \cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)}{b^2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(-2),x]
```

```
[Out] (-((b*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*x])) + CosIntegral[a/b + A
rcSin[c + d*x]]*Sin[a/b] - Cos[a/b]*SinIntegral[a/b + ArcSin[c + d*x]])/(b^
2*d)
```

Maple [A]
time = 0.08, size = 83, normalized size = 0.89

method	result	size
derivativedivides	$\frac{-\frac{\sqrt{1-(dx+c)^2}}{(a+b\arcsin(dx+c))b}-\frac{\mathrm{sinIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)-\mathrm{cosineIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)}{b^2}}{d}$	83
default	$\frac{-\frac{\sqrt{1-(dx+c)^2}}{(a+b\arcsin(dx+c))b}-\frac{\mathrm{sinIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)-\mathrm{cosineIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)}{b^2}}{d}$	83

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c))^2,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(-1/(a+b*arcsin(d*x+c))/b*(1-(d*x+c)^2)^(1/2)-(Si(arcsin(d*x+c)+a/b)*co
s(a/b)-Ci(arcsin(d*x+c)+a/b)*sin(a/b))/b^2)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] ((b^2*d*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + a*b*d)*int
egrate(sqrt(d*x + c + 1)*(d*x + c)*sqrt(-d*x - c + 1)/(a*b*d^2*x^2 + 2*a*b*
c*d*x + a*b*c^2 - a*b + (b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2 - b^2)*arctan2
(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))), x) - sqrt(d*x + c + 1)*sq
rt(-d*x - c + 1))/(b^2*d*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c +
 1)) + a*b*d)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a + b \operatorname{asin}{(c + dx)})^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c))**2,x)
```

```
[Out] Integral((a + b*asin(c + d*x))**(-2), x)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 215 vs. 2(91) = 182.
time = 0.43, size = 215, normalized size = 2.31

$$\frac{b \arcsin(dx + c) \operatorname{Ci}\left(\frac{a}{b} + \arcsin(dx + c)\right) \sin\left(\frac{a}{b}\right)}{b^3 d \arcsin(dx + c) + ab^2 d} - \frac{b \arcsin(dx + c) \cos\left(\frac{a}{b}\right) \operatorname{Si}\left(\frac{a}{b} + \arcsin(dx + c)\right)}{b^3 d \arcsin(dx + c) + ab^2 d} + \frac{a \operatorname{Ci}\left(\frac{a}{b} + \arcsin(dx + c)\right) \sin\left(\frac{a}{b}\right)}{b^3 d \arcsin(dx + c) + ab^2 d} - \frac{a \cos\left(\frac{a}{b}\right) \operatorname{Si}\left(\frac{a}{b} + \arcsin(dx + c)\right)}{b^3 d \arcsin(dx + c) + ab^2 d} - \frac{\sqrt{-(dx + c)^2 + 1}\, b}{b^3 d \arcsin(dx + c) + ab^2 d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] b*arcsin(d*x + c)*cos_integral(a/b + arcsin(d*x + c))*sin(a/b)/(b^3*d*arcsi
n(d*x + c) + a*b^2*d) - b*arcsin(d*x + c)*cos(a/b)*sin_integral(a/b + arcsi
n(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) + a*cos_integral(a/b + arcsin
(d*x + c))*sin(a/b)/(b^3*d*arcsin(d*x + c) + a*b^2*d) - a*cos(a/b)*sin_inte
gral(a/b + arcsin(d*x + c))/(b^3*d*arcsin(d*x + c) + a*b^2*d) - sqrt(-(d*x
+ c)^2 + 1)*b/(b^3*d*arcsin(d*x + c) + a*b^2*d)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{(a + b \operatorname{asin}{(c + d\,x)})^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(c + d*x))^2,x)
```

```
[Out] int(1/(a + b*asin(c + d*x))^2, x)
```

3.226 $\int \frac{1}{(ce+dex)(a+b\text{ArcSin}(c+dx))^2}\,dx$

Optimal. Leaf size=27

$$\frac{\text{Int}\left(\frac{1}{(c+dx)(a+b\text{ArcSin}(c+dx))^2},x\right)}{e}$$

```
[Out] Unintegrable(1/(d*x+c)/(a+b*arcsin(d*x+c))^2,x)/e
```

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(ce+dex)(a+b\text{ArcSin}(c+dx))^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^2),x]
[Out] Defer[Subst][Defer[Int][1/(x*(a + b*ArcSin[x])^2), x], x, c + d*x]/(d*e)
```

Rubi steps

$$\begin{aligned}\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^2}\,dx &= \frac{\text{Subst}\left(\int \frac{1}{ex(a+b\sin^{-1}(x))^2}\,dx,x,c+dx\right)}{d}\\ &= \frac{\text{Subst}\left(\int \frac{1}{x(a+b\sin^{-1}(x))^2}\,dx,x,c+dx\right)}{de}\end{aligned}$$

Mathematica [A]
time = 1.86, size = 0, normalized size = 0.00

$$\int \frac{1}{(ce+dex)(a+b\text{ArcSin}(c+dx))^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^2),x]
[Out] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^2), x]
```

Maple [A]
time = 0.12, size = 0, normalized size = 0.00

$$\int \frac{1}{(dex+ce)\left(a+b\arcsin\left(dx+c\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^2,x)
```

```
[Out] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] ((a*b*d^2*x*e + a*b*c*d*e + (b^2*d^2*x*e + b^2*c*d*e)*arctan2(d*x + c, sqrt
(d*x + c + 1)*sqrt(-d*x - c + 1)))*integrate(sqrt(d*x + c + 1)*sqrt(-d*x -
c + 1)/(a*b*d^4*x^4*e + 4*a*b*c*d^3*x^3*e + a*b*c^4*e + (6*a*b*c^2*e - a*b*
e)*d^2*x^2 - a*b*c^2*e + 2*(2*a*b*c^3*e - a*b*c*e)*d*x + (b^2*d^4*x^4*e + 4
*b^2*c*d^3*x^3*e + b^2*c^4*e + (6*b^2*c^2*e - b^2*e)*d^2*x^2 - b^2*c^2*e +
2*(2*b^2*c^3*e - b^2*c*e)*d*x)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x
 - c + 1))), x) - sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))/(a*b*d^2*x*e + a*b*
c*d*e + (b^2*d^2*x*e + b^2*c*d*e)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-
d*x - c + 1)))
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] integral(1/((b^2*d*x + b^2*c)*arcsin(d*x + c)^2*e + 2*(a*b*d*x + a*b*c)*arc
sin(d*x + c)*e + (a^2*d*x + a^2*c)*e), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{1}{a^2c+a^2dx+2abc\operatorname{asin}(c+dx)+2abdx\operatorname{asin}(c+dx)+b^2c\operatorname{asin}^2(c+dx)+b^2dx\operatorname{asin}^2(c+dx)}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*asin(d*x+c))**2,x)
```

```
[Out] Integral(1/(a**2*c + a**2*d*x + 2*a*b*c*asin(c + d*x) + 2*a*b*d*x*asin(c +
d*x) + b**2*c*asin(c + d*x)**2 + b**2*d*x*asin(c + d*x)**2), x)/e
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
[Out] integrate(1/((d*e*x + c*e)*(b*arcsin(d*x + c) + a)^2), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{(c\,e+d\,e\,x)\,\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((c*e + d*e*x)*(a + b*asin(c + d*x))^2),x)
[Out] int(1/((c*e + d*e*x)*(a + b*asin(c + d*x))^2), x)
```

3.227 $\int \frac{(ce+dex)^4}{(a+b\mathbf{ArcSin}(c+dx))^3}\,dx$

Optimal. Leaf size=322

$$-\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{2bd(a+b\text{ArcSin}(c+dx))^2}-\frac{2e^4(c+dx)^3}{b^2d(a+b\text{ArcSin}(c+dx))}+\frac{5e^4(c+dx)^5}{2b^2d(a+b\text{ArcSin}(c+dx))}-\frac{e^4\cos\left(\frac{a}{b}\right)\text{CosInteg}}{16}$$

```
[Out] -2*e^4*(d*x+c)^3/b^2/d/(a+b*arcsin(d*x+c))+5/2*e^4*(d*x+c)^5/b^2/d/(a+b*arc
sin(d*x+c))-1/16*e^4*Ci((a+b*arcsin(d*x+c))/b)*cos(a/b)/b^3/d+27/32*e^4*Ci(
3*(a+b*arcsin(d*x+c))/b)*cos(3*a/b)/b^3/d-25/32*e^4*Ci(5*(a+b*arcsin(d*x+c)
)/b)*cos(5*a/b)/b^3/d-1/16*e^4*Si((a+b*arcsin(d*x+c))/b)*sin(a/b)/b^3/d+27/
32*e^4*Si(3*(a+b*arcsin(d*x+c))/b)*sin(3*a/b)/b^3/d-25/32*e^4*Si(5*(a+b*arc
sin(d*x+c))/b)*sin(5*a/b)/b^3/d-1/2*e^4*(d*x+c)^4*(1-(d*x+c)^2)^(1/2)/b/d/(
a+b*arcsin(d*x+c))^2
```

Rubi [A]
time = 0.57, antiderivative size = 322, normalized size of antiderivative = 1.00, number of steps used = 26, number of rules used = 9, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.391$, Rules used = {4889, 12, 4729, 4807, 4731, 4491, 3384, 3380, 3383}

$$-\frac{e^4\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{16b^3d}+\frac{27e^4\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3(a+b\text{ArcSin}(c+dx))}{b}\right)}{32b^3d}-\frac{25e^4\cos\left(\frac{5a}{b}\right)\text{CosIntegral}\left(\frac{5(a+b\text{ArcSin}(c+dx))}{b}\right)}{32b^3d}-\frac{e^4\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{16b^3d}+\frac{27e^4\sin\left(\frac{3a}{b}\right)\text{Si}\left(\frac{3(a+b\text{ArcSin}(c+dx))}{b}\right)}{32b^3d}-\frac{25e^4\sin\left(\frac{5a}{b}\right)\text{Si}\left(\frac{5(a+b\text{ArcSin}(c+dx))}{b}\right)}{32b^3d}+\frac{5e^4(c+dx)^5}{2b^2d(a+b\text{ArcSin}(c+dx))}-\frac{2e^4(c+dx)^3}{b^2d(a+b\text{ArcSin}(c+dx))}-\frac{e^4\sqrt{1-(c+dx)^2}(c+dx)^4}{2bd(a+b\text{ArcSin}(c+dx))^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^4/(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] -1/2*(e^4*(c + d*x)^4*Sqrt[1 - (c + d*x)^2])/(b*d*(a + b*ArcSin[c + d*x])^2
) - (2*e^4*(c + d*x)^3)/(b^2*d*(a + b*ArcSin[c + d*x])) + (5*e^4*(c + d*x)^
5)/(2*b^2*d*(a + b*ArcSin[c + d*x])) - (e^4*Cos[a/b]*CosIntegral[(a + b*Arc
Sin[c + d*x])/b])/(16*b^3*d) + (27*e^4*Cos[(3*a)/b]*CosIntegral[(3*(a + b*A
rcSin[c + d*x]))/b])/(32*b^3*d) - (25*e^4*Cos[(5*a)/b]*CosIntegral[(5*(a +
b*ArcSin[c + d*x]))/b])/(32*b^3*d) - (e^4*Sin[a/b]*SinIntegral[(a + b*ArcSi
n[c + d*x])/b])/(16*b^3*d) + (27*e^4*Sin[(3*a)/b]*SinIntegral[(3*(a + b*Arc
Sin[c + d*x]))/b])/(32*b^3*d) - (25*e^4*Sin[(5*a)/b]*SinIntegral[(5*(a + b*
ArcSin[c + d*x]))/b])/(32*b^3*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3384

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[c*(f/d) + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[c*(f/d) + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + (Dis
t[c*((m + 1)/(b*(n + 1))), Int[x^(m + 1)*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[
1 - c^2*x^2]), x], x] - Dist[m/(b*c*(n + 1)), Int[x^(m - 1)*((a + b*ArcSin[
c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^4}{\left(a+b\sin^{-1}(c+dx)\right)^3}\,dx = \frac{\text{Subst}\left(\int \frac{e^4x^4}{(a+b\sin^{-1}(x))^3}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^4\text{Subst}\left(\int \frac{x^4}{(a+b\sin^{-1}(x))^3}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{(2e^4)\,\text{Subst}\left(\int \frac{x^3}{\sqrt{1-x^2}\,(a+b\sin^{-1}(x))^2}\,dx, x, c\right.}{bd}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{2e^4(c+dx)^3}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{5e^4(c+d}{2b^2d\left(a+b\sin^{-1}\right.}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{2e^4(c+dx)^3}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{5e^4(c+d}{2b^2d\left(a+b\sin^{-1}\right.}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{2e^4(c+dx)^3}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{5e^4(c+d}{2b^2d\left(a+b\sin^{-1}\right.}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{2e^4(c+dx)^3}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{5e^4(c+d}{2b^2d\left(a+b\sin^{-1}\right.}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{2e^4(c+dx)^3}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{5e^4(c+d}{2b^2d\left(a+b\sin^{-1}\right.}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{2e^4(c+dx)^3}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{5e^4(c+d}{2b^2d\left(a+b\sin^{-1}\right.}$$

Mathematica [A]
time = 1.02, size = 317, normalized size = 0.98

$$\frac{e^4\left(-\frac{16b^2(c+dx)^4\sqrt{1-(c+dx)^2}}{(a+b\text{ArcSin}(c+dx))^2}+\frac{16b(-4(c+dx)^3+5(c+dx)^5)}{a+b\text{ArcSin}(c+dx)}+48\left(\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)-\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(3\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)+\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)-\sin\left(\frac{3a}{b}\right)\text{Si}\left(3\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\right)-25\left(2\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)-3\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(3\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)+\cos\left(\frac{5a}{b}\right)\text{CosIntegral}\left(5\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)+2\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)-3\sin\left(\frac{3a}{b}\right)\text{Si}\left(3\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)+\sin\left(\frac{5a}{b}\right)\text{Si}\left(5\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\right)\right)}{32b^3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^4/(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] (e^4*((-16*b^2*(c + d*x)^4*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*x])^2
 + (16*b*(-4*(c + d*x)^3 + 5*(c + d*x)^5))/(a + b*ArcSin[c + d*x]) + 48*(Co
s[a/b]*CosIntegral[a/b + ArcSin[c + d*x]] - Cos[(3*a)/b]*CosIntegral[3*(a/b
 + ArcSin[c + d*x])] + Sin[a/b]*SinIntegral[a/b + ArcSin[c + d*x]] - Sin[(3
*a)/b]*SinIntegral[3*(a/b + ArcSin[c + d*x])]) - 25*(2*Cos[a/b]*CosIntegral
[a/b + ArcSin[c + d*x]] - 3*Cos[(3*a)/b]*CosIntegral[3*(a/b + ArcSin[c + d*
x])] + Cos[(5*a)/b]*CosIntegral[5*(a/b + ArcSin[c + d*x])] + 2*Sin[a/b]*Sin
Integral[a/b + ArcSin[c + d*x]] - 3*Sin[(3*a)/b]*SinIntegral[3*(a/b + ArcSi
n[c + d*x])] + Sin[(5*a)/b]*SinIntegral[5*(a/b + ArcSin[c + d*x])])))/(32*b
^3*d)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 719 vs. $2(304) = 608$.
time = 0.31, size = 720, normalized size = 2.24 Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/32/d*e^4*(3*cos(3*arcsin(d*x+c))*b^2-cos(5*arcsin(d*x+c))*b^2-2*(1-(d*x+c
)^2)^(1/2)*b^2+54*arcsin(d*x+c)*Ci(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b)*a*b-50
*arcsin(d*x+c)*Si(5*arcsin(d*x+c)+5*a/b)*sin(5*a/b)*a*b-50*arcsin(d*x+c)*Ci
(5*arcsin(d*x+c)+5*a/b)*cos(5*a/b)*a*b-4*arcsin(d*x+c)*Si(arcsin(d*x+c)+a/b
)*sin(a/b)*a*b-4*arcsin(d*x+c)*Ci(arcsin(d*x+c)+a/b)*cos(a/b)*a*b+54*arcsin
(d*x+c)*Si(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)*a*b+27*arcsin(d*x+c)^2*Si(3*ar
csin(d*x+c)+3*a/b)*sin(3*a/b)*b^2+27*arcsin(d*x+c)^2*Ci(3*arcsin(d*x+c)+3*a
/b)*cos(3*a/b)*b^2-25*arcsin(d*x+c)^2*Si(5*arcsin(d*x+c)+5*a/b)*sin(5*a/b)*
b^2-25*arcsin(d*x+c)^2*Ci(5*arcsin(d*x+c)+5*a/b)*cos(5*a/b)*b^2-2*arcsin(d*
x+c)^2*Si(arcsin(d*x+c)+a/b)*sin(a/b)*b^2-2*arcsin(d*x+c)^2*Ci(arcsin(d*x+c
)+a/b)*cos(a/b)*b^2+2*a*b*(d*x+c)+27*Ci(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b)*a
^2-9*sin(3*arcsin(d*x+c))*a*b+5*arcsin(d*x+c)*sin(5*arcsin(d*x+c))*b^2-25*S
i(5*arcsin(d*x+c)+5*a/b)*sin(5*a/b)*a^2-25*Ci(5*arcsin(d*x+c)+5*a/b)*cos(5*
a/b)*a^2+5*sin(5*arcsin(d*x+c))*a*b+2*arcsin(d*x+c)*b^2*(d*x+c)-2*Si(arcsin
(d*x+c)+a/b)*sin(a/b)*a^2-2*Ci(arcsin(d*x+c)+a/b)*cos(a/b)*a^2-9*arcsin(d*x
+c)*sin(3*arcsin(d*x+c))*b^2+27*Si(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)*a^2)/(
a+b*arcsin(d*x+c))^2/b^3
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] 1/2*(5*a*d^5*x^5*e^4 + 25*a*c*d^4*x^4*e^4 + 2*(25*a*c^2*e^4 - 2*a*e^4)*d^3*
x^3 + 5*a*c^5*e^4 + 2*(25*a*c^3*e^4 - 6*a*c*e^4)*d^2*x^2 - 4*a*c^3*e^4 + (2
```

```
5*a*c^4*e^4 - 12*a*c^2*e^4)*d*x - (b*d^4*x^4*e^4 + 4*b*c*d^3*x^3*e^4 + 6*b*
c^2*d^2*x^2*e^4 + 4*b*c^3*d*x*e^4 + b*c^4*e^4)*sqrt(d*x + c + 1)*sqrt(-d*x
- c + 1) + (5*b*d^5*x^5*e^4 + 25*b*c*d^4*x^4*e^4 + 2*(25*b*c^2*e^4 - 2*b*e^
4)*d^3*x^3 + 5*b*c^5*e^4 + 2*(25*b*c^3*e^4 - 6*b*c*e^4)*d^2*x^2 - 4*b*c^3*e
^4 + (25*b*c^4*e^4 - 12*b*c^2*e^4)*d*x)*arctan2(d*x + c, sqrt(d*x + c + 1)*
sqrt(-d*x - c + 1)) - 2*(b^4*d*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x
 - c + 1))^2 + 2*a*b^3*d*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c +
 1)) + a^2*b^2*d)*integrate(1/2*(25*d^4*x^4*e^4 + 100*c*d^3*x^3*e^4 + 6*(25
*c^2*e^4 - 2*e^4)*d^2*x^2 + 25*c^4*e^4 + 4*(25*c^3*e^4 - 6*c*e^4)*d*x - 12*
c^2*e^4)/(b^3*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + a*b^
2), x))/(b^4*d*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2 + 2
*a*b^3*d*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + a^2*b^2*d
)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] integral((d^4*x^4 + 4*c*d^3*x^3 + 6*c^2*d^2*x^2 + 4*c^3*d*x + c^4)*e^4/(b^3
*arcsin(d*x + c)^3 + 3*a*b^2*arcsin(d*x + c)^2 + 3*a^2*b*arcsin(d*x + c) +
a^3), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e^{4}\left(\int \frac{c^{4}}{a^{3}+3a^{2}b\operatorname{asin}{\left(c+dx\right)}+3ab^{2}\operatorname{asin}^{2}{\left(c+dx\right)}+b^{3}\operatorname{asin}^{3}{\left(c+dx\right)}}\,dx+\int \frac{d^{4}x^{4}}{a^{3}+3a^{2}b\operatorname{asin}{\left(c+dx\right)}+3ab^{2}\operatorname{asin}^{2}{\left(c+dx\right)}+b^{3}\operatorname{asin}^{3}{\left(c+dx\right)}}\,dx+\int \frac{4cd^{3}x^{3}}{a^{3}+3a^{2}b\operatorname{asin}{\left(c+dx\right)}+3ab^{2}\operatorname{asin}^{2}{\left(c+dx\right)}+b^{3}\operatorname{asin}^{3}{\left(c+dx\right)}}\,dx+\int \frac{6c^{2}d^{2}x^{2}}{a^{3}+3a^{2}b\operatorname{asin}{\left(c+dx\right)}+3ab^{2}\operatorname{asin}^{2}{\left(c+dx\right)}+b^{3}\operatorname{asin}^{3}{\left(c+dx\right)}}\,dx+\int \frac{4c^{3}dx}{a^{3}+3a^{2}b\operatorname{asin}{\left(c+dx\right)}+3ab^{2}\operatorname{asin}^{2}{\left(c+dx\right)}+b^{3}\operatorname{asin}^{3}{\left(c+dx\right)}}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**4/(a+b*asin(d*x+c))**3,x)
```

```
[Out] e**4*(Integral(c**4/(a**3 + 3*a**2*b*asin(c + d*x) + 3*a*b**2*asin(c + d*x)
**2 + b**3*asin(c + d*x)**3), x) + Integral(d**4*x**4/(a**3 + 3*a**2*b*asin
(c + d*x) + 3*a*b**2*asin(c + d*x)**2 + b**3*asin(c + d*x)**3), x) + Integr
al(4*c*d**3*x**3/(a**3 + 3*a**2*b*asin(c + d*x) + 3*a*b**2*asin(c + d*x)**2
 + b**3*asin(c + d*x)**3), x) + Integral(6*c**2*d**2*x**2/(a**3 + 3*a**2*b*
asin(c + d*x) + 3*a*b**2*asin(c + d*x)**2 + b**3*asin(c + d*x)**3), x) + In
tegral(4*c**3*d*x/(a**3 + 3*a**2*b*asin(c + d*x) + 3*a*b**2*asin(c + d*x)**
2 + b**3*asin(c + d*x)**3), x))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 3180 vs. $2(304) = 608$.
time = 0.66, size = 3180, normalized size = 9.88

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^3,x, algorithm="giac")

[Out] -25/2*b^2*e^4*arcsin(d*x + c)^2*cos(a/b)^5*cos_integral(5*a/b + 5*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 25/2*b^2*e^4*arcsin(d*x + c)^2*cos(a/b)^4*sin(a/b)*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 25*a*b*e^4*arcsin(d*x + c)*cos(a/b)^5*cos_integral(5*a/b + 5*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 25*a*b*e^4*arcsin(d*x + c)*cos(a/b)^4*sin(a/b)*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 125/8*b^2*e^4*arcsin(d*x + c)^2*cos(a/b)^3*cos_integral(5*a/b + 5*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 25/2*a^2*e^4*cos(a/b)^5*cos_integral(5*a/b + 5*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 27/8*b^2*e^4*arcsin(d*x + c)^2*cos(a/b)^3*cos_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 75/8*b^2*e^4*arcsin(d*x + c)^2*cos(a/b)^2*sin(a/b)*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 25/2*a^2*e^4*cos(a/b)^4*sin(a/b)*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 27/8*b^2*e^4*arcsin(d*x + c)^2*cos(a/b)^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 125/4*a*b*e^4*arcsin(d*x + c)*cos(a/b)^3*cos_integral(5*a/b + 5*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 27/4*a*b*e^4*arcsin(d*x + c)*cos(a/b)^3*cos_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 75/4*a*b*e^4*arcsin(d*x + c)*cos(a/b)^2*sin(a/b)*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 27/4*a*b*e^4*arcsin(d*x + c)*cos(a/b)^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 5/2*((d*x + c)^2 - 1)^2*(d*x + c)*b^2*e^4*arcsin(d*x + c)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 125/32*b^2*e^4*arcsin(d*x + c)^2*cos(a/b)*cos_integral(5*a/b + 5*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 125/8*a^2*e^4*cos(a/b)^3*cos_integral(5*a/b + 5*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 81/32*b^2*e^4*arcsin(d*x + c)^2*cos(a/b)*cos_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 27/8*a^2*e^4*cos(a/b)^3*cos_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/16*b^2*e^4*arcsin(d*x + c)^2*cos(a/b)*cos_integral(a/b + arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 25/32*b^2*e^4*arcsin(d*x + c)^2*sin(a/b)*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*

```
x + c) + a^2*b^3*d) + 75/8*a^2*e^4*cos(a/b)^2*sin(a/b)*sin_integral(5*a/b +
 5*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) +
a^2*b^3*d) - 27/32*b^2*e^4*arcsin(d*x + c)^2*sin(a/b)*sin_integral(3*a/b +
3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a
^2*b^3*d) + 27/8*a^2*e^4*cos(a/b)^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(
d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d)
 - 1/16*b^2*e^4*arcsin(d*x + c)^2*sin(a/b)*sin_integral(a/b + arcsin(d*x +
c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 5/2
*((d*x + c)^2 - 1)^2*(d*x + c)*a*b*e^4/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d
*arcsin(d*x + c) + a^2*b^3*d) + 3*((d*x + c)^2 - 1)*(d*x + c)*b^2*e^4*arcsi
n(d*x + c)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d
) - 125/16*a*b*e^4*arcsin(d*x + c)*cos(a/b)*cos_integral(5*a/b + 5*arcsin(d
*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d)
- 81/16*a*b*e^4*arcsin(d*x + c)*cos(a/b)*cos_integral(3*a/b + 3*arcsin(d*x
+ c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1
/8*a*b*e^4*arcsin(d*x + c)*cos(a/b)*cos_integral(a/b + arcsin(d*x + c))/(b^
5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 25/16*a*b*
e^4*arcsin(d*x + c)*sin(a/b)*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^5*d
*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 27/16*a*b*e^4
*arcsin(d*x + c)*sin(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*ar
csin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/8*a*b*e^4*arcs
in(d*x + c)*sin(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^5*d*arcsin(d*x
+ c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/2*((d*x + c)^2 - 1)^2*s
qrt(-(d*x + c)^2 + 1)*b^2*e^4/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d
*x + c) + a^2*b^3*d) + 3*((d*x + c)^2 - 1)*(d*x + c)*a*b*e^4/(b^5*d*arcsin(
d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^...
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,e+d\,e\,x)^4}{(a+b\,\mathrm{asin}\,(c+d\,x))^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^4/(a + b*asin(c + d*x))^3,x)
```

```
[Out] int((c*e + d*e*x)^4/(a + b*asin(c + d*x))^3, x)
```

3.228 $\int \frac{(ce+dex)^3}{(a+b\textbf{ArcSin}(c+dx))^3}\,dx$

Optimal. Leaf size=249

$$-\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{2bd(a+b\text{ArcSin}(c+dx))^2}-\frac{3e^3(c+dx)^2}{2b^2d(a+b\text{ArcSin}(c+dx))}+\frac{2e^3(c+dx)^4}{b^2d(a+b\text{ArcSin}(c+dx))}+\frac{e^3\text{CosIntegral}\left(\frac{2(a}{}\right.}{}$$

```
[Out] -3/2*e^3*(d*x+c)^2/b^2/d/(a+b*arcsin(d*x+c))+2*e^3*(d*x+c)^4/b^2/d/(a+b*arc
sin(d*x+c))-1/2*e^3*cos(2*a/b)*Si(2*(a+b*arcsin(d*x+c))/b)/b^3/d+e^3*cos(4*
a/b)*Si(4*(a+b*arcsin(d*x+c))/b)/b^3/d+1/2*e^3*Ci(2*(a+b*arcsin(d*x+c))/b)*
sin(2*a/b)/b^3/d-e^3*Ci(4*(a+b*arcsin(d*x+c))/b)*sin(4*a/b)/b^3/d-1/2*e^3*(
d*x+c)^3*(1-(d*x+c)^2)^(1/2)/b/d/(a+b*arcsin(d*x+c))^2
```

Rubi [A]
time = 0.43, antiderivative size = 249, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 9, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.391$, Rules used = {4889, 12, 4729, 4807, 4731, 4491, 3384, 3380, 3383}

$$\frac{e^3\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2(a+b\text{ArcSin}(c+dx))}{b}\right)}{2b^3d}-\frac{e^3\sin\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4(a+b\text{ArcSin}(c+dx))}{b}\right)}{b^3d}-\frac{e^3\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2(a+b\text{ArcSin}(c+dx))}{b}\right)}{2b^3d}+\frac{e^3\cos\left(\frac{4a}{b}\right)\text{Si}\left(\frac{4(a+b\text{ArcSin}(c+dx))}{b}\right)}{b^3d}+\frac{2e^3(c+dx)^4}{b^2d(a+b\text{ArcSin}(c+dx))}-\frac{3e^3(c+dx)^2}{2b^2d(a+b\text{ArcSin}(c+dx))}-\frac{e^3\sqrt{1-(c+dx)^2}\,(c+dx)^3}{2bd(a+b\text{ArcSin}(c+dx))^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] -1/2*(e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(b*d*(a + b*ArcSin[c + d*x])^2
) - (3*e^3*(c + d*x)^2)/(2*b^2*d*(a + b*ArcSin[c + d*x])) + (2*e^3*(c + d*x
)^4)/(b^2*d*(a + b*ArcSin[c + d*x])) + (e^3*CosIntegral[(2*(a + b*ArcSin[c
+ d*x]))/b]*Sin[(2*a)/b])/(2*b^3*d) - (e^3*CosIntegral[(4*(a + b*ArcSin[c +
 d*x]))/b]*Sin[(4*a)/b])/(b^3*d) - (e^3*Cos[(2*a)/b]*SinIntegral[(2*(a + b*
ArcSin[c + d*x]))/b])/(2*b^3*d) + (e^3*Cos[(4*a)/b]*SinIntegral[(4*(a + b*A
rcSin[c + d*x]))/b])/(b^3*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
```

```
c*f, 0]
```

Rule 3384

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[c*(f/d) + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[c*(f/d) + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + (Dis
t[c*((m + 1)/(b*(n + 1))), Int[x^(m + 1)*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[
1 - c^2*x^2]), x], x] - Dist[m/(b*c*(n + 1)), Int[x^(m - 1)*((a + b*ArcSin[
c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^3}{\left(a+b\sin^{-1}(c+dx)\right)^3}\,dx = \frac{\text{Subst}\left(\int \frac{e^3x^3}{\left(a+b\sin^{-1}(x)\right)^3}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^3\text{Subst}\left(\int \frac{x^3}{\left(a+b\sin^{-1}(x)\right)^3}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{(3e^3)\,\text{Subst}\left(\int \frac{x^2}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^2}\,dx, x,\right.}{2bd}$$

$$= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{3e^3(c+dx)^2}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{2e^3(c+}{b^2d\left(a+b\sin\right.}$$

$$= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{3e^3(c+dx)^2}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{2e^3(c+}{b^2d\left(a+b\sin\right.}$$

$$= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{3e^3(c+dx)^2}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{2e^3(c+}{b^2d\left(a+b\sin\right.}$$

$$= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{3e^3(c+dx)^2}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{2e^3(c+}{b^2d\left(a+b\sin\right.}$$

$$= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{3e^3(c+dx)^2}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{2e^3(c+}{b^2d\left(a+b\sin\right.}$$

$$= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{3e^3(c+dx)^2}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{2e^3(c+}{b^2d\left(a+b\sin\right.}$$

Mathematica [A]
time = 0.48, size = 181, normalized size = 0.73

$$\frac{e^3\left(-\frac{b^2(c+dx)^3\sqrt{1-(c+dx)^2}}{(a+b\text{ArcSin}(c+dx))^2}+\frac{b(-3(c+dx)^2+4(c+dx)^4)}{a+b\text{ArcSin}(c+dx)}+\text{CosIntegral}\left(2\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\sin\left(\frac{2a}{b}\right)-2\text{CosIntegral}\left(4\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\sin\left(\frac{4a}{b}\right)-\cos\left(\frac{2a}{b}\right)\text{Si}\left(2\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)+2\cos\left(\frac{4a}{b}\right)\text{Si}\left(4\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\right)}{2b^3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] (e^3*(-((b^2*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*x])^2)
+ (b*(-3*(c + d*x)^2 + 4*(c + d*x)^4))/(a + b*ArcSin[c + d*x]) + CosIntegra
l[2*(a/b + ArcSin[c + d*x])]*Sin[(2*a)/b] - 2*CosIntegral[4*(a/b + ArcSin[c
 + d*x])]*Sin[(4*a)/b] - Cos[(2*a)/b]*SinIntegral[2*(a/b + ArcSin[c + d*x])
] + 2*Cos[(4*a)/b]*SinIntegral[4*(a/b + ArcSin[c + d*x])]))/(2*b^3*d)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 506 vs. $2(239) = 478$.
time = 0.13, size = 507, normalized size = 2.04

method	result
derivativedivides	$-\frac{e^3\left(8\arcsin(dx+c)^2 \operatorname{sinIntegral}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\cos\left(\frac{2a}{b}\right)b^2-8\arcsin(dx+c)^2 \operatorname{cosineIntegral}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\mathrm{s}\right.}{}$
default	$-\frac{e^3\left(8\arcsin(dx+c)^2 \operatorname{sinIntegral}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\cos\left(\frac{2a}{b}\right)b^2-8\arcsin(dx+c)^2 \operatorname{cosineIntegral}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\mathrm{s}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^3,x,method=_RETURNVERBOSE)
```

```
[Out] -1/16/d*e^3*(8*arcsin(d*x+c)^2*Si(2*arcsin(d*x+c)+2*a/b)*cos(2*a/b)*b^2-8*a
rcsin(d*x+c)^2*Ci(2*arcsin(d*x+c)+2*a/b)*sin(2*a/b)*b^2-16*arcsin(d*x+c)^2*
Si(4*arcsin(d*x+c)+4*a/b)*cos(4*a/b)*b^2+16*arcsin(d*x+c)^2*Ci(4*arcsin(d*x
+c)+4*a/b)*sin(4*a/b)*b^2+16*arcsin(d*x+c)*Si(2*arcsin(d*x+c)+2*a/b)*cos(2*
a/b)*a*b-16*arcsin(d*x+c)*Ci(2*arcsin(d*x+c)+2*a/b)*sin(2*a/b)*a*b-32*arcsi
n(d*x+c)*Si(4*arcsin(d*x+c)+4*a/b)*cos(4*a/b)*a*b+32*arcsin(d*x+c)*Ci(4*arc
sin(d*x+c)+4*a/b)*sin(4*a/b)*a*b+4*arcsin(d*x+c)*cos(2*arcsin(d*x+c))*b^2-4
*arcsin(d*x+c)*cos(4*arcsin(d*x+c))*b^2+8*Si(2*arcsin(d*x+c)+2*a/b)*cos(2*a
/b)*a^2-8*Ci(2*arcsin(d*x+c)+2*a/b)*sin(2*a/b)*a^2-16*Si(4*arcsin(d*x+c)+4*
a/b)*cos(4*a/b)*a^2+16*Ci(4*arcsin(d*x+c)+4*a/b)*sin(4*a/b)*a^2+2*sin(2*arc
sin(d*x+c))*b^2+4*cos(2*arcsin(d*x+c))*a*b-sin(4*arcsin(d*x+c))*b^2-4*cos(4
*arcsin(d*x+c))*a*b)/(a+b*arcsin(d*x+c))^2/b^3
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] 1/2*(4*a*d^4*x^4*e^3 + 16*a*c*d^3*x^3*e^3 + 4*a*c^4*e^3 + 3*(8*a*c^2*e^3 -
a*e^3)*d^2*x^2 - 3*a*c^2*e^3 + 2*(8*a*c^3*e^3 - 3*a*c*e^3)*d*x - (b*d^3*x^3
*e^3 + 3*b*c*d^2*x^2*e^3 + 3*b*c^2*d*x*e^3 + b*c^3*e^3)*sqrt(d*x + c + 1)*s
qrt(-d*x - c + 1) + (4*b*d^4*x^4*e^3 + 16*b*c*d^3*x^3*e^3 + 4*b*c^4*e^3 + 3
*(8*b*c^2*e^3 - b*e^3)*d^2*x^2 - 3*b*c^2*e^3 + 2*(8*b*c^3*e^3 - 3*b*c*e^3)*
d*x)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) - 2*(b^4*d*arct
an2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2 + 2*a*b^3*d*arctan2(d*
x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + a^2*b^2*d)*integrate((8*d^3*
x^3*e^3 + 24*c*d^2*x^2*e^3 + 8*c^3*e^3 + 3*(8*c^2*e^3 - e^3)*d*x - 3*c*e^3)
/(b^3*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + a*b^2), x))/
```

```
(b^4*d*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2 + 2*a*b^3*d
*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + a^2*b^2*d)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] integral((d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3)*e^3/(b^3*arcsin(d*x + c)
^3 + 3*a*b^2*arcsin(d*x + c)^2 + 3*a^2*b*arcsin(d*x + c) + a^3), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e^{3}\left(\int \frac{c^{3}}{a^{3} + 3a^{2}b\operatorname{asin}{\left(c + dx \right)} + 3ab^{2}\operatorname{asin}^{2}{\left(c + dx \right)} + b^{3}\operatorname{asin}^{3}{\left(c + dx \right)}}\, dx + \int \frac{d^{3}x^{3}}{a^{3} + 3a^{2}b\operatorname{asin}{\left(c + dx \right)} + 3ab^{2}\operatorname{asin}^{2}{\left(c + dx \right)} + b^{3}\operatorname{asin}^{3}{\left(c + dx \right)}}\, dx + \int \frac{3cd^{2}x^{2}}{a^{3} + 3a^{2}b\operatorname{asin}{\left(c + dx \right)} + 3ab^{2}\operatorname{asin}^{2}{\left(c + dx \right)} + b^{3}\operatorname{asin}^{3}{\left(c + dx \right)}}\, dx + \int \frac{3c^{2}dx}{a^{3} + 3a^{2}b\operatorname{asin}{\left(c + dx \right)} + 3ab^{2}\operatorname{asin}^{2}{\left(c + dx \right)} + b^{3}\operatorname{asin}^{3}{\left(c + dx \right)}}\, dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3/(a+b*asin(d*x+c))**3,x)
```

```
[Out] e**3*(Integral(c**3/(a**3 + 3*a**2*b*asin(c + d*x) + 3*a*b**2*asin(c + d*x)
**2 + b**3*asin(c + d*x)**3), x) + Integral(d**3*x**3/(a**3 + 3*a**2*b*asin
(c + d*x) + 3*a*b**2*asin(c + d*x)**2 + b**3*asin(c + d*x)**3), x) + Integr
al(3*c*d**2*x**2/(a**3 + 3*a**2*b*asin(c + d*x) + 3*a*b**2*asin(c + d*x)**2
 + b**3*asin(c + d*x)**3), x) + Integral(3*c**2*d*x/(a**3 + 3*a**2*b*asin(c
 + d*x) + 3*a*b**2*asin(c + d*x)**2 + b**3*asin(c + d*x)**3), x))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 2201 vs. $2(239) = 478$.
time = 0.63, size = 2201, normalized size = 8.84

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] -8*b^2*e^3*arcsin(d*x + c)^2*cos(a/b)^3*cos_integral(4*a/b + 4*arcsin(d*x +
 c))*sin(a/b)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^
3*d) + 8*b^2*e^3*arcsin(d*x + c)^2*cos(a/b)^4*sin_integral(4*a/b + 4*arcsin
(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d
) - 16*a*b*e^3*arcsin(d*x + c)*cos(a/b)^3*cos_integral(4*a/b + 4*arcsin(d*x
 + c))*sin(a/b)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*
b^3*d) + 16*a*b*e^3*arcsin(d*x + c)*cos(a/b)^4*sin_integral(4*a/b + 4*arcsi
n(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*
```

d) + 4*b^2*e^3*arcsin(d*x + c)^2*cos(a/b)*cos_integral(4*a/b + 4*arcsin(d*x + c))*sin(a/b)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 8*a^2*e^3*cos(a/b)^3*cos_integral(4*a/b + 4*arcsin(d*x + c))*sin(a/b)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + b^2*e^3*arcsin(d*x + c)^2*cos(a/b)*cos_integral(2*a/b + 2*arcsin(d*x + c))*sin(a/b)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 8*b^2*e^3*arcsin(d*x + c)^2*cos(a/b)^2*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 8*a^2*e^3*cos(a/b)^4*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - b^2*e^3*arcsin(d*x + c)^2*cos(a/b)^2*sin_integral(2*a/b + 2*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 8*a*b*e^3*arcsin(d*x + c)*cos(a/b)*cos_integral(4*a/b + 4*arcsin(d*x + c))*sin(a/b)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 2*a*b*e^3*arcsin(d*x + c)*cos(a/b)*cos_integral(2*a/b + 2*arcsin(d*x + c))*sin(a/b)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 16*a*b*e^3*arcsin(d*x + c)*cos(a/b)^2*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 2*a*b*e^3*arcsin(d*x + c)*cos(a/b)^2*sin_integral(2*a/b + 2*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 2*((d*x + c)^2 - 1)^2*b^2*e^3*arcsin(d*x + c)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 4*a^2*e^3*cos(a/b)*cos_integral(4*a/b + 4*arcsin(d*x + c))*sin(a/b)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + a^2*e^3*cos(a/b)*cos_integral(2*a/b + 2*arcsin(d*x + c))*sin(a/b)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + b^2*e^3*arcsin(d*x + c)^2*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 8*a^2*e^3*cos(a/b)^2*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 1/2*b^2*e^3*arcsin(d*x + c)^2*sin_integral(2*a/b + 2*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - a^2*e^3*cos(a/b)^2*sin_integral(2*a/b + 2*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 1/2*(-(d*x + c)^2 + 1)^(3/2)*(d*x + c)*b^2*e^3/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 2*((d*x + c)^2 - 1)^2*a*b*e^3/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 5/2*((d*x + c)^2 - 1)*b^2*e^3*arcsin(d*x + c)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 2*a*b*e^3*arcsin(d*x + c)*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + a*b*e^3*arcsin(d*x + c)*sin_integral(2*a/b + 2*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/2*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*b^2*e^3/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 5/2*((d*x + c)^2 - 1)*a*b*e^3/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 1/2*b^2*e^3*arcsin(d*x + c)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + a^2*e^3*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x +

```
c) + a^2*b^3*d) + 1/2*a^2*e^3*sin_integral(2*a/b + 2*arcsin(d*x + c))/(b^5*
d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 1/2*a*b*e^3/
(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,e+d\,e\,x)^3}{(a+b\,\mathrm{asin}\,(c+d\,x))^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^3/(a + b*asin(c + d*x))^3,x)
[Out] int((c*e + d*e*x)^3/(a + b*asin(c + d*x))^3, x)
```

3.229 $\int \frac{(ce+dex)^2}{(a+b\mathbf{ArcSin}(c+dx))^3}\,dx$

Optimal. Leaf size=248

$$-\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{2bd(a+b\text{ArcSin}(c+dx))^2}-\frac{e^2(c+dx)}{b^2d(a+b\text{ArcSin}(c+dx))}+\frac{3e^2(c+dx)^3}{2b^2d(a+b\text{ArcSin}(c+dx))}-\frac{e^2\cos\left(\frac{a}{b}\right)\text{CosInteg}}{8}$$

```
[Out] -e^2*(d*x+c)/b^2/d/(a+b*arcsin(d*x+c))+3/2*e^2*(d*x+c)^3/b^2/d/(a+b*arcsin(
d*x+c))-1/8*e^2*Ci((a+b*arcsin(d*x+c))/b)*cos(a/b)/b^3/d+9/8*e^2*Ci(3*(a+b*
arcsin(d*x+c))/b)*cos(3*a/b)/b^3/d-1/8*e^2*Si((a+b*arcsin(d*x+c))/b)*sin(a/
b)/b^3/d+9/8*e^2*Si(3*(a+b*arcsin(d*x+c))/b)*sin(3*a/b)/b^3/d-1/2*e^2*(d*x+
c)^2*(1-(d*x+c)^2)^(1/2)/b/d/(a+b*arcsin(d*x+c))^2
```

Rubi [A]
time = 0.37, antiderivative size = 248, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 10, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.435$, Rules used = {4889, 12, 4729, 4807, 4731, 4491, 3384, 3380, 3383, 4719}

$$-\frac{e^2\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{8b^3d}+\frac{9e^2\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3(a+b\text{ArcSin}(c+dx))}{b}\right)}{8b^3d}-\frac{e^2\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{8b^3d}+\frac{9e^2\sin\left(\frac{3a}{b}\right)\text{Si}\left(\frac{3(a+b\text{ArcSin}(c+dx))}{b}\right)}{8b^3d}+\frac{3e^2(c+dx)^3}{2b^2d(a+b\text{ArcSin}(c+dx))}-\frac{e^2(c+dx)}{b^2d(a+b\text{ArcSin}(c+dx))}-\frac{e^2\sqrt{1-(c+dx)^2}(c+dx)^2}{2bd(a+b\text{ArcSin}(c+dx))^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] -1/2*(e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(b*d*(a + b*ArcSin[c + d*x])^2
) - (e^2*(c + d*x))/(b^2*d*(a + b*ArcSin[c + d*x])) + (3*e^2*(c + d*x)^3)/(
2*b^2*d*(a + b*ArcSin[c + d*x])) - (e^2*Cos[a/b]*CosIntegral[(a + b*ArcSin[
c + d*x])/b])/(8*b^3*d) + (9*e^2*Cos[(3*a)/b]*CosIntegral[(3*(a + b*ArcSin[
c + d*x]))/b])/(8*b^3*d) - (e^2*Sin[a/b]*SinIntegral[(a + b*ArcSin[c + d*x]
)/b])/(8*b^3*d) + (9*e^2*Sin[(3*a)/b]*SinIntegral[(3*(a + b*ArcSin[c + d*x]
))/b])/(8*b^3*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
```

```
c*f, 0]
```

Rule 3384

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[c*(f/d) + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[c*(f/d) + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4719

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[-a/b + x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c
, n}, x]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + (Dis
t[c*((m + 1)/(b*(n + 1))), Int[x^(m + 1)*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[
1 - c^2*x^2]), x], x] - Dist[m/(b*c*(n + 1)), Int[x^(m - 1)*((a + b*ArcSin[
c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^2}{\left(a+b\sin^{-1}(c+dx)\right)^3}\,dx = \frac{\operatorname{Subst}\left(\int \frac{e^2x^2}{\left(a+b\sin^{-1}(x)\right)^3}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^2\operatorname{Subst}\left(\int \frac{x^2}{\left(a+b\sin^{-1}(x)\right)^3}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{e^2\operatorname{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^2}\,dx, x, c+\right.}{bd}$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{e^2(c+dx)}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{3e^2(c+d}{2b^2d\left(a+b\sin^{-1}\right.}$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{e^2(c+dx)}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{3e^2(c+d}{2b^2d\left(a+b\sin^{-1}\right.}$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{e^2(c+dx)}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{3e^2(c+d}{2b^2d\left(a+b\sin^{-1}\right.}$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{e^2(c+dx)}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{3e^2(c+d}{2b^2d\left(a+b\sin^{-1}\right.}$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{e^2(c+dx)}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{3e^2(c+d}{2b^2d\left(a+b\sin^{-1}\right.}$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{e^2(c+dx)}{b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{3e^2(c+d}{2b^2d\left(a+b\sin^{-1}\right.}$$

Mathematica [A]
time = 0.51, size = 219, normalized size = 0.88

$$\frac{e^2\left(-\frac{4b^2(c+dx)^2\sqrt{1-(c+dx)^2}}{(a+b\operatorname{ArcSin}(c+dx))^2}+\frac{4b\left(-2(c+dx)+3(c+dx)^3\right)}{a+b\operatorname{ArcSin}(c+dx)}+8\left(\cos\left(\frac{a}{b}\right)\operatorname{CosIntegral}\left(\frac{a}{b}+\operatorname{ArcSin}(c+dx)\right)+\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a}{b}+\operatorname{ArcSin}(c+dx)\right)\right)+9\left(-\cos\left(\frac{a}{b}\right)\operatorname{CosIntegral}\left(\frac{a}{b}+\operatorname{ArcSin}(c+dx)\right)+\cos\left(\frac{3a}{b}\right)\operatorname{CosIntegral}\left(3\left(\frac{a}{b}+\operatorname{ArcSin}(c+dx)\right)\right)-\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a}{b}+\operatorname{ArcSin}(c+dx)\right)+\sin\left(\frac{3a}{b}\right)\operatorname{Si}\left(3\left(\frac{a}{b}+\operatorname{ArcSin}(c+dx)\right)\right)\right)\right)}{8b^3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] (e^2*((-4*b^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*x])^2
+ (4*b*(-2*(c + d*x) + 3*(c + d*x)^3))/(a + b*ArcSin[c + d*x]) + 8*(Cos[a/b
]*CosIntegral[a/b + ArcSin[c + d*x]] + Sin[a/b]*SinIntegral[a/b + ArcSin[c
+ d*x]]) + 9*(-(Cos[a/b]*CosIntegral[a/b + ArcSin[c + d*x]]) + Cos[(3*a)/b]
*CosIntegral[3*(a/b + ArcSin[c + d*x])] - Sin[a/b]*SinIntegral[a/b + ArcSin
[c + d*x]] + Sin[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c + d*x])])))/(8*b^3*
d)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 475 vs. $2(234) = 468$.
time = 0.24, size = 476, normalized size = 1.92

method	result
derivativedivides	$\frac{e^2\left(9\arcsin(dx+c)^2\operatorname{cosineIntegral}\left(3\arcsin(dx+c)+\frac{3a}{b}\right)\cos\left(\frac{3a}{b}\right)b^2-\arcsin(dx+c)^2\operatorname{sinIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right.\right.}{}$
default	$\frac{e^2\left(9\arcsin(dx+c)^2\operatorname{cosineIntegral}\left(3\arcsin(dx+c)+\frac{3a}{b}\right)\cos\left(\frac{3a}{b}\right)b^2-\arcsin(dx+c)^2\operatorname{sinIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right.\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/8/d*e^2*(9*arcsin(d*x+c)^2*Ci(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b)*b^2-arcsi
n(d*x+c)^2*Si(arcsin(d*x+c)+a/b)*sin(a/b)*b^2-arcsin(d*x+c)^2*Ci(arcsin(d*x
+c)+a/b)*cos(a/b)*b^2+9*arcsin(d*x+c)^2*Si(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b
)*b^2+18*arcsin(d*x+c)*Ci(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b)*a*b-2*arcsin(d*
x+c)*Si(arcsin(d*x+c)+a/b)*sin(a/b)*a*b-2*arcsin(d*x+c)*Ci(arcsin(d*x+c)+a/
b)*cos(a/b)*a*b+18*arcsin(d*x+c)*Si(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)*a*b-3
*arcsin(d*x+c)*sin(3*arcsin(d*x+c))*b^2+arcsin(d*x+c)*b^2*(d*x+c)+9*Ci(3*ar
csin(d*x+c)+3*a/b)*cos(3*a/b)*a^2-Si(arcsin(d*x+c)+a/b)*sin(a/b)*a^2-Ci(arc
sin(d*x+c)+a/b)*cos(a/b)*a^2+9*Si(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)*a^2+cos
(3*arcsin(d*x+c))*b^2-3*sin(3*arcsin(d*x+c))*a*b-(1-(d*x+c)^2)^(1/2)*b^2+a*
b*(d*x+c))/(a+b*arcsin(d*x+c))^2/b^3
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] 1/2*(3*a*d^3*x^3*e^2 + 9*a*c*d^2*x^2*e^2 + 3*a*c^3*e^2 + (9*a*c^2*e^2 - 2*a
*e^2)*d*x - 2*a*c*e^2 - (b*d^2*x^2*e^2 + 2*b*c*d*x*e^2 + b*c^2*e^2)*sqrt(d*
x + c + 1)*sqrt(-d*x - c + 1) + (3*b*d^3*x^3*e^2 + 9*b*c*d^2*x^2*e^2 + 3*b*
c^3*e^2 + (9*b*c^2*e^2 - 2*b*e^2)*d*x - 2*b*c*e^2)*arctan2(d*x + c, sqrt(d*
x + c + 1)*sqrt(-d*x - c + 1)) - 2*(b^4*d*arctan2(d*x + c, sqrt(d*x + c + 1
)*sqrt(-d*x - c + 1))^2 + 2*a*b^3*d*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt
(-d*x - c + 1)) + a^2*b^2*d)*integrate(1/2*(9*d^2*x^2*e^2 + 18*c*d*x*e^2 +
9*c^2*e^2 - 2*e^2)/(b^3*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c +
1)) + a*b^2), x))/(b^4*d*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c +
 1))^2 + 2*a*b^3*d*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) +
 a^2*b^2*d)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] integral((d^2*x^2 + 2*c*d*x + c^2)*e^2/(b^3*arcsin(d*x + c)^3 + 3*a*b^2*arc
sin(d*x + c)^2 + 3*a^2*b*arcsin(d*x + c) + a^3), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e^{2}\left(\int \frac{c^{2}}{a^{3} + 3a^{2}b\operatorname{asin}{\left(c + dx \right)} + 3ab^{2}\operatorname{asin}^{2}{\left(c + dx \right)} + b^{3}\operatorname{asin}^{3}{\left(c + dx \right)}}\, dx + \int \frac{d^{2}x^{2}}{a^{3} + 3a^{2}b\operatorname{asin}{\left(c + dx \right)} + 3ab^{2}\operatorname{asin}^{2}{\left(c + dx \right)} + b^{3}\operatorname{asin}^{3}{\left(c + dx \right)}}\, dx + \int \frac{2cdx}{a^{3} + 3a^{2}b\operatorname{asin}{\left(c + dx \right)} + 3ab^{2}\operatorname{asin}^{2}{\left(c + dx \right)} + b^{3}\operatorname{asin}^{3}{\left(c + dx \right)}}\, dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2/(a+b*asin(d*x+c))**3,x)
```

```
[Out] e**2*(Integral(c**2/(a**3 + 3*a**2*b*asin(c + d*x) + 3*a*b**2*asin(c + d*x)
**2 + b**3*asin(c + d*x)**3), x) + Integral(d**2*x**2/(a**3 + 3*a**2*b*asin
(c + d*x) + 3*a*b**2*asin(c + d*x)**2 + b**3*asin(c + d*x)**3), x) + Integr
al(2*c*d*x/(a**3 + 3*a**2*b*asin(c + d*x) + 3*a*b**2*asin(c + d*x)**2 + b**
3*asin(c + d*x)**3), x))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 1641 vs. $2(234) = 468$.
time = 0.63, size = 1641, normalized size = 6.62

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^3,x, algorithm="giac")
```

[Out] 9/2*b^2*e^2*arcsin(d*x + c)^2*cos(a/b)^3*cos_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 9/2*b^2*e^2*arcsin(d*x + c)^2*cos(a/b)^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 9*a*b*e^2*arcsin(d*x + c)*cos(a/b)^3*cos_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 9*a*b*e^2*arcsin(d*x + c)*cos(a/b)^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 27/8*b^2*e^2*arcsin(d*x + c)^2*cos(a/b)*cos_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 9/2*a^2*e^2*cos(a/b)^3*cos_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/8*b^2*e^2*arcsin(d*x + c)^2*cos(a/b)*cos_integral(a/b + arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 9/8*b^2*e^2*arcsin(d*x + c)^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 9/2*a^2*e^2*cos(a/b)^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/8*b^2*e^2*arcsin(d*x + c)^2*sin(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 3/2*((d*x + c)^2 - 1)*(d*x + c)*b^2*e^2*arcsin(d*x + c)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 27/4*a*b*e^2*arcsin(d*x + c)*cos(a/b)*cos_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/4*a*b*e^2*arcsin(d*x + c)*cos(a/b)*cos_integral(a/b + arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 9/4*a*b*e^2*arcsin(d*x + c)*sin(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/4*a*b*e^2*arcsin(d*x + c)*sin(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 3/2*((d*x + c)^2 - 1)*(d*x + c)*a*b*e^2/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 1/2*(d*x + c)*b^2*e^2*arcsin(d*x + c)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 27/8*a^2*e^2*cos(a/b)*cos_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/8*a^2*e^2*cos(a/b)*cos_integral(a/b + arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 9/8*a^2*e^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/8*a^2*e^2*sin(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 1/2*(-(d*x + c)^2 + 1)^(3/2)*b^2*e^2/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 1/2*(d*x + c)*a*b*e^2/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/2*sqrt(-(d*x + c)^2 + 1)*b^2*e^2/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d)

Mupad [**F**]

time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,e + d\,e\,x)^2}{(a + b\,\mathrm{asin}\,(c + d\,x))^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^2/(a + b*asin(c + d*x))^3,x)
[Out] int((c*e + d*e*x)^2/(a + b*asin(c + d*x))^3, x)
```

3.230 $\int \frac{ce+dex}{(a+b\textbf{ArcSin}(c+dx))^3}\,dx$

Optimal. Leaf size=157

$$-\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{2bd(a+b\text{ArcSin}(c+dx))^2}-\frac{e}{2b^2d(a+b\text{ArcSin}(c+dx))}+\frac{e(c+dx)^2}{b^2d(a+b\text{ArcSin}(c+dx))}+\frac{e\text{CosIntegral}\left(\frac{2(a+b\dots}{}\right.}{}$$

```
[Out] -1/2*e/b^2/d/(a+b*arcsin(d*x+c))+e*(d*x+c)^2/b^2/d/(a+b*arcsin(d*x+c))-e*co
s(2*a/b)*Si(2*(a+b*arcsin(d*x+c))/b)/b^3/d+e*Ci(2*(a+b*arcsin(d*x+c))/b)*si
n(2*a/b)/b^3/d-1/2*e*(d*x+c)*(1-(d*x+c)^2)^(1/2)/b/d/(a+b*arcsin(d*x+c))^2
```

Rubi [A]
time = 0.23, antiderivative size = 157, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.476$, Rules used = {4889, 12, 4729, 4807, 4731, 4491, 3384, 3380, 3383, 4737}

$$\frac{e\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2(a+b\text{ArcSin}(c+dx))}{b}\right)}{b^3d}-\frac{e\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2(a+b\text{ArcSin}(c+dx))}{b}\right)}{b^3d}+\frac{e(c+dx)^2}{b^2d(a+b\text{ArcSin}(c+dx))}-\frac{e}{2b^2d(a+b\text{ArcSin}(c+dx))}-\frac{e\sqrt{1-(c+dx)^2}\,(c+dx)}{2bd(a+b\text{ArcSin}(c+dx))^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)/(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] -1/2*(e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(b*d*(a + b*ArcSin[c + d*x])^2) -
e/(2*b^2*d*(a + b*ArcSin[c + d*x])) + (e*(c + d*x)^2)/(b^2*d*(a + b*ArcSin[
c + d*x])) + (e*CosIntegral[(2*(a + b*ArcSin[c + d*x]))/b]*Sin[(2*a)/b])/(b
^3*d) - (e*Cos[(2*a)/b]*SinIntegral[(2*(a + b*ArcSin[c + d*x]))/b])/(b^3*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3384

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[c*(f/d) + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
```

```
)/d], Int[Cos[c*(f/d) + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + (Dis
t[c*((m + 1)/(b*(n + 1))), Int[x^(m + 1)*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[
1 - c^2*x^2]), x], x] - Dist[m/(b*c*(n + 1)), Int[x^(m - 1)*((a + b*ArcSin[
c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[(((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{ce+dex}{\left(a+b\sin^{-1}(c+dx)\right)^3}\,dx = \frac{\text{Subst}\left(\int \frac{ex}{\left(a+b\sin^{-1}(x)\right)^3}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e\text{Subst}\left(\int \frac{x}{\left(a+b\sin^{-1}(x)\right)^3}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{e\text{Subst}\left(\int \frac{1}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^2}\,dx, x, c+d\right.}{2bd}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{e}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{e(c+dx}{b^2d\left(a+b\sin^{-1}\right.}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{e}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{e(c+dx}{b^2d\left(a+b\sin^{-1}\right.}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{e}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{e(c+dx}{b^2d\left(a+b\sin^{-1}\right.}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{e}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{e(c+dx}{b^2d\left(a+b\sin^{-1}\right.}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{e}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{e(c+dx}{b^2d\left(a+b\sin^{-1}\right.}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{2bd\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{e}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)} + \frac{e(c+dx}{b^2d\left(a+b\sin^{-1}\right.}$$

Mathematica [A]
time = 0.43, size = 107, normalized size = 0.68

$$-\frac{e\left(-4\text{CosIntegral}\left(2\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\sin\left(\frac{2a}{b}\right)+\frac{b(2(a+b\text{ArcSin}(c+dx))\cos(2\text{ArcSin}(c+dx))+b\sin(2\text{ArcSin}(c+dx)))}{(a+b\text{ArcSin}(c+dx))^2}+4\cos\left(\frac{2a}{b}\right)\text{Si}\left(2\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\right)}{4b^3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)/(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] -1/4*(e*(-4*CosIntegral[2*(a/b + ArcSin[c + d*x])]*Sin[(2*a)/b] + (b*(2*(a
+ b*ArcSin[c + d*x])*Cos[2*ArcSin[c + d*x]] + b*Sin[2*ArcSin[c + d*x]]))/(a
 + b*ArcSin[c + d*x])^2 + 4*Cos[(2*a)/b]*SinIntegral[2*(a/b + ArcSin[c + d*
x])]))/(b^3*d)
```

Maple [A]
time = 0.04, size = 263, normalized size = 1.68

method	result
derivativedivides	$-\frac{e\left(4\arcsin(dx+c)^2\,\mathrm{sinIntegral}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\cos\left(\frac{2a}{b}\right)b^2-4\arcsin(dx+c)^2\,\mathrm{cosineIntegral}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\sin\right.}{}$
default	$-\frac{e\left(4\arcsin(dx+c)^2\,\mathrm{sinIntegral}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\cos\left(\frac{2a}{b}\right)b^2-4\arcsin(dx+c)^2\,\mathrm{cosineIntegral}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\sin\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)/(a+b*arcsin(d*x+c))^3,x,method=_RETURNVERBOSE)
```

```
[Out] -1/4/d*e*(4*arcsin(d*x+c)^2*Si(2*arcsin(d*x+c)+2*a/b)*cos(2*a/b)*b^2-4*arcs
in(d*x+c)^2*Ci(2*arcsin(d*x+c)+2*a/b)*sin(2*a/b)*b^2+8*arcsin(d*x+c)*Si(2*a
rcsin(d*x+c)+2*a/b)*cos(2*a/b)*a*b-8*arcsin(d*x+c)*Ci(2*arcsin(d*x+c)+2*a/b
)*sin(2*a/b)*a*b+2*arcsin(d*x+c)*cos(2*arcsin(d*x+c))*b^2+4*Si(2*arcsin(d*x
+c)+2*a/b)*cos(2*a/b)*a^2-4*Ci(2*arcsin(d*x+c)+2*a/b)*sin(2*a/b)*a^2+sin(2*
arcsin(d*x+c))*b^2+2*cos(2*arcsin(d*x+c))*a*b)/(a+b*arcsin(d*x+c))^2/b^3
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] 1/2*(2*a*d^2*x^2*e + 4*a*c*d*x*e + 2*a*c^2*e - (b*d*x*e + b*c*e)*sqrt(d*x +
 c + 1)*sqrt(-d*x - c + 1) + (2*b*d^2*x^2*e + 4*b*c*d*x*e + 2*b*c^2*e - b*e
)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) - a*e - 2*(b^4*d*a
rctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2 + 2*a*b^3*d*arctan2
(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + a^2*b^2*d)*integrate(2*(d
*x*e + c*e)/(b^3*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + a
*b^2), x))/(b^4*d*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2
+ 2*a*b^3*d*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + a^2*b^
2*d)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] integral((d*x + c)*e/(b^3*arcsin(d*x + c)^3 + 3*a*b^2*arcsin(d*x + c)^2 + 3
*a^2*b*arcsin(d*x + c) + a^3), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e\left(\int \frac{c}{a^3 + 3a^2 b \operatorname{asin}(c+dx) + 3ab^2 \operatorname{asin}^2(c+dx) + b^3 \operatorname{asin}^3(c+dx)}\,dx + \int \frac{dx}{a^3 + 3a^2 b \operatorname{asin}(c+dx) + 3ab^2 \operatorname{asin}^2(c+dx) + b^3 \operatorname{asin}^3(c+dx)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*asin(d*x+c))**3,x)
```

```
[Out] e*(Integral(c/(a**3 + 3*a**2*b*asin(c + d*x) + 3*a*b**2*asin(c + d*x)**2 +
b**3*asin(c + d*x)**3), x) + Integral(d*x/(a**3 + 3*a**2*b*asin(c + d*x) +
3*a*b**2*asin(c + d*x)**2 + b**3*asin(c + d*x)**3), x))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 888 vs. $2(151) = 302$.
time = 0.59, size = 888, normalized size = 5.66

$$\frac{2b^2 e \arcsin(dx+c)^2 \cos\left(\frac{a}{b}\right) \operatorname{Ci}\left(\frac{2a}{b} + 2\arcsin(dx+c)\right) \sin\left(\frac{a}{b}\right)}{b^5 d \arcsin(dx+c)^2 + 2ab^4 d \arcsin(dx+c) + a^2 b^3 d} - \frac{2b^2 e \arcsin(dx+c)^2 \cos\left(\frac{a}{b}\right)^2 \operatorname{Si}\left(\frac{2a}{b} + 2\arcsin(dx+c)\right)}{b^5 d \arcsin(dx+c)^2 + 2ab^4 d \arcsin(dx+c) + a^2 b^3 d} + \frac{4abe \arcsin(dx+c) \cos\left(\frac{a}{b}\right) \operatorname{Ci}\left(\frac{2a}{b} + 2\arcsin(dx+c)\right) \sin\left(\frac{a}{b}\right)}{b^5 d \arcsin(dx+c)^2 + 2ab^4 d \arcsin(dx+c) + a^2 b^3 d} - \frac{4abe \arcsin(dx+c) \cos\left(\frac{a}{b}\right)^2 \operatorname{Si}\left(\frac{2a}{b} + 2\arcsin(dx+c)\right)}{b^5 d \arcsin(dx+c)^2 + 2ab^4 d \arcsin(dx+c) + a^2 b^3 d} + \frac{2a^2 e \cos\left(\frac{a}{b}\right) \operatorname{Ci}\left(\frac{2a}{b} + 2\arcsin(dx+c)\right) \sin\left(\frac{a}{b}\right)}{b^5 d \arcsin(dx+c)^2 + 2ab^4 d \arcsin(dx+c) + a^2 b^3 d} + \frac{b^2 e \arcsin(dx+c)^2 \operatorname{Si}\left(\frac{2a}{b} + 2\arcsin(dx+c)\right)}{b^5 d \arcsin(dx+c)^2 + 2ab^4 d \arcsin(dx+c) + a^2 b^3 d} - \frac{2a^2 e \cos\left(\frac{a}{b}\right)^2 \operatorname{Si}\left(\frac{2a}{b} + 2\arcsin(dx+c)\right)}{b^5 d \arcsin(dx+c)^2 + 2ab^4 d \arcsin(dx+c) + a^2 b^3 d} + \frac{((dx+c)^2 - 1) b^2 e \arcsin(dx+c)}{b^5 d \arcsin(dx+c)^2 + 2ab^4 d \arcsin(dx+c) + a^2 b^3 d} + \frac{2abe \arcsin(dx+c) \operatorname{Si}\left(\frac{2a}{b} + 2\arcsin(dx+c)\right)}{b^5 d \arcsin(dx+c)^2 + 2ab^4 d \arcsin(dx+c) + a^2 b^3 d} - \frac{\sqrt{-(dx+c)^2 + 1}\,(dx+c) b^2 e}{2\left(b^5 d \arcsin(dx+c)^2 + 2ab^4 d \arcsin(dx+c) + a^2 b^3 d\right)} + \frac{((dx+c)^2 - 1)abe}{b^5 d \arcsin(dx+c)^2 + 2ab^4 d \arcsin(dx+c) + a^2 b^3 d} + \frac{b^2 e \arcsin(dx+c)}{2\left(b^5 d \arcsin(dx+c)^2 + 2ab^4 d \arcsin(dx+c) + a^2 b^3 d\right)} + \frac{a^2 e \operatorname{Si}\left(\frac{2a}{b} + 2\arcsin(dx+c)\right)}{b^5 d \arcsin(dx+c)^2 + 2ab^4 d \arcsin(dx+c) + a^2 b^3 d} + \frac{abe}{2\left(b^5 d \arcsin(dx+c)^2 + 2ab^4 d \arcsin(dx+c) + a^2 b^3 d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] 2*b^2*e*arcsin(d*x + c)^2*cos(a/b)*cos_integral(2*a/b + 2*arcsin(d*x + c))*
sin(a/b)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d)
- 2*b^2*e*arcsin(d*x + c)^2*cos(a/b)^2*sin_integral(2*a/b + 2*arcsin(d*x +
c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 4*a
*b*e*arcsin(d*x + c)*cos(a/b)*cos_integral(2*a/b + 2*arcsin(d*x + c))*sin(a
/b)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 4*a
*b*e*arcsin(d*x + c)*cos(a/b)^2*sin_integral(2*a/b + 2*arcsin(d*x + c))/(b^
5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 2*a^2*e*co
s(a/b)*cos_integral(2*a/b + 2*arcsin(d*x + c))*sin(a/b)/(b^5*d*arcsin(d*x +
 c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + b^2*e*arcsin(d*x + c)^2*si
n_integral(2*a/b + 2*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*
arcsin(d*x + c) + a^2*b^3*d) - 2*a^2*e*cos(a/b)^2*sin_integral(2*a/b + 2*ar
csin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b
^3*d) + ((d*x + c)^2 - 1)*b^2*e*arcsin(d*x + c)/(b^5*d*arcsin(d*x + c)^2 +
2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 2*a*b*e*arcsin(d*x + c)*sin_integr
al(2*a/b + 2*arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d
*x + c) + a^2*b^3*d) - 1/2*sqrt(-(d*x + c)^2 + 1)*(d*x + c)*b^2*e/(b^5*d*ar
csin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + ((d*x + c)^2 - 1
)*a*b*e/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) +
 1/2*b^2*e*arcsin(d*x + c)/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x
+ c) + a^2*b^3*d) + a^2*e*sin_integral(2*a/b + 2*arcsin(d*x + c))/(b^5*d*ar
```

```
csin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 1/2*a*b*e/(b^5*d
*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{c\,e+d\,e\,x}{{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)/(a + b*asin(c + d*x))^3,x)
[Out] int((c*e + d*e*x)/(a + b*asin(c + d*x))^3, x)
```

3.231 $\int \frac{1}{(a+b\mathbf{ArcSin}(c+dx))^3}\,dx$

Optimal. Leaf size=127

$$-\frac{\sqrt{1-(c+dx)^2}}{2bd(a+b\text{ArcSin}(c+dx))^2}+\frac{c+dx}{2b^2d(a+b\text{ArcSin}(c+dx))}-\frac{\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{2b^3d}-\frac{\sin\left(\frac{a}{b}\right)}{}$$

```
[Out] 1/2*(d*x+c)/b^2/d/(a+b*arcsin(d*x+c))-1/2*Ci((a+b*arcsin(d*x+c))/b)*cos(a/b
)/b^3/d-1/2*Si((a+b*arcsin(d*x+c))/b)*sin(a/b)/b^3/d-1/2*(1-(d*x+c)^2)^(1/2
)/b/d/(a+b*arcsin(d*x+c))^2
```

Rubi [A]
time = 0.13, antiderivative size = 127, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.583$, Rules used = {4887, 4717, 4807, 4719, 3384, 3380, 3383}

$$-\frac{\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{2b^3d}-\frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{2b^3d}+\frac{c+dx}{2b^2d(a+b\text{ArcSin}(c+dx))}-\frac{\sqrt{1-(c+dx)^2}}{2bd(a+b\text{ArcSin}(c+dx))^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(-3),x]
```

```
[Out] -1/2*Sqrt[1 - (c + d*x)^2]/(b*d*(a + b*ArcSin[c + d*x])^2) + (c + d*x)/(2*b
^2*d*(a + b*ArcSin[c + d*x])) - (Cos[a/b]*CosIntegral[(a + b*ArcSin[c + d*x
])/b])/(2*b^3*d) - (Sin[a/b]*SinIntegral[(a + b*ArcSin[c + d*x])/b])/(2*b^3
*d)
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3384

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[c*(f/d) + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[c*(f/d) + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4717

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[Sqrt[1 - c^2
*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + Dist[c/(b*(n + 1)),
 Int[x*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4719

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[-a/b + x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c
, n}, x]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\int \frac{1}{(a+b\sin^{-1}(c+dx))^3}\,dx = \frac{\text{Subst}\left(\int \frac{1}{(a+b\sin^{-1}(x))^3}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{2bd\,(a+b\sin^{-1}(c+dx))^2} - \frac{\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\,(a+b\sin^{-1}(x))^2}\,dx, x, c+dx\right.}{2bd}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{2bd\,(a+b\sin^{-1}(c+dx))^2} + \frac{c+dx}{2b^2d\,(a+b\sin^{-1}(c+dx))} - \frac{\text{Subst}\left(\int \frac{1}{a+b\sin^{-}}\right.}{2}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{2bd\,(a+b\sin^{-1}(c+dx))^2} + \frac{c+dx}{2b^2d\,(a+b\sin^{-1}(c+dx))} - \frac{\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}-\right.}{x}\right.}{}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{2bd\,(a+b\sin^{-1}(c+dx))^2} + \frac{c+dx}{2b^2d\,(a+b\sin^{-1}(c+dx))} - \frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int\right.}{}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{2bd\,(a+b\sin^{-1}(c+dx))^2} + \frac{c+dx}{2b^2d\,(a+b\sin^{-1}(c+dx))} - \frac{\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin}{}\right.}{2b^3d}$$

Mathematica [A]
time = 0.45, size = 100, normalized size = 0.79

$$-\frac{\frac{b\left(b\sqrt{1-(c+dx)^2}-(c+dx)(a+b\text{ArcSin}(c+dx))\right)}{(a+b\text{ArcSin}(c+dx))^2}+\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)+\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)}{2b^3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(-3),x]
```

```
[Out] -1/2*((b*(b*Sqrt[1 - (c + d*x)^2] - (c + d*x)*(a + b*ArcSin[c + d*x])))/(a
+ b*ArcSin[c + d*x])^2 + Cos[a/b]*CosIntegral[a/b + ArcSin[c + d*x]] + Sin[
a/b]*SinIntegral[a/b + ArcSin[c + d*x]])/(b^3*d)
```

Maple [A]
time = 0.07, size = 158, normalized size = 1.24

method	result
derivativedivides	$\frac{-\frac{\sqrt{1-(dx+c)^2}}{2(a+b\arcsin(dx+c))^2 b}-\frac{\arcsin(dx+c)\,\text{sinIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)b+\arcsin(dx+c)\,\text{cosineIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\text{co}}{2(a+b\arcsi}}{d}$

default	$\frac{-\frac{\sqrt{1-(dx+c)^2}}{2(a+b\arcsin(dx+c))^2 b}-\frac{\arcsin(dx+c)\,\text{sinIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)b+\arcsin(dx+c)\,\text{cosineIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\cos(}{2(a+b\arcsin(}}{d}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c))^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(-1/2/(a+b*arcsin(d*x+c))^2/b*(1-(d*x+c)^2)^(1/2)-1/2*(arcsin(d*x+c)*Si
(arcsin(d*x+c)+a/b)*sin(a/b)*b+arcsin(d*x+c)*Ci(arcsin(d*x+c)+a/b)*cos(a/b)
*b+Si(arcsin(d*x+c)+a/b)*sin(a/b)*a+Ci(arcsin(d*x+c)+a/b)*cos(a/b)*a-(d*x+c
)*b)/(a+b*arcsin(d*x+c))/b^3)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] 1/2*(a*d*x - sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)*b + a*c + (b*d*x + b*c)*a
rctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) - 2*(b^4*d*arctan2(d*
x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2 + 2*a*b^3*d*arctan2(d*x + c,
 sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + a^2*b^2*d)*integrate(1/2/(b^3*arct
an2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + a*b^2), x))/(b^4*d*arc
tan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2 + 2*a*b^3*d*arctan2(d
*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + a^2*b^2*d)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] integral(1/(b^3*arcsin(d*x + c)^3 + 3*a*b^2*arcsin(d*x + c)^2 + 3*a^2*b*arc
sin(d*x + c) + a^3), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a+b\,\mathrm{asin}\,(c+dx))^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c))**3,x)
```

```
[Out] Integral((a + b*asin(c + d*x))**(-3), x)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 547 vs. 2(117) = 234.
time = 0.41, size = 547, normalized size = 4.31

$$-\frac{b^2\arcsin(dx+c)^2\cos\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{a}{b}+\arcsin(dx+c)\right)}{2\left(b^5d\arcsin(dx+c)^2+2\,ab^4d\arcsin(dx+c)+a^2b^3d\right)}-\frac{b^2\arcsin(dx+c)^2\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a}{b}+\arcsin(dx+c)\right)}{2\left(b^5d\arcsin(dx+c)^2+2\,ab^4d\arcsin(dx+c)+a^2b^3d\right)}-\frac{ab\arcsin(dx+c)\cos\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{a}{b}+\arcsin(dx+c)\right)}{b^5d\arcsin(dx+c)^2+2\,ab^4d\arcsin(dx+c)+a^2b^3d}-\frac{ab\arcsin(dx+c)\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a}{b}+\arcsin(dx+c)\right)}{b^5d\arcsin(dx+c)^2+2\,ab^4d\arcsin(dx+c)+a^2b^3d}+\frac{(dx+c)b^2\arcsin(dx+c)}{2\left(b^5d\arcsin(dx+c)^2+2\,ab^4d\arcsin(dx+c)+a^2b^3d\right)}-\frac{a^2\cos\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{a}{b}+\arcsin(dx+c)\right)}{2\left(b^5d\arcsin(dx+c)^2+2\,ab^4d\arcsin(dx+c)+a^2b^3d\right)}-\frac{a^2\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a}{b}+\arcsin(dx+c)\right)}{2\left(b^5d\arcsin(dx+c)^2+2\,ab^4d\arcsin(dx+c)+a^2b^3d\right)}+\frac{(dx+c)ab}{2\left(b^5d\arcsin(dx+c)^2+2\,ab^4d\arcsin(dx+c)+a^2b^3d\right)}-\frac{\sqrt{-(dx+c)^2+1}\,b^2}{2\left(b^5d\arcsin(dx+c)^2+2\,ab^4d\arcsin(dx+c)+a^2b^3d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] -1/2*b^2*arcsin(d*x + c)^2*cos(a/b)*cos_integral(a/b + arcsin(d*x + c))/(b^
5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/2*b^2*ar
csin(d*x + c)^2*sin(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^5*d*arcsin(
d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - a*b*arcsin(d*x + c)*c
os(a/b)*cos_integral(a/b + arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*
b^4*d*arcsin(d*x + c) + a^2*b^3*d) - a*b*arcsin(d*x + c)*sin(a/b)*sin_integ
ral(a/b + arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x
+ c) + a^2*b^3*d) + 1/2*(d*x + c)*b^2*arcsin(d*x + c)/(b^5*d*arcsin(d*x + c
)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) - 1/2*a^2*cos(a/b)*cos_integra
l(a/b + arcsin(d*x + c))/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x +
c) + a^2*b^3*d) - 1/2*a^2*sin(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^5
*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) + 1/2*(d*x +
c)*a*b/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(d*x + c) + a^2*b^3*d) -
1/2*sqrt(-(d*x + c)^2 + 1)*b^2/(b^5*d*arcsin(d*x + c)^2 + 2*a*b^4*d*arcsin(
d*x + c) + a^2*b^3*d)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(c + d*x))^3,x)
```

```
[Out] int(1/(a + b*asin(c + d*x))^3, x)
```

3.232 $\int \frac{1}{(ce+dex)(a+b\mathbf{ArcSin}(c+dx))^3}\,dx$

Optimal. Leaf size=27

$$\frac{\text{Int}\left(\frac{1}{(c+dx)(a+b\text{ArcSin}(c+dx))^3},x\right)}{e}$$

```
[Out] Unintegrable(1/(d*x+c)/(a+b*arcsin(d*x+c))^3,x)/e
```

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(ce+dex)(a+b\text{ArcSin}(c+dx))^3}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^3),x]
[Out] Defer[Subst][Defer[Int][1/(x*(a + b*ArcSin[x])^3), x], x, c + d*x]/(d*e)
```

Rubi steps

$$\begin{aligned}\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^3}\,dx &= \frac{\text{Subst}\left(\int \frac{1}{ex\left(a+b\sin^{-1}(x)\right)^3}\,dx,x,c+dx\right)}{d}\\ &= \frac{\text{Subst}\left(\int \frac{1}{x\left(a+b\sin^{-1}(x)\right)^3}\,dx,x,c+dx\right)}{de}\end{aligned}$$

Mathematica [A]
time = 0.76, size = 0, normalized size = 0.00

$$\int \frac{1}{(ce+dex)(a+b\text{ArcSin}(c+dx))^3}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^3),x]
[Out] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^3), x]
```

Maple [A]
time = 0.14, size = 0, normalized size = 0.00

$$\int \frac{1}{(dex+ce)\left(a+b\arcsin\left(dx+c\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^3,x)
```

```
[Out] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^3,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] -1/2*((b*d*x + b*c)*sqrt(d*x + c + 1)*sqrt(-d*x - c + 1) - b*arctan2(d*x +
c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) - 2*(a^2*b^2*d^3*x^2*e + 2*a^2*b^2
*c*d^2*x*e + a^2*b^2*c^2*d*e + (b^4*d^3*x^2*e + 2*b^4*c*d^2*x*e + b^4*c^2*d
*e)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2 + 2*(a*b^3*d^3
*x^2*e + 2*a*b^3*c*d^2*x*e + a*b^3*c^2*d*e)*arctan2(d*x + c, sqrt(d*x + c +
 1)*sqrt(-d*x - c + 1)))*integrate(1/(a*b^2*d^3*x^3*e + 3*a*b^2*c*d^2*x^2*e
 + 3*a*b^2*c^2*d*x*e + a*b^2*c^3*e + (b^3*d^3*x^3*e + 3*b^3*c*d^2*x^2*e + 3
*b^3*c^2*d*x*e + b^3*c^3*e)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x -
c + 1))), x) - a)/(a^2*b^2*d^3*x^2*e + 2*a^2*b^2*c*d^2*x*e + a^2*b^2*c^2*d*
e + (b^4*d^3*x^2*e + 2*b^4*c*d^2*x*e + b^4*c^2*d*e)*arctan2(d*x + c, sqrt(d
*x + c + 1)*sqrt(-d*x - c + 1))^2 + 2*(a*b^3*d^3*x^2*e + 2*a*b^3*c*d^2*x*e
+ a*b^3*c^2*d*e)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] integral(1/((b^3*d*x + b^3*c)*arcsin(d*x + c)^3*e + 3*(a*b^2*d*x + a*b^2*c)
*arcsin(d*x + c)^2*e + 3*(a^2*b*d*x + a^2*b*c)*arcsin(d*x + c)*e + (a^3*d*x
 + a^3*c)*e), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{1}{a^3c+a^3dx+3a^2bc\operatorname{asin}(c+dx)+3a^2bdx\operatorname{asin}(c+dx)+3ab^2c\operatorname{asin}^2(c+dx)+3ab^2dx\operatorname{asin}^2(c+dx)+b^3c\operatorname{asin}^3(c+dx)+b^3dx\operatorname{asin}^3(c+dx)}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*asin(d*x+c))**3,x)
```

```
[Out] Integral(1/(a**3*c + a**3*d*x + 3*a**2*b*c*asin(c + d*x) + 3*a**2*b*d*x*asi
n(c + d*x) + 3*a*b**2*c*asin(c + d*x)**2 + 3*a*b**2*d*x*asin(c + d*x)**2 +
b**3*c*asin(c + d*x)**3 + b**3*d*x*asin(c + d*x)**3), x)/e
```

Giac [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] integrate(1/((d*e*x + c*e)*(b*arcsin(d*x + c) + a)^3), x)
```

Mupad [**A**]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{(c\,e+d\,e\,x)\,\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((c*e + d*e*x)*(a + b*asin(c + d*x))^3),x)
```

```
[Out] int(1/((c*e + d*e*x)*(a + b*asin(c + d*x))^3), x)
```

3.233 $\int \frac{(ce+dex)^4}{(a+b\text{ArcSin}(c+dx))^4}\,dx$

Optimal. Leaf size=416

$$-\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{3bd(a+b\text{ArcSin}(c+dx))^3}-\frac{2e^4(c+dx)^3}{3b^2d(a+b\text{ArcSin}(c+dx))^2}+\frac{5e^4(c+dx)^5}{6b^2d(a+b\text{ArcSin}(c+dx))^2}-\frac{2e^4(c+dx)^2\sqrt{}}{b^3d(a+b\text{Arc}}$$

```
[Out] -2/3*e^4*(d*x+c)^3/b^2/d/(a+b*arcsin(d*x+c))^2+5/6*e^4*(d*x+c)^5/b^2/d/(a+b
*arcsin(d*x+c))^2+1/48*e^4*cos(a/b)*Si((a+b*arcsin(d*x+c))/b)/b^4/d-27/32*e
^4*cos(3*a/b)*Si(3*(a+b*arcsin(d*x+c))/b)/b^4/d+125/96*e^4*cos(5*a/b)*Si(5*
(a+b*arcsin(d*x+c))/b)/b^4/d-1/48*e^4*Ci((a+b*arcsin(d*x+c))/b)*sin(a/b)/b^
4/d+27/32*e^4*Ci(3*(a+b*arcsin(d*x+c))/b)*sin(3*a/b)/b^4/d-125/96*e^4*Ci(5*
(a+b*arcsin(d*x+c))/b)*sin(5*a/b)/b^4/d-1/3*e^4*(d*x+c)^4*(1-(d*x+c)^2)^(1/
2)/b/d/(a+b*arcsin(d*x+c))^3-2*e^4*(d*x+c)^2*(1-(d*x+c)^2)^(1/2)/b^3/d/(a+b
*arcsin(d*x+c))+25/6*e^4*(d*x+c)^4*(1-(d*x+c)^2)^(1/2)/b^3/d/(a+b*arcsin(d*
x+c))
```

Rubi [A]
time = 0.56, antiderivative size = 416, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 8, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.348$, Rules used = {4889, 12, 4729, 4807, 4727, 3384, 3380, 3383}

$$-\frac{e^4\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{48b^4d}+\frac{27e^4\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3(a+b\text{ArcSin}(c+dx))}{b}\right)}{32b^4d}-\frac{125e^4\sin\left(\frac{5a}{b}\right)\text{CosIntegral}\left(\frac{5(a+b\text{ArcSin}(c+dx))}{b}\right)}{96b^4d}+\frac{e^4\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{48b^4d}-\frac{27e^4\cos\left(\frac{3a}{b}\right)\text{Si}\left(\frac{3(a+b\text{ArcSin}(c+dx))}{b}\right)}{32b^4d}+\frac{125e^4\cos\left(\frac{5a}{b}\right)\text{Si}\left(\frac{5(a+b\text{ArcSin}(c+dx))}{b}\right)}{96b^4d}+\frac{25e^4\sqrt{1-(c+dx)^2}(c+dx)^4}{6b^3d(a+b\text{ArcSin}(c+dx))}-\frac{2e^4\sqrt{1-(c+dx)^2}(c+dx)^2}{b^3d(a+b\text{ArcSin}(c+dx))}+\frac{5e^4(c+dx)^5}{6b^2d(a+b\text{ArcSin}(c+dx))^2}-\frac{2e^4(c+dx)^3}{3b^2d(a+b\text{ArcSin}(c+dx))^2}-\frac{e^4\sqrt{1-(c+dx)^2}(c+dx)^4}{3bd(a+b\text{ArcSin}(c+dx))^3}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^4/(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] -1/3*(e^4*(c + d*x)^4*Sqrt[1 - (c + d*x)^2])/(b*d*(a + b*ArcSin[c + d*x])^3
) - (2*e^4*(c + d*x)^3)/(3*b^2*d*(a + b*ArcSin[c + d*x])^2) + (5*e^4*(c + d
*x)^5)/(6*b^2*d*(a + b*ArcSin[c + d*x])^2) - (2*e^4*(c + d*x)^2*Sqrt[1 - (c
 + d*x)^2])/(b^3*d*(a + b*ArcSin[c + d*x])) + (25*e^4*(c + d*x)^4*Sqrt[1 -
(c + d*x)^2])/(6*b^3*d*(a + b*ArcSin[c + d*x])) - (e^4*CosIntegral[(a + b*A
rcSin[c + d*x])/b]*Sin[a/b])/(48*b^4*d) + (27*e^4*CosIntegral[(3*(a + b*Arc
Sin[c + d*x]))/b]*Sin[(3*a)/b])/(32*b^4*d) - (125*e^4*CosIntegral[(5*(a + b
*ArcSin[c + d*x]))/b]*Sin[(5*a)/b])/(96*b^4*d) + (e^4*Cos[a/b]*SinIntegral[
(a + b*ArcSin[c + d*x])/b])/(48*b^4*d) - (27*e^4*Cos[(3*a)/b]*SinIntegral[(
3*(a + b*ArcSin[c + d*x]))/b])/(32*b^4*d) + (125*e^4*Cos[(5*a)/b]*SinIntegr
al[(5*(a + b*ArcSin[c + d*x]))/b])/(96*b^4*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3384

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[c*(f/d) + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[c*(f/d) + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4727

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] - Dist
[1/(b^2*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[x^(n + 1), Sin[-a/b
+ x/b]^(m - 1)*(m - (m + 1)*Sin[-a/b + x/b]^2), x], x], x, a + b*ArcSin[c*x
]], x] /; FreeQ[{a, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + (Dis
t[c*((m + 1)/(b*(n + 1))), Int[x^(m + 1)*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[
1 - c^2*x^2]), x], x] - Dist[m/(b*c*(n + 1)), Int[x^(m - 1)*((a + b*ArcSin[
c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
```

```
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^4}{\left(a+b\sin^{-1}(c+dx)\right)^4}\,dx = \frac{\text{Subst}\left(\int \frac{e^4x^4}{\left(a+b\sin^{-1}(x)\right)^4}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^4\text{Subst}\left(\int \frac{x^4}{\left(a+b\sin^{-1}(x)\right)^4}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{(4e^4)\,\text{Subst}\left(\int \frac{x^3}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^3}\,dx, x\right.}{3bd}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{2e^4(c+dx)^3}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{5e^4(c}{6b^2d\left(a+b\,\text{si}\right.}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{2e^4(c+dx)^3}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{5e^4(c}{6b^2d\left(a+b\,\text{si}\right.}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{2e^4(c+dx)^3}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{5e^4(c}{6b^2d\left(a+b\,\text{si}\right.}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{2e^4(c+dx)^3}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{5e^4(c}{6b^2d\left(a+b\,\text{si}\right.}$$

$$= -\frac{e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{2e^4(c+dx)^3}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{5e^4(c}{6b^2d\left(a+b\,\text{si}\right.}$$

Mathematica [A]
time = 1.10, size = 414, normalized size = 1.00

$$\frac{e^4\left(-\frac{32b^3(c+dx)^4\sqrt{1-(c+dx)^2}}{(a+b\text{ArcSin}(c+dx))^3}+\frac{16b^2(-4(c+dx)^3+5(c+dx)^5)}{(a+b\text{ArcSin}(c+dx))^2}+\frac{16b\sqrt{1-(c+dx)^2}(-12(c+dx)^2+25(c+dx)^4)}{a+b\text{ArcSin}(c+dx)}+384\left(-\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\sin\left(\frac{a}{b}\right)+\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)+544\left(3\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\sin\left(\frac{a}{b}\right)-\text{CosIntegral}\left(3\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\sin\left(\frac{3a}{b}\right)-3\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)+\cos\left(\frac{3a}{b}\right)\text{Si}\left(3\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\right)-125\left(10\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\sin\left(\frac{a}{b}\right)-5\text{CosIntegral}\left(3\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\sin\left(\frac{3a}{b}\right)+\text{CosIntegral}\left(5\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\sin\left(\frac{5a}{b}\right)-10\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)+5\cos\left(\frac{3a}{b}\right)\text{Si}\left(3\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)-\cos\left(\frac{5a}{b}\right)\text{Si}\left(5\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\right)\right)}{96b^4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^4/(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] (e^4*((-32*b^3*(c + d*x)^4*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*x])^3
 + (16*b^2*(-4*(c + d*x)^3 + 5*(c + d*x)^5))/(a + b*ArcSin[c + d*x])^2 + (1
6*b*Sqrt[1 - (c + d*x)^2]*(-12*(c + d*x)^2 + 25*(c + d*x)^4))/(a + b*ArcSin
[c + d*x]) + 384*(-(CosIntegral[a/b + ArcSin[c + d*x]]*Sin[a/b]) + Cos[a/b]
*SinIntegral[a/b + ArcSin[c + d*x]]) + 544*(3*CosIntegral[a/b + ArcSin[c +
```

```
d*x]]*Sin[a/b] - CosIntegral[3*(a/b + ArcSin[c + d*x])]*Sin[(3*a)/b] - 3*Co
s[a/b]*SinIntegral[a/b + ArcSin[c + d*x]] + Cos[(3*a)/b]*SinIntegral[3*(a/b
 + ArcSin[c + d*x])]) - 125*(10*CosIntegral[a/b + ArcSin[c + d*x]]*Sin[a/b]
 - 5*CosIntegral[3*(a/b + ArcSin[c + d*x])]*Sin[(3*a)/b] + CosIntegral[5*(a
/b + ArcSin[c + d*x])]*Sin[(5*a)/b] - 10*Cos[a/b]*SinIntegral[a/b + ArcSin[
c + d*x]] + 5*Cos[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c + d*x])] - Cos[(5*
a)/b]*SinIntegral[5*(a/b + ArcSin[c + d*x])])))/(96*b^4*d)
```

Maple [**B**] Leaf count of result is larger than twice the leaf count of optimal. 1137 vs. $2(390) = 780$.
time = 0.36, size = 1138, normalized size = 2.74

method	result	size
derivativedivides	Expression too large to display	1138
default	Expression too large to display	1138

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^4,x,method=_RETURNVERBOSE)
```

```
[Out] -1/96/d*e^4*(-50*arcsin(d*x+c)*cos(5*arcsin(d*x+c))*a*b^2-2*arcsin(d*x+c)^3
*Si(arcsin(d*x+c)+a/b)*cos(a/b)*b^3+2*arcsin(d*x+c)^3*Ci(arcsin(d*x+c)+a/b)
*sin(a/b)*b^3-4*(1-(d*x+c)^2)^(1/2)*arcsin(d*x+c)*a*b^2+81*arcsin(d*x+c)^3*
Si(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b)*b^3-81*arcsin(d*x+c)^3*Ci(3*arcsin(d*x
+c)+3*a/b)*sin(3*a/b)*b^3+54*cos(3*arcsin(d*x+c))*arcsin(d*x+c)*a*b^2-125*a
rcsin(d*x+c)^3*Si(5*arcsin(d*x+c)+5*a/b)*cos(5*a/b)*b^3+125*arcsin(d*x+c)^3
*Ci(5*arcsin(d*x+c)+5*a/b)*sin(5*a/b)*b^3+6*arcsin(d*x+c)*Ci(arcsin(d*x+c)+
a/b)*sin(a/b)*a^2*b+243*arcsin(d*x+c)^2*Si(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b
)*a*b^2-243*arcsin(d*x+c)^2*Ci(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)*a*b^2+243*
arcsin(d*x+c)*Si(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b)*a^2*b-243*arcsin(d*x+c)*
Ci(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)*a^2*b-375*arcsin(d*x+c)^2*Si(5*arcsin(
d*x+c)+5*a/b)*cos(5*a/b)*a*b^2+375*arcsin(d*x+c)^2*Ci(5*arcsin(d*x+c)+5*a/b
)*sin(5*a/b)*a*b^2-375*arcsin(d*x+c)*Si(5*arcsin(d*x+c)+5*a/b)*cos(5*a/b)*a
^2*b+375*arcsin(d*x+c)*Ci(5*arcsin(d*x+c)+5*a/b)*sin(5*a/b)*a^2*b-6*arcsin(
d*x+c)^2*Si(arcsin(d*x+c)+a/b)*cos(a/b)*a*b^2+6*arcsin(d*x+c)^2*Ci(arcsin(d
*x+c)+a/b)*sin(a/b)*a*b^2-6*arcsin(d*x+c)*Si(arcsin(d*x+c)+a/b)*cos(a/b)*a^
2*b-2*a*b^2*(d*x+c)+4*(1-(d*x+c)^2)^(1/2)*b^3-6*cos(3*arcsin(d*x+c))*b^3+2*
cos(5*arcsin(d*x+c))*b^3-2*(1-(d*x+c)^2)^(1/2)*a^2*b+9*sin(3*arcsin(d*x+c))
*arcsin(d*x+c)*b^3+81*Si(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b)*a^3-81*Ci(3*arcs
in(d*x+c)+3*a/b)*sin(3*a/b)*a^3+27*cos(3*arcsin(d*x+c))*a^2*b+9*sin(3*arcsi
n(d*x+c))*a*b^2-25*arcsin(d*x+c)^2*cos(5*arcsin(d*x+c))*b^3-5*arcsin(d*x+c)
*sin(5*arcsin(d*x+c))*b^3-125*Si(5*arcsin(d*x+c)+5*a/b)*cos(5*a/b)*a^3+125*
Ci(5*arcsin(d*x+c)+5*a/b)*sin(5*a/b)*a^3-25*cos(5*arcsin(d*x+c))*a^2*b-5*si
n(5*arcsin(d*x+c))*a*b^2-2*arcsin(d*x+c)*b^3*(d*x+c)-2*Si(arcsin(d*x+c)+a/b
)*cos(a/b)*a^3+2*Ci(arcsin(d*x+c)+a/b)*sin(a/b)*a^3-2*(1-(d*x+c)^2)^(1/2)*a
```

```
rcsin(d*x+c)^2*b^3+27*cos(3*arcsin(d*x+c))*arcsin(d*x+c)^2*b^3)/(a+b*arcsin
(d*x+c))^3/b^4
```

Maxima [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^4,x, algorithm="maxima")
[Out] Timed out
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^4,x, algorithm="fricas")
[Out] integral((d^4*x^4 + 4*c*d^3*x^3 + 6*c^2*d^2*x^2 + 4*c^3*d*x + c^4)*e^4/(b^4
*arcsin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6*a^2*b^2*arcsin(d*x + c)^
2 + 4*a^3*b*arcsin(d*x + c) + a^4), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e^{4}\left(\int \frac{c^{4}}{a^{4} + 4a^{3}b\operatorname{asin}{\left(c + dx \right)} + 6a^{2}b^{2}\operatorname{asin}^{2}{\left(c + dx \right)} + 4ab^{3}\operatorname{asin}^{3}{\left(c + dx \right)} + b^{4}\operatorname{asin}^{4}{\left(c + dx \right)}}\, dx + \int \frac{d^{4}x^{4}}{a^{4} + 4a^{3}b\operatorname{asin}{\left(c + dx \right)} + 6a^{2}b^{2}\operatorname{asin}^{2}{\left(c + dx \right)} + 4ab^{3}\operatorname{asin}^{3}{\left(c + dx \right)} + b^{4}\operatorname{asin}^{4}{\left(c + dx \right)}}\, dx + \int \frac{4cd^{3}x^{3}}{a^{4} + 4a^{3}b\operatorname{asin}{\left(c + dx \right)} + 6a^{2}b^{2}\operatorname{asin}^{2}{\left(c + dx \right)} + 4ab^{3}\operatorname{asin}^{3}{\left(c + dx \right)} + b^{4}\operatorname{asin}^{4}{\left(c + dx \right)}}\, dx + \int \frac{6c^{2}d^{2}x^{2}}{a^{4} + 4a^{3}b\operatorname{asin}{\left(c + dx \right)} + 6a^{2}b^{2}\operatorname{asin}^{2}{\left(c + dx \right)} + 4ab^{3}\operatorname{asin}^{3}{\left(c + dx \right)} + b^{4}\operatorname{asin}^{4}{\left(c + dx \right)}}\, dx + \int \frac{4c^{3}dx}{a^{4} + 4a^{3}b\operatorname{asin}{\left(c + dx \right)} + 6a^{2}b^{2}\operatorname{asin}^{2}{\left(c + dx \right)} + 4ab^{3}\operatorname{asin}^{3}{\left(c + dx \right)} + b^{4}\operatorname{asin}^{4}{\left(c + dx \right)}}\, dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**4/(a+b*asin(d*x+c))**4,x)
[Out] e**4*(Integral(c**4/(a**4 + 4*a**3*b*asin(c + d*x) + 6*a**2*b**2*asin(c + d
*x)**2 + 4*a*b**3*asin(c + d*x)**3 + b**4*asin(c + d*x)**4), x) + Integral(
d**4*x**4/(a**4 + 4*a**3*b*asin(c + d*x) + 6*a**2*b**2*asin(c + d*x)**2 + 4
*a*b**3*asin(c + d*x)**3 + b**4*asin(c + d*x)**4), x) + Integral(4*c*d**3*x
**3/(a**4 + 4*a**3*b*asin(c + d*x) + 6*a**2*b**2*asin(c + d*x)**2 + 4*a*b**
3*asin(c + d*x)**3 + b**4*asin(c + d*x)**4), x) + Integral(6*c**2*d**2*x**2
/(a**4 + 4*a**3*b*asin(c + d*x) + 6*a**2*b**2*asin(c + d*x)**2 + 4*a*b**3*a
sin(c + d*x)**3 + b**4*asin(c + d*x)**4), x) + Integral(4*c**3*d*x/(a**4 +
4*a**3*b*asin(c + d*x) + 6*a**2*b**2*asin(c + d*x)**2 + 4*a*b**3*asin(c + d
*x)**3 + b**4*asin(c + d*x)**4), x))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 5870 vs. $2(390) = 780$.
time = 0.82, size = 5870, normalized size = 14.11

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^4,x, algorithm="giac")

[Out] -125/6*b^3*e^4*arcsin(d*x + c)^3*cos(a/b)^4*cos_integral(5*a/b + 5*arcsin(d*x + c))*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 125/6*b^3*e^4*arcsin(d*x + c)^3*cos(a/b)^5*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 125/2*a*b^2*e^4*arcsin(d*x + c)^2*cos(a/b)^4*cos_integral(5*a/b + 5*arcsin(d*x + c))*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 125/2*a*b^2*e^4*arcsin(d*x + c)^2*cos(a/b)^5*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 125/8*b^3*e^4*arcsin(d*x + c)^3*cos(a/b)^2*cos_integral(5*a/b + 5*arcsin(d*x + c))*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 125/2*a^2*b*e^4*arcsin(d*x + c)*cos(a/b)^4*cos_integral(5*a/b + 5*arcsin(d*x + c))*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 27/8*b^3*e^4*arcsin(d*x + c)^3*cos(a/b)^2*cos_integral(3*a/b + 3*arcsin(d*x + c))*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 625/24*b^3*e^4*arcsin(d*x + c)^3*cos(a/b)^3*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 125/2*a^2*b*e^4*arcsin(d*x + c)*cos(a/b)^5*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 27/8*b^3*e^4*arcsin(d*x + c)^3*cos(a/b)^3*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 375/8*a*b^2*e^4*arcsin(d*x + c)^2*cos(a/b)^2*cos_integral(5*a/b + 5*arcsin(d*x + c))*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 125/6*a^3*e^4*cos(a/b)^4*cos_integral(5*a/b + 5*arcsin(d*x + c))*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 81/8*a*b^2*e^4*arcsin(d*x + c)^2*cos(a/b)^2*cos_integral(3*a/b + 3*arcsin(d*x + c))*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 625/8*a*b^2*e^4*arcsin(d*x + c)^2*cos(a/b)^3*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 125/6*a^3*e^4*cos(a/b)^5*sin_integral(5*a/b + 5*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 81/8*a*b^2*e^4*arcsin(d*x + c)^2*cos(a/b)^3*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 125/96*b^3*e^4*arcsin(d*x + c)^3*cos_integral(5*a/b + 5*arcsin(d*x + c))*sin(a/b)/(b^7*d*arcsin(d*x +

```
c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4
*d) + 375/8*a^2*b*e^4*arcsin(d*x + c)*cos(a/b)^2*cos_integral(5*a/b + 5*arc
sin(d*x + c))*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)
^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 27/32*b^3*e^4*arcsin(d*x +
c)^3*cos_integral(3*a/b + 3*arcsin(d*x + c))*sin(a/b)/(b^7*d*arcsin(d*x + c
)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d
) + 81/8*a^2*b*e^4*arcsin(d*x + c)*cos(a/b)^2*cos_integral(3*a/b + 3*arcsin
(d*x + c))*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2
+ 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 1/48*b^3*e^4*arcsin(d*x + c)^3
*cos_integral(a/b + arcsin(d*x + c))*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*
a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 625/
96*b^3*e^4*arcsin(d*x + c)^3*cos(a/b)*sin_integral(5*a/b + 5*arcsin(d*x + c
))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arc
sin(d*x + c) + a^3*b^4*d) - 625/8*a^2*b*e^4*arcsin(d*x + c)*cos(a/b)^3*sin_
integral(5*a/b + 5*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*ar
csin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 81/32*b^3*e^4*
arcsin(d*x + c)^3*cos(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^7*d*a
rcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c
) + a^3*b^4*d) - 81/8*a^2*b*e^4*arcsin(d*x + c)*cos(a/b)^3*sin_integral(3*a
/b + 3*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c
)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/48*b^3*e^4*arcsin(d*x +
c)^3*cos(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3
+ 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) +
25/6*((d*x + c)^2 - 1)^2*sqrt(-(d*x + c)^2 + 1)*b^3*e^4*arcsin(d*x + c)^2/(
b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(
d*x + c) + a^3*b^4*d) + 5/6*((d*x + c)^2 - 1)^2...
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,e+d\,e\,x)^4}{(a+b\,\mathrm{asin}\,(c+d\,x))^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^4/(a + b*asin(c + d*x))^4,x)
[Out] int((c*e + d*e*x)^4/(a + b*asin(c + d*x))^4, x)
```

3.234 $\int \frac{(ce+dex)^3}{(a+b\,\mathbf{ArcSin}(c+dx))^4}\,dx$

Optimal. Leaf size=346

$$-\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd(a+b\text{ArcSin}(c+dx))^3}-\frac{e^3(c+dx)^2}{2b^2d(a+b\text{ArcSin}(c+dx))^2}+\frac{2e^3(c+dx)^4}{3b^2d(a+b\text{ArcSin}(c+dx))^2}-\frac{e^3(c+dx)\sqrt{1-}}{b^3d(a+b\text{ArcSi}}$$

```
[Out] -1/2*e^3*(d*x+c)^2/b^2/d/(a+b*arcsin(d*x+c))^2+2/3*e^3*(d*x+c)^4/b^2/d/(a+b
*arcsin(d*x+c))^2-1/3*e^3*Ci(2*(a+b*arcsin(d*x+c))/b)*cos(2*a/b)/b^4/d+4/3*
e^3*Ci(4*(a+b*arcsin(d*x+c))/b)*cos(4*a/b)/b^4/d-1/3*e^3*Si(2*(a+b*arcsin(d
*x+c))/b)*sin(2*a/b)/b^4/d+4/3*e^3*Si(4*(a+b*arcsin(d*x+c))/b)*sin(4*a/b)/b
^4/d-1/3*e^3*(d*x+c)^3*(1-(d*x+c)^2)^(1/2)/b/d/(a+b*arcsin(d*x+c))^3-e^3*(d
*x+c)*(1-(d*x+c)^2)^(1/2)/b^3/d/(a+b*arcsin(d*x+c))+8/3*e^3*(d*x+c)^3*(1-(d
*x+c)^2)^(1/2)/b^3/d/(a+b*arcsin(d*x+c))
```

Rubi [A]
time = 0.43, antiderivative size = 346, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 8, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.348$, Rules used = {4889, 12, 4729, 4807, 4727, 3384, 3380, 3383}

$$-\frac{e^3\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2(a+b\text{ArcSin}(c+dx))}{b}\right)}{3b^4d}+\frac{4e^3\cos\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4(a+b\text{ArcSin}(c+dx))}{b}\right)}{3b^4d}-\frac{e^3\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2(a+b\text{ArcSin}(c+dx))}{b}\right)}{3b^4d}+\frac{4e^3\sin\left(\frac{4a}{b}\right)\text{Si}\left(\frac{4(a+b\text{ArcSin}(c+dx))}{b}\right)}{3b^4d}+\frac{8e^3\sqrt{1-(c+dx)^2}\,(c+dx)^3}{3b^3d(a+b\text{ArcSin}(c+dx))}-\frac{e^3\sqrt{1-(c+dx)^2}\,(c+dx)}{b^3d(a+b\text{ArcSin}(c+dx))}+\frac{2e^3(c+dx)^4}{3b^2d(a+b\text{ArcSin}(c+dx))^2}-\frac{e^3(c+dx)^2}{2b^2d(a+b\text{ArcSin}(c+dx))^2}-\frac{e^3\sqrt{1-(c+dx)^2}\,(c+dx)^3}{3bd(a+b\text{ArcSin}(c+dx))^3}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] -1/3*(e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(b*d*(a + b*ArcSin[c + d*x])^3
) - (e^3*(c + d*x)^2)/(2*b^2*d*(a + b*ArcSin[c + d*x])^2) + (2*e^3*(c + d*x
)^4)/(3*b^2*d*(a + b*ArcSin[c + d*x])^2) - (e^3*(c + d*x)*Sqrt[1 - (c + d*x
)^2])/(b^3*d*(a + b*ArcSin[c + d*x])) + (8*e^3*(c + d*x)^3*Sqrt[1 - (c + d*
x)^2])/(3*b^3*d*(a + b*ArcSin[c + d*x])) - (e^3*Cos[(2*a)/b]*CosIntegral[(2
*(a + b*ArcSin[c + d*x]))/b])/(3*b^4*d) + (4*e^3*Cos[(4*a)/b]*CosIntegral[(
4*(a + b*ArcSin[c + d*x]))/b])/(3*b^4*d) - (e^3*Sin[(2*a)/b]*SinIntegral[(2
*(a + b*ArcSin[c + d*x]))/b])/(3*b^4*d) + (4*e^3*Sin[(4*a)/b]*SinIntegral[(
4*(a + b*ArcSin[c + d*x]))/b])/(3*b^4*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3384

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[c*(f/d) + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[c*(f/d) + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4727

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] - Dist
[1/(b^2*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[x^(n + 1), Sin[-a/b
+ x/b]^(m - 1)*(m - (m + 1)*Sin[-a/b + x/b]^2), x], x], x, a + b*ArcSin[c*x
]], x] /; FreeQ[{a, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + (Dis
t[c*((m + 1)/(b*(n + 1))), Int[x^(m + 1)*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[
1 - c^2*x^2]), x], x] - Dist[m/(b*c*(n + 1)), Int[x^(m - 1)*((a + b*ArcSin[
c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(ce+dex)^3}{\left(a+b\sin^{-1}(c+dx)\right)^4}\,dx &= \frac{\text{Subst}\left(\int \frac{e^3x^3}{\left(a+b\sin^{-1}(x)\right)^4}\,dx, x, c+dx\right)}{d} \\
&= \frac{e^3\text{Subst}\left(\int \frac{x^3}{\left(a+b\sin^{-1}(x)\right)^4}\,dx, x, c+dx\right)}{d} \\
&= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{e^3\text{Subst}\left(\int \frac{x^2}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^3}\,dx, x, c+\right.}{bd} \\
&= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e^3(c+dx)^2}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{2e^3(c+}{3b^2d\left(a+b\sin\right.} \\
&= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e^3(c+dx)^2}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{2e^3(c+}{3b^2d\left(a+b\sin\right.} \\
&= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e^3(c+dx)^2}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{2e^3(c+}{3b^2d\left(a+b\sin\right.} \\
&= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e^3(c+dx)^2}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{2e^3(c+}{3b^2d\left(a+b\sin\right.} \\
&= -\frac{e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e^3(c+dx)^2}{2b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{2e^3(c+}{3b^2d\left(a+b\sin\right.}
\end{aligned}
$$

Mathematica [A]
time = 0.70, size = 320, normalized size = 0.92

$$
\frac{e^3\left(-\frac{2b^3(c+dx)^3\sqrt{1-(c+dx)^2}}{(a+b\text{ArcSin}(c+dx))^3}+\frac{b^2(-3(c+dx)^2+4(c+dx)^4)}{(a+b\text{ArcSin}(c+dx))^2}+\frac{2b\sqrt{1-(c+dx)^2}(-3(c+dx)+8(c+dx)^3)}{a+b\text{ArcSin}(c+dx)}+6\log(a+b\text{ArcSin}(c+dx))+30\left(\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(2\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)-\log(a+b\text{ArcSin}(c+dx))+\sin\left(\frac{2a}{b}\right)\text{Si}\left(2\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\right)+8\left(-4\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(2\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)+\cos\left(\frac{4a}{b}\right)\text{CosIntegral}\left(4\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)+3\log(a+b\text{ArcSin}(c+dx))-4\sin\left(\frac{2a}{b}\right)\text{Si}\left(2\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)+\sin\left(\frac{4a}{b}\right)\text{Si}\left(4\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\right)\right)}{6b^4d}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] (e^3*((-2*b^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*x])^3
+ (b^2*(-3*(c + d*x)^2 + 4*(c + d*x)^4))/(a + b*ArcSin[c + d*x])^2 + (2*b*S
qrt[1 - (c + d*x)^2]*(-3*(c + d*x) + 8*(c + d*x)^3))/(a + b*ArcSin[c + d*x]
) + 6*Log[a + b*ArcSin[c + d*x]] + 30*(Cos[(2*a)/b]*CosIntegral[2*(a/b + Ar
cSin[c + d*x])] - Log[a + b*ArcSin[c + d*x]] + Sin[(2*a)/b]*SinIntegral[2*(
a/b + ArcSin[c + d*x])]) + 8*(-4*Cos[(2*a)/b]*CosIntegral[2*(a/b + ArcSin[c
 + d*x])] + Cos[(4*a)/b]*CosIntegral[4*(a/b + ArcSin[c + d*x])] + 3*Log[a +
 b*ArcSin[c + d*x]] - 4*Sin[(2*a)/b]*SinIntegral[2*(a/b + ArcSin[c + d*x])]
 + Sin[(4*a)/b]*SinIntegral[4*(a/b + ArcSin[c + d*x])])))/(6*b^4*d)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 782 vs. $2(324) = 648$.
time = 0.11, size = 783, normalized size = 2.26

method	result	size
derivativedivides	Expression too large to display	783
default	Expression too large to display	783

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^4,x,method=_RETURNVERBOSE)
```

```
[Out] -1/24/d*e^3*(-4*arcsin(d*x+c)^2*sin(2*arcsin(d*x+c))*b^3-96*arcsin(d*x+c)*S
i(4*arcsin(d*x+c)+4*a/b)*sin(4*a/b)*a^2*b-96*arcsin(d*x+c)*Ci(4*arcsin(d*x+
c)+4*a/b)*cos(4*a/b)*a^2*b+24*arcsin(d*x+c)^2*Si(2*arcsin(d*x+c)+2*a/b)*sin
(2*a/b)*a*b^2+24*arcsin(d*x+c)^2*Ci(2*arcsin(d*x+c)+2*a/b)*cos(2*a/b)*a*b^2
-96*arcsin(d*x+c)^2*Si(4*arcsin(d*x+c)+4*a/b)*sin(4*a/b)*a*b^2-96*arcsin(d*
x+c)^2*Ci(4*arcsin(d*x+c)+4*a/b)*cos(4*a/b)*a*b^2+24*arcsin(d*x+c)*Si(2*arc
sin(d*x+c)+2*a/b)*sin(2*a/b)*a^2*b+24*arcsin(d*x+c)*Ci(2*arcsin(d*x+c)+2*a/
b)*cos(2*a/b)*a^2*b+2*sin(2*arcsin(d*x+c))*b^3-sin(4*arcsin(d*x+c))*b^3-32*
Ci(4*arcsin(d*x+c)+4*a/b)*cos(4*a/b)*a^3-4*sin(2*arcsin(d*x+c))*a^2*b+2*cos
(2*arcsin(d*x+c))*a*b^2+8*sin(4*arcsin(d*x+c))*a^2*b-2*cos(4*arcsin(d*x+c))
*a*b^2+8*arcsin(d*x+c)^2*sin(4*arcsin(d*x+c))*b^3+2*arcsin(d*x+c)*cos(2*arc
sin(d*x+c))*b^3-2*arcsin(d*x+c)*cos(4*arcsin(d*x+c))*b^3+8*Si(2*arcsin(d*x+
c)+2*a/b)*sin(2*a/b)*a^3+8*Ci(2*arcsin(d*x+c)+2*a/b)*cos(2*a/b)*a^3-32*Si(4
*arcsin(d*x+c)+4*a/b)*sin(4*a/b)*a^3+8*arcsin(d*x+c)^3*Si(2*arcsin(d*x+c)+2
*a/b)*sin(2*a/b)*b^3+8*arcsin(d*x+c)^3*Ci(2*arcsin(d*x+c)+2*a/b)*cos(2*a/b)
*b^3-32*arcsin(d*x+c)^3*Si(4*arcsin(d*x+c)+4*a/b)*sin(4*a/b)*b^3-32*arcsin(
d*x+c)^3*Ci(4*arcsin(d*x+c)+4*a/b)*cos(4*a/b)*b^3-8*arcsin(d*x+c)*sin(2*arc
sin(d*x+c))*a*b^2+16*arcsin(d*x+c)*sin(4*arcsin(d*x+c))*a*b^2)/(a+b*arcsin(
d*x+c))^3/b^4
```

Maxima [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^4,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^4,x, algorithm="fricas")
```

```
[Out] integral((d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3)*e^3/(b^4*arcsin(d*x + c)
^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6*a^2*b^2*arcsin(d*x + c)^2 + 4*a^3*b*arcs
in(d*x + c) + a^4), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e^3\left(\int \frac{c^3}{a^4+4a^3b\operatorname{asin}(c+dx)+6a^2b^2\operatorname{asin}^2(c+dx)+4ab^3\operatorname{asin}^3(c+dx)+b^4\operatorname{asin}^4(c+dx)}\,dx+\int \frac{d^3x^3}{a^4+4a^3b\operatorname{asin}(c+dx)+6a^2b^2\operatorname{asin}^2(c+dx)+4ab^3\operatorname{asin}^3(c+dx)+b^4\operatorname{asin}^4(c+dx)}\,dx+\int \frac{3cd^2x^2}{a^4+4a^3b\operatorname{asin}(c+dx)+6a^2b^2\operatorname{asin}^2(c+dx)+4ab^3\operatorname{asin}^3(c+dx)+b^4\operatorname{asin}^4(c+dx)}\,dx+\int \frac{3c^2dx}{a^4+4a^3b\operatorname{asin}(c+dx)+6a^2b^2\operatorname{asin}^2(c+dx)+4ab^3\operatorname{asin}^3(c+dx)+b^4\operatorname{asin}^4(c+dx)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3/(a+b*asin(d*x+c))**4,x)
```

```
[Out] e**3*(Integral(c**3/(a**4 + 4*a**3*b*asin(c + d*x) + 6*a**2*b**2*asin(c + d
*x)**2 + 4*a*b**3*asin(c + d*x)**3 + b**4*asin(c + d*x)**4), x) + Integral(
d**3*x**3/(a**4 + 4*a**3*b*asin(c + d*x) + 6*a**2*b**2*asin(c + d*x)**2 + 4
*a*b**3*asin(c + d*x)**3 + b**4*asin(c + d*x)**4), x) + Integral(3*c*d**2*x
**2/(a**4 + 4*a**3*b*asin(c + d*x) + 6*a**2*b**2*asin(c + d*x)**2 + 4*a*b**
3*asin(c + d*x)**3 + b**4*asin(c + d*x)**4), x) + Integral(3*c**2*d*x/(a**4
 + 4*a**3*b*asin(c + d*x) + 6*a**2*b**2*asin(c + d*x)**2 + 4*a*b**3*asin(c
+ d*x)**3 + b**4*asin(c + d*x)**4), x))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 4040 vs. $2(324) = 648$.
time = 0.85, size = 4040, normalized size = 11.68

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^4,x, algorithm="giac")
```

```
[Out] 32/3*b^3*e^3*arcsin(d*x + c)^3*cos(a/b)^4*cos_integral(4*a/b + 4*arcsin(d*x
 + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d
*arcsin(d*x + c) + a^3*b^4*d) + 32/3*b^3*e^3*arcsin(d*x + c)^3*cos(a/b)^3*s
in(a/b)*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 +
3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 32
*a*b^2*e^3*arcsin(d*x + c)^2*cos(a/b)^4*cos_integral(4*a/b + 4*arcsin(d*x +
 c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*a
rcsin(d*x + c) + a^3*b^4*d) + 32*a*b^2*e^3*arcsin(d*x + c)^2*cos(a/b)^3*sin
(a/b)*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*
a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 32/3
*b^3*e^3*arcsin(d*x + c)^3*cos(a/b)^2*cos_integral(4*a/b + 4*arcsin(d*x + c
))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arc
```

sin(d*x + c) + a^3*b^4*d) + 32*a^2*b*e^3*arcsin(d*x + c)*cos(a/b)^4*cos_int
egral(4*a/b + 4*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsi
n(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 2/3*b^3*e^3*arcsi
n(d*x + c)^3*cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(d*x + c))/(b^7*d*arcs
in(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) +
 a^3*b^4*d) - 16/3*b^3*e^3*arcsin(d*x + c)^3*cos(a/b)*sin(a/b)*sin_integral
(4*a/b + 4*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x
 + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 32*a^2*b*e^3*arcsin(d*
x + c)*cos(a/b)^3*sin(a/b)*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^7*d*a
rcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c
) + a^3*b^4*d) - 2/3*b^3*e^3*arcsin(d*x + c)^3*cos(a/b)*sin(a/b)*sin_integr
al(2*a/b + 2*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d
*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 32*a*b^2*e^3*arcsin(
d*x + c)^2*cos(a/b)^2*cos_integral(4*a/b + 4*arcsin(d*x + c))/(b^7*d*arcsin
(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a
^3*b^4*d) + 32/3*a^3*e^3*cos(a/b)^4*cos_integral(4*a/b + 4*arcsin(d*x + c))
/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsi
n(d*x + c) + a^3*b^4*d) - 2*a*b^2*e^3*arcsin(d*x + c)^2*cos(a/b)^2*cos_inte
gral(2*a/b + 2*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin
(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 16*a*b^2*e^3*arcsi
n(d*x + c)^2*cos(a/b)*sin(a/b)*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^7
*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x
 + c) + a^3*b^4*d) + 32/3*a^3*e^3*cos(a/b)^3*sin(a/b)*sin_integral(4*a/b +
4*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 +
 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 2*a*b^2*e^3*arcsin(d*x + c)^2*c
os(a/b)*sin(a/b)*sin_integral(2*a/b + 2*arcsin(d*x + c))/(b^7*d*arcsin(d*x
+ c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^
4*d) - 8/3*(-(d*x + c)^2 + 1)^(3/2)*(d*x + c)*b^3*e^3*arcsin(d*x + c)^2/(b^
7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*
x + c) + a^3*b^4*d) + 4/3*b^3*e^3*arcsin(d*x + c)^3*cos_integral(4*a/b + 4*
arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3
*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 32*a^2*b*e^3*arcsin(d*x + c)*cos(
a/b)^2*cos_integral(4*a/b + 4*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3
*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/3
*b^3*e^3*arcsin(d*x + c)^3*cos_integral(2*a/b + 2*arcsin(d*x + c))/(b^7*d*a
rcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c
) + a^3*b^4*d) - 2*a^2*b*e^3*arcsin(d*x + c)*cos(a/b)^2*cos_integral(2*a/b
+ 2*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2
 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 16*a^2*b*e^3*arcsin(d*x + c)*
cos(a/b)*sin(a/b)*sin_integral(4*a/b + 4*arcsin(d*x + c))/(b^7*d*arcsin(d*x
 + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b
^4*d) - 2*a^2*b*e^3*arcsin(d*x + c)*cos(a/b)*sin(a/b)*sin_integral(2*a/b +
2*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 +
 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 16/3*(-(d*x + c)^2 + 1)^(3/2)*(
d*x + c)*a*b^2*e^3*arcsin(d*x + c)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arc

```
sin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 5/3*sqrt(-(d*x
+ c)^2 + 1)*(d*x + c)*b^3*e^3*arcsin(d*x + c)^2/(b^7*d*arcsin(d*x + c)^3 +
3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 2/
3*((d*x + c)^2 - 1)^2*b^3*e^3*arcsin(d*x + c)/(b^7*d*arcsin(d*x + c)^3 + 3*
a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 4*a*
b^2*e^3*arcsin(d*x + c)^2*cos_integral(4*a/b + 4*arcsin(d*x + c))/(b^7*d*ar
csin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c)
 + a^3*b^4*d) - 32/3*a^3*e^3*cos(a/b)^2*cos_integral(4*a/b + 4*arcsin(d*x +
 c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*a
rcsin(d*x + c) + a^3*b^4*d) + a*b^2*e^3*arcsin(...
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,e+d\,e\,x)^3}{{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^3/(a + b*asin(c + d*x))^4,x)
[Out] int((c*e + d*e*x)^3/(a + b*asin(c + d*x))^4, x)
```

3.235 $\int \frac{(ce+dex)^2}{(a+b\mathbf{ArcSin}(c+dx))^4}\,dx$

Optimal. Leaf size=337

$$-\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd(a+b\text{ArcSin}(c+dx))^3}-\frac{e^2(c+dx)}{3b^2d(a+b\text{ArcSin}(c+dx))^2}+\frac{e^2(c+dx)^3}{2b^2d(a+b\text{ArcSin}(c+dx))^2}-\frac{e^2\sqrt{1-(c}{3b^3d(a+b\text{ArcS}}$$

```
[Out] -1/3*e^2*(d*x+c)/b^2/d/(a+b*arcsin(d*x+c))^2+1/2*e^2*(d*x+c)^3/b^2/d/(a+b*a
rcsin(d*x+c))^2+1/24*e^2*cos(a/b)*Si((a+b*arcsin(d*x+c))/b)/b^4/d-9/8*e^2*c
os(3*a/b)*Si(3*(a+b*arcsin(d*x+c))/b)/b^4/d-1/24*e^2*Ci((a+b*arcsin(d*x+c))
/b)*sin(a/b)/b^4/d+9/8*e^2*Ci(3*(a+b*arcsin(d*x+c))/b)*sin(3*a/b)/b^4/d-1/3
*e^2*(d*x+c)^2*(1-(d*x+c)^2)^(1/2)/b/d/(a+b*arcsin(d*x+c))^3-1/3*e^2*(1-(d*
x+c)^2)^(1/2)/b^3/d/(a+b*arcsin(d*x+c))+3/2*e^2*(d*x+c)^2*(1-(d*x+c)^2)^(1/
2)/b^3/d/(a+b*arcsin(d*x+c))
```

Rubi [A]
time = 0.43, antiderivative size = 337, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 10, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.435$, Rules used = {4889, 12, 4729, 4807, 4727, 3384, 3380, 3383, 4717, 4809}

$$-\frac{e^2\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{24b^4d}+\frac{9e^2\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3(a+b\text{ArcSin}(c+dx))}{b}\right)}{8b^4d}+\frac{e^2\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{24b^4d}-\frac{9e^2\cos\left(\frac{3a}{b}\right)\text{Si}\left(\frac{3(a+b\text{ArcSin}(c+dx))}{b}\right)}{8b^4d}+\frac{3e^2\sqrt{1-(c+dx)^2}(c+dx)^2}{2b^3d(a+b\text{ArcSin}(c+dx))}-\frac{e^2\sqrt{1-(c+dx)^2}}{3b^3d(a+b\text{ArcSin}(c+dx))}+\frac{e^2(c+dx)^3}{2b^2d(a+b\text{ArcSin}(c+dx))^2}-\frac{e^2(c+dx)}{3b^2d(a+b\text{ArcSin}(c+dx))^2}-\frac{e^2\sqrt{1-(c+dx)^2}(c+dx)^2}{3bd(a+b\text{ArcSin}(c+dx))^3}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] -1/3*(e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(b*d*(a + b*ArcSin[c + d*x])^3
) - (e^2*(c + d*x))/(3*b^2*d*(a + b*ArcSin[c + d*x])^2) + (e^2*(c + d*x)^3)
/(2*b^2*d*(a + b*ArcSin[c + d*x])^2) - (e^2*Sqrt[1 - (c + d*x)^2])/(3*b^3*d
*(a + b*ArcSin[c + d*x])) + (3*e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(2*b^
3*d*(a + b*ArcSin[c + d*x])) - (e^2*CosIntegral[(a + b*ArcSin[c + d*x])/b]*
Sin[a/b])/(24*b^4*d) + (9*e^2*CosIntegral[(3*(a + b*ArcSin[c + d*x]))/b]*Si
n[(3*a)/b])/(8*b^4*d) + (e^2*Cos[a/b]*SinIntegral[(a + b*ArcSin[c + d*x])/b
])/(24*b^4*d) - (9*e^2*Cos[(3*a)/b]*SinIntegral[(3*(a + b*ArcSin[c + d*x]))
/b])/(8*b^4*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3384

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[c*(f/d) + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[c*(f/d) + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4717

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[Sqrt[1 - c^2
*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + Dist[c/(b*(n + 1)),
 Int[x*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4727

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] - Dist
[1/(b^2*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[x^(n + 1), Sin[-a/b
+ x/b]^(m - 1)*(m - (m + 1)*Sin[-a/b + x/b]^2), x], x], x, a + b*ArcSin[c*x
]], x] /; FreeQ[{a, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + (Dis
t[c*((m + 1)/(b*(n + 1))), Int[x^(m + 1)*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[
1 - c^2*x^2]), x], x] - Dist[m/(b*c*(n + 1)), Int[x^(m - 1)*((a + b*ArcSin[
c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4809

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[(1/(b*c^(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x
^2)^p], Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b]^(2*p + 1), x], x, a
 + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0]
&& IGtQ[2*p + 2, 0] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^2}{\left(a+b\sin^{-1}(c+dx)\right)^4}\,dx = \frac{\text{Subst}\left(\int \frac{e^2x^2}{\left(a+b\sin^{-1}(x)\right)^4}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e^2\text{Subst}\left(\int \frac{x^2}{\left(a+b\sin^{-1}(x)\right)^4}\,dx,x,c+dx\right)}{d}$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{(2e^2)\,\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^3}\,dx,x\right.}{3bd}$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e^2(c+dx)}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{e^2(c}{2b^2d\left(a+b\,\text{si}\right.}$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e^2(c+dx)}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{e^2(c}{2b^2d\left(a+b\,\text{si}\right.}$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e^2(c+dx)}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{e^2(c}{2b^2d\left(a+b\,\text{si}\right.}$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e^2(c+dx)}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{e^2(c}{2b^2d\left(a+b\,\text{si}\right.}$$

$$= -\frac{e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e^2(c+dx)}{3b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{e^2(c}{2b^2d\left(a+b\,\text{si}\right.}$$

Mathematica [A]

time = 0.75, size = 264, normalized size = 0.78

$$\frac{e^2\left(-\frac{8b^3(c+dx)^2\sqrt{1-(c+dx)^2}}{(a+b\text{ArcSin}(c+dx))^3}+\frac{4b^2(-2(c+dx)+3(c+dx)^3)}{(a+b\text{ArcSin}(c+dx))^2}+\frac{4b\sqrt{1-(c+dx)^2}\,(-2+9(c+dx)^2)}{a+b\text{ArcSin}(c+dx)}+80\left(\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\sin\left(\frac{a}{b}\right)-\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)+27\left(-3\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\sin\left(\frac{a}{b}\right)+\text{CosIntegral}\left(3\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\sin\left(\frac{3a}{b}\right)+3\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)-\cos\left(\frac{3a}{b}\right)\text{Si}\left(3\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\right)\right)}{24b^4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] (e^2*((-8*b^3*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*x])^3
+ (4*b^2*(-2*(c + d*x) + 3*(c + d*x)^3))/(a + b*ArcSin[c + d*x])^2 + (4*b*S
qrt[1 - (c + d*x)^2]*(-2 + 9*(c + d*x)^2))/(a + b*ArcSin[c + d*x]) + 80*(Co
sIntegral[a/b + ArcSin[c + d*x]]*Sin[a/b] - Cos[a/b]*SinIntegral[a/b + ArcS
in[c + d*x]]) + 27*(-3*CosIntegral[a/b + ArcSin[c + d*x]]*Sin[a/b] + CosInt
egral[3*(a/b + ArcSin[c + d*x])]*Sin[(3*a)/b] + 3*Cos[a/b]*SinIntegral[a/b
+ ArcSin[c + d*x]] - Cos[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c + d*x])])))
/(24*b^4*d)
```

Maple [**B**] Leaf count of result is larger than twice the leaf count of optimal. 752 vs. $2(313) = 626$.
time = 0.27, size = 753, normalized size = 2.23 Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^4,x,method=_RETURNVERBOSE)
```

```
[Out] 1/24/d*e^2*(arcsin(d*x+c)^3*Si(arcsin(d*x+c)+a/b)*cos(a/b)*b^3-arcsin(d*x+c
)^3*Ci(arcsin(d*x+c)+a/b)*sin(a/b)*b^3+2*(1-(d*x+c)^2)^(1/2)*arcsin(d*x+c)*
a*b^2-27*arcsin(d*x+c)^3*Si(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b)*b^3+27*arcsin
(d*x+c)^3*Ci(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)*b^3-18*cos(3*arcsin(d*x+c))*
arcsin(d*x+c)*a*b^2-3*arcsin(d*x+c)*Ci(arcsin(d*x+c)+a/b)*sin(a/b)*a^2*b-81
*arcsin(d*x+c)^2*Si(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b)*a*b^2+81*arcsin(d*x+c
)^2*Ci(3*arcsin(d*x+c)+3*a/b)*sin(3*a/b)*a*b^2-81*arcsin(d*x+c)*Si(3*arcsin
(d*x+c)+3*a/b)*cos(3*a/b)*a^2*b+81*arcsin(d*x+c)*Ci(3*arcsin(d*x+c)+3*a/b)*
sin(3*a/b)*a^2*b+3*arcsin(d*x+c)^2*Si(arcsin(d*x+c)+a/b)*cos(a/b)*a*b^2-3*a
rcsin(d*x+c)^2*Ci(arcsin(d*x+c)+a/b)*sin(a/b)*a*b^2+3*arcsin(d*x+c)*Si(arcs
in(d*x+c)+a/b)*cos(a/b)*a^2*b+a*b^2*(d*x+c)-2*(1-(d*x+c)^2)^(1/2)*b^3+2*cos
(3*arcsin(d*x+c))*b^3+(1-(d*x+c)^2)^(1/2)*a^2*b-3*sin(3*arcsin(d*x+c))*arcs
in(d*x+c)*b^3-27*Si(3*arcsin(d*x+c)+3*a/b)*cos(3*a/b)*a^3+27*Ci(3*arcsin(d*
x+c)+3*a/b)*sin(3*a/b)*a^3-9*cos(3*arcsin(d*x+c))*a^2*b-3*sin(3*arcsin(d*x+
c))*a*b^2+arcsin(d*x+c)*b^3*(d*x+c)+Si(arcsin(d*x+c)+a/b)*cos(a/b)*a^3-Ci(a
rcsin(d*x+c)+a/b)*sin(a/b)*a^3+(1-(d*x+c)^2)^(1/2)*arcsin(d*x+c)^2*b^3-9*co
s(3*arcsin(d*x+c))*arcsin(d*x+c)^2*b^3)/(a+b*arcsin(d*x+c))^3/b^4
```

Maxima [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^4,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^4,x, algorithm="fricas")
```

```
[Out] integral((d^2*x^2 + 2*c*d*x + c^2)*e^2/(b^4*arcsin(d*x + c)^4 + 4*a*b^3*arc
sin(d*x + c)^3 + 6*a^2*b^2*arcsin(d*x + c)^2 + 4*a^3*b*arcsin(d*x + c) + a^
4), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e^{2}\left(\int \frac{c^{2}}{a^{4} + 4a^{3}b\operatorname{asin}\left(c+dx\right) + 6a^{2}b^{2}\operatorname{asin}^{2}\left(c+dx\right) + 4ab^{3}\operatorname{asin}^{3}\left(c+dx\right) + b^{4}\operatorname{asin}^{4}\left(c+dx\right)}\,dx + \int \frac{d^{2}x^{2}}{a^{4} + 4a^{3}b\operatorname{asin}\left(c+dx\right) + 6a^{2}b^{2}\operatorname{asin}^{2}\left(c+dx\right) + 4ab^{3}\operatorname{asin}^{3}\left(c+dx\right) + b^{4}\operatorname{asin}^{4}\left(c+dx\right)}\,dx + \int \frac{2cdx}{a^{4} + 4a^{3}b\operatorname{asin}\left(c+dx\right) + 6a^{2}b^{2}\operatorname{asin}^{2}\left(c+dx\right) + 4ab^{3}\operatorname{asin}^{3}\left(c+dx\right) + b^{4}\operatorname{asin}^{4}\left(c+dx\right)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2/(a+b*asin(d*x+c))**4,x)
```

```
[Out] e**2*(Integral(c**2/(a**4 + 4*a**3*b*asin(c + d*x) + 6*a**2*b**2*asin(c + d
*x)**2 + 4*a*b**3*asin(c + d*x)**3 + b**4*asin(c + d*x)**4), x) + Integral(
d**2*x**2/(a**4 + 4*a**3*b*asin(c + d*x) + 6*a**2*b**2*asin(c + d*x)**2 + 4
*a*b**3*asin(c + d*x)**3 + b**4*asin(c + d*x)**4), x) + Integral(2*c*d*x/(a
**4 + 4*a**3*b*asin(c + d*x) + 6*a**2*b**2*asin(c + d*x)**2 + 4*a*b**3*asin
(c + d*x)**3 + b**4*asin(c + d*x)**4), x))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 3109 vs. $2(313) = 626$.
time = 0.81, size = 3109, normalized size = 9.23

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^4,x, algorithm="giac")
```

```
[Out] 9/2*b^3*e^2*arcsin(d*x + c)^3*cos(a/b)^2*cos_integral(3*a/b + 3*arcsin(d*x
+ c))*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a
^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 9/2*b^3*e^2*arcsin(d*x + c)^3*cos(a
/b)^3*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*
a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 27/2
*a*b^2*e^2*arcsin(d*x + c)^2*cos(a/b)^2*cos_integral(3*a/b + 3*arcsin(d*x +
 c))*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^
```

2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 27/2*a*b^2*e^2*arcsin(d*x + c)^2*cos
(a/b)^3*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 +
3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 9/
8*b^3*e^2*arcsin(d*x + c)^3*cos_integral(3*a/b + 3*arcsin(d*x + c))*sin(a/b
)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcs
in(d*x + c) + a^3*b^4*d) + 27/2*a^2*b*e^2*arcsin(d*x + c)*cos(a/b)^2*cos_in
tegral(3*a/b + 3*arcsin(d*x + c))*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b
^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 1/24*b^
3*e^2*arcsin(d*x + c)^3*cos_integral(a/b + arcsin(d*x + c))*sin(a/b)/(b^7*d
*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x +
 c) + a^3*b^4*d) + 27/8*b^3*e^2*arcsin(d*x + c)^3*cos(a/b)*sin_integral(3*a
/b + 3*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c
)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 27/2*a^2*b*e^2*arcsin(d*x
+ c)*cos(a/b)^3*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^7*d*arcsin(d*x +
 c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4
*d) + 1/24*b^3*e^2*arcsin(d*x + c)^3*cos(a/b)*sin_integral(a/b + arcsin(d*x
 + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d
*arcsin(d*x + c) + a^3*b^4*d) - 27/8*a*b^2*e^2*arcsin(d*x + c)^2*cos_integr
al(3*a/b + 3*arcsin(d*x + c))*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d
*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 9/2*a^3*e^2
*cos(a/b)^2*cos_integral(3*a/b + 3*arcsin(d*x + c))*sin(a/b)/(b^7*d*arcsin(
d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^
3*b^4*d) - 1/8*a*b^2*e^2*arcsin(d*x + c)^2*cos_integral(a/b + arcsin(d*x +
c))*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2
*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 81/8*a*b^2*e^2*arcsin(d*x + c)^2*cos(
a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a
*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 9/2*a
^3*e^2*cos(a/b)^3*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b^7*d*arcsin(d*x
 + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b
^4*d) + 1/8*a*b^2*e^2*arcsin(d*x + c)^2*cos(a/b)*sin_integral(a/b + arcsin(
d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^
5*d*arcsin(d*x + c) + a^3*b^4*d) - 3/2*(-(d*x + c)^2 + 1)^(3/2)*b^3*e^2*arc
sin(d*x + c)^2/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a
^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/2*((d*x + c)^2 - 1)*(d*x + c)*b^3
*e^2*arcsin(d*x + c)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2
 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 27/8*a^2*b*e^2*arcsin(d*x + c
)*cos_integral(3*a/b + 3*arcsin(d*x + c))*sin(a/b)/(b^7*d*arcsin(d*x + c)^3
 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) -
 1/8*a^2*b*e^2*arcsin(d*x + c)*cos_integral(a/b + arcsin(d*x + c))*sin(a/b)
/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsi
n(d*x + c) + a^3*b^4*d) + 81/8*a^2*b*e^2*arcsin(d*x + c)*cos(a/b)*sin_integ
ral(3*a/b + 3*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(
d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/8*a^2*b*e^2*arcsi
n(d*x + c)*cos(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^7*d*arcsin(d*x +
 c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4

```
*d) - 3*(-(d*x + c)^2 + 1)^(3/2)*a*b^2*e^2*arcsin(d*x + c)/(b^7*d*arcsin(d*
x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*
b^4*d) + 7/6*sqrt(-(d*x + c)^2 + 1)*b^3*e^2*arcsin(d*x + c)^2/(b^7*d*arcsin
(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a
^3*b^4*d) + 1/2*((d*x + c)^2 - 1)*(d*x + c)*a*b^2*e^2/(b^7*d*arcsin(d*x + c
)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d
) + 1/6*(d*x + c)*b^3*e^2*arcsin(d*x + c)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^
6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 9/8*a^3*
e^2*cos_integral(3*a/b + 3*arcsin(d*x + c))*sin(a/b)/(b^7*d*arcsin(d*x + c)
^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d)
 - 1/24*a^3*e^2*cos_integral(a/b + arcsin(d*x + c))*sin(a/b)/(b^7*d*arcsin(
d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^
3*b^4*d) + 27/8*a^3*e^2*cos(a/b)*sin_integral(3*a/b + 3*arcsin(d*x + c))/(b
^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d
*x + c) + a^3*b^4*d) + 1/24*a^3*e^2*cos(a/b)*si...
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,e+d\,e\,x)^2}{(a+b\,\mathrm{asin}\,(c+d\,x))^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^2/(a + b*asin(c + d*x))^4,x)
```

```
[Out] int((c*e + d*e*x)^2/(a + b*asin(c + d*x))^4, x)
```

3.236 $\int \frac{ce+dex}{(a+b\mathbf{ArcSin}(c+dx))^4}\,dx$

Optimal. Leaf size=208

$$-\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{3bd(a+b\text{ArcSin}(c+dx))^3}-\frac{e}{6b^2d(a+b\text{ArcSin}(c+dx))^2}+\frac{e(c+dx)^2}{3b^2d(a+b\text{ArcSin}(c+dx))^2}+\frac{2e(c+dx)\sqrt{1-(}{3b^3d(a+b\text{ArcSin}}$$

```
[Out] -1/6*e/b^2/d/(a+b*arcsin(d*x+c))^2+1/3*e*(d*x+c)^2/b^2/d/(a+b*arcsin(d*x+c)
)^2-2/3*e*Ci(2*(a+b*arcsin(d*x+c))/b)*cos(2*a/b)/b^4/d-2/3*e*Si(2*(a+b*arcs
in(d*x+c))/b)*sin(2*a/b)/b^4/d-1/3*e*(d*x+c)*(1-(d*x+c)^2)^(1/2)/b/d/(a+b*a
rcsin(d*x+c))^3+2/3*e*(d*x+c)*(1-(d*x+c)^2)^(1/2)/b^3/d/(a+b*arcsin(d*x+c))
```

Rubi [A]
time = 0.24, antiderivative size = 208, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 9, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.429$, Rules used = {4889, 12, 4729, 4807, 4727, 3384, 3380, 3383, 4737}

$$-\frac{2e\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2(a+b\text{ArcSin}(c+dx))}{b}\right)}{3b^4d}-\frac{2e\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2(a+b\text{ArcSin}(c+dx))}{b}\right)}{3b^4d}+\frac{2e\sqrt{1-(c+dx)^2}\,(c+dx)}{3b^3d(a+b\text{ArcSin}(c+dx))}+\frac{e(c+dx)^2}{3b^2d(a+b\text{ArcSin}(c+dx))^2}-\frac{e}{6b^2d(a+b\text{ArcSin}(c+dx))^2}-\frac{e\sqrt{1-(c+dx)^2}\,(c+dx)}{3bd(a+b\text{ArcSin}(c+dx))^3}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)/(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] -1/3*(e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(b*d*(a + b*ArcSin[c + d*x])^3) -
e/(6*b^2*d*(a + b*ArcSin[c + d*x])^2) + (e*(c + d*x)^2)/(3*b^2*d*(a + b*Arc
Sin[c + d*x])^2) + (2*e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(3*b^3*d*(a + b*Ar
cSin[c + d*x])) - (2*e*Cos[(2*a)/b]*CosIntegral[(2*(a + b*ArcSin[c + d*x]))
/b])/(3*b^4*d) - (2*e*Sin[(2*a)/b]*SinIntegral[(2*(a + b*ArcSin[c + d*x]))/
b])/(3*b^4*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3384

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[c*(f/d) + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[c*(f/d) + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4727

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] - Dist
[1/(b^2*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[x^(n + 1), Sin[-a/b
+ x/b]^(m - 1)*(m - (m + 1)*Sin[-a/b + x/b]^2), x], x], x, a + b*ArcSin[c*x
]], x] /; FreeQ[{a, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + (Dis
t[c*((m + 1)/(b*(n + 1))), Int[x^(m + 1)*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[
1 - c^2*x^2]), x], x] - Dist[m/(b*c*(n + 1)), Int[x^(m - 1)*((a + b*ArcSin[
c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{ce+dex}{\left(a+b\sin^{-1}(c+dx)\right)^4}\,dx = \frac{\text{Subst}\left(\int \frac{ex}{(a+b\sin^{-1}(x))^4}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e\text{Subst}\left(\int \frac{x}{(a+b\sin^{-1}(x))^4}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{e\text{Subst}\left(\int \frac{1}{\sqrt{1-x^2}\,(a+b\sin^{-1}(x))^3}\,dx, x, c+dx\right.}{3bd}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e}{6b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{e(c+d}{3b^2d\,(a+b\sin^{-}}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e}{6b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{e(c+d}{3b^2d\,(a+b\sin^{-}}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e}{6b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{e(c+d}{3b^2d\,(a+b\sin^{-}}$$

$$= -\frac{e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{e}{6b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{e(c+d}{3b^2d\,(a+b\sin^{-}}$$

Mathematica [A]
time = 0.52, size = 186, normalized size = 0.89

$$\frac{e\left(-\frac{2b^3(c+dx)\sqrt{1-(c+dx)^2}}{(a+b\text{ArcSin}(c+dx))^3}+\frac{b^2(-1+2(c+dx)^2)}{(a+b\text{ArcSin}(c+dx))^2}+\frac{4b(c+dx)\sqrt{1-(c+dx)^2}}{a+b\text{ArcSin}(c+dx)}-4\log(a+b\text{ArcSin}(c+dx))-4\left(\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(2\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)-\log(a+b\text{ArcSin}(c+dx))+\sin\left(\frac{2a}{b}\right)\text{Si}\left(2\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\right)\right)\right)}{6b^4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)/(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] (e*((-2*b^3*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*x])^3 + (b
^2*(-1 + 2*(c + d*x)^2))/(a + b*ArcSin[c + d*x])^2 + (4*b*(c + d*x)*Sqrt[1
- (c + d*x)^2])/(a + b*ArcSin[c + d*x]) - 4*Log[a + b*ArcSin[c + d*x]] - 4*
(Cos[(2*a)/b]*CosIntegral[2*(a/b + ArcSin[c + d*x])] - Log[a + b*ArcSin[c +
 d*x]] + Sin[(2*a)/b]*SinIntegral[2*(a/b + ArcSin[c + d*x])])))/(6*b^4*d)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 398 vs. 2(192) = 384.
time = 0.04, size = 399, normalized size = 1.92

method	result
derivativedivides	$-\frac{e\left(4\arcsin(dx+c)^3 \operatorname{sinIntegral}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\sin\left(\frac{2a}{b}\right)b^3+4\arcsin(dx+c)^3 \operatorname{cosineIntegral}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\right.}{}$
default	$-\frac{e\left(4\arcsin(dx+c)^3 \operatorname{sinIntegral}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\sin\left(\frac{2a}{b}\right)b^3+4\arcsin(dx+c)^3 \operatorname{cosineIntegral}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)/(a+b*arcsin(d*x+c))^4,x,method=_RETURNVERBOSE)
```

```
[Out] -1/6/d*e*(4*arcsin(d*x+c)^3*Si(2*arcsin(d*x+c)+2*a/b)*sin(2*a/b)*b^3+4*arcs
in(d*x+c)^3*Ci(2*arcsin(d*x+c)+2*a/b)*cos(2*a/b)*b^3+12*arcsin(d*x+c)^2*Si(
2*arcsin(d*x+c)+2*a/b)*sin(2*a/b)*a*b^2+12*arcsin(d*x+c)^2*Ci(2*arcsin(d*x+
c)+2*a/b)*cos(2*a/b)*a*b^2-2*arcsin(d*x+c)^2*sin(2*arcsin(d*x+c))*b^3+12*ar
csin(d*x+c)*Si(2*arcsin(d*x+c)+2*a/b)*sin(2*a/b)*a^2*b+12*arcsin(d*x+c)*Ci(
2*arcsin(d*x+c)+2*a/b)*cos(2*a/b)*a^2*b-4*arcsin(d*x+c)*sin(2*arcsin(d*x+c)
)*a*b^2+arcsin(d*x+c)*cos(2*arcsin(d*x+c))*b^3+4*Si(2*arcsin(d*x+c)+2*a/b)*
sin(2*a/b)*a^3+4*Ci(2*arcsin(d*x+c)+2*a/b)*cos(2*a/b)*a^3-2*sin(2*arcsin(d*
x+c))*a^2*b+sin(2*arcsin(d*x+c))*b^3+cos(2*arcsin(d*x+c))*a*b^2)/(a+b*arcsi
n(d*x+c))^3/b^4
```

Maxima [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^4,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^4,x, algorithm="fricas")
```

```
[Out] integral((d*x + c)*e/(b^4*arcsin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6
*a^2*b^2*arcsin(d*x + c)^2 + 4*a^3*b*arcsin(d*x + c) + a^4), x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$e\left(\int \frac{c}{a^4+4a^3b\operatorname{asin}(c+dx)+6a^2b^2\operatorname{asin}^2(c+dx)+4ab^3\operatorname{asin}^3(c+dx)+b^4\operatorname{asin}^4(c+dx)}\,dx+\int \frac{dx}{a^4+4a^3b\operatorname{asin}(c+dx)+6a^2b^2\operatorname{asin}^2(c+dx)+4ab^3\operatorname{asin}^3(c+dx)+b^4\operatorname{asin}^4(c+dx)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*asin(d*x+c))**4,x)
```

```
[Out] e*(Integral(c/(a**4 + 4*a**3*b*asin(c + d*x) + 6*a**2*b**2*asin(c + d*x)**2
 + 4*a*b**3*asin(c + d*x)**3 + b**4*asin(c + d*x)**4), x) + Integral(d*x/(a
**4 + 4*a**3*b*asin(c + d*x) + 6*a**2*b**2*asin(c + d*x)**2 + 4*a*b**3*asin
(c + d*x)**3 + b**4*asin(c + d*x)**4), x))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 1665 vs. $2(192) = 384$.
time = 0.74, size = 1665, normalized size = 8.00

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^4,x, algorithm="giac")
```

```
[Out] -4/3*b^3*e*arcsin(d*x + c)^3*cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(d*x +
 c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*a
rcsin(d*x + c) + a^3*b^4*d) - 4/3*b^3*e*arcsin(d*x + c)^3*cos(a/b)*sin(a/b)
*sin_integral(2*a/b + 2*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6
*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 4*a*b^2*e
*arcsin(d*x + c)^2*cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(d*x + c))/(b^7*
d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x
+ c) + a^3*b^4*d) - 4*a*b^2*e*arcsin(d*x + c)^2*cos(a/b)*sin(a/b)*sin_integ
ral(2*a/b + 2*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(
d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 2/3*b^3*e*arcsin(d*
x + c)^3*cos_integral(2*a/b + 2*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 +
 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 4
*a^2*b*e*arcsin(d*x + c)*cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(d*x + c))
/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsi
n(d*x + c) + a^3*b^4*d) - 4*a^2*b*e*arcsin(d*x + c)*cos(a/b)*sin(a/b)*sin_i
ntegral(2*a/b + 2*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arc
sin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 2/3*sqrt(-(d*x
+ c)^2 + 1)*(d*x + c)*b^3*e*arcsin(d*x + c)^2/(b^7*d*arcsin(d*x + c)^3 + 3*
a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 2*a*
b^2*e*arcsin(d*x + c)^2*cos_integral(2*a/b + 2*arcsin(d*x + c))/(b^7*d*arcs
in(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) +
 a^3*b^4*d) - 4/3*a^3*e*cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(d*x + c))/
(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin
(d*x + c) + a^3*b^4*d) - 4/3*a^3*e*cos(a/b)*sin(a/b)*sin_integral(2*a/b + 2
*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 +
3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 4/3*sqrt(-(d*x + c)^2 + 1)*(d*x
+ c)*a*b^2*e*arcsin(d*x + c)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*
x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/3*((d*x + c)^2 - 1)
```

```
*b^3*e*arcsin(d*x + c)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)
^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 2*a^2*b*e*arcsin(d*x + c)*c
os_integral(2*a/b + 2*arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d
*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 2/3*sqrt(-(
d*x + c)^2 + 1)*(d*x + c)*a^2*b*e/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcs
in(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 1/3*sqrt(-(d*x +
 c)^2 + 1)*(d*x + c)*b^3*e/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x
+ c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/3*((d*x + c)^2 - 1)*a
*b^2*e/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d
*arcsin(d*x + c) + a^3*b^4*d) + 1/6*b^3*e*arcsin(d*x + c)/(b^7*d*arcsin(d*x
 + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b
^4*d) + 2/3*a^3*e*cos_integral(2*a/b + 2*arcsin(d*x + c))/(b^7*d*arcsin(d*x
 + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b
^4*d) + 1/6*a*b^2*e/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2
+ 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d)
```

Mupad [**F**]

time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{c\,e+d\,e\,x}{{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)/(a + b*asin(c + d*x))^4,x)
[Out] int((c*e + d*e*x)/(a + b*asin(c + d*x))^4, x)
```

3.237 $\int \frac{1}{(a+b\text{ArcSin}(c+dx))^4} dx$

Optimal. Leaf size=164

$$-\frac{\sqrt{1-(c+dx)^2}}{3bd(a+b\text{ArcSin}(c+dx))^3}+\frac{c+dx}{6b^2d(a+b\text{ArcSin}(c+dx))^2}+\frac{\sqrt{1-(c+dx)^2}}{6b^3d(a+b\text{ArcSin}(c+dx))}-\frac{\text{CosIntegral}\left(\frac{a+b\text{Ar}}{}\right.}{6b}$$

```
[Out] 1/6*(d*x+c)/b^2/d/(a+b*arcsin(d*x+c))^2+1/6*cos(a/b)*Si((a+b*arcsin(d*x+c))
/b)/b^4/d-1/6*Ci((a+b*arcsin(d*x+c))/b)*sin(a/b)/b^4/d-1/3*(1-(d*x+c)^2)^(1
/2)/b/d/(a+b*arcsin(d*x+c))^3+1/6*(1-(d*x+c)^2)^(1/2)/b^3/d/(a+b*arcsin(d*x
+c))
```

Rubi [A]
time = 0.18, antiderivative size = 164, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.583$, Rules used = {4887, 4717, 4807, 4809, 3384, 3380, 3383}

$$-\frac{\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{6b^4d}+\frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{6b^4d}+\frac{\sqrt{1-(c+dx)^2}}{6b^3d(a+b\text{ArcSin}(c+dx))}+\frac{c+dx}{6b^2d(a+b\text{ArcSin}(c+dx))^2}-\frac{\sqrt{1-(c+dx)^2}}{3bd(a+b\text{ArcSin}(c+dx))^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(-4),x]
```

```
[Out] -1/3*Sqrt[1 - (c + d*x)^2]/(b*d*(a + b*ArcSin[c + d*x])^3) + (c + d*x)/(6*b
^2*d*(a + b*ArcSin[c + d*x])^2) + Sqrt[1 - (c + d*x)^2]/(6*b^3*d*(a + b*Arc
Sin[c + d*x])) - (CosIntegral[(a + b*ArcSin[c + d*x])/b]*Sin[a/b])/(6*b^4*d
) + (Cos[a/b]*SinIntegral[(a + b*ArcSin[c + d*x])/b])/(6*b^4*d)
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3384

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[c*(f/d) + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[c*(f/d) + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4717

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[Sqrt[1 - c^2
*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + Dist[c/(b*(n + 1)),
 Int[x*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4809

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[(1/(b*c^(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x
^2)^p], Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b]^(2*p + 1), x], x, a
 + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0]
&& IGtQ[2*p + 2, 0] && IGtQ[m, 0]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^4}\,dx = \frac{\text{Subst}\left(\int \frac{1}{(a+b\sin^{-1}(x))^4}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\,(a+b\sin^{-1}(x))^3}\,dx, x, c+dx\right)}{3bd}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{c+dx}{6b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} - \frac{\text{Subst}\left(\int \frac{1}{(a+b\sin^{-}}\right.}{6}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{c+dx}{6b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{\sqrt{1-(c+}}{6b^3d\left(a+b\sin^{-1}\right.}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{c+dx}{6b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{\sqrt{1-(c+}}{6b^3d\left(a+b\sin^{-1}\right.}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{c+dx}{6b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{\sqrt{1-(c+}}{6b^3d\left(a+b\sin^{-1}\right.}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{c+dx}{6b^2d\left(a+b\sin^{-1}(c+dx)\right)^2} + \frac{\sqrt{1-(c+}}{6b^3d\left(a+b\sin^{-1}\right.}$$

Mathematica [A]
time = 0.25, size = 134, normalized size = 0.82

$$\frac{-\frac{2b^3\sqrt{1-(c+dx)^2}}{(a+b\text{ArcSin}(c+dx))^3} + \frac{b^2(c+dx)}{(a+b\text{ArcSin}(c+dx))^2} + \frac{b\sqrt{1-(c+dx)^2}}{a+b\text{ArcSin}(c+dx)} - \text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)\sin\left(\frac{a}{b}\right) + \cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)}{6b^4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(-4),x]
```

```
[Out] ((-2*b^3*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*x])^3 + (b^2*(c + d*x))
/(a + b*ArcSin[c + d*x])^2 + (b*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*
x]) - CosIntegral[a/b + ArcSin[c + d*x]]*Sin[a/b] + Cos[a/b]*SinIntegral[a/
b + ArcSin[c + d*x]])/(6*b^4*d)
```

Maple [A]
time = 0.17, size = 270, normalized size = 1.65

method	result

derivativedivides	$-\frac{\sqrt{1-(dx+c)^2}}{3(a+b\arcsin(dx+c))^3 b}+\frac{\arcsin(dx+c)^2 \operatorname{sinIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)b^2-\arcsin(dx+c)^2 \operatorname{cosineIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right.}{}$
default	$-\frac{\sqrt{1-(dx+c)^2}}{3(a+b\arcsin(dx+c))^3 b}+\frac{\arcsin(dx+c)^2 \operatorname{sinIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)b^2-\arcsin(dx+c)^2 \operatorname{cosineIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c))^4,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(-1/3/(a+b*arcsin(d*x+c))^3/b*(1-(d*x+c)^2)^(1/2)+1/6*(arcsin(d*x+c)^2*
Si(arcsin(d*x+c)+a/b)*cos(a/b)*b^2-arcsin(d*x+c)^2*Ci(arcsin(d*x+c)+a/b)*si
n(a/b)*b^2+2*arcsin(d*x+c)*Si(arcsin(d*x+c)+a/b)*cos(a/b)*a*b-2*arcsin(d*x+
c)*Ci(arcsin(d*x+c)+a/b)*sin(a/b)*a*b+arcsin(d*x+c)*(1-(d*x+c)^2)^(1/2)*b^2
+Si(arcsin(d*x+c)+a/b)*cos(a/b)*a^2-Ci(arcsin(d*x+c)+a/b)*sin(a/b)*a^2+(1-(
d*x+c)^2)^(1/2)*a*b+(d*x+c)*b^2)/(a+b*arcsin(d*x+c))^2/b^4)
```

Maxima [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^4,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^4,x, algorithm="fricas")
```

```
[Out] integral(1/(b^4*arcsin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6*a^2*b^2*a
rcsin(d*x + c)^2 + 4*a^3*b*arcsin(d*x + c) + a^4), x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a+b\operatorname{asin}(c+dx))^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c))**4,x)
```

```
[Out] Integral((a + b*asin(c + d*x))**(-4), x)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 1112 vs. $2(150) = 300$.
time = 0.42, size = 1112, normalized size = 6.78

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^4,x, algorithm="giac")
```

```
[Out] -1/6*b^3*arcsin(d*x + c)^3*cos_integral(a/b + arcsin(d*x + c))*sin(a/b)/(b^
7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*
x + c) + a^3*b^4*d) + 1/6*b^3*arcsin(d*x + c)^3*cos(a/b)*sin_integral(a/b +
 arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 +
3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 1/2*a*b^2*arcsin(d*x + c)^2*cos_
integral(a/b + arcsin(d*x + c))*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6
*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/2*a*b^2
*arcsin(d*x + c)^2*cos(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^7*d*arcs
in(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) +
 a^3*b^4*d) - 1/2*a^2*b*arcsin(d*x + c)*cos_integral(a/b + arcsin(d*x + c))
*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^
5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/2*a^2*b*arcsin(d*x + c)*cos(a/b)*sin_i
ntegral(a/b + arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(
d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/6*sqrt(-(d*x + c)
^2 + 1)*b^3*arcsin(d*x + c)^2/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d
*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/6*(d*x + c)*b^3*ar
csin(d*x + c)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^
2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 1/6*a^3*cos_integral(a/b + arcsin(d*
x + c))*sin(a/b)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3
*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/6*a^3*cos(a/b)*sin_integral(a/b
 + arcsin(d*x + c))/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2
+ 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/3*sqrt(-(d*x + c)^2 + 1)*a*b
^2*arcsin(d*x + c)/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 +
 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) + 1/6*(d*x + c)*a*b^2/(b^7*d*arcs
in(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) +
 a^3*b^4*d) + 1/6*sqrt(-(d*x + c)^2 + 1)*a^2*b/(b^7*d*arcsin(d*x + c)^3 + 3
*a*b^6*d*arcsin(d*x + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d) - 1/3
*sqrt(-(d*x + c)^2 + 1)*b^3/(b^7*d*arcsin(d*x + c)^3 + 3*a*b^6*d*arcsin(d*x
 + c)^2 + 3*a^2*b^5*d*arcsin(d*x + c) + a^3*b^4*d)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(c + d*x))^4,x)
[Out] int(1/(a + b*asin(c + d*x))^4, x)
```

3.238 $\int \frac{1}{(ce+dex)(a+b\mathbf{ArcSin}(c+dx))^4}\,dx$

Optimal. Leaf size=27

$$\frac{\text{Int}\left(\frac{1}{(c+dx)(a+b\text{ArcSin}(c+dx))^4},x\right)}{e}$$

```
[Out] Unintegrable(1/(d*x+c)/(a+b*arcsin(d*x+c))^4,x)/e
```

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(ce+dex)(a+b\text{ArcSin}(c+dx))^4}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^4),x]
[Out] Defer[Subst][Defer[Int][1/(x*(a + b*ArcSin[x])^4), x], x, c + d*x]/(d*e)
```

Rubi steps

$$\begin{aligned}\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^4}\,dx &= \frac{\text{Subst}\left(\int \frac{1}{ex\left(a+b\sin^{-1}(x)\right)^4}\,dx,x,c+dx\right)}{d}\\ &= \frac{\text{Subst}\left(\int \frac{1}{x\left(a+b\sin^{-1}(x)\right)^4}\,dx,x,c+dx\right)}{de}\end{aligned}$$

Mathematica [A]
time = 4.12, size = 0, normalized size = 0.00

$$\int \frac{1}{(ce+dex)(a+b\text{ArcSin}(c+dx))^4}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^4),x]
[Out] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^4), x]
```

Maple [A]
time = 0.89, size = 0, normalized size = 0.00

$$\int \frac{1}{(dex+ce)\left(a+b\arcsin(dx+c)\right)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^4,x)
```

```
[Out] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^4,x)
```

Maxima [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^4,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^4,x, algorithm="fricas")
```

```
[Out] integral(1/((b^4*d*x + b^4*c)*arcsin(d*x + c)^4*e + 4*(a*b^3*d*x + a*b^3*c)
*arcsin(d*x + c)^3*e + 6*(a^2*b^2*d*x + a^2*b^2*c)*arcsin(d*x + c)^2*e + 4*
(a^3*b*d*x + a^3*b*c)*arcsin(d*x + c)*e + (a^4*d*x + a^4*c)*e), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{1}{a^4c+a^4dx+4a^3bc\operatorname{asin}(c+dx)+4a^3bdx\operatorname{asin}(c+dx)+6a^2b^2c\operatorname{asin}^2(c+dx)+6a^2b^2dx\operatorname{asin}^2(c+dx)+4ab^3c\operatorname{asin}^3(c+dx)+4ab^3dx\operatorname{asin}^3(c+dx)+b^4c\operatorname{asin}^4(c+dx)+b^4dx\operatorname{asin}^4(c+dx)}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*asin(d*x+c))**4,x)
```

```
[Out] Integral(1/(a**4*c + a**4*d*x + 4*a**3*b*c*asin(c + d*x) + 4*a**3*b*d*x*asi
n(c + d*x) + 6*a**2*b**2*c*asin(c + d*x)**2 + 6*a**2*b**2*d*x*asin(c + d*x)
**2 + 4*a*b**3*c*asin(c + d*x)**3 + 4*a*b**3*d*x*asin(c + d*x)**3 + b**4*c*
asin(c + d*x)**4 + b**4*d*x*asin(c + d*x)**4), x)/e
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^4,x, algorithm="giac")
```

```
[Out] integrate(1/((d*e*x + c*e)*(b*arcsin(d*x + c) + a)^4), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{(c\,e+d\,e\,x)\,\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((c*e + d*e*x)*(a + b*asin(c + d*x))^4),x)
```

```
[Out] int(1/((c*e + d*e*x)*(a + b*asin(c + d*x))^4), x)
```

3.239 $\int \frac{1}{(a+b\mathbf{ArcSin}(c+dx))^5}\,dx$

Optimal. Leaf size=191

$$-\frac{\sqrt{1-(c+dx)^2}}{4bd(a+b\text{ArcSin}(c+dx))^4}+\frac{c+dx}{12b^2d(a+b\text{ArcSin}(c+dx))^3}+\frac{\sqrt{1-(c+dx)^2}}{24b^3d(a+b\text{ArcSin}(c+dx))^2}-\frac{c+}{24b^4d(a+b\text{Ar}}$$

```
[Out] 1/12*(d*x+c)/b^2/d/(a+b*arcsin(d*x+c))^3+1/24*(-d*x-c)/b^4/d/(a+b*arcsin(d*
x+c))+1/24*Ci((a+b*arcsin(d*x+c))/b)*cos(a/b)/b^5/d+1/24*Si((a+b*arcsin(d*x
+c))/b)*sin(a/b)/b^5/d-1/4*(1-(d*x+c)^2)^(1/2)/b/d/(a+b*arcsin(d*x+c))^4+1/
24*(1-(d*x+c)^2)^(1/2)/b^3/d/(a+b*arcsin(d*x+c))^2
```

Rubi [A]
time = 0.20, antiderivative size = 191, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.583$, Rules used = {4887, 4717, 4807, 4719, 3384, 3380, 3383}

$$\frac{\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{24b^5d}+\frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\text{ArcSin}(c+dx)}{b}\right)}{24b^5d}-\frac{c+dx}{24b^4d(a+b\text{ArcSin}(c+dx))}+\frac{\sqrt{1-(c+dx)^2}}{24b^3d(a+b\text{ArcSin}(c+dx))^2}+\frac{c+dx}{12b^2d(a+b\text{ArcSin}(c+dx))^3}-\frac{\sqrt{1-(c+dx)^2}}{4bd(a+b\text{ArcSin}(c+dx))^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(-5),x]
```

```
[Out] -1/4*Sqrt[1 - (c + d*x)^2]/(b*d*(a + b*ArcSin[c + d*x])^4) + (c + d*x)/(12*
b^2*d*(a + b*ArcSin[c + d*x])^3) + Sqrt[1 - (c + d*x)^2]/(24*b^3*d*(a + b*A
rcSin[c + d*x])^2) - (c + d*x)/(24*b^4*d*(a + b*ArcSin[c + d*x])) + (Cos[a/
b]*CosIntegral[(a + b*ArcSin[c + d*x])/b])/(24*b^5*d) + (Sin[a/b]*SinIntegr
al[(a + b*ArcSin[c + d*x])/b])/(24*b^5*d)
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3384

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[c*(f/d) + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[c*(f/d) + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4717

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[Sqrt[1 - c^2
*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + Dist[c/(b*(n + 1)),
 Int[x*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4719

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[-a/b + x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c
, n}, x]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^5}\,dx = \frac{\text{Subst}\left(\int \frac{1}{(a+b\sin^{-1}(x))^5}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{4bd\left(a+b\sin^{-1}(c+dx)\right)^4} - \frac{\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\,(a+b\sin^{-1}(x))^4}\,dx, x, c+dx\right.}{4bd}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{4bd\left(a+b\sin^{-1}(c+dx)\right)^4} + \frac{c+dx}{12b^2d\left(a+b\sin^{-1}(c+dx)\right)^3} - \frac{\text{Subst}\left(\int \frac{}{(a+b}\right.}{}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{4bd\left(a+b\sin^{-1}(c+dx)\right)^4} + \frac{c+dx}{12b^2d\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{\sqrt{1-(c}}{24b^3d\,(a+b\,\mathrm{si}}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{4bd\left(a+b\sin^{-1}(c+dx)\right)^4} + \frac{c+dx}{12b^2d\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{\sqrt{1-(c}}{24b^3d\,(a+b\,\mathrm{si}}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{4bd\left(a+b\sin^{-1}(c+dx)\right)^4} + \frac{c+dx}{12b^2d\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{\sqrt{1-(c}}{24b^3d\,(a+b\,\mathrm{si}}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{4bd\left(a+b\sin^{-1}(c+dx)\right)^4} + \frac{c+dx}{12b^2d\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{\sqrt{1-(c}}{24b^3d\,(a+b\,\mathrm{si}}$$

$$= -\frac{\sqrt{1-(c+dx)^2}}{4bd\left(a+b\sin^{-1}(c+dx)\right)^4} + \frac{c+dx}{12b^2d\left(a+b\sin^{-1}(c+dx)\right)^3} + \frac{\sqrt{1-(c}}{24b^3d\,(a+b\,\mathrm{si}}$$

Mathematica [A]
time = 0.28, size = 156, normalized size = 0.82

$$\frac{-\frac{6b^4\sqrt{1-(c+dx)^2}}{(a+b\text{ArcSin}(c+dx))^4}+\frac{2b^3(c+dx)}{(a+b\text{ArcSin}(c+dx))^3}+\frac{b^2\sqrt{1-(c+dx)^2}}{(a+b\text{ArcSin}(c+dx))^2}-\frac{b(c+dx)}{a+b\text{ArcSin}(c+dx)}+\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)+\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{ArcSin}(c+dx)\right)}{24b^5d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(-5),x]
```

```
[Out] ((-6*b^4*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c + d*x])^4 + (2*b^3*(c + d*x
))/(a + b*ArcSin[c + d*x])^3 + (b^2*Sqrt[1 - (c + d*x)^2])/(a + b*ArcSin[c
+ d*x])^2 - (b*(c + d*x))/(a + b*ArcSin[c + d*x]) + Cos[a/b]*CosIntegral[a/
b + ArcSin[c + d*x]] + Sin[a/b]*SinIntegral[a/b + ArcSin[c + d*x]])/(24*b^5
*d)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 386 vs. 2(178) = 356.
time = 0.16, size = 387, normalized size = 2.03

method	result
derivativedivides	$-\frac{\sqrt{1-(dx+c)^2}}{4(a+b\arcsin(dx+c))^4 b}+\frac{\arcsin(dx+c)^3\,\mathrm{sinIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)b^3+\arcsin(dx+c)^3\,\mathrm{cosineIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)}{}$
default	$-\frac{\sqrt{1-(dx+c)^2}}{4(a+b\arcsin(dx+c))^4 b}+\frac{\arcsin(dx+c)^3\,\mathrm{sinIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)b^3+\arcsin(dx+c)^3\,\mathrm{cosineIntegral}\left(\arcsin(dx+c)+\frac{a}{b}\right)}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c))^5,x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*(-1/4/(a+b*arcsin(d*x+c))^4/b*(1-(d*x+c)^2)^(1/2)+1/24*(arcsin(d*x+c)^3
*Si(arcsin(d*x+c)+a/b)*sin(a/b)*b^3+arcsin(d*x+c)^3*Ci(arcsin(d*x+c)+a/b)*c
os(a/b)*b^3+3*arcsin(d*x+c)^2*Si(arcsin(d*x+c)+a/b)*sin(a/b)*a*b^2+3*arcsin
(d*x+c)^2*Ci(arcsin(d*x+c)+a/b)*cos(a/b)*a*b^2-arcsin(d*x+c)^2*b^3*(d*x+c)+
3*arcsin(d*x+c)*Si(arcsin(d*x+c)+a/b)*sin(a/b)*a^2*b+3*arcsin(d*x+c)*Ci(arc
sin(d*x+c)+a/b)*cos(a/b)*a^2*b+(1-(d*x+c)^2)^(1/2)*arcsin(d*x+c)*b^3-2*arcs
in(d*x+c)*a*b^2*(d*x+c)+Si(arcsin(d*x+c)+a/b)*sin(a/b)*a^3+Ci(arcsin(d*x+c)
+a/b)*cos(a/b)*a^3+(1-(d*x+c)^2)^(1/2)*a*b^2-a^2*b*(d*x+c)+2*(d*x+c)*b^3)/(
a+b*arcsin(d*x+c))^3/b^5)
```

Maxima [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^5,x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^5,x, algorithm="fricas")
```

```
[Out] integral(1/(b^5*arcsin(d*x + c)^5 + 5*a*b^4*arcsin(d*x + c)^4 + 10*a^2*b^3*
arcsin(d*x + c)^3 + 10*a^3*b^2*arcsin(d*x + c)^2 + 5*a^4*b*arcsin(d*x + c)
+ a^5), x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a+b\operatorname{asin}(c+dx))^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c))**5,x)
```

```
[Out] Integral((a + b*asin(c + d*x))**(-5), x)
```

Giac [**B**] Leaf count of result is larger than twice the leaf count of optimal. 1915 vs. $2(175) = 350$.
time = 0.43, size = 1915, normalized size = 10.03

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^5,x, algorithm="giac")
```

```
[Out] 1/24*b^4*arcsin(d*x + c)^4*cos(a/b)*cos_integral(a/b + arcsin(d*x + c))/(b^
9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6*a^2*b^7*d*arcsin(d*
x + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d) + 1/24*b^4*arcsin(d*x +
 c)^4*sin(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^9*d*arcsin(d*x + c)^4
 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6*a^2*b^7*d*arcsin(d*x + c)^2 + 4*a^3*b^6*
d*arcsin(d*x + c) + a^4*b^5*d) + 1/6*a*b^3*arcsin(d*x + c)^3*cos(a/b)*cos_i
ntegral(a/b + arcsin(d*x + c))/(b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(
d*x + c)^3 + 6*a^2*b^7*d*arcsin(d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) +
a^4*b^5*d) + 1/6*a*b^3*arcsin(d*x + c)^3*sin(a/b)*sin_integral(a/b + arcsin
(d*x + c))/(b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6*a^2*b
^7*d*arcsin(d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d) - 1/24*(d
*x + c)*b^4*arcsin(d*x + c)^3/(b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d
*x + c)^3 + 6*a^2*b^7*d*arcsin(d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a
^4*b^5*d) + 1/4*a^2*b^2*arcsin(d*x + c)^2*cos(a/b)*cos_integral(a/b + arcsi
n(d*x + c))/(b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6*a^2*
b^7*d*arcsin(d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d) + 1/4*a^
2*b^2*arcsin(d*x + c)^2*sin(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^9*d
*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6*a^2*b^7*d*arcsin(d*x +
 c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d) - 1/8*(d*x + c)*a*b^3*arcs
in(d*x + c)^2/(b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6*a^
2*b^7*d*arcsin(d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d) + 1/6*
a^3*b*arcsin(d*x + c)*cos(a/b)*cos_integral(a/b + arcsin(d*x + c))/(b^9*d*a
rcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6*a^2*b^7*d*arcsin(d*x + c
)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d) + 1/6*a^3*b*arcsin(d*x + c)*
sin(a/b)*sin_integral(a/b + arcsin(d*x + c))/(b^9*d*arcsin(d*x + c)^4 + 4*a
```

```
*b^8*d*arcsin(d*x + c)^3 + 6*a^2*b^7*d*arcsin(d*x + c)^2 + 4*a^3*b^6*d*arcs
in(d*x + c) + a^4*b^5*d) + 1/24*sqrt(-(d*x + c)^2 + 1)*b^4*arcsin(d*x + c)^
2/(b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6*a^2*b^7*d*arcs
in(d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d) - 1/8*(d*x + c)*a^
2*b^2*arcsin(d*x + c)/(b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^
3 + 6*a^2*b^7*d*arcsin(d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d
) + 1/12*(d*x + c)*b^4*arcsin(d*x + c)/(b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d
*arcsin(d*x + c)^3 + 6*a^2*b^7*d*arcsin(d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x
 + c) + a^4*b^5*d) + 1/24*a^4*cos(a/b)*cos_integral(a/b + arcsin(d*x + c))/
(b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6*a^2*b^7*d*arcsin
(d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d) + 1/24*a^4*sin(a/b)*
sin_integral(a/b + arcsin(d*x + c))/(b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*ar
csin(d*x + c)^3 + 6*a^2*b^7*d*arcsin(d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x +
c) + a^4*b^5*d) + 1/12*sqrt(-(d*x + c)^2 + 1)*a*b^3*arcsin(d*x + c)/(b^9*d*
arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6*a^2*b^7*d*arcsin(d*x +
c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d) - 1/24*(d*x + c)*a^3*b/(b^9
*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6*a^2*b^7*d*arcsin(d*x
 + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d) + 1/12*(d*x + c)*a*b^3/(
b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6*a^2*b^7*d*arcsin(
d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d) + 1/24*sqrt(-(d*x + c
)^2 + 1)*a^2*b^2/(b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d*x + c)^3 + 6
*a^2*b^7*d*arcsin(d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a^4*b^5*d) - 1
/4*sqrt(-(d*x + c)^2 + 1)*b^4/(b^9*d*arcsin(d*x + c)^4 + 4*a*b^8*d*arcsin(d
*x + c)^3 + 6*a^2*b^7*d*arcsin(d*x + c)^2 + 4*a^3*b^6*d*arcsin(d*x + c) + a
^4*b^5*d)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{(a+b\,\mathrm{asin}\,(c+d\,x))^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(c + d*x))^5,x)
```

```
[Out] int(1/(a + b*asin(c + d*x))^5, x)
```

3.240 $\int (ce+dex)^3 \sqrt{a+b\text{ArcSin}(c+dx)}\,dx$

Optimal. Leaf size=288

$$-\frac{3e^3\sqrt{a+b\text{ArcSin}(c+dx)}}{32d}+\frac{e^3(c+dx)^4\sqrt{a+b\text{ArcSin}(c+dx)}}{4d}-\frac{\sqrt{b}\,e^3\sqrt{\frac{\pi}{2}}\cos\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}}{\cdots}\right)}{64d}$$

```
[Out] -1/128*e^3*cos(4*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)
/b^(1/2))*b^(1/2)*2^(1/2)*Pi^(1/2)/d-1/128*e^3*FresnelS(2*2^(1/2)/Pi^(1/2)*
(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(4*a/b)*b^(1/2)*2^(1/2)*Pi^(1/2)/d+1/
16*e^3*cos(2*a/b)*FresnelC(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*b^
(1/2)*Pi^(1/2)/d+1/16*e^3*FresnelS(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(
1/2))*sin(2*a/b)*b^(1/2)*Pi^(1/2)/d-3/32*e^3*(a+b*arcsin(d*x+c))^(1/2)/d+1/
4*e^3*(d*x+c)^4*(a+b*arcsin(d*x+c))^(1/2)/d
```

Rubi [A]
time = 0.43, antiderivative size = 288, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$, Rules used = {4889, 12, 4725, 4809, 3393, 3387, 3386, 3432, 3385, 3433}

$$-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,e^3\cos\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{64d}+\frac{\sqrt{\pi}\sqrt{b}\,e^3\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{16d}+\frac{\sqrt{\pi}\sqrt{b}\,e^3\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{16d}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,e^3\sin\left(\frac{4a}{b}\right)S\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{64d}+\frac{e^3(c+dx)^4\sqrt{a+b\text{ArcSin}(c+dx)}}{4d}-\frac{3e^3\sqrt{a+b\text{ArcSin}(c+dx)}}{32d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3*Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (-3*e^3*Sqrt[a + b*ArcSin[c + d*x]])/(32*d) + (e^3*(c + d*x)^4*Sqrt[a + b*A
rcSin[c + d*x]])/(4*d) - (Sqrt[b]*e^3*Sqrt[Pi/2]*Cos[(4*a)/b]*FresnelC[(2*S
qrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(64*d) + (Sqrt[b]*e^3*Sqrt
[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi
])])/(16*d) + (Sqrt[b]*e^3*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]]
)/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(16*d) - (Sqrt[b]*e^3*Sqrt[Pi/2]*Fresne
lS[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(4*a)/b])/(64*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
```

```
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3393

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4725

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^(m + 1)*((a + b*ArcSin[c*x])^n/(m + 1)), x] - Dist[b*c*(n/(m + 1)), Int[x^
(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4809

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[(1/(b*c^(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x
^2)^p], Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b]^(2*p + 1), x], x, a
 + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0]
&& IGtQ[2*p + 2, 0] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)^3\sqrt{a+b\sin^{-1}(c+dx)}\,dx = \frac{\text{Subst}\left(\int e^3x^3\sqrt{a+b\sin^{-1}(x)}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e^3\text{Subst}\left(\int x^3\sqrt{a+b\sin^{-1}(x)}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e^3(c+dx)^4\sqrt{a+b\sin^{-1}(c+dx)}}{4d} - \frac{(be^3)\,\text{Subst}\left(\int \frac{}{\sqrt{1-x^2}\sqrt{}}\right.}{}$$

$$= \frac{e^3(c+dx)^4\sqrt{a+b\sin^{-1}(c+dx)}}{4d} - \frac{(be^3)\,\text{Subst}\left(\int \frac{\sin^4(x)}{\sqrt{a+bx}}\,dx\right.}{8d}$$

$$= \frac{e^3(c+dx)^4\sqrt{a+b\sin^{-1}(c+dx)}}{4d} - \frac{(be^3)\,\text{Subst}\left(\int \left(\frac{3}{8\sqrt{a+bx}}\right.\right.}{}$$

$$= -\frac{3e^3\sqrt{a+b\sin^{-1}(c+dx)}}{32d} + \frac{e^3(c+dx)^4\sqrt{a+b\sin^{-1}(c+dx)}}{4d}$$

$$= -\frac{3e^3\sqrt{a+b\sin^{-1}(c+dx)}}{32d} + \frac{e^3(c+dx)^4\sqrt{a+b\sin^{-1}(c+dx)}}{4d}$$

$$= -\frac{3e^3\sqrt{a+b\sin^{-1}(c+dx)}}{32d} + \frac{e^3(c+dx)^4\sqrt{a+b\sin^{-1}(c+dx)}}{4d}$$

$$= -\frac{3e^3\sqrt{a+b\sin^{-1}(c+dx)}}{32d} + \frac{e^3(c+dx)^4\sqrt{a+b\sin^{-1}(c+dx)}}{4d}$$

Mathematica [C] Result contains complex when optimal does not.

time = 0.13, size = 269, normalized size = 0.93

$$\frac{e^3 e^{-\frac{4ia}{b}} \sqrt{a+b\text{ArcSin}(c+dx)} \left(-4\sqrt{2}\, e^{\frac{2ia}{b}} \sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\, \text{Gamma}\left(\frac{3}{2}, -\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right) - 4\sqrt{2}\, e^{\frac{6ia}{b}} \sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\, \text{Gamma}\left(\frac{3}{2}, \frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right) + \sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\, \text{Gamma}\left(\frac{3}{2}, -\frac{4i(a+b\text{ArcSin}(c+dx))}{b}\right) + e^{\frac{8ia}{b}} \sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\, \text{Gamma}\left(\frac{3}{2}, \frac{4i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)}{128d\sqrt{\frac{(a+b\text{ArcSin}(c+dx))^2}{b^2}}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^3*Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (e^3*Sqrt[a + b*ArcSin[c + d*x]]*(-4*Sqrt[2]*E^(((2*I)*a)/b)*Sqrt[(I*(a + b
*ArcSin[c + d*x]))/b]*Gamma[3/2, ((-2*I)*(a + b*ArcSin[c + d*x]))/b] - 4*Sq
rt[2]*E^(((6*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((2
*I)*(a + b*ArcSin[c + d*x]))/b] + Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma
[3/2, ((-4*I)*(a + b*ArcSin[c + d*x]))/b] + E^(((8*I)*a)/b)*Sqrt[((-I)*(a +
 b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((4*I)*(a + b*ArcSin[c + d*x]))/b]))/(12
8*d*E^(((4*I)*a)/b)*Sqrt[(a + b*ArcSin[c + d*x])^2/b^2])
```

Maple [A]
time = 0.56, size = 401, normalized size = 1.39

method	result
default	$\frac{e^3\left(-\sqrt{2}\,\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,\sqrt{a+b\arcsin\left(dx+c\right)}\,\cos\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)b+\sqrt{2}\,\sqrt{}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^(1/2),x,method=_RETURNVERBOSE)
```

```
[Out] 1/128/d*e^3/(a+b*arcsin(d*x+c))^(1/2)*(-2^(1/2)*Pi^(1/2)*(-1/b)^(1/2)*(a+b*
arcsin(d*x+c))^(1/2)*cos(4*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a
+b*arcsin(d*x+c))^(1/2)/b)*b+2^(1/2)*Pi^(1/2)*(-1/b)^(1/2)*(a+b*arcsin(d*x+
c))^(1/2)*sin(4*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d
*x+c))^(1/2)/b)*b-4*(a+b*arcsin(d*x+c))^(1/2)*(-2/b)^(1/2)*Pi^(1/2)*2^(1/2)
*sin(2*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1
/2)/b)*b+4*(a+b*arcsin(d*x+c))^(1/2)*(-2/b)^(1/2)*Pi^(1/2)*2^(1/2)*cos(2*a/
b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b+
4*arcsin(d*x+c)*cos(-4*(a+b*arcsin(d*x+c))/b+4*a/b)*b+4*cos(-4*(a+b*arcsin(
d*x+c))/b+4*a/b)*a-16*arcsin(d*x+c)*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*b-1
6*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)^3*sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$e^{3}\left(\int c^{3}\sqrt{a+b\operatorname{asin}{\left(c+dx\right)}}\,dx+\int d^{3}x^{3}\sqrt{a+b\operatorname{asin}{\left(c+dx\right)}}\,dx+\int 3cd^{2}x^{2}\sqrt{a+b\operatorname{asin}{\left(c+dx\right)}}\,dx+\int 3c^{2}dx\sqrt{a+b\operatorname{asin}{\left(c+dx\right)}}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3*(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] e**3*(Integral(c**3*sqrt(a + b*asin(c + d*x)), x) + Integral(d**3*x**3*sqrt
(a + b*asin(c + d*x)), x) + Integral(3*c*d**2*x**2*sqrt(a + b*asin(c + d*x)
), x) + Integral(3*c**2*d*x*sqrt(a + b*asin(c + d*x)), x))
```

Giac [**C**] Result contains complex when optimal does not.
time = 1.23, size = 1088, normalized size = 3.78

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] 1/16*I*sqrt(pi)*a*b*e^3*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) +
I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-4*I*a/b)/((sqrt(2
)*b^(3/2) - I*sqrt(2)*b^(5/2)/abs(b))*d) + 1/128*sqrt(pi)*b^2*e^3*erf(-sqrt
(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(2)*sqrt(b*arcsin(d*x + c)
+ a)*sqrt(b)/abs(b))*e^(-4*I*a/b)/((sqrt(2)*b^(3/2) - I*sqrt(2)*b^(5/2)/abs
(b))*d) - 1/16*I*sqrt(pi)*a*sqrt(b)*e^3*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c)
 + a)/sqrt(b) - I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(4*
I*a/b)/((sqrt(2)*b + I*sqrt(2)*b^2/abs(b))*d) + 1/128*sqrt(pi)*b^(3/2)*e^3*
erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(2)*sqrt(b*arcsin(
d*x + c) + a)*sqrt(b)/abs(b))*e^(4*I*a/b)/((sqrt(2)*b + I*sqrt(2)*b^2/abs(b
))*d) + 1/8*I*sqrt(pi)*a*sqrt(b)*e^3*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(
```

```
b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/((b + I*b^2/
abs(b))*d) - 1/32*sqrt(pi)*b^(3/2)*e^3*erf(-sqrt(b*arcsin(d*x + c) + a)/sqr
t(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/((b + I*b^
2/abs(b))*d) - 1/8*I*sqrt(pi)*a*sqrt(b)*e^3*erf(-sqrt(b*arcsin(d*x + c) + a
)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/((b
- I*b^2/abs(b))*d) - 1/32*sqrt(pi)*b^(3/2)*e^3*erf(-sqrt(b*arcsin(d*x + c)
+ a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(
(b - I*b^2/abs(b))*d) + 1/16*I*sqrt(pi)*a*e^3*erf(-sqrt(2)*sqrt(b*arcsin(d*
x + c) + a)/sqrt(b) - I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))
*e^(4*I*a/b)/((sqrt(2)*sqrt(b) + I*sqrt(2)*b^(3/2)/abs(b))*d) + 1/8*I*sqrt(
pi)*a*e^3*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x +
c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(d*(sqrt(b) - I*b^(3/2)/abs(b))) - 1/1
6*I*sqrt(pi)*a*e^3*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqr
t(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-4*I*a/b)/((sqrt(2)*sqr
t(b) - I*sqrt(2)*b^(3/2)/abs(b))*d) - 1/8*I*sqrt(pi)*a*e^3*erf(-sqrt(b*arcs
in(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^
(2*I*a/b)/(sqrt(b)*d*(I*b/abs(b) + 1)) + 1/64*sqrt(b*arcsin(d*x + c) + a)*e
^3*e^(4*I*arcsin(d*x + c))/d - 1/16*sqrt(b*arcsin(d*x + c) + a)*e^3*e^(2*I*
arcsin(d*x + c))/d - 1/16*sqrt(b*arcsin(d*x + c) + a)*e^3*e^(-2*I*arcsin(d*
x + c))/d + 1/64*sqrt(b*arcsin(d*x + c) + a)*e^3*e^(-4*I*arcsin(d*x + c))/d
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (c\,e+d\,e\,x)^3\,\sqrt{a+b\,\mathrm{asin}\,(c+d\,x)}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^3*(a + b*asin(c + d*x))^(1/2),x)
[Out] int((c*e + d*e*x)^3*(a + b*asin(c + d*x))^(1/2), x)
```

3.241 $\int (ce+dex)^2 \sqrt{a+b\text{ArcSin}(c+dx)}\,dx$

Optimal. Leaf size=274

$$\frac{e^2(c+dx)^3\sqrt{a+b\text{ArcSin}(c+dx)}}{3d}-\frac{\sqrt{b}\,e^2\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{4d}+\frac{\sqrt{b}\,e^2\sqrt{\frac{\pi}{6}}\ \text{c}$$

```
[Out] 1/72*e^2*cos(3*a/b)*FresnelS(6^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(
1/2))*b^(1/2)*6^(1/2)*Pi^(1/2)/d-1/72*e^2*FresnelC(6^(1/2)/Pi^(1/2)*(a+b*ar
csin(d*x+c))^(1/2)/b^(1/2))*sin(3*a/b)*b^(1/2)*6^(1/2)*Pi^(1/2)/d-1/8*e^2*c
os(a/b)*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*b^(1/2
)*2^(1/2)*Pi^(1/2)/d+1/8*e^2*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^
(1/2)/b^(1/2))*sin(a/b)*b^(1/2)*2^(1/2)*Pi^(1/2)/d+1/3*e^2*(d*x+c)^3*(a+b*a
rcsin(d*x+c))^(1/2)/d
```

Rubi [A]
time = 0.50, antiderivative size = 274, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$, Rules used = {4889, 12, 4725, 4809, 3393, 3387, 3386, 3432, 3385, 3433}

$$\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,e^2\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{4d}-\frac{\sqrt{\frac{\pi}{6}}\sqrt{b}\,e^2\sin\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{12d}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,e^2\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{4d}+\frac{\sqrt{\frac{\pi}{6}}\sqrt{b}\,e^2\cos\left(\frac{3a}{b}\right)S\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{12d}+\frac{e^2(c+dx)^3\sqrt{a+b\text{ArcSin}(c+dx)}}{3d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2*Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (e^2*(c + d*x)^3*Sqrt[a + b*ArcSin[c + d*x]])/(3*d) - (Sqrt[b]*e^2*Sqrt[Pi/
2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(4*
d) + (Sqrt[b]*e^2*Sqrt[Pi/6]*Cos[(3*a)/b]*FresnelS[(Sqrt[6/Pi]*Sqrt[a + b*A
rcSin[c + d*x]])/Sqrt[b]])/(12*d) + (Sqrt[b]*e^2*Sqrt[Pi/2]*FresnelC[(Sqrt[
2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(4*d) - (Sqrt[b]*e^2*
Sqrt[Pi/6]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(
3*a)/b])/(12*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
```

```
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3393

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4725

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^(m + 1)*((a + b*ArcSin[c*x])^n/(m + 1)), x] - Dist[b*c*(n/(m + 1)), Int[x^
(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4809

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[(1/(b*c^(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x
^2)^p], Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b]^(2*p + 1), x], x, a
 + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0]
&& IGtQ[2*p + 2, 0] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)^2\sqrt{a+b\sin^{-1}(c+dx)}\,dx = \frac{\text{Subst}\left(\int e^2x^2\sqrt{a+b\sin^{-1}(x)}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e^2\text{Subst}\left(\int x^2\sqrt{a+b\sin^{-1}(x)}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e^2(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{3d} - \frac{(be^2)\,\text{Subst}\left(\int \frac{}{\sqrt{1-x^2}\sqrt{}}\right.}{}$$

$$= \frac{e^2(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{3d} - \frac{(be^2)\,\text{Subst}\left(\int \frac{\sin^3(x)}{\sqrt{a+bx}}\,dx\right.}{6d}$$

$$= \frac{e^2(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{3d} - \frac{(be^2)\,\text{Subst}\left(\int \left(\frac{3\sin(x)}{4\sqrt{a+bx}}\right.\right.}{}$$

$$= \frac{e^2(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{3d} + \frac{(be^2)\,\text{Subst}\left(\int \frac{\sin(3x)}{\sqrt{a+bx}}\,dx\right.}{24d}$$

$$= \frac{e^2(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{3d} - \frac{\left(be^2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin(}{\sqrt{a}}\right.}{8}$$

$$= \frac{e^2(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{3d} - \frac{\left(e^2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \sin\left(\right.\right.}{}$$

$$= \frac{e^2(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{3d} - \frac{\sqrt{b}\,e^2\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}}{}\right.}{4a}$$

Mathematica [C] Result contains complex when optimal does not.

time = 0.19, size = 269, normalized size = 0.98

$$-\frac{ie^2e^{-\frac{3ia}{b}}\sqrt{a+b\text{ArcSin}(c+dx)}\left(9e^{\frac{2ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\text{Gamma}\left(\frac{3}{2},-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)-9e^{\frac{4ia}{b}}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\text{Gamma}\left(\frac{3}{2},\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)+\sqrt{3}\left(-\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\text{Gamma}\left(\frac{3}{2},-\frac{3i(a+b\text{ArcSin}(c+dx))}{b}\right)+e^{\frac{6ia}{b}}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\text{Gamma}\left(\frac{3}{2},\frac{3i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)\right)}{72d\sqrt{\frac{(a+b\text{ArcSin}(c+dx))^2}{b^2}}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^2*Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] ((-1/72*I)*e^2*Sqrt[a + b*ArcSin[c + d*x]]*(9*E^(((2*I)*a)/b)*Sqrt[(I*(a +
b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((-I)*(a + b*ArcSin[c + d*x]))/b] - 9*E^(
((4*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, (I*(a + b*Ar
cSin[c + d*x]))/b] + Sqrt[3]*(-(Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[3
/2, ((-3*I)*(a + b*ArcSin[c + d*x]))/b]) + E^(((6*I)*a)/b)*Sqrt[((-I)*(a +
b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((3*I)*(a + b*ArcSin[c + d*x]))/b])))/(d*
E^(((3*I)*a)/b)*Sqrt[(a + b*ArcSin[c + d*x])^2/b^2])
```

Maple [A]
time = 0.51, size = 394, normalized size = 1.44

method	result
default	$-\frac{e^2\left(-9\sqrt{2}\,\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,\sqrt{a+b\arcsin\left(dx+c\right)}\,\cos\left(\frac{a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)b-9\sqrt{2}\,\sqrt{\pi}\,\cdots\right.}{\cdots}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(1/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/72/d*e^2/(a+b*arcsin(d*x+c))^(1/2)*(-9*2^(1/2)*Pi^(1/2)*(-1/b)^(1/2)*(a+
b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b
*arcsin(d*x+c))^(1/2)/b)*b-9*2^(1/2)*Pi^(1/2)*(-1/b)^(1/2)*(a+b*arcsin(d*x+
c))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c
))^(1/2)/b)*b+cos(3*a/b)*FresnelS(3*2^(1/2)/Pi^(1/2)/(-3/b)^(1/2)*(a+b*arcs
in(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+c))^(1/2)*2^(1/2)*Pi^(1/2)*(-3/b)^(1/2)
*b+2^(1/2)*Pi^(1/2)*(-3/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(3*a/b)*Fresn
elC(3*2^(1/2)/Pi^(1/2)/(-3/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b+18*sin(-
(a+b*arcsin(d*x+c))/b+a/b)*arcsin(d*x+c)*b+18*sin(-(a+b*arcsin(d*x+c))/b+a/
b)*a-6*sin(-3*(a+b*arcsin(d*x+c))/b+3*a/b)*arcsin(d*x+c)*b-6*sin(-3*(a+b*ar
csin(d*x+c))/b+3*a/b)*a)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)^2*sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$e^{2}\left(\int c^{2}\sqrt{a+b\operatorname{asin}\left(c+dx\right)}\,dx+\int d^{2}x^{2}\sqrt{a+b\operatorname{asin}\left(c+dx\right)}\,dx+\int 2cdx\sqrt{a+b\operatorname{asin}\left(c+dx\right)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2*(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] e**2*(Integral(c**2*sqrt(a + b*asin(c + d*x)), x) + Integral(d**2*x**2*sqrt
(a + b*asin(c + d*x)), x) + Integral(2*c*d*x*sqrt(a + b*asin(c + d*x)), x))
```

Giac [**C**] Result contains complex when optimal does not.
time = 1.28, size = 1169, normalized size = 4.27

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] 1/8*sqrt(2)*sqrt(pi)*a*b*e^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)
/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(
I*a/b)/((I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*d) + 1/16*I*sqrt(2)*sqrt(pi)*
b^2*e^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*s
qrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^2/sqrt(a
bs(b)) + b*sqrt(abs(b)))*d) + 1/8*sqrt(2)*sqrt(pi)*a*b*e^2*erf(1/2*I*sqrt(2
)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x
+ c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b))
)*d) - 1/16*I*sqrt(2)*sqrt(pi)*b^2*e^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x
+ c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b
))/b)*e^(-I*a/b)/((-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*d) - 1/4*sqrt(pi)*
a*sqrt(b)*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - 1/2*I*
```

```
sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(3*I*a/b)/((sqrt(6)*b
 + I*sqrt(6)*b^2/abs(b))*d) - 1/24*I*sqrt(pi)*b^(3/2)*e^2*erf(-1/2*sqrt(6)*
sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c)
+ a)*sqrt(b)/abs(b))*e^(3*I*a/b)/((sqrt(6)*b + I*sqrt(6)*b^2/abs(b))*d) - 1
/4*sqrt(pi)*a*sqrt(b)*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt
(b) + 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-3*I*a/b
)/((sqrt(6)*b - I*sqrt(6)*b^2/abs(b))*d) + 1/24*I*sqrt(pi)*b^(3/2)*e^2*erf(
-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b*arc
sin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-3*I*a/b)/((sqrt(6)*b - I*sqrt(6)*b^2/
abs(b))*d) + 1/4*sqrt(pi)*a*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a
)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(3*
I*a/b)/((sqrt(6)*sqrt(b) + I*sqrt(6)*b^(3/2)/abs(b))*d) - 1/4*sqrt(pi)*a*e^
2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)
*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(d*(I*sqrt(2)*b/sqrt
(abs(b)) + sqrt(2)*sqrt(abs(b)))) - 1/4*sqrt(pi)*a*e^2*erf(1/2*I*sqrt(2)*sq
rt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c)
 + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(d*(-I*sqrt(2)*b/sqrt(abs(b)) + sqrt(2)*sq
rt(abs(b)))) + 1/4*sqrt(pi)*a*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) +
 a)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(
-3*I*a/b)/((sqrt(6)*sqrt(b) - I*sqrt(6)*b^(3/2)/abs(b))*d) + 1/24*I*sqrt(b*
arcsin(d*x + c) + a)*e^2*e^(3*I*arcsin(d*x + c))/d - 1/8*I*sqrt(b*arcsin(d*
x + c) + a)*e^2*e^(I*arcsin(d*x + c))/d + 1/8*I*sqrt(b*arcsin(d*x + c) + a)
*e^2*e^(-I*arcsin(d*x + c))/d - 1/24*I*sqrt(b*arcsin(d*x + c) + a)*e^2*e^(-
3*I*arcsin(d*x + c))/d
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int (c\,e+d\,e\,x)^2\,\sqrt{a+b\,\mathrm{asin}\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^2*(a + b*asin(c + d*x))^(1/2),x)
[Out] int((c*e + d*e*x)^2*(a + b*asin(c + d*x))^(1/2), x)
```

3.242 $\int (ce+dex)\sqrt{a+b\mathbf{ArcSin}(c+dx)}\,dx$

Optimal. Leaf size=156

$$-\frac{e\sqrt{a+b\text{ArcSin}(c+dx)}}{4d}+\frac{e(c+dx)^2\sqrt{a+b\text{ArcSin}(c+dx)}}{2d}+\frac{\sqrt{b}\,e\sqrt{\pi}\,\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}}}{\sqrt{b}}\right.}{8d}$$

```
[Out] 1/8*e*cos(2*a/b)*FresnelC(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*b^(
1/2)*Pi^(1/2)/d+1/8*e*FresnelS(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2)
)*sin(2*a/b)*b^(1/2)*Pi^(1/2)/d-1/4*e*(a+b*arcsin(d*x+c))^(1/2)/d+1/2*e*(d*
x+c)^2*(a+b*arcsin(d*x+c))^(1/2)/d
```

Rubi [A]

time = 0.26, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 10, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.435$, Rules used = {4889, 12, 4725, 4809, 3393, 3387, 3386, 3432, 3385, 3433}

$$\frac{\sqrt{\pi}\sqrt{b}\,e\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{8d}+\frac{\sqrt{\pi}\sqrt{b}\,e\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{8d}+\frac{e(c+dx)^2\sqrt{a+b\text{ArcSin}(c+dx)}}{2d}-\frac{e\sqrt{a+b\text{ArcSin}(c+dx)}}{4d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)*Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] -1/4*(e*Sqrt[a + b*ArcSin[c + d*x]])/d + (e*(c + d*x)^2*Sqrt[a + b*ArcSin[c
 + d*x]])/(2*d) + (Sqrt[b]*e*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*A
rcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(8*d) + (Sqrt[b]*e*Sqrt[Pi]*FresnelS[
(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(8*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3393

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4725

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^(m + 1)*((a + b*ArcSin[c*x])^n/(m + 1)), x] - Dist[b*c*(n/(m + 1)), Int[x^
(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4809

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[(1/(b*c^(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x
^2)^p], Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b]^(2*p + 1), x], x, a
 + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0]
&& IGtQ[2*p + 2, 0] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)\sqrt{a+b\sin^{-1}(c+dx)}\,dx = \frac{\text{Subst}\left(\int ex\sqrt{a+b\sin^{-1}(x)}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e\text{Subst}\left(\int x\sqrt{a+b\sin^{-1}(x)}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{2d} - \frac{(be)\text{Subst}\left(\int \frac{x^2}{\sqrt{1-x^2}\sqrt{a+ \cdots}} \cdots\right.}{4d}$$

$$= \frac{e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{2d} - \frac{(be)\text{Subst}\left(\int \frac{\sin^2(x)}{\sqrt{a+bx}}\,dx,x, \cdots\right.}{4d}$$

$$= \frac{e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{2d} - \frac{(be)\text{Subst}\left(\int \left(\frac{1}{2\sqrt{a+bx}} - \cdots\right.\right.}{\cdots}$$

$$= -\frac{e\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{2d} + \cdots$$

$$= -\frac{e\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{2d} + \cdots$$

$$= -\frac{e\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{2d} + \cdots$$

$$= -\frac{e\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{2d} + \cdots$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.06, size = 154, normalized size = 0.99

$$-\frac{ee^{-\frac{2ia}{b}}\sqrt{a+b\text{ArcSin}(c+dx)}\left(\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{3}{2},-\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)+e^{\frac{4ia}{b}}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{3}{2},\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)}{8\sqrt{2}\,d\sqrt{\frac{(a+b\text{ArcSin}(c+dx))^2}{b^2}}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)*Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] -1/8*(e*Sqrt[a + b*ArcSin[c + d*x]]*(Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Ga
mma[3/2, ((-2*I)*(a + b*ArcSin[c + d*x]))/b] + E^(((4*I)*a)/b)*Sqrt[((-I)*(
```

```
a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((2*I)*(a + b*ArcSin[c + d*x]))/b]))/
(Sqrt[2]*d*E^(((2*I)*a)/b)*Sqrt[(a + b*ArcSin[c + d*x])^2/b^2])
```

Maple [A]
time = 0.24, size = 209, normalized size = 1.34

method	result
default	$-\frac{e\left(-\sqrt{a+b\arcsin\left(dx+c\right)}\,\sqrt{-\frac{2}{b}}\,\sqrt{\pi}\,\sqrt{2}\,\cos\left(\frac{2a}{b}\right)\mathrm{FresnelC}\left(\frac{2\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{2}{b}}\,b}\right)b+\sqrt{a\cdots}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(1/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/16/d*e/(a+b*arcsin(d*x+c))^(1/2)*(-(a+b*arcsin(d*x+c))^(1/2)*(-2/b)^(1/2
)*Pi^(1/2)*2^(1/2)*cos(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b
*arcsin(d*x+c))^(1/2)/b)*b+(a+b*arcsin(d*x+c))^(1/2)*(-2/b)^(1/2)*Pi^(1/2)*
2^(1/2)*sin(2*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x
+c))^(1/2)/b)*b+4*arcsin(d*x+c)*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*b+4*cos
(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)*sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e\left(\int c\sqrt{a+b\operatorname{asin}\left(c+dx\right)}\,dx+\int dx\sqrt{a+b\operatorname{asin}\left(c+dx\right)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] e*(Integral(c*sqrt(a + b*asin(c + d*x)), x) + Integral(d*x*sqrt(a + b*asin(
c + d*x)), x))
```

Giac [C] Result contains complex when optimal does not.
time = 1.10, size = 488, normalized size = 3.13

$$\frac{i\sqrt{\pi}a\sqrt{b}e\operatorname{erf}\left(-\frac{\sqrt{b\arcsin\left(dx+c\right)+a}}{\sqrt{b}}-\frac{i\sqrt{b\arcsin\left(dx+c\right)+a}\sqrt{b}}{|b|}\right)e^{\left(\frac{2ia}{b}\right)}}{4\left(b+\frac{ib^2}{|b|}\right)d}-\frac{\sqrt{\pi}b^{\frac{3}{2}}e\operatorname{erf}\left(-\frac{\sqrt{b\arcsin\left(dx+c\right)+a}}{\sqrt{b}}-\frac{i\sqrt{b\arcsin\left(dx+c\right)+a}\sqrt{b}}{|b|}\right)e^{\left(\frac{2ia}{b}\right)}}{16\left(b+\frac{ib^2}{|b|}\right)d}-\frac{i\sqrt{\pi}a\sqrt{b}e\operatorname{erf}\left(-\frac{\sqrt{b\arcsin\left(dx+c\right)+a}}{\sqrt{b}}+\frac{i\sqrt{b\arcsin\left(dx+c\right)+a}\sqrt{b}}{|b|}\right)e^{\left(-\frac{2ia}{b}\right)}}{4\left(b-\frac{ib^2}{|b|}\right)d}-\frac{\sqrt{\pi}b^{\frac{3}{2}}e\operatorname{erf}\left(-\frac{\sqrt{b\arcsin\left(dx+c\right)+a}}{\sqrt{b}}+\frac{i\sqrt{b\arcsin\left(dx+c\right)+a}\sqrt{b}}{|b|}\right)e^{\left(-\frac{2ia}{b}\right)}}{16\left(b-\frac{ib^2}{|b|}\right)d}+\frac{i\sqrt{\pi}ae\operatorname{erf}\left(-\frac{\sqrt{b\arcsin\left(dx+c\right)+a}}{\sqrt{b}}+\frac{i\sqrt{b\arcsin\left(dx+c\right)+a}\sqrt{b}}{|b|}\right)e^{\left(-\frac{2ia}{b}\right)}}{4d\left(\sqrt{b}-\frac{ib^{\frac{3}{2}}}{|b|}\right)}-\frac{i\sqrt{\pi}ae\operatorname{erf}\left(-\frac{\sqrt{b\arcsin\left(dx+c\right)+a}}{\sqrt{b}}-\frac{i\sqrt{b\arcsin\left(dx+c\right)+a}\sqrt{b}}{|b|}\right)e^{\left(\frac{2ia}{b}\right)}}{4\sqrt{b}d\left(\frac{ib}{|b|}+1\right)}-\frac{\sqrt{b\arcsin\left(dx+c\right)+a}ee^{\left(2i\arcsin\left(dx+c\right)\right)}}{8d}-\frac{\sqrt{b\arcsin\left(dx+c\right)+a}ee^{\left(-2i\arcsin\left(dx+c\right)\right)}}{8d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*I*sqrt(pi)*a*sqrt(b)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqr
t(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/((b + I*b^2/abs(b))*d)
 - 1/16*sqrt(pi)*b^(3/2)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqr
t(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/((b + I*b^2/abs(b))*d)
 - 1/4*I*sqrt(pi)*a*sqrt(b)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*
sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/((b - I*b^2/abs(b)
)*d) - 1/16*sqrt(pi)*b^(3/2)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I
*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/((b - I*b^2/abs(b
))*d) + 1/4*I*sqrt(pi)*a*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqr
t(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(d*(sqrt(b) - I*b^(3/
2)/abs(b))) - 1/4*I*sqrt(pi)*a*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) -
 I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/(sqrt(b)*d*(I*b/
abs(b) + 1)) - 1/8*sqrt(b*arcsin(d*x + c) + a)*e*e^(2*I*arcsin(d*x + c))/d
- 1/8*sqrt(b*arcsin(d*x + c) + a)*e*e^(-2*I*arcsin(d*x + c))/d
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int (c\,e+d\,e\,x)\,\sqrt{a+b\,\mathrm{asin}\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)*(a + b*asin(c + d*x))^(1/2),x)
```

```
[Out] int((c*e + d*e*x)*(a + b*asin(c + d*x))^(1/2), x)
```

3.243 $\int \sqrt{a+b\text{ArcSin}(c+dx)}\,dx$

Optimal. Leaf size=133

$$\frac{(c+dx)\sqrt{a+b\text{ArcSin}(c+dx)}}{d}-\frac{\sqrt{b}\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{d}+\frac{\sqrt{b}\sqrt{\frac{\pi}{2}}\,\text{FresnelC}\left(\right.}{}$$

```
[Out] -1/2*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*
b^(1/2)*2^(1/2)*Pi^(1/2)/d+1/2*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c)
)^(1/2)/b^(1/2))*sin(a/b)*b^(1/2)*2^(1/2)*Pi^(1/2)/d+(d*x+c)*(a+b*arcsin(d*
x+c))^(1/2)/d
```

Rubi [A]
time = 0.17, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.571$, Rules used = {4887, 4715, 4809, 3387, 3386, 3432, 3385, 3433}

$$\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{d}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{d}+\frac{(c+dx)\sqrt{a+b\text{ArcSin}(c+dx)}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] ((c + d*x)*Sqrt[a + b*ArcSin[c + d*x]])/d - (Sqrt[b]*Sqrt[Pi/2]*Cos[a/b]*Fr
esnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/d + (Sqrt[b]*Sqrt
[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])
/d
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4809

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[(1/(b*c^(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x
^2)^p], Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b]^(2*p + 1), x], x, a
 + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0]
&& IGtQ[2*p + 2, 0] && IGtQ[m, 0]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\int \sqrt{a+b\sin^{-1}(c+dx)}\,dx = \frac{\text{Subst}\left(\int \sqrt{a+b\sin^{-1}(x)}\,dx, x, c+dx\right)}{d}$$

$$= \frac{(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d} - \frac{b\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\sqrt{a+b\sin^{-1}(x)}}\,dx, x\right.}{2d}$$

$$= \frac{(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d} - \frac{b\text{Subst}\left(\int \frac{\sin(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{2d}$$

$$= \frac{(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d} - \frac{\left(b\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(\right.}{2d}$$

$$= \frac{(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d} - \frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \sin\left(\frac{x^2}{b}\right)\,dx, x, \sqrt{a+b\sin\right.}{d}$$

$$= \frac{(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{d} - \frac{\sqrt{b}\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c-}}{\sqrt{b}}\right.}{d}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.04, size = 129, normalized size = 0.97

$$\frac{be^{-\frac{ia}{b}}\left(\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{3}{2}, -\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right) + e^{\frac{2ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{3}{2}, \frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)}{2d\sqrt{a+b\text{ArcSin}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (b*(Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((-I)*(a + b*ArcSin[c
 + d*x]))/b] + E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/
2, (I*(a + b*ArcSin[c + d*x]))/b]))/(2*d*E^((I*a)/b)*Sqrt[a + b*ArcSin[c +
d*x]])
```

Maple [A]
time = 0.00, size = 203, normalized size = 1.53

method	result

default	$-\frac{-\sqrt{2}\,\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,\sqrt{a+b\arcsin\left(dx+c\right)}\,\cos\left(\frac{a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)b-\sqrt{2}\,\sqrt{\pi}\,\sqrt{-}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^(1/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/2/d/(a+b*arcsin(d*x+c))^(1/2)*(-2^(1/2)*Pi^(1/2)*(-1/b)^(1/2)*(a+b*arcsi
n(d*x+c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin
(d*x+c))^(1/2)/b)*b-2^(1/2)*Pi^(1/2)*(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)
*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/
b)*b+2*sin(-(a+b*arcsin(d*x+c))/b+a/b)*arcsin(d*x+c)*b+2*sin(-(a+b*arcsin(d
*x+c))/b+a/b)*a)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{a+b\operatorname{asin}\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*asin(c + d*x)), x)
```

Giac [C] Result contains complex when optimal does not.
time = 0.69, size = 563, normalized size = 4.23

$$\frac{\sqrt{2}\sqrt{\pi}ab\operatorname{erf}\left(-\frac{i\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}\sqrt{|b|}}{2b}\right)e^{\left(\frac{ia}{b}\right)}}{2\left(\frac{ib^{2}}{\sqrt{|b|}}+b\sqrt{|b|}\right)d}+\frac{i\sqrt{2}\sqrt{\pi}b^{2}\operatorname{erf}\left(-\frac{i\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}\sqrt{|b|}}{2b}\right)e^{\left(\frac{ia}{b}\right)}}{4\left(\frac{ib^{2}}{\sqrt{|b|}}+b\sqrt{|b|}\right)d}+\frac{\sqrt{2}\sqrt{\pi}ab\operatorname{erf}\left(\frac{i\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}\sqrt{|b|}}{2b}\right)e^{\left(-\frac{ia}{b}\right)}}{2\left(-\frac{ib^{2}}{\sqrt{|b|}}+b\sqrt{|b|}\right)d}-\frac{i\sqrt{2}\sqrt{\pi}b^{2}\operatorname{erf}\left(\frac{i\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}\sqrt{|b|}}{2b}\right)e^{\left(-\frac{ia}{b}\right)}}{4\left(-\frac{ib^{2}}{\sqrt{|b|}}+b\sqrt{|b|}\right)d}-\frac{\sqrt{\pi}a\operatorname{erf}\left(-\frac{i\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}\sqrt{|b|}}{2b}\right)e^{\left(\frac{ia}{b}\right)}}{d\left(\frac{i\sqrt{2}b}{\sqrt{|b|}}+\sqrt{2}\sqrt{|b|}\right)}-\frac{\sqrt{\pi}a\operatorname{erf}\left(\frac{i\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}\sqrt{|b|}}{2b}\right)e^{\left(-\frac{ia}{b}\right)}}{d\left(-\frac{i\sqrt{2}b}{\sqrt{|b|}}+\sqrt{2}\sqrt{|b|}\right)}-\frac{i\sqrt{b\arcsin\left(dx+c\right)+a}e^{\left(i\arcsin\left(dx+c\right)\right)}}{2d}+\frac{i\sqrt{b\arcsin\left(dx+c\right)+a}e^{\left(-i\arcsin\left(dx+c\right)\right)}}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*sqrt(pi)*a*b*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqr
t(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/
b)/((I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*d) + 1/4*I*sqrt(2)*sqrt(pi)*b^2*e
rf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sq
rt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^2/sqrt(abs(b)) +
b*sqrt(abs(b)))*d) + 1/2*sqrt(2)*sqrt(pi)*a*b*erf(1/2*I*sqrt(2)*sqrt(b*arcs
in(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqr
t(abs(b))/b)*e^(-I*a/b)/((-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*d) - 1/4*I*
sqrt(2)*sqrt(pi)*b^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs
(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(
(-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*d) - sqrt(pi)*a*erf(-1/2*I*sqrt(2)*s
qrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c
) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(d*(I*sqrt(2)*b/sqrt(abs(b)) + sqrt(2)*sqr
t(abs(b)))) - sqrt(pi)*a*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt
(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/
b)/(d*(-I*sqrt(2)*b/sqrt(abs(b)) + sqrt(2)*sqrt(abs(b)))) - 1/2*I*sqrt(b*ar
csin(d*x + c) + a)*e^(I*arcsin(d*x + c))/d + 1/2*I*sqrt(b*arcsin(d*x + c) +
 a)*e^(-I*arcsin(d*x + c))/d
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{a+b\,\mathrm{asin}\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^(1/2),x)
```

```
[Out] int((a + b*asin(c + d*x))^(1/2), x)
```

3.244 $\int \frac{\sqrt{a+b\text{ArcSin}(c+dx)}}{ce+dex}\,dx$

Optimal. Leaf size=29

$$\frac{\text{Int}\left(\frac{\sqrt{a+b\text{ArcSin}(c+dx)}}{c+dx},x\right)}{e}$$

[Out] Unintegrable((a+b*arcsin(d*x+c))^(1/2)/(d*x+c),x)/e

Rubi [A]
time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{\sqrt{a+b\text{ArcSin}(c+dx)}}{ce+dex}\,dx$$

Verification is not applicable to the result.

[In] Int[Sqrt[a + b*ArcSin[c + d*x]]/(c*e + d*e*x),x]

[Out] Defer[Subst][Defer[Int][Sqrt[a + b*ArcSin[x]]/x, x], x, c + d*x]/(d*e)

Rubi steps

$$\begin{aligned}\int \frac{\sqrt{a+b\sin^{-1}(c+dx)}}{ce+dex}\,dx &= \frac{\text{Subst}\left(\int \frac{\sqrt{a+b\sin^{-1}(x)}}{ex}\,dx,x,c+dx\right)}{d}\\ &= \frac{\text{Subst}\left(\int \frac{\sqrt{a+b\sin^{-1}(x)}}{x}\,dx,x,c+dx\right)}{de}\end{aligned}$$

Mathematica [A]
time = 1.60, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\text{ArcSin}(c+dx)}}{ce+dex}\,dx$$

Verification is not applicable to the result.

[In] Integrate[Sqrt[a + b*ArcSin[c + d*x]]/(c*e + d*e*x),x]

```
[Out] Integrate[Sqrt[a + b*ArcSin[c + d*x]]/(c*e + d*e*x), x]
```

Maple [A]
time = 0.25, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\arcsin\left(dx+c\right)}}{dex+ce}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^(1/2)/(d*e*x+c*e),x)
```

```
[Out] int((a+b*arcsin(d*x+c))^(1/2)/(d*e*x+c*e),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(1/2)/(d*e*x+c*e),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*arcsin(d*x + c) + a)/(d*x*e + c*e), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(1/2)/(d*e*x+c*e),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\sqrt{a+b\,\mathrm{asin}\left(c+dx\right)}}{c+dx}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**(1/2)/(d*e*x+c*e),x)
```

```
[Out] Integral(sqrt(a + b*asin(c + d*x))/(c + d*x), x)/e
```

Giac [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(1/2)/(d*e*x+c*e),x, algorithm="giac")
[Out] integrate(sqrt(b*arcsin(d*x + c) + a)/(d*e*x + c*e), x)
```

Mupad [**A**]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sqrt{a+b\,\mathrm{asin}\left(c+d\,x\right)}}{c\,e+d\,e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^(1/2)/(c*e + d*e*x),x)
[Out] int((a + b*asin(c + d*x))^(1/2)/(c*e + d*e*x), x)
```

3.245 $\int (ce+dex)^3(a+b\mathbf{ArcSin}(c+dx))^{3/2}\,dx$

Optimal. Leaf size=380

$$\frac{9be^3(c+dx)\sqrt{1-(c+dx)^2}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{64d}+\frac{3be^3(c+dx)^3\sqrt{1-(c+dx)^2}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{32d}$$

```
[Out] -3/32*e^3*(a+b*arcsin(d*x+c))^(3/2)/d+1/4*e^3*(d*x+c)^4*(a+b*arcsin(d*x+c))
^(3/2)/d+3/1024*b^(3/2)*e^3*cos(4*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)*(a+b*arc
sin(d*x+c))^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/d-3/1024*b^(3/2)*e^3*FresnelC(2
*2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(4*a/b)*2^(1/2)*Pi^
(1/2)/d-3/64*b^(3/2)*e^3*cos(2*a/b)*FresnelS(2*(a+b*arcsin(d*x+c))^(1/2)/b^
(1/2)/Pi^(1/2))*Pi^(1/2)/d+3/64*b^(3/2)*e^3*FresnelC(2*(a+b*arcsin(d*x+c))^
(1/2)/b^(1/2)/Pi^(1/2))*sin(2*a/b)*Pi^(1/2)/d+9/64*b*e^3*(d*x+c)*(1-(d*x+c)
^2)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/d+3/32*b*e^3*(d*x+c)^3*(1-(d*x+c)^2)^(1
/2)*(a+b*arcsin(d*x+c))^(1/2)/d
```

Rubi [A]

time = 0.69, antiderivative size = 380, normalized size of antiderivative = 1.00, number of steps used = 27, number of rules used = 12, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.480$, Rules used = {4889, 12, 4725, 4795, 4737, 4731, 4491, 3387, 3386, 3432, 3385, 3433}

$$\frac{3\sqrt{\pi}b^{3/2}e^3\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{64d}-\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}e^3\sin\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{512d}+\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}e^3\cos\left(\frac{4a}{b}\right)S\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{512d}-\frac{3\sqrt{\pi}b^{3/2}e^3\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{64d}+\frac{e^3(c+dx)^4(a+b\text{ArcSin}(c+dx))^{3/2}}{4d}+\frac{3be^3\sqrt{1-(c+dx)^2}(c+dx)^3\sqrt{a+b\text{ArcSin}(c+dx)}}{32d}+\frac{9be^3\sqrt{1-(c+dx)^2}(c+dx)\sqrt{a+b\text{ArcSin}(c+dx)}}{64d}-\frac{3e^3(a+b\text{ArcSin}(c+dx))^{3/2}}{32d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3*(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (9*b*e^3*(c + d*x)*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(64*d
) + (3*b*e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])
/(32*d) - (3*e^3*(a + b*ArcSin[c + d*x])^(3/2))/(32*d) + (e^3*(c + d*x)^4*(
a + b*ArcSin[c + d*x])^(3/2))/(4*d) + (3*b^(3/2)*e^3*Sqrt[Pi/2]*Cos[(4*a)/b
]*FresnelS[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(512*d) - (
3*b^(3/2)*e^3*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]]
)/(Sqrt[b]*Sqrt[Pi])])/(64*d) + (3*b^(3/2)*e^3*Sqrt[Pi]*FresnelC[(2*Sqrt[a
+ b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(64*d) - (3*b^(3/2)
*e^3*Sqrt[Pi/2]*FresnelC[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]
]*Sin[(4*a)/b])/(512*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4725

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^(m + 1)*((a + b*ArcSin[c*x])^n/(m + 1)), x] - Dist[b*c*(n/(m + 1)), Int[x^
(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
```

```
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)^3 \left(a+b\sin^{-1}(c+dx)\right)^{3/2} dx = \frac{\text{Subst}\left(\int e^3x^3(a+b\sin^{-1}(x))^{3/2} dx,x,c+dx\right)}{d}$$

$$= \frac{e^3\text{Subst}\left(\int x^3(a+b\sin^{-1}(x))^{3/2} dx,x,c+dx\right)}{d}$$

$$= \frac{e^3(c+dx)^4 \left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{4d} - \frac{(3be^3)\,\text{Subst}\left(\int \frac{x^4\sqrt{a+}}{\sqrt{}}\right.}{}$$

$$= \frac{3be^3(c+dx)^3\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{32d} + \frac{e^3(c+}{}$$

$$= \frac{9be^3(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{64d} + \frac{3be^3(c}{}$$

$$= \frac{9be^3(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{64d} + \frac{3be^3(c}{}$$

$$= \frac{9be^3(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{64d} + \frac{3be^3(c}{}$$

$$= \frac{9be^3(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{64d} + \frac{3be^3(c}{}$$

$$= \frac{9be^3(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{64d} + \frac{3be^3(c}{}$$

$$= \frac{9be^3(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{64d} + \frac{3be^3(c}{}$$

$$= \frac{9be^3(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{64d} + \frac{3be^3(c}{}$$

Mathematica [C] Result contains complex when optimal does not.

time = 0.13, size = 273, normalized size = 0.72

$$-\frac{ibe^3e^{-\frac{4ia}{b}}\sqrt{a+b\text{ArcSin}(c+dx)}\left(8\sqrt{2}\,e^{\frac{2ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{5}{2},-\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)-8\sqrt{2}\,e^{\frac{6ia}{b}}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{5}{2},\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)-\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{5}{2},-\frac{4i(a+b\text{ArcSin}(c+dx))}{b}\right)+e^{\frac{8ia}{b}}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{5}{2},\frac{4i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)}{512d\sqrt{\frac{(a+b\text{ArcSin}(c+dx))^2}{b^2}}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^3*(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] ((-1/512*I)*b*e^3*Sqrt[a + b*ArcSin[c + d*x]]*(8*Sqrt[2]*E^(((2*I)*a)/b)*Sq
rt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[5/2, ((-2*I)*(a + b*ArcSin[c + d*x]
))/b] - 8*Sqrt[2]*E^(((6*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Ga
mma[5/2, ((2*I)*(a + b*ArcSin[c + d*x]))/b] - Sqrt[(I*(a + b*ArcSin[c + d*x
]))/b]*Gamma[5/2, ((-4*I)*(a + b*ArcSin[c + d*x]))/b] + E^(((8*I)*a)/b)*Sqr
t[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[5/2, ((4*I)*(a + b*ArcSin[c + d*x
]))/b]))/(d*E^(((4*I)*a)/b)*Sqrt[(a + b*ArcSin[c + d*x])^2/b^2])
```

Maple [A]
time = 0.50, size = 610, normalized size = 1.61

method	result
default	$-\frac{e^3\left(3\sqrt{-\frac{1}{b}}\,\sqrt{\pi}\,\sqrt{2}\,\sqrt{a+b\arcsin(dx+c)}\,\cos\left(\frac{4a}{b}\right)\mathrm{S}\left(\frac{2\sqrt{2}\,\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)b^2+3\sqrt{-\frac{1}{b}}\,\sqrt{\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^(3/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/1024/d*e^3/(a+b*arcsin(d*x+c))^(1/2)*(3*(-1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a
+b*arcsin(d*x+c))^(1/2)*cos(4*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)
*(a+b*arcsin(d*x+c))^(1/2)/b)*b^2+3*(-1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcs
in(d*x+c))^(1/2)*sin(4*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*a
rcsin(d*x+c))^(1/2)/b)*b^2-24*(-2/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x
+c))^(1/2)*cos(2*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(
d*x+c))^(1/2)/b)*b^2-24*(-2/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(
1/2)*sin(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c)
)^(1/2)/b)*b^2+128*arcsin(d*x+c)^2*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*b^2-
32*arcsin(d*x+c)^2*cos(-4*(a+b*arcsin(d*x+c))/b+4*a/b)*b^2+256*arcsin(d*x+c
)*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a*b+96*arcsin(d*x+c)*sin(-2*(a+b*arcs
in(d*x+c))/b+2*a/b)*b^2-64*arcsin(d*x+c)*cos(-4*(a+b*arcsin(d*x+c))/b+4*a/b
)*a*b-12*arcsin(d*x+c)*sin(-4*(a+b*arcsin(d*x+c))/b+4*a/b)*b^2+128*cos(-2*(
a+b*arcsin(d*x+c))/b+2*a/b)*a^2+96*sin(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a*b-
32*cos(-4*(a+b*arcsin(d*x+c))/b+4*a/b)*a^2-12*sin(-4*(a+b*arcsin(d*x+c))/b+
4*a/b)*a*b)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)^3*(b*arcsin(d*x + c) + a)^(3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e^{3}\left(\int ac^{3}\sqrt{a+b\operatorname{asin}{(c+dx)}}\,dx+\int ad^{3}x^{3}\sqrt{a+b\operatorname{asin}{(c+dx)}}\,dx+\int bc^{3}\sqrt{a+b\operatorname{asin}{(c+dx)}}\operatorname{asin}{(c+dx)}\,dx+\int 3acd^{2}x^{2}\sqrt{a+b\operatorname{asin}{(c+dx)}}\,dx+\int 3ac^{2}dx\sqrt{a+b\operatorname{asin}{(c+dx)}}\,dx+\int bd^{3}x^{3}\sqrt{a+b\operatorname{asin}{(c+dx)}}\operatorname{asin}{(c+dx)}\,dx+\int 3bcd^{2}x^{2}\sqrt{a+b\operatorname{asin}{(c+dx)}}\operatorname{asin}{(c+dx)}\,dx+\int 3bc^{2}dx\sqrt{a+b\operatorname{asin}{(c+dx)}}\operatorname{asin}{(c+dx)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3*(a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] e**3*(Integral(a*c**3*sqrt(a + b*asin(c + d*x)), x) + Integral(a*d**3*x**3*
sqrt(a + b*asin(c + d*x)), x) + Integral(b*c**3*sqrt(a + b*asin(c + d*x))*a
sin(c + d*x), x) + Integral(3*a*c*d**2*x**2*sqrt(a + b*asin(c + d*x)), x) +
 Integral(3*a*c**2*d*x*sqrt(a + b*asin(c + d*x)), x) + Integral(b*d**3*x**3
*sqrt(a + b*asin(c + d*x))*asin(c + d*x), x) + Integral(3*b*c*d**2*x**2*sqr
t(a + b*asin(c + d*x))*asin(c + d*x), x) + Integral(3*b*c**2*d*x*sqrt(a + b
*asin(c + d*x))*asin(c + d*x), x))
```

Giac [C] Result contains complex when optimal does not.
time = 1.29, size = 2237, normalized size = 5.89

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

[Out] 1/16*I*sqrt(pi)*a^2*b^2*e^3*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(4*I*a/b)/((sqrt(2)*b^(5/2) + I*sqrt(2)*b^(7/2)/abs(b))*d) + 1/8*I*sqrt(pi)*a^2*b^2*e^3*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-4*I*a/b)/((sqrt(2)*b^(5/2) - I*sqrt(2)*b^(7/2)/abs(b))*d) + 1/64*sqrt(pi)*a*b^3*e^3*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-4*I*a/b)/((sqrt(2)*b^(5/2) - I*sqrt(2)*b^(7/2)/abs(b))*d) - 1/8*I*sqrt(pi)*a^2*b^(3/2)*e^3*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(4*I*a/b)/((sqrt(2)*b^2 + I*sqrt(2)*b^3/abs(b))*d) + 1/64*sqrt(pi)*a*b^(5/2)*e^3*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(4*I*a/b)/((sqrt(2)*b^2 + I*sqrt(2)*b^3/abs(b))*d) + 1/8*I*sqrt(pi)*a^2*b^(3/2)*e^3*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/((b^2 + I*b^3/abs(b))*d) - 1/16*sqrt(pi)*a*b^(5/2)*e^3*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/((b^2 + I*b^3/abs(b))*d) - 1/8*I*sqrt(pi)*a^2*b^(3/2)*e^3*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/((b^2 - I*b^3/abs(b))*d) - 1/16*sqrt(pi)*a*b^(5/2)*e^3*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/((b^2 - I*b^3/abs(b))*d) - 1/16*I*sqrt(pi)*a^2*b^(3/2)*e^3*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-4*I*a/b)/((sqrt(2)*b^2 - I*sqrt(2)*b^3/abs(b))*d) + 1/16*I*sqrt(pi)*a^2*b*e^3*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(4*I*a/b)/((sqrt(2)*b^(3/2) + I*sqrt(2)*b^(5/2)/abs(b))*d) - 1/64*sqrt(pi)*a*b^2*e^3*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(4*I*a/b)/((sqrt(2)*b^(3/2) + I*sqrt(2)*b^(5/2)/abs(b))*d) + 1/16*sqrt(pi)*a*b^2*e^3*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/((b^(3/2) + I*b^(5/2)/abs(b))*d) + 1/8*I*sqrt(pi)*a^2*b*e^3*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/((b^(3/2) - I*b^(5/2)/abs(b))*d) + 1/16*sqrt(pi)*a*b^2*e^3*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/((b^(3/2) - I*b^(5/2)/abs(b))*d) - 1/16*I*sqrt(pi)*a^2*b*e^3*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-4*I*a/b)/((sqrt(2)*b^(3/2) - I*sqrt(2)*b^(5/2)/abs(b))*d) - 1/64*sqrt(pi)*a*b^2*e^3*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-4*I*a/b)/((sqrt(2)*b^(3/2) - I*sqrt(2)*b^(5/2)/abs(b))*d) + 3/1024*I*sqrt(pi)*b^3*e^3*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-4*I*a/b)/((sqrt(2)*b^(3/2) - I*sqrt(2)*b^(5/2)/abs(b))*d) - 3/1024*I*sqrt(pi)*b^(5/2)*e^3*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))

```
*e^(4*I*a/b)/((sqrt(2)*b + I*sqrt(2)*b^2/abs(b))*d) - 1/8*I*sqrt(pi)*a^2*sq
rt(b)*e^3*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x +
c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/((b + I*b^2/abs(b))*d) + 3/128*I*sqrt(p
i)*b^(5/2)*e^3*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d
*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/((b + I*b^2/abs(b))*d) - 3/128*I*s
qrt(pi)*b^(5/2)*e^3*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arc
sin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/((b - I*b^2/abs(b))*d) + 1/6
4*sqrt(b*arcsin(d*x + c) + a)*b*e^3*arcsin(d*x + c)*e^(4*I*arcsin(d*x + c))
/d - 1/16*sqrt(b*arcsin(d*x + c) + a)*b*e^3*arcsin(d*x + c)*e^(2*I*arcsin(d
*x + c))/d - 1/16*sqrt(b*arcsin(d*x + c) + a)*b*e^3*arcsin(d*x + c)*e^(-2*I
*arcsin(d*x + c))/d + 1/64*sqrt(b*arcsin(d*x + c) + a)*b*e^3*arcsin(d*x + c
)*e^(-4*I*arcsin(d*x + c))/d + 1/64*sqrt(b*arcsin(d*x + c) + a)*a*e^3*e^(4*
I*arcsin(d*x + c))/d + 3/512*I*sqrt(b*arcsin(d*x + c) + a)*b*e^3*e^(4*I*arc
sin(d*x + c))/d - 1/16*sqrt(b*arcsin(d*x + c) + a)*a*e^3*e^(2*I*arcsin(d*x
+ c))/d - 3/64*I*sqrt(b*arcsin(d*x + c) + a)*b*e^3*e^(2*I*arcsin(d*x + c))/
d - 1/16*sqrt(b*arcsin(d*x + c) + a)*a*e^3*e^(-2*I*arcsin(d*x + c))/d + 3/6
4*I*sqrt(b*arcsin(d*x + c) + a)*b*e^3*e^(-2*I*arcsin(d*x + c))/d + 1/64*sqr
t(b*arcsin(d*x + c) + a)*a*e^3*e^(-4*I*arcsin(d*x + c))/d - 3/512*I*sqrt(b*
arcsin(d*x + c) + a)*b*e^3*e^(-4*I*arcsin(d*x + c))/d
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.00

$$\int (c\,e+d\,e\,x)^3\,(a+b\,\mathrm{asin}(c+d\,x))^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^3*(a + b*asin(c + d*x))^(3/2),x)
```

```
[Out] int((c*e + d*e*x)^3*(a + b*asin(c + d*x))^(3/2), x)
```

3.246 $\int (ce+dex)^2(a+b\mathbf{ArcSin}(c+dx))^{3/2}\,dx$

Optimal. Leaf size=361

$$\frac{be^2\sqrt{1-(c+dx)^2}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{3d}+\frac{be^2(c+dx)^2\sqrt{1-(c+dx)^2}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{6d}+\frac{e^2(c+\ldots}{}$$

```
[Out] 1/3*e^2*(d*x+c)^3*(a+b*arcsin(d*x+c))^(3/2)/d+1/144*b^(3/2)*e^2*cos(3*a/b)*
FresnelC(6^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*6^(1/2)*Pi^(1/
2)/d+1/144*b^(3/2)*e^2*FresnelS(6^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/
b^(1/2))*sin(3*a/b)*6^(1/2)*Pi^(1/2)/d-3/16*b^(3/2)*e^2*cos(a/b)*FresnelC(2
^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/d-3/16*
b^(3/2)*e^2*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*si
n(a/b)*2^(1/2)*Pi^(1/2)/d+1/3*b*e^2*(1-(d*x+c)^2)^(1/2)*(a+b*arcsin(d*x+c))
^(1/2)/d+1/6*b*e^2*(d*x+c)^2*(1-(d*x+c)^2)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/
d
```

Rubi [A]
time = 0.67, antiderivative size = 361, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 13, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.520$, Rules used = {4889, 12, 4725, 4795, 4767, 4719, 3387, 3386, 3432, 3385, 3433, 4731, 4491}

$$-\frac{3\sqrt{\frac{\pi}{2}}\,b^{3/2}e^2\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{8d}+\frac{\sqrt{\frac{\pi}{6}}\,b^{3/2}e^2\cos\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{24d}-\frac{3\sqrt{\frac{\pi}{2}}\,b^{3/2}e^2\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{8d}+\frac{\sqrt{\frac{\pi}{6}}\,b^{3/2}e^2\sin\left(\frac{3a}{b}\right)S\left(\frac{\sqrt{\frac{6}{\pi}}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{24d}+\frac{e^2(c+dx)^3(a+b\text{ArcSin}(c+dx))^{3/2}}{3d}+\frac{be^2\sqrt{1-(c+dx)^2}\,(c+dx)^2\sqrt{a+b\text{ArcSin}(c+dx)}}{6d}+\frac{be^2\sqrt{1-(c+dx)^2}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{3d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (b*e^2*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(3*d) + (b*e^2*(c
 + d*x)^2*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(6*d) + (e^2*(
c + d*x)^3*(a + b*ArcSin[c + d*x])^(3/2))/(3*d) - (3*b^(3/2)*e^2*Sqrt[Pi/2]
*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(8*d)
 + (b^(3/2)*e^2*Sqrt[Pi/6]*Cos[(3*a)/b]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*Arc
Sin[c + d*x]])/Sqrt[b]])/(24*d) - (3*b^(3/2)*e^2*Sqrt[Pi/2]*FresnelS[(Sqrt[
2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(8*d) + (b^(3/2)*e^2*
Sqrt[Pi/6]*FresnelS[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(
3*a)/b])/(24*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4719

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[-a/b + x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c
, n}, x]
```

Rule 4725

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^(m + 1)*((a + b*ArcSin[c*x])^n/(m + 1)), x] - Dist[b*c*(n/(m + 1)), Int[x^
(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)^2 \left(a+b\sin^{-1}(c+dx)\right)^{3/2} dx = \frac{\text{Subst}\left(\int e^2x^2(a+b\sin^{-1}(x))^{3/2} dx, x, c+dx\right)}{d}$$

$$= \frac{e^2\text{Subst}\left(\int x^2(a+b\sin^{-1}(x))^{3/2} dx, x, c+dx\right)}{d}$$

$$= \frac{e^2(c+dx)^3 \left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{3d} - \frac{(be^2)\,\text{Subst}\left(\int \frac{x^3\sqrt{a+}}{\sqrt{1}}\right.}{}$$

$$= \frac{be^2(c+dx)^2\sqrt{1-(c+dx)^2}\,\sqrt{a+b\sin^{-1}(c+dx)}}{6d} + \frac{e^2(c+}{}$$

$$= \frac{be^2\sqrt{1-(c+dx)^2}\,\sqrt{a+b\sin^{-1}(c+dx)}}{3d} + \frac{be^2(c+dx)^2\sqrt{1}}{}$$

$$= \frac{be^2\sqrt{1-(c+dx)^2}\,\sqrt{a+b\sin^{-1}(c+dx)}}{3d} + \frac{be^2(c+dx)^2\sqrt{1}}{}$$

$$= \frac{be^2\sqrt{1-(c+dx)^2}\,\sqrt{a+b\sin^{-1}(c+dx)}}{3d} + \frac{be^2(c+dx)^2\sqrt{1}}{}$$

$$= \frac{be^2\sqrt{1-(c+dx)^2}\,\sqrt{a+b\sin^{-1}(c+dx)}}{3d} + \frac{be^2(c+dx)^2\sqrt{1}}{}$$

$$= \frac{be^2\sqrt{1-(c+dx)^2}\,\sqrt{a+b\sin^{-1}(c+dx)}}{3d} + \frac{be^2(c+dx)^2\sqrt{1}}{}$$

$$= \frac{be^2\sqrt{1-(c+dx)^2}\,\sqrt{a+b\sin^{-1}(c+dx)}}{3d} + \frac{be^2(c+dx)^2\sqrt{1}}{}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.19, size = 268, normalized size = 0.74

$$\frac{be^2e^{-\frac{3ia}{b}}\sqrt{a+b\text{ArcSin}(c+dx)}\left(27e^{\frac{2ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{5}{2},-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)+27e^{\frac{4ia}{b}}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{5}{2},\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)-\sqrt{3}\left(\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{5}{2},-\frac{3i(a+b\text{ArcSin}(c+dx))}{b}\right)+e^{\frac{6ia}{b}}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{5}{2},\frac{3i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)\right)}{216d\sqrt{\frac{(a+b\text{ArcSin}(c+dx))^2}{b^2}}}$$

Antiderivative was successfully verified.

[In] Integrate[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x])^(3/2),x]

[Out] (b*e^2*Sqrt[a + b*ArcSin[c + d*x]]*(27*E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[5/2, ((-I)*(a + b*ArcSin[c + d*x]))/b] + 27*E^(((4*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[5/2, (I*(a + b*ArcSin[c + d*x]))/b] - Sqrt[3]*(Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[5/2, ((-3*I)*(a + b*ArcSin[c + d*x]))/b] + E^(((6*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[5/2, ((3*I)*(a + b*ArcSin[c + d*x]))/b])))/(216*d*E^(((3*I)*a)/b)*Sqrt[(a + b*ArcSin[c + d*x])^2/b^2])

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 599 vs. $2(289) = 578$.
time = 0.56, size = 600, normalized size = 1.66

method	result
default	$-\frac{e^2\left(27\sqrt{a+b\arcsin\left(dx+c\right)}\,\cos\left(\frac{a}{b}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)\sqrt{-\frac{1}{b}}\,\sqrt{\pi}\,\sqrt{2}\,b^2-27\sqrt{}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(3/2),x,method=_RETURNVERBOSE)

[Out] -1/144/d*e^2*(27*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)*Pi^(1/2)*2^(1/2)*b^2-27*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)*Pi^(1/2)*2^(1/2)*b^2-Pi^(1/2)*2^(1/2)*(-3/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(3*a/b)*FresnelC(3*2^(1/2)/Pi^(1/2)/(-3/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b^2+Pi^(1/2)*2^(1/2)*(-3/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(3*a/b)*FresnelS(3*2^(1/2)/Pi^(1/2)/(-3/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b^2+36*arcsin(d*x+c)^2*sin(-(a+b*arcsin(d*x+c))/b+a/b)*b^2-12*arcsin(d*x+c)^2*sin(-3*(a+b*arcsin(d*x+c))/b+3*a/b)*b^2+72*arcsin(d*x+c)*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a*b-54*arcsin(d*x+c)*cos(-(a+b*arcsin(d*x+c))/b+a/b)*b^2-24*arcsin(d*x+c)*sin(-3*(a+b*arcsin(d*x+c))/b+3*a/b)*a*b+6*arcsin(d*x+c)*cos(-3*(a+b*arcsin(d*x+c))/b+3*a/b)*b^2+36*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a^2-54*cos(-(a+b*arcsin(d*x+c))/b+a/b)*a*b-12*sin(-3*(a+b*arcsin(d*x+c))/b+3*a/b)*a^2+6*cos(-3*(a+b*arcsin(d*x+c))/b+3*a/b)*a*b)/(a+b*arcsin(d*x+c))^(1/2)

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)^2*(b*arcsin(d*x + c) + a)^(3/2), x)
```

Fricas [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$e^2\left(\int ac^2\sqrt{a+b\operatorname{asin}(c+dx)}\,dx+\int ad^2x^2\sqrt{a+b\operatorname{asin}(c+dx)}\,dx+\int bc^2\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)\,dx+\int 2acdx\sqrt{a+b\operatorname{asin}(c+dx)}\,dx+\int bd^2x^2\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)\,dx+\int 2bcdx\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2*(a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] e**2*(Integral(a*c**2*sqrt(a + b*asin(c + d*x)), x) + Integral(a*d**2*x**2*
sqrt(a + b*asin(c + d*x)), x) + Integral(b*c**2*sqrt(a + b*asin(c + d*x))*a
sin(c + d*x), x) + Integral(2*a*c*d*x*sqrt(a + b*asin(c + d*x)), x) + Integ
ral(b*d**2*x**2*sqrt(a + b*asin(c + d*x))*asin(c + d*x), x) + Integral(2*b*
c*d*x*sqrt(a + b*asin(c + d*x))*asin(c + d*x), x))
```

Giac [**C**] Result contains complex when optimal does not.
time = 1.47, size = 2199, normalized size = 6.09

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] 1/8*sqrt(2)*sqrt(pi)*a^2*b^2*e^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c)
+ a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)
*e^(I*a/b)/((I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d) + 1/8*I*sqrt(2)*sqrt
(pi)*a*b^3*e^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b))
- 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^3
/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d) + 1/8*sqrt(2)*sqrt(pi)*a^2*b^2*e^2*erf
(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(
b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^3/sqrt(abs(b)) + b
```

^2*sqrt(abs(b)))*d) - 1/8*I*sqrt(2)*sqrt(pi)*a*b^3*e^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d) - 1/4*sqrt(pi)*a^2*b^(3/2)*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(3*I*a/b)/((sqrt(6)*b^2 + I*sqrt(6)*b^3/abs(b))*d) - 1/12*I*sqrt(pi)*a*b^(5/2)*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(3*I*a/b)/((sqrt(6)*b^2 + I*sqrt(6)*b^3/abs(b))*d) - 1/8*I*sqrt(2)*sqrt(pi)*a*b^2*e^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*d) + 3/32*sqrt(2)*sqrt(pi)*b^3*e^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*d) + 1/8*I*sqrt(2)*sqrt(pi)*a*b^2*e^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*d) + 3/32*sqrt(2)*sqrt(pi)*b^3*e^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*d) - 1/4*sqrt(pi)*a^2*b^(3/2)*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-3*I*a/b)/((sqrt(6)*b^2 - I*sqrt(6)*b^3/abs(b))*d) + 1/12*I*sqrt(pi)*a*b^(5/2)*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-3*I*a/b)/((sqrt(6)*b^2 - I*sqrt(6)*b^3/abs(b))*d) + 1/4*sqrt(pi)*a^2*b*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(3*I*a/b)/((sqrt(6)*b^(3/2) + I*sqrt(6)*b^(5/2)/abs(b))*d) + 1/12*I*sqrt(pi)*a*b^2*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(3*I*a/b)/((sqrt(6)*b^(3/2) + I*sqrt(6)*b^(5/2)/abs(b))*d) - 1/4*sqrt(pi)*a^2*b*e^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*sqrt(2)*b^2/sqrt(abs(b)) + sqrt(2)*b*sqrt(abs(b)))*d) - 1/4*sqrt(pi)*a^2*b*e^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*sqrt(2)*b^2/sqrt(abs(b)) + sqrt(2)*b*sqrt(abs(b)))*d) + 1/4*sqrt(pi)*a^2*b*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-3*I*a/b)/((sqrt(6)*b^(3/2) - I*sqrt(6)*b^(5/2)/abs(b))*d) - 1/12*I*sqrt(pi)*a*b^2*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-3*I*a/b)/((sqrt(6)*b^(3/2) - I*sqrt(6)*b^(5/2)/abs(b))*d) - 1/48*sqrt(pi)*b^(5/2)*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(3*I*a/b)/((sqrt(6)*b + I*sqrt(6)*b^2/abs(b))*d) - 1/48*sqrt(pi)*b^(5/2)*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c)

```
+ a)*sqrt(b)/abs(b))*e^(-3*I*a/b)/((sqrt(6)*b - I*sqrt(6)*b^2/abs(b))*d) +
1/24*I*sqrt(b*arcsin(d*x + c) + a)*b*e^2*arcsin(d*x + c)*e^(3*I*arcsin(d*x
+ c))/d - 1/8*I*sqrt(b*arcsin(d*x + c) + a)*b*e^2*arcsin(d*x + c)*e^(I*arcs
in(d*x + c))/d + 1/8*I*sqrt(b*arcsin(d*x + c) + a)*b*e^2*arcsin(d*x + c)*e^
(-I*arcsin(d*x + c))/d - 1/24*I*sqrt(b*arcsin(d*x + c) + a)*b*e^2*arcsin(d*
x + c)*e^(-3*I*arcsin(d*x + c))/d + 1/24*I*sqrt(b*arcsin(d*x + c) + a)*a*e^
2*e^(3*I*arcsin(d*x + c))/d - 1/48*sqrt(b*arcsin(d*x + c) + a)*b*e^2*e^(3*I
*arcsin(d*x + c))/d - 1/8*I*sqrt(b*arcsin(d*x + c) + a)*a*e^2*e^(I*arcsin(d
*x + c))/d + 3/16*sqrt(b*arcsin(d*x + c) + a)*b*e^2*e^(I*arcsin(d*x + c))/d
 + 1/8*I*sqrt(b*arcsin(d*x + c) + a)*a*e^2*e^(-I*arcsin(d*x + c))/d + 3/16*
sqrt(b*arcsin(d*x + c) + a)*b*e^2*e^(-I*arcsin(d*x + c))/d - 1/24*I*sqrt(b*
arcsin(d*x + c) + a)*a*e^2*e^(-3*I*arcsin(d*x + c))/d - 1/48*sqrt(b*arcsin(
d*x + c) + a)*b*e^2*e^(-3*I*arcsin(d*x + c))/d
```

Mupad [**F**]

time = 0.00, size = -1, normalized size = -0.00

$$\int (c\,e+d\,e\,x)^2\,\left(a+b\,\mathrm{asin}(c+d\,x)\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^2*(a + b*asin(c + d*x))^(3/2),x)
[Out] int((c*e + d*e*x)^2*(a + b*asin(c + d*x))^(3/2), x)
```

3.247 $\int (ce + dex)(a + b\mathbf{ArcSin}(c + dx))^{3/2}\,dx$

Optimal. Leaf size=199

$$\frac{3be(c+dx)\sqrt{1-(c+dx)^2}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{8d}-\frac{e(a+b\text{ArcSin}(c+dx))^{3/2}}{4d}+\frac{e(c+dx)^2(a+b\text{ArcSin}(c}{2d}$$

```
[Out] -1/4*e*(a+b*arcsin(d*x+c))^(3/2)/d+1/2*e*(d*x+c)^2*(a+b*arcsin(d*x+c))^(3/2
)/d-3/32*b^(3/2)*e*cos(2*a/b)*FresnelS(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/
Pi^(1/2))*Pi^(1/2)/d+3/32*b^(3/2)*e*FresnelC(2*(a+b*arcsin(d*x+c))^(1/2)/b^
(1/2)/Pi^(1/2))*sin(2*a/b)*Pi^(1/2)/d+3/8*b*e*(d*x+c)*(1-(d*x+c)^2)^(1/2)*(
a+b*arcsin(d*x+c))^(1/2)/d
```

Rubi [A]
time = 0.29, antiderivative size = 199, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 12, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.522$, Rules used = {4889, 12, 4725, 4795, 4737, 4731, 4491, 3387, 3386, 3432, 3385, 3433}

$$\frac{3\sqrt{\pi}\,b^{3/2}e\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}\,\sqrt{b}}\right)}{32d}-\frac{3\sqrt{\pi}\,b^{3/2}e\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\,\sqrt{\pi}}\right)}{32d}+\frac{e(c+dx)^2(a+b\text{ArcSin}(c+dx))^{3/2}}{2d}+\frac{3be\sqrt{1-(c+dx)^2}\,(c+dx)\sqrt{a+b\text{ArcSin}(c+dx)}}{8d}-\frac{e(a+b\text{ArcSin}(c+dx))^{3/2}}{4d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (3*b*e*(c + d*x)*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(8*d) -
 (e*(a + b*ArcSin[c + d*x])^(3/2))/(4*d) + (e*(c + d*x)^2*(a + b*ArcSin[c +
 d*x])^(3/2))/(2*d) - (3*b^(3/2)*e*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqrt[a
 + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(32*d) + (3*b^(3/2)*e*Sqrt[Pi]*
FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/
(32*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
```

```
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4725

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^(m + 1)*((a + b*ArcSin[c*x])^n/(m + 1)), x] - Dist[b*c*(n/(m + 1)), Int[x^
(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}\,dx = \frac{\text{Subst}\left(\int ex(a+b\sin^{-1}(x))^{3/2}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e\text{Subst}\left(\int x(a+b\sin^{-1}(x))^{3/2}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{2d} - \frac{(3be)\text{Subst}\left(\int \frac{x^2\sqrt{a+b\text{s}}}{\sqrt{1-}}\right.}{4a}$$

$$= \frac{3be(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d} + \frac{e(c+dx)}{}$$

$$= \frac{3be(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d} - \frac{e(a+b\text{si}}{}$$

$$= \frac{3be(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d} - \frac{e(a+b\text{si}}{}$$

$$= \frac{3be(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d} - \frac{e(a+b\text{si}}{}$$

$$= \frac{3be(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d} - \frac{e(a+b\text{si}}{}$$

$$= \frac{3be(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d} - \frac{e(a+b\text{si}}{}$$

$$= \frac{3be(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d} - \frac{e(a+b\text{si}}{}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.04, size = 137, normalized size = 0.69

$$\frac{b^2ee^{-\frac{2ia}{b}}\left(\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{5}{2},-\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)+e^{\frac{4ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{5}{2},\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)}{16\sqrt{2}\,d\sqrt{a+b\text{ArcSin}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (b^2*e*(Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[5/2, ((-2*I)*(a + b*Ar
cSin[c + d*x]))/b] + E^(((4*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Ga
mma[5/2, ((2*I)*(a + b*ArcSin[c + d*x]))/b]))/(16*Sqrt[2]*d*E^(((2*I)*a)/b)
*Sqrt[a + b*ArcSin[c + d*x]])
```

Maple [A]
time = 0.25, size = 314, normalized size = 1.58

method	result
default	$-\frac{e\left(-3\sqrt{-\frac{2}{b}}\,\sqrt{\pi}\,\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}\,\cos\left(\frac{2a}{b}\right)\mathrm{S}\left(\frac{2\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{2}{b}}\,b}\right)b^{2}-3\sqrt{-\frac{2}{b}}\,\sqrt{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(3/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/64/d*e/(a+b*arcsin(d*x+c))^(1/2)*(-3*(-2/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*
arcsin(d*x+c))^(1/2)*cos(2*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a
+b*arcsin(d*x+c))^(1/2)/b)*b^2-3*(-2/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(
d*x+c))^(1/2)*sin(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcs
in(d*x+c))^(1/2)/b)*b^2+16*arcsin(d*x+c)^2*cos(-2*(a+b*arcsin(d*x+c))/b+2*a
/b)*b^2+32*arcsin(d*x+c)*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a*b+12*arcsin(
d*x+c)*sin(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*b^2+16*cos(-2*(a+b*arcsin(d*x+c)
)/b+2*a/b)*a^2+12*sin(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a*b)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)*(b*arcsin(d*x + c) + a)^(3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e\left(\int ac\sqrt{a+b\operatorname{asin}(c+dx)}\,dx+\int adx\sqrt{a+b\operatorname{asin}(c+dx)}\,dx+\int bc\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)\,dx+\int bdx\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] e*(Integral(a*c*sqrt(a + b*asin(c + d*x)), x) + Integral(a*d*x*sqrt(a + b*a
sin(c + d*x)), x) + Integral(b*c*sqrt(a + b*asin(c + d*x))*asin(c + d*x), x
) + Integral(b*d*x*sqrt(a + b*asin(c + d*x))*asin(c + d*x), x))
```

Giac [C] Result contains complex when optimal does not.
time = 0.87, size = 929, normalized size = 4.67

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] 1/4*I*sqrt(pi)*a^2*b^(3/2)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*s
qrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/((b^2 + I*b^3/abs(b)
)*d) - 1/8*sqrt(pi)*a*b^(5/2)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) -
I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/((b^2 + I*b^3/abs
(b))*d) - 1/4*I*sqrt(pi)*a^2*b^(3/2)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqr
t(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/((b^2 - I
*b^3/abs(b))*d) - 1/8*sqrt(pi)*a*b^(5/2)*e*erf(-sqrt(b*arcsin(d*x + c) + a)
/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/((b^2
 - I*b^3/abs(b))*d) + 1/8*sqrt(pi)*a*b^2*e*erf(-sqrt(b*arcsin(d*x + c) + a)
/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/((b^(3
/2) + I*b^(5/2)/abs(b))*d) + 1/4*I*sqrt(pi)*a^2*b*e*erf(-sqrt(b*arcsin(d*x
+ c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a
/b)/((b^(3/2) - I*b^(5/2)/abs(b))*d) + 1/8*sqrt(pi)*a*b^2*e*erf(-sqrt(b*arc
sin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e
^(-2*I*a/b)/((b^(3/2) - I*b^(5/2)/abs(b))*d) - 1/4*I*sqrt(pi)*a^2*sqrt(b)*e
*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*s
qrt(b)/abs(b))*e^(2*I*a/b)/((b + I*b^2/abs(b))*d) + 3/64*I*sqrt(pi)*b^(5/2)
*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)
*sqrt(b)/abs(b))*e^(2*I*a/b)/((b + I*b^2/abs(b))*d) - 3/64*I*sqrt(pi)*b^(5/
2)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) +
a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/((b - I*b^2/abs(b))*d) - 1/8*sqrt(b*arcsin(
d*x + c) + a)*b*e*arcsin(d*x + c)*e^(2*I*arcsin(d*x + c))/d - 1/8*sqrt(b*ar
csin(d*x + c) + a)*b*e*arcsin(d*x + c)*e^(-2*I*arcsin(d*x + c))/d - 1/8*sqr
```

```
t(b*arcsin(d*x + c) + a)*a*e*e^(2*I*arcsin(d*x + c))/d - 3/32*I*sqrt(b*arcs
in(d*x + c) + a)*b*e*e^(2*I*arcsin(d*x + c))/d - 1/8*sqrt(b*arcsin(d*x + c)
 + a)*a*e*e^(-2*I*arcsin(d*x + c))/d + 3/32*I*sqrt(b*arcsin(d*x + c) + a)*b
*e*e^(-2*I*arcsin(d*x + c))/d
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int (c\,e+d\,e\,x)\,\left(a+b\,\mathrm{asin}(c+d\,x)\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)*(a + b*asin(c + d*x))^(3/2),x)
```

```
[Out] int((c*e + d*e*x)*(a + b*asin(c + d*x))^(3/2), x)
```

3.248 $\int (a + b\mathbf{ArcSin}(c + dx))^{3/2}\, dx$

Optimal. Leaf size=175

$$\frac{3b\sqrt{1-(c+dx)^2}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{2d}+\frac{(c+dx)(a+b\text{ArcSin}(c+dx))^{3/2}}{d}-\frac{3b^{3/2}\sqrt{\frac{\pi}{2}}\,\cos\left(\frac{a}{b}\right)\text{FresnelC}}{}$$

[Out] (d*x+c)*(a+b*arcsin(d*x+c))^(3/2)/d-3/4*b^(3/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/d-3/4*b^(3/2)*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/d+3/2*b*(1-(d*x+c)^2)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/d

Rubi [A]
time = 0.18, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 9, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.643$, Rules used = {4887, 4715, 4767, 4719, 3387, 3386, 3432, 3385, 3433}

$$-\frac{3\sqrt{\frac{\pi}{2}}\,b^{3/2}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{2d}-\frac{3\sqrt{\frac{\pi}{2}}\,b^{3/2}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{2d}+\frac{3b\sqrt{1-(c+dx)^2}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{2d}+\frac{(c+dx)(a+b\text{ArcSin}(c+dx))^{3/2}}{d}$$

Antiderivative was successfully verified.

[In] Int[(a + b*ArcSin[c + d*x])^(3/2),x]

[Out] (3*b*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(2*d) + ((c + d*x)*(a + b*ArcSin[c + d*x])^(3/2))/d - (3*b^(3/2)*Sqrt[Pi/2]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(2*d) - (3*b^(3/2)*Sqrt[Pi/2]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(2*d)

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4719

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[-a/b + x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c
, n}, x]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\int \left(a+b\sin^{-1}(c+dx)\right)^{3/2}\,dx = \frac{\text{Subst}\left(\int (a+b\sin^{-1}(x))^{3/2}\,dx, x, c+dx\right)}{d}$$

$$= \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{d} - \frac{(3b)\text{Subst}\left(\int \frac{x\sqrt{a+b\sin^{-1}(x)}}{\sqrt{1-x^2}}\,dx, x\right.}{2d}$$

$$= \frac{3b\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{3b\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{3b\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{3b\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{3b\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{2d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)}{d}$$

Mathematica [C] Result contains complex when optimal does not.
time = 1.36, size = 313, normalized size = 1.79

$$\frac{b\left(2\sqrt{a+b\text{ArcSin}(c+dx)}\left(3\sqrt{1-(c+dx)^2}+2(c+dx)\text{ArcSin}(c+dx)\right)+\frac{2ae^{-\frac{ia}{b}}\left(\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{3}{2},-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)+e^{\frac{2ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{3}{2},\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)}{\sqrt{a+b\text{ArcSin}(c+dx)}}-\sqrt{\frac{1}{b}}\sqrt{2\pi}\,\text{FresnelC}\left(\sqrt{\frac{1}{b}}\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}\right)\left(3b\cos\left(\frac{a}{b}\right)+2a\sin\left(\frac{a}{b}\right)\right)+\sqrt{\frac{1}{b}}\sqrt{2\pi}\,S\left(\sqrt{\frac{1}{b}}\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}\right)\left(2a\cos\left(\frac{a}{b}\right)-3b\sin\left(\frac{a}{b}\right)\right)\right)}{4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (b*(2*Sqrt[a + b*ArcSin[c + d*x]]*(3*Sqrt[1 - (c + d*x)^2] + 2*(c + d*x)*Ar
cSin[c + d*x]) + (2*a*(Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((
-I)*(a + b*ArcSin[c + d*x]))/b] + E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c +
 d*x]))/b]*Gamma[3/2, (I*(a + b*ArcSin[c + d*x]))/b]))/(E^((I*a)/b)*Sqrt[a
+ b*ArcSin[c + d*x]]) - Sqrt[b^(-1)]*Sqrt[2*Pi]*FresnelC[Sqrt[b^(-1)]*Sqrt[
2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]]*(3*b*Cos[a/b] + 2*a*Sin[a/b]) + Sqrt[b^(
```

-1)]*Sqrt[2*Pi]*FresnelS[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]
]]*(2*a*Cos[a/b] - 3*b*Sin[a/b])))/(4*d)

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 303 vs. $2(139) = 278$.
time = 0.00, size = 304, normalized size = 1.74

method	result
default	$-\frac{3\sqrt{a+b\arcsin(dx+c)}\,\cos\left(\frac{a}{b}\right)\operatorname{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)\sqrt{-\frac{1}{b}}\,\sqrt{\pi}\,\sqrt{2}\,b^{2}-3\sqrt{a+b}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^(3/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/4/d*(3*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/
b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)*Pi^(1/2)*2^(1/2)*b^2-3*(
a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a
+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)*Pi^(1/2)*2^(1/2)*b^2+4*arcsin(d*x+c
)^2*sin(-(a+b*arcsin(d*x+c))/b+a/b)*b^2-6*arcsin(d*x+c)*cos(-(a+b*arcsin(d*
x+c))/b+a/b)*b^2+8*arcsin(d*x+c)*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a*b-6*cos(
-(a+b*arcsin(d*x+c))/b+a/b)*a*b+4*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a^2)/(a+b
*arcsin(d*x+c))^(1/2)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int (a + b\,\mathrm{asin}\,(c + dx))^{\frac{3}{2}}\; dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**(3/2), x)
```

Giac [**C**] Result contains complex when optimal does not.
time = 0.89, size = 1061, normalized size = 6.06

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*sqrt(pi)*a^2*b^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)
/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(
I*a/b)/((I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d) + 1/2*I*sqrt(2)*sqrt(pi)
*a*b^3*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sq
rt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^3/sqrt(ab
s(b)) + b^2*sqrt(abs(b)))*d) + 1/2*sqrt(2)*sqrt(pi)*a^2*b^2*erf(1/2*I*sqrt(
2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x
 + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(
b)))*d) - 1/2*I*sqrt(2)*sqrt(pi)*a*b^3*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x
+ c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b
))/b)*e^(-I*a/b)/((-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d) - 1/2*I*sqrt(
2)*sqrt(pi)*a*b^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b
)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*
b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*d) + 3/8*sqrt(2)*sqrt(pi)*b^3*erf(-1/2*I
*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcs
in(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^2/sqrt(abs(b)) + b*sqrt(ab
s(b)))*d) + 1/2*I*sqrt(2)*sqrt(pi)*a*b^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*
x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs
(b))/b)*e^(-I*a/b)/((-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*d) + 3/8*sqrt(2)
*sqrt(pi)*b^3*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) -
1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^2
/sqrt(abs(b)) + b*sqrt(abs(b)))*d) - sqrt(pi)*a^2*b*erf(-1/2*I*sqrt(2)*sqrt
(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) +
 a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*sqrt(2)*b^2/sqrt(abs(b)) + sqrt(2)*b*sqrt
(abs(b)))*d) - sqrt(pi)*a^2*b*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)
/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(
```

```
-I*a/b)/((-I*sqrt(2)*b^2/sqrt(abs(b)) + sqrt(2)*b*sqrt(abs(b)))*d) - 1/2*I*
sqrt(b*arcsin(d*x + c) + a)*b*arcsin(d*x + c)*e^(I*arcsin(d*x + c))/d + 1/2
*I*sqrt(b*arcsin(d*x + c) + a)*b*arcsin(d*x + c)*e^(-I*arcsin(d*x + c))/d -
 1/2*I*sqrt(b*arcsin(d*x + c) + a)*a*e^(I*arcsin(d*x + c))/d + 3/4*sqrt(b*a
rcsin(d*x + c) + a)*b*e^(I*arcsin(d*x + c))/d + 1/2*I*sqrt(b*arcsin(d*x + c
) + a)*a*e^(-I*arcsin(d*x + c))/d + 3/4*sqrt(b*arcsin(d*x + c) + a)*b*e^(-I
*arcsin(d*x + c))/d
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int (a + b\,\mathrm{asin}(c + d\,x))^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^(3/2),x)
[Out] int((a + b*asin(c + d*x))^(3/2), x)
```

3.249 $\int \frac{(a+b\text{ArcSin}(c+dx))^{3/2}}{ce+dex}\,dx$

Optimal. Leaf size=29

$$\frac{\text{Int}\left(\frac{(a+b\text{ArcSin}(c+dx))^{3/2}}{c+dx},x\right)}{e}$$

[Out] Unintegrable((a+b*arcsin(d*x+c))^(3/2)/(d*x+c),x)/e

Rubi [A]
time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(a+b\text{ArcSin}(c+dx))^{3/2}}{ce+dex}\,dx$$

Verification is not applicable to the result.

[In] Int[(a + b*ArcSin[c + d*x])^(3/2)/(c*e + d*e*x),x]

[Out] Defer[Subst][Defer[Int][(a + b*ArcSin[x])^(3/2)/x, x], x, c + d*x]/(d*e)

Rubi steps

$$\begin{aligned}\int \frac{(a+b\sin^{-1}(c+dx))^{3/2}}{ce+dex}\,dx &= \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^{3/2}}{ex}\,dx,x,c+dx\right)}{d}\\ &= \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^{3/2}}{x}\,dx,x,c+dx\right)}{de}\end{aligned}$$

Mathematica [A]
time = 1.26, size = 0, normalized size = 0.00

$$\int \frac{(a+b\text{ArcSin}(c+dx))^{3/2}}{ce+dex}\,dx$$

Verification is not applicable to the result.

[In] Integrate[(a + b*ArcSin[c + d*x])^(3/2)/(c*e + d*e*x),x]

[Out] Integrate[(a + b*ArcSin[c + d*x])^(3/2)/(c*e + d*e*x), x]

Maple [A]
time = 0.23, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin (dx+c))^{\frac{3}{2}}}{dex+ce}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^(3/2)/(d*e*x+c*e),x)
[Out] int((a+b*arcsin(d*x+c))^(3/2)/(d*e*x+c*e),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(3/2)/(d*e*x+c*e),x, algorithm="maxima")
[Out] integrate((b*arcsin(d*x + c) + a)^(3/2)/(d*x*e + c*e), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(3/2)/(d*e*x+c*e),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a\sqrt{a+b\operatorname{asin}(c+dx)}}{c+dx}\,dx+\int \frac{b\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)}{c+dx}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**(3/2)/(d*e*x+c*e),x)
[Out] (Integral(a*sqrt(a + b*asin(c + d*x))/(c + d*x), x) + Integral(b*sqrt(a + b
*asin(c + d*x))*asin(c + d*x)/(c + d*x), x))/e
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(3/2)/(d*e*x+c*e),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(3/2)/(d*e*x + c*e), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)^{3/2}}{c\,e+d\,e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^(3/2)/(c*e + d*e*x),x)
```

```
[Out] int((a + b*asin(c + d*x))^(3/2)/(c*e + d*e*x), x)
```

3.250 $\int (ce+dex)^3 (a+b\mathbf{ArcSin}(c+dx))^{5/2}\,dx$

Optimal. Leaf size=475

$$\frac{225b^2e^3\sqrt{a+b\text{ArcSin}(c+dx)}}{2048d}-\frac{45b^2e^3(c+dx)^2\sqrt{a+b\text{ArcSin}(c+dx)}}{256d}-\frac{15b^2e^3(c+dx)^4\sqrt{a+b\text{ArcSin}(c}{256d}$$

```
[Out] -3/32*e^3*(a+b*arcsin(d*x+c))^(5/2)/d+1/4*e^3*(d*x+c)^4*(a+b*arcsin(d*x+c))
^(5/2)/d+15/8192*b^(5/2)*e^3*cos(4*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)*(a+b*ar
csin(d*x+c))^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/d+15/8192*b^(5/2)*e^3*FresnelS
(2*2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(4*a/b)*2^(1/2)*P
i^(1/2)/d-15/256*b^(5/2)*e^3*cos(2*a/b)*FresnelC(2*(a+b*arcsin(d*x+c))^(1/2
)/b^(1/2)/Pi^(1/2))*Pi^(1/2)/d-15/256*b^(5/2)*e^3*FresnelS(2*(a+b*arcsin(d*
x+c))^(1/2)/b^(1/2)/Pi^(1/2))*sin(2*a/b)*Pi^(1/2)/d+15/64*b*e^3*(d*x+c)*(a+
b*arcsin(d*x+c))^(3/2)*(1-(d*x+c)^2)^(1/2)/d+5/32*b*e^3*(d*x+c)^3*(a+b*arcs
in(d*x+c))^(3/2)*(1-(d*x+c)^2)^(1/2)/d+225/2048*b^2*e^3*(a+b*arcsin(d*x+c))
^(1/2)/d-45/256*b^2*e^3*(d*x+c)^2*(a+b*arcsin(d*x+c))^(1/2)/d-15/256*b^2*e^
3*(d*x+c)^4*(a+b*arcsin(d*x+c))^(1/2)/d
```

Rubi [A]
time = 0.95, antiderivative size = 475, normalized size of antiderivative = 1.00, number of steps used = 29, number of rules used = 12, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.480$, Rules used = {4889, 12, 4725, 4795, 4737, 4809, 3393, 3387, 3386, 3432, 3385, 3433}

$$\frac{15\sqrt{\frac{\pi}{2}}b^{5/2}e^3\cos\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{4096d}-\frac{15\sqrt{\pi}b^{5/2}e^3\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{256d}-\frac{15\sqrt{\pi}b^{5/2}e^3\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{256d}+\frac{15\sqrt{\frac{\pi}{2}}b^{5/2}e^3\sin\left(\frac{4a}{b}\right)S\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{4096d}-\frac{15b^2e^3(c+dx)^4\sqrt{a+b\text{ArcSin}(c+dx)}}{256d}-\frac{45b^2e^3(c+dx)^2\sqrt{a+b\text{ArcSin}(c+dx)}}{256d}+\frac{225b^2e^3\sqrt{a+b\text{ArcSin}(c+dx)}}{2048d}+\frac{e^3(c+dx)^4(a+b\text{ArcSin}(c+dx))^{5/2}}{4d}+\frac{5be^3\sqrt{1-(c+dx)^2}(c+dx)^3(a+b\text{ArcSin}(c+dx))^{3/2}}{32d}+\frac{15be^3\sqrt{1-(c+dx)^2}(c+dx)(a+b\text{ArcSin}(c+dx))^{3/2}}{64d}-\frac{3e^3(a+b\text{ArcSin}(c+dx))^{5/2}}{32d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3*(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] (225*b^2*e^3*Sqrt[a + b*ArcSin[c + d*x]])/(2048*d) - (45*b^2*e^3*(c + d*x)^
2*Sqrt[a + b*ArcSin[c + d*x]])/(256*d) - (15*b^2*e^3*(c + d*x)^4*Sqrt[a + b
*ArcSin[c + d*x]])/(256*d) + (15*b*e^3*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a +
 b*ArcSin[c + d*x])^(3/2))/(64*d) + (5*b*e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)
^2]*(a + b*ArcSin[c + d*x])^(3/2))/(32*d) - (3*e^3*(a + b*ArcSin[c + d*x])^
(5/2))/(32*d) + (e^3*(c + d*x)^4*(a + b*ArcSin[c + d*x])^(5/2))/(4*d) + (15
*b^(5/2)*e^3*Sqrt[Pi/2]*Cos[(4*a)/b]*FresnelC[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcS
in[c + d*x]])/Sqrt[b]])/(4096*d) - (15*b^(5/2)*e^3*Sqrt[Pi]*Cos[(2*a)/b]*Fr
esnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(256*d) - (15*b
^(5/2)*e^3*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[
Pi])]*Sin[(2*a)/b])/(256*d) + (15*b^(5/2)*e^3*Sqrt[Pi/2]*FresnelS[(2*Sqrt[2
/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(4*a)/b])/(4096*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3393

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4725

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^(m + 1)*((a + b*ArcSin[c*x])^n/(m + 1)), x] - Dist[b*c*(n/(m + 1)), Int[x^
(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4809

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[(1/(b*c^(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x
^2)^p], Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b]^(2*p + 1), x], x, a
 + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0]
&& IGtQ[2*p + 2, 0] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)^3 \left(a+b\sin^{-1}(c+dx)\right)^{5/2} dx = \frac{\text{Subst}\left(\int e^3x^3(a+b\sin^{-1}(x))^{5/2} dx, x, c+dx\right)}{d}$$

$$= \frac{e^3\text{Subst}\left(\int x^3(a+b\sin^{-1}(x))^{5/2} dx, x, c+dx\right)}{d}$$

$$= \frac{e^3(c+dx)^4 \left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{4d} - \frac{(5be^3)\,\text{Subst}\left(\int \frac{x^4(a+b\sin}{\sqrt{1-}}\right.}{8d}$$

$$= \frac{5be^3(c+dx)^3\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{32d} + \frac{e^3(c-}{}$$

$$= -\frac{15b^2e^3(c+dx)^4\sqrt{a+b\sin^{-1}(c+dx)}}{256d} + \frac{15be^3(c+dx)\sqrt{1-}}{}$$

$$= -\frac{45b^2e^3(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{256d} - \frac{15b^2e^3(c+dx)^4\sqrt{a}}{25}$$

$$= -\frac{45b^2e^3(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{256d} - \frac{15b^2e^3(c+dx)^4\sqrt{a}}{25}$$

$$= \frac{45b^2e^3\sqrt{a+b\sin^{-1}(c+dx)}}{2048d} - \frac{45b^2e^3(c+dx)^2\sqrt{a+b\sin^{-1}(}}{256d}$$

$$= \frac{225b^2e^3\sqrt{a+b\sin^{-1}(c+dx)}}{2048d} - \frac{45b^2e^3(c+dx)^2\sqrt{a+b\sin^{-1}}}{256d}$$

$$= \frac{225b^2e^3\sqrt{a+b\sin^{-1}(c+dx)}}{2048d} - \frac{45b^2e^3(c+dx)^2\sqrt{a+b\sin^{-1}}}{256d}$$

$$= \frac{225b^2e^3\sqrt{a+b\sin^{-1}(c+dx)}}{2048d} - \frac{45b^2e^3(c+dx)^2\sqrt{a+b\sin^{-1}}}{256d}$$

$$= \frac{225b^2e^3\sqrt{a+b\sin^{-1}(c+dx)}}{2048d} - \frac{45b^2e^3(c+dx)^2\sqrt{a+b\sin^{-1}}}{256d}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.19, size = 269, normalized size = 0.57

$$-\frac{e^3e^{-\frac{4ia}{b}}(a+b\text{ArcSin}(c+dx))^{5/2}\left(-16\sqrt{2}e^{\frac{2ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\text{Gamma}\left(\frac{7}{2},-\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)-16\sqrt{2}e^{\frac{6ia}{b}}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\text{Gamma}\left(\frac{7}{2},\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)+\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\text{Gamma}\left(\frac{7}{2},-\frac{4i(a+b\text{ArcSin}(c+dx))}{b}\right)+e^{\frac{8ia}{b}}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\text{Gamma}\left(\frac{7}{2},\frac{4i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)}{2048d\left(\frac{(a+b\text{ArcSin}(c+dx))^2}{b^2}\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^3*(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] -1/2048*(e^3*(a + b*ArcSin[c + d*x])^(5/2)*(-16*Sqrt[2]*E^(((2*I)*a)/b)*Sqr
t[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[7/2, ((-2*I)*(a + b*ArcSin[c + d*x])
)/b] - 16*Sqrt[2]*E^(((6*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Ga
mma[7/2, ((2*I)*(a + b*ArcSin[c + d*x]))/b] + Sqrt[(I*(a + b*ArcSin[c + d*x
]))/b]*Gamma[7/2, ((-4*I)*(a + b*ArcSin[c + d*x]))/b] + E^(((8*I)*a)/b)*Sqr
t[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[7/2, ((4*I)*(a + b*ArcSin[c + d*x
]))/b]))/(d*E^(((4*I)*a)/b)*((a + b*ArcSin[c + d*x])^2/b^2)^(3/2))
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 891 vs. $2(391) = 782$.
time = 0.52, size = 892, normalized size = 1.88

method	result
default	$-\frac{e^3\left(-15\sqrt{-\frac{1}{b}}\sqrt{\pi}\sqrt{2}\sqrt{a+b\arcsin(dx+c)}\cos\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{2}\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\sqrt{-\frac{1}{b}}b}\right)b^3+15\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^(5/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/8192/d*e^3/(a+b*arcsin(d*x+c))^(1/2)*(-15*(-1/b)^(1/2)*Pi^(1/2)*2^(1/2)*
(a+b*arcsin(d*x+c))^(1/2)*cos(4*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-1/b)^(1/
2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b^3+15*(-1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*a
rcsin(d*x+c))^(1/2)*sin(4*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+
b*arcsin(d*x+c))^(1/2)/b)*b^3+240*(-2/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin
(d*x+c))^(1/2)*cos(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arc
sin(d*x+c))^(1/2)/b)*b^3-240*(-2/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+
c))^(1/2)*sin(2*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d
*x+c))^(1/2)/b)*b^3+1024*arcsin(d*x+c)^3*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b
)*b^3-256*arcsin(d*x+c)^3*cos(-4*(a+b*arcsin(d*x+c))/b+4*a/b)*b^3+3072*arcs
in(d*x+c)^2*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a*b^2+1280*arcsin(d*x+c)^2*
sin(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*b^3-768*arcsin(d*x+c)^2*cos(-4*(a+b*arc
sin(d*x+c))/b+4*a/b)*a*b^2-160*arcsin(d*x+c)^2*sin(-4*(a+b*arcsin(d*x+c))/b
+4*a/b)*b^3+3072*arcsin(d*x+c)*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a^2*b-96
0*arcsin(d*x+c)*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*b^3+2560*arcsin(d*x+c)*
```

```
sin(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a*b^2-768*arcsin(d*x+c)*cos(-4*(a+b*arc
sin(d*x+c))/b+4*a/b)*a^2*b+60*arcsin(d*x+c)*cos(-4*(a+b*arcsin(d*x+c))/b+4*
a/b)*b^3-320*arcsin(d*x+c)*sin(-4*(a+b*arcsin(d*x+c))/b+4*a/b)*a*b^2+1024*c
os(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a^3-960*cos(-2*(a+b*arcsin(d*x+c))/b+2*a
/b)*a*b^2+1280*sin(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a^2*b-256*cos(-4*(a+b*ar
csin(d*x+c))/b+4*a/b)*a^3+60*cos(-4*(a+b*arcsin(d*x+c))/b+4*a/b)*a*b^2-160*
sin(-4*(a+b*arcsin(d*x+c))/b+4*a/b)*a^2*b)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)^3*(b*arcsin(d*x + c) + a)^(5/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e^{3}\left(\int a^{2}c^{3}\sqrt{a+b\operatorname{asin}{(c+dx)}}\,dx+\int a^{2}d^{3}x^{3}\sqrt{a+b\operatorname{asin}{(c+dx)}}\,dx+\int b^{2}c^{3}\sqrt{a+b\operatorname{asin}{(c+dx)}}\operatorname{asin}^{2}{(c+dx)}\,dx+\int 2abc^{3}\sqrt{a+b\operatorname{asin}{(c+dx)}}\operatorname{asin}{(c+dx)}\,dx+\int 3a^{2}cd^{2}x^{2}\sqrt{a+b\operatorname{asin}{(c+dx)}}\,dx+\int 3a^{2}c^{2}dx\sqrt{a+b\operatorname{asin}{(c+dx)}}\,dx+\int b^{2}d^{3}x^{3}\sqrt{a+b\operatorname{asin}{(c+dx)}}\operatorname{asin}^{2}{(c+dx)}\,dx+\int 2abd^{3}x^{3}\sqrt{a+b\operatorname{asin}{(c+dx)}}\operatorname{asin}{(c+dx)}\,dx+\int 3b^{2}cd^{2}x^{2}\sqrt{a+b\operatorname{asin}{(c+dx)}}\operatorname{asin}^{2}{(c+dx)}\,dx+\int 3b^{2}c^{2}dx\sqrt{a+b\operatorname{asin}{(c+dx)}}\operatorname{asin}^{2}{(c+dx)}\,dx+\int 6abcd^{2}x^{2}\sqrt{a+b\operatorname{asin}{(c+dx)}}\operatorname{asin}{(c+dx)}\,dx+\int 6abc^{2}dx\sqrt{a+b\operatorname{asin}{(c+dx)}}\operatorname{asin}{(c+dx)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3*(a+b*asin(d*x+c))**(5/2),x)
```

```
[Out] e**3*(Integral(a**2*c**3*sqrt(a + b*asin(c + d*x)), x) + Integral(a**2*d**3
*x**3*sqrt(a + b*asin(c + d*x)), x) + Integral(b**2*c**3*sqrt(a + b*asin(c
+ d*x))*asin(c + d*x)**2, x) + Integral(2*a*b*c**3*sqrt(a + b*asin(c + d*x)
)*asin(c + d*x), x) + Integral(3*a**2*c*d**2*x**2*sqrt(a + b*asin(c + d*x))
, x) + Integral(3*a**2*c**2*d*x*sqrt(a + b*asin(c + d*x)), x) + Integral(b*
*2*d**3*x**3*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**2, x) + Integral(2*a*
b*d**3*x**3*sqrt(a + b*asin(c + d*x))*asin(c + d*x), x) + Integral(3*b**2*c
*d**2*x**2*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**2, x) + Integral(3*b**2
*c**2*d*x*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**2, x) + Integral(6*a*b*c
```

```
*d**2*x**2*sqrt(a + b*asin(c + d*x))*asin(c + d*x), x) + Integral(6*a*b*c**
2*d*x*sqrt(a + b*asin(c + d*x))*asin(c + d*x), x))
```

Giac [C] Result contains complex when optimal does not.
time = 1.74, size = 3408, normalized size = 7.17

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3*(a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] -1/8192*(-512*I*sqrt(pi)*a^3*b^2*e^3*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) +
a)/sqrt(b) + I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-4*I*
a/b)/(sqrt(2)*b^(5/2) - I*sqrt(2)*b^(7/2)/abs(b)) - 128*sqrt(b*arcsin(d*x +
 c) + a)*b^2*e^3*arcsin(d*x + c)^2*e^(4*I*arcsin(d*x + c)) + 512*sqrt(b*arc
sin(d*x + c) + a)*b^2*e^3*arcsin(d*x + c)^2*e^(2*I*arcsin(d*x + c)) + 512*s
qrt(b*arcsin(d*x + c) + a)*b^2*e^3*arcsin(d*x + c)^2*e^(-2*I*arcsin(d*x + c
)) - 128*sqrt(b*arcsin(d*x + c) + a)*b^2*e^3*arcsin(d*x + c)^2*e^(-4*I*arcs
in(d*x + c)) - 1536*I*sqrt(pi)*a^3*b*e^3*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c
) + a)/sqrt(b) - I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(4
*I*a/b)/(sqrt(2)*b^(3/2) + I*sqrt(2)*b^(5/2)/abs(b)) - 192*sqrt(pi)*a^2*b^2
*e^3*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(2)*sqrt(b*ar
csin(d*x + c) + a)*sqrt(b)/abs(b))*e^(4*I*a/b)/(sqrt(2)*b^(3/2) + I*sqrt(2)
*b^(5/2)/abs(b)) + 1024*I*sqrt(pi)*a^3*b*e^3*erf(-sqrt(b*arcsin(d*x + c) +
a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/(b^(
3/2) + I*b^(5/2)/abs(b)) - 1024*I*sqrt(pi)*a^3*b*e^3*erf(-sqrt(b*arcsin(d*x
 + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*
a/b)/(b^(3/2) - I*b^(5/2)/abs(b)) - 1024*I*sqrt(pi)*a^3*b*e^3*erf(-sqrt(2)*
sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)
*sqrt(b)/abs(b))*e^(-4*I*a/b)/(sqrt(2)*b^(3/2) - I*sqrt(2)*b^(5/2)/abs(b))
- 384*sqrt(pi)*a^2*b^2*e^3*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b)
 + I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-4*I*a/b)/(sqrt
(2)*b^(3/2) - I*sqrt(2)*b^(5/2)/abs(b)) + 1536*I*sqrt(pi)*a^3*sqrt(b)*e^3*e
rf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(2)*sqrt(b*arcsin(d
*x + c) + a)*sqrt(b)/abs(b))*e^(4*I*a/b)/(sqrt(2)*b + I*sqrt(2)*b^2/abs(b))
 - 192*sqrt(pi)*a^2*b^(3/2)*e^3*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sq
rt(b) - I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(4*I*a/b)/(
sqrt(2)*b + I*sqrt(2)*b^2/abs(b)) - 1024*I*sqrt(pi)*a^3*sqrt(b)*e^3*erf(-sq
rt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/a
bs(b))*e^(2*I*a/b)/(b + I*b^2/abs(b)) + 1536*sqrt(pi)*a^2*b^(3/2)*e^3*erf(-
sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)
/abs(b))*e^(2*I*a/b)/(b + I*b^2/abs(b)) + 1024*I*sqrt(pi)*a^3*sqrt(b)*e^3*e
rf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqr
t(b)/abs(b))*e^(-2*I*a/b)/(b - I*b^2/abs(b)) + 1536*sqrt(pi)*a^2*b^(3/2)*e^
3*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*
```

```
sqrt(b)/abs(b))*e^(-2*I*a/b)/(b - I*b^2/abs(b)) + 1024*I*sqrt(pi)*a^3*sqrt(
b)*e^3*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(2)*sqrt(b*
arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-4*I*a/b)/(sqrt(2)*b - I*sqrt(2)*b^
2/abs(b)) - 256*sqrt(b*arcsin(d*x + c) + a)*a*b*e^3*arcsin(d*x + c)*e^(4*I*
arcsin(d*x + c)) - 80*I*sqrt(b*arcsin(d*x + c) + a)*b^2*e^3*arcsin(d*x + c)
*e^(4*I*arcsin(d*x + c)) + 1024*sqrt(b*arcsin(d*x + c) + a)*a*b*e^3*arcsin(
d*x + c)*e^(2*I*arcsin(d*x + c)) + 640*I*sqrt(b*arcsin(d*x + c) + a)*b^2*e^
3*arcsin(d*x + c)*e^(2*I*arcsin(d*x + c)) + 1024*sqrt(b*arcsin(d*x + c) + a
)*a*b*e^3*arcsin(d*x + c)*e^(-2*I*arcsin(d*x + c)) - 640*I*sqrt(b*arcsin(d*
x + c) + a)*b^2*e^3*arcsin(d*x + c)*e^(-2*I*arcsin(d*x + c)) - 256*sqrt(b*a
rcsin(d*x + c) + a)*a*b*e^3*arcsin(d*x + c)*e^(-4*I*arcsin(d*x + c)) + 80*I
*sqrt(b*arcsin(d*x + c) + a)*b^2*e^3*arcsin(d*x + c)*e^(-4*I*arcsin(d*x + c
)) - 512*I*sqrt(pi)*a^3*e^3*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b
) - I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(4*I*a/b)/(sqrt
(2)*sqrt(b) + I*sqrt(2)*b^(3/2)/abs(b)) + 384*sqrt(pi)*a^2*b*e^3*erf(-sqrt(
2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(2)*sqrt(b*arcsin(d*x + c) +
 a)*sqrt(b)/abs(b))*e^(4*I*a/b)/(sqrt(2)*sqrt(b) + I*sqrt(2)*b^(3/2)/abs(b)
) - 72*I*sqrt(pi)*a*b^2*e^3*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b
) - I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(4*I*a/b)/(sqrt
(2)*sqrt(b) + I*sqrt(2)*b^(3/2)/abs(b)) + 15*sqrt(pi)*b^3*e^3*erf(-sqrt(2)*
sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)
*sqrt(b)/abs(b))*e^(4*I*a/b)/(sqrt(2)*sqrt(b) + I*sqrt(2)*b^(3/2)/abs(b)) -
 1536*sqrt(pi)*a^2*b*e^3*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(
b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/(sqrt(b) + I*b^(3/2)/abs
(b)) + 576*I*sqrt(pi)*a*b^2*e^3*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) -
I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/(sqrt(b) + I*b^(3
/2)/abs(b)) - 1024*I*sqrt(pi)*a^3*e^3*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt
(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(sqrt(b) -
 I*b^(3/2)/abs(b)) - 1536*sqrt(pi)*a^2*b*e^3*erf(-sqrt(b*arcsin(d*x + c) +
a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(sq
rt(b) - I*b^(3/2)/abs(b)) - 576*I*sqrt(pi)*a*b^2*e^3*erf(-sqrt(b*arcsin(d*x
 + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*
a/b)/(sqrt(b) - I*b^(3/2)/abs(b)) + 512*I*sqrt(...
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.00

$$\int (c\,e+d\,e\,x)^3\,(a+b\,\mathrm{asin}(c+d\,x))^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^3*(a + b*asin(c + d*x))^(5/2),x)
```

```
[Out] int((c*e + d*e*x)^3*(a + b*asin(c + d*x))^(5/2), x)
```

3.251 $\int (ce+dex)^2(a+b\mathbf{ArcSin}(c+dx))^{5/2}\,dx$

Optimal. Leaf size=427

$$-\frac{5b^2e^2(c+dx)\sqrt{a+b\text{ArcSin}(c+dx)}}{6d}-\frac{5b^2e^2(c+dx)^3\sqrt{a+b\text{ArcSin}(c+dx)}}{36d}+\frac{5be^2\sqrt{1-(c+dx)^2}\,(a+}{9d}$$

```
[Out] 1/3*e^2*(d*x+c)^3*(a+b*arcsin(d*x+c))^(5/2)/d-5/864*b^(5/2)*e^2*cos(3*a/b)*
FresnelS(6^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*6^(1/2)*Pi^(1/
2)/d+5/864*b^(5/2)*e^2*FresnelC(6^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/
b^(1/2))*sin(3*a/b)*6^(1/2)*Pi^(1/2)/d+15/32*b^(5/2)*e^2*cos(a/b)*FresnelS(
2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/d-15/3
2*b^(5/2)*e^2*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*
sin(a/b)*2^(1/2)*Pi^(1/2)/d+5/9*b*e^2*(a+b*arcsin(d*x+c))^(3/2)*(1-(d*x+c)^
2)^(1/2)/d+5/18*b*e^2*(d*x+c)^2*(a+b*arcsin(d*x+c))^(3/2)*(1-(d*x+c)^2)^(1/
2)/d-5/6*b^2*e^2*(d*x+c)*(a+b*arcsin(d*x+c))^(1/2)/d-5/36*b^2*e^2*(d*x+c)^3
*(a+b*arcsin(d*x+c))^(1/2)/d
```

Rubi [A]
time = 0.88, antiderivative size = 427, normalized size of antiderivative = 1.00, number of steps used = 26, number of rules used = 13, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.520$, Rules used = {4889, 12, 4725, 4795, 4767, 4715, 4809, 3387, 3386, 3432, 3385, 3433, 3393}

$$-\frac{15\sqrt{\frac{\pi}{2}}\,b^{5/2}e^2\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{16d}+\frac{5\sqrt{\frac{\pi}{6}}\,b^{5/2}e^2\sin\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{144d}+\frac{15\sqrt{\frac{\pi}{2}}\,b^{5/2}e^2\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{16d}-\frac{5\sqrt{\frac{\pi}{6}}\,b^{5/2}e^2\cos\left(\frac{3a}{b}\right)S\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{144d}-\frac{5b^2e^2(c+dx)^3\sqrt{a+b\text{ArcSin}(c+dx)}}{36d}-\frac{5b^2e^2(c+dx)\sqrt{a+b\text{ArcSin}(c+dx)}}{6d}+\frac{e^2(c+dx)^3(a+b\text{ArcSin}(c+dx))^{5/2}}{3d}+\frac{5be^2\sqrt{1-(c+dx)^2}\,(c+dx)^2(a+b\text{ArcSin}(c+dx))^{3/2}}{18d}+\frac{5be^2\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^{3/2}}{9d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] (-5*b^2*e^2*(c + d*x)*Sqrt[a + b*ArcSin[c + d*x]])/(6*d) - (5*b^2*e^2*(c +
d*x)^3*Sqrt[a + b*ArcSin[c + d*x]])/(36*d) + (5*b*e^2*Sqrt[1 - (c + d*x)^2]
*(a + b*ArcSin[c + d*x])^(3/2))/(9*d) + (5*b*e^2*(c + d*x)^2*Sqrt[1 - (c +
d*x)^2]*(a + b*ArcSin[c + d*x])^(3/2))/(18*d) + (e^2*(c + d*x)^3*(a + b*Arc
Sin[c + d*x])^(5/2))/(3*d) + (15*b^(5/2)*e^2*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(
Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(16*d) - (5*b^(5/2)*e^2*S
qrt[Pi/6]*Cos[(3*a)/b]*FresnelS[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sq
rt[b]])/(144*d) - (15*b^(5/2)*e^2*Sqrt[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a +
b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(16*d) + (5*b^(5/2)*e^2*Sqrt[Pi/6]*F
resnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(3*a)/b])/(14
4*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3393

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4725

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^(m + 1)*((a + b*ArcSin[c*x])^n/(m + 1)), x] - Dist[b*c*(n/(m + 1)), Int[x^
(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a
```

```
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4809

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[(1/(b*c^(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x
^2)^p], Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b]^(2*p + 1), x], x, a
 + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0]
&& IGtQ[2*p + 2, 0] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)^2 \left(a+b\sin^{-1}(c+dx)\right)^{5/2} \, dx = \frac{\text{Subst}\left(\int e^2x^2(a+b\sin^{-1}(x))^{5/2} \, dx, x, c+dx\right)}{d}$$

$$= \frac{e^2\text{Subst}\left(\int x^2(a+b\sin^{-1}(x))^{5/2} \, dx, x, c+dx\right)}{d}$$

$$= \frac{e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{3d} - \frac{(5be^2)\,\text{Subst}\left(\int \frac{x^3(a+b\sin}{\sqrt{1-}}\right.}{6d}$$

$$= \frac{5be^2(c+dx)^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{18d} + \frac{e^2(c-}{}$$

$$= -\frac{5b^2e^2(c+dx)^3\sqrt{a+b\sin^{-1}(c+dx)}}{36d} + \frac{5be^2\sqrt{1-(c+dx)^2}}{}$$

$$= -\frac{5b^2e^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{6d} - \frac{5b^2e^2(c+dx)^3\sqrt{a+}}{36d}$$

$$= -\frac{5b^2e^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{6d} - \frac{5b^2e^2(c+dx)^3\sqrt{a+}}{36d}$$

$$= -\frac{5b^2e^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{6d} - \frac{5b^2e^2(c+dx)^3\sqrt{a+}}{36d}$$

$$= -\frac{5b^2e^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{6d} - \frac{5b^2e^2(c+dx)^3\sqrt{a+}}{36d}$$

$$= -\frac{5b^2e^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{6d} - \frac{5b^2e^2(c+dx)^3\sqrt{a+}}{36d}$$

$$= -\frac{5b^2e^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{6d} - \frac{5b^2e^2(c+dx)^3\sqrt{a+}}{36d}$$

Mathematica [C] Result contains complex when optimal does not.

time = 0.17, size = 249, normalized size = 0.58

$$\frac{b^3e^2e^{-\frac{3ia}{b}}\left(-81e^{\frac{2ia}{b}}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\text{Gamma}\left(\frac{7}{2},-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)-81e^{\frac{4ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\text{Gamma}\left(\frac{7}{2},\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)+\sqrt{3}\left(\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\text{Gamma}\left(\frac{7}{2},-\frac{3i(a+b\text{ArcSin}(c+dx))}{b}\right)+e^{\frac{6ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\text{Gamma}\left(\frac{7}{2},\frac{3i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)\right)}{648d\sqrt{a+b\text{ArcSin}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] (b^3*e^2*(-81*E^(((2*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[
7/2, ((-I)*(a + b*ArcSin[c + d*x]))/b] - 81*E^(((4*I)*a)/b)*Sqrt[(I*(a + b*
ArcSin[c + d*x]))/b]*Gamma[7/2, (I*(a + b*ArcSin[c + d*x]))/b] + Sqrt[3]*(S
qrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[7/2, ((-3*I)*(a + b*ArcSin[c +
d*x]))/b] + E^(((6*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[7/2,
((3*I)*(a + b*ArcSin[c + d*x]))/b])))/(648*d*E^(((3*I)*a)/b)*Sqrt[a + b*Arc
Sin[c + d*x]])
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 878 vs. $2(347) = 694$.
time = 0.53, size = 879, normalized size = 2.06

method	result
default	$-\frac{e^2\left(-5\sqrt{-\frac{3}{b}}\sqrt{\pi}\sqrt{2}\sqrt{a+b\arcsin(dx+c)}\cos(\frac{3a}{b})\text{S}\left(\frac{3\sqrt{2}\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\sqrt{-\frac{3}{b}}b}\right)b^3-5\sqrt{-\frac{3}{b}}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(5/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/864/d*e^2*(-5*(-3/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*co
s(3*a/b)*FresnelS(3*2^(1/2)/Pi^(1/2)/(-3/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)
/b)*b^3-5*(-3/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(3*a/b
)*FresnelC(3*2^(1/2)/Pi^(1/2)/(-3/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b^3
+405*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1
/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)*Pi^(1/2)*2^(1/2)*b^3+405*Pi^(
1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(
-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)*b^3+216*arcsin(d*x+c)
^3*sin(-(a+b*arcsin(d*x+c))/b+a/b)*b^3-72*arcsin(d*x+c)^3*sin(-3*(a+b*arcsi
n(d*x+c))/b+3*a/b)*b^3+648*arcsin(d*x+c)^2*sin(-(a+b*arcsin(d*x+c))/b+a/b)*
a*b^2-540*arcsin(d*x+c)^2*cos(-(a+b*arcsin(d*x+c))/b+a/b)*b^3-216*arcsin(d*
x+c)^2*sin(-3*(a+b*arcsin(d*x+c))/b+3*a/b)*a*b^2+60*arcsin(d*x+c)^2*cos(-3*
(a+b*arcsin(d*x+c))/b+3*a/b)*b^3+648*arcsin(d*x+c)*sin(-(a+b*arcsin(d*x+c))
/b+a/b)*a^2*b-810*arcsin(d*x+c)*sin(-(a+b*arcsin(d*x+c))/b+a/b)*b^3-1080*ar
csin(d*x+c)*cos(-(a+b*arcsin(d*x+c))/b+a/b)*a*b^2-216*arcsin(d*x+c)*sin(-3*
(a+b*arcsin(d*x+c))/b+3*a/b)*a^2*b+30*arcsin(d*x+c)*sin(-3*(a+b*arcsin(d*x+
```

```
c))/b+3*a/b)*b^3+120*arcsin(d*x+c)*cos(-3*(a+b*arcsin(d*x+c))/b+3*a/b)*a*b^
2+216*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a^3-810*sin(-(a+b*arcsin(d*x+c))/b+a/
b)*a*b^2-540*cos(-(a+b*arcsin(d*x+c))/b+a/b)*a^2*b-72*sin(-3*(a+b*arcsin(d*
x+c))/b+3*a/b)*a^3+30*sin(-3*(a+b*arcsin(d*x+c))/b+3*a/b)*a*b^2+60*cos(-3*(
a+b*arcsin(d*x+c))/b+3*a/b)*a^2*b)/(a+b*arcsin(d*x+c))^(1/2)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)^2*(b*arcsin(d*x + c) + a)^(5/2), x)
```

Fricas [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$e^{2}\left(\int a^{2}c^{2}\sqrt{a+b\operatorname{asin}{(c+dx)}}\,dx+\int a^{2}d^{2}x^{2}\sqrt{a+b\operatorname{asin}{(c+dx)}}\,dx+\int b^{2}c^{2}\sqrt{a+b\operatorname{asin}{(c+dx)}}\operatorname{asin}^{2}{(c+dx)}\,dx+\int 2abc^{2}\sqrt{a+b\operatorname{asin}{(c+dx)}}\operatorname{asin}{(c+dx)}\,dx+\int 2a^{2}cdx\sqrt{a+b\operatorname{asin}{(c+dx)}}\,dx+\int b^{2}d^{2}x^{2}\sqrt{a+b\operatorname{asin}{(c+dx)}}\operatorname{asin}^{2}{(c+dx)}\,dx+\int 2abd^{2}x^{2}\sqrt{a+b\operatorname{asin}{(c+dx)}}\operatorname{asin}{(c+dx)}\,dx+\int 2b^{2}cdx\sqrt{a+b\operatorname{asin}{(c+dx)}}\operatorname{asin}^{2}{(c+dx)}\,dx+\int 4abcdx\sqrt{a+b\operatorname{asin}{(c+dx)}}\operatorname{asin}{(c+dx)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2*(a+b*asin(d*x+c))**(5/2),x)
```

```
[Out] e**2*(Integral(a**2*c**2*sqrt(a + b*asin(c + d*x)), x) + Integral(a**2*d**2
*x**2*sqrt(a + b*asin(c + d*x)), x) + Integral(b**2*c**2*sqrt(a + b*asin(c
+ d*x))*asin(c + d*x)**2, x) + Integral(2*a*b*c**2*sqrt(a + b*asin(c + d*x)
)*asin(c + d*x), x) + Integral(2*a**2*c*d*x*sqrt(a + b*asin(c + d*x)), x) +
 Integral(b**2*d**2*x**2*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**2, x) + I
ntegral(2*a*b*d**2*x**2*sqrt(a + b*asin(c + d*x))*asin(c + d*x), x) + Integ
ral(2*b**2*c*d*x*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**2, x) + Integral(
4*a*b*c*d*x*sqrt(a + b*asin(c + d*x))*asin(c + d*x), x))
```

Giac [**C**] Result contains complex when optimal does not.
time = 2.04, size = 2826, normalized size = 6.62

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] 1/576*(72*sqrt(2)*sqrt(pi)*a^3*b^2*e^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x
 + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(
b))/b)*e^(I*a/b)/(I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b))) + 72*sqrt(2)*sqrt(
pi)*a^3*b^2*e^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b))
- 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*b^
3/sqrt(abs(b)) + b^2*sqrt(abs(b))) + 216*I*sqrt(2)*sqrt(pi)*a^2*b^2*e^2*erf
(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt
(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(I*b^2/sqrt(abs(b)) + b*s
qrt(abs(b))) - 216*I*sqrt(2)*sqrt(pi)*a^2*b^2*e^2*erf(1/2*I*sqrt(2)*sqrt(b*
arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)
*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b))) + 24*I*s
qrt(b*arcsin(d*x + c) + a)*b^2*e^2*arcsin(d*x + c)^2*e^(3*I*arcsin(d*x + c)
) - 72*I*sqrt(b*arcsin(d*x + c) + a)*b^2*e^2*arcsin(d*x + c)^2*e^(I*arcsin(
d*x + c)) + 72*I*sqrt(b*arcsin(d*x + c) + a)*b^2*e^2*arcsin(d*x + c)^2*e^(-
I*arcsin(d*x + c)) - 24*I*sqrt(b*arcsin(d*x + c) + a)*b^2*e^2*arcsin(d*x +
c)^2*e^(-3*I*arcsin(d*x + c)) - 144*sqrt(pi)*a^3*sqrt(b)*e^2*erf(-1/2*sqrt(
6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x +
c) + a)*sqrt(b)/abs(b))*e^(3*I*a/b)/(sqrt(6)*b + I*sqrt(6)*b^2/abs(b)) - 14
4*I*sqrt(pi)*a^2*b^(3/2)*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/s
qrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(3*I*a
/b)/(sqrt(6)*b + I*sqrt(6)*b^2/abs(b)) - 216*I*sqrt(2)*sqrt(pi)*a^2*b*e^2*e
rf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sq
rt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(I*b/sqrt(abs(b)) + sqr
t(abs(b))) - 135*I*sqrt(2)*sqrt(pi)*b^3*e^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsi
n(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt
(abs(b))/b)*e^(I*a/b)/(I*b/sqrt(abs(b)) + sqrt(abs(b))) + 216*I*sqrt(2)*sqr
t(pi)*a^2*b*e^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b))
- 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*b/
sqrt(abs(b)) + sqrt(abs(b))) + 135*I*sqrt(2)*sqrt(pi)*b^3*e^2*erf(1/2*I*sqr
t(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d
*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*b/sqrt(abs(b)) + sqrt(abs(b)))
- 144*sqrt(pi)*a^3*sqrt(b)*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)
/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-3*
I*a/b)/(sqrt(6)*b - I*sqrt(6)*b^2/abs(b)) + 144*I*sqrt(pi)*a^2*b^(3/2)*e^2*
erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b
*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-3*I*a/b)/(sqrt(6)*b - I*sqrt(6)*b
^2/abs(b)) + 48*I*sqrt(b*arcsin(d*x + c) + a)*a*b*e^2*arcsin(d*x + c)*e^(3*
I*arcsin(d*x + c)) - 20*sqrt(b*arcsin(d*x + c) + a)*b^2*e^2*arcsin(d*x + c)
*e^(3*I*arcsin(d*x + c)) - 144*I*sqrt(b*arcsin(d*x + c) + a)*a*b*e^2*arcsin
(d*x + c)*e^(I*arcsin(d*x + c)) + 180*sqrt(b*arcsin(d*x + c) + a)*b^2*e^2*a
rcsin(d*x + c)*e^(I*arcsin(d*x + c)) + 144*I*sqrt(b*arcsin(d*x + c) + a)*a*
```

```
b*e^2*arcsin(d*x + c)*e^(-I*arcsin(d*x + c)) + 180*sqrt(b*arcsin(d*x + c) +
 a)*b^2*e^2*arcsin(d*x + c)*e^(-I*arcsin(d*x + c)) - 48*I*sqrt(b*arcsin(d*x
 + c) + a)*a*b*e^2*arcsin(d*x + c)*e^(-3*I*arcsin(d*x + c)) - 20*sqrt(b*arc
sin(d*x + c) + a)*b^2*e^2*arcsin(d*x + c)*e^(-3*I*arcsin(d*x + c)) + 144*sq
rt(pi)*a^3*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - 1/2*I
*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(3*I*a/b)/(sqrt(6)*s
qrt(b) + I*sqrt(6)*b^(3/2)/abs(b)) + 144*I*sqrt(pi)*a^2*b*e^2*erf(-1/2*sqrt
(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x +
 c) + a)*sqrt(b)/abs(b))*e^(3*I*a/b)/(sqrt(6)*sqrt(b) + I*sqrt(6)*b^(3/2)/a
bs(b)) + 36*sqrt(pi)*a*b^2*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)
/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(3*I
*a/b)/(sqrt(6)*sqrt(b) + I*sqrt(6)*b^(3/2)/abs(b)) - 144*sqrt(pi)*a^3*e^2*e
rf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sq
rt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(I*sqrt(2)*b/sqrt(abs(b
)) + sqrt(2)*sqrt(abs(b))) - 144*sqrt(pi)*a^3*e^2*erf(1/2*I*sqrt(2)*sqrt(b*
arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)
*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*sqrt(2)*b/sqrt(abs(b)) + sqrt(2)*sqrt(abs(b
))) + 144*sqrt(pi)*a^3*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqr
t(b) + 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-3*I*a/
b)/(sqrt(6)*sqrt(b) - I*sqrt(6)*b^(3/2)/abs(b)) - 144*I*sqrt(pi)*a^2*b*e^2*
erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b
*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-3*I*a/b)/(sqrt(6)*sqrt(b) - I*sqr
t(6)*b^(3/2)/abs(b)) + 36*sqrt(pi)*a*b^2*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin
(d*x + c) + a)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/
abs(b))*e^(-3*I*a/b)/(sqrt(6)*sqrt(b) - I*sqrt(6)*b^(3/2)/abs(b)) - 36*sqrt
(pi)*a*b^(3/2)*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcs...
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.00

$$\int (c\,e+d\,e\,x)^2\,(a+b\,\mathrm{asin}(c+d\,x))^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^2*(a + b*asin(c + d*x))^(5/2),x)
[Out] int((c*e + d*e*x)^2*(a + b*asin(c + d*x))^(5/2), x)
```

3.252 $\int (ce+dex)(a+b\textbf{ArcSin}(c+dx))^{5/2}\,dx$

Optimal. Leaf size=256

$$\frac{15b^2e\sqrt{a+b\text{ArcSin}(c+dx)}}{64d}-\frac{15b^2e(c+dx)^2\sqrt{a+b\text{ArcSin}(c+dx)}}{32d}+\frac{5be(c+dx)\sqrt{1-(c+dx)^2}\,(a+bA}{8d}$$

```
[Out] -1/4*e*(a+b*arcsin(d*x+c))^(5/2)/d+1/2*e*(d*x+c)^2*(a+b*arcsin(d*x+c))^(5/2
)/d-15/128*b^(5/2)*e*cos(2*a/b)*FresnelC(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2
)/Pi^(1/2))*Pi^(1/2)/d-15/128*b^(5/2)*e*FresnelS(2*(a+b*arcsin(d*x+c))^(1/2
)/b^(1/2)/Pi^(1/2))*sin(2*a/b)*Pi^(1/2)/d+5/8*b*e*(d*x+c)*(a+b*arcsin(d*x+c
))^(3/2)*(1-(d*x+c)^2)^(1/2)/d+15/64*b^2*e*(a+b*arcsin(d*x+c))^(1/2)/d-15/3
2*b^2*e*(d*x+c)^2*(a+b*arcsin(d*x+c))^(1/2)/d
```

Rubi [A]
time = 0.43, antiderivative size = 256, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 12, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.522$, Rules used = {4889, 12, 4725, 4795, 4737, 4809, 3393, 3387, 3386, 3432, 3385, 3433}

$$-\frac{15\sqrt{\pi}\,b^{5/2}e\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}\,\sqrt{b}}\right)}{128d}-\frac{15\sqrt{\pi}\,b^{5/2}e\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\,\sqrt{\pi}}\right)}{128d}-\frac{15b^2e(c+dx)^2\sqrt{a+b\text{ArcSin}(c+dx)}}{32d}+\frac{15b^2e\sqrt{a+b\text{ArcSin}(c+dx)}}{64d}+\frac{5be(c+dx)\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^{3/2}}{8d}+\frac{e(c+dx)^2(a+b\text{ArcSin}(c+dx))^{5/2}}{2d}-\frac{e(a+b\text{ArcSin}(c+dx))^{5/2}}{4d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] (15*b^2*e*Sqrt[a + b*ArcSin[c + d*x]])/(64*d) - (15*b^2*e*(c + d*x)^2*Sqrt[
a + b*ArcSin[c + d*x]])/(32*d) + (5*b*e*(c + d*x)*Sqrt[1 - (c + d*x)^2]*(a
+ b*ArcSin[c + d*x])^(3/2))/(8*d) - (e*(a + b*ArcSin[c + d*x])^(5/2))/(4*d)
 + (e*(c + d*x)^2*(a + b*ArcSin[c + d*x])^(5/2))/(2*d) - (15*b^(5/2)*e*Sqrt
[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi
])])/(128*d) - (15*b^(5/2)*e*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x
]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(128*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3393

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4725

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^(m + 1)*((a + b*ArcSin[c*x])^n/(m + 1)), x] - Dist[b*c*(n/(m + 1)), Int[x^
(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
```

```
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4809

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[(1/(b*c^(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x
^2)^p], Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b]^(2*p + 1), x], x, a
 + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0]
&& IGtQ[2*p + 2, 0] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[(((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^{5/2}\,dx = \frac{\text{Subst}\left(\int ex(a+b\sin^{-1}(x))^{5/2}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e\text{Subst}\left(\int x(a+b\sin^{-1}(x))^{5/2}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{2d} - \frac{(5be)\text{Subst}\left(\int \frac{x^2(a+b\sin^{-1}(}{\sqrt{1-x}}\right.}{4d}$$

$$= \frac{5be(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{8d} + \frac{e(c+dx}{}$$

$$= -\frac{15b^2e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{32d} + \frac{5be(c+dx)\sqrt{1-(c}}{}$$

$$= -\frac{15b^2e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{32d} + \frac{5be(c+dx)\sqrt{1-(c}}{}$$

$$= -\frac{15b^2e(c+dx)^2\sqrt{a+b\sin^{-1}(c+dx)}}{32d} + \frac{5be(c+dx)\sqrt{1-(c}}{}$$

$$= \frac{15b^2e\sqrt{a+b\sin^{-1}(c+dx)}}{64d} - \frac{15b^2e(c+dx)^2\sqrt{a+b\sin^{-1}(c+}}{32d}$$

$$= \frac{15b^2e\sqrt{a+b\sin^{-1}(c+dx)}}{64d} - \frac{15b^2e(c+dx)^2\sqrt{a+b\sin^{-1}(c+}}{32d}$$

$$= \frac{15b^2e\sqrt{a+b\sin^{-1}(c+dx)}}{64d} - \frac{15b^2e(c+dx)^2\sqrt{a+b\sin^{-1}(c+}}{32d}$$

$$= \frac{15b^2e\sqrt{a+b\sin^{-1}(c+dx)}}{64d} - \frac{15b^2e(c+dx)^2\sqrt{a+b\sin^{-1}(c+}}{32d}$$

<u>**Mathematica**</u> **[C]** Result contains complex when optimal does not.
time = 0.06, size = 154, normalized size = 0.60

$$\frac{ee^{-\frac{2ia}{b}}(a+b\text{ArcSin}(c+dx))^{5/2}\left(\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{7}{2},-\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)+e^{\frac{4ia}{b}}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{7}{2},\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)}{32\sqrt{2}\,d\left(\frac{(a+b\text{ArcSin}(c+dx))^2}{b^2}\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] (e*(a + b*ArcSin[c + d*x])^(5/2)*(Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma
[7/2, ((-2*I)*(a + b*ArcSin[c + d*x]))/b] + E^(((4*I)*a)/b)*Sqrt[((-I)*(a +
 b*ArcSin[c + d*x]))/b]*Gamma[7/2, ((2*I)*(a + b*ArcSin[c + d*x]))/b]))/(32
*Sqrt[2]*d*E^(((2*I)*a)/b)*((a + b*ArcSin[c + d*x])^2/b^2)^(3/2))
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 454 vs. $2(210) = 420$.
time = 0.27, size = 455, normalized size = 1.78

method	result
default	$-\frac{e\left(15\sqrt{-\frac{2}{b}}\,\sqrt{\pi}\,\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}\,\cos\left(\frac{2a}{b}\right)\mathrm{FresnelC}\left(\frac{2\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{2}{b}}\,b}\right)b^{3}-15\sqrt{\cdots}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(5/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/256/d*e/(a+b*arcsin(d*x+c))^(1/2)*(15*(-2/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b
*arcsin(d*x+c))^(1/2)*cos(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(
a+b*arcsin(d*x+c))^(1/2)/b)*b^3-15*(-2/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsi
n(d*x+c))^(1/2)*sin(2*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*ar
csin(d*x+c))^(1/2)/b)*b^3+64*arcsin(d*x+c)^3*cos(-2*(a+b*arcsin(d*x+c))/b+2
*a/b)*b^3+192*arcsin(d*x+c)^2*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a*b^2+80*
arcsin(d*x+c)^2*sin(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*b^3+192*arcsin(d*x+c)*c
os(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a^2*b-60*arcsin(d*x+c)*cos(-2*(a+b*arcsi
n(d*x+c))/b+2*a/b)*b^3+160*arcsin(d*x+c)*sin(-2*(a+b*arcsin(d*x+c))/b+2*a/b
)*a*b^2+64*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a^3-60*cos(-2*(a+b*arcsin(d*
x+c))/b+2*a/b)*a*b^2+80*sin(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a^2*b)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)*(b*arcsin(d*x + c) + a)^(5/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e\left(\int a^{2}c\sqrt{a+b\operatorname{asin}(c+dx)}\,dx+\int a^{2}dx\sqrt{a+b\operatorname{asin}(c+dx)}\,dx+\int b^{2}c\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^{2}(c+dx)\,dx+\int 2abc\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)\,dx+\int b^{2}dx\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^{2}(c+dx)\,dx+\int 2abdx\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*asin(d*x+c))**(5/2),x)
```

```
[Out] e*(Integral(a**2*c*sqrt(a + b*asin(c + d*x)), x) + Integral(a**2*d*x*sqrt(a
 + b*asin(c + d*x)), x) + Integral(b**2*c*sqrt(a + b*asin(c + d*x))*asin(c
+ d*x)**2, x) + Integral(2*a*b*c*sqrt(a + b*asin(c + d*x))*asin(c + d*x), x
) + Integral(b**2*d*x*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**2, x) + Inte
gral(2*a*b*d*x*sqrt(a + b*asin(c + d*x))*asin(c + d*x), x))
```

Giac [C] Result contains complex when optimal does not.
time = 1.11, size = 1449, normalized size = 5.66

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] 1/4*I*sqrt(pi)*a^3*b^(3/2)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*s
qrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/((b^2 + I*b^3/abs(b)
)*d) - 3/8*sqrt(pi)*a^2*b^(5/2)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b)
- I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/((b^2 + I*b^3/a
bs(b))*d) - 1/4*I*sqrt(pi)*a^3*b^(3/2)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/s
qrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/((b^2 -
 I*b^3/abs(b))*d) - 3/8*sqrt(pi)*a^2*b^(5/2)*e*erf(-sqrt(b*arcsin(d*x + c)
+ a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(
(b^2 - I*b^3/abs(b))*d) - 1/8*sqrt(b*arcsin(d*x + c) + a)*b^2*e*arcsin(d*x
+ c)^2*e^(2*I*arcsin(d*x + c))/d - 1/8*sqrt(b*arcsin(d*x + c) + a)*b^2*e*ar
csin(d*x + c)^2*e^(-2*I*arcsin(d*x + c))/d + 3/8*sqrt(pi)*a^2*b^2*e*erf(-sq
rt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/a
bs(b))*e^(2*I*a/b)/((b^(3/2) + I*b^(5/2)/abs(b))*d) - 9/64*I*sqrt(pi)*a*b^3
*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)
*sqrt(b)/abs(b))*e^(2*I*a/b)/((b^(3/2) + I*b^(5/2)/abs(b))*d) + 1/4*I*sqrt(
pi)*a^3*b*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x
+ c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/((b^(3/2) - I*b^(5/2)/abs(b))*d) + 3
```

/8*sqrt(pi)*a^2*b^2*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/((b^(3/2) - I*b^(5/2)/abs(b))*d) + 9/64*I*sqrt(pi)*a*b^3*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/((b^(3/2) - I*b^(5/2)/abs(b))*d) - 1/4*I*sqrt(pi)*a^3*sqrt(b)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/((b + I*b^2/abs(b))*d) + 9/64*I*sqrt(pi)*a*b^(5/2)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/((b + I*b^2/abs(b))*d) + 15/256*sqrt(pi)*b^(7/2)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/((b + I*b^2/abs(b))*d) - 9/64*I*sqrt(pi)*a*b^(5/2)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/((b - I*b^2/abs(b))*d) + 15/256*sqrt(pi)*b^(7/2)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/((b - I*b^2/abs(b))*d) - 1/4*sqrt(b*arcsin(d*x + c) + a)*a*b*e*arcsin(d*x + c)*e^(2*I*arcsin(d*x + c))/d - 5/32*I*sqrt(b*arcsin(d*x + c) + a)*b^2*e*arcsin(d*x + c)*e^(2*I*arcsin(d*x + c))/d - 1/4*sqrt(b*arcsin(d*x + c) + a)*a*b*e*arcsin(d*x + c)*e^(-2*I*arcsin(d*x + c))/d + 5/32*I*sqrt(b*arcsin(d*x + c) + a)*b^2*e*arcsin(d*x + c)*e^(-2*I*arcsin(d*x + c))/d - 1/8*sqrt(b*arcsin(d*x + c) + a)*a^2*e*e^(2*I*arcsin(d*x + c))/d - 5/32*I*sqrt(b*arcsin(d*x + c) + a)*a*b*e*e^(2*I*arcsin(d*x + c))/d + 15/128*sqrt(b*arcsin(d*x + c) + a)*b^2*e*e^(2*I*arcsin(d*x + c))/d - 1/8*sqrt(b*arcsin(d*x + c) + a)*a^2*e*e^(-2*I*arcsin(d*x + c))/d + 5/32*I*sqrt(b*arcsin(d*x + c) + a)*a*b*e*e^(-2*I*arcsin(d*x + c))/d + 15/128*sqrt(b*arcsin(d*x + c) + a)*b^2*e*e^(-2*I*arcsin(d*x + c))/d

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int (c\,e+d\,e\,x)\,\left(a+b\,\mathrm{asin}(c+d\,x)\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((c*e + d*e*x)*(a + b*asin(c + d*x))^(5/2),x)

[Out] int((c*e + d*e*x)*(a + b*asin(c + d*x))^(5/2), x)

3.253 $\int (a+b\text{ArcSin}(c+dx))^{5/2}\,dx$

Optimal. Leaf size=204

$$-\frac{15b^2(c+dx)\sqrt{a+b\text{ArcSin}(c+dx)}}{4d}+\frac{5b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^{3/2}}{2d}+\frac{(c+dx)(a+b\text{ArcSi}}{d}$$

```
[Out] (d*x+c)*(a+b*arcsin(d*x+c))^(5/2)/d+15/8*b^(5/2)*cos(a/b)*FresnelS(2^(1/2)/
Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/d-15/8*b^(5/2)
*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(a/b)*2^(1
/2)*Pi^(1/2)/d+5/2*b*(a+b*arcsin(d*x+c))^(3/2)*(1-(d*x+c)^2)^(1/2)/d-15/4*b
^2*(d*x+c)*(a+b*arcsin(d*x+c))^(1/2)/d
```

Rubi [A]
time = 0.26, antiderivative size = 204, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 9, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.643$, Rules used = {4887, 4715, 4767, 4809, 3387, 3386, 3432, 3385, 3433}

$$-\frac{15\sqrt{\frac{\pi}{2}}\,b^{5/2}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{4d}+\frac{15\sqrt{\frac{\pi}{2}}\,b^{5/2}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{4d}-\frac{15b^2(c+dx)\sqrt{a+b\text{ArcSin}(c+dx)}}{4d}+\frac{5b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^{3/2}}{2d}+\frac{(c+dx)(a+b\text{ArcSin}(c+dx))^{5/2}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] (-15*b^2*(c + d*x)*Sqrt[a + b*ArcSin[c + d*x]])/(4*d) + (5*b*Sqrt[1 - (c +
d*x)^2]*(a + b*ArcSin[c + d*x])^(3/2))/(2*d) + ((c + d*x)*(a + b*ArcSin[c +
 d*x])^(5/2))/d + (15*b^(5/2)*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt
[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(4*d) - (15*b^(5/2)*Sqrt[Pi/2]*FresnelC[
(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(4*d)
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4809

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[(1/(b*c^(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x
^2)^p], Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b]^(2*p + 1), x], x, a
 + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0]
&& IGtQ[2*p + 2, 0] && IGtQ[m, 0]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\int \left(a+b\sin^{-1}(c+dx)\right)^{5/2}\,dx = \frac{\text{Subst}\left(\int (a+b\sin^{-1}(x))^{5/2}\,dx, x, c+dx\right)}{d}$$

$$= \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{d} - \frac{(5b)\text{Subst}\left(\int \frac{x\left(a+b\sin^{-1}(x)\right)^{3/2}}{\sqrt{1-x^2}}\,dx, x, c+\right.}{2d}$$

$$= \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{2d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx\right.}{d}$$

$$= -\frac{15b^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c\right.}{2d}$$

$$= -\frac{15b^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c\right.}{2d}$$

$$= -\frac{15b^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c\right.}{2d}$$

$$= -\frac{15b^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c\right.}{2d}$$

$$= -\frac{15b^2(c+dx)\sqrt{a+b\sin^{-1}(c+dx)}}{4d} + \frac{5b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c\right.}{2d}$$

Mathematica [C] Result contains complex when optimal does not.
time = 1.14, size = 432, normalized size = 2.12

$$\frac{e^{-\frac{ia}{b}}\left(\frac{i(4a^2+15b^2)\left(-1+e^{\frac{2ia}{b}}\right)\sqrt{\frac{\pi}{2}}\sqrt{a+b\text{ArcSin}(c+dx)}\,\text{FresnelC}\left(\sqrt{\frac{1}{b}}\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}\right)}{\sqrt{\frac{1}{b}}}+\frac{(4a^2+15b^2)\left(1+e^{\frac{2ia}{b}}\right)\sqrt{\frac{\pi}{2}}\sqrt{a+b\text{ArcSin}(c+dx)}\,S\left(\sqrt{\frac{1}{b}}\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}\right)}{\sqrt{\frac{1}{b}}}+2b\left(e^{\frac{ia}{b}}(a+b\text{ArcSin}(c+dx))\left(-15b(c+dx)+10a\sqrt{1-c^2-2cdx-d^2x^2}+2\left(4a(c+dx)+5b\sqrt{1-c^2-2cdx-d^2x^2}\right)\text{ArcSin}(c+dx)+4b(c+dx)\text{ArcSin}(c+dx)^2\right)+2a^2\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{3}{2},-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)+2a^2e^{\frac{2ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{3}{2},\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)\right)}{8d\sqrt{a+b\text{ArcSin}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] ((I*(4*a^2 + 15*b^2)*(-1 + E^(((2*I)*a)/b))*Sqrt[Pi/2]*Sqrt[a + b*ArcSin[c
+ d*x]]*FresnelC[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]])/Sqrt
[b^(-1)] + ((4*a^2 + 15*b^2)*(1 + E^(((2*I)*a)/b))*Sqrt[Pi/2]*Sqrt[a + b*Ar
cSin[c + d*x]]*FresnelS[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]
])/Sqrt[b^(-1)] + 2*b*(E^((I*a)/b)*(a + b*ArcSin[c + d*x])*(-15*b*(c + d*x)
```

```
 + 10*a*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2] + 2*(4*a*(c + d*x) + 5*b*Sqrt[1 -
 c^2 - 2*c*d*x - d^2*x^2])*ArcSin[c + d*x] + 4*b*(c + d*x)*ArcSin[c + d*x]^
2) + 2*a^2*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, ((-I)*(a + b*A
rcSin[c + d*x]))/b] + 2*a^2*E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x])
)/b]*Gamma[3/2, (I*(a + b*ArcSin[c + d*x]))/b]))/(8*d*E^((I*a)/b)*Sqrt[a +
b*ArcSin[c + d*x]])
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 440 vs. $2(164) = 328$.
time = 0.16, size = 441, normalized size = 2.16

method	result
default	$-\frac{15\sqrt{a+b\arcsin\left(dx+c\right)}\,\cos\left(\frac{a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)\sqrt{-\frac{1}{b}}\,\sqrt{\pi}\,\sqrt{2}\,b^{3}+15\sqrt{a+b\arcs}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^(5/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/8/d*(15*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(-1
/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)*Pi^(1/2)*2^(1/2)*b^3+15
*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1
/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)*b^3+8*arcsin(d*x
+c)^3*sin(-(a+b*arcsin(d*x+c))/b+a/b)*b^3+24*arcsin(d*x+c)^2*sin(-(a+b*arcs
in(d*x+c))/b+a/b)*a*b^2-20*arcsin(d*x+c)^2*cos(-(a+b*arcsin(d*x+c))/b+a/b)*
b^3+24*arcsin(d*x+c)*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a^2*b-30*arcsin(d*x+c)
*sin(-(a+b*arcsin(d*x+c))/b+a/b)*b^3-40*arcsin(d*x+c)*cos(-(a+b*arcsin(d*x+
c))/b+a/b)*a*b^2+8*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a^3-30*sin(-(a+b*arcsin(
d*x+c))/b+a/b)*a*b^2-20*cos(-(a+b*arcsin(d*x+c))/b+a/b)*a^2*b)/(a+b*arcsin(
d*x+c))^(1/2)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(5/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int (a + b \operatorname{asin}(c + dx))^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**(5/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**(5/2), x)
```

Giac [C] Result contains complex when optimal does not.
time = 1.20, size = 1279, normalized size = 6.27

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*sqrt(pi)*a^3*b^3*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)
/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(
I*a/b)/((I*b^4/sqrt(abs(b)) + b^3*sqrt(abs(b)))*d) + 1/2*sqrt(2)*sqrt(pi)*a
^3*b^3*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqr
t(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^4/sqrt(a
bs(b)) + b^3*sqrt(abs(b)))*d) + 3/2*I*sqrt(2)*sqrt(pi)*a^2*b^3*erf(-1/2*I*s
qrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin
(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^3/sqrt(abs(b)) + b^2*sqrt(ab
s(b)))*d) - 3/2*I*sqrt(2)*sqrt(pi)*a^2*b^3*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(
d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(a
bs(b))/b)*e^(-I*a/b)/((-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*d) - 3/2*I*s
qrt(2)*sqrt(pi)*a^2*b^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt
(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b
)/((I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*d) - 15/16*I*sqrt(2)*sqrt(pi)*b^4*
erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*s
qrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^2/sqrt(abs(b)) +
 b*sqrt(abs(b)))*d) + 3/2*I*sqrt(2)*sqrt(pi)*a^2*b^2*erf(1/2*I*sqrt(2)*sqrt
(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) +
 a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*d) +
 15/16*I*sqrt(2)*sqrt(pi)*b^4*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)
/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(
```

```
-I*a/b)/((-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*d) - 1/2*I*sqrt(b*arcsin(d*
x + c) + a)*b^2*arcsin(d*x + c)^2*e^(I*arcsin(d*x + c))/d + 1/2*I*sqrt(b*ar
csin(d*x + c) + a)*b^2*arcsin(d*x + c)^2*e^(-I*arcsin(d*x + c))/d - sqrt(pi
)*a^3*b*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*s
qrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*sqrt(2)*b^
2/sqrt(abs(b)) + sqrt(2)*b*sqrt(abs(b)))*d) - sqrt(pi)*a^3*b*erf(1/2*I*sqrt
(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*
x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*sqrt(2)*b^2/sqrt(abs(b)) + sqrt
(2)*b*sqrt(abs(b)))*d) - I*sqrt(b*arcsin(d*x + c) + a)*a*b*arcsin(d*x + c)*
e^(I*arcsin(d*x + c))/d + 5/4*sqrt(b*arcsin(d*x + c) + a)*b^2*arcsin(d*x +
c)*e^(I*arcsin(d*x + c))/d + I*sqrt(b*arcsin(d*x + c) + a)*a*b*arcsin(d*x +
 c)*e^(-I*arcsin(d*x + c))/d + 5/4*sqrt(b*arcsin(d*x + c) + a)*b^2*arcsin(d
*x + c)*e^(-I*arcsin(d*x + c))/d - 1/2*I*sqrt(b*arcsin(d*x + c) + a)*a^2*e^
(I*arcsin(d*x + c))/d + 5/4*sqrt(b*arcsin(d*x + c) + a)*a*b*e^(I*arcsin(d*x
 + c))/d + 15/8*I*sqrt(b*arcsin(d*x + c) + a)*b^2*e^(I*arcsin(d*x + c))/d +
 1/2*I*sqrt(b*arcsin(d*x + c) + a)*a^2*e^(-I*arcsin(d*x + c))/d + 5/4*sqrt(
b*arcsin(d*x + c) + a)*a*b*e^(-I*arcsin(d*x + c))/d - 15/8*I*sqrt(b*arcsin(
d*x + c) + a)*b^2*e^(-I*arcsin(d*x + c))/d
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.00

$$\int (a + b\,\mathrm{asin}(c + d\,x))^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^(5/2),x)
```

```
[Out] int((a + b*asin(c + d*x))^(5/2), x)
```

3.254 $\int \frac{(a+b\text{ArcSin}(c+dx))^{5/2}}{ce+dex}\,dx$

Optimal. Leaf size=29

$$\frac{\text{Int}\left(\frac{(a+b\text{ArcSin}(c+dx))^{5/2}}{c+dx},x\right)}{e}$$

[Out] Unintegrable((a+b*arcsin(d*x+c))^(5/2)/(d*x+c),x)/e

Rubi [A]
time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(a+b\text{ArcSin}(c+dx))^{5/2}}{ce+dex}\,dx$$

Verification is not applicable to the result.

[In] Int[(a + b*ArcSin[c + d*x])^(5/2)/(c*e + d*e*x),x]

[Out] Defer[Subst][Defer[Int][(a + b*ArcSin[x])^(5/2)/x, x], x, c + d*x]/(d*e)

Rubi steps

$$\begin{aligned}\int \frac{(a+b\sin^{-1}(c+dx))^{5/2}}{ce+dex}\,dx &= \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^{5/2}}{ex}\,dx, x, c+dx\right)}{d}\\ &= \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^{5/2}}{x}\,dx, x, c+dx\right)}{de}\end{aligned}$$

Mathematica [A]
time = 0.92, size = 0, normalized size = 0.00

$$\int \frac{(a+b\text{ArcSin}(c+dx))^{5/2}}{ce+dex}\,dx$$

Verification is not applicable to the result.

[In] Integrate[(a + b*ArcSin[c + d*x])^(5/2)/(c*e + d*e*x),x]

[Out] Integrate[(a + b*ArcSin[c + d*x])^(5/2)/(c*e + d*e*x), x]

Maple [A]
time = 0.24, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin(dx+c))^{\frac{5}{2}}}{dex+ce}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^(5/2)/(d*e*x+c*e),x)
```

```
[Out] int((a+b*arcsin(d*x+c))^(5/2)/(d*e*x+c*e),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(5/2)/(d*e*x+c*e),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(5/2)/(d*x*e + c*e), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(5/2)/(d*e*x+c*e),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a^2\sqrt{a+b\operatorname{asin}(c+dx)}}{c+dx}\,dx+\int \frac{b^2\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^2(c+dx)}{c+dx}\,dx+\int \frac{2ab\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)}{c+dx}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**(5/2)/(d*e*x+c*e),x)
```

```
[Out] (Integral(a**2*sqrt(a + b*asin(c + d*x))/(c + d*x), x) + Integral(b**2*sqrt
(a + b*asin(c + d*x))*asin(c + d*x)**2/(c + d*x), x) + Integral(2*a*b*sqrt(
a + b*asin(c + d*x))*asin(c + d*x)/(c + d*x), x))/e
```

Giac [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(5/2)/(d*e*x+c*e),x, algorithm="giac")
[Out] integrate((b*arcsin(d*x + c) + a)^(5/2)/(d*e*x + c*e), x)
```

Mupad [**A**]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{(a + b\,\mathrm{asin}(c + d\,x))^{5/2}}{c\,e + d\,e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^(5/2)/(c*e + d*e*x),x)
[Out] int((a + b*asin(c + d*x))^(5/2)/(c*e + d*e*x), x)
```

3.255 $\int (ce+dex)^2(a+b\mathbf{ArcSin}(c+dx))^{7/2}\,dx$

Optimal. Leaf size=518

$$-\frac{175b^3e^2\sqrt{1-(c+dx)^2}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{54d}-\frac{35b^3e^2(c+dx)^2\sqrt{1-(c+dx)^2}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{216d}$$

```
[Out] -35/18*b^2*e^2*(d*x+c)*(a+b*arcsin(d*x+c))^(3/2)/d-35/108*b^2*e^2*(d*x+c)^3
*(a+b*arcsin(d*x+c))^(3/2)/d+1/3*e^2*(d*x+c)^3*(a+b*arcsin(d*x+c))^(7/2)/d-
35/5184*b^(7/2)*e^2*cos(3*a/b)*FresnelC(6^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c)
)^(1/2)/b^(1/2))*6^(1/2)*Pi^(1/2)/d-35/5184*b^(7/2)*e^2*FresnelS(6^(1/2)/Pi
^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(3*a/b)*6^(1/2)*Pi^(1/2)/d+105
/64*b^(7/2)*e^2*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2
)/b^(1/2))*2^(1/2)*Pi^(1/2)/d+105/64*b^(7/2)*e^2*FresnelS(2^(1/2)/Pi^(1/2)*
(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/d+7/9*b*e^2*(a
+b*arcsin(d*x+c))^(5/2)*(1-(d*x+c)^2)^(1/2)/d+7/18*b*e^2*(d*x+c)^2*(a+b*arc
sin(d*x+c))^(5/2)*(1-(d*x+c)^2)^(1/2)/d-175/54*b^3*e^2*(1-(d*x+c)^2)^(1/2)*
(a+b*arcsin(d*x+c))^(1/2)/d-35/216*b^3*e^2*(d*x+c)^2*(1-(d*x+c)^2)^(1/2)*(a
+b*arcsin(d*x+c))^(1/2)/d
```

Rubi [A]
time = 1.11, antiderivative size = 518, normalized size of antiderivative = 1.00, number of steps used = 35, number of rules used = 14, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.560$, Rules used = {4889, 12, 4725, 4795, 4767, 4715, 4719, 3387, 3386, 3432, 3385, 3433, 4731, 4491}

$$\frac{105\sqrt{\frac{\pi}{2}}\,b^{7/2}e^2\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{32d}-\frac{35\sqrt{\frac{\pi}{6}}\,b^{7/2}e^2\cos\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{864d}+\frac{105\sqrt{\frac{\pi}{2}}\,b^{7/2}e^2\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{32d}-\frac{35\sqrt{\frac{\pi}{6}}\,b^{7/2}e^2\sin\left(\frac{3a}{b}\right)S\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{864d}-\frac{175b^3e^2\sqrt{1-(c+dx)^2}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{54d}-\frac{35b^3e^2(c+dx)^2\sqrt{1-(c+dx)^2}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{216d}-\frac{35b^2e^2(c+dx)^3(a+b\text{ArcSin}(c+dx))^{3/2}}{108d}-\frac{35b^2e^2(c+dx)(a+b\text{ArcSin}(c+dx))^{3/2}}{18d}+\frac{7be^2\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^{5/2}}{9d}+\frac{7be^2(c+dx)^2\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^{5/2}}{18d}+\frac{e^2(c+dx)^3(a+b\text{ArcSin}(c+dx))^{7/2}}{3d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] (-175*b^3*e^2*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(54*d) - (
35*b^3*e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(
216*d) - (35*b^2*e^2*(c + d*x)*(a + b*ArcSin[c + d*x])^(3/2))/(18*d) - (35*
b^2*e^2*(c + d*x)^3*(a + b*ArcSin[c + d*x])^(3/2))/(108*d) + (7*b*e^2*Sqrt[
1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^(5/2))/(9*d) + (7*b*e^2*(c + d*x)^
2*Sqrt[1 - (c + d*x)^2]*(a + b*ArcSin[c + d*x])^(5/2))/(18*d) + (e^2*(c + d
*x)^3*(a + b*ArcSin[c + d*x])^(7/2))/(3*d) + (105*b^(7/2)*e^2*Sqrt[Pi/2]*Co
s[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(32*d) -
 (35*b^(7/2)*e^2*Sqrt[Pi/6]*Cos[(3*a)/b]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*Ar
cSin[c + d*x]])/Sqrt[b]])/(864*d) + (105*b^(7/2)*e^2*Sqrt[Pi/2]*FresnelS[(S
qrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(32*d) - (35*b^(7
```

```
/2)*e^2*Sqrt[Pi/6]*FresnelS[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b
]]*Sin[(3*a)/b])/(864*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
```

```
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4719

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[-a/b + x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c
, n}, x]
```

Rule 4725

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^(m + 1)*((a + b*ArcSin[c*x])^n/(m + 1)), x] - Dist[b*c*(n/(m + 1)), Int[x^
(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[(((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)^2 \left(a+b\sin^{-1}(c+dx)\right)^{7/2} dx = \frac{\text{Subst}\left(\int e^2x^2(a+b\sin^{-1}(x))^{7/2} dx, x, c+dx\right)}{d}$$

$$= \frac{e^2\text{Subst}\left(\int x^2(a+b\sin^{-1}(x))^{7/2} dx, x, c+dx\right)}{d}$$

$$= \frac{e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}{3d} - \frac{(7be^2)\,\text{Subst}\left(\int \frac{x^3(a+b\sin^{-}}{\sqrt{1-}}\right.}{6d}$$

$$= \frac{7be^2(c+dx)^2\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{18d} + \frac{e^2(c+}{}$$

$$= -\frac{35b^2e^2(c+dx)^3\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{108d} + \frac{7be^2\sqrt{1-(c+dx)}}{}$$

$$= -\frac{35b^3e^2(c+dx)^2\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{216d} - \frac{35b}{}$$

$$= -\frac{175b^3e^2\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{54d} - \frac{35b^3e^2(c+}{}$$

$$= -\frac{175b^3e^2\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{54d} - \frac{35b^3e^2(c+}{}$$

$$= -\frac{175b^3e^2\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{54d} - \frac{35b^3e^2(c+}{}$$

$$= -\frac{175b^3e^2\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{54d} - \frac{35b^3e^2(c+}{}$$

$$= -\frac{175b^3e^2\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{54d} - \frac{35b^3e^2(c+}{}$$

$$= -\frac{175b^3e^2\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{54d} - \frac{35b^3e^2(c+}{}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.21, size = 267, normalized size = 0.52

$$\frac{be^2e^{-\frac{3ia}{b}}(a+b\text{ArcSin}(c+dx))^{5/2}\left(-243e^{\frac{2ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{9}{2},-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)-243e^{\frac{4ia}{b}}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{9}{2},\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)+\sqrt{3}\left(\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{9}{2},-\frac{3i(a+b\text{ArcSin}(c+dx))}{b}\right)+e^{\frac{6ia}{b}}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{9}{2},\frac{3i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)\right)}{1944d\left(\frac{(a+b\text{ArcSin}(c+dx))^2}{b^2}\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^2*(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] (b*e^2*(a + b*ArcSin[c + d*x])^(5/2)*(-243*E^(((2*I)*a)/b)*Sqrt[(I*(a + b*A
rcSin[c + d*x]))/b]*Gamma[9/2, ((-I)*(a + b*ArcSin[c + d*x]))/b] - 243*E^((
(4*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[9/2, (I*(a + b*Arc
Sin[c + d*x]))/b] + Sqrt[3]*(Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[9/2,
 ((-3*I)*(a + b*ArcSin[c + d*x]))/b] + E^(((6*I)*a)/b)*Sqrt[((-I)*(a + b*Ar
cSin[c + d*x]))/b]*Gamma[9/2, ((3*I)*(a + b*ArcSin[c + d*x]))/b])))/(1944*d
*E^(((3*I)*a)/b)*((a + b*ArcSin[c + d*x])^2/b^2)^(3/2))
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 1233 vs. $2(426) = 852$.
time = 0.61, size = 1234, normalized size = 2.38

method	result	size
default	Expression too large to display	1234

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(7/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/5184/d*e^2*(1296*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a^4+5184*arcsin(d*x+c)^
3*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a*b^3+7776*arcsin(d*x+c)^2*sin(-(a+b*arcs
in(d*x+c))/b+a/b)*a^2*b^2-13608*arcsin(d*x+c)^2*cos(-(a+b*arcsin(d*x+c))/b+
a/b)*a*b^3+5184*arcsin(d*x+c)*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a^3*b-22680*a
rcsin(d*x+c)*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a*b^3-13608*arcsin(d*x+c)*cos(
-(a+b*arcsin(d*x+c))/b+a/b)*a^2*b^2+1512*arcsin(d*x+c)^2*cos(-3*(a+b*arcsin
(d*x+c))/b+3*a/b)*a*b^3+1512*arcsin(d*x+c)*cos(-3*(a+b*arcsin(d*x+c))/b+3*a
/b)*a^2*b^2-1728*arcsin(d*x+c)*sin(-3*(a+b*arcsin(d*x+c))/b+3*a/b)*a^3*b-25
92*arcsin(d*x+c)^2*sin(-3*(a+b*arcsin(d*x+c))/b+3*a/b)*a^2*b^2-1728*arcsin(
d*x+c)^3*sin(-3*(a+b*arcsin(d*x+c))/b+3*a/b)*a*b^3+840*arcsin(d*x+c)*sin(-3
*(a+b*arcsin(d*x+c))/b+3*a/b)*a*b^3+8505*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)
/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a
+b*arcsin(d*x+c))^(1/2)*b^4+1296*arcsin(d*x+c)^4*sin(-(a+b*arcsin(d*x+c))/b
+a/b)*b^4-4536*arcsin(d*x+c)^3*cos(-(a+b*arcsin(d*x+c))/b+a/b)*b^4-11340*ar
csin(d*x+c)^2*sin(-(a+b*arcsin(d*x+c))/b+a/b)*b^4+17010*arcsin(d*x+c)*cos(-
(a+b*arcsin(d*x+c))/b+a/b)*b^4-11340*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a^2*b^
2-4536*cos(-(a+b*arcsin(d*x+c))/b+a/b)*a^3*b+17010*cos(-(a+b*arcsin(d*x+c))
/b+a/b)*a*b^3+504*cos(-3*(a+b*arcsin(d*x+c))/b+3*a/b)*a^3*b-210*cos(-3*(a+b
*arcsin(d*x+c))/b+3*a/b)*a*b^3-432*arcsin(d*x+c)^4*sin(-3*(a+b*arcsin(d*x+c
```

```
))/b+3*a/b)*b^4+504*arcsin(d*x+c)^3*cos(-3*(a+b*arcsin(d*x+c))/b+3*a/b)*b^4
+420*arcsin(d*x+c)^2*sin(-3*(a+b*arcsin(d*x+c))/b+3*a/b)*b^4-210*arcsin(d*x
+c)*cos(-3*(a+b*arcsin(d*x+c))/b+3*a/b)*b^4+420*sin(-3*(a+b*arcsin(d*x+c))/
b+3*a/b)*a^2*b^2-432*sin(-3*(a+b*arcsin(d*x+c))/b+3*a/b)*a^4+35*Pi^(1/2)*(a
+b*arcsin(d*x+c))^(1/2)*cos(3*a/b)*FresnelC(3*2^(1/2)/Pi^(1/2)/(-3/b)^(1/2)
*(a+b*arcsin(d*x+c))^(1/2)/b)*(-3/b)^(1/2)*2^(1/2)*b^4-35*Pi^(1/2)*(a+b*arc
sin(d*x+c))^(1/2)*sin(3*a/b)*FresnelS(3*2^(1/2)/Pi^(1/2)/(-3/b)^(1/2)*(a+b*
arcsin(d*x+c))^(1/2)/b)*(-3/b)^(1/2)*2^(1/2)*b^4-8505*Pi^(1/2)*(a+b*arcsin(
d*x+c))^(1/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d
*x+c))^(1/2)/b)*(-1/b)^(1/2)*2^(1/2)*b^4)/(a+b*arcsin(d*x+c))^(1/2)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)^2*(b*arcsin(d*x + c) + a)^(7/2), x)
```

Fricas [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: SystemError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2*(a+b*asin(d*x+c))**(7/2),x)
```

```
[Out] Exception raised: SystemError >> excessive stack use: stack is 4845 deep
```

Giac [**C**] Result contains complex when optimal does not.
time = 2.67, size = 8028, normalized size = 15.50

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*e*x+c*e)^2*(a+b*arcsin(d*x+c))^(7/2),x, algorithm="giac")

[Out] 1/3456*(1296*sqrt(2)*sqrt(pi)*a^4*b^2*e^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b))) + 1296*sqrt(2)*sqrt(pi)*a^4*b^2*e^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b))) - 864*sqrt(2)*sqrt(pi)*a^4*b*e^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(I*b^2/sqrt(abs(b)) + b*sqrt(abs(b))) + 2808*I*sqrt(2)*sqrt(pi)*a^3*b^2*e^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(I*b^2/sqrt(abs(b)) + b*sqrt(abs(b))) - 864*sqrt(2)*sqrt(pi)*a^4*b*e^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b))) - 2808*I*sqrt(2)*sqrt(pi)*a^3*b^2*e^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b))) + 432*I*sqrt(b*arcsin(d*x + c) + a)*a*b^2*e^2*arcsin(d*x + c)^2*e^(3*I*arcsin(d*x + c)) - 1296*I*sqrt(b*arcsin(d*x + c) + a)*a*b^2*e^2*arcsin(d*x + c)^2*e^(I*arcsin(d*x + c)) + 1296*I*sqrt(b*arcsin(d*x + c) + a)*a*b^2*e^2*arcsin(d*x + c)^2*e^(-I*arcsin(d*x + c)) - 432*I*sqrt(b*arcsin(d*x + c) + a)*a*b^2*e^2*arcsin(d*x + c)^2*e^(-3*I*arcsin(d*x + c)) - 864*sqrt(pi)*a^4*sqrt(b)*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(3*I*a/b)/(sqrt(6)*b + I*sqrt(6)*b^2/abs(b)) - 1872*I*sqrt(pi)*a^3*b^(3/2)*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(3*I*a/b)/(sqrt(6)*b + I*sqrt(6)*b^2/abs(b)) - 2592*I*sqrt(2)*sqrt(pi)*a^3*b*e^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(I*b/sqrt(abs(b)) + sqrt(abs(b))) - 972*sqrt(2)*sqrt(pi)*a^2*b^2*e^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(I*b/sqrt(abs(b)) + sqrt(abs(b))) - 2430*I*sqrt(2)*sqrt(pi)*a*b^3*e^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(I*b/sqrt(abs(b)) + sqrt(abs(b))) + 2592*I*sqrt(2)*sqrt(pi)*a^3*b*e^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*b/sqrt(abs(b)) + sqrt(abs(b))) - 972*sqrt(2)*sqrt(pi)*a^2*b^2*e^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*b/sqrt(abs(b)) + sqrt(abs(b))) + 2430*I*sqrt(2)*sqrt(pi)*a*b^3*e^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*

```
x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*b/sqrt(abs(b)) + sqrt(abs(b))) -
 864*sqrt(pi)*a^4*sqrt(b)*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/
sqrt(b) + 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-3*I
*a/b)/(sqrt(6)*b - I*sqrt(6)*b^2/abs(b)) + 1872*I*sqrt(pi)*a^3*b^(3/2)*e^2*
erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b
*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-3*I*a/b)/(sqrt(6)*b - I*sqrt(6)*b
^2/abs(b)) + 432*I*sqrt(b*arcsin(d*x + c) + a)*a^2*b*e^2*arcsin(d*x + c)*e^
(3*I*arcsin(d*x + c)) - 360*sqrt(b*arcsin(d*x + c) + a)*a*b^2*e^2*arcsin(d*
x + c)*e^(3*I*arcsin(d*x + c)) - 1296*I*sqrt(b*arcsin(d*x + c) + a)*a^2*b*e
^2*arcsin(d*x + c)*e^(I*arcsin(d*x + c)) + 3240*sqrt(b*arcsin(d*x + c) + a)
*a*b^2*e^2*arcsin(d*x + c)*e^(I*arcsin(d*x + c)) + 1296*I*sqrt(b*arcsin(d*x
 + c) + a)*a^2*b*e^2*arcsin(d*x + c)*e^(-I*arcsin(d*x + c)) + 3240*sqrt(b*a
rcsin(d*x + c) + a)*a*b^2*e^2*arcsin(d*x + c)*e^(-I*arcsin(d*x + c)) - 432*
I*sqrt(b*arcsin(d*x + c) + a)*a^2*b*e^2*arcsin(d*x + c)*e^(-3*I*arcsin(d*x
+ c)) - 360*sqrt(b*arcsin(d*x + c) + a)*a*b^2*e^2*arcsin(d*x + c)*e^(-3*I*a
rcsin(d*x + c)) + 864*sqrt(pi)*a^4*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x +
 c) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b)
)*e^(3*I*a/b)/(sqrt(6)*sqrt(b) + I*sqrt(6)*b^(3/2)/abs(b)) + 1728*I*sqrt(pi
)*a^3*b*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - 1/2*I*sq
rt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(3*I*a/b)/(sqrt(6)*sqrt
(b) + I*sqrt(6)*b^(3/2)/abs(b)) + 648*sqrt(pi)*a^2*b^2*e^2*erf(-1/2*sqrt(6)
*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c)
 + a)*sqrt(b)/abs(b))*e^(3*I*a/b)/(sqrt(6)*sqrt(b) + I*sqrt(6)*b^(3/2)/abs(
b)) - 864*sqrt(pi)*a^4*e^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/s
qrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*
a/b)/(I*sqrt(2)*b/sqrt(abs(b)) + sqrt(2)*sqrt(a...
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.00

$$\int (c\,e+d\,e\,x)^2\,{\left(a+b\,\mathrm{asin}(c+d\,x)\right)}^{7/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^2*(a + b*asin(c + d*x))^(7/2),x)
```

```
[Out] int((c*e + d*e*x)^2*(a + b*asin(c + d*x))^(7/2), x)
```

3.256 $\int (ce+dex)(a+b\mathbf{ArcSin}(c+dx))^{7/2}\,dx$

Optimal. Leaf size=301

$$-\frac{105b^3e(c+dx)\sqrt{1-(c+dx)^2}\,\sqrt{a+b\mathrm{ArcSin}(c+dx)}}{128d}+\frac{35b^2e(a+b\mathrm{ArcSin}(c+dx))^{3/2}}{64d}-\frac{35b^2e(c+dx)^2}{}$$

```
[Out] 35/64*b^2*e*(a+b*arcsin(d*x+c))^(3/2)/d-35/32*b^2*e*(d*x+c)^2*(a+b*arcsin(d
*x+c))^(3/2)/d-1/4*e*(a+b*arcsin(d*x+c))^(7/2)/d+1/2*e*(d*x+c)^2*(a+b*arcsi
n(d*x+c))^(7/2)/d+105/512*b^(7/2)*e*cos(2*a/b)*FresnelS(2*(a+b*arcsin(d*x+c
))^(1/2)/b^(1/2)/Pi^(1/2))*Pi^(1/2)/d-105/512*b^(7/2)*e*FresnelC(2*(a+b*arc
sin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*sin(2*a/b)*Pi^(1/2)/d+7/8*b*e*(d*x+c)*(
a+b*arcsin(d*x+c))^(5/2)*(1-(d*x+c)^2)^(1/2)/d-105/128*b^3*e*(d*x+c)*(1-(d*
x+c)^2)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/d
```

Rubi [A]
time = 0.48, antiderivative size = 301, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 12, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.522$, Rules used = {4889, 12, 4725, 4795, 4737, 4731, 4491, 3387, 3386, 3432, 3385, 3433}

$$-\frac{105\sqrt{\pi}\,b^{7/2}e\sin\left(\frac{2a}{b}\right)\mathrm{FresnelC}\left(\frac{2\sqrt{a+b\mathrm{ArcSin}(c+dx)}}{\sqrt{\pi}\,\sqrt{b}}\right)}{512d}+\frac{105\sqrt{\pi}\,b^{7/2}e\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\mathrm{ArcSin}(c+dx)}}{\sqrt{b}\,\sqrt{\pi}}\right)}{512d}-\frac{105b^3e(c+dx)\sqrt{1-(c+dx)^2}\,\sqrt{a+b\mathrm{ArcSin}(c+dx)}}{128d}-\frac{35b^2e(c+dx)^2(a+b\mathrm{ArcSin}(c+dx))^{3/2}}{32d}+\frac{35b^2e(a+b\mathrm{ArcSin}(c+dx))^{3/2}}{64d}+\frac{7be(c+dx)\sqrt{1-(c+dx)^2}\,(a+b\mathrm{ArcSin}(c+dx))^{5/2}}{8d}+\frac{e(c+dx)^2(a+b\mathrm{ArcSin}(c+dx))^{7/2}}{2d}-\frac{e(a+b\mathrm{ArcSin}(c+dx))^{7/2}}{4d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] (-105*b^3*e*(c + d*x)*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(1
28*d) + (35*b^2*e*(a + b*ArcSin[c + d*x])^(3/2))/(64*d) - (35*b^2*e*(c + d*
x)^2*(a + b*ArcSin[c + d*x])^(3/2))/(32*d) + (7*b*e*(c + d*x)*Sqrt[1 - (c +
 d*x)^2]*(a + b*ArcSin[c + d*x])^(5/2))/(8*d) - (e*(a + b*ArcSin[c + d*x])^
(7/2))/(4*d) + (e*(c + d*x)^2*(a + b*ArcSin[c + d*x])^(7/2))/(2*d) + (105*b
^(7/2)*e*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sq
rt[b]*Sqrt[Pi])])/(512*d) - (105*b^(7/2)*e*Sqrt[Pi]*FresnelC[(2*Sqrt[a + b*
ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(512*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4725

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^(m + 1)*((a + b*ArcSin[c*x])^n/(m + 1)), x] - Dist[b*c*(n/(m + 1)), Int[x^
(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
```

```
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^{7/2}\,dx = \frac{\text{Subst}\left(\int ex\left(a+b\sin^{-1}(x)\right)^{7/2}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e\text{Subst}\left(\int x\left(a+b\sin^{-1}(x)\right)^{7/2}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}{2d} - \frac{(7be)\text{Subst}\left(\int \frac{x^2(a+b\sin^{-1}(x)}{\sqrt{1-x^2}}\right.}{4d}$$

$$= \frac{7be(c+dx)\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{8d} + \frac{e(c+dx)}{}$$

$$= -\frac{35b^2e(c+dx)^2\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{32d} + \frac{7be(c+dx)\sqrt{1-(c}}{}$$

$$= -\frac{105b^3e(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{128d} - \frac{35b^2e}{}$$

$$= -\frac{105b^3e(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{128d} + \frac{35b^2e}{}$$

$$= -\frac{105b^3e(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{128d} + \frac{35b^2e}{}$$

$$= -\frac{105b^3e(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{128d} + \frac{35b^2e}{}$$

$$= -\frac{105b^3e(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{128d} + \frac{35b^2e}{}$$

$$= -\frac{105b^3e(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{128d} + \frac{35b^2e}{}$$

$$= -\frac{105b^3e(c+dx)\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{128d} + \frac{35b^2e}{}$$

Mathematica [C] Result contains complex when optimal does not.

time = 0.04, size = 137, normalized size = 0.46

$$-\frac{b^4 e e^{-\frac{2ia}{b}}\left(\sqrt{-\frac{i(a+b\mathrm{ArcSin}(c+dx))}{b}}\,\mathrm{Gamma}\left(\frac{9}{2},-\frac{2i(a+b\mathrm{ArcSin}(c+dx))}{b}\right)+e^{\frac{4ia}{b}}\sqrt{\frac{i(a+b\mathrm{ArcSin}(c+dx))}{b}}\,\mathrm{Gamma}\left(\frac{9}{2},\frac{2i(a+b\mathrm{ArcSin}(c+dx))}{b}\right)\right)}{64\sqrt{2}\,d\sqrt{a+b\mathrm{ArcSin}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] -1/64*(b^4*e*(Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[9/2, ((-2*I)*(a
+ b*ArcSin[c + d*x]))/b] + E^(((4*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))
/b]*Gamma[9/2, ((2*I)*(a + b*ArcSin[c + d*x]))/b]))/(Sqrt[2]*d*E^(((2*I)*a)
/b)*Sqrt[a + b*ArcSin[c + d*x]])
```

Maple [**B**] Leaf count of result is larger than twice the leaf count of optimal. 634 vs. $2(249) = 498$.
time = 0.27, size = 635, normalized size = 2.11

method	result
default	$-\frac{e\left(105\sqrt{\pi}\,\sqrt{2}\,\sqrt{-\frac{2}{b}}\,\sqrt{a+b\arcsin(dx+c)}\,\cos(\frac{2a}{b})\mathrm{S}\left(\frac{2\sqrt{2}\,\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\,\sqrt{-\frac{2}{b}}\,b}\right)b^4+105\sqrt{\pi}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(7/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/1024/d*e/(a+b*arcsin(d*x+c))^(1/2)*(105*Pi^(1/2)*2^(1/2)*(-2/b)^(1/2)*(a
+b*arcsin(d*x+c))^(1/2)*cos(2*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)
*(a+b*arcsin(d*x+c))^(1/2)/b)*b^4+105*Pi^(1/2)*2^(1/2)*(-2/b)^(1/2)*(a+b*ar
csin(d*x+c))^(1/2)*sin(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b
*arcsin(d*x+c))^(1/2)/b)*b^4+256*arcsin(d*x+c)^4*cos(-2*(a+b*arcsin(d*x+c))
/b+2*a/b)*b^4+1024*arcsin(d*x+c)^3*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a*b^
3+448*arcsin(d*x+c)^3*sin(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*b^4+1536*arcsin(d
*x+c)^2*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a^2*b^2-560*arcsin(d*x+c)^2*cos
(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*b^4+1344*arcsin(d*x+c)^2*sin(-2*(a+b*arcsi
n(d*x+c))/b+2*a/b)*a*b^3+1024*arcsin(d*x+c)*cos(-2*(a+b*arcsin(d*x+c))/b+2*
a/b)*a^3*b-1120*arcsin(d*x+c)*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a*b^3+134
4*arcsin(d*x+c)*sin(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a^2*b^2-420*arcsin(d*x+
c)*sin(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*b^4+256*cos(-2*(a+b*arcsin(d*x+c))/b
+2*a/b)*a^4-560*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a^2*b^2+448*sin(-2*(a+b
*arcsin(d*x+c))/b+2*a/b)*a^3*b-420*sin(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a*b^
3)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)*(b*arcsin(d*x + c) + a)^(7/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: SystemError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*asin(d*x+c))**(7/2),x)
```

```
[Out] Exception raised: SystemError >> excessive stack use: stack is 3876 deep
```

Giac [C] Result contains complex when optimal does not.
time = 1.31, size = 2561, normalized size = 8.51

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)*(a+b*arcsin(d*x+c))^(7/2),x, algorithm="giac")
```

```
[Out] -1/1024*(128*sqrt(b*arcsin(d*x + c) + a)*b^3*e*arcsin(d*x + c)^3*e^(2*I*arc
sin(d*x + c)) + 128*sqrt(b*arcsin(d*x + c) + a)*b^3*e*arcsin(d*x + c)^3*e^(
-2*I*arcsin(d*x + c)) + 384*sqrt(b*arcsin(d*x + c) + a)*a*b^2*e*arcsin(d*x
+ c)^2*e^(2*I*arcsin(d*x + c)) + 224*I*sqrt(b*arcsin(d*x + c) + a)*b^3*e*ar
csin(d*x + c)^2*e^(2*I*arcsin(d*x + c)) + 384*sqrt(b*arcsin(d*x + c) + a)*a
*b^2*e*arcsin(d*x + c)^2*e^(-2*I*arcsin(d*x + c)) - 224*I*sqrt(b*arcsin(d*x
 + c) + a)*b^3*e*arcsin(d*x + c)^2*e^(-2*I*arcsin(d*x + c)) + 768*I*sqrt(pi
)*a^4*b*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x +
c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/(b^(3/2) + I*b^(5/2)/abs(b)) + 192*sqrt
(pi)*a^3*b^2*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d
*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/(b^(3/2) + I*b^(5/2)/abs(b)) - 768
*I*sqrt(pi)*a^4*b*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arc
```

sin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(b^(3/2) - I*b^(5/2)/abs(b))
 + 192*sqrt(pi)*a^3*b^2*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt
(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(b^(3/2) - I*b^(5/2)/a
bs(b)) - 256*I*sqrt(pi)*a^4*sqrt(b)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt
(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/(b + I*b^2/
abs(b)) + 832*sqrt(pi)*a^3*b^(3/2)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(
b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/(b + I*b^2/a
bs(b)) - 288*I*sqrt(pi)*a^2*b^(5/2)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt
(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/(b + I*b^2/
abs(b)) + 256*I*sqrt(pi)*a^4*sqrt(b)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqr
t(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(b - I*b^
2/abs(b)) + 832*sqrt(pi)*a^3*b^(3/2)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqr
t(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(b - I*b^
2/abs(b)) + 288*I*sqrt(pi)*a^2*b^(5/2)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/s
qrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(b - I*
b^2/abs(b)) + 384*sqrt(b*arcsin(d*x + c) + a)*a^2*b*e*arcsin(d*x + c)*e^(2*
I*arcsin(d*x + c)) + 448*I*sqrt(b*arcsin(d*x + c) + a)*a*b^2*e*arcsin(d*x +
 c)*e^(2*I*arcsin(d*x + c)) - 280*sqrt(b*arcsin(d*x + c) + a)*b^3*e*arcsin(
d*x + c)*e^(2*I*arcsin(d*x + c)) + 384*sqrt(b*arcsin(d*x + c) + a)*a^2*b*e*
arcsin(d*x + c)*e^(-2*I*arcsin(d*x + c)) - 448*I*sqrt(b*arcsin(d*x + c) + a
)*a*b^2*e*arcsin(d*x + c)*e^(-2*I*arcsin(d*x + c)) - 280*sqrt(b*arcsin(d*x
+ c) + a)*b^3*e*arcsin(d*x + c)*e^(-2*I*arcsin(d*x + c)) - 768*sqrt(pi)*a^3
*b*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) +
a)*sqrt(b)/abs(b))*e^(2*I*a/b)/(sqrt(b) + I*b^(3/2)/abs(b)) + 576*I*sqrt(pi
)*a^2*b^2*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d*x
+ c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/(sqrt(b) + I*b^(3/2)/abs(b)) + 240*sq
rt(pi)*a*b^3*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*arcsin(d
*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/(sqrt(b) + I*b^(3/2)/abs(b)) - 256
*I*sqrt(pi)*a^4*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arcsi
n(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(sqrt(b) - I*b^(3/2)/abs(b)) -
 768*sqrt(pi)*a^3*b*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*a
rcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(sqrt(b) - I*b^(3/2)/abs(b
)) - 576*I*sqrt(pi)*a^2*b^2*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*
sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(sqrt(b) - I*b^(3/
2)/abs(b)) + 240*sqrt(pi)*a*b^3*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b)
+ I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(sqrt(b) - I*b
^(3/2)/abs(b)) - 512*I*sqrt(pi)*a^4*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt
(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/(sqrt(b)*(I
*b/abs(b) + 1)) - 256*sqrt(pi)*a^3*sqrt(b)*e*erf(-sqrt(b*arcsin(d*x + c) +
a)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/(I*b
/abs(b) + 1) - 288*I*sqrt(pi)*a^2*b^(3/2)*e*erf(-sqrt(b*arcsin(d*x + c) + a
)/sqrt(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/(I*b/
abs(b) + 1) - 240*sqrt(pi)*a*b^(5/2)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqr
t(b) - I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/(I*b/abs(b
) + 1) + 105*I*sqrt(pi)*b^(7/2)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b)

```
- I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/(I*b/abs(b) + 1
) + 768*I*sqrt(pi)*a^4*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(
b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(sqrt(b)*(-I*b/abs(b) +
 1)) - 256*sqrt(pi)*a^3*sqrt(b)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b)
+ I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(-I*b/abs(b) +
 1) + 288*I*sqrt(pi)*a^2*b^(3/2)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b)
 + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(-I*b/abs(b)
+ 1) - 240*sqrt(pi)*a*b^(5/2)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) +
I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(-I*b/abs(b) + 1
) - 105*I*sqrt(pi)*b^(7/2)*e*erf(-sqrt(b*arcsin...
```

Mupad [**F**]

time = 0.00, size = -1, normalized size = -0.00

$$\int (c\,e+d\,e\,x)\,\left(a+b\,\mathrm{asin}(c+d\,x)\right)^{7/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)*(a + b*asin(c + d*x))^(7/2),x)
[Out] int((c*e + d*e*x)*(a + b*asin(c + d*x))^(7/2), x)
```

3.257 $\int (a+b\mathbf{ArcSin}(c+dx))^{7/2}\,dx$

Optimal. Leaf size=243

$$-\frac{105b^3\sqrt{1-(c+dx)^2}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{8d}-\frac{35b^2(c+dx)(a+b\text{ArcSin}(c+dx))^{3/2}}{4d}+\frac{7b\sqrt{1-(c+dx)}}{}$$

```
[Out] -35/4*b^2*(d*x+c)*(a+b*arcsin(d*x+c))^(3/2)/d+(d*x+c)*(a+b*arcsin(d*x+c))^(
7/2)/d+105/16*b^(7/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c)
)^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/d+105/16*b^(7/2)*FresnelS(2^(1/2)/Pi^(1/2
)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/d+7/2*b*(a+b
*arcsin(d*x+c))^(5/2)*(1-(d*x+c)^2)^(1/2)/d-105/8*b^3*(1-(d*x+c)^2)^(1/2)*(
a+b*arcsin(d*x+c))^(1/2)/d
```

Rubi [A]
time = 0.28, antiderivative size = 243, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 9, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.643$, Rules used = {4887, 4715, 4767, 4719, 3387, 3386, 3432, 3385, 3433}

$$\frac{105\sqrt{\frac{\pi}{2}}\,b^{7/2}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{8d}+\frac{105\sqrt{\frac{\pi}{2}}\,b^{7/2}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{8d}-\frac{105b^3\sqrt{1-(c+dx)^2}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{8d}-\frac{35b^2(c+dx)(a+b\text{ArcSin}(c+dx))^{3/2}}{4d}+\frac{7b\sqrt{1-(c+dx)^2}\,(a+b\text{ArcSin}(c+dx))^{5/2}}{2d}+\frac{(c+dx)(a+b\text{ArcSin}(c+dx))^{7/2}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] (-105*b^3*Sqrt[1 - (c + d*x)^2]*Sqrt[a + b*ArcSin[c + d*x]])/(8*d) - (35*b^
2*(c + d*x)*(a + b*ArcSin[c + d*x])^(3/2))/(4*d) + (7*b*Sqrt[1 - (c + d*x)^
2]*(a + b*ArcSin[c + d*x])^(5/2))/(2*d) + ((c + d*x)*(a + b*ArcSin[c + d*x]
)^(7/2))/d + (105*b^(7/2)*Sqrt[Pi/2]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a +
 b*ArcSin[c + d*x]])/Sqrt[b]])/(8*d) + (105*b^(7/2)*Sqrt[Pi/2]*FresnelS[(Sq
rt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(8*d)
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4719

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[-a/b + x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c
, n}, x]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\int \left(a+b\sin^{-1}(c+dx)\right)^{7/2}\,dx = \frac{\text{Subst}\left(\int \left(a+b\sin^{-1}(x)\right)^{7/2}\,dx,x,c+dx\right)}{d}$$

$$= \frac{(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}{d} - \frac{(7b)\text{Subst}\left(\int \frac{x\left(a+b\sin^{-1}(x)\right)^{5/2}}{\sqrt{1-x^2}}\,dx,x,c+\right.}{2d}$$

$$= \frac{7b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}{2d} + \frac{(c+dx)\left(a+b\sin^{-1}(c+dx\right.}{d}$$

$$= -\frac{35b^2(c+dx)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}{4d} + \frac{7b\sqrt{1-(c+dx)^2}\left(a+b\sin^{-1}(\right.}{2d}$$

$$= -\frac{105b^3\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d} - \frac{35b^2(c+dx)\left(a+b\sin^{-}\right.}{4d}$$

$$= -\frac{105b^3\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d} - \frac{35b^2(c+dx)\left(a+b\sin^{-}\right.}{4d}$$

$$= -\frac{105b^3\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d} - \frac{35b^2(c+dx)\left(a+b\sin^{-}\right.}{4d}$$

$$= -\frac{105b^3\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d} - \frac{35b^2(c+dx)\left(a+b\sin^{-}\right.}{4d}$$

$$= -\frac{105b^3\sqrt{1-(c+dx)^2}\sqrt{a+b\sin^{-1}(c+dx)}}{8d} - \frac{35b^2(c+dx)\left(a+b\sin^{-}\right.}{4d}$$

Mathematica [C] Result contains complex when optimal does not.
time = 1.38, size = 551, normalized size = 2.27

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] (((8*I)*a^3*(-1 + E^(((2*I)*a)/b)) + 105*b^3*(1 + E^(((2*I)*a)/b)))*Sqrt[2*
Pi]*Sqrt[a + b*ArcSin[c + d*x]]*FresnelC[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b
```

```
*ArcSin[c + d*x]]] - I*(105*b^3*(-1 + E^(((2*I)*a)/b)) + (8*I)*a^3*(1 + E^(
((2*I)*a)/b)))*Sqrt[2*Pi]*Sqrt[a + b*ArcSin[c + d*x]]*FresnelS[Sqrt[b^(-1)]
*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]]] + (4*(E^((I*a)/b)*(a + b*ArcSin[c
+ d*x])*(7*(-10*a*b*(c + d*x) + 4*a^2*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2] - 1
5*b^2*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2]) + (24*a^2*(c + d*x) - 70*b^2*(c +
d*x) + 56*a*b*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2])*ArcSin[c + d*x] + 4*b*(6*a
*(c + d*x) + 7*b*Sqrt[1 - c^2 - 2*c*d*x - d^2*x^2])*ArcSin[c + d*x]^2 + 8*b
^2*(c + d*x)*ArcSin[c + d*x]^3) + 4*a^3*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))
/b]*Gamma[3/2, ((-I)*(a + b*ArcSin[c + d*x]))/b] + 4*a^3*E^(((2*I)*a)/b)*Sq
rt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[3/2, (I*(a + b*ArcSin[c + d*x]))/b]
))/Sqrt[b^(-1)])/(32*Sqrt[b^(-1)]*d*E^((I*a)/b)*Sqrt[a + b*ArcSin[c + d*x]]
)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 615 vs. $2(197) = 394$.
time = 0.21, size = 616, normalized size = 2.53

method	result
default	$-\frac{-105 \cos\left(\frac{a}{b}\right) \operatorname{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{a+b \arcsin\left(d x+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right) \sqrt{-\frac{1}{b}}\,\sqrt{\pi}\,\sqrt{2}\,\sqrt{a+b \arcsin\left(d x+c\right)}\,b^{4}+105 \sin}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^(7/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/16/d*(-105*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelC(2^(1/2)/
Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)*2^(1/2)*b^4
+105*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1
/2)/b)*(-1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*b^4+16*arcsi
n(d*x+c)^4*sin(-(a+b*arcsin(d*x+c))/b+a/b)*b^4+64*arcsin(d*x+c)^3*sin(-(a+b
*arcsin(d*x+c))/b+a/b)*a*b^3-56*arcsin(d*x+c)^3*cos(-(a+b*arcsin(d*x+c))/b+
a/b)*b^4+96*arcsin(d*x+c)^2*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a^2*b^2-140*arc
sin(d*x+c)^2*sin(-(a+b*arcsin(d*x+c))/b+a/b)*b^4-168*arcsin(d*x+c)^2*cos(-(
a+b*arcsin(d*x+c))/b+a/b)*a*b^3+64*arcsin(d*x+c)*sin(-(a+b*arcsin(d*x+c))/b
+a/b)*a^3*b-280*arcsin(d*x+c)*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a*b^3-168*arc
sin(d*x+c)*cos(-(a+b*arcsin(d*x+c))/b+a/b)*a^2*b^2+210*arcsin(d*x+c)*cos(-(
a+b*arcsin(d*x+c))/b+a/b)*b^4+16*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a^4-140*si
n(-(a+b*arcsin(d*x+c))/b+a/b)*a^2*b^2-56*cos(-(a+b*arcsin(d*x+c))/b+a/b)*a^
3*b+210*cos(-(a+b*arcsin(d*x+c))/b+a/b)*a*b^3)/(a+b*arcsin(d*x+c))^(1/2)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(7/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: SystemError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**(7/2),x)
```

```
[Out] Exception raised: SystemError >> excessive stack use: stack is 3060 deep
```

Giac [C] Result contains complex when optimal does not.
time = 1.44, size = 2308, normalized size = 9.50

Too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(7/2),x, algorithm="giac")
```

```
[Out] -1/32*(16*sqrt(2)*sqrt(pi)*a^4*b^3*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c
) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/
b)*e^(I*a/b)/(I*b^4/sqrt(abs(b)) + b^3*sqrt(abs(b))) + 16*sqrt(2)*sqrt(pi)*
a^4*b^3*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sq
rt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*b^4/sqrt(a
bs(b)) + b^3*sqrt(abs(b))) - 64*sqrt(2)*sqrt(pi)*a^4*b^2*erf(-1/2*I*sqrt(2)
*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x +
 c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))
+ 32*I*sqrt(2)*sqrt(pi)*a^3*b^3*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) +
 a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*
e^(I*a/b)/(I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b))) - 64*sqrt(2)*sqrt(pi)*a^4
*b^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(
```

2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*b^3/sqrt(abs(
b)) + b^2*sqrt(abs(b))) - 32*I*sqrt(2)*sqrt(pi)*a^3*b^3*erf(1/2*I*sqrt(2)*s
qrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c
) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))
+ 16*I*sqrt(b*arcsin(d*x + c) + a)*b^3*arcsin(d*x + c)^3*e^(I*arcsin(d*x +
c)) - 16*I*sqrt(b*arcsin(d*x + c) + a)*b^3*arcsin(d*x + c)^3*e^(-I*arcsin(d
*x + c)) + 32*sqrt(2)*sqrt(pi)*a^4*b*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x +
c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b)
)/b)*e^(I*a/b)/(I*b^2/sqrt(abs(b)) + b*sqrt(abs(b))) - 128*I*sqrt(2)*sqrt(p
i)*a^3*b^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/
2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(I*b^2/sqrt
(abs(b)) + b*sqrt(abs(b))) - 72*sqrt(2)*sqrt(pi)*a^2*b^3*erf(-1/2*I*sqrt(2)
*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x +
c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(I*b^2/sqrt(abs(b)) + b*sqrt(abs(b))) +
32*sqrt(2)*sqrt(pi)*a^4*b*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqr
t(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a
/b)/(-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b))) + 128*I*sqrt(2)*sqrt(pi)*a^3*b^2
*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*s
qrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*b^2/sqrt(abs(b))
+ b*sqrt(abs(b))) - 72*sqrt(2)*sqrt(pi)*a^2*b^3*erf(1/2*I*sqrt(2)*sqrt(b*ar
csin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*s
qrt(abs(b))/b)*e^(-I*a/b)/(-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b))) + 48*I*sqr
t(b*arcsin(d*x + c) + a)*a*b^2*arcsin(d*x + c)^2*e^(I*arcsin(d*x + c)) - 56
*sqrt(b*arcsin(d*x + c) + a)*b^3*arcsin(d*x + c)^2*e^(I*arcsin(d*x + c)) -
48*I*sqrt(b*arcsin(d*x + c) + a)*a*b^2*arcsin(d*x + c)^2*e^(-I*arcsin(d*x +
c)) - 56*sqrt(b*arcsin(d*x + c) + a)*b^3*arcsin(d*x + c)^2*e^(-I*arcsin(d*
x + c)) + 96*I*sqrt(2)*sqrt(pi)*a^3*b*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x
+ c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b
))/b)*e^(I*a/b)/(I*b/sqrt(abs(b)) + sqrt(abs(b))) + 72*sqrt(2)*sqrt(pi)*a^2
*b^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt
(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(I*b/sqrt(abs(b))
+ sqrt(abs(b))) + 105*sqrt(2)*sqrt(pi)*b^4*erf(-1/2*I*sqrt(2)*sqrt(b*arcsi
n(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt
(abs(b))/b)*e^(I*a/b)/(I*b/sqrt(abs(b)) + sqrt(abs(b))) - 96*I*sqrt(2)*sqrt
(pi)*a^3*b*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2
*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*b/sqrt(
abs(b)) + sqrt(abs(b))) + 72*sqrt(2)*sqrt(pi)*a^2*b^2*erf(1/2*I*sqrt(2)*sqr
t(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c)
+ a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I*b/sqrt(abs(b)) + sqrt(abs(b))) + 105*sq
rt(2)*sqrt(pi)*b^4*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b
)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(-I
*b/sqrt(abs(b)) + sqrt(abs(b))) + 48*I*sqrt(b*arcsin(d*x + c) + a)*a^2*b*ar
csin(d*x + c)*e^(I*arcsin(d*x + c)) - 112*sqrt(b*arcsin(d*x + c) + a)*a*b^2
*arcsin(d*x + c)*e^(I*arcsin(d*x + c)) - 140*I*sqrt(b*arcsin(d*x + c) + a)*
b^3*arcsin(d*x + c)*e^(I*arcsin(d*x + c)) - 48*I*sqrt(b*arcsin(d*x + c) + a

```
)*a^2*b*arcsin(d*x + c)*e^(-I*arcsin(d*x + c)) - 112*sqrt(b*arcsin(d*x + c)
 + a)*a*b^2*arcsin(d*x + c)*e^(-I*arcsin(d*x + c)) + 140*I*sqrt(b*arcsin(d*
x + c) + a)*b^3*arcsin(d*x + c)*e^(-I*arcsin(d*x + c)) + 32*sqrt(pi)*a^4*er
f(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqr
t(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(I*sqrt(2)*b/sqrt(abs(b)
) + sqrt(2)*sqrt(abs(b))) + 32*sqrt(pi)*a^4*erf(1/2*I*sqrt(2)*sqrt(b*arcsin
(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(
abs(b))/b)*e^(-I*a/b)/(-I*sqrt(2)*b/sqrt(abs(b)) + sqrt(2)*sqrt(abs(b))) +
16*I*sqrt(b*arcsin(d*x + c) + a)*a^3*e^(I*arcsin(d*x + c)) - 56*sqrt(b*arcs
in(d*x + c) + a)*a^2*b*e^(I*arcsin(d*x + c)) - ...
```

Mupad [**F**]

time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,\mathrm{asin}(c+d\,x))^{7/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^(7/2),x)
```

```
[Out] int((a + b*asin(c + d*x))^(7/2), x)
```

3.258 $\int \frac{(a+b\text{ArcSin}(c+dx))^{7/2}}{ce+dex}\,dx$

Optimal. Leaf size=29

$$\frac{\text{Int}\left(\frac{(a+b\text{ArcSin}(c+dx))^{7/2}}{c+dx},x\right)}{e}$$

```
[Out] Unintegrable((a+b*arcsin(d*x+c))^(7/2)/(d*x+c),x)/e
```

Rubi [A]
time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(a+b\text{ArcSin}(c+dx))^{7/2}}{ce+dex}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(a + b*ArcSin[c + d*x])^(7/2)/(c*e + d*e*x),x]
[Out] Defer[Subst][Defer[Int][(a + b*ArcSin[x])^(7/2)/x, x], x, c + d*x]/(d*e)
```

Rubi steps

$$\int \frac{(a+b\sin^{-1}(c+dx))^{7/2}}{ce+dex}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^{7/2}}{ex}\,dx,x,c+dx\right)}{d}$$
$$= \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^{7/2}}{x}\,dx,x,c+dx\right)}{de}$$

Mathematica [A]
time = 0.88, size = 0, normalized size = 0.00

$$\int \frac{(a+b\text{ArcSin}(c+dx))^{7/2}}{ce+dex}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(7/2)/(c*e + d*e*x),x]
[Out] Integrate[(a + b*ArcSin[c + d*x])^(7/2)/(c*e + d*e*x), x]
```

Maple [A]
time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin(dx+c))^{\frac{7}{2}}}{dex+ce}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^(7/2)/(d*e*x+c*e),x)
[Out] int((a+b*arcsin(d*x+c))^(7/2)/(d*e*x+c*e),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(7/2)/(d*e*x+c*e),x, algorithm="maxima")
[Out] integrate((b*arcsin(d*x + c) + a)^(7/2)/(d*x*e + c*e), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(7/2)/(d*e*x+c*e),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: SystemError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**(7/2)/(d*e*x+c*e),x)
[Out] Exception raised: SystemError >> excessive stack use: stack is 3061 deep
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^(7/2)/(d*e*x+c*e),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(7/2)/(d*e*x + c*e), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{(a+b\,\mathrm{asin}(c+d\,x))^{7/2}}{c\,e+d\,e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^(7/2)/(c*e + d*e*x),x)
```

```
[Out] int((a + b*asin(c + d*x))^(7/2)/(c*e + d*e*x), x)
```

3.259 $\int \frac{(ce+dex)^4}{\sqrt{a+b\mathbf{ArcSin}(c+dx)}}\,dx$

Optimal. Leaf size=365

$$\frac{e^4\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{4\sqrt{b}\,d}-\frac{e^4\sqrt{\frac{3\pi}{2}}\cos\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSi}}}{\sqrt{b}}\right.}{8\sqrt{b}\,d}$$

```
[Out] 1/80*e^4*cos(5*a/b)*FresnelC(10^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^
(1/2))*10^(1/2)*Pi^(1/2)/d/b^(1/2)+1/80*e^4*FresnelS(10^(1/2)/Pi^(1/2)*(a+b
*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(5*a/b)*10^(1/2)*Pi^(1/2)/d/b^(1/2)+1/8*e
^4*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*2^
(1/2)*Pi^(1/2)/d/b^(1/2)+1/8*e^4*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+
c))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/d/b^(1/2)-1/16*e^4*cos(3*a/b)*
FresnelC(6^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*6^(1/2)*Pi^(1/
2)/d/b^(1/2)-1/16*e^4*FresnelS(6^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b
^(1/2))*sin(3*a/b)*6^(1/2)*Pi^(1/2)/d/b^(1/2)
```

Rubi [A]
time = 0.62, antiderivative size = 365, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 9, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.360$, Rules used = {4889, 12, 4731, 4491, 3387, 3386, 3432, 3385, 3433}

$$\frac{\sqrt{\frac{\pi}{2}}e^4\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{4\sqrt{b}\,d}-\frac{\sqrt{\frac{3\pi}{2}}e^4\cos\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{8\sqrt{b}\,d}+\frac{\sqrt{\frac{\pi}{10}}e^4\cos\left(\frac{5a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{10}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{8\sqrt{b}\,d}+\frac{\sqrt{\frac{\pi}{2}}e^4\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{4\sqrt{b}\,d}-\frac{\sqrt{\frac{3\pi}{2}}e^4\sin\left(\frac{3a}{b}\right)S\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{8\sqrt{b}\,d}+\frac{\sqrt{\frac{\pi}{10}}e^4\sin\left(\frac{5a}{b}\right)S\left(\frac{\sqrt{\frac{10}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{8\sqrt{b}\,d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^4/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (e^4*Sqrt[Pi/2]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/
Sqrt[b]])/(4*Sqrt[b]*d) - (e^4*Sqrt[(3*Pi)/2]*Cos[(3*a)/b]*FresnelC[(Sqrt[6
/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(8*Sqrt[b]*d) + (e^4*Sqrt[Pi/10
]*Cos[(5*a)/b]*FresnelC[(Sqrt[10/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])
/(8*Sqrt[b]*d) + (e^4*Sqrt[Pi/2]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c +
 d*x]])/Sqrt[b]]*Sin[a/b])/(4*Sqrt[b]*d) - (e^4*Sqrt[(3*Pi)/2]*FresnelS[(Sq
rt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(3*a)/b])/(8*Sqrt[b]*d)
+ (e^4*Sqrt[Pi/10]*FresnelS[(Sqrt[10/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[
b]]*Sin[(5*a)/b])/(8*Sqrt[b]*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
```

```
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^4}{\sqrt{a+b\sin^{-1}(c+dx)}}\,dx = \frac{\text{Subst}\left(\int \frac{e^4x^4}{\sqrt{a+b\sin^{-1}(x)}}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e^4\text{Subst}\left(\int \frac{x^4}{\sqrt{a+b\sin^{-1}(x)}}\,dx,x,c+dx\right)}{d}$$

$$= \frac{e^4\text{Subst}\left(\int \frac{\cos(x)\sin^4(x)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{e^4\text{Subst}\left(\int \left(\frac{\cos(x)}{8\sqrt{a+bx}}-\frac{3\cos(3x)}{16\sqrt{a+bx}}+\frac{\cos(5x)}{16\sqrt{a+bx}}\right)dx,x,\sin^{-1}(c+dx)\right.}{d}$$

$$= \frac{e^4\text{Subst}\left(\int \frac{\cos(5x)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(c+dx)\right)}{16d}+\frac{e^4\text{Subst}\left(\int \frac{\cos(x)}{\sqrt{a+bx}}\,dx,x,\text{s}\right.}{8d}$$

$$= \frac{\left(e^4\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+x\right)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(c+dx)\right)}{8d}-\frac{\left(3e^4\cos\left(\frac{3a}{b}\right)\right)\text{Subs}}{}$$

$$= \frac{\left(e^4\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \cos\left(\frac{x^2}{b}\right)dx,x,\sqrt{a+b\sin^{-1}(c+dx)}\right)}{4bd}-\frac{\left(3e^4\cos\left(\frac{3}{}\right.\right.}{}$$

$$= \frac{e^4\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{4\sqrt{b}\,d}-\frac{e^4\sqrt{\frac{3\pi}{2}}\cos\left(\frac{3a}{b}\right)C\left(\right.}{}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.16, size = 370, normalized size = 1.01

$$\frac{ie^4e^{-\frac{5ia}{b}}\left(-10e^{\frac{4ia}{b}}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\text{Gamma}\left(\frac{1}{2},-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)+10e^{\frac{6ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\text{Gamma}\left(\frac{1}{2},\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)+5\sqrt{3}e^{\frac{2ia}{b}}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\text{Gamma}\left(\frac{1}{2},-\frac{3i(a+b\text{ArcSin}(c+dx))}{b}\right)-5\sqrt{3}e^{\frac{8ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\text{Gamma}\left(\frac{1}{2},\frac{3i(a+b\text{ArcSin}(c+dx))}{b}\right)-\sqrt{5}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\text{Gamma}\left(\frac{1}{2},-\frac{5i(a+b\text{ArcSin}(c+dx))}{b}\right)+\sqrt{5}e^{\frac{10ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\text{Gamma}\left(\frac{1}{2},\frac{5i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)}{160d\sqrt{a+b\text{ArcSin}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^4/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] ((I/160)*e^4*(-10*E^(((4*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Ga
mma[1/2, ((-I)*(a + b*ArcSin[c + d*x]))/b] + 10*E^(((6*I)*a)/b)*Sqrt[(I*(a
+ b*ArcSin[c + d*x]))/b]*Gamma[1/2, (I*(a + b*ArcSin[c + d*x]))/b] + 5*Sqrt
[3]*E^(((2*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((-3*
I)*(a + b*ArcSin[c + d*x]))/b] - 5*Sqrt[3]*E^(((8*I)*a)/b)*Sqrt[(I*(a + b*A
rcSin[c + d*x]))/b]*Gamma[1/2, ((3*I)*(a + b*ArcSin[c + d*x]))/b] - Sqrt[5]
*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((-5*I)*(a + b*ArcSin[c
+ d*x]))/b] + Sqrt[5]*E^(((10*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*
Gamma[1/2, ((5*I)*(a + b*ArcSin[c + d*x]))/b]))/(d*E^(((5*I)*a)/b)*Sqrt[a +
 b*ArcSin[c + d*x]])
```

Maple [A]
time = 0.60, size = 317, normalized size = 0.87

method	result
default	$\frac{e^4\sqrt{2}\,\sqrt{\pi}\,\sqrt{-\frac{5}{b}}\left(\sqrt{-\frac{3}{b}}\,\sqrt{-\frac{5}{b}}\,\cos\left(\frac{3a}{b}\right)\mathrm{FresnelC}\left(\frac{3\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{3}{b}}\,b}\right)b-\sqrt{-\frac{3}{b}}\,\sqrt{-\frac{5}{b}}\,\sin\left(\frac{3}{}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^(1/2),x,method=_RETURNVERBOSE)
```

```
[Out] 1/80/d*e^4*2^(1/2)*Pi^(1/2)*(-5/b)^(1/2)*((-3/b)^(1/2)*(-5/b)^(1/2)*cos(3*a
/b)*FresnelC(3*2^(1/2)/Pi^(1/2)/(-3/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b
-(-3/b)^(1/2)*(-5/b)^(1/2)*sin(3*a/b)*FresnelS(3*2^(1/2)/Pi^(1/2)/(-3/b)^(1
/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b-2*(-1/b)^(1/2)*(-5/b)^(1/2)*cos(a/b)*Fre
snelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b+2*(-1/b)
^(1/2)*(-5/b)^(1/2)*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*ar
csin(d*x+c))^(1/2)/b)*b+cos(5*a/b)*FresnelC(5*2^(1/2)/Pi^(1/2)/(-5/b)^(1/2)
*(a+b*arcsin(d*x+c))^(1/2)/b)-sin(5*a/b)*FresnelS(5*2^(1/2)/Pi^(1/2)/(-5/b)
^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)^4/sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")

[Out] Exception raised: TypeError >> Error detected within library code: integ
rate: implementation incomplete (constant residues)

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e^4\left(\int\frac{c^4}{\sqrt{a+b\operatorname{asin}(c+dx)}}\,dx+\int\frac{d^4x^4}{\sqrt{a+b\operatorname{asin}(c+dx)}}\,dx+\int\frac{4cd^3x^3}{\sqrt{a+b\operatorname{asin}(c+dx)}}\,dx+\int\frac{6c^2d^2x^2}{\sqrt{a+b\operatorname{asin}(c+dx)}}\,dx+\int\frac{4c^3dx}{\sqrt{a+b\operatorname{asin}(c+dx)}}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*e*x+c*e)**4/(a+b*asin(d*x+c))**(1/2),x)

[Out] e**4*(Integral(c**4/sqrt(a + b*asin(c + d*x)), x) + Integral(d**4*x**4/sqrt
(a + b*asin(c + d*x)), x) + Integral(4*c*d**3*x**3/sqrt(a + b*asin(c + d*x)
), x) + Integral(6*c**2*d**2*x**2/sqrt(a + b*asin(c + d*x)), x) + Integral(
4*c**3*d*x/sqrt(a + b*asin(c + d*x)), x))

Giac [C] Result contains complex when optimal does not.
time = 0.86, size = 507, normalized size = 1.39

$$-\frac{\sqrt{\pi}e^4\operatorname{erf}\left(-\frac{\sqrt{10}\sqrt{b\arcsin(dx+c)+a}}{2\sqrt{b}}-\frac{i\sqrt{10}\sqrt{b\arcsin(dx+c)+a}\sqrt{b}}{2|b|}\right)e^{\left(\frac{5ia}{b}\right)}}{16\left(\sqrt{10}\sqrt{b}+\frac{i\sqrt{10}b^{3/2}}{|b|}\right)d}+\frac{\sqrt{6}\sqrt{\pi}e^4\operatorname{erf}\left(-\frac{\sqrt{6}\sqrt{b\arcsin(dx+c)+a}}{2\sqrt{b}}-\frac{i\sqrt{6}\sqrt{b\arcsin(dx+c)+a}\sqrt{b}}{2|b|}\right)e^{\left(\frac{3ia}{b}\right)}}{32\sqrt{b}d\left(\frac{ib}{|b|}+1\right)}-\frac{\sqrt{\pi}e^4\operatorname{erf}\left(-\frac{i\sqrt{2}\sqrt{b\arcsin(dx+c)+a}}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}\sqrt{|b|}}{2b}\right)e^{\left(\frac{ia}{b}\right)}}{8d\left(\frac{i\sqrt{2}b}{\sqrt{|b|}}+\sqrt{2}\sqrt{|b|}\right)}-\frac{\sqrt{\pi}e^4\operatorname{erf}\left(\frac{i\sqrt{2}\sqrt{b\arcsin(dx+c)+a}}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}\sqrt{|b|}}{2b}\right)e^{\left(-\frac{ia}{b}\right)}}{8d\left(-\frac{i\sqrt{2}b}{\sqrt{|b|}}+\sqrt{2}\sqrt{|b|}\right)}+\frac{\sqrt{6}\sqrt{\pi}e^4\operatorname{erf}\left(-\frac{\sqrt{6}\sqrt{b\arcsin(dx+c)+a}}{2\sqrt{b}}+\frac{i\sqrt{6}\sqrt{b\arcsin(dx+c)+a}\sqrt{b}}{2|b|}\right)e^{\left(-\frac{3ia}{b}\right)}}{32\sqrt{b}d\left(-\frac{ib}{|b|}+1\right)}-\frac{\sqrt{\pi}e^4\operatorname{erf}\left(-\frac{\sqrt{10}\sqrt{b\arcsin(dx+c)+a}}{2\sqrt{b}}+\frac{i\sqrt{10}\sqrt{b\arcsin(dx+c)+a}\sqrt{b}}{2|b|}\right)e^{\left(-\frac{5ia}{b}\right)}}{16\left(\sqrt{10}\sqrt{b}-\frac{i\sqrt{10}b^{3/2}}{|b|}\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")

[Out] -1/16*sqrt(pi)*e^4*erf(-1/2*sqrt(10)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) -
1/2*I*sqrt(10)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(5*I*a/b)/((sq
rt(10)*sqrt(b) + I*sqrt(10)*b^(3/2)/abs(b))*d) + 1/32*sqrt(6)*sqrt(pi)*e^4*
erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b
*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(3*I*a/b)/(sqrt(b)*d*(I*b/abs(b) +
1)) - 1/8*sqrt(pi)*e^4*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(
abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)
/(d*(I*sqrt(2)*b/sqrt(abs(b)) + sqrt(2)*sqrt(abs(b)))) - 1/8*sqrt(pi)*e^4*e
rf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqr
t(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(d*(-I*sqrt(2)*b/sqrt(a
bs(b)) + sqrt(2)*sqrt(abs(b)))) + 1/32*sqrt(6)*sqrt(pi)*e^4*erf(-1/2*sqrt(6
)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b*arcsin(d*x + c
) + a)*sqrt(b)/abs(b))*e^(-3*I*a/b)/(sqrt(b)*d*(-I*b/abs(b) + 1)) - 1/16*sq
rt(pi)*e^4*erf(-1/2*sqrt(10)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + 1/2*I*sq
rt(10)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-5*I*a/b)/((sqrt(10)*
sqrt(b) - I*sqrt(10)*b^(3/2)/abs(b))*d)

Mupad [F]

time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,e+d\,e\,x)^4}{\sqrt{a+b\,\mathrm{asin}\left(c+d\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^4/(a + b*asin(c + d*x))^(1/2),x)
[Out] int((c*e + d*e*x)^4/(a + b*asin(c + d*x))^(1/2), x)
```

3.260 $\int \frac{(ce+dex)^3}{\sqrt{a+b\mathbf{ArcSin}(c+dx)}}\,dx$

Optimal. Leaf size=233

$$-\frac{e^3\sqrt{\frac{\pi}{2}}\cos\left(\frac{4a}{b}\right)S\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{8\sqrt{b}\,d}+\frac{e^3\sqrt{\pi}\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{4\sqrt{b}\,d}-\frac{e^3\sqrt{\ }}{}$$

```
[Out] -1/16*e^3*cos(4*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/
b^(1/2))*2^(1/2)*Pi^(1/2)/d/b^(1/2)+1/16*e^3*FresnelC(2*2^(1/2)/Pi^(1/2)*(a
+b*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(4*a/b)*2^(1/2)*Pi^(1/2)/d/b^(1/2)+1/4*
e^3*cos(2*a/b)*FresnelS(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*Pi^(1
/2)/d/b^(1/2)-1/4*e^3*FresnelC(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2)
)*sin(2*a/b)*Pi^(1/2)/d/b^(1/2)
```

Rubi [A]
time = 0.32, antiderivative size = 233, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 9, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.360$, Rules used = {4889, 12, 4731, 4491, 3387, 3386, 3432, 3385, 3433}

$$-\frac{\sqrt{\pi}e^3\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{4\sqrt{b}\,d}+\frac{\sqrt{\frac{\pi}{2}}e^3\sin\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{8\sqrt{b}\,d}-\frac{\sqrt{\frac{\pi}{2}}e^3\cos\left(\frac{4a}{b}\right)S\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{8\sqrt{b}\,d}+\frac{\sqrt{\pi}e^3\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{4\sqrt{b}\,d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] -1/8*(e^3*Sqrt[Pi/2]*Cos[(4*a)/b]*FresnelS[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[
c + d*x]])/Sqrt[b]])/(Sqrt[b]*d) + (e^3*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*S
qrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(4*Sqrt[b]*d) - (e^3*Sqrt[
Pi]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/
b])/(4*Sqrt[b]*d) + (e^3*Sqrt[Pi/2]*FresnelC[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSi
n[c + d*x]])/Sqrt[b]]*Sin[(4*a)/b])/(8*Sqrt[b]*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
```

```
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^3}{\sqrt{a+b\sin^{-1}(c+dx)}}\,dx = \frac{\text{Subst}\left(\int \frac{e^3x^3}{\sqrt{a+b\sin^{-1}(x)}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^3\text{Subst}\left(\int \frac{x^3}{\sqrt{a+b\sin^{-1}(x)}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^3\text{Subst}\left(\int \frac{\cos(x)\sin^3(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{e^3\text{Subst}\left(\int \left(\frac{\sin(2x)}{4\sqrt{a+bx}} - \frac{\sin(4x)}{8\sqrt{a+bx}}\right)\,dx, x, \sin^{-1}(c+dx)\right)}{d}$$

$$= -\frac{e^3\text{Subst}\left(\int \frac{\sin(4x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{8d} + \frac{e^3\text{Subst}\left(\int \frac{\sin(2x)}{\sqrt{a+bx}}\,dx, x\right.}{4d}$$

$$= \frac{\left(e^3\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{2a}{b}+2x\right)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{4d} - \frac{\left(e^3\cos\left(\frac{4a}{b}\right)\right)\text{Subs}}{}$$

$$= \frac{\left(e^3\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \sin\left(\frac{2x^2}{b}\right)\,dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{2bd} - \frac{\left(e^3\cos\left(\right.\right.}{}$$

$$= -\frac{e^3\sqrt{\frac{\pi}{2}}\cos\left(\frac{4a}{b}\right)S\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{8\sqrt{b}\,d} + \frac{e^3\sqrt{\pi}\cos\left(\frac{2a}{b}\right)S\left(\right.}{}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.09, size = 249, normalized size = 1.07

$$\frac{e^3e^{-\frac{4ia}{b}}\left(-2\sqrt{2}\,e^{\frac{2ia}{b}}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},-\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)-2\sqrt{2}\,e^{\frac{6ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)+\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},-\frac{4i(a+b\text{ArcSin}(c+dx))}{b}\right)+e^{\frac{8ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},\frac{4i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)}{32d\sqrt{a+b\text{ArcSin}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^3/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (e^3*(-2*Sqrt[2]*E^(((2*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gam
ma[1/2, ((-2*I)*(a + b*ArcSin[c + d*x]))/b] - 2*Sqrt[2]*E^(((6*I)*a)/b)*Sqr
```

```
t[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((2*I)*(a + b*ArcSin[c + d*x]))
/b] + Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((-4*I)*(a + b*ArcS
in[c + d*x]))/b] + E^(((8*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamm
a[1/2, ((4*I)*(a + b*ArcSin[c + d*x]))/b]))/(32*d*E^(((4*I)*a)/b)*Sqrt[a +
b*ArcSin[c + d*x]])
```

Maple [A]
time = 0.40, size = 211, normalized size = 0.91

method	result
default	$\frac{e^3\sqrt{\pi}\,\sqrt{2}\,\sqrt{-\frac{1}{b}}\left(2\cos\left(\frac{2a}{b}\right)\mathrm{S}\left(\frac{2\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{2}{b}}\,b}\right)\sqrt{-\frac{1}{b}}\,\sqrt{-\frac{2}{b}}\,b+2\sin\left(\frac{2a}{b}\right)\mathrm{FresnelC}\left(\frac{2\sqrt{2}\,\sqrt{}}{}\right.\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(1/2),x,method=_RETURNVERBOSE)
```

```
[Out] 1/16/d*e^3*Pi^(1/2)*2^(1/2)*(-1/b)^(1/2)*(2*cos(2*a/b)*FresnelS(2*2^(1/2)/P
i^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)*(-2/b)^(1/2)
*b+2*sin(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c)
)^(1/2)/b)*(-1/b)^(1/2)*(-2/b)^(1/2)*b+cos(4*a/b)*FresnelS(2*2^(1/2)/Pi^(1/
2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)+sin(4*a/b)*FresnelC(2*2^(1/2)/
Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)^3/sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e^{3}\left(\int \frac{c^{3}}{\sqrt{a+b\operatorname{asin}(c+dx)}}\,dx+\int \frac{d^{3}x^{3}}{\sqrt{a+b\operatorname{asin}(c+dx)}}\,dx+\int \frac{3cd^{2}x^{2}}{\sqrt{a+b\operatorname{asin}(c+dx)}}\,dx+\int \frac{3c^{2}dx}{\sqrt{a+b\operatorname{asin}(c+dx)}}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3/(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] e**3*(Integral(c**3/sqrt(a + b*asin(c + d*x)), x) + Integral(d**3*x**3/sqrt
(a + b*asin(c + d*x)), x) + Integral(3*c*d**2*x**2/sqrt(a + b*asin(c + d*x)
), x) + Integral(3*c**2*d*x/sqrt(a + b*asin(c + d*x)), x))
```

Giac [C] Result contains complex when optimal does not.
time = 0.82, size = 318, normalized size = 1.36

$$\frac{i\sqrt{\pi}e^{3}\operatorname{erf}\left(-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}}{\sqrt{b}}-\frac{i\sqrt{2}\sqrt{b\arcsin(dx+c)+a}\sqrt{b}}{|b|}\right)e^{\left(\frac{4ia}{b}\right)}}{16\left(\sqrt{2}\sqrt{b}+\frac{i\sqrt{2}b^{\frac{3}{2}}}{|b|}\right)d}+\frac{i\sqrt{\pi}e^{3}\operatorname{erf}\left(-\frac{\sqrt{b\arcsin(dx+c)+a}}{\sqrt{b}}+\frac{i\sqrt{b\arcsin(dx+c)+a}\sqrt{b}}{|b|}\right)e^{\left(-\frac{2ia}{b}\right)}}{8d\left(\sqrt{b}-\frac{ib^{\frac{3}{2}}}{|b|}\right)}-\frac{i\sqrt{\pi}e^{3}\operatorname{erf}\left(-\frac{\sqrt{2}\sqrt{b\arcsin(dx+c)+a}}{\sqrt{b}}+\frac{i\sqrt{2}\sqrt{b\arcsin(dx+c)+a}\sqrt{b}}{|b|}\right)e^{\left(-\frac{4ia}{b}\right)}}{16\left(\sqrt{2}\sqrt{b}-\frac{i\sqrt{2}b^{\frac{3}{2}}}{|b|}\right)d}-\frac{i\sqrt{\pi}e^{3}\operatorname{erf}\left(-\frac{\sqrt{b\arcsin(dx+c)+a}}{\sqrt{b}}-\frac{i\sqrt{b\arcsin(dx+c)+a}\sqrt{b}}{|b|}\right)e^{\left(\frac{2ia}{b}\right)}}{8\sqrt{b}d\left(\frac{ib}{|b|}+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] 1/16*I*sqrt(pi)*e^3*erf(-sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sq
rt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(4*I*a/b)/((sqrt(2)*sqr
t(b) + I*sqrt(2)*b^(3/2)/abs(b))*d) + 1/8*I*sqrt(pi)*e^3*erf(-sqrt(b*arcsin
(d*x + c) + a)/sqrt(b) + I*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-
2*I*a/b)/(d*(sqrt(b) - I*b^(3/2)/abs(b))) - 1/16*I*sqrt(pi)*e^3*erf(-sqrt(2
)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(2)*sqrt(b*arcsin(d*x + c) +
a)*sqrt(b)/abs(b))*e^(-4*I*a/b)/((sqrt(2)*sqrt(b) - I*sqrt(2)*b^(3/2)/abs(b
))*d) - 1/8*I*sqrt(pi)*e^3*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqr
t(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/(sqrt(b)*d*(I*b/abs(b)
 + 1))
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,e+d\,e\,x\right)}^3}{\sqrt{a+b\,\mathrm{asin}\left(c+d\,x\right)}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^3/(a + b*asin(c + d*x))^(1/2),x)
```

```
[Out] int((c*e + d*e*x)^3/(a + b*asin(c + d*x))^(1/2), x)
```

3.261 $\int \frac{(ce+dex)^2}{\sqrt{a+b\mathbf{ArcSin}(c+dx)}}\,dx$

Optimal. Leaf size=243

$$\frac{e^2\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{2\sqrt{b}\,d}-\frac{e^2\sqrt{\frac{\pi}{6}}\cos\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(}{\sqrt{b}}\right.}{2\sqrt{b}\,d}$$

```
[Out] -1/12*e^2*cos(3*a/b)*FresnelC(6^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^
(1/2))*6^(1/2)*Pi^(1/2)/d/b^(1/2)-1/12*e^2*FresnelS(6^(1/2)/Pi^(1/2)*(a+b*a
rcsin(d*x+c))^(1/2)/b^(1/2))*sin(3*a/b)*6^(1/2)*Pi^(1/2)/d/b^(1/2)+1/4*e^2*
cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*2^(1/
2)*Pi^(1/2)/d/b^(1/2)+1/4*e^2*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))
^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/d/b^(1/2)
```

Rubi [A]

time = 0.37, antiderivative size = 243, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 9, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.360$, Rules used = {4889, 12, 4731, 4491, 3387, 3386, 3432, 3385, 3433}

$$\frac{\sqrt{\frac{\pi}{2}}e^2\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{2\sqrt{b}\,d}-\frac{\sqrt{\frac{\pi}{6}}e^2\cos\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{2\sqrt{b}\,d}+\frac{\sqrt{\frac{\pi}{2}}e^2\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{2\sqrt{b}\,d}-\frac{\sqrt{\frac{\pi}{6}}e^2\sin\left(\frac{3a}{b}\right)S\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{2\sqrt{b}\,d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (e^2*Sqrt[Pi/2]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/
Sqrt[b]])/(2*Sqrt[b]*d) - (e^2*Sqrt[Pi/6]*Cos[(3*a)/b]*FresnelC[(Sqrt[6/Pi]
*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(2*Sqrt[b]*d) + (e^2*Sqrt[Pi/2]*Fre
snelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(2*Sqrt[b
]*d) - (e^2*Sqrt[Pi/6]*FresnelS[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sq
rt[b]]*Sin[(3*a)/b])/(2*Sqrt[b]*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
```

```
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^2}{\sqrt{a+b\sin^{-1}(c+dx)}}\,dx = \frac{\text{Subst}\left(\int \frac{e^2x^2}{\sqrt{a+b\sin^{-1}(x)}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^2\text{Subst}\left(\int \frac{x^2}{\sqrt{a+b\sin^{-1}(x)}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^2\text{Subst}\left(\int \frac{\cos(x)\sin^2(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{e^2\text{Subst}\left(\int \left(\frac{\cos(x)}{4\sqrt{a+bx}} - \frac{\cos(3x)}{4\sqrt{a+bx}}\right)\,dx, x, \sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{e^2\text{Subst}\left(\int \frac{\cos(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{4d} - \frac{e^2\text{Subst}\left(\int \frac{\cos(3x)}{\sqrt{a+bx}}\,dx, x, \sin\right.}{4d}$$

$$= \frac{\left(e^2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+x\right)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{4d} - \frac{\left(e^2\cos\left(\frac{3a}{b}\right)\right)\text{Subst}\left(\right.}{}$$

$$= \frac{\left(e^2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \cos\left(\frac{x^2}{b}\right)\,dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{2bd} - \frac{\left(e^2\cos\left(\frac{3a}{b}\right)\right.}{}$$

$$= \frac{e^2\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{2\sqrt{b}\,d} - \frac{e^2\sqrt{\frac{\pi}{6}}\cos\left(\frac{3a}{b}\right)C\left(\sqrt{\frac{6}{\pi}}\right.}{2}$$

<u>Mathematica</u> [C] Result contains complex when optimal does not.
time = 0.16, size = 249, normalized size = 1.02

$$-\frac{ie^2e^{-\frac{3ia}{b}}\left(3e^{\frac{2ia}{b}}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)-3e^{\frac{4ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)+\sqrt{3}\left(-\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},-\frac{3i(a+b\text{ArcSin}(c+dx))}{b}\right)+e^{\frac{6ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},\frac{3i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)\right)}{24d\sqrt{a+b\text{ArcSin}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^2/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] ((-1/24*I)*e^2*(3*E^(((2*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Ga
mma[1/2, ((-I)*(a + b*ArcSin[c + d*x]))/b] - 3*E^(((4*I)*a)/b)*Sqrt[(I*(a +
```

```
b*ArcSin[c + d*x]))/b]*Gamma[1/2, (I*(a + b*ArcSin[c + d*x]))/b] + Sqrt[3]
*(-(Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((-3*I)*(a + b*ArcSin
[c + d*x]))/b]) + E^(((6*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma
[1/2, ((3*I)*(a + b*ArcSin[c + d*x]))/b])))/(d*E^(((3*I)*a)/b)*Sqrt[a + b*A
rcSin[c + d*x]])
```

Maple [A]
time = 0.35, size = 207, normalized size = 0.85

method	result
default	$-\frac{e^{2}\sqrt{\pi}\,\sqrt{2}\,\sqrt{-\frac{3}{b}}\left(\cos\left(\frac{a}{b}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)\sqrt{-\frac{1}{b}}\,\sqrt{-\frac{3}{b}}\,b-\sin\left(\frac{a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{a}}{}\right.\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(1/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/12/d*e^2*Pi^(1/2)*2^(1/2)*(-3/b)^(1/2)*((-1/b)^(1/2)*(-3/b)^(1/2)*cos(a/
b)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b-si
n(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*
(-1/b)^(1/2)*(-3/b)^(1/2)*b+cos(3*a/b)*FresnelC(3*2^(1/2)/Pi^(1/2)/(-3/b)^(
1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)-sin(3*a/b)*FresnelS(3*2^(1/2)/Pi^(1/2)/(-
3/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)^2/sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e^{2}\left(\int \frac{c^{2}}{\sqrt{a + b\operatorname{asin}{\left(c + dx \right)}}}\, dx + \int \frac{d^{2}x^{2}}{\sqrt{a + b\operatorname{asin}{\left(c + dx \right)}}}\, dx + \int \frac{2cdx}{\sqrt{a + b\operatorname{asin}{\left(c + dx \right)}}}\, dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2/(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] e**2*(Integral(c**2/sqrt(a + b*asin(c + d*x)), x) + Integral(d**2*x**2/sqrt
(a + b*asin(c + d*x)), x) + Integral(2*c*d*x/sqrt(a + b*asin(c + d*x)), x))
```

Giac [C] Result contains complex when optimal does not.
time = 0.84, size = 345, normalized size = 1.42

$$\frac{\sqrt{\pi} e^{2} \operatorname{erf}\left(-\frac{\sqrt{6} \sqrt{b \arcsin\left(dx + c\right) + a}}{2 \sqrt{b}} - \frac{i \sqrt{6} \sqrt{b \arcsin\left(dx + c\right) + a} \sqrt{b}}{2 \left|b\right|}\right) e^{\left(\frac{3 i a}{b}\right)}}{4 \left(\sqrt{6} \sqrt{b} + \frac{i \sqrt{6} b^{\frac{3}{2}}}{\left|b\right|}\right) d} - \frac{\sqrt{\pi} e^{2} \operatorname{erf}\left(-\frac{i \sqrt{2} \sqrt{b \arcsin\left(dx + c\right) + a}}{2 \sqrt{\left|b\right|}} - \frac{\sqrt{2} \sqrt{b \arcsin\left(dx + c\right) + a} \sqrt{\left|b\right|}}{2 b}\right) e^{\left(\frac{i a}{b}\right)}}{4 d \left(\frac{i \sqrt{2} b}{\sqrt{\left|b\right|}} + \sqrt{2} \sqrt{\left|b\right|}\right)} - \frac{\sqrt{\pi} e^{2} \operatorname{erf}\left(\frac{i \sqrt{2} \sqrt{b \arcsin\left(dx + c\right) + a}}{2 \sqrt{\left|b\right|}} - \frac{\sqrt{2} \sqrt{b \arcsin\left(dx + c\right) + a} \sqrt{\left|b\right|}}{2 b}\right) e^{\left(-\frac{i a}{b}\right)}}{4 d \left(-\frac{i \sqrt{2} b}{\sqrt{\left|b\right|}} + \sqrt{2} \sqrt{\left|b\right|}\right)} + \frac{\sqrt{\pi} e^{2} \operatorname{erf}\left(-\frac{\sqrt{6} \sqrt{b \arcsin\left(dx + c\right) + a}}{2 \sqrt{b}} + \frac{i \sqrt{6} \sqrt{b \arcsin\left(dx + c\right) + a} \sqrt{b}}{2 \left|b\right|}\right) e^{\left(-\frac{3 i a}{b}\right)}}{4 \left(\sqrt{6} \sqrt{b} - \frac{i \sqrt{6} b^{\frac{3}{2}}}{\left|b\right|}\right) d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*sqrt(pi)*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - 1/2
*I*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(3*I*a/b)/((sqrt(6
)*sqrt(b) + I*sqrt(6)*b^(3/2)/abs(b))*d) - 1/4*sqrt(pi)*e^2*erf(-1/2*I*sqrt
(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*
x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(d*(I*sqrt(2)*b/sqrt(abs(b)) + sqrt(2
)*sqrt(abs(b)))) - 1/4*sqrt(pi)*e^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c
) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/
b)*e^(-I*a/b)/(d*(-I*sqrt(2)*b/sqrt(abs(b)) + sqrt(2)*sqrt(abs(b)))) + 1/4*
sqrt(pi)*e^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + 1/2*I*s
qrt(6)*sqrt(b*arcsin(d*x + c) + a)*sqrt(b)/abs(b))*e^(-3*I*a/b)/((sqrt(6)*s
qrt(b) - I*sqrt(6)*b^(3/2)/abs(b))*d)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,e+d\,e\,x\right)}^2}{\sqrt{a+b\,\mathrm{asin}\left(c+d\,x\right)}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^2/(a + b*asin(c + d*x))^(1/2),x)
```

```
[Out] int((c*e + d*e*x)^2/(a + b*asin(c + d*x))^(1/2), x)
```

3.262 $\int \frac{ce+dex}{\sqrt{a+b\mathbf{ArcSin}(c+dx)}}\,dx$

Optimal. Leaf size=105

$$\frac{e\sqrt{\pi}\,\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\,\sqrt{\pi}}\right)}{2\sqrt{b}\,d}-\frac{e\sqrt{\pi}\,\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\,\sqrt{\pi}}\right)\sin\left(\frac{2a}{b}\right)}{2\sqrt{b}\,d}$$

```
[Out] 1/2*e*cos(2*a/b)*FresnelS(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*Pi^
(1/2)/d/b^(1/2)-1/2*e*FresnelC(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2)
)*sin(2*a/b)*Pi^(1/2)/d/b^(1/2)
```

Rubi [A]

time = 0.13, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 9, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.391$, Rules used = {4889, 12, 4731, 4491, 3387, 3386, 3432, 3385, 3433}

$$\frac{\sqrt{\pi}\,e\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\,\sqrt{\pi}}\right)}{2\sqrt{b}\,d}-\frac{\sqrt{\pi}\,e\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}\,\sqrt{b}}\right)}{2\sqrt{b}\,d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (e*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*
Sqrt[Pi])])/(2*Sqrt[b]*d) - (e*Sqrt[Pi]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d
*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(2*Sqrt[b]*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{ce+dex}{\sqrt{a+b\sin^{-1}(c+dx)}}\,dx = \frac{\text{Subst}\left(\int \frac{ex}{\sqrt{a+b\sin^{-1}(x)}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e\text{Subst}\left(\int \frac{x}{\sqrt{a+b\sin^{-1}(x)}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e\text{Subst}\left(\int \frac{\cos(x)\sin(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{e\text{Subst}\left(\int \frac{\sin(2x)}{2\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{d}$$

$$= \frac{e\text{Subst}\left(\int \frac{\sin(2x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{2d}$$

$$= \frac{\left(e\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{2a}{b}+2x\right)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{2d} - \frac{\left(e\sin\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\right.}{}$$

$$= \frac{\left(e\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \sin\left(\frac{2x^2}{b}\right)\,dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd} - \frac{\left(e\sin\left(\frac{2a}{b}\right.\right.}{}$$

$$= \frac{e\sqrt{\pi}\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{2\sqrt{b}\,d} - \frac{e\sqrt{\pi}\,C\left(\frac{2\sqrt{a+b\sin^{-1}(c+\right.}{\sqrt{b}\sqrt{\pi}}}{2\sqrt{b}\,d}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.04, size = 134, normalized size = 1.28

$$-\frac{ee^{-\frac{2ia}{b}}\left(\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},-\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)+e^{\frac{4ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)}{4\sqrt{2}\,d\sqrt{a+b\text{ArcSin}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] -1/4*(e*(Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((-2*I)*(a + b*A
rcSin[c + d*x]))/b] + E^(((4*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*G
```

```
amma[1/2, ((2*I)*(a + b*ArcSin[c + d*x]))/b]))/(Sqrt[2]*d*E^(((2*I)*a)/b)*S
qrt[a + b*ArcSin[c + d*x]])
```

Maple [A]
time = 0.12, size = 99, normalized size = 0.94

method	result
default	$-\frac{\sqrt{2}\,\sqrt{\pi}\,\sqrt{-\frac{2}{b}}\,e\left(\cos\left(\frac{2a}{b}\right)\mathrm{S}\left(\frac{2\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{2}{b}}\,b}\right)+\sin\left(\frac{2a}{b}\right)\mathrm{FresnelC}\left(\frac{2\sqrt{2}\,\sqrt{a+b\arcsin\left(dx\cdots\right.}}{\sqrt{\pi}\,\sqrt{-\frac{2}{b}}\,b}\right.\right.}{4d}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(1/2),x,method=_RETURNVERBOSE)
[Out] -1/4*2^(1/2)*Pi^(1/2)*(-2/b)^(1/2)*e*(cos(2*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2
)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)+sin(2*a/b)*FresnelC(2*2^(1/2)/P
i^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b))/d
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
[Out] integrate((d*x*e + c*e)/sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e\left(\int\frac{c}{\sqrt{a+b\operatorname{asin}\left(c+dx\right)}}\,dx+\int\frac{dx}{\sqrt{a+b\operatorname{asin}\left(c+dx\right)}}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] e*(Integral(c/sqrt(a + b*asin(c + d*x)), x) + Integral(d*x/sqrt(a + b*asin(
c + d*x)), x))
```

Giac [C] Result contains complex when optimal does not.
time = 0.78, size = 142, normalized size = 1.35

$$\frac{i\sqrt{\pi}\,e\,\mathrm{erf}\left(-\frac{\sqrt{b\arcsin\left(dx+c\right)+a}}{\sqrt{b}}+\frac{i\sqrt{b\arcsin\left(dx+c\right)+a}\,\sqrt{b}}{|b|}\right)e^{\left(-\frac{2ia}{b}\right)}}{4\,d\left(\sqrt{b}-\frac{ib^{\frac{3}{2}}}{|b|}\right)}-\frac{i\sqrt{\pi}\,e\,\mathrm{erf}\left(-\frac{\sqrt{b\arcsin\left(dx+c\right)+a}}{\sqrt{b}}-\frac{i\sqrt{b\arcsin\left(dx+c\right)+a}\,\sqrt{b}}{|b|}\right)e^{\left(\frac{2ia}{b}\right)}}{4\sqrt{b}\,d\left(\frac{ib}{|b|}+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*I*sqrt(pi)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) + I*sqrt(b*arcsin
(d*x + c) + a)*sqrt(b)/abs(b))*e^(-2*I*a/b)/(d*(sqrt(b) - I*b^(3/2)/abs(b))
) - 1/4*I*sqrt(pi)*e*erf(-sqrt(b*arcsin(d*x + c) + a)/sqrt(b) - I*sqrt(b*ar
csin(d*x + c) + a)*sqrt(b)/abs(b))*e^(2*I*a/b)/(sqrt(b)*d*(I*b/abs(b) + 1))
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{c\,e+d\,e\,x}{\sqrt{a+b\,\mathrm{asin}\left(c+d\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)/(a + b*asin(c + d*x))^(1/2),x)
```

```
[Out] int((c*e + d*e*x)/(a + b*asin(c + d*x))^(1/2), x)
```

3.263 $\int \frac{1}{\sqrt{a+b\textbf{ArcSin}(c+dx)}}\,dx$

Optimal. Leaf size=105

$$\frac{\sqrt{2\pi}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}\,d}+\frac{\sqrt{2\pi}\,S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)\sin\left(\frac{a}{b}\right)}{\sqrt{b}\,d}$$

```
[Out] cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*2^(1/
2)*Pi^(1/2)/d/b^(1/2)+FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b
^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/d/b^(1/2)
```

Rubi [A]

time = 0.10, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {4887, 4719, 3387, 3386, 3432, 3385, 3433}

$$\frac{\sqrt{2\pi}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}\,d}+\frac{\sqrt{2\pi}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}\,d}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[a + b*ArcSin[c + d*x]],x]
```

```
[Out] (Sqrt[2*Pi]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt
[b]])/(Sqrt[b]*d) + (Sqrt[2*Pi]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c +
d*x]])/Sqrt[b]]*Sin[a/b])/(Sqrt[b]*d)
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4719

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[-a/b + x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c
, n}, x]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\int \frac{1}{\sqrt{a+b\sin^{-1}(c+dx)}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\sqrt{a+b\sin^{-1}(x)}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}-\frac{x}{b}\right)}{\sqrt{x}}\,dx, x, a+b\sin^{-1}(c+dx)\right)}{bd}$$

$$= \frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\cos\left(\frac{x}{b}\right)}{\sqrt{x}}\,dx, x, a+b\sin^{-1}(c+dx)\right)}{bd} + \frac{\sin\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\sin\left(\frac{x}{b}\right)}{\sqrt{x}}\,d\right.}{}$$

$$= \frac{\left(2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \cos\left(\frac{x^2}{b}\right)\,dx, x, \sqrt{a+b\sin^{-1}(c+dx)}\right)}{bd} + \frac{\left(2\sin\left(\frac{a}{b}\right)\right)\text{S}}{}$$

$$= \frac{\sqrt{2\pi}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}\,d} + \frac{\sqrt{2\pi}\,S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin}}{\sqrt{b}}\right.}{\sqrt{b}\,d}$$

Mathematica [F]
time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a+b\text{ArcSin}(c+dx)}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/Sqrt[a + b*ArcSin[c + d*x]],x]
[Out] Integrate[1/Sqrt[a + b*ArcSin[c + d*x]], x]
```

Maple [A]
time = 0.02, size = 95, normalized size = 0.90

method	result
default	$-\frac{\sqrt{2}\sqrt{\pi}\sqrt{-\frac{1}{b}}\left(-\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{2}\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\sqrt{-\frac{1}{b}}\,b}\right)+\sin\left(\frac{a}{b}\right)\text{S}\left(\frac{\sqrt{2}\sqrt{a+b\arcsin(dx+}}{\sqrt{\pi}\sqrt{-\frac{1}{b}}\,b}\right.\right.}{d}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c))^(1/2),x,method=_RETURNVERBOSE)
```

```
[Out] -2^(1/2)*Pi^(1/2)*(-1/b)^(1/2)*(-cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^
(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)+sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b
)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b))/d
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/sqrt(b*arcsin(d*x + c) + a), x)
```

Fricas [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a + b \operatorname{asin}{\left(c + dx \right)}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] Integral(1/sqrt(a + b*asin(c + d*x)), x)
```

Giac [**C**] Result contains complex when optimal does not.
time = 0.51, size = 167, normalized size = 1.59

$$-\frac{\sqrt{\pi}\operatorname{erf}\left(-\frac{i\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}\sqrt{|b|}}{2b}\right)e^{\left(\frac{ia}{b}\right)}}{d\left(\frac{i\sqrt{2}b}{\sqrt{|b|}}+\sqrt{2}\sqrt{|b|}\right)}-\frac{\sqrt{\pi}\operatorname{erf}\left(\frac{i\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin\left(dx+c\right)+a}\sqrt{|b|}}{2b}\right)e^{\left(-\frac{ia}{b}\right)}}{d\left(-\frac{i\sqrt{2}b}{\sqrt{|b|}}+\sqrt{2}\sqrt{|b|}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] -sqrt(pi)*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2
*sqrt(2)*sqrt(b*arcsin(d*x + c) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(d*(I*sqrt(2
)*b/sqrt(abs(b)) + sqrt(2)*sqrt(abs(b)))) - sqrt(pi)*erf(1/2*I*sqrt(2)*sqrt
(b*arcsin(d*x + c) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(d*x + c) +
 a)*sqrt(abs(b))/b)*e^(-I*a/b)/(d*(-I*sqrt(2)*b/sqrt(abs(b)) + sqrt(2)*sqrt
(abs(b))))
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\sqrt{a+b\,\mathrm{asin}\left(c+d\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(c + d*x))^(1/2),x)
```

```
[Out] int(1/(a + b*asin(c + d*x))^(1/2), x)
```

3.264 $\int \frac{1}{(ce+dex)\sqrt{a+b\textbf{ArcSin}(c+dx)}}\,dx$

Optimal. Leaf size=29

$$\frac{\operatorname{Int}\left(\frac{1}{(c+dx)\sqrt{a+b\text{ArcSin}(c+dx)}},x\right)}{e}$$

[Out] Unintegrable(1/(d*x+c)/(a+b*arcsin(d*x+c))^(1/2),x)/e

Rubi [A]
time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(ce+dex)\sqrt{a+b\text{ArcSin}(c+dx)}}\,dx$$

Verification is not applicable to the result.

[In] Int[1/((c*e + d*e*x)*Sqrt[a + b*ArcSin[c + d*x]]),x]

[Out] Defer[Subst][Defer[Int][1/(x*Sqrt[a + b*ArcSin[x]]), x], x, c + d*x]/(d*e)

Rubi steps

$$\begin{aligned}\int \frac{1}{(ce+dex)\sqrt{a+b\sin^{-1}(c+dx)}}\,dx &= \frac{\operatorname{Subst}\left(\int \frac{1}{ex\sqrt{a+b\sin^{-1}(x)}}\,dx,x,c+dx\right)}{d}\\ &= \frac{\operatorname{Subst}\left(\int \frac{1}{x\sqrt{a+b\sin^{-1}(x)}}\,dx,x,c+dx\right)}{de}\end{aligned}$$

Mathematica [A]
time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{1}{(ce+dex)\sqrt{a+b\text{ArcSin}(c+dx)}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((c*e + d*e*x)*Sqrt[a + b*ArcSin[c + d*x]]),x]
```

```
[Out] Integrate[1/((c*e + d*e*x)*Sqrt[a + b*ArcSin[c + d*x]]), x]
```

Maple [A]
time = 0.24, size = 0, normalized size = 0.00

$$\int \frac{1}{(dex+ce)\sqrt{a+b\arcsin(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(1/2),x)
```

```
[Out] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(1/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/((d*x*e + c*e)*sqrt(b*arcsin(d*x + c) + a)), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{1}{c\sqrt{a+b\operatorname{asin}(c+dx)}+dx\sqrt{a+b\operatorname{asin}(c+dx)}}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*asin(d*x+c))**(1/2),x)
```

```
[Out] Integral(1/(c*sqrt(a + b*asin(c + d*x)) + d*x*sqrt(a + b*asin(c + d*x))), x
)/e
```

Giac [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(1/2),x, algorithm="giac")
[Out] integrate(1/((d*e*x + c*e)*sqrt(b*arcsin(d*x + c) + a)), x)
```

Mupad [**A**]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{(c\,e+d\,e\,x)\,\sqrt{a+b\,\mathrm{asin}\left(c+d\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((c*e + d*e*x)*(a + b*asin(c + d*x))^(1/2)),x)
[Out] int(1/((c*e + d*e*x)*(a + b*asin(c + d*x))^(1/2)), x)
```

3.265 $\int \frac{(ce+dex)^4}{(a+b\mathbf{ArcSin}(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=412

$$-\frac{2e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{e^4\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{2b^{3/2}d}+\frac{3e^4\sqrt{\frac{3\pi}{2}}\cos\left(\frac{3a}{b}\right)S\left(\right.}{}$$

```
[Out] -1/4*e^4*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/
2))*2^(1/2)*Pi^(1/2)/b^(3/2)/d+1/4*e^4*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsi
n(d*x+c))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/b^(3/2)/d+3/8*e^4*cos(3*
a/b)*FresnelS(6^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*6^(1/2)*P
i^(1/2)/b^(3/2)/d-3/8*e^4*FresnelC(6^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/
2)/b^(1/2))*sin(3*a/b)*6^(1/2)*Pi^(1/2)/b^(3/2)/d-1/8*e^4*cos(5*a/b)*Fresne
lS(10^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*10^(1/2)*Pi^(1/2)/b
^(3/2)/d+1/8*e^4*FresnelC(10^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/
2))*sin(5*a/b)*10^(1/2)*Pi^(1/2)/b^(3/2)/d-2*e^4*(d*x+c)^4*(1-(d*x+c)^2)^(1
/2)/b/d/(a+b*arcsin(d*x+c))^(1/2)
```

Rubi [A]
time = 0.57, antiderivative size = 412, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.320$, Rules used = {4889, 12, 4727, 3387, 3386, 3432, 3385, 3433}

$$\frac{\sqrt{\frac{\pi}{2}}e^4\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{2b^{3/2}d}-\frac{3\sqrt{\frac{3\pi}{2}}e^4\sin\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{4b^{3/2}d}+\frac{\sqrt{\frac{5\pi}{2}}e^4\sin\left(\frac{5a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{10}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{4b^{3/2}d}-\frac{\sqrt{\frac{\pi}{2}}e^4\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{2b^{3/2}d}+\frac{3\sqrt{\frac{3\pi}{2}}e^4\cos\left(\frac{3a}{b}\right)S\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{4b^{3/2}d}-\frac{\sqrt{\frac{5\pi}{2}}e^4\cos\left(\frac{5a}{b}\right)S\left(\frac{\sqrt{\frac{10}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{4b^{3/2}d}-\frac{2e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\text{ArcSin}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^4/(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (-2*e^4*(c + d*x)^4*Sqrt[1 - (c + d*x)^2])/(b*d*Sqrt[a + b*ArcSin[c + d*x]]
) - (e^4*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x
]])/Sqrt[b]])/(2*b^(3/2)*d) + (3*e^4*Sqrt[(3*Pi)/2]*Cos[(3*a)/b]*FresnelS[(
Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(4*b^(3/2)*d) - (e^4*Sqrt
[(5*Pi)/2]*Cos[(5*a)/b]*FresnelS[(Sqrt[10/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/
Sqrt[b]])/(4*b^(3/2)*d) + (e^4*Sqrt[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*A
rcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(2*b^(3/2)*d) - (3*e^4*Sqrt[(3*Pi)/2]*F
resnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(3*a)/b])/(4*
b^(3/2)*d) + (e^4*Sqrt[(5*Pi)/2]*FresnelC[(Sqrt[10/Pi]*Sqrt[a + b*ArcSin[c
+ d*x]])/Sqrt[b]]*Sin[(5*a)/b])/(4*b^(3/2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4727

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] - Dist
[1/(b^2*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[x^(n + 1), Sin[-a/b
+ x/b]^(m - 1)*(m - (m + 1)*Sin[-a/b + x/b]^2), x], x], x, a + b*ArcSin[c*x
]], x] /; FreeQ[{a, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^4}{(a+b\sin^{-1}(c+dx))^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{e^4x^4}{(a+b\sin^{-1}(x))^{3/2}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^4\text{Subst}\left(\int \frac{x^4}{(a+b\sin^{-1}(x))^{3/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{(2e^4)\,\text{Subst}\left(\int \left(-\frac{\sin(x)}{8\sqrt{a+bx}} + \frac{9\sin(3x)}{16\sqrt{a+b}\right.\right.}{b}$$

$$= -\frac{2e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{e^4\text{Subst}\left(\int \frac{\sin(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right.}{4bd}$$

$$= -\frac{2e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{\left(e^4\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{\sqrt{a+bx}}\,dx, x, \sin\right.}{4bd}$$

$$= -\frac{2e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{\left(e^4\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \sin\left(\frac{x^2}{b}\right)\,dx, x, \sqrt{a}\right.}{2b^2d}$$

$$= -\frac{2e^4(c+dx)^4\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{e^4\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c-}}{\sqrt{b}}\right.}{2b^{3/2}d}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.42, size = 572, normalized size = 1.39

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^4/(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (e^4*(-E^(((5*I)*a)/b) + 3*E^(((5*I)*a)/b + (2*I)*ArcSin[c + d*x]) - 2*E^((
(5*I)*a)/b + (4*I)*ArcSin[c + d*x]) - 2*E^(((5*I)*a)/b + (6*I)*ArcSin[c + d
*x]) + 3*E^(((5*I)*a)/b + (8*I)*ArcSin[c + d*x]) - E^(((5*I)*(a + 2*b*ArcSi
```

```
n[c + d*x]))/b) + 2*E^(((4*I)*a)/b + (5*I)*ArcSin[c + d*x])*Sqrt[((-I)*(a +
 b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((-I)*(a + b*ArcSin[c + d*x]))/b] + 2*E^
(((6*I)*a)/b + (5*I)*ArcSin[c + d*x])*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*G
amma[1/2, (I*(a + b*ArcSin[c + d*x]))/b] - 3*Sqrt[3]*E^(((2*I)*a)/b + (5*I)
*ArcSin[c + d*x])*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((-3*I)
*(a + b*ArcSin[c + d*x]))/b] - 3*Sqrt[3]*E^(((8*I)*a)/b + (5*I)*ArcSin[c +
d*x])*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((3*I)*(a + b*ArcSin[c
 + d*x]))/b] + Sqrt[5]*E^((5*I)*ArcSin[c + d*x])*Sqrt[((-I)*(a + b*ArcSin[c
 + d*x]))/b]*Gamma[1/2, ((-5*I)*(a + b*ArcSin[c + d*x]))/b] + Sqrt[5]*E^(((
5*I)*(2*a + b*ArcSin[c + d*x]))/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamm
a[1/2, ((5*I)*(a + b*ArcSin[c + d*x]))/b]))/(16*b*d*E^(((5*I)*(a + b*ArcSin
[c + d*x]))/b)*Sqrt[a + b*ArcSin[c + d*x]])
```

Maple [A]
time = 0.54, size = 483, normalized size = 1.17

method	result
default	$\frac{e^4\left(2\sqrt{a+b\arcsin(dx+c)}\cos\left(\frac{a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\sqrt{-\frac{1}{b}}\,b}\right)\sqrt{-\frac{1}{b}}\sqrt{\pi}\sqrt{2}+2\sqrt{a+b\arcsi\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^(3/2),x,method=_RETURNVERBOSE)
```

```
[Out] 1/8/d*e^4/b*(2*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)
/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)*Pi^(1/2)*2^(1/2)+2*
(-1/b)^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi
^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*Pi^(1/2)-3*2^(1/2)*(a+b*ar
csin(d*x+c))^(1/2)*cos(3*a/b)*FresnelS(3*2^(1/2)/Pi^(1/2)/(-3/b)^(1/2)*(a+b
*arcsin(d*x+c))^(1/2)/b)*(-3/b)^(1/2)*Pi^(1/2)-3*2^(1/2)*(a+b*arcsin(d*x+c)
)^(1/2)*sin(3*a/b)*FresnelC(3*2^(1/2)/Pi^(1/2)/(-3/b)^(1/2)*(a+b*arcsin(d*x
+c))^(1/2)/b)*(-3/b)^(1/2)*Pi^(1/2)+2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(5
*a/b)*FresnelS(5*2^(1/2)/Pi^(1/2)/(-5/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)
*(-5/b)^(1/2)*Pi^(1/2)+2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(5*a/b)*Fresnel
C(5*2^(1/2)/Pi^(1/2)/(-5/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-5/b)^(1/2)
*Pi^(1/2)+3*cos(-3*(a+b*arcsin(d*x+c))/b+3*a/b)-2*cos(-(a+b*arcsin(d*x+c))/
b+a/b)-cos(-5*(a+b*arcsin(d*x+c))/b+5*a/b))/(a+b*arcsin(d*x+c))^(1/2)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)^4/(b*arcsin(d*x + c) + a)^(3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e^{4}\left(\int \frac{c^{4}}{a\sqrt{a+b\operatorname{asin}{\left(c+dx\right)}}+b\sqrt{a+b\operatorname{asin}{\left(c+dx\right)}}\operatorname{asin}{\left(c+dx\right)}}\,dx+\int \frac{d^{4}x^{4}}{a\sqrt{a+b\operatorname{asin}{\left(c+dx\right)}}+b\sqrt{a+b\operatorname{asin}{\left(c+dx\right)}}\operatorname{asin}{\left(c+dx\right)}}\,dx+\int \frac{4cd^{3}x^{3}}{a\sqrt{a+b\operatorname{asin}{\left(c+dx\right)}}+b\sqrt{a+b\operatorname{asin}{\left(c+dx\right)}}\operatorname{asin}{\left(c+dx\right)}}\,dx+\int \frac{6c^{2}d^{2}x^{2}}{a\sqrt{a+b\operatorname{asin}{\left(c+dx\right)}}+b\sqrt{a+b\operatorname{asin}{\left(c+dx\right)}}\operatorname{asin}{\left(c+dx\right)}}\,dx+\int \frac{4c^{3}dx}{a\sqrt{a+b\operatorname{asin}{\left(c+dx\right)}}+b\sqrt{a+b\operatorname{asin}{\left(c+dx\right)}}\operatorname{asin}{\left(c+dx\right)}}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**4/(a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] e**4*(Integral(c**4/(a*sqrt(a + b*asin(c + d*x)) + b*sqrt(a + b*asin(c + d*
x))*asin(c + d*x)), x) + Integral(d**4*x**4/(a*sqrt(a + b*asin(c + d*x)) +
b*sqrt(a + b*asin(c + d*x))*asin(c + d*x)), x) + Integral(4*c*d**3*x**3/(a*
sqrt(a + b*asin(c + d*x)) + b*sqrt(a + b*asin(c + d*x))*asin(c + d*x)), x)
+ Integral(6*c**2*d**2*x**2/(a*sqrt(a + b*asin(c + d*x)) + b*sqrt(a + b*asi
n(c + d*x))*asin(c + d*x)), x) + Integral(4*c**3*d*x/(a*sqrt(a + b*asin(c +
 d*x)) + b*sqrt(a + b*asin(c + d*x))*asin(c + d*x)), x))
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^4/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)^4/(b*arcsin(d*x + c) + a)^(3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,e+d\,e\,x\right)}^4}{{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^4/(a + b*asin(c + d*x))^(3/2),x)
```

```
[Out] int((c*e + d*e*x)^4/(a + b*asin(c + d*x))^(3/2), x)
```

3.266 $\int \frac{(ce+dex)^3}{(a+b\mathbf{ArcSin}(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=270

$$-\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{e^3\sqrt{\frac{\pi}{2}}\cos\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}+\frac{e^3\sqrt{\pi}\cos\left(\right.}{}$$

```
[Out] -1/2*e^3*cos(4*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b
^(1/2))*2^(1/2)*Pi^(1/2)/b^(3/2)/d-1/2*e^3*FresnelS(2*2^(1/2)/Pi^(1/2)*(a+b
*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(4*a/b)*2^(1/2)*Pi^(1/2)/b^(3/2)/d+e^3*co
s(2*a/b)*FresnelC(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*Pi^(1/2)/b^
(3/2)/d+e^3*FresnelS(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*sin(2*a/
b)*Pi^(1/2)/b^(3/2)/d-2*e^3*(d*x+c)^3*(1-(d*x+c)^2)^(1/2)/b/d/(a+b*arcsin(d
*x+c))^(1/2)
```

Rubi [A]
time = 0.32, antiderivative size = 270, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.320$, Rules used = {4889, 12, 4727, 3387, 3386, 3432, 3385, 3433}

$$-\frac{\sqrt{\frac{\pi}{2}}e^3\cos\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}+\frac{\sqrt{\pi}e^3\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{b^{3/2}d}+\frac{\sqrt{\pi}e^3\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{b^{3/2}d}-\frac{\sqrt{\frac{\pi}{2}}e^3\sin\left(\frac{4a}{b}\right)S\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}-\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\text{ArcSin}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (-2*e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(b*d*Sqrt[a + b*ArcSin[c + d*x]]
) - (e^3*Sqrt[Pi/2]*Cos[(4*a)/b]*FresnelC[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c
 + d*x]])/Sqrt[b]])/(b^(3/2)*d) + (e^3*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sq
rt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(b^(3/2)*d) + (e^3*Sqrt[Pi]
*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])
/(b^(3/2)*d) - (e^3*Sqrt[Pi/2]*FresnelS[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c +
 d*x]])/Sqrt[b]]*Sin[(4*a)/b])/(b^(3/2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
```

```
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4727

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] - Dist
[1/(b^2*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[x^(n + 1), Sin[-a/b
+ x/b]^(m - 1)*(m - (m + 1)*Sin[-a/b + x/b]^2), x], x], x, a + b*ArcSin[c*x
]], x] /; FreeQ[{a, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[(((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^3}{(a+b\sin^{-1}(c+dx))^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{e^3x^3}{(a+b\sin^{-1}(x))^{3/2}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^3\text{Subst}\left(\int \frac{x^3}{(a+b\sin^{-1}(x))^{3/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{(2e^3)\,\text{Subst}\left(\int \left(\frac{\cos(2x)}{2\sqrt{a+bx}} - \frac{\cos(4x)}{2\sqrt{a+bx}}\right.\right.}{bd}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{e^3\text{Subst}\left(\int \frac{\cos(2x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx\right.}{bd}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{\left(e^3\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{2a}{b}+2x\right)}{\sqrt{a+bx}}\,dx, x, \text{s}\right.}{bd}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{\left(2e^3\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \cos\left(\frac{2x^2}{b}\right)\,dx, x,\right.}{b^2d}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{e^3\sqrt{\frac{\pi}{2}}\cos\left(\frac{4a}{b}\right)C\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}}}{\sqrt{b}}\right.}{b^{3/2}d}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.21, size = 300, normalized size = 1.11

$$-\frac{ie^3e^{-\frac{4ia}{b}}\left(\sqrt{2}e^{\frac{2ia}{b}}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\text{Gamma}\left(\frac{1}{2},-\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)-\sqrt{2}e^{\frac{6ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\text{Gamma}\left(\frac{1}{2},\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)-\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\text{Gamma}\left(\frac{1}{2},-\frac{4i(a+b\text{ArcSin}(c+dx))}{b}\right)+e^{\frac{8ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\text{Gamma}\left(\frac{1}{2},\frac{4i(a+b\text{ArcSin}(c+dx))}{b}\right)-2ie^{\frac{4ia}{b}}\sin(2\text{ArcSin}(c+dx))+ie^{\frac{4ia}{b}}\sin(4\text{ArcSin}(c+dx))\right)}{4bd\sqrt{a+b\text{ArcSin}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] ((-1/4*I)*e^3*(Sqrt[2]*E^(((2*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/
b]*Gamma[1/2, ((-2*I)*(a + b*ArcSin[c + d*x]))/b] - Sqrt[2]*E^(((6*I)*a)/b)
*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((2*I)*(a + b*ArcSin[c + d*
x]))/b] - Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((-4*I)*(a + b*
```

```
ArcSin[c + d*x]))/b] + E^(((8*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*
Gamma[1/2, ((4*I)*(a + b*ArcSin[c + d*x]))/b] - (2*I)*E^(((4*I)*a)/b)*Sin[2
*ArcSin[c + d*x]] + I*E^(((4*I)*a)/b)*Sin[4*ArcSin[c + d*x]]))/(b*d*E^(((4*
I)*a)/b)*Sqrt[a + b*ArcSin[c + d*x]])
```

Maple [A]
time = 0.35, size = 335, normalized size = 1.24

method	result
default	$\frac{e^3\left(-2\sqrt{-\frac{1}{b}}\,\sqrt{\pi}\,\sqrt{2}\,\cos\left(\frac{4a}{b}\right)\mathrm{FresnelC}\left(\frac{2\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)\sqrt{a+b\arcsin\left(dx+c\right)}+2\sqrt{-\frac{1}{b}}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(3/2),x,method=_RETURNVERBOSE)
```

```
[Out] 1/4/d*e^3/b/(a+b*arcsin(d*x+c))^(1/2)*(-2*(-1/b)^(1/2)*Pi^(1/2)*2^(1/2)*cos
(4*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/
b)*(a+b*arcsin(d*x+c))^(1/2)+2*(-1/b)^(1/2)*Pi^(1/2)*2^(1/2)*sin(4*a/b)*Fre
snelS(2*2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arc
sin(d*x+c))^(1/2)+2*(-2/b)^(1/2)*Pi^(1/2)*2^(1/2)*cos(2*a/b)*FresnelC(2*2^(
1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+c))
^(1/2)-2*Pi^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(2*a/b)*FresnelS(2*2
^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-2/b)^(1/2)+2*si
n(-2*(a+b*arcsin(d*x+c))/b+2*a/b)-sin(-4*(a+b*arcsin(d*x+c))/b+4*a/b))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)^3/(b*arcsin(d*x + c) + a)^(3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e^{3}\left(\int \frac{c^{3}}{a\sqrt{a+b\operatorname{asin}{(c+dx)}}+b\sqrt{a+b\operatorname{asin}{(c+dx)}}\operatorname{asin}{(c+dx)}}\,dx+\int \frac{d^{3}x^{3}}{a\sqrt{a+b\operatorname{asin}{(c+dx)}}+b\sqrt{a+b\operatorname{asin}{(c+dx)}}\operatorname{asin}{(c+dx)}}\,dx+\int \frac{3cd^{2}x^{2}}{a\sqrt{a+b\operatorname{asin}{(c+dx)}}+b\sqrt{a+b\operatorname{asin}{(c+dx)}}\operatorname{asin}{(c+dx)}}\,dx+\int \frac{3c^{2}dx}{a\sqrt{a+b\operatorname{asin}{(c+dx)}}+b\sqrt{a+b\operatorname{asin}{(c+dx)}}\operatorname{asin}{(c+dx)}}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3/(a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] e**3*(Integral(c**3/(a*sqrt(a + b*asin(c + d*x)) + b*sqrt(a + b*asin(c + d*
x))*asin(c + d*x)), x) + Integral(d**3*x**3/(a*sqrt(a + b*asin(c + d*x)) +
b*sqrt(a + b*asin(c + d*x))*asin(c + d*x)), x) + Integral(3*c*d**2*x**2/(a*
sqrt(a + b*asin(c + d*x)) + b*sqrt(a + b*asin(c + d*x))*asin(c + d*x)), x)
+ Integral(3*c**2*d*x/(a*sqrt(a + b*asin(c + d*x)) + b*sqrt(a + b*asin(c +
d*x))*asin(c + d*x)), x))
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)^3/(b*arcsin(d*x + c) + a)^(3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,e+d\,e\,x\right)}^3}{{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^3/(a + b*asin(c + d*x))^(3/2),x)
```

```
[Out] int((c*e + d*e*x)^3/(a + b*asin(c + d*x))^(3/2), x)
```

3.267 $\int \frac{(ce+dex)^2}{(a+b\mathbf{ArcSin}(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=280

$$-\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{e^2\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}+\frac{e^2\sqrt{\frac{3\pi}{2}}\cos\left(\frac{3a}{b}\right)S\left(\right.}{}$$

```
[Out] -1/2*e^2*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/
2))*2^(1/2)*Pi^(1/2)/b^(3/2)/d+1/2*e^2*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsi
n(d*x+c))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/b^(3/2)/d+1/2*e^2*cos(3*
a/b)*FresnelS(6^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*6^(1/2)*P
i^(1/2)/b^(3/2)/d-1/2*e^2*FresnelC(6^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/
2)/b^(1/2))*sin(3*a/b)*6^(1/2)*Pi^(1/2)/b^(3/2)/d-2*e^2*(d*x+c)^2*(1-(d*x+c
)^2)^(1/2)/b/d/(a+b*arcsin(d*x+c))^(1/2)
```

Rubi [A]
time = 0.35, antiderivative size = 280, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.320$, Rules used = {4889, 12, 4727, 3387, 3386, 3432, 3385, 3433}

$$\frac{\sqrt{\frac{\pi}{2}}e^2\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}-\frac{\sqrt{\frac{3\pi}{2}}e^2\sin\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}-\frac{\sqrt{\frac{\pi}{2}}e^2\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}+\frac{\sqrt{\frac{3\pi}{2}}e^2\cos\left(\frac{3a}{b}\right)S\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}-\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\text{ArcSin}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (-2*e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(b*d*Sqrt[a + b*ArcSin[c + d*x]]
) - (e^2*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x
]])/Sqrt[b]])/(b^(3/2)*d) + (e^2*Sqrt[(3*Pi)/2]*Cos[(3*a)/b]*FresnelS[(Sqrt
[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(b^(3/2)*d) + (e^2*Sqrt[Pi/2]
*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(b^(3
/2)*d) - (e^2*Sqrt[(3*Pi)/2]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x
]])/Sqrt[b]]*Sin[(3*a)/b])/(b^(3/2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
```

```
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4727

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] - Dist
[1/(b^2*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[x^(n + 1), Sin[-a/b
+ x/b]^(m - 1)*(m - (m + 1)*Sin[-a/b + x/b]^2), x], x], x, a + b*ArcSin[c*x
]], x] /; FreeQ[{a, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^2}{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{e^2x^2}{\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^2\text{Subst}\left(\int \frac{x^2}{\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{(2e^2)\,\text{Subst}\left(\int \left(-\frac{\sin(x)}{4\sqrt{a+bx}} + \frac{3\sin(3x)}{4\sqrt{a+b\cdots}}\right.\right.}{bd}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{e^2\text{Subst}\left(\int \frac{\sin(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\cdots\right.}{2bd}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{\left(e^2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{\sqrt{a+bx}}\,dx, x, \sin\cdots\right.}{2bd}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{\left(e^2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \sin\left(\frac{x^2}{b}\right)\,dx, x, \sqrt{a\cdots}\right.}{b^2d}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{e^2\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c\cdots}}{\sqrt{b}}\right.}{b^{3/2}d}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.24, size = 380, normalized size = 1.36

$$\frac{e^2e^{-\frac{3i(a+b\text{ArcSin}(c+dx))}{b}}\left(e^{\frac{3ia}{b}} - e^{\frac{3ia}{b}+2i\text{ArcSin}(c+dx)} - e^{\frac{3ia}{b}+4i\text{ArcSin}(c+dx)} + e^{\frac{3i(a+2b\text{ArcSin}(c+dx))}{b}} + e^{\frac{2ia}{b}+3i\text{ArcSin}(c+dx)}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2}, -\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right) + e^{\frac{4ia}{b}+3i\text{ArcSin}(c+dx)}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2}, \frac{i(a+b\text{ArcSin}(c+dx))}{b}\right) - \sqrt{3}\,e^{3i\text{ArcSin}(c+dx)}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2}, -\frac{3i(a+b\text{ArcSin}(c+dx))}{b}\right) - \sqrt{3}\,e^{3i\left(\frac{2a}{b}+\text{ArcSin}(c+dx)\right)}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2}, \frac{3i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)}{4bd\sqrt{a+b\text{ArcSin}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (e^2*(E^(((3*I)*a)/b) - E^(((3*I)*a)/b + (2*I)*ArcSin[c + d*x]) - E^(((3*I)
*a)/b + (4*I)*ArcSin[c + d*x]) + E^(((3*I)*(a + 2*b*ArcSin[c + d*x]))/b) +
E^(((2*I)*a)/b + (3*I)*ArcSin[c + d*x])*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))
/b]*Gamma[1/2, ((-I)*(a + b*ArcSin[c + d*x]))/b] + E^(((4*I)*a)/b + (3*I)*A
```

```
rcSin[c + d*x])*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, (I*(a + b*Ar
cSin[c + d*x]))/b] - Sqrt[3]*E^((3*I)*ArcSin[c + d*x])*Sqrt[((-I)*(a + b*Ar
cSin[c + d*x]))/b]*Gamma[1/2, ((-3*I)*(a + b*ArcSin[c + d*x]))/b] - Sqrt[3]
*E^((3*I)*((2*a)/b + ArcSin[c + d*x]))*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*
Gamma[1/2, ((3*I)*(a + b*ArcSin[c + d*x]))/b]))/(4*b*d*E^(((3*I)*(a + b*Arc
Sin[c + d*x]))/b)*Sqrt[a + b*ArcSin[c + d*x]])
```

Maple [A]
time = 0.33, size = 326, normalized size = 1.16

method	result
default	$\frac{e^2\left(\sqrt{a+b\arcsin(dx+c)}\,\cos\left(\frac{a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)\sqrt{-\frac{1}{b}}\,\sqrt{\pi}\,\sqrt{2}+\sqrt{a+b\arcsin}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(3/2),x,method=_RETURNVERBOSE)
```

```
[Out] 1/2/d*e^2/b*((a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(
-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)*Pi^(1/2)*2^(1/2)+(-1/
b)^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/
2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*Pi^(1/2)-2^(1/2)*(a+b*arcsin(d
*x+c))^(1/2)*cos(3*a/b)*FresnelS(3*2^(1/2)/Pi^(1/2)/(-3/b)^(1/2)*(a+b*arcsi
n(d*x+c))^(1/2)/b)*(-3/b)^(1/2)*Pi^(1/2)-2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*
sin(3*a/b)*FresnelC(3*2^(1/2)/Pi^(1/2)/(-3/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/
2)/b)*(-3/b)^(1/2)*Pi^(1/2)+cos(-3*(a+b*arcsin(d*x+c))/b+3*a/b)-cos(-(a+b*a
rcsin(d*x+c))/b+a/b))/(a+b*arcsin(d*x+c))^(1/2)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)^2/(b*arcsin(d*x + c) + a)^(3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e^2\left(\int \frac{c^2}{a\sqrt{a+b\operatorname{asin}(c+dx)}+b\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)}\,dx+\int \frac{d^2x^2}{a\sqrt{a+b\operatorname{asin}(c+dx)}+b\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)}\,dx+\int \frac{2cdx}{a\sqrt{a+b\operatorname{asin}(c+dx)}+b\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2/(a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] e**2*(Integral(c**2/(a*sqrt(a + b*asin(c + d*x)) + b*sqrt(a + b*asin(c + d*
x))*asin(c + d*x)), x) + Integral(d**2*x**2/(a*sqrt(a + b*asin(c + d*x)) +
b*sqrt(a + b*asin(c + d*x))*asin(c + d*x)), x) + Integral(2*c*d*x/(a*sqrt(a
 + b*asin(c + d*x)) + b*sqrt(a + b*asin(c + d*x))*asin(c + d*x)), x))
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)^2/(b*arcsin(d*x + c) + a)^(3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,e+d\,e\,x\right)}^2}{{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^2/(a + b*asin(c + d*x))^(3/2),x)
```

```
[Out] int((c*e + d*e*x)^2/(a + b*asin(c + d*x))^(3/2), x)
```

3.268 $\int \frac{ce+dex}{(a+b\textbf{ArcSin}(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=144

$$-\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\text{ArcSin}(c+dx)}}+\frac{2e\sqrt{\pi}\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{b^{3/2}d}+\frac{2e\sqrt{\pi}\,S\left(\frac{2\sqrt{a+b\text{A}}}{\sqrt{}}\right.}{}$$

```
[Out] 2*e*cos(2*a/b)*FresnelC(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*Pi^(1
/2)/b^(3/2)/d+2*e*FresnelS(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*si
n(2*a/b)*Pi^(1/2)/b^(3/2)/d-2*e*(d*x+c)*(1-(d*x+c)^2)^(1/2)/b/d/(a+b*arcsin
(d*x+c))^(1/2)
```

Rubi [A]
time = 0.14, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.348$, Rules used = {4889, 12, 4727, 3387, 3386, 3432, 3385, 3433}

$$\frac{2\sqrt{\pi}\,e\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{b^{3/2}d}+\frac{2\sqrt{\pi}\,e\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{b^{3/2}d}-\frac{2e\sqrt{1-(c+dx)^2}\,(c+dx)}{bd\sqrt{a+b\text{ArcSin}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)/(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] (-2*e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(b*d*Sqrt[a + b*ArcSin[c + d*x]]) +
(2*e*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b
]*Sqrt[Pi])])/(b^(3/2)*d) + (2*e*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c +
 d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(b^(3/2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4727

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] - Dist
[1/(b^2*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[x^(n + 1), Sin[-a/b
+ x/b]^(m - 1)*(m - (m + 1)*Sin[-a/b + x/b]^2), x], x], x, a + b*ArcSin[c*x
]], x] /; FreeQ[{a, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{ce+dex}{(a+b\sin^{-1}(c+dx))^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{ex}{(a+b\sin^{-1}(x))^{3/2}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e\text{Subst}\left(\int \frac{x}{(a+b\sin^{-1}(x))^{3/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{(2e)\text{Subst}\left(\int \frac{\cos(2x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+d$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{\left(2e\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{2a}{b}+2x\right)}{\sqrt{a+bx}}\,dx, x, \sin$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{\left(4e\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \cos\left(\frac{2x^2}{b}\right)\,dx, x, \sqrt{}\right.}{b^2d}$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{2e\sqrt{\pi}\cos\left(\frac{2a}{b}\right)C\left(\frac{2\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right.}{b^{3/2}d}$$

<u>**Mathematica**</u> [C] Result contains complex when optimal does not.
time = 0.10, size = 168, normalized size = 1.17

$$\frac{iee^{-\frac{2ia}{b}}\left(-\sqrt{2}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},-\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)+\sqrt{2}\,e^{\frac{4ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)+2ie^{\frac{2ia}{b}}\sin(2\text{ArcSin}(c+dx))\right)}{2bd\sqrt{a+b\text{ArcSin}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)/(a + b*ArcSin[c + d*x])^(3/2),x]
```

```
[Out] ((I/2)*e*(-(Sqrt[2]*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((-2*
I)*(a + b*ArcSin[c + d*x]))/b]) + Sqrt[2]*E^(((4*I)*a)/b)*Sqrt[(I*(a + b*Ar
cSin[c + d*x]))/b]*Gamma[1/2, ((2*I)*(a + b*ArcSin[c + d*x]))/b] + (2*I)*E^
(((2*I)*a)/b)*Sin[2*ArcSin[c + d*x]]))/(b*d*E^(((2*I)*a)/b)*Sqrt[a + b*ArcS
in[c + d*x]])
```

<u>**Maple**</u> [A]
time = 0.23, size = 174, normalized size = 1.21

method	result
default	$\frac{e\left(\sqrt{\pi}\,\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}\,\cos\left(\frac{2a}{b}\right)\mathrm{FresnelC}\left(\frac{2\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{2}{b}}\,b}\right)\sqrt{-\frac{2}{b}}-\sqrt{\pi}\,\sqrt{2}}{db\sqrt{a+b\arcs}}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(3/2),x,method=_RETURNVERBOSE)
```

```
[Out] 1/d*e/b*((-2/b)^(1/2)*Pi^(1/2)*2^(1/2)*cos(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/
2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(a+b*arcsin(d*x+c))^(1/2)-Pi^(
1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(2*a/b)*FresnelS(2*2^(1/2)/Pi^(1/
2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-2/b)^(1/2)+sin(-2*(a+b*arcsi
n(d*x+c))/b+2*a/b))/(a+b*arcsin(d*x+c))^(1/2)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)/(b*arcsin(d*x + c) + a)^(3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e\left(\int\frac{c}{a\sqrt{a+b\,\mathrm{asin}\,(c+dx)}+b\sqrt{a+b\,\mathrm{asin}\,(c+dx)}\,\mathrm{asin}\,(c+dx)}\,dx+\int\frac{dx}{a\sqrt{a+b\,\mathrm{asin}\,(c+dx)}+b\sqrt{a+b\,\mathrm{asin}\,(c+dx)}\,\mathrm{asin}\,(c+dx)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] e*(Integral(c/(a*sqrt(a + b*asin(c + d*x)) + b*sqrt(a + b*asin(c + d*x))*as
in(c + d*x)), x) + Integral(d*x/(a*sqrt(a + b*asin(c + d*x)) + b*sqrt(a + b
*asin(c + d*x))*asin(c + d*x)), x))
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)/(b*arcsin(d*x + c) + a)^(3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{c\,e+d\,e\,x}{{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)/(a + b*asin(c + d*x))^(3/2),x)
```

```
[Out] int((c*e + d*e*x)/(a + b*asin(c + d*x))^(3/2), x)
```

3.269 $\int \frac{1}{(a+b\mathbf{ArcSin}(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=144

$$-\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{2\sqrt{2\pi}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}+\frac{2\sqrt{2\pi}\,\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{\ldots}}{\ldots}\right)}{\ldots}$$

```
[Out] -2*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*2^
(1/2)*Pi^(1/2)/b^(3/2)/d+2*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1
/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/b^(3/2)/d-2*(1-(d*x+c)^2)^(1/2)/b/d/
(a+b*arcsin(d*x+c))^(1/2)
```

Rubi [A]
time = 0.17, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.571$, Rules used = {4887, 4717, 4809, 3387, 3386, 3432, 3385, 3433}

$$\frac{2\sqrt{2\pi}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}-\frac{2\sqrt{2\pi}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}d}-\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\text{ArcSin}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(-3/2),x]
```

```
[Out] (-2*Sqrt[1 - (c + d*x)^2])/(b*d*Sqrt[a + b*ArcSin[c + d*x]]) - (2*Sqrt[2*Pi
]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(b^(
3/2)*d) + (2*Sqrt[2*Pi]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/S
qrt[b]]*Sin[a/b])/(b^(3/2)*d)
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4717

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[Sqrt[1 - c^2
*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + Dist[c/(b*(n + 1)),
 Int[x*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4809

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[(1/(b*c^(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x
^2)^p], Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b]^(2*p + 1), x], x, a
 + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0]
&& IGtQ[2*p + 2, 0] && IGtQ[m, 0]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{2\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\sqrt{a+b\sin^{-1}(x)}}\,dx, x, c\right.}{bd}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{2\text{Subst}\left(\int \frac{\sin(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c+dx)\right)}{bd}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{\left(2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c-\right.}{bd}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{\left(4\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \sin\left(\frac{x^2}{b}\right)\,dx, x, \sqrt{a+b\,\text{si}}\right.}{b^2d}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{bd\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{2\sqrt{2\pi}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c+dx)}}{\sqrt{b}}\right.}{b^{3/2}d}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.09, size = 185, normalized size = 1.28

$$\frac{e^{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\left(e^{i\text{ArcSin}(c+dx)}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)+e^{\frac{ia}{b}}\left(-1-e^{2i\text{ArcSin}(c+dx)}+e^{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)\right)}{bd\sqrt{a+b\text{ArcSin}(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(-3/2),x]
```

```
[Out] (E^(I*ArcSin[c + d*x])*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((
-I)*(a + b*ArcSin[c + d*x]))/b] + E^((I*a)/b)*(-1 - E^((2*I)*ArcSin[c + d*x
]) + E^((I*(a + b*ArcSin[c + d*x]))/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*
Gamma[1/2, (I*(a + b*ArcSin[c + d*x]))/b]))/(b*d*E^((I*(a + b*ArcSin[c + d*
x]))/b)*Sqrt[a + b*ArcSin[c + d*x]])
```

Maple [A]
time = 0.14, size = 170, normalized size = 1.18

method	result
default	$-\frac{2\left(-\sqrt{a+b\arcsin\left(dx+c\right)}\,\cos\left(\frac{a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin\left(dx+c\right)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)\sqrt{-\frac{1}{b}}\,\sqrt{\pi}\,\sqrt{2}-\sqrt{a+b\,\mathrm{arcs}}\right.}{db\sqrt{a+b\,\mathrm{arc}}}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c))^(3/2),x,method=_RETURNVERBOSE)
```

```
[Out] -2/d/b/(a+b*arcsin(d*x+c))^(1/2)*(-(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*Fresn
elS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)
*Pi^(1/2)*2^(1/2)-(-1/b)^(1/2)*2^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*F
resnelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*Pi^(1/2)
+cos(-(a+b*arcsin(d*x+c))/b+a/b))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(-3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\,\mathrm{asin}\left(c+dx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**(-3/2), x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(-3/2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(c + d*x))^(3/2),x)
```

```
[Out] int(1/(a + b*asin(c + d*x))^(3/2), x)
```

3.270 $\int \frac{1}{(ce+dex)(a+b\mathbf{ArcSin}(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=29

$$\frac{\operatorname{Int}\left(\frac{1}{(c+dx)(a+b\operatorname{ArcSin}(c+dx))^{3/2}},x\right)}{e}$$

```
[Out] Unintegrable(1/(d*x+c)/(a+b*arcsin(d*x+c))^(3/2),x)/e
```

Rubi [A]
time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(ce+dex)(a+b\operatorname{ArcSin}(c+dx))^{3/2}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(3/2)),x]
```

```
[Out] Defer[Subst][Defer[Int][1/(x*(a + b*ArcSin[x])^(3/2)), x], x, c + d*x]/(d*e
)
```

Rubi steps

$$\begin{aligned}\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^{3/2}}\,dx &= \frac{\operatorname{Subst}\left(\int \frac{1}{ex\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx,x,c+dx\right)}{d}\\ &= \frac{\operatorname{Subst}\left(\int \frac{1}{x\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx,x,c+dx\right)}{de}\end{aligned}$$

Mathematica [A]
time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{1}{(ce+dex)(a+b\operatorname{ArcSin}(c+dx))^{3/2}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(3/2)),x]
```

```
[Out] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(3/2)), x]
```

Maple [A]
time = 0.33, size = 0, normalized size = 0.00

$$\int \frac{1}{(dex+ce)\left(a+b\arcsin\left(dx+c\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(3/2),x)
```

```
[Out] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(3/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(1/((d*x*e + c*e)*(b*arcsin(d*x + c) + a)^(3/2)), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{1}{ac\sqrt{a+b\operatorname{asin}\left(c+dx\right)}+adx\sqrt{a+b\operatorname{asin}\left(c+dx\right)}+bc\sqrt{a+b\operatorname{asin}\left(c+dx\right)}\operatorname{asin}\left(c+dx\right)+bdx\sqrt{a+b\operatorname{asin}\left(c+dx\right)}\operatorname{asin}\left(c+dx\right)}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*asin(d*x+c))**(3/2),x)
```

```
[Out] Integral(1/(a*c*sqrt(a + b*asin(c + d*x)) + a*d*x*sqrt(a + b*asin(c + d*x))
 + b*c*sqrt(a + b*asin(c + d*x))*asin(c + d*x) + b*d*x*sqrt(a + b*asin(c +
d*x))*asin(c + d*x)), x)/e
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(3/2),x, algorithm="giac")
[Out] integrate(1/((d*e*x + c*e)*(b*arcsin(d*x + c) + a)^(3/2)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\left(c\,e+d\,e\,x\right)\,{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((c*e + d*e*x)*(a + b*asin(c + d*x))^(3/2)),x)
[Out] int(1/((c*e + d*e*x)*(a + b*asin(c + d*x))^(3/2)), x)
```

3.271 $\int \frac{(ce+dex)^3}{(a+b\mathbf{ArcSin}(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=344

$$-\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd(a+b\text{ArcSin}(c+dx))^{3/2}}-\frac{4e^3(c+dx)^2}{b^2d\sqrt{a+b\text{ArcSin}(c+dx)}}+\frac{16e^3(c+dx)^4}{3b^2d\sqrt{a+b\text{ArcSin}(c+dx)}}+\frac{4e^3\sqrt{2\pi}\,\cos\left(\frac{4}{b}\right.}{}$$

[Out] -4/3*e^3*cos(2*a/b)*FresnelS(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*Pi^(1/2)/b^(5/2)/d+4/3*e^3*FresnelC(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*sin(2*a/b)*Pi^(1/2)/b^(5/2)/d+4/3*e^3*cos(4*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/b^(5/2)/d-4/3*e^3*FresnelC(2*2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(4*a/b)*2^(1/2)*Pi^(1/2)/b^(5/2)/d-2/3*e^3*(d*x+c)^3*(1-(d*x+c)^2)^(1/2)/b/d/(a+b*arcsin(d*x+c))^(3/2)-4*e^3*(d*x+c)^2/b^2/d/(a+b*arcsin(d*x+c))^(1/2)+16/3*e^3*(d*x+c)^4/b^2/d/(a+b*arcsin(d*x+c))^(1/2)

Rubi [A]
time = 0.72, antiderivative size = 344, normalized size of antiderivative = 1.00, number of steps used = 26, number of rules used = 11, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.440$, Rules used = {4889, 12, 4729, 4807, 4731, 4491, 3387, 3386, 3432, 3385, 3433}

$$\frac{4\sqrt{\pi}\,e^3\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{3b^{5/2}d}-\frac{4\sqrt{2\pi}\,e^3\sin\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d}+\frac{4\sqrt{2\pi}\,e^3\cos\left(\frac{4a}{b}\right)S\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d}-\frac{4\sqrt{\pi}\,e^3\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{3b^{5/2}d}+\frac{16e^3(c+dx)^4}{3b^2d\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{4e^3(c+dx)^2}{b^2d\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{2e^3\sqrt{1-(c+dx)^2}\,(c+dx)^3}{3bd(a+b\text{ArcSin}(c+dx))^{3/2}}$$

Antiderivative was successfully verified.

[In] Int[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x])^(5/2),x]

[Out] (-2*e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(3*b*d*(a + b*ArcSin[c + d*x])^(3/2)) - (4*e^3*(c + d*x)^2)/(b^2*d*Sqrt[a + b*ArcSin[c + d*x]]) + (16*e^3*(c + d*x)^4)/(3*b^2*d*Sqrt[a + b*ArcSin[c + d*x]]) + (4*e^3*Sqrt[2*Pi]*Cos[(4*a)/b]*FresnelS[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(3*b^(5/2)*d) - (4*e^3*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(3*b^(5/2)*d) + (4*e^3*Sqrt[Pi]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(3*b^(5/2)*d) - (4*e^3*Sqrt[2*Pi]*FresnelC[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(4*a)/b])/(3*b^(5/2)*d)

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + (Dis
t[c*((m + 1)/(b*(n + 1))), Int[x^(m + 1)*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[
1 - c^2*x^2]), x], x] - Dist[m/(b*c*(n + 1)), Int[x^(m - 1)*((a + b*ArcSin[
c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^3}{\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{e^3x^3}{\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^3\text{Subst}\left(\int \frac{x^3}{\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{(2e^3)\,\text{Subst}\left(\int \frac{x^2}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^{3/2}}\,a\right.}{bd}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4e^3(c+dx)^2}{b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{16e^3}{3b^2d\sqrt{a+}}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4e^3(c+dx)^2}{b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{16e^3}{3b^2d\sqrt{a+}}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4e^3(c+dx)^2}{b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{16e^3}{3b^2d\sqrt{a+}}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4e^3(c+dx)^2}{b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{16e^3}{3b^2d\sqrt{a+}}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4e^3(c+dx)^2}{b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{16e^3}{3b^2d\sqrt{a+}}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4e^3(c+dx)^2}{b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{16e^3}{3b^2d\sqrt{a+}}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4e^3(c+dx)^2}{b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{16e^3}{3b^2d\sqrt{a+}}$$

Mathematica [C] Result contains complex when optimal does not.
time = 1.34, size = 351, normalized size = 1.02

$$\frac{e^3\left(-4(a+b\text{ArcSin}(c+dx))\left(e^{-2i\text{ArcSin}(c+dx)}+e^{2i\text{ArcSin}(c+dx)}-\sqrt{2}\,e^{-\frac{2ia}{b}}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},-\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)-\sqrt{2}\,e^{\frac{2ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)+4(a+b\text{ArcSin}(c+dx))\left(e^{-4i\text{ArcSin}(c+dx)}+e^{4i\text{ArcSin}(c+dx)}-2e^{-\frac{4ia}{b}}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},-\frac{4i(a+b\text{ArcSin}(c+dx))}{b}\right)-2e^{\frac{4ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},\frac{4i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)-2b\sin(2\text{ArcSin}(c+dx))+b\sin(4\text{ArcSin}(c+dx))\right)}{12b^2d(a+b\text{ArcSin}(c+dx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] (e^3*(-4*(a + b*ArcSin[c + d*x])*(E^((-2*I)*ArcSin[c + d*x]) + E^((2*I)*Arc
Sin[c + d*x]) - (Sqrt[2]*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2,
((-2*I)*(a + b*ArcSin[c + d*x]))/b])/E^(((2*I)*a)/b) - Sqrt[2]*E^(((2*I)*a)
/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((2*I)*(a + b*ArcSin[c +
 d*x]))/b]) + 4*(a + b*ArcSin[c + d*x])*(E^((-4*I)*ArcSin[c + d*x]) + E^((4
*I)*ArcSin[c + d*x]) - (2*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2,
 ((-4*I)*(a + b*ArcSin[c + d*x]))/b])/E^(((4*I)*a)/b) - 2*E^(((4*I)*a)/b)*S
qrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((4*I)*(a + b*ArcSin[c + d*x]
))/b]) - 2*b*Sin[2*ArcSin[c + d*x]] + b*Sin[4*ArcSin[c + d*x]]))/(12*b^2*d*
(a + b*ArcSin[c + d*x])^(3/2))
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 743 vs. 2(284) = 568.
time = 0.48, size = 744, normalized size = 2.16

method	result
default	$-\frac{e^3\left(16\arcsin(dx+c)\sqrt{2}\,\sqrt{\pi}\,\sqrt{a+b\arcsin(dx+c)}\,\sqrt{-\frac{1}{b}}\,\cos\left(\frac{4a}{b}\right)\mathrm{S}\left(\frac{2\sqrt{2}\,\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)b+\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(5/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/12/d*e^3/b^2*(16*arcsin(d*x+c)*2^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2
)*(-1/b)^(1/2)*cos(4*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arc
sin(d*x+c))^(1/2)/b)*b+16*arcsin(d*x+c)*2^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c)
)^(1/2)*(-1/b)^(1/2)*sin(4*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a
+b*arcsin(d*x+c))^(1/2)/b)*b-8*arcsin(d*x+c)*2^(1/2)*Pi^(1/2)*(a+b*arcsin(d
*x+c))^(1/2)*(-2/b)^(1/2)*cos(2*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/
2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b-8*arcsin(d*x+c)*2^(1/2)*Pi^(1/2)*(a+b*arc
sin(d*x+c))^(1/2)*(-2/b)^(1/2)*sin(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-2/b
)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*b+16*2^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+
c))^(1/2)*(-1/b)^(1/2)*cos(4*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*
(a+b*arcsin(d*x+c))^(1/2)/b)*a+16*2^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2
)*(-1/b)^(1/2)*sin(4*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arc
```

```
sin(d*x+c))^(1/2)/b)*a-8*2^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*(-2/b)^
(1/2)*cos(2*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c
))^(1/2)/b)*a-8*2^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*(-2/b)^(1/2)*sin
(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/
b)*a+8*arcsin(d*x+c)*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*b-8*arcsin(d*x+c)*
cos(-4*(a+b*arcsin(d*x+c))/b+4*a/b)*b-2*sin(-2*(a+b*arcsin(d*x+c))/b+2*a/b)
*b+8*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a+sin(-4*(a+b*arcsin(d*x+c))/b+4*a
/b)*b-8*cos(-4*(a+b*arcsin(d*x+c))/b+4*a/b)*a)/(a+b*arcsin(d*x+c))^(3/2)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)^3/(b*arcsin(d*x + c) + a)^(5/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e^{3} \left(\int \frac{c^{3}}{a^{2} \sqrt{a + b \operatorname{asin}{\left(c + d x \right)}} + 2 a b \sqrt{a + b \operatorname{asin}{\left(c + d x \right)}} \operatorname{asin}{\left(c + d x \right)} + b^{2} \sqrt{a + b \operatorname{asin}{\left(c + d x \right)}} \operatorname{asin}^{2}{\left(c + d x \right)}}\, dx + \int \frac{d^{3} x^{3}}{a^{2} \sqrt{a + b \operatorname{asin}{\left(c + d x \right)}} + 2 a b \sqrt{a + b \operatorname{asin}{\left(c + d x \right)}} \operatorname{asin}{\left(c + d x \right)} + b^{2} \sqrt{a + b \operatorname{asin}{\left(c + d x \right)}} \operatorname{asin}^{2}{\left(c + d x \right)}}\, dx + \int \frac{3 c d^{2} x^{2}}{a^{2} \sqrt{a + b \operatorname{asin}{\left(c + d x \right)}} + 2 a b \sqrt{a + b \operatorname{asin}{\left(c + d x \right)}} \operatorname{asin}{\left(c + d x \right)} + b^{2} \sqrt{a + b \operatorname{asin}{\left(c + d x \right)}} \operatorname{asin}^{2}{\left(c + d x \right)}}\, dx + \int \frac{3 c^{2} d x}{a^{2} \sqrt{a + b \operatorname{asin}{\left(c + d x \right)}} + 2 a b \sqrt{a + b \operatorname{asin}{\left(c + d x \right)}} \operatorname{asin}{\left(c + d x \right)} + b^{2} \sqrt{a + b \operatorname{asin}{\left(c + d x \right)}} \operatorname{asin}^{2}{\left(c + d x \right)}}\, dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3/(a+b*asin(d*x+c))**(5/2),x)
```

```
[Out] e**3*(Integral(c**3/(a**2*sqrt(a + b*asin(c + d*x)) + 2*a*b*sqrt(a + b*asin
(c + d*x))*asin(c + d*x) + b**2*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**2)
, x) + Integral(d**3*x**3/(a**2*sqrt(a + b*asin(c + d*x)) + 2*a*b*sqrt(a +
b*asin(c + d*x))*asin(c + d*x) + b**2*sqrt(a + b*asin(c + d*x))*asin(c + d*
x)**2), x) + Integral(3*c*d**2*x**2/(a**2*sqrt(a + b*asin(c + d*x)) + 2*a*b
*sqrt(a + b*asin(c + d*x))*asin(c + d*x) + b**2*sqrt(a + b*asin(c + d*x))*a
sin(c + d*x)**2), x) + Integral(3*c**2*d*x/(a**2*sqrt(a + b*asin(c + d*x))
```

```
+ 2*a*b*sqrt(a + b*asin(c + d*x))*asin(c + d*x) + b**2*sqrt(a + b*asin(c +
d*x))*asin(c + d*x)**2), x))
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")
[Out] integrate((d*e*x + c*e)^3/(b*arcsin(d*x + c) + a)^(5/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,e+d\,e\,x)^3}{(a+b\,\mathrm{asin}\left(c+d\,x\right))^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^3/(a + b*asin(c + d*x))^(5/2),x)
[Out] int((c*e + d*e*x)^3/(a + b*asin(c + d*x))^(5/2), x)
```

3.272 $\int \frac{(ce+dex)^2}{(a+b\mathbf{ArcSin}(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=342

$$-\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd(a+b\text{ArcSin}(c+dx))^{3/2}}-\frac{8e^2(c+dx)}{3b^2d\sqrt{a+b\text{ArcSin}(c+dx)}}+\frac{4e^2(c+dx)^3}{b^2d\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{e^2\sqrt{2\pi}\,\cos\left(\frac{a}{b}\right.\cdots}{\cdots}$$

```
[Out] -1/3*e^2*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/
2))*2^(1/2)*Pi^(1/2)/b^(5/2)/d-1/3*e^2*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsi
n(d*x+c))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/b^(5/2)/d+e^2*cos(3*a/b)
*FresnelC(6^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*6^(1/2)*Pi^(1
/2)/b^(5/2)/d+e^2*FresnelS(6^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/
2))*sin(3*a/b)*6^(1/2)*Pi^(1/2)/b^(5/2)/d-2/3*e^2*(d*x+c)^2*(1-(d*x+c)^2)^(
1/2)/b/d/(a+b*arcsin(d*x+c))^(3/2)-8/3*e^2*(d*x+c)/b^2/d/(a+b*arcsin(d*x+c)
)^(1/2)+4*e^2*(d*x+c)^3/b^2/d/(a+b*arcsin(d*x+c))^(1/2)
```

Rubi [A]
time = 0.74, antiderivative size = 342, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 12, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.480$, Rules used = {4889, 12, 4729, 4807, 4731, 4491, 3387, 3386, 3432, 3385, 3433, 4719}

$$-\frac{\sqrt{2\pi}\,e^2\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d}+\frac{\sqrt{6\pi}\,e^2\cos\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{b^{5/2}d}-\frac{\sqrt{2\pi}\,e^2\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d}+\frac{\sqrt{6\pi}\,e^2\sin\left(\frac{3a}{b}\right)S\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{b^{5/2}d}+\frac{4e^2(c+dx)^3}{b^2d\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{8e^2(c+dx)}{3b^2d\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{2e^2\sqrt{1-(c+dx)^2}\,(c+dx)^2}{3bd(a+b\text{ArcSin}(c+dx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] (-2*e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(3*b*d*(a + b*ArcSin[c + d*x])^(
3/2)) - (8*e^2*(c + d*x))/(3*b^2*d*Sqrt[a + b*ArcSin[c + d*x]]) + (4*e^2*(c
 + d*x)^3)/(b^2*d*Sqrt[a + b*ArcSin[c + d*x]]) - (e^2*Sqrt[2*Pi]*Cos[a/b]*F
resnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(3*b^(5/2)*d) +
(e^2*Sqrt[6*Pi]*Cos[(3*a)/b]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x
]])/Sqrt[b]])/(b^(5/2)*d) - (e^2*Sqrt[2*Pi]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b
*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(3*b^(5/2)*d) + (e^2*Sqrt[6*Pi]*Fresn
elS[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(3*a)/b])/(b^(5/2
)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4719

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[-a/b + x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c
, n}, x]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + (Dis
t[c*((m + 1)/(b*(n + 1))), Int[x^(m + 1)*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[
```

```
1 - c^2*x^2]), x], x] - Dist[m/(b*c*(n + 1)), Int[x^(m - 1)*((a + b*ArcSin[
c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^2}{\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{e^2x^2}{\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^2\text{Subst}\left(\int \frac{x^2}{\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{(4e^2)\,\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\,\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx\right.}{3bd}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{8e^2(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{4e^2(}{b^2d\sqrt{a+b}}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{8e^2(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{4e^2(}{b^2d\sqrt{a+b}}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{8e^2(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{4e^2(}{b^2d\sqrt{a+b}}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{8e^2(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{4e^2(}{b^2d\sqrt{a+b}}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{8e^2(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{4e^2(}{b^2d\sqrt{a+b}}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{8e^2(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{4e^2(}{b^2d\sqrt{a+b}}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{8e^2(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{4e^2(}{b^2d\sqrt{a+b}}$$

Mathematica [C] Result contains complex when optimal does not.
time = 1.21, size = 411, normalized size = 1.20

$$\frac{e^2\left(-6iae^{-3i\text{ArcSin}(c+dx)}+be^{-3i\text{ArcSin}(c+dx)}(1-6i\text{ArcSin}(c+dx))+e^{3i\text{ArcSin}(c+dx)}(6ia+b+6ib\text{ArcSin}(c+dx))-ie^{i\text{ArcSin}(c+dx)}(2a-ib+2b\text{ArcSin}(c+dx))-2be^{-\frac{ia}{b}}\left(-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)+ie^{-i\text{ArcSin}(c+dx)}\left(2a+ib+2b\text{ArcSin}(c+dx)+2ibe^{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\left(\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)+6\sqrt{3}\,be^{-\frac{3ia}{b}}\left(-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},-\frac{3i(a+b\text{ArcSin}(c+dx))}{b}\right)+6\sqrt{3}\,be^{\frac{3ia}{b}}\left(\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},\frac{3i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)}{12b^2d(a+b\text{ArcSin}(c+dx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] (e^2*(((-6*I)*a)/E^((3*I)*ArcSin[c + d*x]) + (b*(1 - (6*I)*ArcSin[c + d*x])
)/E^((3*I)*ArcSin[c + d*x]) + E^((3*I)*ArcSin[c + d*x])*((6*I)*a + b + (6*I
)*b*ArcSin[c + d*x]) - I*E^(I*ArcSin[c + d*x])*(2*a - I*b + 2*b*ArcSin[c +
d*x]) - (2*b*(((-I)*(a + b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1/2, ((-I)*(a +
 b*ArcSin[c + d*x]))/b])/E^((I*a)/b) + (I*(2*a + I*b + 2*b*ArcSin[c + d*x]
+ (2*I)*b*E^((I*(a + b*ArcSin[c + d*x]))/b)*((I*(a + b*ArcSin[c + d*x]))/b)
^(3/2)*Gamma[1/2, (I*(a + b*ArcSin[c + d*x]))/b]))/E^(I*ArcSin[c + d*x]) +
(6*Sqrt[3]*b*(((-I)*(a + b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1/2, ((-3*I)*(a
 + b*ArcSin[c + d*x]))/b])/E^(((3*I)*a)/b) + 6*Sqrt[3]*b*E^(((3*I)*a)/b)*((
I*(a + b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1/2, ((3*I)*(a + b*ArcSin[c + d*x
]))/b]))/(12*b^2*d*(a + b*ArcSin[c + d*x])^(3/2))
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 732 vs. $2(286) = 572$.
time = 0.53, size = 733, normalized size = 2.14

method	result
default	$-\frac{e^2\left(2\arcsin(dx+c)\sqrt{a+b\arcsin(dx+c)}\,\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)\sqrt{2}\,\sqrt{\pi}\,\sqrt{-}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(5/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/6/d*e^2/b^2*(2*arcsin(d*x+c)*(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(
a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^
(1/2)*Pi^(1/2)*b-2*arcsin(d*x+c)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*Fresnel
S(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*Pi^(1/
2)*(-1/b)^(1/2)*b-6*arcsin(d*x+c)*(a+b*arcsin(d*x+c))^(1/2)*cos(3*a/b)*Fres
nelC(3*2^(1/2)/Pi^(1/2)/(-3/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-3/b)^(1
/2)*2^(1/2)*Pi^(1/2)*b+6*arcsin(d*x+c)*(a+b*arcsin(d*x+c))^(1/2)*sin(3*a/b)
*FresnelS(3*2^(1/2)/Pi^(1/2)/(-3/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-3/
b)^(1/2)*2^(1/2)*Pi^(1/2)*b+2*(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(a/
b)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1
/2)*Pi^(1/2)*a-2*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/
```

```
2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*Pi^(1/2)*(-1/b)^(1/2)*
a-6*(a+b*arcsin(d*x+c))^(1/2)*cos(3*a/b)*FresnelC(3*2^(1/2)/Pi^(1/2)/(-3/b)
^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-3/b)^(1/2)*2^(1/2)*Pi^(1/2)*a+6*(a+b*
arcsin(d*x+c))^(1/2)*sin(3*a/b)*FresnelS(3*2^(1/2)/Pi^(1/2)/(-3/b)^(1/2)*(a
+b*arcsin(d*x+c))^(1/2)/b)*(-3/b)^(1/2)*2^(1/2)*Pi^(1/2)*a+2*sin(-(a+b*arcs
in(d*x+c))/b+a/b)*arcsin(d*x+c)*b-6*sin(-3*(a+b*arcsin(d*x+c))/b+3*a/b)*arc
sin(d*x+c)*b+cos(-(a+b*arcsin(d*x+c))/b+a/b)*b+2*sin(-(a+b*arcsin(d*x+c))/b
+a/b)*a-cos(-3*(a+b*arcsin(d*x+c))/b+3*a/b)*b-6*sin(-3*(a+b*arcsin(d*x+c))/
b+3*a/b)*a)/(a+b*arcsin(d*x+c))^(3/2)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)^2/(b*arcsin(d*x + c) + a)^(5/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e^{2}\left(\int \frac{c^{2}}{a^{2}\sqrt{a+b\operatorname{asin}(c+dx)}+2ab\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)+b^{2}\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^{2}(c+dx)}\,dx+\int \frac{d^{2}x^{2}}{a^{2}\sqrt{a+b\operatorname{asin}(c+dx)}+2ab\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)+b^{2}\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^{2}(c+dx)}\,dx+\int \frac{2cdx}{a^{2}\sqrt{a+b\operatorname{asin}(c+dx)}+2ab\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)+b^{2}\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^{2}(c+dx)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2/(a+b*asin(d*x+c))**(5/2),x)
```

```
[Out] e**2*(Integral(c**2/(a**2*sqrt(a + b*asin(c + d*x)) + 2*a*b*sqrt(a + b*asin
(c + d*x))*asin(c + d*x) + b**2*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**2)
, x) + Integral(d**2*x**2/(a**2*sqrt(a + b*asin(c + d*x)) + 2*a*b*sqrt(a +
b*asin(c + d*x))*asin(c + d*x) + b**2*sqrt(a + b*asin(c + d*x))*asin(c + d*
x)**2), x) + Integral(2*c*d*x/(a**2*sqrt(a + b*asin(c + d*x)) + 2*a*b*sqrt(
a + b*asin(c + d*x))*asin(c + d*x) + b**2*sqrt(a + b*asin(c + d*x))*asin(c
+ d*x)**2), x))
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")
[Out] integrate((d*e*x + c*e)^2/(b*arcsin(d*x + c) + a)^(5/2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,e+d\,e\,x)^2}{(a+b\,\mathrm{asin}\,(c+d\,x))^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^2/(a + b*asin(c + d*x))^(5/2),x)
[Out] int((c*e + d*e*x)^2/(a + b*asin(c + d*x))^(5/2), x)
```

3.273 $\int \frac{ce+dex}{(a+b\mathbf{ArcSin}(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=207

$$-\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{3bd(a+b\text{ArcSin}(c+dx))^{3/2}}-\frac{4e}{3b^2d\sqrt{a+b\text{ArcSin}(c+dx)}}+\frac{8e(c+dx)^2}{3b^2d\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{8e\sqrt{\pi}\,\cos\left(\frac{2a}{b}\right)}{}$$

```
[Out] -8/3*e*cos(2*a/b)*FresnelS(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*Pi
^(1/2)/b^(5/2)/d+8/3*e*FresnelC(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2
))*sin(2*a/b)*Pi^(1/2)/b^(5/2)/d-2/3*e*(d*x+c)*(1-(d*x+c)^2)^(1/2)/b/d/(a+b
*arcsin(d*x+c))^(3/2)-4/3*e/b^2/d/(a+b*arcsin(d*x+c))^(1/2)+8/3*e*(d*x+c)^2
/b^2/d/(a+b*arcsin(d*x+c))^(1/2)
```

Rubi [A]
time = 0.34, antiderivative size = 207, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 12, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.522$, Rules used = {4889, 12, 4729, 4807, 4731, 4491, 3387, 3386, 3432, 3385, 3433, 4737}

$$\frac{8\sqrt{\pi}\,e\sin\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{3b^{5/2}d}-\frac{8\sqrt{\pi}\,e\cos\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{3b^{5/2}d}+\frac{8e(c+dx)^2}{3b^2d\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{4e}{3b^2d\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{2e\sqrt{1-(c+dx)^2}\,(c+dx)}{3bd(a+b\text{ArcSin}(c+dx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)/(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] (-2*e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(3*b*d*(a + b*ArcSin[c + d*x])^(3/2)
) - (4*e)/(3*b^2*d*Sqrt[a + b*ArcSin[c + d*x]]) + (8*e*(c + d*x)^2)/(3*b^2*
d*Sqrt[a + b*ArcSin[c + d*x]]) - (8*e*Sqrt[Pi]*Cos[(2*a)/b]*FresnelS[(2*Sqr
t[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(3*b^(5/2)*d) + (8*e*Sqrt[Pi
]*FresnelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b]
)/(3*b^(5/2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
```

```
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + (Dis
t[c*((m + 1)/(b*(n + 1))), Int[x^(m + 1)*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[
1 - c^2*x^2]), x], x] - Dist[m/(b*c*(n + 1)), Int[x^(m - 1)*((a + b*ArcSin[
c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
```

```
+ e, 0] && NeQ[n, -1]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{ce+dex}{(a+b\sin^{-1}(c+dx))^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{ex}{(a+b\sin^{-1}(x))^{5/2}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e\text{Subst}\left(\int \frac{x}{(a+b\sin^{-1}(x))^{5/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\,(a+b\sin^{-1}(c+dx))^{3/2}} + \frac{(2e)\text{Subst}\left(\int \frac{1}{\sqrt{1-x^2}\,(a+b\sin^{-1}(x))^{3/2}}\,dx, x\right.}{3bd}$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\,(a+b\sin^{-1}(c+dx))^{3/2}} - \frac{4e}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{8e(c}{3b^2d\sqrt{a+}}$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\,(a+b\sin^{-1}(c+dx))^{3/2}} - \frac{4e}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{8e(c}{3b^2d\sqrt{a+}}$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\,(a+b\sin^{-1}(c+dx))^{3/2}} - \frac{4e}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{8e(c}{3b^2d\sqrt{a+}}$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\,(a+b\sin^{-1}(c+dx))^{3/2}} - \frac{4e}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{8e(c}{3b^2d\sqrt{a+}}$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\,(a+b\sin^{-1}(c+dx))^{3/2}} - \frac{4e}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{8e(c}{3b^2d\sqrt{a+}}$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\,(a+b\sin^{-1}(c+dx))^{3/2}} - \frac{4e}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{8e(c}{3b^2d\sqrt{a+}}$$

$$= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{3bd\,(a+b\sin^{-1}(c+dx))^{3/2}} - \frac{4e}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} + \frac{8e(c}{3b^2d\sqrt{a+}}$$

Mathematica [C] Result contains complex when optimal does not.

time = 0.75, size = 192, normalized size = 0.93

$$-\frac{e\left(2(a+b\text{ArcSin}(c+dx))\left(e^{-2i\text{ArcSin}(c+dx)}+e^{2i\text{ArcSin}(c+dx)}-\sqrt{2}\,e^{-\frac{2ia}{b}}\sqrt{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},-\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)-\sqrt{2}\,e^{\frac{2ia}{b}}\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)+b\sin(2\text{ArcSin}(c+dx))\right)}{3b^2d(a+b\text{ArcSin}(c+dx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)/(a + b*ArcSin[c + d*x])^(5/2),x]
```

```
[Out] -1/3*(e*(2*(a + b*ArcSin[c + d*x])*(E^((-2*I)*ArcSin[c + d*x]) + E^((2*I)*A
rcSin[c + d*x]) - (Sqrt[2]*Sqrt[((-I)*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2
, ((-2*I)*(a + b*ArcSin[c + d*x]))/b])/E^(((2*I)*a)/b) - Sqrt[2]*E^(((2*I)*
a)/b)*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2, ((2*I)*(a + b*ArcSin[c
 + d*x]))/b]) + b*Sin[2*ArcSin[c + d*x]]))/(b^2*d*(a + b*ArcSin[c + d*x])^(
3/2))
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 382 vs. $2(169) = 338$.
time = 0.26, size = 383, normalized size = 1.85

method	result
default	$-\frac{e\left(-4\arcsin(dx+c)\sqrt{2}\,\sqrt{\pi}\,\sqrt{a+b\arcsin(dx+c)}\,\sqrt{-\frac{2}{b}}\,\cos(\frac{2a}{b})\text{S}\left(\frac{2\sqrt{2}\,\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\,\sqrt{-\frac{2}{b}}\,b}\right)b-\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(5/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/3/d*e/b^2*(-4*arcsin(d*x+c)*2^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*(
-2/b)^(1/2)*cos(2*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin
(d*x+c))^(1/2)/b)*b-4*arcsin(d*x+c)*2^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1
/2)*(-2/b)^(1/2)*sin(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*a
rcsin(d*x+c))^(1/2)/b)*b-4*2^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*(-2/b
)^(1/2)*cos(2*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x
+c))^(1/2)/b)*a-4*2^(1/2)*Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*(-2/b)^(1/2)*s
in(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2
)/b)*a+4*arcsin(d*x+c)*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*b-sin(-2*(a+b*ar
csin(d*x+c))/b+2*a/b)*b+4*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a)/(a+b*arcsi
n(d*x+c))^(3/2)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)/(b*arcsin(d*x + c) + a)^(5/2), x)
```

Fricas [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$e\left(\int \frac{c}{a^{2}\sqrt{a+b\operatorname{asin}(c+dx)}+2ab\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)+b^{2}\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^{2}(c+dx)}\,dx+\int \frac{dx}{a^{2}\sqrt{a+b\operatorname{asin}(c+dx)}+2ab\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)+b^{2}\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^{2}(c+dx)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*asin(d*x+c))**(5/2),x)
```

```
[Out] e*(Integral(c/(a**2*sqrt(a + b*asin(c + d*x)) + 2*a*b*sqrt(a + b*asin(c + d
*x))*asin(c + d*x) + b**2*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**2), x) +
 Integral(d*x/(a**2*sqrt(a + b*asin(c + d*x)) + 2*a*b*sqrt(a + b*asin(c + d
*x))*asin(c + d*x) + b**2*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**2), x))
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)/(b*arcsin(d*x + c) + a)^(5/2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{c\,e+d\,e\,x}{{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)/(a + b*asin(c + d*x))^(5/2),x)
```

```
[Out] int((c*e + d*e*x)/(a + b*asin(c + d*x))^(5/2), x)
```

3.274 $\int \frac{1}{(a+b\textbf{ArcSin}(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=179

$$-\frac{2\sqrt{1-(c+dx)^2}}{3bd(a+b\text{ArcSin}(c+dx))^{3/2}}+\frac{4(c+dx)}{3b^2d\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{4\sqrt{2\pi}\,\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\,\sqrt{a+b\text{ArcSin}}}{\sqrt{b}}\right.}{3b^{5/2}d}$$

```
[Out] -4/3*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*
2^(1/2)*Pi^(1/2)/b^(5/2)/d-4/3*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c)
)^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/b^(5/2)/d-2/3*(1-(d*x+c)^2)^(1/2
)/b/d/(a+b*arcsin(d*x+c))^(3/2)+4/3*(d*x+c)/b^2/d/(a+b*arcsin(d*x+c))^(1/2)
```

Rubi [A]
time = 0.20, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 9, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.643$, Rules used = {4887, 4717, 4807, 4719, 3387, 3386, 3432, 3385, 3433}

$$-\frac{4\sqrt{2\pi}\,\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d}-\frac{4\sqrt{2\pi}\,\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\,\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{3b^{5/2}d}+\frac{4(c+dx)}{3b^2d\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{2\sqrt{1-(c+dx)^2}}{3bd(a+b\text{ArcSin}(c+dx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(-5/2),x]
```

```
[Out] (-2*Sqrt[1 - (c + d*x)^2])/(3*b*d*(a + b*ArcSin[c + d*x])^(3/2)) + (4*(c +
d*x))/(3*b^2*d*Sqrt[a + b*ArcSin[c + d*x]]) - (4*Sqrt[2*Pi]*Cos[a/b]*Fresne
lC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(3*b^(5/2)*d) - (4*Sq
rt[2*Pi]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b
])/(3*b^(5/2)*d)
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4717

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[Sqrt[1 - c^2
*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + Dist[c/(b*(n + 1)),
 Int[x*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4719

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[-a/b + x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c
, n}, x]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{2\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^{3/2}}\,dx, x, c+\right.}{3bd}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{4(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{4\text{Subst}\left(\int -\right.}{}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{4(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{4\text{Subst}\left(\int \frac{\text{co}}{}\right.}{}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{4(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{\left(4\cos\left(\frac{a}{b}\right)\right)\text{S}}{}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{4(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{\left(8\cos\left(\frac{a}{b}\right)\right)\text{S}}{}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{3bd\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{4(c+dx)}{3b^2d\sqrt{a+b\sin^{-1}(c+dx)}} - \frac{4\sqrt{2\pi}\cos\left(\frac{a}{b}\right.}{}$$

<u>**Mathematica**</u> [C] Result contains complex when optimal does not.
time = 0.35, size = 238, normalized size = 1.33

$$\frac{e^{-\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\left(-2be^{i\text{ArcSin}(c+dx)}\left(-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)-ie^{\frac{ia}{b}}\left(2a\left(-1+e^{2i\text{ArcSin}(c+dx)}\right)+b\left(-i-2\text{ArcSin}(c+dx)+e^{2i\text{ArcSin}(c+dx)}(-i+2\text{ArcSin}(c+dx))\right)\right)-2ibe^{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\left(\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)\right)}{3b^2d(a+b\text{ArcSin}(c+dx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(-5/2),x]
```

```
[Out] (-2*b*E^(I*ArcSin[c + d*x])*(((-I)*(a + b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[
1/2, ((-I)*(a + b*ArcSin[c + d*x]))/b] - I*E^((I*a)/b)*(2*a*(-1 + E^((2*I)*
ArcSin[c + d*x])) + b*(-I - 2*ArcSin[c + d*x] + E^((2*I)*ArcSin[c + d*x])*(
```

```
-I + 2*ArcSin[c + d*x])) - (2*I)*b*E^((I*(a + b*ArcSin[c + d*x]))/b)*((I*(a
 + b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1/2, (I*(a + b*ArcSin[c + d*x]))/b]))
/(3*b^2*d*E^((I*(a + b*ArcSin[c + d*x]))/b)*(a + b*ArcSin[c + d*x])^(3/2))
```

Maple [**B**] Leaf count of result is larger than twice the leaf count of optimal. 369 vs. $2(145) = 290$.
time = 0.16, size = 370, normalized size = 2.07

method	result
default	$-\frac{2\left(2\arcsin(dx+c)\sqrt{a+b\arcsin(dx+c)}\,\cos\left(\frac{a}{b}\right)\operatorname{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)\sqrt{2}\,\sqrt{\pi}\,\sqrt{-}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c))^(5/2),x,method=_RETURNVERBOSE)
```

```
[Out] -2/3/d/b^2*(2*arcsin(d*x+c)*(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)
*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2
)*Pi^(1/2)*b-2*arcsin(d*x+c)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelS(2^
(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*Pi^(1/2)*(
-1/b)^(1/2)*b+2*(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(a/b)*FresnelC(2^
(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*Pi^(1/2)*a
-2*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2
)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*Pi^(1/2)*(-1/b)^(1/2)*a+2*sin(-(a+b*
arcsin(d*x+c))/b+a/b)*arcsin(d*x+c)*b+cos(-(a+b*arcsin(d*x+c))/b+a/b)*b+2*s
in(-(a+b*arcsin(d*x+c))/b+a/b)*a)/(a+b*arcsin(d*x+c))^(3/2)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(-5/2), x)
```

Fricas [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a + b\operatorname{asin}(c + dx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c))**(5/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**(-5/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(-5/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{(a + b\operatorname{asin}(c + d\,x))^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(c + d*x))^(5/2),x)
```

```
[Out] int(1/(a + b*asin(c + d*x))^(5/2), x)
```

3.275 $\int \frac{1}{(ce+dex)(a+b\mathbf{ArcSin}(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=29

$$\frac{\text{Int}\left(\frac{1}{(c+dx)(a+b\text{ArcSin}(c+dx))^{5/2}},x\right)}{e}$$

```
[Out] Unintegrable(1/(d*x+c)/(a+b*arcsin(d*x+c))^(5/2),x)/e
```

Rubi [A]
time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(ce+dex)(a+b\text{ArcSin}(c+dx))^{5/2}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(5/2)),x]
[Out] Defer[Subst][Defer[Int][1/(x*(a + b*ArcSin[x])^(5/2)), x], x, c + d*x]/(d*e
)
```

Rubi steps

$$\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{ex\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx,x,c+dx\right)}{d}$$
$$= \frac{\text{Subst}\left(\int \frac{1}{x\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx,x,c+dx\right)}{de}$$

Mathematica [A]
time = 0.06, size = 0, normalized size = 0.00

$$\int \frac{1}{(ce+dex)(a+b\text{ArcSin}(c+dx))^{5/2}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(5/2)),x]
[Out] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(5/2)), x]
```

Maple [A]
time = 0.33, size = 0, normalized size = 0.00

$$\int \frac{1}{(dex+ce)\left(a+b\arcsin\left(dx+c\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(5/2),x)
```

```
[Out] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(5/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(1/((d*x*e + c*e)*(b*arcsin(d*x + c) + a)^(5/2)), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{1}{a^{2}c\sqrt{a+b\operatorname{asin}(c+dx)}+a^{2}dx\sqrt{a+b\operatorname{asin}(c+dx)}+2abc\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)+2abdx\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)+b^{2}c\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^{2}(c+dx)+b^{2}dx\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^{2}(c+dx)}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*asin(d*x+c))**(5/2),x)
```

```
[Out] Integral(1/(a**2*c*sqrt(a + b*asin(c + d*x)) + a**2*d*x*sqrt(a + b*asin(c +
 d*x)) + 2*a*b*c*sqrt(a + b*asin(c + d*x))*asin(c + d*x) + 2*a*b*d*x*sqrt(a
 + b*asin(c + d*x))*asin(c + d*x) + b**2*c*sqrt(a + b*asin(c + d*x))*asin(c
 + d*x)**2 + b**2*d*x*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**2), x)/e
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(5/2),x, algorithm="giac")
[Out] integrate(1/((d*e*x + c*e)*(b*arcsin(d*x + c) + a)^(5/2)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{(c\,e+d\,e\,x)\,\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((c*e + d*e*x)*(a + b*asin(c + d*x))^(5/2)),x)
[Out] int(1/((c*e + d*e*x)*(a + b*asin(c + d*x))^(5/2)), x)
```

3.276 $\int \frac{(ce+dex)^3}{(a+b\mathbf{ArcSin}(c+dx))^{7/2}}\,dx$

Optimal. Leaf size=442

$$-\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{5bd(a+b\text{ArcSin}(c+dx))^{5/2}}-\frac{4e^3(c+dx)^2}{5b^2d(a+b\text{ArcSin}(c+dx))^{3/2}}+\frac{16e^3(c+dx)^4}{15b^2d(a+b\text{ArcSin}(c+dx))^{3/2}}-\frac{16e^3(c+d}{5b^3d\sqrt{a+}}$$

```
[Out] -4/5*e^3*(d*x+c)^2/b^2/d/(a+b*arcsin(d*x+c))^(3/2)+16/15*e^3*(d*x+c)^4/b^2/
d/(a+b*arcsin(d*x+c))^(3/2)-16/15*e^3*cos(2*a/b)*FresnelC(2*(a+b*arcsin(d*x
+c))^(1/2)/b^(1/2)/Pi^(1/2))*Pi^(1/2)/b^(7/2)/d-16/15*e^3*FresnelS(2*(a+b*a
rcsin(d*x+c))^(1/2)/b^(1/2)/Pi^(1/2))*sin(2*a/b)*Pi^(1/2)/b^(7/2)/d+32/15*e
^3*cos(4*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2)
)*2^(1/2)*Pi^(1/2)/b^(7/2)/d+32/15*e^3*FresnelS(2*2^(1/2)/Pi^(1/2)*(a+b*arc
sin(d*x+c))^(1/2)/b^(1/2))*sin(4*a/b)*2^(1/2)*Pi^(1/2)/b^(7/2)/d-2/5*e^3*(d
*x+c)^3*(1-(d*x+c)^2)^(1/2)/b/d/(a+b*arcsin(d*x+c))^(5/2)-16/5*e^3*(d*x+c)*
(1-(d*x+c)^2)^(1/2)/b^3/d/(a+b*arcsin(d*x+c))^(1/2)+128/15*e^3*(d*x+c)^3*(1
-(d*x+c)^2)^(1/2)/b^3/d/(a+b*arcsin(d*x+c))^(1/2)
```

Rubi [A]
time = 0.72, antiderivative size = 442, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$,
Rules used = {4889, 12, 4729, 4807, 4727, 3387, 3386, 3432, 3385, 3433}

$$\frac{32\sqrt{2\pi}e^3\cos\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{15b^{7/2}d}-\frac{16\sqrt{\pi}e^3\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{15b^{7/2}d}-\frac{16\sqrt{\pi}e^3\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{15b^{7/2}d}+\frac{32\sqrt{2\pi}e^3\sin\left(\frac{4a}{b}\right)S\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{15b^{7/2}d}+\frac{128e^3\sqrt{1-(c+dx)^2}(c+dx)^3}{15b^3d\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{16e^3\sqrt{1-(c+dx)^2}(c+dx)}{5b^3d\sqrt{a+b\text{ArcSin}(c+dx)}}+\frac{16e^3(c+dx)^4}{15b^2d(a+b\text{ArcSin}(c+dx))^{3/2}}-\frac{4e^3(c+dx)^2}{5b^2d(a+b\text{ArcSin}(c+dx))^{3/2}}-\frac{2e^3\sqrt{1-(c+dx)^2}(c+dx)^3}{5bd(a+b\text{ArcSin}(c+dx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] (-2*e^3*(c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(5*b*d*(a + b*ArcSin[c + d*x])^(
5/2)) - (4*e^3*(c + d*x)^2)/(5*b^2*d*(a + b*ArcSin[c + d*x])^(3/2)) + (16*e
^3*(c + d*x)^4)/(15*b^2*d*(a + b*ArcSin[c + d*x])^(3/2)) - (16*e^3*(c + d*x
)*Sqrt[1 - (c + d*x)^2])/(5*b^3*d*Sqrt[a + b*ArcSin[c + d*x]]) + (128*e^3*(
c + d*x)^3*Sqrt[1 - (c + d*x)^2])/(15*b^3*d*Sqrt[a + b*ArcSin[c + d*x]]) +
(32*e^3*Sqrt[2*Pi]*Cos[(4*a)/b]*FresnelC[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c
+ d*x]])/Sqrt[b]])/(15*b^(7/2)*d) - (16*e^3*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[
(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(15*b^(7/2)*d) - (16*e
^3*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])]*Si
n[(2*a)/b])/(15*b^(7/2)*d) + (32*e^3*Sqrt[2*Pi]*FresnelS[(2*Sqrt[2/Pi]*Sqrt
[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[(4*a)/b])/(15*b^(7/2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4727

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] - Dist
[1/(b^2*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[x^(n + 1), Sin[-a/b
+ x/b]^(m - 1)*(m - (m + 1)*Sin[-a/b + x/b]^2), x], x], x, a + b*ArcSin[c*x
]], x] /; FreeQ[{a, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + (Dis
t[c*((m + 1)/(b*(n + 1))), Int[x^(m + 1)*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[
1 - c^2*x^2]), x], x] - Dist[m/(b*c*(n + 1)), Int[x^(m - 1)*((a + b*ArcSin[
```

```
c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^3}{(a+b\sin^{-1}(c+dx))^{7/2}}\,dx = \frac{\text{Subst}\left(\int \frac{e^3x^3}{(a+b\sin^{-1}(x))^{7/2}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^3\text{Subst}\left(\int \frac{x^3}{(a+b\sin^{-1}(x))^{7/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{5bd\,(a+b\sin^{-1}(c+dx))^{5/2}} + \frac{(6e^3)\,\text{Subst}\left(\int \frac{x^2}{\sqrt{1-x^2}\,(a+b\sin^{-1}(x))^{5/2}}\,d\right.}{5bd}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{5bd\,(a+b\sin^{-1}(c+dx))^{5/2}} - \frac{4e^3(c+dx)^2}{5b^2d\,(a+b\sin^{-1}(c+dx))^{3/2}} + \frac{}{15b^2d\,(a}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{5bd\,(a+b\sin^{-1}(c+dx))^{5/2}} - \frac{4e^3(c+dx)^2}{5b^2d\,(a+b\sin^{-1}(c+dx))^{3/2}} + \frac{}{15b^2d\,(a}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{5bd\,(a+b\sin^{-1}(c+dx))^{5/2}} - \frac{4e^3(c+dx)^2}{5b^2d\,(a+b\sin^{-1}(c+dx))^{3/2}} + \frac{}{15b^2d\,(a}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{5bd\,(a+b\sin^{-1}(c+dx))^{5/2}} - \frac{4e^3(c+dx)^2}{5b^2d\,(a+b\sin^{-1}(c+dx))^{3/2}} + \frac{}{15b^2d\,(a}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{5bd\,(a+b\sin^{-1}(c+dx))^{5/2}} - \frac{4e^3(c+dx)^2}{5b^2d\,(a+b\sin^{-1}(c+dx))^{3/2}} + \frac{}{15b^2d\,(a}$$

$$= -\frac{2e^3(c+dx)^3\sqrt{1-(c+dx)^2}}{5bd\,(a+b\sin^{-1}(c+dx))^{5/2}} - \frac{4e^3(c+dx)^2}{5b^2d\,(a+b\sin^{-1}(c+dx))^{3/2}} + \frac{}{15b^2d\,(a}$$

Mathematica [C] Result contains complex when optimal does not.
time = 1.57, size = 445, normalized size = 1.01

$$\frac{e^3\left(-4(a+b\text{ArcSin}(c+dx))\left(e^{2i\text{ArcSin}(c+dx)}(4ia+b+4ib\text{ArcSin}(c+dx))+4\sqrt{2}\,be^{-\frac{2ia}{b}}\left(-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},-\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)+e^{-2i\text{ArcSin}(c+dx)}\left(-4ia+b-4ib\text{ArcSin}(c+dx)+4\sqrt{2}\,be^{\frac{2i(a+b\text{ArcSin}(c+dx))}{b}}\left(\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)\right)+4(a+b\text{ArcSin}(c+dx))\left(e^{-4i\text{ArcSin}(c+dx)}(-8ia+b-8ib\text{ArcSin}(c+dx))+e^{4i\text{ArcSin}(c+dx)}(8ia+b+8ib\text{ArcSin}(c+dx))+16be^{-\frac{4ia}{b}}\left(-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},-\frac{4i(a+b\text{ArcSin}(c+dx))}{b}\right)+16be^{\frac{4ia}{b}}\left(\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},\frac{4i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)-6b^2\sin(2\text{ArcSin}(c+dx))+3b^2\sin(4\text{ArcSin}(c+dx))\right)}{60b^3d(a+b\text{ArcSin}(c+dx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^3/(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] (e^3*(-4*(a + b*ArcSin[c + d*x])*(E^((2*I)*ArcSin[c + d*x])*((4*I)*a + b +
(4*I)*b*ArcSin[c + d*x]) + (4*Sqrt[2]*b*(((-I)*(a + b*ArcSin[c + d*x]))/b)^
(3/2)*Gamma[1/2, ((-2*I)*(a + b*ArcSin[c + d*x]))/b])/E^(((2*I)*a)/b) + ((-
4*I)*a + b - (4*I)*b*ArcSin[c + d*x] + 4*Sqrt[2]*b*E^(((2*I)*(a + b*ArcSin[
c + d*x]))/b)*((I*(a + b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1/2, ((2*I)*(a +
b*ArcSin[c + d*x]))/b])/E^((2*I)*ArcSin[c + d*x])) + 4*(a + b*ArcSin[c + d*
x])*(((-8*I)*a + b - (8*I)*b*ArcSin[c + d*x])/E^((4*I)*ArcSin[c + d*x]) + E
^((4*I)*ArcSin[c + d*x])*((8*I)*a + b + (8*I)*b*ArcSin[c + d*x]) + (16*b*((
(-I)*(a + b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1/2, ((-4*I)*(a + b*ArcSin[c +
 d*x]))/b])/E^(((4*I)*a)/b) + 16*b*E^(((4*I)*a)/b)*((I*(a + b*ArcSin[c + d*
x]))/b)^(3/2)*Gamma[1/2, ((4*I)*(a + b*ArcSin[c + d*x]))/b]) - 6*b^2*Sin[2*
ArcSin[c + d*x]] + 3*b^2*Sin[4*ArcSin[c + d*x]]))/(60*b^3*d*(a + b*ArcSin[c
 + d*x])^(5/2))
```

Maple [**B**] Leaf count of result is larger than twice the leaf count of optimal. 1264 vs. $2(368) = 736$.
time = 0.53, size = 1265, normalized size = 2.86

method	result	size
default	Expression too large to display	1265

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(7/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/60/d*e^3/b^3*(32*arcsin(d*x+c)^2*(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*
cos(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/
2)/b)*2^(1/2)*Pi^(1/2)*b^2-32*arcsin(d*x+c)^2*(a+b*arcsin(d*x+c))^(1/2)*sin
(2*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/
b)*(-2/b)^(1/2)*2^(1/2)*Pi^(1/2)*b^2-128*arcsin(d*x+c)^2*(a+b*arcsin(d*x+c)
)^(1/2)*cos(4*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x
+c))^(1/2)/b)*2^(1/2)*Pi^(1/2)*(-1/b)^(1/2)*b^2+128*arcsin(d*x+c)^2*(a+b*ar
csin(d*x+c))^(1/2)*sin(4*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b
*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*Pi^(1/2)*(-1/b)^(1/2)*b^2+64*arcsin(d*x+c)
*(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1
/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*Pi^(1/2)*a*b-64*arcsi
n(d*x+c)*(a+b*arcsin(d*x+c))^(1/2)*sin(2*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(
-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-2/b)^(1/2)*2^(1/2)*Pi^(1/2)*a*b-
256*arcsin(d*x+c)*(a+b*arcsin(d*x+c))^(1/2)*cos(4*a/b)*FresnelC(2*2^(1/2)/P
i^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*Pi^(1/2)*(-1/b)^(
1/2)*a*b+256*arcsin(d*x+c)*(a+b*arcsin(d*x+c))^(1/2)*sin(4*a/b)*FresnelS(2*
2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*Pi^(1/2)
*(-1/b)^(1/2)*a*b+32*(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(2*a/b)*Fres
```

```
nelC(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*P
i^(1/2)*a^2-32*(a+b*arcsin(d*x+c))^(1/2)*sin(2*a/b)*FresnelS(2*2^(1/2)/Pi^(
1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-2/b)^(1/2)*2^(1/2)*Pi^(1/2
)*a^2-128*(a+b*arcsin(d*x+c))^(1/2)*cos(4*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/
(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*Pi^(1/2)*(-1/b)^(1/2)*a^2
+128*(a+b*arcsin(d*x+c))^(1/2)*sin(4*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-1/b
)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*Pi^(1/2)*(-1/b)^(1/2)*a^2+32*a
rcsin(d*x+c)^2*sin(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*b^2-64*arcsin(d*x+c)^2*s
in(-4*(a+b*arcsin(d*x+c))/b+4*a/b)*b^2+64*arcsin(d*x+c)*sin(-2*(a+b*arcsin(
d*x+c))/b+2*a/b)*a*b+8*arcsin(d*x+c)*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*b^
2-128*arcsin(d*x+c)*sin(-4*(a+b*arcsin(d*x+c))/b+4*a/b)*a*b-8*arcsin(d*x+c)
*cos(-4*(a+b*arcsin(d*x+c))/b+4*a/b)*b^2+32*sin(-2*(a+b*arcsin(d*x+c))/b+2*
a/b)*a^2-6*sin(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*b^2+8*cos(-2*(a+b*arcsin(d*x
+c))/b+2*a/b)*a*b-64*sin(-4*(a+b*arcsin(d*x+c))/b+4*a/b)*a^2+3*sin(-4*(a+b*
arcsin(d*x+c))/b+4*a/b)*b^2-8*cos(-4*(a+b*arcsin(d*x+c))/b+4*a/b)*a*b)/(a+b
*arcsin(d*x+c))^(5/2)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)^3/(b*arcsin(d*x + c) + a)^(7/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e^3\left(\int \frac{c^3}{a^3\sqrt{a+b\operatorname{asin}(c+dx)}+3a^2b\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)+3ab^2\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^2(c+dx)+b^3\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^3(c+dx)}\,dx+\int \frac{d^3x^3}{a^3\sqrt{a+b\operatorname{asin}(c+dx)}+3a^2b\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)+3ab^2\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^2(c+dx)+b^3\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^3(c+dx)}\,dx+\int \frac{3cd^2x^2}{a^3\sqrt{a+b\operatorname{asin}(c+dx)}+3a^2b\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)+3ab^2\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^2(c+dx)+b^3\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^3(c+dx)}\,dx+\int \frac{3c^2dx}{a^3\sqrt{a+b\operatorname{asin}(c+dx)}+3a^2b\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)+3ab^2\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^2(c+dx)+b^3\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^3(c+dx)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**3/(a+b*asin(d*x+c))**(7/2),x)
```

```
[Out] e**3*(Integral(c**3/(a**3*sqrt(a + b*asin(c + d*x)) + 3*a**2*b*sqrt(a + b*a
sin(c + d*x))*asin(c + d*x) + 3*a*b**2*sqrt(a + b*asin(c + d*x))*asin(c + d
*x)**2 + b**3*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**3), x) + Integral(d*
*3*x**3/(a**3*sqrt(a + b*asin(c + d*x)) + 3*a**2*b*sqrt(a + b*asin(c + d*x)
)*asin(c + d*x) + 3*a*b**2*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**2 + b**
3*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**3), x) + Integral(3*c*d**2*x**2/
(a**3*sqrt(a + b*asin(c + d*x)) + 3*a**2*b*sqrt(a + b*asin(c + d*x))*asin(c
 + d*x) + 3*a*b**2*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**2 + b**3*sqrt(a
 + b*asin(c + d*x))*asin(c + d*x)**3), x) + Integral(3*c**2*d*x/(a**3*sqrt(
a + b*asin(c + d*x)) + 3*a**2*b*sqrt(a + b*asin(c + d*x))*asin(c + d*x) + 3
*a*b**2*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**2 + b**3*sqrt(a + b*asin(c
 + d*x))*asin(c + d*x)**3), x))
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^3/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)^3/(b*arcsin(d*x + c) + a)^(7/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,e+d\,e\,x)^3}{(a+b\,\mathrm{asin}\left(c+d\,x\right))^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^3/(a + b*asin(c + d*x))^(7/2),x)
```

```
[Out] int((c*e + d*e*x)^3/(a + b*asin(c + d*x))^(7/2), x)
```

3.277 $\int \frac{(ce+dex)^2}{(a+b\mathbf{ArcSin}(c+dx))^{7/2}}\,dx$

Optimal. Leaf size=441

$$-\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{5bd(a+b\text{ArcSin}(c+dx))^{5/2}}-\frac{8e^2(c+dx)}{15b^2d(a+b\text{ArcSin}(c+dx))^{3/2}}+\frac{4e^2(c+dx)^3}{5b^2d(a+b\text{ArcSin}(c+dx))^{3/2}}-\frac{16e^2}{15b^3d\sqrt{a}}$$

```
[Out] -8/15*e^2*(d*x+c)/b^2/d/(a+b*arcsin(d*x+c))^(3/2)+4/5*e^2*(d*x+c)^3/b^2/d/(
a+b*arcsin(d*x+c))^(3/2)+2/15*e^2*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*a
rcsin(d*x+c))^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/b^(7/2)/d-2/15*e^2*FresnelC(2
^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2
)/b^(7/2)/d-6/5*e^2*cos(3*a/b)*FresnelS(6^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c)
)^(1/2)/b^(1/2))*6^(1/2)*Pi^(1/2)/b^(7/2)/d+6/5*e^2*FresnelC(6^(1/2)/Pi^(1/
2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(3*a/b)*6^(1/2)*Pi^(1/2)/b^(7/2)/d
-2/5*e^2*(d*x+c)^2*(1-(d*x+c)^2)^(1/2)/b/d/(a+b*arcsin(d*x+c))^(5/2)-16/15*
e^2*(1-(d*x+c)^2)^(1/2)/b^3/d/(a+b*arcsin(d*x+c))^(1/2)+24/5*e^2*(d*x+c)^2*
(1-(d*x+c)^2)^(1/2)/b^3/d/(a+b*arcsin(d*x+c))^(1/2)
```

Rubi [A]
time = 0.78, antiderivative size = 441, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 12, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.480$, Rules used = {4889, 12, 4729, 4807, 4727, 3387, 3386, 3432, 3385, 3433, 4717, 4809}

$$-\frac{2\sqrt{2\pi}\,e^2\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{15b^{7/2}d}+\frac{6\sqrt{6\pi}\,e^2\sin\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{5b^{7/2}d}+\frac{2\sqrt{2\pi}\,e^2\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{15b^{7/2}d}-\frac{6\sqrt{6\pi}\,e^2\cos\left(\frac{3a}{b}\right)S\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{5b^{7/2}d}+\frac{24e^2\sqrt{1-(c+dx)^2}(c+dx)^2}{5b^3d\sqrt{a+b\text{ArcSin}(c+dx)}}-\frac{16e^2\sqrt{1-(c+dx)^2}}{15b^3d\sqrt{a+b\text{ArcSin}(c+dx)}}+\frac{4e^2(c+dx)^3}{5b^2d(a+b\text{ArcSin}(c+dx))^{3/2}}-\frac{8e^2(c+dx)}{15b^2d(a+b\text{ArcSin}(c+dx))^{3/2}}-\frac{2e^2\sqrt{1-(c+dx)^2}(c+dx)^2}{5bd(a+b\text{ArcSin}(c+dx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] (-2*e^2*(c + d*x)^2*Sqrt[1 - (c + d*x)^2])/(5*b*d*(a + b*ArcSin[c + d*x])^(
5/2)) - (8*e^2*(c + d*x))/(15*b^2*d*(a + b*ArcSin[c + d*x])^(3/2)) + (4*e^2
*(c + d*x)^3)/(5*b^2*d*(a + b*ArcSin[c + d*x])^(3/2)) - (16*e^2*Sqrt[1 - (c
 + d*x)^2])/(15*b^3*d*Sqrt[a + b*ArcSin[c + d*x]]) + (24*e^2*(c + d*x)^2*Sq
rt[1 - (c + d*x)^2])/(5*b^3*d*Sqrt[a + b*ArcSin[c + d*x]]) + (2*e^2*Sqrt[2*
Pi]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(1
5*b^(7/2)*d) - (6*e^2*Sqrt[6*Pi]*Cos[(3*a)/b]*FresnelS[(Sqrt[6/Pi]*Sqrt[a +
 b*ArcSin[c + d*x]])/Sqrt[b]])/(5*b^(7/2)*d) - (2*e^2*Sqrt[2*Pi]*FresnelC[(
Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(15*b^(7/2)*d) +
 (6*e^2*Sqrt[6*Pi]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b
]]*Sin[(3*a)/b])/(5*b^(7/2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4717

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[Sqrt[1 - c^2
*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + Dist[c/(b*(n + 1)),
 Int[x*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4727

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] - Dist
[1/(b^2*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[x^(n + 1), Sin[-a/b
+ x/b]^(m - 1)*(m - (m + 1)*Sin[-a/b + x/b]^2), x], x], x, a + b*ArcSin[c*x
]], x] /; FreeQ[{a, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + (Dis
t[c*((m + 1)/(b*(n + 1))), Int[x^(m + 1)*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[
1 - c^2*x^2]), x], x] - Dist[m/(b*c*(n + 1)), Int[x^(m - 1)*((a + b*ArcSin[
c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4809

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[(1/(b*c^(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x
^2)^p], Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b]^(2*p + 1), x], x, a
 + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0]
&& IGtQ[2*p + 2, 0] && IGtQ[m, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{(ce+dex)^2}{\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}\,dx = \frac{\text{Subst}\left(\int \frac{e^2x^2}{\left(a+b\sin^{-1}(x)\right)^{7/2}}\,dx, x, c+dx\right)}{d}$$

$$= \frac{e^2\text{Subst}\left(\int \frac{x^2}{\left(a+b\sin^{-1}(x)\right)^{7/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{(4e^2)\,\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\,\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx\right.}{5bd}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{8e^2(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{}{5b^2d\,(a-}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{8e^2(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{}{5b^2d\,(a-}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{8e^2(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{}{5b^2d\,(a-}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{8e^2(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{}{5b^2d\,(a-}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{8e^2(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{}{5b^2d\,(a-}$$

$$= -\frac{2e^2(c+dx)^2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{8e^2(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{}{5b^2d\,(a-}$$

Mathematica [C] Result contains complex when optimal does not.
time = 1.20, size = 538, normalized size = 1.22

$$\frac{e^2\left(-3b^2e^{i\text{ArcSin}(c+dx)}+3b^2e^{3i\text{ArcSin}(c+dx)}+2e^{-\frac{ia}{b}}(a+b\text{ArcSin}(c+dx))\left(e^{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}(2a-ib+2b\text{ArcSin}(c+dx))-2ib\left(-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)+e^{-i\text{ArcSin}(c+dx)}\left(4a^2+2ab(i+4\text{ArcSin}(c+dx))+b^2(-3+2i\text{ArcSin}(c+dx)+4\text{ArcSin}(c+dx)^2)-4e^{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}(a+b\text{ArcSin}(c+dx))^2\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\text{Gamma}\left(\frac{1}{2},\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)-6e^{-\frac{3ia}{b}}(a+b\text{ArcSin}(c+dx))\left(e^{\frac{3i(a+b\text{ArcSin}(c+dx))}{b}}(6a-ib+6b\text{ArcSin}(c+dx))-6i\sqrt{3}b\left(-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},-\frac{3i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)+3e^{-3i\text{ArcSin}(c+dx)}\left(b^2-2(a+b\text{ArcSin}(c+dx))\left(6a+ib+6b\text{ArcSin}(c+dx)+6i\sqrt{3}be^{\frac{3i(a+b\text{ArcSin}(c+dx))}{b}}\left(\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},\frac{3i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)\right)\right)}{60b^3d(a+b\text{ArcSin}(c+dx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^2/(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] (e^2*(-3*b^2*E^(I*ArcSin[c + d*x]) + 3*b^2*E^((3*I)*ArcSin[c + d*x]) + (2*(
a + b*ArcSin[c + d*x])*(E^((I*(a + b*ArcSin[c + d*x]))/b)*(2*a - I*b + 2*b*
ArcSin[c + d*x]) - (2*I)*b*(((-I)*(a + b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1
/2, ((-I)*(a + b*ArcSin[c + d*x]))/b]))/E^((I*a)/b) + (4*a^2 + 2*a*b*(I + 4
*ArcSin[c + d*x]) + b^2*(-3 + (2*I)*ArcSin[c + d*x] + 4*ArcSin[c + d*x]^2)
- 4*E^((I*(a + b*ArcSin[c + d*x]))/b)*(a + b*ArcSin[c + d*x])^2*Sqrt[(I*(a
+ b*ArcSin[c + d*x]))/b]*Gamma[1/2, (I*(a + b*ArcSin[c + d*x]))/b])/E^(I*Ar
cSin[c + d*x]) - (6*(a + b*ArcSin[c + d*x])*(E^(((3*I)*(a + b*ArcSin[c + d*
x]))/b)*(6*a - I*b + 6*b*ArcSin[c + d*x]) - (6*I)*Sqrt[3]*b*(((-I)*(a + b*A
rcSin[c + d*x]))/b)^(3/2)*Gamma[1/2, ((-3*I)*(a + b*ArcSin[c + d*x]))/b]))/
E^(((3*I)*a)/b) + (3*(b^2 - 2*(a + b*ArcSin[c + d*x])*(6*a + I*b + 6*b*ArcS
in[c + d*x] + (6*I)*Sqrt[3]*b*E^(((3*I)*(a + b*ArcSin[c + d*x]))/b)*((I*(a
+ b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1/2, ((3*I)*(a + b*ArcSin[c + d*x]))/b
])))/E^((3*I)*ArcSin[c + d*x])))/(60*b^3*d*(a + b*ArcSin[c + d*x])^(5/2))
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 1246 vs. $2(367) = 734$.
time = 0.57, size = 1247, normalized size = 2.83

method	result	size
default	Expression too large to display	1247

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(7/2),x,method=_RETURNVERBOSE)
```

```
[Out] 1/30/d*e^2/b^3*(36*arcsin(d*x+c)^2*(-3/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*c
os(3*a/b)*FresnelS(3*2^(1/2)/Pi^(1/2)/(-3/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2
)/b)*2^(1/2)*Pi^(1/2)*b^2+36*arcsin(d*x+c)^2*(-3/b)^(1/2)*(a+b*arcsin(d*x+c
))^(1/2)*sin(3*a/b)*FresnelC(3*2^(1/2)/Pi^(1/2)/(-3/b)^(1/2)*(a+b*arcsin(d*
x+c))^(1/2)/b)*2^(1/2)*Pi^(1/2)*b^2-4*arcsin(d*x+c)^2*(a+b*arcsin(d*x+c))^(
1/2)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*co
s(a/b)*2^(1/2)*Pi^(1/2)*(-1/b)^(1/2)*b^2-4*arcsin(d*x+c)^2*(a+b*arcsin(d*x+
c))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c
))^(1/2)/b)*(-1/b)^(1/2)*2^(1/2)*Pi^(1/2)*b^2+72*arcsin(d*x+c)*(-3/b)^(1/2)
*(a+b*arcsin(d*x+c))^(1/2)*cos(3*a/b)*FresnelS(3*2^(1/2)/Pi^(1/2)/(-3/b)^(1
/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*Pi^(1/2)*a*b+72*arcsin(d*x+c)*(-3/
b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*sin(3*a/b)*FresnelC(3*2^(1/2)/Pi^(1/2)/(
-3/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*Pi^(1/2)*a*b-8*arcsin(d*x+
c)*(a+b*arcsin(d*x+c))^(1/2)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*ar
csin(d*x+c))^(1/2)/b)*cos(a/b)*2^(1/2)*Pi^(1/2)*(-1/b)^(1/2)*a*b-8*arcsin(d
*x+c)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^(
1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)*2^(1/2)*Pi^(1/2)*a*b+36*(-3/
```

```
b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*cos(3*a/b)*FresnelS(3*2^(1/2)/Pi^(1/2)/(
-3/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*Pi^(1/2)*a^2+36*(-3/b)^(1/
2)*(a+b*arcsin(d*x+c))^(1/2)*sin(3*a/b)*FresnelC(3*2^(1/2)/Pi^(1/2)/(-3/b)^
(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*2^(1/2)*Pi^(1/2)*a^2-4*(a+b*arcsin(d*x+c
))^(1/2)*FresnelS(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b
)*cos(a/b)*2^(1/2)*Pi^(1/2)*(-1/b)^(1/2)*a^2-4*(a+b*arcsin(d*x+c))^(1/2)*si
n(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*
(-1/b)^(1/2)*2^(1/2)*Pi^(1/2)*a^2+4*arcsin(d*x+c)^2*cos(-(a+b*arcsin(d*x+c)
)/b+a/b)*b^2-36*arcsin(d*x+c)^2*cos(-3*(a+b*arcsin(d*x+c))/b+3*a/b)*b^2+8*a
rcsin(d*x+c)*cos(-(a+b*arcsin(d*x+c))/b+a/b)*a*b-2*arcsin(d*x+c)*sin(-(a+b*
arcsin(d*x+c))/b+a/b)*b^2-72*arcsin(d*x+c)*cos(-3*(a+b*arcsin(d*x+c))/b+3*a
/b)*a*b+6*arcsin(d*x+c)*sin(-3*(a+b*arcsin(d*x+c))/b+3*a/b)*b^2+4*cos(-(a+b
*arcsin(d*x+c))/b+a/b)*a^2-3*cos(-(a+b*arcsin(d*x+c))/b+a/b)*b^2-2*sin(-(a+
b*arcsin(d*x+c))/b+a/b)*a*b-36*cos(-3*(a+b*arcsin(d*x+c))/b+3*a/b)*a^2+3*co
s(-3*(a+b*arcsin(d*x+c))/b+3*a/b)*b^2+6*sin(-3*(a+b*arcsin(d*x+c))/b+3*a/b)
*a*b)/(a+b*arcsin(d*x+c))^(5/2)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)^2/(b*arcsin(d*x + c) + a)^(7/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e^{2}\left(\int \frac{c^{2}}{a^{3}\sqrt{a+b\operatorname{asin}(c+dx)}+3a^{2}b\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)+3ab^{2}\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^{2}(c+dx)+b^{3}\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^{3}(c+dx)}\,dx+\int \frac{d^{2}x^{2}}{a^{3}\sqrt{a+b\operatorname{asin}(c+dx)}+3a^{2}b\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)+3ab^{2}\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^{2}(c+dx)+b^{3}\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^{3}(c+dx)}\,dx+\int \frac{2cdx}{a^{3}\sqrt{a+b\operatorname{asin}(c+dx)}+3a^{2}b\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)+3ab^{2}\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^{2}(c+dx)+b^{3}\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^{3}(c+dx)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**2/(a+b*asin(d*x+c))**(7/2),x)
```

```
[Out] e**2*(Integral(c**2/(a**3*sqrt(a + b*asin(c + d*x)) + 3*a**2*b*sqrt(a + b*a
sin(c + d*x))*asin(c + d*x) + 3*a*b**2*sqrt(a + b*asin(c + d*x))*asin(c + d
*x)**2 + b**3*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**3), x) + Integral(d*
*2*x**2/(a**3*sqrt(a + b*asin(c + d*x)) + 3*a**2*b*sqrt(a + b*asin(c + d*x)
)*asin(c + d*x) + 3*a*b**2*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**2 + b**
3*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**3), x) + Integral(2*c*d*x/(a**3*
sqrt(a + b*asin(c + d*x)) + 3*a**2*b*sqrt(a + b*asin(c + d*x))*asin(c + d*x
) + 3*a*b**2*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**2 + b**3*sqrt(a + b*a
sin(c + d*x))*asin(c + d*x)**3), x))
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^2/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)^2/(b*arcsin(d*x + c) + a)^(7/2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,e+d\,e\,x)^2}{(a+b\,\mathrm{asin}\,(c+d\,x))^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^2/(a + b*asin(c + d*x))^(7/2),x)
```

```
[Out] int((c*e + d*e*x)^2/(a + b*asin(c + d*x))^(7/2), x)
```

3.278 $\int \frac{ce+dex}{(a+b\text{ArcSin}(c+dx))^{7/2}}\,dx$

Optimal. Leaf size=252

$$-\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{5bd(a+b\text{ArcSin}(c+dx))^{5/2}}-\frac{4e}{15b^2d(a+b\text{ArcSin}(c+dx))^{3/2}}+\frac{8e(c+dx)^2}{15b^2d(a+b\text{ArcSin}(c+dx))^{3/2}}+\frac{32e(c+d\cdots}{15b^3d\sqrt{a\cdots}}$$

```
[Out] -4/15*e/b^2/d/(a+b*arcsin(d*x+c))^(3/2)+8/15*e*(d*x+c)^2/b^2/d/(a+b*arcsin(
d*x+c))^(3/2)-32/15*e*cos(2*a/b)*FresnelC(2*(a+b*arcsin(d*x+c))^(1/2)/b^(1/
2)/Pi^(1/2))*Pi^(1/2)/b^(7/2)/d-32/15*e*FresnelS(2*(a+b*arcsin(d*x+c))^(1/2
)/b^(1/2)/Pi^(1/2))*sin(2*a/b)*Pi^(1/2)/b^(7/2)/d-2/5*e*(d*x+c)*(1-(d*x+c)^
2)^(1/2)/b/d/(a+b*arcsin(d*x+c))^(5/2)+32/15*e*(d*x+c)*(1-(d*x+c)^2)^(1/2)/
b^3/d/(a+b*arcsin(d*x+c))^(1/2)
```

Rubi [A]
time = 0.34, antiderivative size = 252, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 11, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.478$, Rules used = {4889, 12, 4729, 4807, 4727, 3387, 3386, 3432, 3385, 3433, 4737}

$$-\frac{32\sqrt{\pi}\,e\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{\pi}\sqrt{b}}\right)}{15b^{7/2}d}-\frac{32\sqrt{\pi}\,e\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}\sqrt{\pi}}\right)}{15b^{7/2}d}+\frac{32e\sqrt{1-(c+dx)^2}\,(c+dx)}{15b^3d\sqrt{a+b\text{ArcSin}(c+dx)}}+\frac{8e(c+dx)^2}{15b^2d(a+b\text{ArcSin}(c+dx))^{3/2}}-\frac{4e}{15b^2d(a+b\text{ArcSin}(c+dx))^{3/2}}-\frac{2e\sqrt{1-(c+dx)^2}\,(c+dx)}{5bd(a+b\text{ArcSin}(c+dx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)/(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] (-2*e*(c + d*x)*Sqrt[1 - (c + d*x)^2])/(5*b*d*(a + b*ArcSin[c + d*x])^(5/2)
) - (4*e)/(15*b^2*d*(a + b*ArcSin[c + d*x])^(3/2)) + (8*e*(c + d*x)^2)/(15*
b^2*d*(a + b*ArcSin[c + d*x])^(3/2)) + (32*e*(c + d*x)*Sqrt[1 - (c + d*x)^2
])/(15*b^3*d*Sqrt[a + b*ArcSin[c + d*x]]) - (32*e*Sqrt[Pi]*Cos[(2*a)/b]*Fre
snelC[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])])/(15*b^(7/2)*d) -
 (32*e*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c + d*x]])/(Sqrt[b]*Sqrt[Pi])
]*Sin[(2*a)/b])/(15*b^(7/2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4727

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] - Dist
[1/(b^2*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[x^(n + 1), Sin[-a/b
+ x/b]^(m - 1)*(m - (m + 1)*Sin[-a/b + x/b]^2), x], x], x, a + b*ArcSin[c*x
]], x] /; FreeQ[{a, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + (Dis
t[c*((m + 1)/(b*(n + 1))), Int[x^(m + 1)*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[
1 - c^2*x^2]), x], x] - Dist[m/(b*c*(n + 1)), Int[x^(m - 1)*((a + b*ArcSin[
c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$
\begin{aligned}
\int \frac{ce+dex}{\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}\,dx &= \frac{\text{Subst}\left(\int \frac{ex}{\left(a+b\sin^{-1}(x)\right)^{7/2}}\,dx, x, c+dx\right)}{d} \\
&= \frac{e\text{Subst}\left(\int \frac{x}{\left(a+b\sin^{-1}(x)\right)^{7/2}}\,dx, x, c+dx\right)}{d} \\
&= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{(2e)\text{Subst}\left(\int \frac{1}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx, x\right.}{5bd} \\
&= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{4e}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{}{15b^2d\,(a} \\
&= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{4e}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{}{15b^2d\,(a} \\
&= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{4e}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{}{15b^2d\,(a} \\
&= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{4e}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{}{15b^2d\,(a} \\
&= -\frac{2e(c+dx)\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{4e}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{}{15b^2d\,(a}
\end{aligned}
$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.57, size = 254, normalized size = 1.01

$$
-\frac{e\left((a+b\text{ArcSin}(c+dx))\left(e^{-\frac{2ia}{b}}\left(2e^{\frac{2i(a+b\text{ArcSin}(c+dx))}{b}}(4ia+b+4ib\text{ArcSin}(c+dx))+8\sqrt{2}\,b\left(-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},-\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)+2e^{-2i\text{ArcSin}(c+dx)}\left(-4ia+b-4ib\text{ArcSin}(c+dx)+4\sqrt{2}\,be^{\frac{2i(a+b\text{ArcSin}(c+dx))}{b}}\left(\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},\frac{2i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)\right)+3b^2\sin(2\text{ArcSin}(c+dx))\right)}{15b^3d(a+b\text{ArcSin}(c+dx))^{5/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)/(a + b*ArcSin[c + d*x])^(7/2),x]
```

```
[Out] -1/15*(e*((a + b*ArcSin[c + d*x])*((2*E^(((2*I)*(a + b*ArcSin[c + d*x]))/b)
*((4*I)*a + b + (4*I)*b*ArcSin[c + d*x]) + 8*Sqrt[2]*b*(((-I)*(a + b*ArcSin
```

[c + d*x]))/b)^(3/2)*Gamma[1/2, ((-2*I)*(a + b*ArcSin[c + d*x]))/b])/E^(((2
*I)*a)/b) + (2*((-4*I)*a + b - (4*I)*b*ArcSin[c + d*x] + 4*Sqrt[2]*b*E^(((2
I)(a + b*ArcSin[c + d*x]))/b)*((I*(a + b*ArcSin[c + d*x]))/b)^(3/2)*Gamma
[1/2, ((2*I)*(a + b*ArcSin[c + d*x]))/b]))/E^((2*I)*ArcSin[c + d*x])) + 3*b
^2*Sin[2*ArcSin[c + d*x]]))/(b^3*d*(a + b*ArcSin[c + d*x])^(5/2))

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 642 vs. $2(208) = 416$.
time = 0.28, size = 643, normalized size = 2.55

method	result
default	$-\frac{e\left(16\arcsin(dx+c)^2\sqrt{a+b\arcsin(dx+c)}\,\cos\left(\frac{2a}{b}\right)\mathrm{FresnelC}\left(\frac{2\sqrt{2}\,\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\,\sqrt{-\frac{2}{b}}\,b}\right)\sqrt{-\frac{2}{b}}\,\sqrt{2}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(7/2),x,method=_RETURNVERBOSE)

[Out] -1/15/d*e/b^3*(16*arcsin(d*x+c)^2*(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)*co
s(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)
/b)*2^(1/2)*Pi^(1/2)*b^2-16*arcsin(d*x+c)^2*(a+b*arcsin(d*x+c))^(1/2)*sin(2
*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)
*(-2/b)^(1/2)*2^(1/2)*Pi^(1/2)*b^2+32*arcsin(d*x+c)*(-2/b)^(1/2)*(a+b*arcsi
n(d*x+c))^(1/2)*cos(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*ar
csin(d*x+c))^(1/2)/b)*2^(1/2)*Pi^(1/2)*a*b-32*arcsin(d*x+c)*(a+b*arcsin(d*x
+c))^(1/2)*sin(2*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(
d*x+c))^(1/2)/b)*(-2/b)^(1/2)*2^(1/2)*Pi^(1/2)*a*b+16*(-2/b)^(1/2)*(a+b*arc
sin(d*x+c))^(1/2)*cos(2*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*
arcsin(d*x+c))^(1/2)/b)*2^(1/2)*Pi^(1/2)*a^2-16*(a+b*arcsin(d*x+c))^(1/2)*s
in(2*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(-2/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2
)/b)*(-2/b)^(1/2)*2^(1/2)*Pi^(1/2)*a^2+16*arcsin(d*x+c)^2*sin(-2*(a+b*arcsi
n(d*x+c))/b+2*a/b)*b^2+32*arcsin(d*x+c)*sin(-2*(a+b*arcsin(d*x+c))/b+2*a/b)
*a*b+4*arcsin(d*x+c)*cos(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*b^2+16*sin(-2*(a+b
*arcsin(d*x+c))/b+2*a/b)*a^2-3*sin(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*b^2+4*co
s(-2*(a+b*arcsin(d*x+c))/b+2*a/b)*a*b)/(a+b*arcsin(d*x+c))^(5/2)

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="maxima")

```
[Out] integrate((d*x*e + c*e)/(b*arcsin(d*x + c) + a)^(7/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$e\left(\int \frac{c}{a^{3}\sqrt{a+b\operatorname{asin}(c+dx)}+3a^{2}b\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)+3ab^{2}\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^{2}(c+dx)+b^{3}\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^{3}(c+dx)}\,dx+\int \frac{dx}{a^{3}\sqrt{a+b\operatorname{asin}(c+dx)}+3a^{2}b\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}(c+dx)+3ab^{2}\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^{2}(c+dx)+b^{3}\sqrt{a+b\operatorname{asin}(c+dx)}\operatorname{asin}^{3}(c+dx)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*asin(d*x+c))**(7/2),x)
```

```
[Out] e*(Integral(c/(a**3*sqrt(a + b*asin(c + d*x)) + 3*a**2*b*sqrt(a + b*asin(c
+ d*x))*asin(c + d*x) + 3*a*b**2*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**2
 + b**3*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**3), x) + Integral(d*x/(a**
3*sqrt(a + b*asin(c + d*x)) + 3*a**2*b*sqrt(a + b*asin(c + d*x))*asin(c + d
*x) + 3*a*b**2*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**2 + b**3*sqrt(a + b
*asin(c + d*x))*asin(c + d*x)**3), x))
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)/(b*arcsin(d*x + c) + a)^(7/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{c\,e+d\,e\,x}{{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^{7/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)/(a + b*asin(c + d*x))^(7/2),x)
```

```
[Out] int((c*e + d*e*x)/(a + b*asin(c + d*x))^(7/2), x)
```

3.279 $\int \frac{1}{(a+b\textbf{ArcSin}(c+dx))^{7/2}}\,dx$

Optimal. Leaf size=218

$$-\frac{2\sqrt{1-(c+dx)^2}}{5bd(a+b\text{ArcSin}(c+dx))^{5/2}}+\frac{4(c+dx)}{15b^2d(a+b\text{ArcSin}(c+dx))^{3/2}}+\frac{8\sqrt{1-(c+dx)^2}}{15b^3d\sqrt{a+b\text{ArcSin}(c+dx)}}+\frac{8\sqrt{2\pi}\cos(}{}$$

```
[Out] 4/15*(d*x+c)/b^2/d/(a+b*arcsin(d*x+c))^(3/2)+8/15*cos(a/b)*FresnelS(2^(1/2)
/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/b^(7/2)/d-8/1
5*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b^(1/2))*sin(a/b)*2^(
1/2)*Pi^(1/2)/b^(7/2)/d-2/5*(1-(d*x+c)^2)^(1/2)/b/d/(a+b*arcsin(d*x+c))^(5/
2)+8/15*(1-(d*x+c)^2)^(1/2)/b^3/d/(a+b*arcsin(d*x+c))^(1/2)
```

Rubi [A]
time = 0.28, antiderivative size = 218, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 9, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.643$, Rules used = {4887, 4717, 4807, 4809, 3387, 3386, 3432, 3385, 3433}

$$-\frac{8\sqrt{2\pi}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{15b^{7/2}d}+\frac{8\sqrt{2\pi}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\text{ArcSin}(c+dx)}}{\sqrt{b}}\right)}{15b^{7/2}d}+\frac{8\sqrt{1-(c+dx)^2}}{15b^3d\sqrt{a+b\text{ArcSin}(c+dx)}}+\frac{4(c+dx)}{15b^2d(a+b\text{ArcSin}(c+dx))^{3/2}}-\frac{2\sqrt{1-(c+dx)^2}}{5bd(a+b\text{ArcSin}(c+dx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^(-7/2),x]
```

```
[Out] (-2*Sqrt[1 - (c + d*x)^2])/(5*b*d*(a + b*ArcSin[c + d*x])^(5/2)) + (4*(c +
d*x))/(15*b^2*d*(a + b*ArcSin[c + d*x])^(3/2)) + (8*Sqrt[1 - (c + d*x)^2])/
(15*b^3*d*Sqrt[a + b*ArcSin[c + d*x]]) + (8*Sqrt[2*Pi]*Cos[a/b]*FresnelS[(S
qrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]])/(15*b^(7/2)*d) - (8*Sqrt[2
*Pi]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c + d*x]])/Sqrt[b]]*Sin[a/b])/(
15*b^(7/2)*d)
```

Rule 3385

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3386

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[f*(x^2/d)], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3387

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[c*(f/d) + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3432

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 3433

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]/(f*Rt[
d, 2]))*FresnelC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)], x] /; FreeQ[{d, e, f}, x]
```

Rule 4717

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[Sqrt[1 - c^2
*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + Dist[c/(b*(n + 1)),
 Int[x*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4809

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[(1/(b*c^(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x
^2)^p], Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b]^(2*p + 1), x], x, a
 + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0]
&& IGtQ[2*p + 2, 0] && IGtQ[m, 0]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\sin^{-1}(x)\right)^{7/2}}\,dx,x,c+dx\right)}{d}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} - \frac{2\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}\left(a+b\sin^{-1}(x)\right)^{5/2}}\,dx,x,c+\right.}{5bd}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} - \frac{4\text{Subst}\left(\int\right.}{}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{8\sqrt{1}}{15b^3d\sqrt{a}}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{8\sqrt{1}}{15b^3d\sqrt{a}}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{8\sqrt{1}}{15b^3d\sqrt{a}}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{8\sqrt{1}}{15b^3d\sqrt{a}}$$

$$= -\frac{2\sqrt{1-(c+dx)^2}}{5bd\left(a+b\sin^{-1}(c+dx)\right)^{5/2}} + \frac{4(c+dx)}{15b^2d\left(a+b\sin^{-1}(c+dx)\right)^{3/2}} + \frac{8\sqrt{1}}{15b^3d\sqrt{a}}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.15, size = 287, normalized size = 1.32

$$\frac{-6b^2e^{i\text{ArcSin}(c+dx)}+4e^{-\frac{ia}{b}}(a+b\text{ArcSin}(c+dx))\left(e^{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}(2a+b(-i+2\text{ArcSin}(c+dx)))-2ib\left(-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},-\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)+e^{-i\text{ArcSin}(c+dx)}\left(8a^2+4ab(i+4\text{ArcSin}(c+dx))+2b^2(-3+2i\text{ArcSin}(c+dx)+4\text{ArcSin}(c+dx)^2)-8e^{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}(a+b\text{ArcSin}(c+dx))^2\sqrt{\frac{i(a+b\text{ArcSin}(c+dx))}{b}}\,\text{Gamma}\left(\frac{1}{2},\frac{i(a+b\text{ArcSin}(c+dx))}{b}\right)\right)}{30b^3d(a+b\text{ArcSin}(c+dx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^(-7/2),x]
```

```
[Out] (-6*b^2*E^(I*ArcSin[c + d*x]) + (4*(a + b*ArcSin[c + d*x])*(E^((I*(a + b*Ar
cSin[c + d*x]))/b)*(2*a + b*(-I + 2*ArcSin[c + d*x])) - (2*I)*b*(((-I)*(a +
 b*ArcSin[c + d*x]))/b)^(3/2)*Gamma[1/2, ((-I)*(a + b*ArcSin[c + d*x]))/b])
)/E^((I*a)/b) + (8*a^2 + 4*a*b*(I + 4*ArcSin[c + d*x]) + 2*b^2*(-3 + (2*I)*
ArcSin[c + d*x] + 4*ArcSin[c + d*x]^2) - 8*E^((I*(a + b*ArcSin[c + d*x]))/b
)*(a + b*ArcSin[c + d*x])^2*Sqrt[(I*(a + b*ArcSin[c + d*x]))/b]*Gamma[1/2,
(I*(a + b*ArcSin[c + d*x]))/b])/E^(I*ArcSin[c + d*x]))/(30*b^3*d*(a + b*Arc
Sin[c + d*x])^(5/2))
```

Maple [**B**] Leaf count of result is larger than twice the leaf count of optimal. 623 vs. $2(178) = 356$.
time = 0.17, size = 624, normalized size = 2.86

method	result
default	$-\frac{8\arcsin(dx+c)^2\sqrt{a+b\arcsin(dx+c)}\,\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b}\right)\cos\left(\frac{a}{b}\right)\sqrt{2}\,\sqrt{\pi}\,\sqrt{-\frac{1}{b}}\,b^2}{15} - \frac{8\arcsin}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x+c))^(7/2),x,method=_RETURNVERBOSE)
```

```
[Out] 2/15/d/b^3*(-4*arcsin(d*x+c)^2*(a+b*arcsin(d*x+c))^(1/2)*FresnelS(2^(1/2)/P
i^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*cos(a/b)*2^(1/2)*Pi^(1/2)
*(-1/b)^(1/2)*b^2-4*arcsin(d*x+c)^2*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*Fres
nelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2
)*2^(1/2)*Pi^(1/2)*b^2-8*arcsin(d*x+c)*(a+b*arcsin(d*x+c))^(1/2)*FresnelS(2
^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*cos(a/b)*2^(1/2)*
Pi^(1/2)*(-1/b)^(1/2)*a*b-8*arcsin(d*x+c)*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b
)*FresnelC(2^(1/2)/Pi^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b
)^(1/2)*2^(1/2)*Pi^(1/2)*a*b-4*(a+b*arcsin(d*x+c))^(1/2)*FresnelS(2^(1/2)/P
i^(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*cos(a/b)*2^(1/2)*Pi^(1/2)
*(-1/b)^(1/2)*a^2-4*(a+b*arcsin(d*x+c))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^
(1/2)/(-1/b)^(1/2)*(a+b*arcsin(d*x+c))^(1/2)/b)*(-1/b)^(1/2)*2^(1/2)*Pi^(1/
2)*a^2+4*arcsin(d*x+c)^2*cos(-(a+b*arcsin(d*x+c))/b+a/b)*b^2+8*arcsin(d*x+c
)*cos(-(a+b*arcsin(d*x+c))/b+a/b)*a*b-2*arcsin(d*x+c)*sin(-(a+b*arcsin(d*x+
c))/b+a/b)*b^2+4*cos(-(a+b*arcsin(d*x+c))/b+a/b)*a^2-3*cos(-(a+b*arcsin(d*x
+c))/b+a/b)*b^2-2*sin(-(a+b*arcsin(d*x+c))/b+a/b)*a*b)/(a+b*arcsin(d*x+c))^
(5/2)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(-7/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a + b \operatorname{asin}(c + dx))^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x+c))**(7/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**(-7/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^(-7/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{1}{{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^{7/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(c + d*x))^(7/2),x)
```

```
[Out] int(1/(a + b*asin(c + d*x))^(7/2), x)
```

3.280 $\int \frac{1}{(ce+dex)(a+b\mathbf{ArcSin}(c+dx))^{7/2}}\,dx$

Optimal. Leaf size=29

$$\frac{\operatorname{Int}\left(\frac{1}{(c+dx)(a+b\operatorname{ArcSin}(c+dx))^{7/2}},x\right)}{e}$$

[Out] Unintegrable(1/(d*x+c)/(a+b*arcsin(d*x+c))^(7/2),x)/e

Rubi [A]
time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(ce+dex)(a+b\operatorname{ArcSin}(c+dx))^{7/2}}\,dx$$

Verification is not applicable to the result.

[In] Int[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(7/2)),x]

[Out] Defer[Subst][Defer[Int][1/(x*(a + b*ArcSin[x])^(7/2)), x], x, c + d*x]/(d*e
)

Rubi steps

$$\begin{aligned}\int \frac{1}{(ce+dex)\left(a+b\sin^{-1}(c+dx)\right)^{7/2}}\,dx &= \frac{\operatorname{Subst}\left(\int \frac{1}{ex\left(a+b\sin^{-1}(x)\right)^{7/2}}\,dx,x,c+dx\right)}{d}\\ &= \frac{\operatorname{Subst}\left(\int \frac{1}{x\left(a+b\sin^{-1}(x)\right)^{7/2}}\,dx,x,c+dx\right)}{de}\end{aligned}$$

Mathematica [A]
time = 0.06, size = 0, normalized size = 0.00

$$\int \frac{1}{(ce+dex)(a+b\operatorname{ArcSin}(c+dx))^{7/2}}\,dx$$

Verification is not applicable to the result.

[In] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(7/2)),x]

[Out] Integrate[1/((c*e + d*e*x)*(a + b*ArcSin[c + d*x])^(7/2)), x]

Maple [A]
time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{1}{(dex + ce)\,(a + b \arcsin{(dx + c)})^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(7/2),x)
```

```
[Out] int(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(7/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate(1/((d*x*e + c*e)*(b*arcsin(d*x + c) + a)^(7/2)), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{1}{a^{3} c \sqrt{a + b \operatorname{asin}{(c + dx)}} + a^{3} dx \sqrt{a + b \operatorname{asin}{(c + dx)}} + 3 a^{2} b c \sqrt{a + b \operatorname{asin}{(c + dx)}} \operatorname{asin}{(c + dx)} + 3 a^{2} b dx \sqrt{a + b \operatorname{asin}{(c + dx)}} \operatorname{asin}{(c + dx)} + 3 a b^{2} c \sqrt{a + b \operatorname{asin}{(c + dx)}} \operatorname{asin}^{2}{(c + dx)} + 3 a b^{2} dx \sqrt{a + b \operatorname{asin}{(c + dx)}} \operatorname{asin}^{2}{(c + dx)} + b^{3} c \sqrt{a + b \operatorname{asin}{(c + dx)}} \operatorname{asin}^{3}{(c + dx)} + b^{3} dx \sqrt{a + b \operatorname{asin}{(c + dx)}} \operatorname{asin}^{3}{(c + dx)}}\,dx}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*asin(d*x+c))**(7/2),x)
```

```
[Out] Integral(1/(a**3*c*sqrt(a + b*asin(c + d*x)) + a**3*d*x*sqrt(a + b*asin(c +
 d*x)) + 3*a**2*b*c*sqrt(a + b*asin(c + d*x))*asin(c + d*x) + 3*a**2*b*d*x*
sqrt(a + b*asin(c + d*x))*asin(c + d*x) + 3*a*b**2*c*sqrt(a + b*asin(c + d*
x))*asin(c + d*x)**2 + 3*a*b**2*d*x*sqrt(a + b*asin(c + d*x))*asin(c + d*x)
**2 + b**3*c*sqrt(a + b*asin(c + d*x))*asin(c + d*x)**3 + b**3*d*x*sqrt(a +
 b*asin(c + d*x))*asin(c + d*x)**3), x)/e
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*e*x+c*e)/(a+b*arcsin(d*x+c))^(7/2),x, algorithm="giac")
[Out] integrate(1/((d*e*x + c*e)*(b*arcsin(d*x + c) + a)^(7/2)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{(c\,e+d\,e\,x)\,\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((c*e + d*e*x)*(a + b*asin(c + d*x))^(7/2)),x)
[Out] int(1/((c*e + d*e*x)*(a + b*asin(c + d*x))^(7/2)), x)
```

3.281 $\int (ce+dex)^{7/2}(a+b\text{ArcSin}(c+dx))\,dx$

Optimal. Leaf size=156

$$\frac{28be^2(e(c+dx))^{3/2}\sqrt{1-(c+dx)^2}}{405d}+\frac{4b(e(c+dx))^{7/2}\sqrt{1-(c+dx)^2}}{81d}+\frac{2(e(c+dx))^{9/2}(a+b\text{ArcSin}(c+dx$$

[Out] 2/9*(e*(d*x+c))^(9/2)*(a+b*arcsin(d*x+c))/d/e+28/135*b*e^3*EllipticE(1/2*(-d*x-c+1)^(1/2)*2^(1/2),2^(1/2))*(e*(d*x+c))^(1/2)/d/(d*x+c)^(1/2)+28/405*b*e^2*(e*(d*x+c))^(3/2)*(1-(d*x+c)^2)^(1/2)/d+4/81*b*(e*(d*x+c))^(7/2)*(1-(d*x+c)^2)^(1/2)/d

Rubi [A]
time = 0.09, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.261$, Rules used = {4889, 4723, 327, 326, 324, 435}

$$\frac{2(e(c+dx))^{9/2}(a+b\text{ArcSin}(c+dx))}{9de}+\frac{28be^3\sqrt{e(c+dx)}\,E\left(\text{ArcSin}\left(\frac{\sqrt{-c-dx+1}}{\sqrt{2}}\right)\middle|2\right)}{135d\sqrt{c+dx}}+\frac{28be^2\sqrt{1-(c+dx)^2}\,(e(c+dx))^{3/2}}{405d}+\frac{4b\sqrt{1-(c+dx)^2}\,(e(c+dx))^{7/2}}{81d}$$

Antiderivative was successfully verified.

[In] Int[(c*e + d*e*x)^(7/2)*(a + b*ArcSin[c + d*x]),x]

[Out] (28*b*e^2*(e*(c + d*x))^(3/2)*Sqrt[1 - (c + d*x)^2])/(405*d) + (4*b*(e*(c + d*x))^(7/2)*Sqrt[1 - (c + d*x)^2])/(81*d) + (2*(e*(c + d*x))^(9/2)*(a + b*ArcSin[c + d*x]))/(9*d*e) + (28*b*e^3*Sqrt[e*(c + d*x)]*EllipticE[ArcSin[Sqrt[1 - c - d*x]/Sqrt[2]], 2])/(135*d*Sqrt[c + d*x])

Rule 324

```
Int[Sqrt[x_]/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Dist[-2/(Sqrt[a]*(-b/a)^(3/4)), Subst[Int[Sqrt[1 - 2*x^2]/Sqrt[1 - x^2], x], x, Sqrt[1 - Sqrt[-b/a]*x]/Sqrt[2]], x] /; FreeQ[{a, b}, x] && GtQ[-b/a, 0] && GtQ[a, 0]
```

Rule 326

```
Int[Sqrt[(c_)*(x_)]/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[c*x]/Sqrt[x], Int[Sqrt[x]/Sqrt[a + b*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[-b/a, 0]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
```

```
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 435

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]/(Sqrt[c]*Rt[-d/c, 2]))*EllipticE[ArcSin[Rt[-d/c, 2]*x], b*(c/(a*d)
)], x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)^{7/2} \left(a+b\sin^{-1}(c+dx)\right) \, dx = \frac{\text{Subst}\left(\int (ex)^{7/2} \left(a+b\sin^{-1}(x)\right) \, dx, x, c+dx\right)}{d}$$

$$= \frac{2(e(c+dx))^{9/2} \left(a+b\sin^{-1}(c+dx)\right)}{9de} - \frac{(2b)\text{Subst}\left(\int \frac{(ex)^{9/2}}{\sqrt{1-x^2}} \, d\right.}{9de}$$

$$= \frac{4b(e(c+dx))^{7/2}\sqrt{1-(c+dx)^2}}{81d} + \frac{2(e(c+dx))^{9/2} \left(a+b\sin^{-1}(\right.}{9de}$$

$$= \frac{28be^2(e(c+dx))^{3/2}\sqrt{1-(c+dx)^2}}{405d} + \frac{4b(e(c+dx))^{7/2}\sqrt{1-(c}{81d}$$

$$= \frac{28be^2(e(c+dx))^{3/2}\sqrt{1-(c+dx)^2}}{405d} + \frac{4b(e(c+dx))^{7/2}\sqrt{1-(c}{81d}$$

$$= \frac{28be^2(e(c+dx))^{3/2}\sqrt{1-(c+dx)^2}}{405d} + \frac{4b(e(c+dx))^{7/2}\sqrt{1-(c}{81d}$$

$$= \frac{28be^2(e(c+dx))^{3/2}\sqrt{1-(c+dx)^2}}{405d} + \frac{4b(e(c+dx))^{7/2}\sqrt{1-(c}{81d}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 0.16, size = 115, normalized size = 0.74

$$\frac{2(e(c+dx))^{7/2} \left(45a(c+dx)^3 + 14b\sqrt{1-(c+dx)^2} + 10b(c+dx)^2\sqrt{1-(c+dx)^2} + 45b(c+dx)^3\text{ArcSin}(c+dx) - 14b\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};(c+dx)^2\right)\right)}{405d(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^(7/2)*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (2*(e*(c + d*x))^(7/2)*(45*a*(c + d*x)^3 + 14*b*Sqrt[1 - (c + d*x)^2] + 10*
b*(c + d*x)^2*Sqrt[1 - (c + d*x)^2] + 45*b*(c + d*x)^3*ArcSin[c + d*x] - 14
*b*Hypergeometric2F1[1/2, 3/4, 7/4, (c + d*x)^2]))/(405*d*(c + d*x)^2)
```

Maple [C] Result contains complex when optimal does not.
time = 0.38, size = 228, normalized size = 1.46

method	result

derivativedivides	$\frac{2(dex+ce)^{\frac{9}{2}}a}{9}+2b\left(\frac{(dex+ce)^{\frac{9}{2}}\arcsin\left(\frac{dex+ce}{e}\right)}{9}-\frac{2\left(-\frac{e^2(dex+ce)^{\frac{7}{2}}\sqrt{-\frac{(dex+ce)^2}{e^2}+1}}{9}-\frac{7e^4(dex+ce)^{\frac{3}{2}}\sqrt{-\frac{(dex+ce)}{e^2}}}{45}\right.}{}\right.$
default	$\frac{2(dex+ce)^{\frac{9}{2}}a}{9}+2b\left(\frac{(dex+ce)^{\frac{9}{2}}\arcsin\left(\frac{dex+ce}{e}\right)}{9}-\frac{2\left(-\frac{e^2(dex+ce)^{\frac{7}{2}}\sqrt{-\frac{(dex+ce)^2}{e^2}+1}}{9}-\frac{7e^4(dex+ce)^{\frac{3}{2}}\sqrt{-\frac{(dex+ce)}{e^2}}}{45}\right.}{}\right.$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^(7/2)*(a+b*arcsin(d*x+c)),x,method=_RETURNVERBOSE)
```

```
[Out] 2/d/e*(1/9*(d*e*x+c*e)^(9/2)*a+b*(1/9*(d*e*x+c*e)^(9/2)*arcsin((d*e*x+c*e)/
e)-2/9/e*(-1/9*e^2*(d*e*x+c*e)^(7/2)*(-(d*e*x+c*e)^2/e^2+1)^(1/2)-7/45*e^4*
(d*e*x+c*e)^(3/2)*(-(d*e*x+c*e)^2/e^2+1)^(1/2)-7/15*e^5/(1/e)^(1/2)*(1-(d*e
*x+c*e)/e)^(1/2)*(1+(d*e*x+c*e)/e)^(1/2)/(-(d*e*x+c*e)^2/e^2+1)^(1/2)*(Elli
pticF((d*e*x+c*e)^(1/2)*(1/e)^(1/2),I)-EllipticE((d*e*x+c*e)^(1/2)*(1/e)^(1
/2),I)))))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(7/2)*(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/9*(2*(b*d^4*x^4*e^3 + 4*b*c*d^3*x^3*e^3 + 6*b*c^2*d^2*x^2*e^3 + 4*b*c^3*d
*x*e^3 + b*c^4*e^3)*sqrt(d*x + c)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-
d*x - c + 1))*e^(1/2) + (2*a*e^(9/2*log(d*x + c) + 3) + 9*d*integrate(2/9*(
b*d^4*x^4*e^3 + 4*b*c*d^3*x^3*e^3 + 6*b*c^2*d^2*x^2*e^3 + 4*b*c^3*d*x*e^3 +
 b*c^4*e^3)*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)/(d^2*x^2 + 2
*c*d*x + c^2 - 1), x))*e^(1/2))/d
```

Fricas [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.68, size = 237, normalized size = 1.52

$$-\frac{2\left(42\sqrt{-d^3e}\,be^3\text{weierstrassZeta}\left(\frac{4}{d^2},0,\text{weierstrassPInverse}\left(\frac{4}{d^2},0,\frac{dx+c}{d}\right)\right)-\left(45\left(bd^5x^4+4\,bcd^4x^3+6\,bc^2d^3x^2+4\,bc^3d^2x+bc^4d\right)\arcsin\left(dx+c\right)e^3+2\left(5\,bd^4x^3+15\,bcd^3x^2+(15\,bc^2+7\,b)d^2x+(5\,bc^3+7\,bc)d\right)\sqrt{-d^2x^2-2\,cdx-c^2+1}\,e^3+45\left(ad^5x^4+4\,acd^4x^3+6\,ac^2d^3x^2+4\,ac^3d^2x+ac^4d\right)e^3\right)\sqrt{dx+c}\,e^{\frac{1}{2}}\right)}{405\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(7/2)*(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -2/405*(42*sqrt(-d^3*e)*b*e^3*weierstrassZeta(4/d^2, 0, weierstrassPInverse
(4/d^2, 0, (d*x + c)/d)) - (45*(b*d^5*x^4 + 4*b*c*d^4*x^3 + 6*b*c^2*d^3*x^2
 + 4*b*c^3*d^2*x + b*c^4*d)*arcsin(d*x + c)*e^3 + 2*(5*b*d^4*x^3 + 15*b*c*d
^3*x^2 + (15*b*c^2 + 7*b)*d^2*x + (5*b*c^3 + 7*b*c)*d)*sqrt(-d^2*x^2 - 2*c*
d*x - c^2 + 1)*e^3 + 45*(a*d^5*x^4 + 4*a*c*d^4*x^3 + 6*a*c^2*d^3*x^2 + 4*a*
c^3*d^2*x + a*c^4*d)*e^3)*sqrt(d*x + c)*e^(1/2))/d^2
```

Sympy [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: SystemError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**(7/2)*(a+b*asin(d*x+c)),x)
```

```
[Out] Exception raised: SystemError >> excessive stack use: stack is 3876 deep
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(7/2)*(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)^(7/2)*(b*arcsin(d*x + c) + a), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int (c\,e+d\,e\,x)^{7/2}\,\left(a+b\,\mathrm{asin}(c+d\,x)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^(7/2)*(a + b*asin(c + d*x)),x)
```

```
[Out] int((c*e + d*e*x)^(7/2)*(a + b*asin(c + d*x)), x)
```

3.282 $\int (ce+dex)^{5/2}(a+b\mathbf{ArcSin}(c+dx))\,dx$

Optimal. Leaf size=136

$$\frac{20be^2\sqrt{e(c+dx)}\sqrt{1-(c+dx)^2}}{147d}+\frac{4b(e(c+dx))^{5/2}\sqrt{1-(c+dx)^2}}{49d}+\frac{2(e(c+dx))^{7/2}(a+b\text{ArcSin}(c+d$$

```
[Out] 2/7*(e*(d*x+c))^(7/2)*(a+b*arcsin(d*x+c))/d/e-20/147*b*e^(5/2)*EllipticF((e
*(d*x+c))^(1/2)/e^(1/2),I)/d+4/49*b*(e*(d*x+c))^(5/2)*(1-(d*x+c)^2)^(1/2)/d
+20/147*b*e^2*(e*(d*x+c))^(1/2)*(1-(d*x+c)^2)^(1/2)/d
```

Rubi [A]
time = 0.08, antiderivative size = 136, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {4889, 4723, 327, 335, 227}

$$\frac{2(e(c+dx))^{7/2}(a+b\text{ArcSin}(c+dx))}{7de}-\frac{20be^{5/2}F\left(\text{ArcSin}\left(\frac{\sqrt{e(c+dx)}}{\sqrt{e}}\right)\middle|-1\right)}{147d}+\frac{20be^2\sqrt{1-(c+dx)^2}\sqrt{e(c+dx)}}{147d}+\frac{4b\sqrt{1-(c+dx)^2}(e(c+dx))^{5/2}}{49d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^(5/2)*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (20*b*e^2*Sqrt[e*(c + d*x)]*Sqrt[1 - (c + d*x)^2])/(147*d) + (4*b*(e*(c + d
*x))^(5/2)*Sqrt[1 - (c + d*x)^2])/(49*d) + (2*(e*(c + d*x))^(7/2)*(a + b*Ar
cSin[c + d*x]))/(7*d*e) - (20*b*e^(5/2)*EllipticF[ArcSin[Sqrt[e*(c + d*x)]/
Sqrt[e]], -1])/(147*d)
```

Rule 227

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[Rt[-b,
4]*(x/Rt[a, 4])], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
b/a] && GtQ[a, 0]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 335

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + b*(x^(k*n)/c^n
))^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
```

```
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)^{5/2}\left(a+b\sin^{-1}(c+dx)\right)\,dx=\frac{\text{Subst}\left(\int (ex)^{5/2}\left(a+b\sin^{-1}(x)\right)\,dx,x,c+dx\right)}{d}$$

$$=\frac{2(e(c+dx))^{7/2}\left(a+b\sin^{-1}(c+dx)\right)}{7de}-\frac{(2b)\text{Subst}\left(\int\frac{(ex)^{7/2}}{\sqrt{1-x^2}}\,d\right.}{7de}$$

$$=\frac{4b(e(c+dx))^{5/2}\sqrt{1-(c+dx)^2}}{49d}+\frac{2(e(c+dx))^{7/2}\left(a+b\sin^{-1}(c\right.}{7de}$$

$$=\frac{20be^2\sqrt{e(c+dx)}\,\sqrt{1-(c+dx)^2}}{147d}+\frac{4b(e(c+dx))^{5/2}\sqrt{1-(c+}}{49d}$$

$$=\frac{20be^2\sqrt{e(c+dx)}\,\sqrt{1-(c+dx)^2}}{147d}+\frac{4b(e(c+dx))^{5/2}\sqrt{1-(c+}}{49d}$$

$$=\frac{20be^2\sqrt{e(c+dx)}\,\sqrt{1-(c+dx)^2}}{147d}+\frac{4b(e(c+dx))^{5/2}\sqrt{1-(c+}}{49d}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 0.12, size = 115, normalized size = 0.85

$$\frac{2(e(c+dx))^{5/2}\left(21a(c+dx)^3+10b\sqrt{1-(c+dx)^2}+6b(c+dx)^2\sqrt{1-(c+dx)^2}+21b(c+dx)^3\text{ArcSin}(c+dx)-10b\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};(c+dx)^2\right)\right)}{147d(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^(5/2)*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (2*(e*(c + d*x))^(5/2)*(21*a*(c + d*x)^3 + 10*b*Sqrt[1 - (c + d*x)^2] + 6*b
*(c + d*x)^2*Sqrt[1 - (c + d*x)^2] + 21*b*(c + d*x)^3*ArcSin[c + d*x] - 10*
b*Hypergeometric2F1[1/4, 1/2, 5/4, (c + d*x)^2]))/(147*d*(c + d*x)^2)
```

Maple [A]
time = 0.12, size = 206, normalized size = 1.51

method	result
derivativedivides	$\frac{\frac{2(dex+ce)^{\frac{7}{2}} a}{7}+2b\left(\frac{(dex+ce)^{\frac{7}{2}}\arcsin\left(\frac{dex+ce}{e}\right)}{7}-\frac{2\left(-\frac{e^{2}(dex+ce)^{\frac{5}{2}}\sqrt{-\frac{(dex+ce)^{2}}{e^{2}}+1}}{7}-\frac{5e^{4}\sqrt{dex+ce}\,\sqrt{-\frac{(de}{}}}{21}\right.}{}\right.}{de}$
default	$\frac{\frac{2(dex+ce)^{\frac{7}{2}} a}{7}+2b\left(\frac{(dex+ce)^{\frac{7}{2}}\arcsin\left(\frac{dex+ce}{e}\right)}{7}-\frac{2\left(-\frac{e^{2}(dex+ce)^{\frac{5}{2}}\sqrt{-\frac{(dex+ce)^{2}}{e^{2}}+1}}{7}-\frac{5e^{4}\sqrt{dex+ce}\,\sqrt{-\frac{(de}{}}}{21}\right.}{}\right.}{de}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^(5/2)*(a+b*arcsin(d*x+c)),x,method=_RETURNVERBOSE)
```

```
[Out] 2/d/e*(1/7*(d*e*x+c*e)^(7/2)*a+b*(1/7*(d*e*x+c*e)^(7/2)*arcsin((d*e*x+c*e)/
e)-2/7/e*(-1/7*e^2*(d*e*x+c*e)^(5/2)*(-(d*e*x+c*e)^2/e^2+1)^(1/2)-5/21*e^4*
(d*e*x+c*e)^(1/2)*(-(d*e*x+c*e)^2/e^2+1)^(1/2)+5/21*e^4/(1/e)^(1/2)*(1-(d*e
*x+c*e)/e)^(1/2)*(1+(d*e*x+c*e)/e)^(1/2)/(-(d*e*x+c*e)^2/e^2+1)^(1/2)*Ellip
ticF((d*e*x+c*e)^(1/2)*(1/e)^(1/2),I))))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(5/2)*(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/7*(2*(b*d^3*x^3*e^2 + 3*b*c*d^2*x^2*e^2 + 3*b*c^2*d*x*e^2 + b*c^3*e^2)*sq
rt(d*x + c)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))*e^(1/2)
+ (2*a*e^(7/2*log(d*x + c) + 2) + 7*d*integrate(2/7*(b*d^3*x^3*e^2 + 3*b*c*
d^2*x^2*e^2 + 3*b*c^2*d*x*e^2 + b*c^3*e^2)*sqrt(d*x + c + 1)*sqrt(d*x + c)*
sqrt(-d*x - c + 1)/(d^2*x^2 + 2*c*d*x + c^2 - 1), x))*e^(1/2))/d
```

Fricas [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.57, size = 193, normalized size = 1.42

$$\frac{2\left(10\sqrt{-d^3e}\,be^2\mathrm{weierstrassPInverse}\left(\frac{4}{d^2},0,\frac{dx+c}{d}\right)+\left(21\left(bd^5x^3+3\,bcd^4x^2+3\,bc^2d^3x+bc^3d^2\right)\arcsin\left(dx+c\right)e^2+2\left(3\,bd^4x^2+6\,bcd^3x+\left(3\,bc^2+5\,b\right)d^2\right)\sqrt{-d^2x^2-2\,cdx-c^2+1}\,e^2+21\left(ad^5x^3+3\,acd^4x^2+3\,ac^2d^3x+ac^3d^2\right)e^2\right)\sqrt{dx+c}\,e^{\frac{1}{2}}\right)}{147\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(5/2)*(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 2/147*(10*sqrt(-d^3*e)*b*e^2*weierstrassPInverse(4/d^2, 0, (d*x + c)/d) + (
21*(b*d^5*x^3 + 3*b*c*d^4*x^2 + 3*b*c^2*d^3*x + b*c^3*d^2)*arcsin(d*x + c)*
e^2 + 2*(3*b*d^4*x^2 + 6*b*c*d^3*x + (3*b*c^2 + 5*b)*d^2)*sqrt(-d^2*x^2 - 2
*c*d*x - c^2 + 1)*e^2 + 21*(a*d^5*x^3 + 3*a*c*d^4*x^2 + 3*a*c^2*d^3*x + a*c
^3*d^2)*e^2)*sqrt(d*x + c)*e^(1/2))/d^3
```

Sympy [A]
time = 78.29, size = 163, normalized size = 1.20

$$ac^2e^2\left(\begin{cases}x\sqrt{ce} & \text{for}\ d=0\\0 & \text{for}\ e=0\\\frac{2(ce+dex)^{\frac{3}{2}}}{3de} & \text{otherwise}\end{cases}\right)-\frac{2ac^2e(ce+dex)^{\frac{3}{2}}}{3d}+\frac{2a(ce+dex)^{\frac{7}{2}}}{7de}+\frac{2b(ce+dex)^{\frac{7}{2}}\,\mathrm{asin}\,(c+dx)}{7de}-\frac{b(ce+dex)^{\frac{9}{2}}\,\Gamma\left(\frac{9}{4}\right)\,{}_2F_1\left(\begin{matrix}\frac{1}{2},\frac{9}{4}\\\frac{13}{4}\end{matrix}\middle|\frac{(ce+dex)^2e^{2i\pi}}{e^2}\right)}{7de^2\Gamma\left(\frac{13}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**(5/2)*(a+b*asin(d*x+c)),x)
```

```
[Out] a*c**2*e**2*Piecewise((x*sqrt(c*e), Eq(d, 0)), (0, Eq(e, 0)), (2*(c*e + d*e
*x)**(3/2)/(3*d*e), True)) - 2*a*c**2*e*(c*e + d*e*x)**(3/2)/(3*d) + 2*a*(c
*e + d*e*x)**(7/2)/(7*d*e) + 2*b*(c*e + d*e*x)**(7/2)*asin(c + d*x)/(7*d*e)
 - b*(c*e + d*e*x)**(9/2)*gamma(9/4)*hyper((1/2, 9/4), (13/4,), (c*e + d*e*
x)**2*exp_polar(2*I*pi)/e**2)/(7*d*e**2*gamma(13/4))
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(5/2)*(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)^(5/2)*(b*arcsin(d*x + c) + a), x)
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.01

$$\int (c\,e+d\,e\,x)^{5/2}\,\left(a+b\,\mathrm{asin}(c+d\,x)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^(5/2)*(a + b*asin(c + d*x)),x)
[Out] int((c*e + d*e*x)^(5/2)*(a + b*asin(c + d*x)), x)
```

3.283 $\int (ce+dex)^{3/2}(a+b\text{ArcSin}(c+dx))\,dx$

Optimal. Leaf size=117

$$\frac{4b(e(c+dx))^{3/2}\sqrt{1-(c+dx)^2}}{25d}+\frac{2(e(c+dx))^{5/2}(a+b\text{ArcSin}(c+dx))}{5de}+\frac{12be\sqrt{e(c+dx)}\,E\left(\text{ArcSin}\left(\sqrt{1\right.\right.}}{25d\sqrt{c+dx}}$$

```
[Out] 2/5*(e*(d*x+c))^(5/2)*(a+b*arcsin(d*x+c))/d/e+12/25*b*e*EllipticE(1/2*(-d*x
-c+1)^(1/2)*2^(1/2),2^(1/2))*(e*(d*x+c))^(1/2)/d/(d*x+c)^(1/2)+4/25*b*(e*(d
*x+c))^(3/2)*(1-(d*x+c)^2)^(1/2)/d
```

Rubi [A]
time = 0.07, antiderivative size = 117, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.261$, Rules used = {4889, 4723, 327, 326, 324, 435}

$$\frac{2(e(c+dx))^{5/2}(a+b\text{ArcSin}(c+dx))}{5de}+\frac{12be\sqrt{e(c+dx)}\,E\left(\text{ArcSin}\left(\frac{\sqrt{-c-dx+1}}{\sqrt{2}}\right)\middle|2\right)}{25d\sqrt{c+dx}}+\frac{4b\sqrt{1-(c+dx)^2}\,(e(c+dx))^{3/2}}{25d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^(3/2)*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (4*b*(e*(c + d*x))^(3/2)*Sqrt[1 - (c + d*x)^2])/(25*d) + (2*(e*(c + d*x))^(
5/2)*(a + b*ArcSin[c + d*x]))/(5*d*e) + (12*b*e*Sqrt[e*(c + d*x)]*EllipticE
[ArcSin[Sqrt[1 - c - d*x]/Sqrt[2]], 2])/(25*d*Sqrt[c + d*x])
```

Rule 324

```
Int[Sqrt[x_]/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Dist[-2/(Sqrt[a]*(-b/a
)^(3/4)), Subst[Int[Sqrt[1 - 2*x^2]/Sqrt[1 - x^2], x], x, Sqrt[1 - Sqrt[-b/
a]*x]/Sqrt[2]], x] /; FreeQ[{a, b}, x] && GtQ[-b/a, 0] && GtQ[a, 0]
```

Rule 326

```
Int[Sqrt[(c_)*(x_)]/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[c*x]/
Sqrt[x], Int[Sqrt[x]/Sqrt[a + b*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[
-b/a, 0]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 435

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]/(Sqrt[c]*Rt[-d/c, 2]))*EllipticE[ArcSin[Rt[-d/c, 2]*x], b*(c/(a*d)
)], x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)^{3/2}\left(a+b\sin^{-1}(c+dx)\right)\,dx=\frac{\text{Subst}\left(\int (ex)^{3/2}\left(a+b\sin^{-1}(x)\right)\,dx,x,c+dx\right)}{d}$$

$$=\frac{2(e(c+dx))^{5/2}\left(a+b\sin^{-1}(c+dx)\right)}{5de}-\frac{(2b)\text{Subst}\left(\int \frac{(ex)^{5/2}}{\sqrt{1-x^2}}\right.}{5de}$$

$$=\frac{4b(e(c+dx))^{3/2}\sqrt{1-(c+dx)^2}}{25d}+\frac{2(e(c+dx))^{5/2}\left(a+b\sin^{-1}\right.}{5de}$$

$$=\frac{4b(e(c+dx))^{3/2}\sqrt{1-(c+dx)^2}}{25d}+\frac{2(e(c+dx))^{5/2}\left(a+b\sin^{-1}\right.}{5de}$$

$$=\frac{4b(e(c+dx))^{3/2}\sqrt{1-(c+dx)^2}}{25d}+\frac{2(e(c+dx))^{5/2}\left(a+b\sin^{-1}\right.}{5de}$$

$$=\frac{4b(e(c+dx))^{3/2}\sqrt{1-(c+dx)^2}}{25d}+\frac{2(e(c+dx))^{5/2}\left(a+b\sin^{-1}\right.}{5de}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.

time = 0.03, size = 87, normalized size = 0.74

$$\frac{2(e(c+dx))^{3/2}\left(5ac+5adx+2b\sqrt{1-(c+dx)^2}+5bc\text{ArcSin}(c+dx)+5bdx\text{ArcSin}(c+dx)-2b\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};(c+dx)^2\right)\right)}{25d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^(3/2)*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (2*(e*(c + d*x))^(3/2)*(5*a*c + 5*a*d*x + 2*b*Sqrt[1 - (c + d*x)^2] + 5*b*c
*ArcSin[c + d*x] + 5*b*d*x*ArcSin[c + d*x] - 2*b*Hypergeometric2F1[1/2, 3/4
, 7/4, (c + d*x)^2]))/(25*d)
```

Maple [C] Result contains complex when optimal does not.
time = 0.13, size = 194, normalized size = 1.66

method	result
derivativedivides	$\frac{\frac{2(dex+ce)^{\frac{5}{2}}a}{5}+2b\left(\frac{(dex+ce)^{\frac{5}{2}}\arcsin\left(\frac{dex+ce}{e}\right)}{5}-\frac{2\left(-\frac{e^2(dex+ce)^{\frac{3}{2}}\sqrt{-\frac{(dex+ce)^2}{e^2}+1}}{5}-\frac{3e^3\sqrt{1-\frac{dex+ce}{e}}\sqrt{1+\cdots}}{\cdots}\right.}{\cdots}\right.}{de}$
default	$\frac{\frac{2(dex+ce)^{\frac{5}{2}}a}{5}+2b\left(\frac{(dex+ce)^{\frac{5}{2}}\arcsin\left(\frac{dex+ce}{e}\right)}{5}-\frac{2\left(-\frac{e^2(dex+ce)^{\frac{3}{2}}\sqrt{-\frac{(dex+ce)^2}{e^2}+1}}{5}-\frac{3e^3\sqrt{1-\frac{dex+ce}{e}}\sqrt{1+\cdots}}{\cdots}\right.}{\cdots}\right.}{de}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^(3/2)*(a+b*arcsin(d*x+c)),x,method=_RETURNVERBOSE)
```

```
[Out] 2/d/e*(1/5*(d*e*x+c*e)^(5/2)*a+b*(1/5*(d*e*x+c*e)^(5/2)*arcsin((d*e*x+c*e)/
e)-2/5/e*(-1/5*e^2*(d*e*x+c*e)^(3/2)*(-(d*e*x+c*e)^2/e^2+1)^(1/2)-3/5*e^3/(
1/e)^(1/2)*(1-(d*e*x+c*e)/e)^(1/2)*(1+(d*e*x+c*e)/e)^(1/2)/(-(d*e*x+c*e)^2/
e^2+1)^(1/2)*(EllipticF((d*e*x+c*e)^(1/2)*(1/e)^(1/2),I)-EllipticE((d*e*x+c
*e)^(1/2)*(1/e)^(1/2),I)))))
```

Maple [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(3/2)*(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/5*(2*(b*d^2*x^2*e + 2*b*c*d*x*e + b*c^2*e)*sqrt(d*x + c)*arctan2(d*x + c,
 sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))*e^(1/2) + (2*a*e^(5/2*log(d*x + c) +
 1) + 5*d*integrate(2/5*(b*d^2*x^2*e + 2*b*c*d*x*e + b*c^2*e)*sqrt(d*x + c
+ 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)/(d^2*x^2 + 2*c*d*x + c^2 - 1), x))*e^
(1/2))/d
```

Fricas [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.56, size = 152, normalized size = 1.30

$$-\frac{2\left(6\sqrt{-d^3e}\,b e \mathrm{weierstrassZeta}\left(\frac{4}{d^2},0,\mathrm{weierstrassPInverse}\left(\frac{4}{d^2},0,\frac{dx+c}{d}\right)\right)-\left(5\left(bd^3x^2+2\,bcd^2x+bc^2d\right)\arcsin\left(dx+c\right)e+2\left(bd^2x+bcd\right)\sqrt{-d^2x^2-2\,cdx-c^2+1}\,e+5\left(ad^3x^2+2\,acd^2x+ac^2d\right)e\right)\sqrt{dx+c}\,e^{\frac{1}{2}}\right)}{25\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(3/2)*(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -2/25*(6*sqrt(-d^3*e)*b*e*weierstrassZeta(4/d^2, 0, weierstrassPInverse(4/d
^2, 0, (d*x + c)/d)) - (5*(b*d^3*x^2 + 2*b*c*d^2*x + b*c^2*d)*arcsin(d*x +
c)*e + 2*(b*d^2*x + b*c*d)*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*e + 5*(a*d^3*
x^2 + 2*a*c*d^2*x + a*c^2*d)*e)*sqrt(d*x + c)*e^(1/2))/d^2
```

Sympy [A]
time = 10.80, size = 156, normalized size = 1.33

$$ace\left(\begin{cases} x\sqrt{ce} & \text{for}\ d=0 \\ 0 & \text{for}\ e=0 \\ \frac{2(ce+dex)^{\frac{3}{2}}}{3de} & \text{otherwise} \end{cases}\right)-\frac{2ac(ce+dex)^{\frac{3}{2}}}{3d}+\frac{2a(ce+dex)^{\frac{5}{2}}}{5de}+\frac{2b(ce+dex)^{\frac{5}{2}}\operatorname{asin}\left(c+dx\right)}{5de}-\frac{b(ce+dex)^{\frac{7}{2}}\,\Gamma\left(\frac{7}{4}\right)\,{}_{2}F_{1}\left(\begin{matrix}\frac{1}{2},\frac{7}{4}\\\frac{11}{4}\end{matrix}\middle|\,\frac{(ce+dex)^2e^{2i\pi}}{e^2}\right)}{5de^2\Gamma\left(\frac{11}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**(3/2)*(a+b*asin(d*x+c)),x)
```

```
[Out] a*c*e*Piecewise((x*sqrt(c*e), Eq(d, 0)), (0, Eq(e, 0)), (2*(c*e + d*e*x)**(
3/2)/(3*d*e), True)) - 2*a*c*(c*e + d*e*x)**(3/2)/(3*d) + 2*a*(c*e + d*e*x)
**(5/2)/(5*d*e) + 2*b*(c*e + d*e*x)**(5/2)*asin(c + d*x)/(5*d*e) - b*(c*e +
 d*e*x)**(7/2)*gamma(7/4)*hyper((1/2, 7/4), (11/4,), (c*e + d*e*x)**2*exp_p
olar(2*I*pi)/e**2)/(5*d*e**2*gamma(11/4))
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(3/2)*(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)^(3/2)*(b*arcsin(d*x + c) + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int (c\,e+d\,e\,x)^{3/2}\,(a+b\,\mathrm{asin}(c+d\,x))\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^(3/2)*(a + b*asin(c + d*x)),x)
[Out] int((c*e + d*e*x)^(3/2)*(a + b*asin(c + d*x)), x)
```

3.284 $\int \sqrt{ce+dex}\,(a+b\mathbf{ArcSin}(c+dx))\,dx$

Optimal. Leaf size=99

$$\frac{4b\sqrt{e(c+dx)}\,\sqrt{1-(c+dx)^2}}{9d}+\frac{2(e(c+dx))^{3/2}(a+b\text{ArcSin}(c+dx))}{3de}-\frac{4b\sqrt{e}\,F\left(\text{ArcSin}\left(\frac{\sqrt{e(c+dx)}}{\sqrt{e}}\right)\right.}{9d}$$

```
[Out] 2/3*(e*(d*x+c))^(3/2)*(a+b*arcsin(d*x+c))/d/e-4/9*b*EllipticF((e*(d*x+c))^(
1/2)/e^(1/2),I)*e^(1/2)/d+4/9*b*(e*(d*x+c))^(1/2)*(1-(d*x+c)^2)^(1/2)/d
```

Rubi [A]
time = 0.06, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {4889, 4723, 327, 335, 227}

$$\frac{2(e(c+dx))^{3/2}(a+b\text{ArcSin}(c+dx))}{3de}-\frac{4b\sqrt{e}\,F\left(\text{ArcSin}\left(\frac{\sqrt{e(c+dx)}}{\sqrt{e}}\right)\middle|-1\right)}{9d}+\frac{4b\sqrt{1-(c+dx)^2}\,\sqrt{e(c+dx)}}{9d}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[c*e + d*e*x]*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (4*b*Sqrt[e*(c + d*x)]*Sqrt[1 - (c + d*x)^2])/(9*d) + (2*(e*(c + d*x))^(3/2
)*(a + b*ArcSin[c + d*x]))/(3*d*e) - (4*b*Sqrt[e]*EllipticF[ArcSin[Sqrt[e*(
c + d*x)]/Sqrt[e]], -1])/(9*d)
```

Rule 227

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[Rt[-b,
4]*(x/Rt[a, 4])], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
b/a] && GtQ[a, 0]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 335

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + b*(x^(k*n)/c^n
))^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \sqrt{ce+dex}\left(a+b\sin^{-1}(c+dx)\right)\,dx=\frac{\text{Subst}\left(\int \sqrt{ex}\left(a+b\sin^{-1}(x)\right)\,dx,x,c+dx\right)}{d}$$

$$=\frac{2(e(c+dx))^{3/2}\left(a+b\sin^{-1}(c+dx)\right)}{3de}-\frac{(2b)\text{Subst}\left(\int \frac{(ex)^{3/2}}{\sqrt{1-x^2}}\,dx\right.}{3de}$$

$$=\frac{4b\sqrt{e(c+dx)}\sqrt{1-(c+dx)^2}}{9d}+\frac{2(e(c+dx))^{3/2}\left(a+b\sin^{-1}(c+\right.}{3de}$$

$$=\frac{4b\sqrt{e(c+dx)}\sqrt{1-(c+dx)^2}}{9d}+\frac{2(e(c+dx))^{3/2}\left(a+b\sin^{-1}(c+\right.}{3de}$$

$$=\frac{4b\sqrt{e(c+dx)}\sqrt{1-(c+dx)^2}}{9d}+\frac{2(e(c+dx))^{3/2}\left(a+b\sin^{-1}(c+\right.}{3de}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 0.02, size = 87, normalized size = 0.88

$$\frac{2\sqrt{e(c+dx)}\left(3ac+3adx+2b\sqrt{1-(c+dx)^2}+3bc\text{ArcSin}(c+dx)+3bdx\text{ArcSin}(c+dx)-2b\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};(c+dx)^2\right)\right)}{9d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[c*e + d*e*x]*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] (2*Sqrt[e*(c + d*x)]*(3*a*c + 3*a*d*x + 2*b*Sqrt[1 - (c + d*x)^2] + 3*b*c*A
rcSin[c + d*x] + 3*b*d*x*ArcSin[c + d*x] - 2*b*Hypergeometric2F1[1/4, 1/2,
5/4, (c + d*x)^2]))/(9*d)
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 171 vs. $2(81) = 162$.
time = 0.14, size = 172, normalized size = 1.74

method	result
derivativedivides	$\frac{\frac{2(dex+ce)^{\frac{3}{2}}a}{3}+2b\left(\frac{(dex+ce)^{\frac{3}{2}}\arcsin\left(\frac{dex+ce}{e}\right)}{3}-\frac{2\left(-\frac{e^2\sqrt{dex+ce}\,\sqrt{-\frac{(dex+ce)^2}{e^2}+1}}{3}+\frac{e^2\sqrt{1-\frac{dex+ce}{e}}\ \cdots}{3\cdots}\right.}{3e}\right.}{de}$
default	$\frac{\frac{2(dex+ce)^{\frac{3}{2}}a}{3}+2b\left(\frac{(dex+ce)^{\frac{3}{2}}\arcsin\left(\frac{dex+ce}{e}\right)}{3}-\frac{2\left(-\frac{e^2\sqrt{dex+ce}\,\sqrt{-\frac{(dex+ce)^2}{e^2}+1}}{3}+\frac{e^2\sqrt{1-\frac{dex+ce}{e}}\ \cdots}{3\cdots}\right.}{3e}\right.}{de}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c)),x,method=_RETURNVERBOSE)
```

```
[Out] 2/d/e*(1/3*(d*e*x+c*e)^(3/2)*a+b*(1/3*(d*e*x+c*e)^(3/2)*arcsin((d*e*x+c*e)/
e)-2/3/e*(-1/3*e^2*(d*e*x+c*e)^(1/2)*(-(d*e*x+c*e)^2/e^2+1)^(1/2)+1/3*e^2/(
1/e)^(1/2)*(1-(d*e*x+c*e)/e)^(1/2)*(1+(d*e*x+c*e)/e)^(1/2)/(-(d*e*x+c*e)^2/
e^2+1)^(1/2)*EllipticF((d*e*x+c*e)^(1/2)*(1/e)^(1/2),I))))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/3*(2*(b*d*x + b*c)*sqrt(d*x + c)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(
-d*x - c + 1))*e^(1/2) + (2*(d*x + c)^(3/2)*a + 3*d*integrate(2/3*(b*d*x +
b*c)*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)/(d^2*x^2 + 2*c*d*x
+ c^2 - 1), x))*e^(1/2))/d
```

Fricas [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.89, size = 108, normalized size = 1.09

$$\frac{2\left(\left(3\,ad^3x+3\,acd^2+2\,\sqrt{-d^2x^2-2\,cdx-c^2+1}\,bd^2+3\,(bd^3x+bcd^2)\arcsin\left(dx+c\right)\right)\sqrt{dx+c}\,e^{\frac{1}{2}}+2\,\sqrt{-d^3e}\,b\mathrm{weierstrassPInverse}\left(\frac{4}{d^2},0,\frac{dx+c}{d}\right)\right)}{9\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 2/9*((3*a*d^3*x + 3*a*c*d^2 + 2*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1)*b*d^2 +
3*(b*d^3*x + b*c*d^2)*arcsin(d*x + c))*sqrt(d*x + c)*e^(1/2) + 2*sqrt(-d^3*
e)*b*weierstrassPInverse(4/d^2, 0, (d*x + c)/d))/d^3
```

Sympy [A]
time = 1.34, size = 104, normalized size = 1.05

$$\frac{2a(ce+dex)^{\frac{3}{2}}}{3de}+\frac{2b(ce+dex)^{\frac{3}{2}}\operatorname{asin}\left(c+dx\right)}{3de}-\frac{b(ce+dex)^{\frac{5}{2}}\,\Gamma\left(\frac{5}{4}\right)\,{}_{2}F_{1}\left(\begin{matrix}\frac{1}{2},\frac{5}{4}\\\frac{9}{4}\end{matrix}\middle|\frac{(ce+dex)^2e^{2i\pi}}{e^2}\right)}{3de^2\Gamma\left(\frac{9}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**(1/2)*(a+b*asin(d*x+c)),x)
```

```
[Out] 2*a*(c*e + d*e*x)**(3/2)/(3*d*e) + 2*b*(c*e + d*e*x)**(3/2)*asin(c + d*x)/(
3*d*e) - b*(c*e + d*e*x)**(5/2)*gamma(5/4)*hyper((1/2, 5/4), (9/4,), (c*e +
 d*e*x)**2*exp_polar(2*I*pi)/e**2)/(3*d*e**2*gamma(9/4))
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*e*x + c*e)*(b*arcsin(d*x + c) + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{c\,e+d\,e\,x}\,\left(a+b\,\mathrm{asin}(c+d\,x)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^(1/2)*(a + b*asin(c + d*x)),x)
```

```
[Out] int((c*e + d*e*x)^(1/2)*(a + b*asin(c + d*x)), x)
```

3.285 $\int \frac{a+b\mathbf{ArcSin}(c+dx)}{\sqrt{ce+dex}}\,dx$

Optimal. Leaf size=81

$$\frac{2\sqrt{e(c+dx)}\,(a+b\text{ArcSin}(c+dx))}{de}+\frac{4b\sqrt{e(c+dx)}\,E\left(\text{ArcSin}\left(\frac{\sqrt{1-c-dx}}{\sqrt{2}}\right)\middle|2\right)}{de\sqrt{c+dx}}$$

```
[Out] 2*(a+b*arcsin(d*x+c))*(e*(d*x+c))^(1/2)/d/e+4*b*EllipticE(1/2*(-d*x-c+1)^(1
/2)*2^(1/2),2^(1/2))*(e*(d*x+c))^(1/2)/d/e/(d*x+c)^(1/2)
```

Rubi [A]
time = 0.06, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {4889, 4723, 326, 324, 435}

$$\frac{2\sqrt{e(c+dx)}\,(a+b\text{ArcSin}(c+dx))}{de}+\frac{4b\sqrt{e(c+dx)}\,E\left(\text{ArcSin}\left(\frac{\sqrt{-c-dx+1}}{\sqrt{2}}\right)\middle|2\right)}{de\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])/Sqrt[c*e + d*e*x],x]
```

```
[Out] (2*Sqrt[e*(c + d*x)]*(a + b*ArcSin[c + d*x]))/(d*e) + (4*b*Sqrt[e*(c + d*x)
]*EllipticE[ArcSin[Sqrt[1 - c - d*x]/Sqrt[2]], 2])/(d*e*Sqrt[c + d*x])
```

Rule 324

```
Int[Sqrt[x_]/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Dist[-2/(Sqrt[a]*(-b/a
)^(3/4)), Subst[Int[Sqrt[1 - 2*x^2]/Sqrt[1 - x^2], x], x, Sqrt[1 - Sqrt[-b/
a]*x]/Sqrt[2]], x] /; FreeQ[{a, b}, x] && GtQ[-b/a, 0] && GtQ[a, 0]
```

Rule 326

```
Int[Sqrt[(c_)*(x_)]/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[c*x]/
Sqrt[x], Int[Sqrt[x]/Sqrt[a + b*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[
-b/a, 0]
```

Rule 435

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]/(Sqrt[c]*Rt[-d/c, 2]))*EllipticE[ArcSin[Rt[-d/c, 2]*x], b*(c/(a*d)
)], x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(c+dx)}{\sqrt{ce+dex}}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{\sqrt{ex}}\,dx,x,c+dx\right)}{d}$$

$$= \frac{2\sqrt{e(c+dx)}\,(a+b\sin^{-1}(c+dx))}{de} - \frac{(2b)\text{Subst}\left(\int \frac{\sqrt{ex}}{\sqrt{1-x^2}}\,dx,x,c+dx\right)}{de}$$

$$= \frac{2\sqrt{e(c+dx)}\,(a+b\sin^{-1}(c+dx))}{de} - \frac{\left(2b\sqrt{e(c+dx)}\right)\text{Subst}\left(\int \frac{\sqrt{x}}{\sqrt{1-x^2}}\,dx,\right.}{de\sqrt{c+dx}}$$

$$= \frac{2\sqrt{e(c+dx)}\,(a+b\sin^{-1}(c+dx))}{de} + \frac{\left(4b\sqrt{e(c+dx)}\right)\text{Subst}\left(\int \frac{\sqrt{1-2x^2}}{\sqrt{1-x^2}}\,dx\right.}{de\sqrt{c+dx}}$$

$$= \frac{2\sqrt{e(c+dx)}\,(a+b\sin^{-1}(c+dx))}{de} + \frac{4b\sqrt{e(c+dx)}\,E\left(\sin^{-1}\left(\frac{\sqrt{1-c-dx}}{\sqrt{2}}\right)\right.}{de\sqrt{c+dx}}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 0.02, size = 59, normalized size = 0.73

$$-\frac{2\sqrt{e(c+dx)}\,\left(-3(a+b\text{ArcSin}(c+dx))+2b(c+dx)\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};(c+dx)^2\right)\right)}{3de}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])/Sqrt[c*e + d*e*x],x]
```

```
[Out] (-2*Sqrt[e*(c + d*x)]*(-3*(a + b*ArcSin[c + d*x]) + 2*b*(c + d*x)*Hypergeom
etric2F1[1/2, 3/4, 7/4, (c + d*x)^2]))/(3*d*e)
```

Maple [C] Result contains complex when optimal does not.
time = 0.12, size = 149, normalized size = 1.84

method	result
derivativedivides	$\frac{2\sqrt{dex+ce}\, a+2b\left(\sqrt{dex+ce}\, \arcsin\left(\frac{dex+ce}{e}\right)+\frac{2\sqrt{1-\frac{dex+ce}{e}}\, \sqrt{1+\frac{dex+ce}{e}}\, \left(\text{EllipticF}\left(\sqrt{dex\right.\right.}}{\sqrt{\frac{1}{e}}\, \sqrt{-\frac{(dex}{}}}\right.}{de}$
default	$\frac{2\sqrt{dex+ce}\, a+2b\left(\sqrt{dex+ce}\, \arcsin\left(\frac{dex+ce}{e}\right)+\frac{2\sqrt{1-\frac{dex+ce}{e}}\, \sqrt{1+\frac{dex+ce}{e}}\, \left(\text{EllipticF}\left(\sqrt{dex\right.\right.}}{\sqrt{\frac{1}{e}}\, \sqrt{-\frac{(dex}{}}}\right.}{de}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(1/2),x,method=_RETURNVERBOSE)
```

```
[Out] 2/d/e*((d*e*x+c*e)^(1/2)*a+b*((d*e*x+c*e)^(1/2)*arcsin((d*e*x+c*e)/e)+2/(1/
e)^(1/2)*(1-(d*e*x+c*e)/e)^(1/2)*(1+(d*e*x+c*e)/e)^(1/2)/(-(d*e*x+c*e)^2/e^
2+1)^(1/2)*(EllipticF((d*e*x+c*e)^(1/2)*(1/e)^(1/2),I)-EllipticE((d*e*x+c*e
)^(1/2)*(1/e)^(1/2),I))))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(1/2),x, algorithm="maxima")
```

```
[Out] 2*(b*d*e*integrate(sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)/(d^2*
x^2*e + 2*c*d*x*e + c^2*e - e), x) + sqrt(d*x + c)*b*arctan2(d*x + c, sqrt(
d*x + c + 1)*sqrt(-d*x - c + 1)) + sqrt(d*x + c)*a)*e^(-1/2)/d
```

Fricas [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.85, size = 66, normalized size = 0.81

$$\frac{2\left(\left(bd\arcsin\left(dx+c\right)+ad\right)\sqrt{dx+c}\, e^{\frac{1}{2}}-2\sqrt{-d^3e}\, b\text{weierstrassZeta}\left(\frac{4}{d^2},0,\text{weierstrassPInverse}\left(\frac{4}{d^2},0,\frac{dx+c}{d}\right)\right)\right)e^{(-1)}}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(1/2),x, algorithm="fricas")
```

```
[Out] 2*((b*d*arcsin(d*x + c) + a*d)*sqrt(d*x + c)*e^(1/2) - 2*sqrt(-d^3*e)*b*wei
erstrassZeta(4/d^2, 0, weierstrassPInverse(4/d^2, 0, (d*x + c)/d)))*e^(-1)/
d^2
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))/(d*e*x+c*e)**(1/2),x)
```

```
[Out] Exception raised: TypeError >> Invalid comparison of non-real zoo
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)/sqrt(d*e*x + c*e), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\mathrm{asin}(c+d\,x)}{\sqrt{c\,e+d\,e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))/(c*e + d*e*x)^(1/2),x)
```

```
[Out] int((a + b*asin(c + d*x))/(c*e + d*e*x)^(1/2), x)
```

3.286 $\int \frac{a+b\mathbf{ArcSin}(c+dx)}{(ce+dex)^{3/2}}\,dx$

Optimal. Leaf size=61

$$-\frac{2(a+b\text{ArcSin}(c+dx))}{de\sqrt{e(c+dx)}}+\frac{4bF\left(\text{ArcSin}\left(\frac{\sqrt{e(c+dx)}}{\sqrt{e}}\right)\middle|-1\right)}{de^{3/2}}$$

```
[Out] 4*b*EllipticF((e*(d*x+c))^(1/2)/e^(1/2),I)/d/e^(3/2)-2*(a+b*arcsin(d*x+c))/
d/e/(e*(d*x+c))^(1/2)
```

Rubi [A]
time = 0.05, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$, Rules used = {4889, 4723, 335, 227}

$$\frac{4bF\left(\text{ArcSin}\left(\frac{\sqrt{e(c+dx)}}{\sqrt{e}}\right)\middle|-1\right)}{de^{3/2}}-\frac{2(a+b\text{ArcSin}(c+dx))}{de\sqrt{e(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^(3/2),x]
```

```
[Out] (-2*(a + b*ArcSin[c + d*x]))/(d*e*Sqrt[e*(c + d*x)]) + (4*b*EllipticF[ArcSi
n[Sqrt[e*(c + d*x)]/Sqrt[e]], -1])/(d*e^(3/2))
```

Rule 227

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[Rt[-b,
4]*(x/Rt[a, 4])], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
b/a] && GtQ[a, 0]
```

Rule 335

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + b*(x^(k*n)/c^n
))^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^{3/2}}\,dx &= \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{(ex)^{3/2}}\,dx, x, c+dx\right)}{d} \\
&= -\frac{2(a+b\sin^{-1}(c+dx))}{de\sqrt{e(c+dx)}} + \frac{(2b)\text{Subst}\left(\int \frac{1}{\sqrt{ex}\sqrt{1-x^2}}\,dx, x, c+dx\right)}{de} \\
&= -\frac{2(a+b\sin^{-1}(c+dx))}{de\sqrt{e(c+dx)}} + \frac{(4b)\text{Subst}\left(\int \frac{1}{\sqrt{1-\frac{x^4}{e^2}}}\,dx, x, \sqrt{e(c+dx)}\right)}{de^2} \\
&= -\frac{2(a+b\sin^{-1}(c+dx))}{de\sqrt{e(c+dx)}} + \frac{4bF\left(\sin^{-1}\left(\frac{\sqrt{e(c+dx)}}{\sqrt{e}}\right)\middle|-1\right)}{de^{3/2}}
\end{aligned}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 0.02, size = 54, normalized size = 0.89

$$-\frac{2\left(a+b\text{ArcSin}(c+dx)-2b(c+dx)\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};(c+dx)^2\right)\right)}{de\sqrt{e(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^(3/2),x]
[Out] (-2*(a + b*ArcSin[c + d*x] - 2*b*(c + d*x)*Hypergeometric2F1[1/4, 1/2, 5/4,
 (c + d*x)^2]))/(d*e*Sqrt[e*(c + d*x)])
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 131 vs. 2(53) = 106.
time = 0.12, size = 132, normalized size = 2.16

method	result

derivativedivides	$\frac{-\frac{2a}{\sqrt{dex+ce}}+2b\left(-\frac{\arcsin\left(\frac{dex+ce}{e}\right)}{\sqrt{dex+ce}}+\frac{2\sqrt{1-\frac{dex+ce}{e}}\,\sqrt{1+\frac{dex+ce}{e}}\,\mathrm{EllipticF}\left(\sqrt{dex+ce}\,\sqrt{\frac{1}{e}},i\right)}{e\sqrt{\frac{1}{e}}\,\sqrt{-\frac{(dex+ce)^2}{e^2}+1}}\right.}{de}$
default	$\frac{-\frac{2a}{\sqrt{dex+ce}}+2b\left(-\frac{\arcsin\left(\frac{dex+ce}{e}\right)}{\sqrt{dex+ce}}+\frac{2\sqrt{1-\frac{dex+ce}{e}}\,\sqrt{1+\frac{dex+ce}{e}}\,\mathrm{EllipticF}\left(\sqrt{dex+ce}\,\sqrt{\frac{1}{e}},i\right)}{e\sqrt{\frac{1}{e}}\,\sqrt{-\frac{(dex+ce)^2}{e^2}+1}}\right.}{de}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(3/2),x,method=_RETURNVERBOSE)
```

```
[Out] 2/d/e*(-a/(d*e*x+c*e)^(1/2)+b*(-1/(d*e*x+c*e)^(1/2)*arcsin((d*e*x+c*e)/e)+2
/e/(1/e)^(1/2)*(1-(d*e*x+c*e)/e)^(1/2)*(1+(d*e*x+c*e)/e)^(1/2)/(-(d*e*x+c*e
)^2/e^2+1)^(1/2)*EllipticF((d*e*x+c*e)^(1/2)*(1/e)^(1/2),I)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(3/2),x, algorithm="maxima")
```

```
[Out] -2*(b*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))*e^(1/2*log(d*x
 + c) + 1/2) + (b*d*e^(1/2*log(d*x + c) + 2)*integrate(sqrt(d*x + c + 1)*sq
rt(d*x + c)*sqrt(-d*x - c + 1)/(d^3*x^3*e^2 + 3*c*d^2*x^2*e^2 + c^3*e^2 + (
3*c^2*e^2 - e^2)*d*x - c*e^2), x) + a)*sqrt(d*x + c)*e^(1/2))*e^(-1/2*log(d
*x + c) - 2)/(sqrt(d*x + c)*d)
```

Fricas [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.59, size = 80, normalized size = 1.31

$$-\frac{2\left(\left(bd^2\arcsin\left(dx+c\right)+ad^2\right)\sqrt{dx+c}\,e^{\frac{1}{2}}+2\sqrt{-d^3e}\,(bdx+bc)\mathrm{weierstrassPInverse}\left(\frac{4}{d^2},0,\frac{dx+c}{d}\right)\right)e^{(-2)}}{d^4x+cd^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(3/2),x, algorithm="fricas")
```

```
[Out] -2*((b*d^2*arcsin(d*x + c) + a*d^2)*sqrt(d*x + c)*e^(1/2) + 2*sqrt(-d^3*e)*
(b*d*x + b*c)*weierstrassPInverse(4/d^2, 0, (d*x + c)/d))*e^(-2)/(d^4*x + c
*d^3)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b \operatorname{asin}(c + dx)}{(e(c + dx))^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))/(d*e*x+c*e)**(3/2),x)
[Out] Integral((a + b*asin(c + d*x))/(e*(c + d*x))**(3/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(3/2),x, algorithm="giac")
[Out] integrate((b*arcsin(d*x + c) + a)/(d*e*x + c*e)^(3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{a + b \operatorname{asin}(c + d\, x)}{(c\, e + d\, e\, x)^{3/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))/(c*e + d*e*x)^(3/2),x)
[Out] int((a + b*asin(c + d*x))/(c*e + d*e*x)^(3/2), x)
```

3.287 $\int \frac{a+b\text{ArcSin}(c+dx)}{(ce+dex)^{5/2}} dx$

Optimal. Leaf size=122

$$-\frac{4b\sqrt{1-(c+dx)^2}}{3de^2\sqrt{e(c+dx)}}-\frac{2(a+b\text{ArcSin}(c+dx))}{3de(e(c+dx))^{3/2}}+\frac{4b\sqrt{e(c+dx)}\,E\left(\text{ArcSin}\left(\frac{\sqrt{1-c-dx}}{\sqrt{2}}\right)\middle|2\right)}{3de^3\sqrt{c+dx}}$$

```
[Out] -2/3*(a+b*arcsin(d*x+c))/d/e/(e*(d*x+c))^(3/2)+4/3*b*EllipticE(1/2*(-d*x-c+
1)^(1/2)*2^(1/2),2^(1/2))*(e*(d*x+c))^(1/2)/d/e^3/(d*x+c)^(1/2)-4/3*b*(1-(d
*x+c)^2)^(1/2)/d/e^2/(e*(d*x+c))^(1/2)
```

Rubi [A]
time = 0.07, antiderivative size = 122, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.261$, Rules used = {4889, 4723, 331, 326, 324, 435}

$$-\frac{2(a+b\text{ArcSin}(c+dx))}{3de(e(c+dx))^{3/2}}+\frac{4b\sqrt{e(c+dx)}\,E\left(\text{ArcSin}\left(\frac{\sqrt{-c-dx+1}}{\sqrt{2}}\right)\middle|2\right)}{3de^3\sqrt{c+dx}}-\frac{4b\sqrt{1-(c+dx)^2}}{3de^2\sqrt{e(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^(5/2),x]
```

```
[Out] (-4*b*Sqrt[1 - (c + d*x)^2])/(3*d*e^2*Sqrt[e*(c + d*x)]) - (2*(a + b*ArcSin
[c + d*x]))/(3*d*e*(e*(c + d*x))^(3/2)) + (4*b*Sqrt[e*(c + d*x)]*EllipticE[
ArcSin[Sqrt[1 - c - d*x]/Sqrt[2]], 2])/(3*d*e^3*Sqrt[c + d*x])
```

Rule 324

```
Int[Sqrt[x_]/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Dist[-2/(Sqrt[a]*(-b/a
)^(3/4)), Subst[Int[Sqrt[1 - 2*x^2]/Sqrt[1 - x^2], x], x, Sqrt[1 - Sqrt[-b/
a]*x]/Sqrt[2]], x] /; FreeQ[{a, b}, x] && GtQ[-b/a, 0] && GtQ[a, 0]
```

Rule 326

```
Int[Sqrt[(c_)*(x_)]/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[c*x]/
Sqrt[x], Int[Sqrt[x]/Sqrt[a + b*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[
-b/a, 0]
```

Rule 331

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c*x
)^(m + 1)*((a + b*x^n)^(p + 1)/(a*c*(m + 1))), x] - Dist[b*((m + n*(p + 1)
+ 1)/(a*c^n*(m + 1))), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
```

```
b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
x]
```

Rule 435

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]/(Sqrt[c]*Rt[-d/c, 2]))*EllipticE[ArcSin[Rt[-d/c, 2]*x], b*(c/(a*d)
)], x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^{5/2}}\,dx &= \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{(ex)^{5/2}}\,dx, x, c+dx\right)}{d} \\
&= -\frac{2(a+b\sin^{-1}(c+dx))}{3de(e(c+dx))^{3/2}} + \frac{(2b)\text{Subst}\left(\int \frac{1}{(ex)^{3/2}\sqrt{1-x^2}}\,dx, x, c+dx\right)}{3de} \\
&= -\frac{4b\sqrt{1-(c+dx)^2}}{3de^2\sqrt{e(c+dx)}} - \frac{2(a+b\sin^{-1}(c+dx))}{3de(e(c+dx))^{3/2}} - \frac{(2b)\text{Subst}\left(\int \frac{\sqrt{ex}}{\sqrt{1-x^2}}\,dx, x, c\right.}{3de^3} \\
&= -\frac{4b\sqrt{1-(c+dx)^2}}{3de^2\sqrt{e(c+dx)}} - \frac{2(a+b\sin^{-1}(c+dx))}{3de(e(c+dx))^{3/2}} - \frac{\left(2b\sqrt{e(c+dx)}\right)\text{Subst}\left(\int \frac{}{\sqrt{}}\right.}{3de^3\sqrt{c+d}} \\
&= -\frac{4b\sqrt{1-(c+dx)^2}}{3de^2\sqrt{e(c+dx)}} - \frac{2(a+b\sin^{-1}(c+dx))}{3de(e(c+dx))^{3/2}} + \frac{\left(4b\sqrt{e(c+dx)}\right)\text{Subst}\left(\int \frac{\sqrt{}}{\sqrt{}}\right.}{3de^3\sqrt{}} \\
&= -\frac{4b\sqrt{1-(c+dx)^2}}{3de^2\sqrt{e(c+dx)}} - \frac{2(a+b\sin^{-1}(c+dx))}{3de(e(c+dx))^{3/2}} + \frac{4b\sqrt{e(c+dx)}\,E\left(\sin^{-1}\left(\frac{\sqrt{1}}{}\right.\right.}{3de^3\sqrt{c+dx}}
\end{aligned}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 0.02, size = 56, normalized size = 0.46

$$-\frac{2\left(a+b\text{ArcSin}(c+dx)+2b(c+dx)\,{}_2F_1\left(-\frac{1}{4},\frac{1}{2};\frac{3}{4};(c+dx)^2\right)\right)}{3de(e(c+dx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^(5/2),x]
```

```
[Out] (-2*(a + b*ArcSin[c + d*x] + 2*b*(c + d*x)*Hypergeometric2F1[-1/4, 1/2, 3/4
, (c + d*x)^2]))/(3*d*e*(e*(c + d*x))^(3/2))
```

Maple [C] Result contains complex when optimal does not.
time = 0.15, size = 190, normalized size = 1.56

method	result
derivativedivides	$\frac{-\frac{2a}{3(dex+ce)^{\frac{3}{2}}}+2b\left(-\frac{\arcsin\left(\frac{dex+ce}{e}\right)}{3(dex+ce)^{\frac{3}{2}}}+\frac{-\frac{2\sqrt{-\frac{(dex+ce)^2}{e^2}+1}}{3\sqrt{dex+ce}}+\frac{2\sqrt{1-\frac{dex+ce}{e}}\sqrt{1+\frac{dex+ce}{e}}\left(\text{EllipticF}\left(\cdots\right.\right.}{3e\sqrt{\frac{1}{e}}\cdots}}{e}\right.}{de}$
default	$\frac{-\frac{2a}{3(dex+ce)^{\frac{3}{2}}}+2b\left(-\frac{\arcsin\left(\frac{dex+ce}{e}\right)}{3(dex+ce)^{\frac{3}{2}}}+\frac{-\frac{2\sqrt{-\frac{(dex+ce)^2}{e^2}+1}}{3\sqrt{dex+ce}}+\frac{2\sqrt{1-\frac{dex+ce}{e}}\sqrt{1+\frac{dex+ce}{e}}\left(\text{EllipticF}\left(\cdots\right.\right.}{3e\sqrt{\frac{1}{e}}\cdots}}{e}\right.}{de}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(5/2),x,method=_RETURNVERBOSE)
```

```
[Out] 2/d/e*(-1/3*a/(d*e*x+c*e)^(3/2)+b*(-1/3/(d*e*x+c*e)^(3/2)*arcsin((d*e*x+c*e
)/e)+2/3/e*(-(-(d*e*x+c*e)^2/e^2+1)^(1/2)/(d*e*x+c*e)^(1/2)+1/e/(1/e)^(1/2)
*(1-(d*e*x+c*e)/e)^(1/2)*(1+(d*e*x+c*e)/e)^(1/2)/(-(d*e*x+c*e)^2/e^2+1)^(1/
2)*(EllipticF((d*e*x+c*e)^(1/2)*(1/e)^(1/2),I)-EllipticE((d*e*x+c*e)^(1/2)*
(1/e)^(1/2),I)))))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(5/2),x, algorithm="maxima")
```

```
[Out] -2/3*((d*x + c)^(3/2)*b*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c +
1)) + (3*(b*d^2*x*e^3 + b*c*d*e^3)*(d*x + c)^(3/2)*integrate(1/3*sqrt(d*x +
 c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)/(d^4*x^4*e^3 + 4*c*d^3*x^3*e^3 + (
6*c^2*e^3 - e^3)*d^2*x^2 + c^4*e^3 + 2*(2*c^3*e^3 - c*e^3)*d*x - c^2*e^3),
x) + a*d*x + a*c)*sqrt(d*x + c))*e^(-3/2*log(d*x + c) - 1/2)/((d^2*x*e^2 +
c*d*e^2)*sqrt(d*x + c))
```

Fricas [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.62, size = 141, normalized size = 1.16

$$-\frac{2\left(\left(bd\arcsin\left(dx+c\right)+ad+2\left(bd^{2}x+bcd\right)\sqrt{-d^{2}x^{2}-2\,cdx-c^{2}+1}\right)\sqrt{dx+c}\,e^{\frac{1}{2}}+2\left(bd^{2}x^{2}+2\,bcdx+bc^{2}\right)\sqrt{-d^{3}e}\,\mathrm{weierstrassZeta}\left(\frac{4}{d^{2}},0,\mathrm{weierstrassPInverse}\left(\frac{4}{d^{2}},0,\frac{dx+c}{d}\right)\right)\right)e^{(-3)}}{3\left(d^{4}x^{2}+2\,cd^{3}x+c^{2}d^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*((b*d*arcsin(d*x + c) + a*d + 2*(b*d^2*x + b*c*d)*sqrt(-d^2*x^2 - 2*c*
d*x - c^2 + 1))*sqrt(d*x + c)*e^(1/2) + 2*(b*d^2*x^2 + 2*b*c*d*x + b*c^2)*s
qrt(-d^3*e)*weierstrassZeta(4/d^2, 0, weierstrassPInverse(4/d^2, 0, (d*x +
c)/d)))*e^(-3)/(d^4*x^2 + 2*c*d^3*x + c^2*d^2)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\,\mathrm{asin}\left(c+dx\right)}{\left(e\left(c+dx\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))/(d*e*x+c*e)**(5/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))/(e*(c + d*x))**(5/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)/(d*e*x + c*e)^(5/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\mathrm{asin}(c+d\,x)}{{\left(c\,e+d\,e\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))/(c*e + d*e*x)^(5/2),x)
[Out] int((a + b*asin(c + d*x))/(c*e + d*e*x)^(5/2), x)
```

3.288 $\int \frac{a+b\text{ArcSin}(c+dx)}{(ce+dex)^{7/2}}\,dx$

Optimal. Leaf size=102

$$-\frac{4b\sqrt{1-(c+dx)^2}}{15de^2(e(c+dx))^{3/2}}-\frac{2(a+b\text{ArcSin}(c+dx))}{5de(e(c+dx))^{5/2}}+\frac{4bF\left(\text{ArcSin}\left(\frac{\sqrt{e(c+dx)}}{\sqrt{e}}\right)\middle|-1\right)}{15de^{7/2}}$$

```
[Out] -2/5*(a+b*arcsin(d*x+c))/d/e/(e*(d*x+c))^(5/2)+4/15*b*EllipticF((e*(d*x+c))
^(1/2)/e^(1/2),I)/d/e^(7/2)-4/15*b*(1-(d*x+c)^2)^(1/2)/d/e^2/(e*(d*x+c))^(3
/2)
```

Rubi [A]
time = 0.07, antiderivative size = 102, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {4889, 4723, 331, 335, 227}

$$-\frac{2(a+b\text{ArcSin}(c+dx))}{5de(e(c+dx))^{5/2}}+\frac{4bF\left(\text{ArcSin}\left(\frac{\sqrt{e(c+dx)}}{\sqrt{e}}\right)\middle|-1\right)}{15de^{7/2}}-\frac{4b\sqrt{1-(c+dx)^2}}{15de^2(e(c+dx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^(7/2),x]
```

```
[Out] (-4*b*Sqrt[1 - (c + d*x)^2])/(15*d*e^2*(e*(c + d*x))^(3/2)) - (2*(a + b*Arc
Sin[c + d*x]))/(5*d*e*(e*(c + d*x))^(5/2)) + (4*b*EllipticF[ArcSin[Sqrt[e*(
c + d*x)]/Sqrt[e]], -1])/(15*d*e^(7/2))
```

Rule 227

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[Rt[-b,
4]*(x/Rt[a, 4])], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
b/a] && GtQ[a, 0]
```

Rule 331

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c*x
)^(m + 1)*((a + b*x^n)^(p + 1)/(a*c*(m + 1))), x] - Dist[b*((m + n*(p + 1)
+ 1)/(a*c^n*(m + 1))), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 335

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + b*(x^(k*n)/c^n
```

```
))^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^{7/2}}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{(ex)^{7/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2(a+b\sin^{-1}(c+dx))}{5de(e(c+dx))^{5/2}} + \frac{(2b)\text{Subst}\left(\int \frac{1}{(ex)^{5/2}\sqrt{1-x^2}}\,dx, x, c+dx\right)}{5de}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{15de^2(e(c+dx))^{3/2}} - \frac{2(a+b\sin^{-1}(c+dx))}{5de(e(c+dx))^{5/2}} + \frac{(2b)\text{Subst}\left(\int \frac{1}{\sqrt{ex}\sqrt{1-x^2}}\right.}{15de^3}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{15de^2(e(c+dx))^{3/2}} - \frac{2(a+b\sin^{-1}(c+dx))}{5de(e(c+dx))^{5/2}} + \frac{(4b)\text{Subst}\left(\int \frac{1}{\sqrt{1-\frac{x^4}{e^2}}}\,dx,\right.}{15de^4}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{15de^2(e(c+dx))^{3/2}} - \frac{2(a+b\sin^{-1}(c+dx))}{5de(e(c+dx))^{5/2}} + \frac{4bF\left(\sin^{-1}\left(\frac{\sqrt{e(c+dx)}}{\sqrt{e}}\right)\right.}{15de^{7/2}}$$

Mathematica [**C**] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 0.03, size = 59, normalized size = 0.58

$$\frac{-6(a+b\text{ArcSin}(c+dx))-4b(c+dx)\,{}_2F_1\left(-\frac{3}{4},\frac{1}{2};\frac{1}{4};(c+dx)^2\right)}{15de(e(c+dx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^(7/2),x]
```

```
[Out] (-6*(a + b*ArcSin[c + d*x]) - 4*b*(c + d*x)*Hypergeometric2F1[-3/4, 1/2, 1/
4, (c + d*x)^2])/(15*d*e*(e*(c + d*x))^(5/2))
```

Maple [A]
time = 0.14, size = 169, normalized size = 1.66

method	result
derivativedivides	$\frac{-\frac{2a}{5(dex+ce)^{\frac{5}{2}}}+2b\left(-\frac{\arcsin\left(\frac{dex+ce}{e}\right)}{5(dex+ce)^{\frac{5}{2}}}+\frac{-\frac{2\sqrt{-\frac{(dex+ce)^2}{e^2}+1}}{15(dex+ce)^{\frac{3}{2}}}+\frac{2\sqrt{1-\frac{dex+ce}{e}}\,\sqrt{1+\frac{dex+ce}{e}}\,\mathrm{EllipticF}\left(\sqrt{d\right.}{15e^2\sqrt{\frac{1}{e}}\,\sqrt{-\frac{(dex+ce)^2}{e^2}+1}}}{e}\right.}{de}$
default	$\frac{-\frac{2a}{5(dex+ce)^{\frac{5}{2}}}+2b\left(-\frac{\arcsin\left(\frac{dex+ce}{e}\right)}{5(dex+ce)^{\frac{5}{2}}}+\frac{-\frac{2\sqrt{-\frac{(dex+ce)^2}{e^2}+1}}{15(dex+ce)^{\frac{3}{2}}}+\frac{2\sqrt{1-\frac{dex+ce}{e}}\,\sqrt{1+\frac{dex+ce}{e}}\,\mathrm{EllipticF}\left(\sqrt{d\right.}{15e^2\sqrt{\frac{1}{e}}\,\sqrt{-\frac{(dex+ce)^2}{e^2}+1}}}{e}\right.}{de}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(7/2),x,method=_RETURNVERBOSE)
```

```
[Out] 2/d/e*(-1/5*a/(d*e*x+c*e)^(5/2)+b*(-1/5/(d*e*x+c*e)^(5/2)*arcsin((d*e*x+c*e
)/e)+2/5/e*(-1/3*(-(d*e*x+c*e)^2/e^2+1)^(1/2)/(d*e*x+c*e)^(3/2)+1/3/e^2/(1/
e)^(1/2)*(1-(d*e*x+c*e)/e)^(1/2)*(1+(d*e*x+c*e)/e)^(1/2)/(-(d*e*x+c*e)^2/e^
2+1)^(1/2)*EllipticF((d*e*x+c*e)^(1/2)*(1/e)^(1/2),I))))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(7/2),x, algorithm="maxima")
```

```
[Out] -2/5*((d*x + c)^(5/2)*b*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c +
1)) + (a*d^2*x^2 + 5*(b*d^3*x^2*e^4 + 2*b*c*d^2*x*e^4 + b*c^2*d*e^4)*(d*x +
```

```
 c)^(5/2)*integrate(1/5*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)/
(d^5*x^5*e^4 + 5*c*d^4*x^4*e^4 + (10*c^2*e^4 - e^4)*d^3*x^3 + c^5*e^4 + (10
*c^3*e^4 - 3*c*e^4)*d^2*x^2 - c^3*e^4 + (5*c^4*e^4 - 3*c^2*e^4)*d*x), x) +
2*a*c*d*x + a*c^2)*sqrt(d*x + c))*e^(-5/2*log(d*x + c) - 1/2)/((d^3*x^2*e^3
 + 2*c*d^2*x*e^3 + c^2*d*e^3)*sqrt(d*x + c))
```

Fricas [**C**] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.79, size = 165, normalized size = 1.62

$$-\frac{2\left(\left(3\,bd^{2}\arcsin\left(dx+c\right)+3\,ad^{2}+2\left(bd^{3}x+bcd^{2}\right)\sqrt{-d^{2}x^{2}-2\,cdx-c^{2}+1}\right)\sqrt{dx+c}\,e^{\frac{1}{2}}+2\left(bd^{3}x^{3}+3\,bcd^{2}x^{2}+3\,bc^{2}dx+bc^{3}\right)\sqrt{-d^{3}e}\,\mathrm{weierstrassPInverse}\left(\frac{4}{d^{2}},0,\frac{dx+c}{d}\right)\right)e^{(-4)}}{15\left(d^{6}x^{3}+3\,cd^{5}x^{2}+3\,c^{2}d^{4}x+c^{3}d^{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(7/2),x, algorithm="fricas")
```

```
[Out] -2/15*((3*b*d^2*arcsin(d*x + c) + 3*a*d^2 + 2*(b*d^3*x + b*c*d^2)*sqrt(-d^2
*x^2 - 2*c*d*x - c^2 + 1))*sqrt(d*x + c)*e^(1/2) + 2*(b*d^3*x^3 + 3*b*c*d^2
*x^2 + 3*b*c^2*d*x + b*c^3)*sqrt(-d^3*e)*weierstrassPInverse(4/d^2, 0, (d*x
 + c)/d))*e^(-4)/(d^6*x^3 + 3*c*d^5*x^2 + 3*c^2*d^4*x + c^3*d^3)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))/(d*e*x+c*e)**(7/2),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(7/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)/(d*e*x + c*e)^(7/2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\mathrm{asin}\left(c+d\,x\right)}{{\left(c\,e+d\,e\,x\right)}^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))/(c*e + d*e*x)^(7/2),x)
```

```
[Out] int((a + b*asin(c + d*x))/(c*e + d*e*x)^(7/2), x)
```

3.289 $\int \frac{a+b\text{ArcSin}(c+dx)}{(ce+dex)^{9/2}}\,dx$

Optimal. Leaf size=159

$$-\frac{4b\sqrt{1-(c+dx)^2}}{35de^2(e(c+dx))^{5/2}}-\frac{12b\sqrt{1-(c+dx)^2}}{35de^4\sqrt{e(c+dx)}}-\frac{2(a+b\text{ArcSin}(c+dx))}{7de(e(c+dx))^{7/2}}+\frac{12b\sqrt{e(c+dx)}\,E\left(\text{ArcSin}\left(\frac{\sqrt{1-c}}{\sqrt{2}}\right.\right.}{35de^5\sqrt{c+dx}}$$

```
[Out] -2/7*(a+b*arcsin(d*x+c))/d/e/(e*(d*x+c))^(7/2)+12/35*b*EllipticE(1/2*(-d*x-
c+1)^(1/2)*2^(1/2),2^(1/2))*(e*(d*x+c))^(1/2)/d/e^5/(d*x+c)^(1/2)-4/35*b*(1
-(d*x+c)^2)^(1/2)/d/e^2/(e*(d*x+c))^(5/2)-12/35*b*(1-(d*x+c)^2)^(1/2)/d/e^4
/(e*(d*x+c))^(1/2)
```

Rubi [A]
time = 0.10, antiderivative size = 159, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.261$, Rules used = {4889, 4723, 331, 326, 324, 435}

$$-\frac{2(a+b\text{ArcSin}(c+dx))}{7de(e(c+dx))^{7/2}}+\frac{12b\sqrt{e(c+dx)}\,E\left(\text{ArcSin}\left(\frac{\sqrt{-c-dx+1}}{\sqrt{2}}\right)\middle|2\right)}{35de^5\sqrt{c+dx}}-\frac{12b\sqrt{1-(c+dx)^2}}{35de^4\sqrt{e(c+dx)}}-\frac{4b\sqrt{1-(c+dx)^2}}{35de^2(e(c+dx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^(9/2),x]
```

```
[Out] (-4*b*Sqrt[1 - (c + d*x)^2])/(35*d*e^2*(e*(c + d*x))^(5/2)) - (12*b*Sqrt[1
- (c + d*x)^2])/(35*d*e^4*Sqrt[e*(c + d*x)]) - (2*(a + b*ArcSin[c + d*x]))/
(7*d*e*(e*(c + d*x))^(7/2)) + (12*b*Sqrt[e*(c + d*x)]*EllipticE[ArcSin[Sqrt
[1 - c - d*x]/Sqrt[2]], 2])/(35*d*e^5*Sqrt[c + d*x])
```

Rule 324

```
Int[Sqrt[x_]/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Dist[-2/(Sqrt[a]*(-b/a
)^(3/4)), Subst[Int[Sqrt[1 - 2*x^2]/Sqrt[1 - x^2], x], x, Sqrt[1 - Sqrt[-b/
a]*x]/Sqrt[2]], x] /; FreeQ[{a, b}, x] && GtQ[-b/a, 0] && GtQ[a, 0]
```

Rule 326

```
Int[Sqrt[(c_)*(x_)]/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[c*x]/
Sqrt[x], Int[Sqrt[x]/Sqrt[a + b*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[
-b/a, 0]
```

Rule 331

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c*x
)^(m + 1)*((a + b*x^n)^(p + 1)/(a*c*(m + 1))), x] - Dist[b*((m + n*(p + 1)
```

```
+ 1)/(a*c^n*(m + 1))), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 435

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]/(Sqrt[c]*Rt[-d/c, 2]))*EllipticE[ArcSin[Rt[-d/c, 2]*x], b*(c/(a*d)
)], x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^{9/2}}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{(ex)^{9/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2(a+b\sin^{-1}(c+dx))}{7de(e(c+dx))^{7/2}} + \frac{(2b)\text{Subst}\left(\int \frac{1}{(ex)^{7/2}\sqrt{1-x^2}}\,dx, x, c+dx\right)}{7de}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{35de^2(e(c+dx))^{5/2}} - \frac{2(a+b\sin^{-1}(c+dx))}{7de(e(c+dx))^{7/2}} + \frac{(6b)\text{Subst}\left(\int \frac{1}{(ex)^{3/2}\sqrt{1-x^2}}\,d\right.}{35de^3}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{35de^2(e(c+dx))^{5/2}} - \frac{12b\sqrt{1-(c+dx)^2}}{35de^4\sqrt{e(c+dx)}} - \frac{2(a+b\sin^{-1}(c+dx))}{7de(e(c+dx))^{7/2}} - \frac{(6b)\text{Su}}{}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{35de^2(e(c+dx))^{5/2}} - \frac{12b\sqrt{1-(c+dx)^2}}{35de^4\sqrt{e(c+dx)}} - \frac{2(a+b\sin^{-1}(c+dx))}{7de(e(c+dx))^{7/2}} - \frac{\left(6b\sqrt{\right.}}{}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{35de^2(e(c+dx))^{5/2}} - \frac{12b\sqrt{1-(c+dx)^2}}{35de^4\sqrt{e(c+dx)}} - \frac{2(a+b\sin^{-1}(c+dx))}{7de(e(c+dx))^{7/2}} + \frac{\left(12b\right.}{}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{35de^2(e(c+dx))^{5/2}} - \frac{12b\sqrt{1-(c+dx)^2}}{35de^4\sqrt{e(c+dx)}} - \frac{2(a+b\sin^{-1}(c+dx))}{7de(e(c+dx))^{7/2}} + \frac{12b\sqrt{}}{}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 0.03, size = 66, normalized size = 0.42

$$-\frac{2\sqrt{e(c+dx)}\left(5(a+b\text{ArcSin}(c+dx))+2b(c+dx)\,{}_2F_1\left(-\frac{5}{4},\frac{1}{2};-\frac{1}{4};(c+dx)^2\right)\right)}{35de^5(c+dx)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^(9/2),x]
```

```
[Out] (-2*Sqrt[e*(c + d*x)]*(5*(a + b*ArcSin[c + d*x]) + 2*b*(c + d*x)*Hypergeome
tric2F1[-5/4, 1/2, -1/4, (c + d*x)^2]))/(35*d*e^5*(c + d*x)^4)
```

Maple [C] Result contains complex when optimal does not.
time = 0.13, size = 225, normalized size = 1.42

method	result

derivativedivides	$\frac{-\frac{2a}{7(dex+ce)^{\frac{7}{2}}}+2b\left(-\frac{\arcsin\left(\frac{dex+ce}{e}\right)}{7(dex+ce)^{\frac{7}{2}}}+\frac{-\frac{2\sqrt{-\frac{(dex+ce)^2}{e^2}+1}}{35(dex+ce)^{\frac{5}{2}}}-\frac{6\sqrt{-\frac{(dex+ce)^2}{e^2}+1}}{35e^2\sqrt{dex+ce}}+\frac{6\sqrt{1-\frac{dex+ce}{e}}\sqrt{}}{}}{}\right.}{de}$
default	$\frac{-\frac{2a}{7(dex+ce)^{\frac{7}{2}}}+2b\left(-\frac{\arcsin\left(\frac{dex+ce}{e}\right)}{7(dex+ce)^{\frac{7}{2}}}+\frac{-\frac{2\sqrt{-\frac{(dex+ce)^2}{e^2}+1}}{35(dex+ce)^{\frac{5}{2}}}-\frac{6\sqrt{-\frac{(dex+ce)^2}{e^2}+1}}{35e^2\sqrt{dex+ce}}+\frac{6\sqrt{1-\frac{dex+ce}{e}}\sqrt{}}{}}{}\right.}{de}$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(9/2),x,method=_RETURNVERBOSE)

[Out] 2/d/e*(-1/7*a/(d*e*x+c*e)^(7/2)+b*(-1/7/(d*e*x+c*e)^(7/2)*arcsin((d*e*x+c*e)/e)+2/7/e*(-1/5*(-(d*e*x+c*e)^2/e^2+1)^(1/2)/(d*e*x+c*e)^(5/2)-3/5/e^2*(-(d*e*x+c*e)^2/e^2+1)^(1/2)/(d*e*x+c*e)^(1/2)+3/5/e^3/(1/e)^(1/2)*(1-(d*e*x+c*e)/e)^(1/2)*(1+(d*e*x+c*e)/e)^(1/2)/(-(d*e*x+c*e)^2/e^2+1)^(1/2)*(EllipticF((d*e*x+c*e)^(1/2)*(1/e)^(1/2),I)-EllipticE((d*e*x+c*e)^(1/2)*(1/e)^(1/2),I)))))

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(9/2),x, algorithm="maxima")

[Out] -2/7*((d*x + c)^(7/2)*b*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + (a*d^3*x^3 + 3*a*c*d^2*x^2 + 7*(b*d^4*x^3*e^5 + 3*b*c*d^3*x^2*e^5 + 3*b*c^2*d^2*x*e^5 + b*c^3*d*e^5)*(d*x + c)^(7/2)*integrate(1/7*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)/(d^6*x^6*e^5 + 6*c*d^5*x^5*e^5 + (15*c^2*e^5 - e^5)*d^4*x^4 + 4*(5*c^3*e^5 - c*e^5)*d^3*x^3 + c^6*e^5 + 3*(5*c^4*e^5 - 2*c^2*e^5)*d^2*x^2 - c^4*e^5 + 2*(3*c^5*e^5 - 2*c^3*e^5)*d*x), x) + 3*a*c^2*d*x + a*c^3)*sqrt(d*x + c))*e^(-7/2*log(d*x + c) - 1/2)/((d^4*x^3*e^4 + 3*c*d^3*x^2*e^4 + 3*c^2*d^2*x*e^4 + c^3*d*e^4)*sqrt(d*x + c))

Fricas [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.87, size = 223, normalized size = 1.40

$$-\frac{2\left(\left(5\,bd\arcsin\left(dx+c\right)+5\,ad+2\left(3\,bd^4x^3+9\,bcd^3x^2+\left(9\,bc^2+b\right)d^2x+\left(3\,bc^3+bc\right)d\right)\sqrt{-d^2x^2-2\,cdx-c^2+1}\right)\sqrt{dx+c}\,e^{\frac{1}{2}}+6\left(bd^4x^4+4\,bcd^3x^3+6\,bc^2d^2x^2+4\,bc^3dx+bc^4\right)\sqrt{-d^3e}\,\mathrm{weierstrassZeta}\left(\frac{4}{d^2},0,\mathrm{weierstrassPInverse}\left(\frac{4}{d^2},0,\frac{dx+c}{d}\right)\right)\right)e^{(-5)}}{35\left(d^6x^4+4\,cd^5x^3+6\,c^2d^4x^2+4\,c^3d^3x+c^4d^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(9/2),x, algorithm="fricas")
```

```
[Out] -2/35*((5*b*d*arcsin(d*x + c) + 5*a*d + 2*(3*b*d^4*x^3 + 9*b*c*d^3*x^2 + (9
*b*c^2 + b)*d^2*x + (3*b*c^3 + b*c)*d)*sqrt(-d^2*x^2 - 2*c*d*x - c^2 + 1))*
sqrt(d*x + c)*e^(1/2) + 6*(b*d^4*x^4 + 4*b*c*d^3*x^3 + 6*b*c^2*d^2*x^2 + 4*
b*c^3*d*x + b*c^4)*sqrt(-d^3*e)*weierstrassZeta(4/d^2, 0, weierstrassPInver
se(4/d^2, 0, (d*x + c)/d)))*e^(-5)/(d^6*x^4 + 4*c*d^5*x^3 + 6*c^2*d^4*x^2 +
 4*c^3*d^3*x + c^4*d^2)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: SystemError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))/(d*e*x+c*e)**(9/2),x)
```

```
[Out] Exception raised: SystemError >> excessive stack use: stack is 3877 deep
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(9/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)/(d*e*x + c*e)^(9/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\mathrm{asin}\left(c+d\,x\right)}{{\left(c\,e+d\,e\,x\right)}^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))/(c*e + d*e*x)^(9/2),x)
```

```
[Out] int((a + b*asin(c + d*x))/(c*e + d*e*x)^(9/2), x)
```

3.290 $\int \frac{a+b\textbf{ArcSin}(c+dx)}{(ce+dex)^{11/2}}\,dx$

Optimal. Leaf size=139

$$-\frac{4b\sqrt{1-(c+dx)^2}}{63de^2(e(c+dx))^{7/2}}-\frac{20b\sqrt{1-(c+dx)^2}}{189de^4(e(c+dx))^{3/2}}-\frac{2(a+b\text{ArcSin}(c+dx))}{9de(e(c+dx))^{9/2}}+\frac{20bF\left(\text{ArcSin}\left(\frac{\sqrt{e(c+dx)}}{\sqrt{e}}\right)\middle|-\right.}{189de^{11/2}}$$

```
[Out] -2/9*(a+b*arcsin(d*x+c))/d/e/(e*(d*x+c))^(9/2)+20/189*b*EllipticF((e*(d*x+c
))^(1/2)/e^(1/2),I)/d/e^(11/2)-4/63*b*(1-(d*x+c)^2)^(1/2)/d/e^2/(e*(d*x+c))
^(7/2)-20/189*b*(1-(d*x+c)^2)^(1/2)/d/e^4/(e*(d*x+c))^(3/2)
```

Rubi [A]
time = 0.09, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {4889, 4723, 331, 335, 227}

$$-\frac{2(a+b\text{ArcSin}(c+dx))}{9de(e(c+dx))^{9/2}}+\frac{20bF\left(\text{ArcSin}\left(\frac{\sqrt{e(c+dx)}}{\sqrt{e}}\right)\middle|-1\right)}{189de^{11/2}}-\frac{20b\sqrt{1-(c+dx)^2}}{189de^4(e(c+dx))^{3/2}}-\frac{4b\sqrt{1-(c+dx)^2}}{63de^2(e(c+dx))^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^(11/2),x]
```

```
[Out] (-4*b*Sqrt[1 - (c + d*x)^2])/(63*d*e^2*(e*(c + d*x))^(7/2)) - (20*b*Sqrt[1
- (c + d*x)^2])/(189*d*e^4*(e*(c + d*x))^(3/2)) - (2*(a + b*ArcSin[c + d*x]
))/(9*d*e*(e*(c + d*x))^(9/2)) + (20*b*EllipticF[ArcSin[Sqrt[e*(c + d*x)]/S
qrt[e]], -1])/(189*d*e^(11/2))
```

Rule 227

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[Rt[-b,
4]*(x/Rt[a, 4])], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
b/a] && GtQ[a, 0]
```

Rule 331

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c*x
)^(m + 1)*((a + b*x^n)^(p + 1)/(a*c*(m + 1))), x] - Dist[b*((m + n*(p + 1)
+ 1)/(a*c^n*(m + 1))), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 335

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + b*(x^(k*n)/c^n
```

```
))^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(c+dx)}{(ce+dex)^{11/2}}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{(ex)^{11/2}}\,dx,x,c+dx\right)}{d}$$

$$= -\frac{2(a+b\sin^{-1}(c+dx))}{9de(e(c+dx))^{9/2}} + \frac{(2b)\text{Subst}\left(\int \frac{1}{(ex)^{9/2}\sqrt{1-x^2}}\,dx,x,c+dx\right)}{9de}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{63de^2(e(c+dx))^{7/2}} - \frac{2(a+b\sin^{-1}(c+dx))}{9de(e(c+dx))^{9/2}} + \frac{(10b)\text{Subst}\left(\int \frac{1}{(ex)^{5/2}\sqrt{1-x^2}}\right.}{63de^3}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{63de^2(e(c+dx))^{7/2}} - \frac{20b\sqrt{1-(c+dx)^2}}{189de^4(e(c+dx))^{3/2}} - \frac{2(a+b\sin^{-1}(c+dx))}{9de(e(c+dx))^{9/2}} + \frac{(10b)S}{}$$

$$(20b)S$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{63de^2(e(c+dx))^{7/2}} - \frac{20b\sqrt{1-(c+dx)^2}}{189de^4(e(c+dx))^{3/2}} - \frac{2(a+b\sin^{-1}(c+dx))}{9de(e(c+dx))^{9/2}} + \frac{}{}$$

$$= -\frac{4b\sqrt{1-(c+dx)^2}}{63de^2(e(c+dx))^{7/2}} - \frac{20b\sqrt{1-(c+dx)^2}}{189de^4(e(c+dx))^{3/2}} - \frac{2(a+b\sin^{-1}(c+dx))}{9de(e(c+dx))^{9/2}} + \frac{20bF}{}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.

time = 0.03, size = 66, normalized size = 0.47

$$-\frac{2\sqrt{e(c+dx)}\,\left(7(a+b\text{ArcSin}(c+dx))+2b(c+dx)\,{}_2F_1\left(-\frac{7}{4},\frac{1}{2};-\frac{3}{4};(c+dx)^2\right)\right)}{63de^6(c+dx)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])/(c*e + d*e*x)^(11/2),x]
```

```
[Out] (-2*Sqrt[e*(c + d*x)]*(7*(a + b*ArcSin[c + d*x]) + 2*b*(c + d*x)*Hypergeome
tric2F1[-7/4, 1/2, -3/4, (c + d*x)^2]))/(63*d*e^6*(c + d*x)^5)
```

Maple [A]
time = 0.14, size = 203, normalized size = 1.46

method	result
derivativedivides	$\frac{-\frac{2a}{9(dex+ce)^{\frac{9}{2}}}+2b\left(-\frac{\arcsin\left(\frac{dex+ce}{e}\right)}{9(dex+ce)^{\frac{9}{2}}}+\frac{-\frac{2\sqrt{-\frac{(dex+ce)^2}{e^2}+1}}{63(dex+ce)^{\frac{7}{2}}}-\frac{10\sqrt{-\frac{(dex+ce)^2}{e^2}+1}}{189e^2(dex+ce)^{\frac{3}{2}}}+\frac{10\sqrt{1-\frac{dex+ce}{e}}\ \cdots}{189\cdots}}{e}\right.}{de}$
default	$\frac{-\frac{2a}{9(dex+ce)^{\frac{9}{2}}}+2b\left(-\frac{\arcsin\left(\frac{dex+ce}{e}\right)}{9(dex+ce)^{\frac{9}{2}}}+\frac{-\frac{2\sqrt{-\frac{(dex+ce)^2}{e^2}+1}}{63(dex+ce)^{\frac{7}{2}}}-\frac{10\sqrt{-\frac{(dex+ce)^2}{e^2}+1}}{189e^2(dex+ce)^{\frac{3}{2}}}+\frac{10\sqrt{1-\frac{dex+ce}{e}}\ \cdots}{189\cdots}}{e}\right.}{de}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(11/2),x,method=_RETURNVERBOSE)
```

```
[Out] 2/d/e*(-1/9*a/(d*e*x+c*e)^(9/2)+b*(-1/9/(d*e*x+c*e)^(9/2)*arcsin((d*e*x+c*e
)/e)+2/9/e*(-1/7*(-(d*e*x+c*e)^2/e^2+1)^(1/2)/(d*e*x+c*e)^(7/2)-5/21/e^2*(-
(d*e*x+c*e)^2/e^2+1)^(1/2)/(d*e*x+c*e)^(3/2)+5/21/e^4/(1/e)^(1/2)*(1-(d*e*x
+c*e)/e)^(1/2)*(1+(d*e*x+c*e)/e)^(1/2)/(-(d*e*x+c*e)^2/e^2+1)^(1/2)*Ellipti
cF((d*e*x+c*e)^(1/2)*(1/e)^(1/2),I))))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(11/2),x, algorithm="maxima")
```

```
[Out] -2/9*((d*x + c)^(9/2)*b*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c +
1)) + (a*d^4*x^4 + 4*a*c*d^3*x^3 + 6*a*c^2*d^2*x^2 + 9*(b*d^5*x^4*e^6 + 4*b
*c*d^4*x^3*e^6 + 6*b*c^2*d^3*x^2*e^6 + 4*b*c^3*d^2*x*e^6 + b*c^4*d*e^6)*(d*
x + c)^(9/2)*integrate(1/9*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c +
1)/(d^7*x^7*e^6 + 7*c*d^6*x^6*e^6 + (21*c^2*e^6 - e^6)*d^5*x^5 + 5*(7*c^3*e
^6 - c*e^6)*d^4*x^4 + c^7*e^6 + 5*(7*c^4*e^6 - 2*c^2*e^6)*d^3*x^3 - c^5*e^6
 + (21*c^5*e^6 - 10*c^3*e^6)*d^2*x^2 + (7*c^6*e^6 - 5*c^4*e^6)*d*x), x) + 4
*a*c^3*d*x + a*c^4)*sqrt(d*x + c))*e^(-9/2*log(d*x + c) - 1/2)/((d^5*x^4*e^
5 + 4*c*d^4*x^3*e^5 + 6*c^2*d^3*x^2*e^5 + 4*c^3*d^2*x*e^5 + c^4*d*e^5)*sqrt
(d*x + c))
```

Fricas [C] Result contains higher order function than in optimal. Order 9 vs. order 4.
time = 0.71, size = 247, normalized size = 1.78

$$-\frac{2\left(\left(21\,bd^2\arcsin\left(dx+c\right)+21\,ad^2+2\left(5\,bd^5x^3+15\,bcd^4x^2+3\left(5\,bc^2+b\right)d^3x+\left(5\,bc^3+3\,bc\right)d^2\right)\sqrt{-d^2x^2-2\,cdx-c^2+1}\right)\sqrt{dx+c}\,e^{\frac{1}{2}}+10\left(bd^5x^5+5\,bcd^4x^4+10\,bc^2d^3x^3+10\,bc^3d^2x^2+5\,bc^4dx+bc^5\right)\sqrt{-d^3e}\,\mathrm{weierstrassPInverse}\left(\frac{4}{d^2},0,\frac{dx+c}{d}\right)\right)e^{(-6)}}{189\left(d^8x^5+5\,cd^7x^4+10\,c^2d^6x^3+10\,c^3d^5x^2+5\,c^4d^4x+c^5d^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(11/2),x, algorithm="fricas")
```

```
[Out] -2/189*((21*b*d^2*arcsin(d*x + c) + 21*a*d^2 + 2*(5*b*d^5*x^3 + 15*b*c*d^4*
x^2 + 3*(5*b*c^2 + b)*d^3*x + (5*b*c^3 + 3*b*c)*d^2)*sqrt(-d^2*x^2 - 2*c*d*
x - c^2 + 1))*sqrt(d*x + c)*e^(1/2) + 10*(b*d^5*x^5 + 5*b*c*d^4*x^4 + 10*b*
c^2*d^3*x^3 + 10*b*c^3*d^2*x^2 + 5*b*c^4*d*x + b*c^5)*sqrt(-d^3*e)*weierstr
assPInverse(4/d^2, 0, (d*x + c)/d))*e^(-6)/(d^8*x^5 + 5*c*d^7*x^4 + 10*c^2*
d^6*x^3 + 10*c^3*d^5*x^2 + 5*c^4*d^4*x + c^5*d^3)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))/(d*e*x+c*e)**(11/2),x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))/(d*e*x+c*e)^(11/2),x, algorithm="giac")
[Out] integrate((b*arcsin(d*x + c) + a)/(d*e*x + c*e)^(11/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\mathrm{asin}(c+d\,x)}{\left(c\,e+d\,e\,x\right)^{11/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))/(c*e + d*e*x)^(11/2),x)
[Out] int((a + b*asin(c + d*x))/(c*e + d*e*x)^(11/2), x)
```

3.291 $\int (ce+dex)^{7/2}(a+b\text{ArcSin}(c+dx))^2\,dx$

Optimal. Leaf size=130

$$\frac{2(e(c+dx))^{9/2}(a+b\text{ArcSin}(c+dx))^2}{9de}-\frac{8b(e(c+dx))^{11/2}(a+b\text{ArcSin}(c+dx))\,{}_2F_1\left(\frac{1}{2},\frac{11}{4};\frac{15}{4};(c+dx)^2\right)}{99de^2}+\frac{16\ldots}{}$$

```
[Out] 2/9*(e*(d*x+c))^(9/2)*(a+b*arcsin(d*x+c))^2/d/e-8/99*b*(e*(d*x+c))^(11/2)*(
a+b*arcsin(d*x+c))*hypergeom([1/2, 11/4],[15/4],(d*x+c)^2)/d/e^2+16/1287*b^
2*(e*(d*x+c))^(13/2)*hypergeom([1, 13/4, 13/4],[15/4, 17/4],(d*x+c)^2)/d/e^
3
```

Rubi [A]
time = 0.16, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.120$, Rules used = {4889, 4723, 4805}

$$\frac{16b^2(e(c+dx))^{13/2}\,{}_3F_2\left(1,\frac{13}{4},\frac{13}{4};\frac{15}{4},\frac{17}{4};(c+dx)^2\right)}{1287de^3}-\frac{8b(e(c+dx))^{11/2}\,{}_2F_1\left(\frac{1}{2},\frac{11}{4};\frac{15}{4};(c+dx)^2\right)(a+b\text{ArcSin}(c+dx))}{99de^2}+\frac{2(e(c+dx))^{9/2}(a+b\text{ArcSin}(c+dx))^2}{9de}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^(7/2)*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (2*(e*(c + d*x))^(9/2)*(a + b*ArcSin[c + d*x])^2)/(9*d*e) - (8*b*(e*(c + d*
x))^(11/2)*(a + b*ArcSin[c + d*x])*Hypergeometric2F1[1/2, 11/4, 15/4, (c +
d*x)^2])/(99*d*e^2) + (16*b^2*(e*(c + d*x))^(13/2)*HypergeometricPFQ[{1, 13
/4, 13/4}, {15/4, 17/4}, (c + d*x)^2])/(1287*d*e^3)
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4805

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)/(f*(m + 1)))*Simp[Sqrt[1 - c^2*
x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])*Hypergeometric2F1[1/2, (1 + m)/2,
 (3 + m)/2, c^2*x^2], x] - Simp[b*c*((f*x)^(m + 2)/(f^2*(m + 1)*(m + 2)))*S
imp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*HypergeometricPFQ[{1, 1 + m/2, 1 + m
/2}, {3/2 + m/2, 2 + m/2}, c^2*x^2], x] /; FreeQ[{a, b, c, d, e, f, m}, x]
&& EqQ[c^2*d + e, 0] &&  !IntegerQ[m]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)^{7/2}\left(a+b\sin^{-1}(c+dx)\right)^2\,dx=\frac{\mathrm{Subst}\left(\int (ex)^{7/2}\left(a+b\sin^{-1}(x)\right)^2\,dx,x,c+dx\right)}{d}$$

$$=\frac{2(e(c+dx))^{9/2}\left(a+b\sin^{-1}(c+dx)\right)^2}{9de}-\frac{(4b)\mathrm{Subst}\left(\int \frac{(ex)^{9/2}(a+}{\sqrt{1}}\right.}{9}$$

$$=\frac{2(e(c+dx))^{9/2}\left(a+b\sin^{-1}(c+dx)\right)^2}{9de}-\frac{8b(e(c+dx))^{11/2}(a+}{}$$

Mathematica [A]
time = 0.08, size = 114, normalized size = 0.88

$$\frac{2e^3(c+dx)^4\sqrt{e(c+dx)}\left(13(a+b\mathrm{ArcSin}(c+dx))\left(11(a+b\mathrm{ArcSin}(c+dx))-4b(c+dx)\,{}_2F_1\left(\frac{1}{2},\frac{11}{4};\frac{15}{4};(c+dx)^2\right)\right)+8b^2(c+dx)^2\,{}_3F_2\left(1,\frac{13}{4},\frac{13}{4};\frac{15}{4},\frac{17}{4};(c+dx)^2\right)\right)}{1287d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^(7/2)*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (2*e^3*(c + d*x)^4*Sqrt[e*(c + d*x)]*(13*(a + b*ArcSin[c + d*x])*(11*(a + b
*ArcSin[c + d*x]) - 4*b*(c + d*x)*Hypergeometric2F1[1/2, 11/4, 15/4, (c + d
*x)^2]) + 8*b^2*(c + d*x)^2*HypergeometricPFQ[{1, 13/4, 13/4}, {15/4, 17/4}
, (c + d*x)^2]))/(1287*d)
```

Maple [F]
time = 0.23, size = 0, normalized size = 0.00

$$\int \left(dex+ce\right)^{\frac{7}{2}}\left(a+b\arcsin\left(dx+c\right)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^(7/2)*(a+b*arcsin(d*x+c))^2,x)
```

```
[Out] int((d*e*x+c*e)^(7/2)*(a+b*arcsin(d*x+c))^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*e*x+c*e)^(7/2)*(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")

```
[Out] 1/630*(140*(b^2*d^4*x^4*e^3 + 4*b^2*c*d^3*x^3*e^3 + 6*b^2*c^2*d^2*x^2*e^3 +
 4*b^2*c^3*d*x*e^3 + b^2*c^4*e^3)*sqrt(d*x + c)*arctan2(d*x + c, sqrt(d*x +
 c + 1)*sqrt(-d*x - c + 1))^2*e^(1/2) + (11340*a*b*d^5*e^(7/2)*integrate(1/
9*sqrt(d*x + c)*x^5*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(
sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) +
56700*a*b*c*d^4*e^(7/2)*integrate(1/9*sqrt(d*x + c)*x^4*arctan(d*x/(sqrt(d*
x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/
(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 113400*a*b*c^2*d^3*e^(7/2)*integrate(1/
9*sqrt(d*x + c)*x^3*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(
sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) +
113400*a*b*c^3*d^2*e^(7/2)*integrate(1/9*sqrt(d*x + c)*x^2*arctan(d*x/(sqrt
(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)
))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 56700*a*b*c^4*d*e^(7/2)*integrate(1/
9*sqrt(d*x + c)*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sq
rt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 11
340*a*b*c^5*e^(7/2)*integrate(1/9*sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c +
1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^2*x^2
 + 2*c*d*x + c^2 - 1), x) + 315*a^2*c^5*(2*arctan(sqrt(d*x + c)) - log(sqrt
(d*x + c) + 1) + log(sqrt(d*x + c) - 1))*e^(7/2)/d + 2520*b^2*d^4*e^(7/2)*i
ntegrate(1/9*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*x^4*arctan(
d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x
 - c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 10080*b^2*c*d^3*e^(7/2)*int
egrate(1/9*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*x^3*arctan(d*
x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x -
 c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 15120*b^2*c^2*d^2*e^(7/2)*int
egrate(1/9*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*x^2*arctan(d*
x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x -
 c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 10080*b^2*c^3*d*e^(7/2)*integ
rate(1/9*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*x*arctan(d*x/(s
qrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c +
 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 2520*b^2*c^4*e^(7/2)*integrate(1/
9*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*arctan(d*x/(sqrt(d*x +
 c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^
2*x^2 + 2*c*d*x + c^2 - 1), x) - 1575*(2*(c + 1)*arctan(sqrt(d*x + c)) - (c
 - 1)*log(sqrt(d*x + c) + 1) + (c - 1)*log(sqrt(d*x + c) - 1) - 4*sqrt(d*x
+ c))*a^2*c^4*e^(7/2)/d - 11340*a*b*d^3*e^(7/2)*integrate(1/9*sqrt(d*x + c)
*x^3*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c +
1)*sqrt(-d*x - c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) - 34020*a*b*c*d^2
*e^(7/2)*integrate(1/9*sqrt(d*x + c)*x^2*arctan(d*x/(sqrt(d*x + c + 1)*sqrt
(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^2*x^2 + 2*c*
d*x + c^2 - 1), x) - 34020*a*b*c^2*d*e^(7/2)*integrate(1/9*sqrt(d*x + c)*x*
```

```
arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sq
rt(-d*x - c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) - 11340*a*b*c^3*e^(7/2
)*integrate(1/9*sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c +
 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 -
 1), x) + 1050*(6*(c^2 + 2*c + 1)*arctan(sqrt(d*x + c)) - 3*(c^2 - 2*c + 1)
*log(sqrt(d*x + c) + 1) + 3*(c^2 - 2*c + 1)*log(sqrt(d*x + c) - 1) + 4*(d*x
 + c)^(3/2) - 24*sqrt(d*x + c)*c)*a^2*c^3*e^(7/2)/d - 315*a^2*c^3*(2*arctan
(sqrt(d*x + c)) - log(sqrt(d*x + c) + 1) + log(sqrt(d*x + c) - 1))*e^(7/2)/
d + 630*(4*(d*x + c)^(5/2) - 20*(d*x + c)^(3/2)*c - 10*(c^3 + 3*c^2 + 3*c +
 1)*arctan(sqrt(d*x + c)) + 5*(c^3 - 3*c^2 + 3*c - 1)*log(sqrt(d*x + c) + 1
) - 5*(c^3 - 3*c^2 + 3*c - 1)*log(sqrt(d*x + c) - 1) + 20*(3*c^2 + 1)*sqrt(
d*x + c))*a^2*c^2*e^(7/2)/d + 945*(2*(c + 1)*arctan(sqrt(d*x + c)) - (c - 1
)*log(sqrt(d*x + c) + 1) + (c - 1)*log(sqrt(d*x + c) - 1) - 4*sqrt(d*x + c)
)*a^2*c^2*e^(7/2)/d + 15*(60*(d*x + c)^(7/2) - 336*(d*x + c)^(5/2)*c + 140*
(6*c^2 + 1)*(d*x + c)^(3/2) + 210*(c^4 + 4*c^3 + 6*c^2 + 4*c + 1)*arctan(sq
rt(d*x + c)) - 105*(c^4 - 4*c^3 + 6*c^2 - 4*c + 1)*log(sqrt(d*x + c) + 1) +
 105*(c^4 - 4*c^3 + 6*c^2 - 4*c + 1)*log(sqrt(d*x + c) - 1) - 1680*(c^3 + c
)*sqrt(d*x + c))*a^2*c*e^(7/2)/d - 315*(6*(c^2 + 2*c + 1)*arctan(sqrt(d*x +
 c)) - 3*(c^2 - 2*c + 1)*log(sqrt(d*x + c) + 1) + 3*(c^2 - 2*c + 1)*log(sqr
t(d*x + c) - 1) + 4*(d*x + c)^(3/2) - 24*sqrt(d*x + c)*c)*a^2*c*e^(7/2)/d +
 (140*(d*x + c)^(9/2) - 900*(d*x + c)^(7/2)*c + 252*(10*c^2 + 1)*(d*x + c)^
(5/2) - 2100*(2*c^3 + c)*(d*x + c)^(3/2) - 630*(c^5 + 5*c^4 + 10*c^3 + 10*c
^2 + 5*c + 1)*arctan(sqrt(d*x + c)) + 315*(c^5 - 5*c^4 + 10*c^3 - 10*c^2 +
5*c - 1)*log(sqrt(d*x + c) + 1) - 315*(c^5 - 5*c^4 + 10*c^3 - 10*c^2 + 5*c
- 1)*log(sqrt(d*x + c) - 1) + 1260*(5*c^4 + 10*c^2 + 1)*sqrt(d*x + c))*a^2*
e^(7/2)/d - 63*(4*(d*x + c)^(5/2) - 20*(d*x + c...
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(7/2)*(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] integral(((b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*arcsin(
d*x + c)^2*e^3 + 2*(a*b*d^3*x^3 + 3*a*b*c*d^2*x^2 + 3*a*b*c^2*d*x + a*b*c^3
)*arcsin(d*x + c)*e^3 + (a^2*d^3*x^3 + 3*a^2*c*d^2*x^2 + 3*a^2*c^2*d*x + a^
2*c^3)*e^3)*sqrt(d*x + c)*e^(1/2), x)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: SystemError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**(7/2)*(a+b*asin(d*x+c))**2,x)
```

```
[Out] Exception raised: SystemError >> excessive stack use: stack is 4845 deep
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(7/2)*(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)^(7/2)*(b*arcsin(d*x + c) + a)^2, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int (c\,e+d\,e\,x)^{7/2}\,(a+b\,\mathrm{asin}(c+d\,x))^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^(7/2)*(a + b*asin(c + d*x))^2,x)
```

```
[Out] int((c*e + d*e*x)^(7/2)*(a + b*asin(c + d*x))^2, x)
```

3.292 $\int (ce+dex)^{5/2}(a+b\mathbf{ArcSin}(c+dx))^2\,dx$

Optimal. Leaf size=130

$$\frac{2(e(c+dx))^{7/2}(a+b\text{ArcSin}(c+dx))^2}{7de}-\frac{8b(e(c+dx))^{9/2}(a+b\text{ArcSin}(c+dx))\,{}_2F_1\left(\frac{1}{2},\frac{9}{4};\frac{13}{4};(c+dx)^2\right)}{63de^2}+\frac{16}{}$$

```
[Out] 2/7*(e*(d*x+c))^(7/2)*(a+b*arcsin(d*x+c))^2/d/e-8/63*b*(e*(d*x+c))^(9/2)*(a
+b*arcsin(d*x+c))*hypergeom([1/2, 9/4],[13/4],(d*x+c)^2)/d/e^2+16/693*b^2*(
e*(d*x+c))^(11/2)*hypergeom([1, 11/4, 11/4],[13/4, 15/4],(d*x+c)^2)/d/e^3
```

Rubi [A]

time = 0.14, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.120$, Rules used = {4889, 4723, 4805}

$$\frac{16b^2(e(c+dx))^{11/2}\,{}_3F_2\left(1,\frac{11}{4},\frac{11}{4};\frac{13}{4},\frac{15}{4};(c+dx)^2\right)}{693de^3}-\frac{8b(e(c+dx))^{9/2}\,{}_2F_1\left(\frac{1}{2},\frac{9}{4};\frac{13}{4};(c+dx)^2\right)(a+b\text{ArcSin}(c+dx))}{63de^2}+\frac{2(e(c+dx))^{7/2}(a+b\text{ArcSin}(c+dx))^2}{7de}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^(5/2)*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (2*(e*(c + d*x))^(7/2)*(a + b*ArcSin[c + d*x])^2)/(7*d*e) - (8*b*(e*(c + d*
x))^(9/2)*(a + b*ArcSin[c + d*x])*Hypergeometric2F1[1/2, 9/4, 13/4, (c + d*
x)^2])/(63*d*e^2) + (16*b^2*(e*(c + d*x))^(11/2)*HypergeometricPFQ[{1, 11/4
, 11/4}, {13/4, 15/4}, (c + d*x)^2])/(693*d*e^3)
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4805

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)/(f*(m + 1)))*Simp[Sqrt[1 - c^2*
x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])*Hypergeometric2F1[1/2, (1 + m)/2,
 (3 + m)/2, c^2*x^2], x] - Simp[b*c*((f*x)^(m + 2)/(f^2*(m + 1)*(m + 2)))*S
imp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*HypergeometricPFQ[{1, 1 + m/2, 1 + m
/2}, {3/2 + m/2, 2 + m/2}, c^2*x^2], x] /; FreeQ[{a, b, c, d, e, f, m}, x]
&& EqQ[c^2*d + e, 0] &&  !IntegerQ[m]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
```

```
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)^{5/2}\left(a+b\sin^{-1}(c+dx)\right)^2\,dx = \frac{\text{Subst}\left(\int (ex)^{5/2}\left(a+b\sin^{-1}(x)\right)^2\,dx, x, c+dx\right)}{d}$$

$$= \frac{2(e(c+dx))^{7/2}\left(a+b\sin^{-1}(c+dx)\right)^2}{7de} - \frac{(4b)\text{Subst}\left(\int \frac{(ex)^{7/2}(a+b}{\sqrt{1-}}\right.}{7d}$$

$$= \frac{2(e(c+dx))^{7/2}\left(a+b\sin^{-1}(c+dx)\right)^2}{7de} - \frac{8b(e(c+dx))^{9/2}\,(a+b}{}$$

Mathematica [A]
time = 0.08, size = 106, normalized size = 0.82

$$\frac{2(e(c+dx))^{7/2}\left(99(a+b\text{ArcSin}(c+dx))^2-44b(c+dx)(a+b\text{ArcSin}(c+dx))\,{}_2F_1\left(\frac{1}{2},\frac{9}{4};\frac{13}{4};(c+dx)^2\right)+8b^2(c+dx)^2\,{}_3F_2\left(1,\frac{11}{4},\frac{11}{4};\frac{13}{4},\frac{15}{4};(c+dx)^2\right)\right)}{693de}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^(5/2)*(a + b*ArcSin[c + d*x])^2,x]
[Out] (2*(e*(c + d*x))^(7/2)*(99*(a + b*ArcSin[c + d*x])^2 - 44*b*(c + d*x)*(a +
b*ArcSin[c + d*x])*Hypergeometric2F1[1/2, 9/4, 13/4, (c + d*x)^2] + 8*b^2*(
c + d*x)^2*HypergeometricPFQ[{1, 11/4, 11/4}, {13/4, 15/4}, (c + d*x)^2]))/
(693*d*e)
```

Maple [F]
time = 0.20, size = 0, normalized size = 0.00

$$\int (dex+ce)^{\frac{5}{2}}\left(a+b\arcsin(dx+c)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^(5/2)*(a+b*arcsin(d*x+c))^2,x)
[Out] int((d*e*x+c*e)^(5/2)*(a+b*arcsin(d*x+c))^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(5/2)*(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")

[Out] 1/210*(60*(b^2*d^3*x^3*e^2 + 3*b^2*c*d^2*x^2*e^2 + 3*b^2*c^2*d*x*e^2 + b^2*
c^3*e^2)*sqrt(d*x + c)*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1
))^2*e^(1/2) + (2940*a*b*d^4*e^(5/2)*integrate(1/7*sqrt(d*x + c)*x^4*arctan
(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*
x - c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 11760*a*b*c*d^3*e^(5/2)*in
tegrate(1/7*sqrt(d*x + c)*x^3*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c +
 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 -
 1), x) + 17640*a*b*c^2*d^2*e^(5/2)*integrate(1/7*sqrt(d*x + c)*x^2*arctan(
d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x
 - c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 11760*a*b*c^3*d*e^(5/2)*int
egrate(1/7*sqrt(d*x + c)*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)
) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1)
, x) + 2940*a*b*c^4*e^(5/2)*integrate(1/7*sqrt(d*x + c)*arctan(d*x/(sqrt(d*
x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/
(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 105*a^2*c^4*(2*arctan(sqrt(d*x + c)) -
log(sqrt(d*x + c) + 1) + log(sqrt(d*x + c) - 1))*e^(5/2)/d + 840*b^2*d^3*e^
(5/2)*integrate(1/7*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*x^3*
arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sq
rt(-d*x - c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 2520*b^2*c*d^2*e^(5/
2)*integrate(1/7*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*x^2*arc
tan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(
-d*x - c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 2520*b^2*c^2*d*e^(5/2)*
integrate(1/7*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*x*arctan(d
*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x
- c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 840*b^2*c^3*e^(5/2)*integrat
e(1/7*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*arctan(d*x/(sqrt(d
*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))
/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) - 420*(2*(c + 1)*arctan(sqrt(d*x + c)) -
 (c - 1)*log(sqrt(d*x + c) + 1) + (c - 1)*log(sqrt(d*x + c) - 1) - 4*sqrt(d
*x + c))*a^2*c^3*e^(5/2)/d - 2940*a*b*d^2*e^(5/2)*integrate(1/7*sqrt(d*x +
c)*x^2*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c
+ 1)*sqrt(-d*x - c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) - 5880*a*b*c*d*
e^(5/2)*integrate(1/7*sqrt(d*x + c)*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d
*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^2*x^2 + 2*c*d*x
 + c^2 - 1), x) - 2940*a*b*c^2*e^(5/2)*integrate(1/7*sqrt(d*x + c)*arctan(d
*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x
- c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 210*(6*(c^2 + 2*c + 1)*arcta
n(sqrt(d*x + c)) - 3*(c^2 - 2*c + 1)*log(sqrt(d*x + c) + 1) + 3*(c^2 - 2*c
+ 1)*log(sqrt(d*x + c) - 1) + 4*(d*x + c)^(3/2) - 24*sqrt(d*x + c)*c)*a^2*c
^2*e^(5/2)/d - 105*a^2*c^2*(2*arctan(sqrt(d*x + c)) - log(sqrt(d*x + c) + 1
) + log(sqrt(d*x + c) - 1))*e^(5/2)/d + 84*(4*(d*x + c)^(5/2) - 20*(d*x + c
)^(3/2)*c - 10*(c^3 + 3*c^2 + 3*c + 1)*arctan(sqrt(d*x + c)) + 5*(c^3 - 3*c
^2 + 3*c - 1)*log(sqrt(d*x + c) + 1) - 5*(c^3 - 3*c^2 + 3*c - 1)*log(sqrt(d
```

```
*x + c) - 1) + 20*(3*c^2 + 1)*sqrt(d*x + c))*a^2*c*e^(5/2)/d + 210*(2*(c +
1)*arctan(sqrt(d*x + c)) - (c - 1)*log(sqrt(d*x + c) + 1) + (c - 1)*log(sqr
t(d*x + c) - 1) - 4*sqrt(d*x + c))*a^2*c*e^(5/2)/d + (60*(d*x + c)^(7/2) -
336*(d*x + c)^(5/2)*c + 140*(6*c^2 + 1)*(d*x + c)^(3/2) + 210*(c^4 + 4*c^3
+ 6*c^2 + 4*c + 1)*arctan(sqrt(d*x + c)) - 105*(c^4 - 4*c^3 + 6*c^2 - 4*c +
 1)*log(sqrt(d*x + c) + 1) + 105*(c^4 - 4*c^3 + 6*c^2 - 4*c + 1)*log(sqrt(d
*x + c) - 1) - 1680*(c^3 + c)*sqrt(d*x + c))*a^2*e^(5/2)/d - 35*(6*(c^2 + 2
*c + 1)*arctan(sqrt(d*x + c)) - 3*(c^2 - 2*c + 1)*log(sqrt(d*x + c) + 1) +
3*(c^2 - 2*c + 1)*log(sqrt(d*x + c) - 1) + 4*(d*x + c)^(3/2) - 24*sqrt(d*x
+ c)*c)*a^2*e^(5/2)/d)*d)/d
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(5/2)*(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
[Out] integral(((b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*arcsin(d*x + c)^2*e^2 + 2*(
a*b*d^2*x^2 + 2*a*b*c*d*x + a*b*c^2)*arcsin(d*x + c)*e^2 + (a^2*d^2*x^2 + 2
*a^2*c*d*x + a^2*c^2)*e^2)*sqrt(d*x + c)*e^(1/2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int (e(c+dx))^{\frac{5}{2}} (a+b\operatorname{asin}(c+dx))^2\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**(5/2)*(a+b*asin(d*x+c))**2,x)
[Out] Integral((e*(c + d*x))**(5/2)*(a + b*asin(c + d*x))**2, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(5/2)*(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
[Out] integrate((d*e*x + c*e)^(5/2)*(b*arcsin(d*x + c) + a)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int {\left(c\,e+d\,e\,x\right)}^{5/2}\,{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^(5/2)*(a + b*asin(c + d*x))^2,x)
[Out] int((c*e + d*e*x)^(5/2)*(a + b*asin(c + d*x))^2, x)
```

3.293 $\int (ce+dex)^{3/2}(a+b\mathbf{ArcSin}(c+dx))^2\,dx$

Optimal. Leaf size=130

$$\frac{2(e(c+dx))^{5/2}(a+b\text{ArcSin}(c+dx))^2}{5de}-\frac{8b(e(c+dx))^{7/2}(a+b\text{ArcSin}(c+dx))\,{}_2F_1\left(\frac{1}{2},\frac{7}{4};\frac{11}{4};(c+dx)^2\right)}{35de^2}+\frac{16b^2}{}$$

```
[Out] 2/5*(e*(d*x+c))^(5/2)*(a+b*arcsin(d*x+c))^2/d/e-8/35*b*(e*(d*x+c))^(7/2)*(a
+b*arcsin(d*x+c))*hypergeom([1/2, 7/4],[11/4],(d*x+c)^2)/d/e^2+16/315*b^2*(
e*(d*x+c))^(9/2)*hypergeom([1, 9/4, 9/4],[11/4, 13/4],(d*x+c)^2)/d/e^3
```

Rubi [A]
time = 0.15, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.120$, Rules used = {4889, 4723, 4805}

$$\frac{16b^2(e(c+dx))^{9/2}\,{}_3F_2\left(1,\frac{9}{4},\frac{9}{4};\frac{11}{4},\frac{13}{4};(c+dx)^2\right)}{315de^3}-\frac{8b(e(c+dx))^{7/2}\,{}_2F_1\left(\frac{1}{2},\frac{7}{4};\frac{11}{4};(c+dx)^2\right)(a+b\text{ArcSin}(c+dx))}{35de^2}+\frac{2(e(c+dx))^{5/2}(a+b\text{ArcSin}(c+dx))^2}{5de}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^(3/2)*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (2*(e*(c + d*x))^(5/2)*(a + b*ArcSin[c + d*x])^2)/(5*d*e) - (8*b*(e*(c + d*
x))^(7/2)*(a + b*ArcSin[c + d*x])*Hypergeometric2F1[1/2, 7/4, 11/4, (c + d*
x)^2])/(35*d*e^2) + (16*b^2*(e*(c + d*x))^(9/2)*HypergeometricPFQ[{1, 9/4,
9/4}, {11/4, 13/4}, (c + d*x)^2])/(315*d*e^3)
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4805

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)/(f*(m + 1)))*Simp[Sqrt[1 - c^2*
x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])*Hypergeometric2F1[1/2, (1 + m)/2,
 (3 + m)/2, c^2*x^2], x] - Simp[b*c*((f*x)^(m + 2)/(f^2*(m + 1)*(m + 2)))*S
imp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*HypergeometricPFQ[{1, 1 + m/2, 1 + m
/2}, {3/2 + m/2, 2 + m/2}, c^2*x^2], x] /; FreeQ[{a, b, c, d, e, f, m}, x]
&& EqQ[c^2*d + e, 0] &&  !IntegerQ[m]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
```

```
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)^{3/2}\left(a+b\sin^{-1}(c+dx)\right)^2\,dx=\frac{\text{Subst}\left(\int (ex)^{3/2}\left(a+b\sin^{-1}(x)\right)^2\,dx,x,c+dx\right)}{d}$$

$$=\frac{2(e(c+dx))^{5/2}\left(a+b\sin^{-1}(c+dx)\right)^2}{5de}-\frac{(4b)\text{Subst}\left(\int \frac{(ex)^{5/2}(a+}{\sqrt{1-}}\right.}{5}$$

$$=\frac{2(e(c+dx))^{5/2}\left(a+b\sin^{-1}(c+dx)\right)^2}{5de}-\frac{8b(e(c+dx))^{7/2}(a+}{}$$

Mathematica [A]
time = 0.08, size = 107, normalized size = 0.82

$$\frac{2(e(c+dx))^{5/2}\left(9(a+b\text{ArcSin}(c+dx))\left(7(a+b\text{ArcSin}(c+dx))-4b(c+dx)\,{}_2F_1\left(\frac{1}{2},\frac{7}{4};\frac{11}{4};(c+dx)^2\right)\right)+8b^2(c+dx)^2\,{}_3F_2\left(1,\frac{9}{4},\frac{9}{4};\frac{11}{4},\frac{13}{4};(c+dx)^2\right)\right)}{315de}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^(3/2)*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (2*(e*(c + d*x))^(5/2)*(9*(a + b*ArcSin[c + d*x])*(7*(a + b*ArcSin[c + d*x]
) - 4*b*(c + d*x)*Hypergeometric2F1[1/2, 7/4, 11/4, (c + d*x)^2]) + 8*b^2*(
c + d*x)^2*HypergeometricPFQ[{1, 9/4, 9/4}, {11/4, 13/4}, (c + d*x)^2]))/(3
15*d*e)
```

Maple [F]
time = 0.21, size = 0, normalized size = 0.00

$$\int (dex+ce)^{\frac{3}{2}}\left(a+b\arcsin(dx+c)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^(3/2)*(a+b*arcsin(d*x+c))^2,x)
```

```
[Out] int((d*e*x+c*e)^(3/2)*(a+b*arcsin(d*x+c))^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(3/2)*(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] 1/10*(4*(b^2*d^2*x^2*e + 2*b^2*c*d*x*e + b^2*c^2*e)*sqrt(d*x + c)*arctan2(d
*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2*e^(1/2) + (100*a*b*d^3*e^(3
/2)*integrate(1/5*sqrt(d*x + c)*x^3*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x
 - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^2*x^2 + 2*c*d*x +
 c^2 - 1), x) + 300*a*b*c*d^2*e^(3/2)*integrate(1/5*sqrt(d*x + c)*x^2*arcta
n(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d
*x - c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 300*a*b*c^2*d*e^(3/2)*int
egrate(1/5*sqrt(d*x + c)*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)
) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1)
, x) + 100*a*b*c^3*e^(3/2)*integrate(1/5*sqrt(d*x + c)*arctan(d*x/(sqrt(d*x
 + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(
d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 5*a^2*c^3*(2*arctan(sqrt(d*x + c)) - log
(sqrt(d*x + c) + 1) + log(sqrt(d*x + c) - 1))*e^(3/2)/d + 40*b^2*d^2*e^(3/2
)*integrate(1/5*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*x^2*arct
an(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-
d*x - c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 80*b^2*c*d*e^(3/2)*integ
rate(1/5*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*x*arctan(d*x/(s
qrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c +
 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 40*b^2*c^2*e^(3/2)*integrate(1/5*
sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*arctan(d*x/(sqrt(d*x + c
 + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^2*
x^2 + 2*c*d*x + c^2 - 1), x) - 15*(2*(c + 1)*arctan(sqrt(d*x + c)) - (c - 1
)*log(sqrt(d*x + c) + 1) + (c - 1)*log(sqrt(d*x + c) - 1) - 4*sqrt(d*x + c)
)*a^2*c^2*e^(3/2)/d - 100*a*b*d*e^(3/2)*integrate(1/5*sqrt(d*x + c)*x*arcta
n(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d
*x - c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) - 100*a*b*c*e^(3/2)*integra
te(1/5*sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/
(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) +
 5*(6*(c^2 + 2*c + 1)*arctan(sqrt(d*x + c)) - 3*(c^2 - 2*c + 1)*log(sqrt(d*
x + c) + 1) + 3*(c^2 - 2*c + 1)*log(sqrt(d*x + c) - 1) + 4*(d*x + c)^(3/2)
- 24*sqrt(d*x + c)*c)*a^2*c*e^(3/2)/d - 5*a^2*c*(2*arctan(sqrt(d*x + c)) -
log(sqrt(d*x + c) + 1) + log(sqrt(d*x + c) - 1))*e^(3/2)/d + (4*(d*x + c)^(
5/2) - 20*(d*x + c)^(3/2)*c - 10*(c^3 + 3*c^2 + 3*c + 1)*arctan(sqrt(d*x +
c)) + 5*(c^3 - 3*c^2 + 3*c - 1)*log(sqrt(d*x + c) + 1) - 5*(c^3 - 3*c^2 + 3
*c - 1)*log(sqrt(d*x + c) - 1) + 20*(3*c^2 + 1)*sqrt(d*x + c))*a^2*e^(3/2)/
d + 5*(2*(c + 1)*arctan(sqrt(d*x + c)) - (c - 1)*log(sqrt(d*x + c) + 1) + (
c - 1)*log(sqrt(d*x + c) - 1) - 4*sqrt(d*x + c))*a^2*e^(3/2)/d)*d)/d
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(3/2)*(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] integral(((b^2*d*x + b^2*c)*arcsin(d*x + c)^2*e + 2*(a*b*d*x + a*b*c)*arcsi
n(d*x + c)*e + (a^2*d*x + a^2*c)*e)*sqrt(d*x + c)*e^(1/2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int (e(c+dx))^{\frac{3}{2}} (a+b \operatorname{asin}(c+dx))^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**(3/2)*(a+b*asin(d*x+c))**2,x)
```

```
[Out] Integral((e*(c + d*x))**(3/2)*(a + b*asin(c + d*x))**2, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(3/2)*(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)^(3/2)*(b*arcsin(d*x + c) + a)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int (c\,e+d\,e\,x)^{3/2}\,(a+b\,\mathrm{asin}(c+d\,x))^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^(3/2)*(a + b*asin(c + d*x))^2,x)
```

```
[Out] int((c*e + d*e*x)^(3/2)*(a + b*asin(c + d*x))^2, x)
```

3.294 $\int \sqrt{ce+dex}\,(a+b\mathbf{ArcSin}(c+dx))^2\,dx$

Optimal. Leaf size=130

$$\frac{2(e(c+dx))^{3/2}(a+b\text{ArcSin}(c+dx))^2}{3de}-\frac{8b(e(c+dx))^{5/2}(a+b\text{ArcSin}(c+dx))\,{}_2F_1\left(\frac{1}{2},\frac{5}{4};\frac{9}{4};(c+dx)^2\right)}{15de^2}+\frac{16b^2(}{}$$

```
[Out] 2/3*(e*(d*x+c))^(3/2)*(a+b*arcsin(d*x+c))^2/d/e-8/15*b*(e*(d*x+c))^(5/2)*(a
+b*arcsin(d*x+c))*hypergeom([1/2, 5/4],[9/4],(d*x+c)^2)/d/e^2+16/105*b^2*(e
*(d*x+c))^(7/2)*hypergeom([1, 7/4, 7/4],[9/4, 11/4],(d*x+c)^2)/d/e^3
```

Rubi [A]

time = 0.14, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}=0.120$, Rules used = {4889, 4723, 4805}

$$\frac{16b^2(e(c+dx))^{7/2}\,{}_3F_2\left(1,\frac{7}{4},\frac{7}{4};\frac{9}{4},\frac{11}{4};(c+dx)^2\right)}{105de^3}-\frac{8b(e(c+dx))^{5/2}\,{}_2F_1\left(\frac{1}{2},\frac{5}{4};\frac{9}{4};(c+dx)^2\right)(a+b\text{ArcSin}(c+dx))}{15de^2}+\frac{2(e(c+dx))^{3/2}(a+b\text{ArcSin}(c+dx))^2}{3de}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[c*e + d*e*x]*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (2*(e*(c + d*x))^(3/2)*(a + b*ArcSin[c + d*x])^2)/(3*d*e) - (8*b*(e*(c + d*
x))^(5/2)*(a + b*ArcSin[c + d*x])*Hypergeometric2F1[1/2, 5/4, 9/4, (c + d*x
)^2])/(15*d*e^2) + (16*b^2*(e*(c + d*x))^(7/2)*HypergeometricPFQ[{1, 7/4, 7
/4}, {9/4, 11/4}, (c + d*x)^2])/(105*d*e^3)
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4805

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)/(f*(m + 1)))*Simp[Sqrt[1 - c^2*
x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])*Hypergeometric2F1[1/2, (1 + m)/2,
 (3 + m)/2, c^2*x^2], x] - Simp[b*c*((f*x)^(m + 2)/(f^2*(m + 1)*(m + 2)))*S
imp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*HypergeometricPFQ[{1, 1 + m/2, 1 + m
/2}, {3/2 + m/2, 2 + m/2}, c^2*x^2], x] /; FreeQ[{a, b, c, d, e, f, m}, x]
&& EqQ[c^2*d + e, 0] &&  !IntegerQ[m]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[(((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
```

```
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \sqrt{ce+dex}\,\left(a+b\sin^{-1}(c+dx)\right)^2\,dx = \frac{\operatorname{Subst}\left(\int \sqrt{ex}\,\left(a+b\sin^{-1}(x)\right)^2\,dx, x, c+dx\right)}{d}$$
$$= \frac{2(e(c+dx))^{3/2}\left(a+b\sin^{-1}(c+dx)\right)^2}{3de} - \frac{(4b)\operatorname{Subst}\left(\int \frac{(ex)^{3/2}(a+b}{\sqrt{1-}}\right.}{3d}$$
$$= \frac{2(e(c+dx))^{3/2}\left(a+b\sin^{-1}(c+dx)\right)^2}{3de} - \frac{8b(e(c+dx))^{5/2}\left(a+b\right.}{}$$

Mathematica [A]
time = 0.07, size = 107, normalized size = 0.82

$$\frac{2(e(c+dx))^{3/2}\left(7(a+b\text{ArcSin}(c+dx))\left(5(a+b\text{ArcSin}(c+dx))-4b(c+dx)\,{}_2F_1\left(\frac{1}{2},\frac{5}{4};\frac{9}{4};(c+dx)^2\right)\right)+8b^2(c+dx)^2\,{}_3F_2\left(1,\frac{7}{4},\frac{7}{4};\frac{9}{4},\frac{11}{4};(c+dx)^2\right)\right)}{105de}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[c*e + d*e*x]*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] (2*(e*(c + d*x))^(3/2)*(7*(a + b*ArcSin[c + d*x])*(5*(a + b*ArcSin[c + d*x]
) - 4*b*(c + d*x)*Hypergeometric2F1[1/2, 5/4, 9/4, (c + d*x)^2]) + 8*b^2*(c
 + d*x)^2*HypergeometricPFQ[{1, 7/4, 7/4}, {9/4, 11/4}, (c + d*x)^2]))/(105
*d*e)
```

Maple [F]
time = 0.20, size = 0, normalized size = 0.00

$$\int \sqrt{dex+ce}\,\left(a+b\arcsin\left(dx+c\right)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^2,x)
```

```
[Out] int((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] 1/6*(4*(b^2*d*x + b^2*c)*sqrt(d*x + c)*arctan2(d*x + c, sqrt(d*x + c + 1)*s
qrt(-d*x - c + 1))^2*e^(1/2) + (36*a*b*d^2*e^(1/2)*integrate(1/3*sqrt(d*x +
 c)*x^2*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c
 + 1)*sqrt(-d*x - c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 72*a*b*c*d*e
^(1/2)*integrate(1/3*sqrt(d*x + c)*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*
x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^2*x^2 + 2*c*d*x
+ c^2 - 1), x) + 36*a*b*c^2*e^(1/2)*integrate(1/3*sqrt(d*x + c)*arctan(d*x/
(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c
 + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 3*a^2*c^2*(2*arctan(sqrt(d*x +
c)) - log(sqrt(d*x + c) + 1) + log(sqrt(d*x + c) - 1))*e^(1/2)/d + 24*b^2*d
*e^(1/2)*integrate(1/3*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*x
*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*s
qrt(-d*x - c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 24*b^2*c*e^(1/2)*in
tegrate(1/3*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*arctan(d*x/(
sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c
+ 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) - 6*(2*(c + 1)*arctan(sqrt(d*x + c
)) - (c - 1)*log(sqrt(d*x + c) + 1) + (c - 1)*log(sqrt(d*x + c) - 1) - 4*sq
rt(d*x + c))*a^2*c*e^(1/2)/d - 36*a*b*e^(1/2)*integrate(1/3*sqrt(d*x + c)*a
rctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqr
t(-d*x - c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + (6*(c^2 + 2*c + 1)*ar
ctan(sqrt(d*x + c)) - 3*(c^2 - 2*c + 1)*log(sqrt(d*x + c) + 1) + 3*(c^2 - 2
*c + 1)*log(sqrt(d*x + c) - 1) + 4*(d*x + c)^(3/2) - 24*sqrt(d*x + c)*c)*a^
2*e^(1/2)/d - 3*a^2*(2*arctan(sqrt(d*x + c)) - log(sqrt(d*x + c) + 1) + log
(sqrt(d*x + c) - 1))*e^(1/2)/d)*d)/d
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2)*sqrt(d*x + c
)*e^(1/2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{e\left(c+dx\right)}\left(a+b\operatorname{asin}\left(c+dx\right)\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**(1/2)*(a+b*asin(d*x+c))**2,x)
```

```
[Out] Integral(sqrt(e*(c + d*x))*(a + b*asin(c + d*x))**2, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
[Out] integrate(sqrt(d*e*x + c*e)*(b*arcsin(d*x + c) + a)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{c\,e+d\,e\,x}\;{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^(1/2)*(a + b*asin(c + d*x))^2,x)
[Out] int((c*e + d*e*x)^(1/2)*(a + b*asin(c + d*x))^2, x)
```

3.295 $\int \frac{(a+b\text{ArcSin}(c+dx))^2}{\sqrt{ce+dex}}\,dx$

Optimal. Leaf size=128

$$\frac{2\sqrt{e(c+dx)}\,(a+b\text{ArcSin}(c+dx))^2}{de}-\frac{8b(e(c+dx))^{3/2}(a+b\text{ArcSin}(c+dx))\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};(c+dx)^2\right)}{3de^2}+\frac{16b^2(e}{}$$

[Out] -8/3*b*(e*(d*x+c))^(3/2)*(a+b*arcsin(d*x+c))*hypergeom([1/2, 3/4],[7/4],(d*x+c)^2)/d/e^2+16/15*b^2*(e*(d*x+c))^(5/2)*hypergeom([1, 5/4, 5/4],[7/4, 9/4],(d*x+c)^2)/d/e^3+2*(a+b*arcsin(d*x+c))^2*(e*(d*x+c))^(1/2)/d/e

Rubi [A]
time = 0.13, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.120$,
Rules used = {4889, 4723, 4805}

$$\frac{16b^2(e(c+dx))^{5/2}\,{}_3F_2\left(1,\frac{5}{4},\frac{5}{4};\frac{7}{4},\frac{9}{4};(c+dx)^2\right)}{15de^3}-\frac{8b(e(c+dx))^{3/2}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};(c+dx)^2\right)(a+b\text{ArcSin}(c+dx))}{3de^2}+\frac{2\sqrt{e(c+dx)}\,(a+b\text{ArcSin}(c+dx))^2}{de}$$

Antiderivative was successfully verified.

[In] Int[(a + b*ArcSin[c + d*x])^2/Sqrt[c*e + d*e*x],x]

[Out] (2*Sqrt[e*(c + d*x)]*(a + b*ArcSin[c + d*x])^2)/(d*e) - (8*b*(e*(c + d*x))^(3/2)*(a + b*ArcSin[c + d*x])*Hypergeometric2F1[1/2, 3/4, 7/4, (c + d*x)^2])/(3*d*e^2) + (16*b^2*(e*(c + d*x))^(5/2)*HypergeometricPFQ[{1, 5/4, 5/4}, {7/4, 9/4}, (c + d*x)^2])/(15*d*e^3)

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4805

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)/(f*(m + 1)))*Simp[Sqrt[1 - c^2*
x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])*Hypergeometric2F1[1/2, (1 + m)/2,
 (3 + m)/2, c^2*x^2], x] - Simp[b*c*((f*x)^(m + 2)/(f^2*(m + 1)*(m + 2)))*S
imp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*HypergeometricPFQ[{1, 1 + m/2, 1 + m
/2}, {3/2 + m/2, 2 + m/2}, c^2*x^2], x] /; FreeQ[{a, b, c, d, e, f, m}, x]
&& EqQ[c^2*d + e, 0] &&  !IntegerQ[m]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{(a+b\sin^{-1}(c+dx))^2}{\sqrt{ce+dex}}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^2}{\sqrt{ex}}\,dx, x, c+dx\right)}{d}$$
$$= \frac{2\sqrt{e(c+dx)}\,(a+b\sin^{-1}(c+dx))^2}{de} - \frac{(4b)\text{Subst}\left(\int \frac{\sqrt{ex}\,(a+b\sin^{-1}(x))}{\sqrt{1-x^2}}\,dx, x,\right.}{de}$$
$$= \frac{2\sqrt{e(c+dx)}\,(a+b\sin^{-1}(c+dx))^2}{de} - \frac{8b(e(c+dx))^{3/2}\,(a+b\sin^{-1}(c+dx)}{3de^2}$$

Mathematica [A]
time = 0.06, size = 107, normalized size = 0.84

$$\frac{2\sqrt{e(c+dx)}\,(5(a+b\text{ArcSin}(c+dx))\,(3(a+b\text{ArcSin}(c+dx))-4b(c+dx)\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};(c+dx)^2\right))+8b^2(c+dx)^2\,{}_3F_2\left(1,\frac{5}{4},\frac{5}{4};\frac{7}{4},\frac{9}{4};(c+dx)^2\right))}{15de}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^2/Sqrt[c*e + d*e*x],x]
[Out] (2*Sqrt[e*(c + d*x)]*(5*(a + b*ArcSin[c + d*x])*(3*(a + b*ArcSin[c + d*x])
- 4*b*(c + d*x)*Hypergeometric2F1[1/2, 3/4, 7/4, (c + d*x)^2]) + 8*b^2*(c +
 d*x)^2*HypergeometricPFQ[{1, 5/4, 5/4}, {7/4, 9/4}, (c + d*x)^2]))/(15*d*e
)
```

Maple [F]
time = 180.00, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin(dx+c))^2}{\sqrt{dex+ce}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(1/2),x)
[Out] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(1/2),x, algorithm="maxima")

[Out] 1/2*(4*sqrt(d*x + c)*b^2*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2*e^(1/2) + (4*a*b*d^2*e^(1/2)*integrate(sqrt(d*x + c)*x^2*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^3*x^3*e + 3*c*d^2*x^2*e + 3*c^2*d*x*e + c^3*e - d*x*e - c*e), x) + 8*a*b*c*d*e^(1/2)*integrate(sqrt(d*x + c)*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^3*x^3*e + 3*c*d^2*x^2*e + 3*c^2*d*x*e + c^3*e - d*x*e - c*e), x) + 4*a*b*c^2*e^(1/2)*integrate(sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^3*x^3*e + 3*c*d^2*x^2*e + 3*c^2*d*x*e + c^3*e - d*x*e - c*e), x) - (2*arctan(sqrt(d*x + c))*e^(-1) + e^(-1)*log(sqrt(d*x + c) + 1) - e^(-1)*log(sqrt(d*x + c) - 1))*a^2*c^2*e^(1/2)/d + 8*b^2*d*e^(1/2)*integrate(sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^3*x^3*e + 3*c*d^2*x^2*e + 3*c^2*d*x*e + c^3*e - d*x*e - c*e), x) + 8*b^2*c*e^(1/2)*integrate(sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^3*x^3*e + 3*c*d^2*x^2*e + 3*c^2*d*x*e + c^3*e - d*x*e - c*e), x) + 2*(2*(c + 1)*arctan(sqrt(d*x + c))*e^(-1) + (c - 1)*e^(-1)*log(sqrt(d*x + c) + 1) - (c - 1)*e^(-1)*log(sqrt(d*x + c) - 1))*a^2*c*e^(1/2)/d - 4*a*b*e^(1/2)*integrate(sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^3*x^3*e + 3*c*d^2*x^2*e + 3*c^2*d*x*e + c^3*e - d*x*e - c*e), x) - (2*(c^2 + 2*c + 1)*arctan(sqrt(d*x + c))*e^(-1) + (c^2 - 2*c + 1)*e^(-1)*log(sqrt(d*x + c) + 1) - (c^2 - 2*c + 1)*e^(-1)*log(sqrt(d*x + c) - 1) - 4*sqrt(d*x + c)*e^(-1))*a^2*e^(1/2)/d + (2*arctan(sqrt(d*x + c))*e^(-1) + e^(-1)*log(sqrt(d*x + c) + 1) - e^(-1)*log(sqrt(d*x + c) - 1))*a^2*e^(1/2)/d)*d*e)*e^(-1)/d

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(1/2),x, algorithm="fricas")

[Out] integral((b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2)*e^(-1/2)/sqrt(d*x + c), x)

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**2/(d*e*x+c*e)**(1/2),x)
```

```
[Out] Exception raised: TypeError >> Invalid comparison of non-real zoo
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^2/sqrt(d*e*x + c*e), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\,\mathrm{asin}(c+d\,x))^2}{\sqrt{c\,e+d\,e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^2/(c*e + d*e*x)^(1/2),x)
```

```
[Out] int((a + b*asin(c + d*x))^2/(c*e + d*e*x)^(1/2), x)
```

3.296 $\int \frac{(a+b\text{ArcSin}(c+dx))^2}{(ce+dex)^{3/2}}\,dx$

Optimal. Leaf size=126

$$-\frac{2(a+b\text{ArcSin}(c+dx))^2}{de\sqrt{e(c+dx)}}+\frac{8b\sqrt{e(c+dx)}\,(a+b\text{ArcSin}(c+dx))\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};(c+dx)^2\right)}{de^2}-\frac{16b^2(e(c+dx))^{3/2}}{}$$

```
[Out] -16/3*b^2*(e*(d*x+c))^(3/2)*hypergeom([3/4, 3/4, 1],[5/4, 7/4],(d*x+c)^2)/d
/e^3-2*(a+b*arcsin(d*x+c))^2/d/e/(e*(d*x+c))^(1/2)+8*b*(a+b*arcsin(d*x+c))*
hypergeom([1/4, 1/2],[5/4],(d*x+c)^2)*(e*(d*x+c))^(1/2)/d/e^2
```

Rubi [A]
time = 0.14, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.120$, Rules used = {4889, 4723, 4805}

$$-\frac{16b^2(e(c+dx))^{3/2}\,{}_3F_2\left(\frac{3}{4},\frac{3}{4},1;\frac{5}{4},\frac{7}{4};(c+dx)^2\right)}{3de^3}+\frac{8b\sqrt{e(c+dx)}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};(c+dx)^2\right)(a+b\text{ArcSin}(c+dx))}{de^2}-\frac{2(a+b\text{ArcSin}(c+dx))^2}{de\sqrt{e(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^(3/2),x]
```

```
[Out] (-2*(a + b*ArcSin[c + d*x])^2)/(d*e*Sqrt[e*(c + d*x)]) + (8*b*Sqrt[e*(c + d
*x)]*(a + b*ArcSin[c + d*x])*Hypergeometric2F1[1/4, 1/2, 5/4, (c + d*x)^2])
/(d*e^2) - (16*b^2*(e*(c + d*x))^(3/2)*HypergeometricPFQ[{3/4, 3/4, 1}, {5/
4, 7/4}, (c + d*x)^2])/(3*d*e^3)
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4805

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)/(f*(m + 1)))*Simp[Sqrt[1 - c^2*
x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])*Hypergeometric2F1[1/2, (1 + m)/2,
 (3 + m)/2, c^2*x^2], x] - Simp[b*c*((f*x)^(m + 2)/(f^2*(m + 1)*(m + 2)))*S
imp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*HypergeometricPFQ[{1, 1 + m/2, 1 + m
/2}, {3/2 + m/2, 2 + m/2}, c^2*x^2], x] /; FreeQ[{a, b, c, d, e, f, m}, x]
&& EqQ[c^2*d + e, 0] &&  !IntegerQ[m]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{(a+b\sin^{-1}(c+dx))^2}{(ce+dex)^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^2}{(ex)^{3/2}}\,dx, x, c+dx\right)}{d}$$
$$= -\frac{2(a+b\sin^{-1}(c+dx))^2}{de\sqrt{e(c+dx)}} + \frac{(4b)\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{\sqrt{ex}\sqrt{1-x^2}}\,dx, x, c+dx\right)}{de}$$
$$= -\frac{2(a+b\sin^{-1}(c+dx))^2}{de\sqrt{e(c+dx)}} + \frac{8b\sqrt{e(c+dx)}\,(a+b\sin^{-1}(c+dx))\ {}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4}\right.}{de^2}$$

Mathematica [A]
time = 0.06, size = 104, normalized size = 0.83

$$-\frac{2\left(3(a+b\text{ArcSin}(c+dx))\left(a+b\text{ArcSin}(c+dx)-4b(c+dx)\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};(c+dx)^2\right)\right)+8b^2(c+dx)^2\,{}_3F_2\left(\frac{3}{4},\frac{3}{4},1;\frac{5}{4},\frac{7}{4};(c+dx)^2\right)\right)}{3de\sqrt{e(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^(3/2),x]
```

```
[Out] (-2*(3*(a + b*ArcSin[c + d*x])*(a + b*ArcSin[c + d*x] - 4*b*(c + d*x)*Hyper
geometric2F1[1/4, 1/2, 5/4, (c + d*x)^2]) + 8*b^2*(c + d*x)^2*Hypergeometri
cPFQ[{3/4, 3/4, 1}, {5/4, 7/4}, (c + d*x)^2]))/(3*d*e*Sqrt[e*(c + d*x)])
```

Maple [F]
time = 0.22, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin(dx+c))^2}{(dex+ce)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(3/2),x)
```

```
[Out] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(3/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/2*(4*b^2*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2 - (4*a
*b*d^2*e^(1/2)*integrate(sqrt(d*x + c)*x^2*arctan(d*x/(sqrt(d*x + c + 1)*sq
rt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^4*x^4*e^2
+ 4*c*d^3*x^3*e^2 + 6*c^2*d^2*x^2*e^2 + 4*c^3*d*x*e^2 + c^4*e^2 - d^2*x^2*e
^2 - 2*c*d*x*e^2 - c^2*e^2), x) + 8*a*b*c*d*e^(1/2)*integrate(sqrt(d*x + c)
*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)
*sqrt(-d*x - c + 1)))/(d^4*x^4*e^2 + 4*c*d^3*x^3*e^2 + 6*c^2*d^2*x^2*e^2 +
4*c^3*d*x*e^2 + c^4*e^2 - d^2*x^2*e^2 - 2*c*d*x*e^2 - c^2*e^2), x) + 4*a*b*
c^2*e^(1/2)*integrate(sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x
 - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^4*x^4*e^2 + 4*c*d
^3*x^3*e^2 + 6*c^2*d^2*x^2*e^2 + 4*c^3*d*x*e^2 + c^4*e^2 - d^2*x^2*e^2 - 2*
c*d*x*e^2 - c^2*e^2), x) + (2*arctan(sqrt(d*x + c))*e^(-2) - e^(-2)*log(sqr
t(d*x + c) + 1) + e^(-2)*log(sqrt(d*x + c) - 1) + 4*e^(-2)/sqrt(d*x + c))*a
^2*c^2*e^(1/2)/d - 8*b^2*d*e^(1/2)*integrate(sqrt(d*x + c + 1)*sqrt(d*x + c
)*sqrt(-d*x - c + 1)*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) +
c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^4*x^4*e^2 + 4*c*d^3*x^3*e^2 +
6*c^2*d^2*x^2*e^2 + 4*c^3*d*x*e^2 + c^4*e^2 - d^2*x^2*e^2 - 2*c*d*x*e^2 - c
^2*e^2), x) - 8*b^2*c*e^(1/2)*integrate(sqrt(d*x + c + 1)*sqrt(d*x + c)*sqr
t(-d*x - c + 1)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt
(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^4*x^4*e^2 + 4*c*d^3*x^3*e^2 + 6*c^2*d
^2*x^2*e^2 + 4*c^3*d*x*e^2 + c^4*e^2 - d^2*x^2*e^2 - 2*c*d*x*e^2 - c^2*e^2)
, x) - 2*(2*(c + 1)*arctan(sqrt(d*x + c))*e^(-2) - (c - 1)*e^(-2)*log(sqrt(
d*x + c) + 1) + (c - 1)*e^(-2)*log(sqrt(d*x + c) - 1) + 4*c*e^(-2)/sqrt(d*x
 + c))*a^2*c*e^(1/2)/d - 4*a*b*e^(1/2)*integrate(sqrt(d*x + c)*arctan(d*x/(
sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c
+ 1)))/(d^4*x^4*e^2 + 4*c*d^3*x^3*e^2 + 6*c^2*d^2*x^2*e^2 + 4*c^3*d*x*e^2 +
 c^4*e^2 - d^2*x^2*e^2 - 2*c*d*x*e^2 - c^2*e^2), x) + (2*(c^2 + 2*c + 1)*ar
ctan(sqrt(d*x + c))*e^(-2) - (c^2 - 2*c + 1)*e^(-2)*log(sqrt(d*x + c) + 1)
+ (c^2 - 2*c + 1)*e^(-2)*log(sqrt(d*x + c) - 1) + 4*c^2*e^(-2)/sqrt(d*x + c
))*a^2*e^(1/2)/d - (2*arctan(sqrt(d*x + c))*e^(-2) - e^(-2)*log(sqrt(d*x +
c) + 1) + e^(-2)*log(sqrt(d*x + c) - 1) + 4*e^(-2)/sqrt(d*x + c))*a^2*e^(1/
2)/d)*sqrt(d*x + c)*d*e^(3/2))*e^(-3/2)/(sqrt(d*x + c)*d)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2)*sqrt(d*x + c
)*e^(-3/2)/(d^2*x^2 + 2*c*d*x + c^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\operatorname{asin}{(c + dx)})^{2}}{(e\,(c + dx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**2/(d*e*x+c*e)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**2/(e*(c + d*x))**(3/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^2/(d*e*x + c*e)^(3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^2}{{\left(c\,e+d\,e\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^2/(c*e + d*e*x)^(3/2),x)
```

```
[Out] int((a + b*asin(c + d*x))^2/(c*e + d*e*x)^(3/2), x)
```

3.297 $\int \frac{(a+b\mathbf{ArcSin}(c+dx))^2}{(ce+dex)^{5/2}}\,dx$

Optimal. Leaf size=130

$$-\frac{2(a+b\text{ArcSin}(c+dx))^2}{3de(e(c+dx))^{3/2}}-\frac{8b(a+b\text{ArcSin}(c+dx))\,{}_2F_1\left(-\frac{1}{4},\frac{1}{2};\frac{3}{4};(c+dx)^2\right)}{3de^2\sqrt{e(c+dx)}}+\frac{16b^2\sqrt{e(c+dx)}\,{}_3F_2\left(\frac{1}{4},\frac{1}{4},1;\right.}{3de^3}$$

```
[Out] -2/3*(a+b*arcsin(d*x+c))^2/d/e/(e*(d*x+c))^(3/2)-8/3*b*(a+b*arcsin(d*x+c))*
hypergeom([-1/4, 1/2],[3/4],(d*x+c)^2)/d/e^2/(e*(d*x+c))^(1/2)+16/3*b^2*hyp
ergeom([1/4, 1/4, 1],[3/4, 5/4],(d*x+c)^2)*(e*(d*x+c))^(1/2)/d/e^3
```

Rubi [A]
time = 0.15, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.120$, Rules used = {4889, 4723, 4805}

$$\frac{16b^2\sqrt{e(c+dx)}\,{}_3F_2\left(\frac{1}{4},\frac{1}{4},1;\frac{3}{4},\frac{5}{4};(c+dx)^2\right)}{3de^3}-\frac{8b\,{}_2F_1\left(-\frac{1}{4},\frac{1}{2};\frac{3}{4};(c+dx)^2\right)(a+b\text{ArcSin}(c+dx))}{3de^2\sqrt{e(c+dx)}}-\frac{2(a+b\text{ArcSin}(c+dx))^2}{3de(e(c+dx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^(5/2),x]
```

```
[Out] (-2*(a + b*ArcSin[c + d*x])^2)/(3*d*e*(e*(c + d*x))^(3/2)) - (8*b*(a + b*Ar
cSin[c + d*x])*Hypergeometric2F1[-1/4, 1/2, 3/4, (c + d*x)^2])/(3*d*e^2*Sqr
t[e*(c + d*x)]) + (16*b^2*Sqrt[e*(c + d*x)]*HypergeometricPFQ[{1/4, 1/4, 1}
, {3/4, 5/4}, (c + d*x)^2])/(3*d*e^3)
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4805

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)/(f*(m + 1)))*Simp[Sqrt[1 - c^2*
x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])*Hypergeometric2F1[1/2, (1 + m)/2,
 (3 + m)/2, c^2*x^2], x] - Simp[b*c*((f*x)^(m + 2)/(f^2*(m + 1)*(m + 2)))*S
imp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*HypergeometricPFQ[{1, 1 + m/2, 1 + m
/2}, {3/2 + m/2, 2 + m/2}, c^2*x^2], x] /; FreeQ[{a, b, c, d, e, f, m}, x]
&& EqQ[c^2*d + e, 0] &&  !IntegerQ[m]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+b\sin^{-1}(c+dx))^2}{(ce+dex)^{5/2}}\,dx &= \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^2}{(ex)^{5/2}}\,dx, x, c+dx\right)}{d}\\ &= -\frac{2(a+b\sin^{-1}(c+dx))^2}{3de(e(c+dx))^{3/2}}+\frac{(4b)\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{(ex)^{3/2}\sqrt{1-x^2}}\,dx, x, c+dx\right)}{3de}\\ &= -\frac{2(a+b\sin^{-1}(c+dx))^2}{3de(e(c+dx))^{3/2}}-\frac{8b(a+b\sin^{-1}(c+dx))\,{}_2F_1\left(-\frac{1}{4},\frac{1}{2};\frac{3}{4};(c+dx)^2\right)}{3de^2\sqrt{e(c+dx)}}\end{aligned}$$

Mathematica [A]
time = 0.06, size = 102, normalized size = 0.78

$$-\frac{2\left((a+b\text{ArcSin}(c+dx))^2+4b(c+dx)\left((a+b\text{ArcSin}(c+dx))\,{}_2F_1\left(-\frac{1}{4},\frac{1}{2};\frac{3}{4};(c+dx)^2\right)-2b(c+dx)\,{}_3F_2\left(\frac{1}{4},\frac{1}{4},1;\frac{3}{4},\frac{5}{4};(c+dx)^2\right)\right)\right)}{3de(e(c+dx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^(5/2),x]
[Out] (-2*((a + b*ArcSin[c + d*x])^2 + 4*b*(c + d*x)*((a + b*ArcSin[c + d*x])*Hyp
ergeometric2F1[-1/4, 1/2, 3/4, (c + d*x)^2] - 2*b*(c + d*x)*HypergeometricP
FQ[{1/4, 1/4, 1}, {3/4, 5/4}, (c + d*x)^2])))/(3*d*e*(e*(c + d*x))^(3/2))
```

Maple [F]
time = 0.22, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin(dx+c))^2}{(dex+ce)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(5/2),x)
[Out] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(5/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(5/2),x, algorithm="maxima")

[Out] -1/6*(4*b^2*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2*e^(1/2) - (36*a*b*d^2*e^(1/2)*integrate(1/3*sqrt(d*x + c)*x^2*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^5*x^5*e^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3*e^3 + 10*c^3*d^2*x^2*e^3 + 5*c^4*d*x*e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2*x^2*e^3 - 3*c^2*d*x*e^3 - c^3*e^3), x) + 72*a*b*c*d*e^(1/2)*integrate(1/3*sqrt(d*x + c)*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^5*x^5*e^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3*e^3 + 10*c^3*d^2*x^2*e^3 + 5*c^4*d*x*e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2*x^2*e^3 - 3*c^2*d*x*e^3 - c^3*e^3), x) + 36*a*b*c^2*e^(1/2)*integrate(1/3*sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^5*x^5*e^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3*e^3 + 10*c^3*d^2*x^2*e^3 + 5*c^4*d*x*e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2*x^2*e^3 - 3*c^2*d*x*e^3 - c^3*e^3), x) - (6*arctan(sqrt(d*x + c))*e^(-3) + 3*e^(-3)*log(sqrt(d*x + c) + 1) - 3*e^(-3)*log(sqrt(d*x + c) - 1) - 4*e^(-3)/(d*x + c)^(3/2))*a^2*c^2*e^(1/2)/d - 24*b^2*d*e^(1/2)*integrate(1/3*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^5*x^5*e^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3*e^3 + 10*c^3*d^2*x^2*e^3 + 5*c^4*d*x*e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2*x^2*e^3 - 3*c^2*d*x*e^3 - c^3*e^3), x) - 24*b^2*c*e^(1/2)*integrate(1/3*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^5*x^5*e^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3*e^3 + 10*c^3*d^2*x^2*e^3 + 5*c^4*d*x*e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2*x^2*e^3 - 3*c^2*d*x*e^3 - c^3*e^3), x) + 2*(6*(c + 1)*arctan(sqrt(d*x + c))*e^(-3) + 3*(c - 1)*e^(-3)*log(sqrt(d*x + c) + 1) - 3*(c - 1)*e^(-3)*log(sqrt(d*x + c) - 1) + 4*(3*d*x + 2*c)*e^(-3)/(d*x + c)^(3/2))*a^2*c*e^(1/2)/d - 36*a*b*e^(1/2)*integrate(1/3*sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^5*x^5*e^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3*e^3 + 10*c^3*d^2*x^2*e^3 + 5*c^4*d*x*e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2*x^2*e^3 - 3*c^2*d*x*e^3 - c^3*e^3), x) - (6*(c^2 + 2*c + 1)*arctan(sqrt(d*x + c))*e^(-3) + 3*(c^2 - 2*c + 1)*e^(-3)*log(sqrt(d*x + c) + 1) - 3*(c^2 - 2*c + 1)*e^(-3)*log(sqrt(d*x + c) - 1) + 4*(6*(d*x + c)*c - c^2)*e^(-3)/(d*x + c)^(3/2))*a^2*e^(1/2)/d + (6*arctan(sqrt(d*x + c))*e^(-3) + 3*e^(-3)*log(sqrt(d*x + c) + 1) - 3*e^(-3)*log(sqrt(d*x + c) - 1) - 4*e^(-3)/(d*x + c)^(3/2))*a^2*e^(1/2)/d)*(d^2*x*e^3 + c*d*e^3)*sqrt(d*x + c))/((d^2*x*e^3 + c*d*e^3)*sqrt(d*x + c))

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2)*sqrt(d*x + c
)*e^(-5/2)/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\,\mathrm{asin}\,(c + dx))^2}{(e\,(c + dx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**2/(d*e*x+c*e)**(5/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**2/(e*(c + d*x))**(5/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^2/(d*e*x + c*e)^(5/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a + b\,\mathrm{asin}(c + d\,x))^2}{(c\,e + d\,e\,x)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^2/(c*e + d*e*x)^(5/2),x)
```

```
[Out] int((a + b*asin(c + d*x))^2/(c*e + d*e*x)^(5/2), x)
```

3.298 $\int \frac{(a+b\mathbf{ArcSin}(c+dx))^2}{(ce+dex)^{7/2}}\,dx$

Optimal. Leaf size=130

$$-\frac{2(a+b\text{ArcSin}(c+dx))^2}{5de(e(c+dx))^{5/2}}-\frac{8b(a+b\text{ArcSin}(c+dx))\,{}_2F_1\left(-\frac{3}{4},\frac{1}{2};\frac{1}{4};(c+dx)^2\right)}{15de^2(e(c+dx))^{3/2}}-\frac{16b^2\,{}_3F_2\left(-\frac{1}{4},-\frac{1}{4},1;\frac{1}{4},\frac{3}{4};(c+$$

```
[Out] -2/5*(a+b*arcsin(d*x+c))^2/d/e/(e*(d*x+c))^(5/2)-8/15*b*(a+b*arcsin(d*x+c))
*hypergeom([-3/4, 1/2],[1/4],(d*x+c)^2)/d/e^2/(e*(d*x+c))^(3/2)-16/15*b^2*h
ypergeom([-1/4, -1/4, 1],[1/4, 3/4],(d*x+c)^2)/d/e^3/(e*(d*x+c))^(1/2)
```

Rubi [A]
time = 0.15, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.120$, Rules used = {4889, 4723, 4805}

$$-\frac{16b^2\,{}_3F_2\left(-\frac{1}{4},-\frac{1}{4},1;\frac{1}{4},\frac{3}{4};(c+dx)^2\right)}{15de^3\sqrt{e(c+dx)}}-\frac{8b\,{}_2F_1\left(-\frac{3}{4},\frac{1}{2};\frac{1}{4};(c+dx)^2\right)(a+b\text{ArcSin}(c+dx))}{15de^2(e(c+dx))^{3/2}}-\frac{2(a+b\text{ArcSin}(c+dx))^2}{5de(e(c+dx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^(7/2),x]
```

```
[Out] (-2*(a + b*ArcSin[c + d*x])^2)/(5*d*e*(e*(c + d*x))^(5/2)) - (8*b*(a + b*Ar
cSin[c + d*x])*Hypergeometric2F1[-3/4, 1/2, 1/4, (c + d*x)^2])/(15*d*e^2*(e
*(c + d*x))^(3/2)) - (16*b^2*HypergeometricPFQ[{-1/4, -1/4, 1}, {1/4, 3/4},
 (c + d*x)^2])/(15*d*e^3*Sqrt[e*(c + d*x)])
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4805

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)/(f*(m + 1)))*Simp[Sqrt[1 - c^2*
x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])*Hypergeometric2F1[1/2, (1 + m)/2,
 (3 + m)/2, c^2*x^2], x] - Simp[b*c*((f*x)^(m + 2)/(f^2*(m + 1)*(m + 2)))*S
imp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*HypergeometricPFQ[{1, 1 + m/2, 1 + m
/2}, {3/2 + m/2, 2 + m/2}, c^2*x^2], x] /; FreeQ[{a, b, c, d, e, f, m}, x]
&& EqQ[c^2*d + e, 0] &&  !IntegerQ[m]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{(a+b\sin^{-1}(c+dx))^2}{(ce+dex)^{7/2}}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^2}{(ex)^{7/2}}\,dx, x, c+dx\right)}{d}$$
$$= -\frac{2(a+b\sin^{-1}(c+dx))^2}{5de(e(c+dx))^{5/2}} + \frac{(4b)\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{(ex)^{5/2}\sqrt{1-x^2}}\,dx, x, c+dx\right)}{5de}$$
$$= -\frac{2(a+b\sin^{-1}(c+dx))^2}{5de(e(c+dx))^{5/2}} - \frac{8b(a+b\sin^{-1}(c+dx))\ {}_2F_1\left(-\frac{3}{4},\frac{1}{2};\frac{1}{4};(c+dx)^2\right)}{15de^2(e(c+dx))^{3/2}}$$

Mathematica [A]
time = 0.06, size = 106, normalized size = 0.82

$$-\frac{2\left((a+b\text{ArcSin}(c+dx))\left(3(a+b\text{ArcSin}(c+dx))+4b(c+dx)\,{}_2F_1\left(-\frac{3}{4},\frac{1}{2};\frac{1}{4};(c+dx)^2\right)\right)+8b^2(c+dx)^2\,{}_3F_2\left(-\frac{1}{4},-\frac{1}{4},1;\frac{1}{4},\frac{3}{4};(c+dx)^2\right)\right)}{15de(e(c+dx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^(7/2),x]
```

```
[Out] (-2*((a + b*ArcSin[c + d*x])*(3*(a + b*ArcSin[c + d*x]) + 4*b*(c + d*x)*Hyp
ergeometric2F1[-3/4, 1/2, 1/4, (c + d*x)^2]) + 8*b^2*(c + d*x)^2*Hypergeome
tricPFQ[{-1/4, -1/4, 1}, {1/4, 3/4}, (c + d*x)^2]))/(15*d*e*(e*(c + d*x))^(
5/2))
```

Maple [F]
time = 0.22, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin(dx+c))^2}{(dex+ce)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(7/2),x)
```

```
[Out] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(7/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(7/2),x, algorithm="maxima")

[Out] -1/30*(12*b^2*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2*e^(1/2) - (d^3*x^2*e^4 + 2*c*d^2*x*e^4 + c^2*d*e^4)*(300*a*b*d^2*e^(1/2)*integrate(1/5*sqrt(d*x + c)*x^2*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^6*x^6*e^4 + 6*c*d^5*x^5*e^4 + 15*c^2*d^4*x^4*e^4 + 20*c^3*d^3*x^3*e^4 + 15*c^4*d^2*x^2*e^4 - d^4*x^4*e^4 + 6*c^5*d*x*e^4 - 4*c*d^3*x^3*e^4 + c^6*e^4 - 6*c^2*d^2*x^2*e^4 - 4*c^3*d*x*e^4 - c^4*e^4), x) + 600*a*b*c*d*e^(1/2)*integrate(1/5*sqrt(d*x + c)*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^6*x^6*e^4 + 6*c*d^5*x^5*e^4 + 15*c^2*d^4*x^4*e^4 + 20*c^3*d^3*x^3*e^4 + 15*c^4*d^2*x^2*e^4 - d^4*x^4*e^4 + 6*c^5*d*x*e^4 - 4*c*d^3*x^3*e^4 + c^6*e^4 - 6*c^2*d^2*x^2*e^4 - 4*c^3*d*x*e^4 - c^4*e^4), x) + 300*a*b*c^2*e^(1/2)*integrate(1/5*sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^6*x^6*e^4 + 6*c*d^5*x^5*e^4 + 15*c^2*d^4*x^4*e^4 + 20*c^3*d^3*x^3*e^4 + 15*c^4*d^2*x^2*e^4 - d^4*x^4*e^4 + 6*c^5*d*x*e^4 - 4*c*d^3*x^3*e^4 + c^6*e^4 - 6*c^2*d^2*x^2*e^4 - 4*c^3*d*x*e^4 - c^4*e^4), x) + 3*(10*arctan(sqrt(d*x + c))*e^(-4) - 5*e^(-4)*log(sqrt(d*x + c) + 1) + 5*e^(-4)*log(sqrt(d*x + c) - 1) + 4*(5*(d*x + c)^2 + 1)*e^(-4)/(d*x + c)^(5/2))*a^2*c^2*e^(1/2)/d - 120*b^2*d*e^(1/2)*integrate(1/5*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^6*x^6*e^4 + 6*c*d^5*x^5*e^4 + 15*c^2*d^4*x^4*e^4 + 20*c^3*d^3*x^3*e^4 + 15*c^4*d^2*x^2*e^4 - d^4*x^4*e^4 + 6*c^5*d*x*e^4 - 4*c*d^3*x^3*e^4 + c^6*e^4 - 6*c^2*d^2*x^2*e^4 - 4*c^3*d*x*e^4 - c^4*e^4), x) - 120*b^2*c*e^(1/2)*integrate(1/5*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^6*x^6*e^4 + 6*c*d^5*x^5*e^4 + 15*c^2*d^4*x^4*e^4 + 20*c^3*d^3*x^3*e^4 + 15*c^4*d^2*x^2*e^4 - d^4*x^4*e^4 + 6*c^5*d*x*e^4 - 4*c*d^3*x^3*e^4 + c^6*e^4 - 6*c^2*d^2*x^2*e^4 - 4*c^3*d*x*e^4 - c^4*e^4), x) - 2*(30*(c + 1)*arctan(sqrt(d*x + c))*e^(-4) - 15*(c - 1)*e^(-4)*log(sqrt(d*x + c) + 1) + 15*(c - 1)*e^(-4)*log(sqrt(d*x + c) - 1) + 4*(15*(d*x + c)^2*c - 5*d*x - 2*c)*e^(-4)/(d*x + c)^(5/2))*a^2*c*e^(1/2)/d - 300*a*b*e^(1/2)*integrate(1/5*sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^6*x^6*e^4 + 6*c*d^5*x^5*e^4 + 15*c^2*d^4*x^4*e^4 + 20*c^3*d^3*x^3*e^4 + 15*c^4*d^2*x^2*e^4 - d^4*x^4*e^4 + 6*c^5*d*x*e^4 - 4*c*d^3*x^3*e^4 + c^6*e^4 - 6*c^2*d^2*x^2*e^4 - 4*c^3*d*x*e^4 - c^4*e^4), x) + (30*(c^2 + 2*c + 1)*arctan(sqrt(d*x + c))*e^(-4) - 15*(c^2 - 2*c + 1)*e^(-4)*log(sqrt(d*x + c) + 1) + 15*(c^2 - 2*c + 1)*e^(-4)*log(sqrt(d*x + c) - 1) + 4*(15*(c^2 + 1)*(d*x + c)^2 - 10*(d*x + c)*c + 3*c^2)*e^(-4)/(d*x + c)^(5/2))*a^2*e^(1/2)/d - 3*(10*arctan(sqrt(d*x + c))*e^(-4) - 5*e^(-4)*log(sqrt(d*x + c) + 1) + 5*e^(-4)*log(sqrt(d*x + c) - 1) + 4*(5*(d*x + c)^2 + 1)*e^(-4)/(d*x + c)^(5/2))*a^2*e^(1/2)/d)*sqr

```
t(d*x + c))/((d^3*x^2*e^4 + 2*c*d^2*x*e^4 + c^2*d*e^4)*sqrt(d*x + c))
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(7/2),x, algorithm="fricas")
[Out] integral((b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2)*sqrt(d*x + c
)*e^(-7/2)/(d^4*x^4 + 4*c*d^3*x^3 + 6*c^2*d^2*x^2 + 4*c^3*d*x + c^4), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(c + dx))^2}{(e(c + dx))^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**2/(d*e*x+c*e)**(7/2),x)
[Out] Integral((a + b*asin(c + d*x))**2/(e*(c + d*x))**(7/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(7/2),x, algorithm="giac")
[Out] integrate((b*arcsin(d*x + c) + a)^2/(d*e*x + c*e)^(7/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a + b \operatorname{asin}(c + d\,x))^2}{(c\,e + d\,e\,x)^{7/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^2/(c*e + d*e*x)^(7/2),x)
[Out] int((a + b*asin(c + d*x))^2/(c*e + d*e*x)^(7/2), x)
```

3.299 $\int \frac{(a+b\mathbf{ArcSin}(c+dx))^2}{(ce+dex)^{9/2}}\,dx$

Optimal. Leaf size=130

$$-\frac{2(a+b\text{ArcSin}(c+dx))^2}{7de(e(c+dx))^{7/2}}-\frac{8b(a+b\text{ArcSin}(c+dx))\,{}_2F_1\left(-\frac{5}{4},\frac{1}{2};-\frac{1}{4};(c+dx)^2\right)}{35de^2(e(c+dx))^{5/2}}-\frac{16b^2\,{}_3F_2\left(-\frac{3}{4},-\frac{3}{4},1;-\frac{1}{4},\frac{1}{4};\right.}{105de^3(e(c+dx))^3}$$

```
[Out] -2/7*(a+b*arcsin(d*x+c))^2/d/e/(e*(d*x+c))^(7/2)-8/35*b*(a+b*arcsin(d*x+c))
*hypergeom([-5/4, 1/2],[-1/4],(d*x+c)^2)/d/e^2/(e*(d*x+c))^(5/2)-16/105*b^2
*hypergeom([-3/4, -3/4, 1],[-1/4, 1/4],(d*x+c)^2)/d/e^3/(e*(d*x+c))^(3/2)
```

Rubi [A]
time = 0.15, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.120$, Rules used = {4889, 4723, 4805}

$$-\frac{16b^2\,{}_3F_2\left(-\frac{3}{4},-\frac{3}{4},1;-\frac{1}{4},\frac{1}{4};(c+dx)^2\right)}{105de^3(e(c+dx))^{3/2}}-\frac{8b\,{}_2F_1\left(-\frac{5}{4},\frac{1}{2};-\frac{1}{4};(c+dx)^2\right)(a+b\text{ArcSin}(c+dx))}{35de^2(e(c+dx))^{5/2}}-\frac{2(a+b\text{ArcSin}(c+dx))^2}{7de(e(c+dx))^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^(9/2),x]
```

```
[Out] (-2*(a + b*ArcSin[c + d*x])^2)/(7*d*e*(e*(c + d*x))^(7/2)) - (8*b*(a + b*Ar
cSin[c + d*x])*Hypergeometric2F1[-5/4, 1/2, -1/4, (c + d*x)^2])/(35*d*e^2*(
e*(c + d*x))^(5/2)) - (16*b^2*HypergeometricPFQ[{-3/4, -3/4, 1}, {-1/4, 1/4
}, (c + d*x)^2])/(105*d*e^3*(e*(c + d*x))^(3/2))
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4805

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)/(f*(m + 1)))*Simp[Sqrt[1 - c^2*
x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])*Hypergeometric2F1[1/2, (1 + m)/2,
 (3 + m)/2, c^2*x^2], x] - Simp[b*c*((f*x)^(m + 2)/(f^2*(m + 1)*(m + 2)))*S
imp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*HypergeometricPFQ[{1, 1 + m/2, 1 + m
/2}, {3/2 + m/2, 2 + m/2}, c^2*x^2], x] /; FreeQ[{a, b, c, d, e, f, m}, x]
&& EqQ[c^2*d + e, 0] &&  !IntegerQ[m]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{(a+b\sin^{-1}(c+dx))^2}{(ce+dex)^{9/2}}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^2}{(ex)^{9/2}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{2(a+b\sin^{-1}(c+dx))^2}{7de(e(c+dx))^{7/2}} + \frac{(4b)\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{(ex)^{7/2}\sqrt{1-x^2}}\,dx, x, c+dx\right)}{7de}$$

$$= -\frac{2(a+b\sin^{-1}(c+dx))^2}{7de(e(c+dx))^{7/2}} - \frac{8b(a+b\sin^{-1}(c+dx))\ {}_2F_1\left(-\frac{5}{4},\frac{1}{2};-\frac{1}{4};(c+dx)\right.}{35de^2(e(c+dx))^{5/2}}$$

Mathematica [**A**]
time = 0.06, size = 114, normalized size = 0.88

$$-\frac{2\sqrt{e(c+dx)}\left(3(a+b\text{ArcSin}(c+dx))\left(5(a+b\text{ArcSin}(c+dx))+4b(c+dx)\,{}_2F_1\left(-\frac{5}{4},\frac{1}{2};-\frac{1}{4};(c+dx)^2\right)\right)+8b^2(c+dx)^2\,{}_3F_2\left(-\frac{3}{4},-\frac{3}{4},1;-\frac{1}{4},\frac{1}{4};(c+dx)^2\right)\right)}{105de^5(c+dx)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^2/(c*e + d*e*x)^(9/2),x]
[Out] (-2*Sqrt[e*(c + d*x)]*(3*(a + b*ArcSin[c + d*x])*(5*(a + b*ArcSin[c + d*x])
 + 4*b*(c + d*x)*Hypergeometric2F1[-5/4, 1/2, -1/4, (c + d*x)^2]) + 8*b^2*(
c + d*x)^2*HypergeometricPFQ[{-3/4, -3/4, 1}, {-1/4, 1/4}, (c + d*x)^2]))/(
105*d*e^5*(c + d*x)^4)
```

Maple [**F**]
time = 0.22, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin(dx+c))^2}{(dex+ce)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(9/2),x)
[Out] int((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(9/2),x)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(9/2),x, algorithm="maxima")

[Out] -1/210*(60*b^2*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2*e^(1/2) - (d^4*x^3*e^5 + 3*c*d^3*x^2*e^5 + 3*c^2*d^2*x*e^5 + c^3*d*e^5)*(2940*a*b*d^2*e^(1/2)*integrate(1/7*sqrt(d*x + c)*x^2*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^7*x^7*e^5 + 7*c*d^6*x^6*e^5 + 21*c^2*d^5*x^5*e^5 + 35*c^3*d^4*x^4*e^5 + 35*c^4*d^3*x^3*e^5 - d^5*x^5*e^5 + 21*c^5*d^2*x^2*e^5 - 5*c*d^4*x^4*e^5 + 7*c^6*d*x*e^5 - 10*c^2*d^3*x^3*e^5 + c^7*e^5 - 10*c^3*d^2*x^2*e^5 - 5*c^4*d*x*e^5 - c^5*e^5), x) + 5880*a*b*c*d*e^(1/2)*integrate(1/7*sqrt(d*x + c)*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^7*x^7*e^5 + 7*c*d^6*x^6*e^5 + 21*c^2*d^5*x^5*e^5 + 35*c^3*d^4*x^4*e^5 + 35*c^4*d^3*x^3*e^5 - d^5*x^5*e^5 + 21*c^5*d^2*x^2*e^5 - 5*c*d^4*x^4*e^5 + 7*c^6*d*x*e^5 - 10*c^2*d^3*x^3*e^5 + c^7*e^5 - 10*c^3*d^2*x^2*e^5 - 5*c^4*d*x*e^5 - c^5*e^5), x) + 2940*a*b*c^2*e^(1/2)*integrate(1/7*sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^7*x^7*e^5 + 7*c*d^6*x^6*e^5 + 21*c^2*d^5*x^5*e^5 + 35*c^3*d^4*x^4*e^5 + 35*c^4*d^3*x^3*e^5 - d^5*x^5*e^5 + 21*c^5*d^2*x^2*e^5 - 5*c*d^4*x^4*e^5 + 7*c^6*d*x*e^5 - 10*c^2*d^3*x^3*e^5 + c^7*e^5 - 10*c^3*d^2*x^2*e^5 - 5*c^4*d*x*e^5 - c^5*e^5), x) - 5*(42*arctan(sqrt(d*x + c))*e^(-5) + 21*e^(-5)*log(sqrt(d*x + c) + 1) - 21*e^(-5)*log(sqrt(d*x + c) - 1) - 4*(7*(d*x + c)^2 + 3)*e^(-5)/(d*x + c)^(7/2))*a^2*c^2*e^(1/2)/d - 840*b^2*d*e^(1/2)*integrate(1/7*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^7*x^7*e^5 + 7*c*d^6*x^6*e^5 + 21*c^2*d^5*x^5*e^5 + 35*c^3*d^4*x^4*e^5 + 35*c^4*d^3*x^3*e^5 - d^5*x^5*e^5 + 21*c^5*d^2*x^2*e^5 - 5*c*d^4*x^4*e^5 + 7*c^6*d*x*e^5 - 10*c^2*d^3*x^3*e^5 + c^7*e^5 - 10*c^3*d^2*x^2*e^5 - 5*c^4*d*x*e^5 - c^5*e^5), x) - 840*b^2*c*e^(1/2)*integrate(1/7*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^7*x^7*e^5 + 7*c*d^6*x^6*e^5 + 21*c^2*d^5*x^5*e^5 + 35*c^3*d^4*x^4*e^5 + 35*c^4*d^3*x^3*e^5 - d^5*x^5*e^5 + 21*c^5*d^2*x^2*e^5 - 5*c*d^4*x^4*e^5 + 7*c^6*d*x*e^5 - 10*c^2*d^3*x^3*e^5 + c^7*e^5 - 10*c^3*d^2*x^2*e^5 - 5*c^4*d*x*e^5 - c^5*e^5), x) + 2*(210*(c + 1)*arctan(sqrt(d*x + c))*e^(-5) + 105*(c - 1)*e^(-5)*log(sqrt(d*x + c) + 1) - 105*(c - 1)*e^(-5)*log(sqrt(d*x + c) - 1) + 4*(105*(d*x + c)^3 - 35*(d*x + c)^2*c + 21*d*x + 6*c)*e^(-5)/(d*x + c)^(7/2))*a^2*c*e^(1/2)/d - 2940*a*b*e^(1/2)*integrate(1/7*sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^7*x^7*e^5 + 7*c*d^6*x^6*e^5 + 21*c^2*d^5*x^5*e^5 + 35*c^3*d^4*x^4*e^5 + 35*c^4*d^3*x^3*e^5 - d^5*x^5*e^5 + 21*c^5*d^2*x^2*e^5 - 5*c*d^4*x^4*e^5 + 7*c^6*d*x*e^5 - 10*c^2*d^3*x^3*e^5 + c^7*e^5 - 10*c^3*d^2*x^2*e^5 - 5*c^4*d*x*e^5 - c^5*e^5), x) - (210*(c^2 + 2*c + 1)*arctan(sqrt(d*x + c))*e^(-5) + 105*(c^2 - 2*c + 1)*e^(-5)*log(sqrt(d*x + c) + 1) - 105*(

```
c^2 - 2*c + 1)*e^(-5)*log(sqrt(d*x + c) - 1) + 4*(210*(d*x + c)^3*c - 35*(c
^2 + 1)*(d*x + c)^2 + 42*(d*x + c)*c - 15*c^2)*e^(-5)/(d*x + c)^(7/2))*a^2*
e^(1/2)/d + 5*(42*arctan(sqrt(d*x + c))*e^(-5) + 21*e^(-5)*log(sqrt(d*x + c
) + 1) - 21*e^(-5)*log(sqrt(d*x + c) - 1) - 4*(7*(d*x + c)^2 + 3)*e^(-5)/(d
*x + c)^(7/2))*a^2*e^(1/2)/d)*sqrt(d*x + c))/((d^4*x^3*e^5 + 3*c*d^3*x^2*e^
5 + 3*c^2*d^2*x*e^5 + c^3*d*e^5)*sqrt(d*x + c))
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(9/2),x, algorithm="fricas")
[Out] integral((b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2)*sqrt(d*x + c
)*e^(-9/2)/(d^5*x^5 + 5*c*d^4*x^4 + 10*c^2*d^3*x^3 + 10*c^3*d^2*x^2 + 5*c^4
*d*x + c^5), x)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: SystemError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**2/(d*e*x+c*e)**(9/2),x)
[Out] Exception raised: SystemError >> excessive stack use: stack is 3877 deep
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^2/(d*e*x+c*e)^(9/2),x, algorithm="giac")
[Out] integrate((b*arcsin(d*x + c) + a)^2/(d*e*x + c*e)^(9/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\,\mathrm{asin}(c+d\,x))^2}{(c\,e+d\,e\,x)^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^2/(c*e + d*e*x)^(9/2),x)
[Out] int((a + b*asin(c + d*x))^2/(c*e + d*e*x)^(9/2), x)
```

3.300 $\int \sqrt{ce+dex}\,(a+b\textbf{ArcSin}(c+dx))^3\,dx$

Optimal. Leaf size=82

$$\frac{2(e(c+dx))^{3/2}(a+b\text{ArcSin}(c+dx))^3}{3de}-\frac{2b\text{Int}\left(\frac{(e(c+dx))^{3/2}(a+b\text{ArcSin}(c+dx))^2}{\sqrt{1-(c+dx)^2}},x\right)}{e}$$

```
[Out] 2/3*(e*(d*x+c))^(3/2)*(a+b*arcsin(d*x+c))^3/d/e-2*b*Unintegrable((e*(d*x+c)
)^(3/2)*(a+b*arcsin(d*x+c))^2/(1-(d*x+c)^2)^(1/2),x)/e
```

Rubi [A]
time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}=0.000$, Rules used = {}

$$\int \sqrt{ce+dex}\,(a+b\text{ArcSin}(c+dx))^3\,dx$$

Verification is not applicable to the result.

```
[In] Int[Sqrt[c*e + d*e*x]*(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] (2*(e*(c + d*x))^(3/2)*(a + b*ArcSin[c + d*x])^3)/(3*d*e) - (2*b*Defer[Subs
t][Defer[Int][((e*x)^(3/2)*(a + b*ArcSin[x])^2)/Sqrt[1 - x^2], x], x, c + d
*x])/(d*e)
```

Rubi steps

$$\begin{aligned}\int \sqrt{ce+dex}\left(a+b\sin^{-1}(c+dx)\right)^3\,dx &= \frac{\text{Subst}\left(\int \sqrt{ex}\left(a+b\sin^{-1}(x)\right)^3\,dx,x,c+dx\right)}{d}\\ &= \frac{2(e(c+dx))^{3/2}\left(a+b\sin^{-1}(c+dx)\right)^3}{3de}-\frac{(2b)\text{Subst}\left(\int \frac{(ex)^{3/2}(a+b\sin}{\sqrt{1-}}\right.}{de}\end{aligned}$$

Mathematica [F]
time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] Integrate[Sqrt[c*e + d*e*x]*(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] $Aborted
```

Maple [A]
time = 0.20, size = 0, normalized size = 0.00

$$\int \sqrt{dex + ce}\, (a + b \arcsin(dx + c))^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^3,x)
[Out] int((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^3,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
[Out] 1/6*(4*(b^3*d*x + b^3*c)*sqrt(d*x + c)*arctan2(d*x + c, sqrt(d*x + c + 1)*s
qrt(-d*x - c + 1))^3*e^(1/2) + (18*a*b^2*d^2*e^(1/2)*integrate(sqrt(d*x + c
)*x^2*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c +
 1)*sqrt(-d*x - c + 1)))^2/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 18*a^2*b*d^2
*e^(1/2)*integrate(sqrt(d*x + c)*x^2*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*
x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^2*x^2 + 2*c*d*x
+ c^2 - 1), x) + 36*a*b^2*c*d*e^(1/2)*integrate(sqrt(d*x + c)*x*arctan(d*x/
(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c
 + 1)))^2/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 36*a^2*b*c*d*e^(1/2)*integrat
e(sqrt(d*x + c)*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sq
rt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 18
*a*b^2*c^2*e^(1/2)*integrate(sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sq
rt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^2/(d^2*x^2 +
2*c*d*x + c^2 - 1), x) + 18*a^2*b*c^2*e^(1/2)*integrate(sqrt(d*x + c)*arcta
n(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d
*x - c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 3*a^3*c^2*(2*arctan(sqrt(
d*x + c)) - log(sqrt(d*x + c) + 1) + log(sqrt(d*x + c) - 1))*e^(1/2)/d + 12
*b^3*d*e^(1/2)*integrate(sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)
*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)
*sqrt(-d*x - c + 1)))^2/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 12*b^3*c*e^(1/2
)*integrate(sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*arctan(d*x/(
sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c
+ 1)))^2/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) - 6*(2*(c + 1)*arctan(sqrt(d*x +
 c)) - (c - 1)*log(sqrt(d*x + c) + 1) + (c - 1)*log(sqrt(d*x + c) - 1) - 4*
sqrt(d*x + c))*a^3*c*e^(1/2)/d - 18*a*b^2*e^(1/2)*integrate(sqrt(d*x + c)*a
```

```
rctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqr
t(-d*x - c + 1)))^2/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) - 18*a^2*b*e^(1/2)*in
tegrate(sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c
/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x)
+ (6*(c^2 + 2*c + 1)*arctan(sqrt(d*x + c)) - 3*(c^2 - 2*c + 1)*log(sqrt(d*x
 + c) + 1) + 3*(c^2 - 2*c + 1)*log(sqrt(d*x + c) - 1) + 4*(d*x + c)^(3/2) -
 24*sqrt(d*x + c)*c)*a^3*e^(1/2)/d - 3*a^3*(2*arctan(sqrt(d*x + c)) - log(s
qrt(d*x + c) + 1) + log(sqrt(d*x + c) - 1))*e^(1/2)/d)*d)/d
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
[Out] integral((b^3*arcsin(d*x + c)^3 + 3*a*b^2*arcsin(d*x + c)^2 + 3*a^2*b*arcsi
n(d*x + c) + a^3)*sqrt(d*x + c)*e^(1/2), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{e\left(c+dx\right)}\left(a+b\operatorname{asin}\left(c+dx\right)\right)^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**(1/2)*(a+b*asin(d*x+c))**3,x)
[Out] Integral(sqrt(e*(c + d*x))*(a + b*asin(c + d*x))**3, x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^3,x, algorithm="giac")
[Out] integrate(sqrt(d*e*x + c*e)*(b*arcsin(d*x + c) + a)^3, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{c\,e+d\,e\,x}\,\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^(1/2)*(a + b*asin(c + d*x))^3,x)
[Out] int((c*e + d*e*x)^(1/2)*(a + b*asin(c + d*x))^3, x)
```

3.301 $\int \frac{(a+b\text{ArcSin}(c+dx))^3}{\sqrt{ce+dex}} dx$

Optimal. Leaf size=80

$$\frac{2\sqrt{e(c+dx)}\,(a+b\text{ArcSin}(c+dx))^3}{de}-\frac{6b\text{Int}\left(\frac{\sqrt{e(c+dx)}\,(a+b\text{ArcSin}(c+dx))^2}{\sqrt{1-(c+dx)^2}},x\right)}{e}$$

```
[Out] 2*(a+b*arcsin(d*x+c))^3*(e*(d*x+c))^(1/2)/d/e-6*b*Unintegrable((a+b*arcsin(
d*x+c))^2*(e*(d*x+c))^(1/2)/(1-(d*x+c)^2)^(1/2),x)/e
```

Rubi [A]
time = 0.12, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(a+b\text{ArcSin}(c+dx))^3}{\sqrt{ce+dex}} dx$$

Verification is not applicable to the result.

```
[In] Int[(a + b*ArcSin[c + d*x])^3/Sqrt[c*e + d*e*x],x]
```

```
[Out] (2*Sqrt[e*(c + d*x)]*(a + b*ArcSin[c + d*x])^3)/(d*e) - (6*b*Defer[Subst][D
efer[Int][(Sqrt[e*x]*(a + b*ArcSin[x])^2)/Sqrt[1 - x^2], x], x, c + d*x])/(
d*e)
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{\sqrt{ce+dex}} dx=\frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^3}{\sqrt{ex}} dx, x, c+dx\right)}{d}$$

$$=\frac{2\sqrt{e(c+dx)}\,\left(a+b\sin^{-1}(c+dx)\right)^3}{de}-\frac{(6b)\text{Subst}\left(\int \frac{\sqrt{ex}\,\left(a+b\sin^{-1}(x)\right)^2}{\sqrt{1-x^2}} dx, x\right.}{de}$$

Mathematica [A]
time = 127.54, size = 0, normalized size = 0.00

$$\int \frac{(a+b\text{ArcSin}(c+dx))^3}{\sqrt{ce+dex}} dx$$

Verification is not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^3/Sqrt[c*e + d*e*x],x]
[Out] Integrate[(a + b*ArcSin[c + d*x])^3/Sqrt[c*e + d*e*x], x]
```

Maple [A]
time = 180.00, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin (dx+c))^3}{\sqrt{dex+ce}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(1/2),x)
[Out] int((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(1/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(1/2),x, algorithm="maxima")
[Out] 1/2*(4*sqrt(d*x + c)*b^3*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c +
 1))^3*e^(1/2) + (6*a*b^2*d^2*e^(1/2)*integrate(sqrt(d*x + c)*x^2*arctan(d*
x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x -
 c + 1)))^2/(d^3*x^3*e + 3*c*d^2*x^2*e + 3*c^2*d*x*e + c^3*e - d*x*e - c*e)
, x) + 6*a^2*b*d^2*e^(1/2)*integrate(sqrt(d*x + c)*x^2*arctan(d*x/(sqrt(d*x
 + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(
d^3*x^3*e + 3*c*d^2*x^2*e + 3*c^2*d*x*e + c^3*e - d*x*e - c*e), x) + 12*a*b
^2*c*d*e^(1/2)*integrate(sqrt(d*x + c)*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt
(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^2/(d^3*x^3*e +
3*c*d^2*x^2*e + 3*c^2*d*x*e + c^3*e - d*x*e - c*e), x) + 12*a^2*b*c*d*e^(1/
2)*integrate(sqrt(d*x + c)*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c +
1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^3*x^3*e + 3*c*d^2*x^2*e
+ 3*c^2*d*x*e + c^3*e - d*x*e - c*e), x) + 6*a*b^2*c^2*e^(1/2)*integrate(sq
rt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x
 + c + 1)*sqrt(-d*x - c + 1)))^2/(d^3*x^3*e + 3*c*d^2*x^2*e + 3*c^2*d*x*e +
 c^3*e - d*x*e - c*e), x) + 6*a^2*b*c^2*e^(1/2)*integrate(sqrt(d*x + c)*arc
tan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(
-d*x - c + 1)))/(d^3*x^3*e + 3*c*d^2*x^2*e + 3*c^2*d*x*e + c^3*e - d*x*e -
c*e), x) - (2*arctan(sqrt(d*x + c))*e^(-1) + e^(-1)*log(sqrt(d*x + c) + 1)
- e^(-1)*log(sqrt(d*x + c) - 1))*a^3*c^2*e^(1/2)/d + 12*b^3*d*e^(1/2)*integ
rate(sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*x*arctan(d*x/(sqrt(
d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))
)^2/(d^3*x^3*e + 3*c*d^2*x^2*e + 3*c^2*d*x*e + c^3*e - d*x*e - c*e), x) + 1
```

```
2*b^3*c*e^(1/2)*integrate(sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1
)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*
sqrt(-d*x - c + 1)))^2/(d^3*x^3*e + 3*c*d^2*x^2*e + 3*c^2*d*x*e + c^3*e - d
*x*e - c*e), x) + 2*(2*(c + 1)*arctan(sqrt(d*x + c))*e^(-1) + (c - 1)*e^(-1
)*log(sqrt(d*x + c) + 1) - (c - 1)*e^(-1)*log(sqrt(d*x + c) - 1))*a^3*c*e^(
1/2)/d - 6*a*b^2*e^(1/2)*integrate(sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c +
 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^2/(d^3*
x^3*e + 3*c*d^2*x^2*e + 3*c^2*d*x*e + c^3*e - d*x*e - c*e), x) - 6*a^2*b*e^
(1/2)*integrate(sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c +
 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^3*x^3*e + 3*c*d^2*x^2*e
 + 3*c^2*d*x*e + c^3*e - d*x*e - c*e), x) - (2*(c^2 + 2*c + 1)*arctan(sqrt(
d*x + c))*e^(-1) + (c^2 - 2*c + 1)*e^(-1)*log(sqrt(d*x + c) + 1) - (c^2 - 2
*c + 1)*e^(-1)*log(sqrt(d*x + c) - 1) - 4*sqrt(d*x + c)*e^(-1))*a^3*e^(1/2)
/d + (2*arctan(sqrt(d*x + c))*e^(-1) + e^(-1)*log(sqrt(d*x + c) + 1) - e^(-
1)*log(sqrt(d*x + c) - 1))*a^3*e^(1/2)/d)*d*e)*e^(-1)/d
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((b^3*arcsin(d*x + c)^3 + 3*a*b^2*arcsin(d*x + c)^2 + 3*a^2*b*arcsi
n(d*x + c) + a^3)*e^(-1/2)/sqrt(d*x + c), x)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**3/(d*e*x+c*e)**(1/2),x)
```

```
[Out] Exception raised: TypeError >> Invalid comparison of non-real zoo
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^3/sqrt(d*e*x + c*e), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a + b\,\mathrm{asin}(c + d\,x))^3}{\sqrt{c\,e + d\,e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^3/(c*e + d*e*x)^(1/2),x)
[Out] int((a + b*asin(c + d*x))^3/(c*e + d*e*x)^(1/2), x)
```

3.302 $\int \frac{(a+b\mathbf{ArcSin}(c+dx))^3}{(ce+dex)^{3/2}}\,dx$

Optimal. Leaf size=80

$$-\frac{2(a+b\text{ArcSin}(c+dx))^3}{de\sqrt{e(c+dx)}}+\frac{6b\text{Int}\left(\frac{(a+b\text{ArcSin}(c+dx))^2}{\sqrt{e(c+dx)}\sqrt{1-(c+dx)^2}},x\right)}{e}$$

```
[Out] -2*(a+b*arcsin(d*x+c))^3/d/e/(e*(d*x+c))^(1/2)+6*b*Unintegrable((a+b*arcsin
(d*x+c))^2/(e*(d*x+c))^(1/2)/(1-(d*x+c)^2)^(1/2),x)/e
```

Rubi [A]
time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(a+b\text{ArcSin}(c+dx))^3}{(ce+dex)^{3/2}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x)^(3/2),x]
```

```
[Out] (-2*(a + b*ArcSin[c + d*x])^3)/(d*e*Sqrt[e*(c + d*x)]) + (6*b*Defer[Subst][
Defer[Int][(a + b*ArcSin[x])^2/(Sqrt[e*x]*Sqrt[1 - x^2]), x], x, c + d*x])/
(d*e)
```

Rubi steps

$$\begin{aligned}\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{(ce+dex)^{3/2}}\,dx &= \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^3}{(ex)^{3/2}}\,dx,x,c+dx\right)}{d}\\ &= -\frac{2\left(a+b\sin^{-1}(c+dx)\right)^3}{de\sqrt{e(c+dx)}}+\frac{(6b)\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^2}{\sqrt{ex}\sqrt{1-x^2}}\,dx,x,c+dx\right)}{de}\end{aligned}$$

Mathematica [A]
time = 96.69, size = 0, normalized size = 0.00

$$\int \frac{(a+b\text{ArcSin}(c+dx))^3}{(ce+dex)^{3/2}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x)^(3/2),x]
```

```
[Out] Integrate[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x)^(3/2), x]
```

Maple [A]
time = 0.22, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin(dx+c))^{3}}{(dex+ce)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(3/2),x)
```

```
[Out] int((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(3/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/2*(4*b^3*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^3 - (6*a
*b^2*d^2*e^(1/2)*integrate(sqrt(d*x + c)*x^2*arctan(d*x/(sqrt(d*x + c + 1)*
sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^2/(d^4*x^4*
e^2 + 4*c*d^3*x^3*e^2 + 6*c^2*d^2*x^2*e^2 + 4*c^3*d*x*e^2 + c^4*e^2 - d^2*x
^2*e^2 - 2*c*d*x*e^2 - c^2*e^2), x) + 6*a^2*b*d^2*e^(1/2)*integrate(sqrt(d*
x + c)*x^2*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x
+ c + 1)*sqrt(-d*x - c + 1)))/(d^4*x^4*e^2 + 4*c*d^3*x^3*e^2 + 6*c^2*d^2*x^
2*e^2 + 4*c^3*d*x*e^2 + c^4*e^2 - d^2*x^2*e^2 - 2*c*d*x*e^2 - c^2*e^2), x)
+ 12*a*b^2*c*d*e^(1/2)*integrate(sqrt(d*x + c)*x*arctan(d*x/(sqrt(d*x + c +
 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^2/(d^4*
x^4*e^2 + 4*c*d^3*x^3*e^2 + 6*c^2*d^2*x^2*e^2 + 4*c^3*d*x*e^2 + c^4*e^2 - d
^2*x^2*e^2 - 2*c*d*x*e^2 - c^2*e^2), x) + 12*a^2*b*c*d*e^(1/2)*integrate(sq
rt(d*x + c)*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d
*x + c + 1)*sqrt(-d*x - c + 1)))/(d^4*x^4*e^2 + 4*c*d^3*x^3*e^2 + 6*c^2*d^2
*x^2*e^2 + 4*c^3*d*x*e^2 + c^4*e^2 - d^2*x^2*e^2 - 2*c*d*x*e^2 - c^2*e^2),
x) + 6*a*b^2*c^2*e^(1/2)*integrate(sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c +
 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^2/(d^4*
x^4*e^2 + 4*c*d^3*x^3*e^2 + 6*c^2*d^2*x^2*e^2 + 4*c^3*d*x*e^2 + c^4*e^2 - d
^2*x^2*e^2 - 2*c*d*x*e^2 - c^2*e^2), x) + 6*a^2*b*c^2*e^(1/2)*integrate(sqr
t(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x
+ c + 1)*sqrt(-d*x - c + 1)))/(d^4*x^4*e^2 + 4*c*d^3*x^3*e^2 + 6*c^2*d^2*x^
2*e^2 + 4*c^3*d*x*e^2 + c^4*e^2 - d^2*x^2*e^2 - 2*c*d*x*e^2 - c^2*e^2), x)
+ (2*arctan(sqrt(d*x + c))*e^(-2) - e^(-2)*log(sqrt(d*x + c) + 1) + e^(-2)*
```

```
log(sqrt(d*x + c) - 1) + 4*e^(-2)/sqrt(d*x + c))*a^3*c^2*e^(1/2)/d - 12*b^3
*d*e^(1/2)*integrate(sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*x*a
rctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqr
t(-d*x - c + 1)))^2/(d^4*x^4*e^2 + 4*c*d^3*x^3*e^2 + 6*c^2*d^2*x^2*e^2 + 4*
c^3*d*x*e^2 + c^4*e^2 - d^2*x^2*e^2 - 2*c*d*x*e^2 - c^2*e^2), x) - 12*b^3*c
*e^(1/2)*integrate(sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*arcta
n(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d
*x - c + 1)))^2/(d^4*x^4*e^2 + 4*c*d^3*x^3*e^2 + 6*c^2*d^2*x^2*e^2 + 4*c^3*
d*x*e^2 + c^4*e^2 - d^2*x^2*e^2 - 2*c*d*x*e^2 - c^2*e^2), x) - 2*(2*(c + 1)
*arctan(sqrt(d*x + c))*e^(-2) - (c - 1)*e^(-2)*log(sqrt(d*x + c) + 1) + (c
- 1)*e^(-2)*log(sqrt(d*x + c) - 1) + 4*c*e^(-2)/sqrt(d*x + c))*a^3*c*e^(1/2
)/d - 6*a*b^2*e^(1/2)*integrate(sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)
*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^2/(d^4*x^4
*e^2 + 4*c*d^3*x^3*e^2 + 6*c^2*d^2*x^2*e^2 + 4*c^3*d*x*e^2 + c^4*e^2 - d^2*
x^2*e^2 - 2*c*d*x*e^2 - c^2*e^2), x) - 6*a^2*b*e^(1/2)*integrate(sqrt(d*x +
 c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1
)*sqrt(-d*x - c + 1)))/(d^4*x^4*e^2 + 4*c*d^3*x^3*e^2 + 6*c^2*d^2*x^2*e^2 +
 4*c^3*d*x*e^2 + c^4*e^2 - d^2*x^2*e^2 - 2*c*d*x*e^2 - c^2*e^2), x) + (2*(c
^2 + 2*c + 1)*arctan(sqrt(d*x + c))*e^(-2) - (c^2 - 2*c + 1)*e^(-2)*log(sqr
t(d*x + c) + 1) + (c^2 - 2*c + 1)*e^(-2)*log(sqrt(d*x + c) - 1) + 4*c^2*e^(
-2)/sqrt(d*x + c))*a^3*e^(1/2)/d - (2*arctan(sqrt(d*x + c))*e^(-2) - e^(-2)
*log(sqrt(d*x + c) + 1) + e^(-2)*log(sqrt(d*x + c) - 1) + 4*e^(-2)/sqrt(d*x
 + c))*a^3*e^(1/2)/d)*sqrt(d*x + c)*d*e^(3/2))*e^(-3/2)/(sqrt(d*x + c)*d)
```

Fricas [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((b^3*arcsin(d*x + c)^3 + 3*a*b^2*arcsin(d*x + c)^2 + 3*a^2*b*arcsi
n(d*x + c) + a^3)*sqrt(d*x + c)*e^(-3/2)/(d^2*x^2 + 2*c*d*x + c^2), x)
```

Sympy [**A**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}{(c + dx)})^3}{(e (c + dx))^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**3/(d*e*x+c*e)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**3/(e*(c + d*x))**(3/2), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(3/2),x, algorithm="giac")
[Out] integrate((b*arcsin(d*x + c) + a)^3/(d*e*x + c*e)^(3/2), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a + b \operatorname{asin}(c + d x))^3}{(c e + d e x)^{3/2}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^3/(c*e + d*e*x)^(3/2),x)
[Out] int((a + b*asin(c + d*x))^3/(c*e + d*e*x)^(3/2), x)
```

3.303 $\int \frac{(a+b\text{ArcSin}(c+dx))^3}{(ce+dex)^{5/2}}\,dx$

Optimal. Leaf size=82

$$-\frac{2(a+b\text{ArcSin}(c+dx))^3}{3de(e(c+dx))^{3/2}}+\frac{2b\text{Int}\left(\frac{(a+b\text{ArcSin}(c+dx))^2}{(e(c+dx))^{3/2}\sqrt{1-(c+dx)^2}},x\right)}{e}$$

```
[Out] -2/3*(a+b*arcsin(d*x+c))^3/d/e/(e*(d*x+c))^(3/2)+2*b*Unintegrable((a+b*arcs
in(d*x+c))^2/(e*(d*x+c))^(3/2)/(1-(d*x+c)^2)^(1/2),x)/e
```

Rubi [A]
time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(a+b\text{ArcSin}(c+dx))^3}{(ce+dex)^{5/2}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x)^(5/2),x]
```

```
[Out] (-2*(a + b*ArcSin[c + d*x])^3)/(3*d*e*(e*(c + d*x))^(3/2)) + (2*b*Defer[Sub
st][Defer[Int][(a + b*ArcSin[x])^2/((e*x)^(3/2)*Sqrt[1 - x^2]), x], x, c +
d*x])/(d*e)
```

Rubi steps

$$\begin{aligned}\int \frac{\left(a+b\sin^{-1}(c+dx)\right)^3}{(ce+dex)^{5/2}}\,dx &= \frac{\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^3}{(ex)^{5/2}}\,dx,x,c+dx\right)}{d}\\ &= -\frac{2\left(a+b\sin^{-1}(c+dx)\right)^3}{3de(e(c+dx))^{3/2}}+\frac{(2b)\text{Subst}\left(\int \frac{\left(a+b\sin^{-1}(x)\right)^2}{(ex)^{3/2}\sqrt{1-x^2}}\,dx,x,c+dx\right)}{de}\end{aligned}$$

Mathematica [A]
time = 93.21, size = 0, normalized size = 0.00

$$\int \frac{(a+b\text{ArcSin}(c+dx))^3}{(ce+dex)^{5/2}}\,dx$$

Verification is not applicable to the result.

[In] Integrate[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x)^(5/2),x]

[Out] Integrate[(a + b*ArcSin[c + d*x])^3/(c*e + d*e*x)^(5/2), x]

Maple [A]
time = 0.22, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin(dx+c))^3}{(dex+ce)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(5/2),x)

[Out] int((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(5/2),x)

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(5/2),x, algorithm="maxima")

[Out] -1/6*(4*b^3*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^3*e^(1/2
) - (18*a*b^2*d^2*e^(1/2)*integrate(sqrt(d*x + c)*x^2*arctan(d*x/(sqrt(d*x
+ c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^2/
(d^5*x^5*e^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3*e^3 + 10*c^3*d^2*x^2*e^3 +
5*c^4*d*x*e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2*x^2*e^3 - 3*c^2*d*x*e^3 - c
^3*e^3), x) + 18*a^2*b*d^2*e^(1/2)*integrate(sqrt(d*x + c)*x^2*arctan(d*x/(
sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c
+ 1)))/(d^5*x^5*e^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3*e^3 + 10*c^3*d^2*x^2
*e^3 + 5*c^4*d*x*e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2*x^2*e^3 - 3*c^2*d*x*
e^3 - c^3*e^3), x) + 36*a*b^2*c*d*e^(1/2)*integrate(sqrt(d*x + c)*x*arctan(
d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x
 - c + 1)))^2/(d^5*x^5*e^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3*e^3 + 10*c^3*
d^2*x^2*e^3 + 5*c^4*d*x*e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2*x^2*e^3 - 3*c
^2*d*x*e^3 - c^3*e^3), x) + 36*a^2*b*c*d*e^(1/2)*integrate(sqrt(d*x + c)*x*
arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sq
rt(-d*x - c + 1)))/(d^5*x^5*e^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3*e^3 + 10
*c^3*d^2*x^2*e^3 + 5*c^4*d*x*e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2*x^2*e^3
- 3*c^2*d*x*e^3 - c^3*e^3), x) + 18*a*b^2*c^2*e^(1/2)*integrate(sqrt(d*x +
c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)
*sqrt(-d*x - c + 1)))^2/(d^5*x^5*e^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3*e^3
 + 10*c^3*d^2*x^2*e^3 + 5*c^4*d*x*e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2*x^2
*e^3 - 3*c^2*d*x*e^3 - c^3*e^3), x) + 18*a^2*b*c^2*e^(1/2)*integrate(sqrt(d
*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c

```
 + 1)*sqrt(-d*x - c + 1)))/(d^5*x^5*e^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3*
e^3 + 10*c^3*d^2*x^2*e^3 + 5*c^4*d*x*e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2*
x^2*e^3 - 3*c^2*d*x*e^3 - c^3*e^3), x) - (6*arctan(sqrt(d*x + c))*e^(-3) +
3*e^(-3)*log(sqrt(d*x + c) + 1) - 3*e^(-3)*log(sqrt(d*x + c) - 1) - 4*e^(-3
)/(d*x + c)^(3/2))*a^3*c^2*e^(1/2)/d - 12*b^3*d*e^(1/2)*integrate(sqrt(d*x
+ c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*x*arctan(d*x/(sqrt(d*x + c + 1)*s
qrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^2/(d^5*x^5*e
^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3*e^3 + 10*c^3*d^2*x^2*e^3 + 5*c^4*d*x*
e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2*x^2*e^3 - 3*c^2*d*x*e^3 - c^3*e^3), x
) - 12*b^3*c*e^(1/2)*integrate(sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x -
c + 1)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c
+ 1)*sqrt(-d*x - c + 1)))^2/(d^5*x^5*e^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3
*e^3 + 10*c^3*d^2*x^2*e^3 + 5*c^4*d*x*e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2
*x^2*e^3 - 3*c^2*d*x*e^3 - c^3*e^3), x) + 2*(6*(c + 1)*arctan(sqrt(d*x + c)
)*e^(-3) + 3*(c - 1)*e^(-3)*log(sqrt(d*x + c) + 1) - 3*(c - 1)*e^(-3)*log(s
qrt(d*x + c) - 1) + 4*(3*d*x + 2*c)*e^(-3)/(d*x + c)^(3/2))*a^3*c*e^(1/2)/d
 - 18*a*b^2*e^(1/2)*integrate(sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*s
qrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^2/(d^5*x^5*e
^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3*e^3 + 10*c^3*d^2*x^2*e^3 + 5*c^4*d*x*
e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2*x^2*e^3 - 3*c^2*d*x*e^3 - c^3*e^3), x
) - 18*a^2*b*e^(1/2)*integrate(sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*
sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^5*x^5*e^
3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3*e^3 + 10*c^3*d^2*x^2*e^3 + 5*c^4*d*x*e
^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2*x^2*e^3 - 3*c^2*d*x*e^3 - c^3*e^3), x)
 - (6*(c^2 + 2*c + 1)*arctan(sqrt(d*x + c))*e^(-3) + 3*(c^2 - 2*c + 1)*e^(-
3)*log(sqrt(d*x + c) + 1) - 3*(c^2 - 2*c + 1)*e^(-3)*log(sqrt(d*x + c) - 1)
 + 4*(6*(d*x + c)*c - c^2)*e^(-3)/(d*x + c)^(3/2))*a^3*e^(1/2)/d + (6*arcta
n(sqrt(d*x + c))*e^(-3) + 3*e^(-3)*log(sqrt(d*x + c) + 1) - 3*e^(-3)*log(sq
rt(d*x + c) - 1) - 4*e^(-3)/(d*x + c)^(3/2))*a^3*e^(1/2)/d)*(d^2*x*e^3 + c*
d*e^3)*sqrt(d*x + c))/((d^2*x*e^3 + c*d*e^3)*sqrt(d*x + c))
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((b^3*arcsin(d*x + c)^3 + 3*a*b^2*arcsin(d*x + c)^2 + 3*a^2*b*arcsi
n(d*x + c) + a^3)*sqrt(d*x + c)*e^(-5/2)/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x
 + c^3), x)
```

Sympy [A]

time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\,\mathrm{asin}\,(c + dx))^3}{(e\,(c + dx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**3/(d*e*x+c*e)**(5/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**3/(e*(c + d*x))**(5/2), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^3/(d*e*x+c*e)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^3/(d*e*x + c*e)^(5/2), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a + b\,\mathrm{asin}(c + d\,x))^3}{(c\,e + d\,e\,x)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^3/(c*e + d*e*x)^(5/2),x)
```

```
[Out] int((a + b*asin(c + d*x))^3/(c*e + d*e*x)^(5/2), x)
```

3.304 $\int \sqrt{ce+dex}\,(a+b\mathbf{ArcSin}(c+dx))^4\,dx$

Optimal. Leaf size=84

$$\frac{2(e(c+dx))^{3/2}(a+b\text{ArcSin}(c+dx))^4}{3de}-\frac{8b\text{Int}\left(\frac{(e(c+dx))^{3/2}(a+b\text{ArcSin}(c+dx))^3}{\sqrt{1-(c+dx)^2}},x\right)}{3e}$$

```
[Out] 2/3*(e*(d*x+c))^(3/2)*(a+b*arcsin(d*x+c))^4/d/e-8/3*b*Unintegrable((e*(d*x+
c))^(3/2)*(a+b*arcsin(d*x+c))^3/(1-(d*x+c)^2)^(1/2),x)/e
```

Rubi [A]
time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}=0.000$, Rules used = {}

$$\int \sqrt{ce+dex}\,(a+b\text{ArcSin}(c+dx))^4\,dx$$

Verification is not applicable to the result.

```
[In] Int[Sqrt[c*e + d*e*x]*(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] (2*(e*(c + d*x))^(3/2)*(a + b*ArcSin[c + d*x])^4)/(3*d*e) - (8*b*Defer[Subs
t][Defer[Int][((e*x)^(3/2)*(a + b*ArcSin[x])^3)/Sqrt[1 - x^2], x], x, c + d
*x])/(3*d*e)
```

Rubi steps

$$\int \sqrt{ce+dex}\left(a+b\sin^{-1}(c+dx)\right)^4\,dx=\frac{\text{Subst}\left(\int \sqrt{ex}\left(a+b\sin^{-1}(x)\right)^4\,dx,x,c+dx\right)}{d}$$
$$=\frac{2(e(c+dx))^{3/2}\left(a+b\sin^{-1}(c+dx)\right)^4}{3de}-\frac{(8b)\text{Subst}\left(\int \frac{(ex)^{3/2}(a+b}{\sqrt{1-}}\right.}{3d}$$

Mathematica [F]
time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] Integrate[Sqrt[c*e + d*e*x]*(a + b*ArcSin[c + d*x])^4,x]
```

[Out] $Aborted

Maple [A]
time = 0.22, size = 0, normalized size = 0.00

$$\int \sqrt{dex + ce}\,\left(a + b\arcsin\left(dx + c\right)\right)^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^4,x)
```

```
[Out] int((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^4,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^4,x, algorithm="maxima")
```

```
[Out] 1/6*(4*(b^4*d*x + b^4*c)*sqrt(d*x + c)*arctan2(d*x + c, sqrt(d*x + c + 1)*s
qrt(-d*x - c + 1))^4*e^(1/2) + (72*a*b^3*d^2*e^(1/2)*integrate(1/3*sqrt(d*x
 + c)*x^2*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x +
 c + 1)*sqrt(-d*x - c + 1)))^3/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 108*a^2*
b^2*d^2*e^(1/2)*integrate(1/3*sqrt(d*x + c)*x^2*arctan(d*x/(sqrt(d*x + c +
1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^2/(d^2*x
^2 + 2*c*d*x + c^2 - 1), x) + 144*a*b^3*c*d*e^(1/2)*integrate(1/3*sqrt(d*x
+ c)*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c
+ 1)*sqrt(-d*x - c + 1)))^3/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 72*a^3*b*d^
2*e^(1/2)*integrate(1/3*sqrt(d*x + c)*x^2*arctan(d*x/(sqrt(d*x + c + 1)*sqr
t(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^2*x^2 + 2*c
*d*x + c^2 - 1), x) + 216*a^2*b^2*c*d*e^(1/2)*integrate(1/3*sqrt(d*x + c)*x
*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*s
qrt(-d*x - c + 1)))^2/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 72*a*b^3*c^2*e^(1
/2)*integrate(1/3*sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c
 + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^3/(d^2*x^2 + 2*c*d*x + c
^2 - 1), x) + 144*a^3*b*c*d*e^(1/2)*integrate(1/3*sqrt(d*x + c)*x*arctan(d*
x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x -
 c + 1)))/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 108*a^2*b^2*c^2*e^(1/2)*integ
rate(1/3*sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) +
c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^2/(d^2*x^2 + 2*c*d*x + c^2 - 1),
x) + 72*a^3*b*c^2*e^(1/2)*integrate(1/3*sqrt(d*x + c)*arctan(d*x/(sqrt(d*x
+ c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d
^2*x^2 + 2*c*d*x + c^2 - 1), x) + 3*a^4*c^2*(2*arctan(sqrt(d*x + c)) - log(
sqrt(d*x + c) + 1) + log(sqrt(d*x + c) - 1))*e^(1/2)/d + 48*b^4*d*e^(1/2)*i
```

```
ntegrate(1/3*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*x*arctan(d*
x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x -
 c + 1)))^3/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) + 48*b^4*c*e^(1/2)*integrate(
1/3*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*arctan(d*x/(sqrt(d*x
 + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^3
/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) - 6*(2*(c + 1)*arctan(sqrt(d*x + c)) - (
c - 1)*log(sqrt(d*x + c) + 1) + (c - 1)*log(sqrt(d*x + c) - 1) - 4*sqrt(d*x
 + c))*a^4*c*e^(1/2)/d - 72*a*b^3*e^(1/2)*integrate(1/3*sqrt(d*x + c)*arcta
n(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d
*x - c + 1)))^3/(d^2*x^2 + 2*c*d*x + c^2 - 1), x) - 108*a^2*b^2*e^(1/2)*int
egrate(1/3*sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))
+ c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^2/(d^2*x^2 + 2*c*d*x + c^2 - 1)
, x) - 72*a^3*b*e^(1/2)*integrate(1/3*sqrt(d*x + c)*arctan(d*x/(sqrt(d*x +
c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^2
*x^2 + 2*c*d*x + c^2 - 1), x) + (6*(c^2 + 2*c + 1)*arctan(sqrt(d*x + c)) -
3*(c^2 - 2*c + 1)*log(sqrt(d*x + c) + 1) + 3*(c^2 - 2*c + 1)*log(sqrt(d*x +
 c) - 1) + 4*(d*x + c)^(3/2) - 24*sqrt(d*x + c)*c)*a^4*e^(1/2)/d - 3*a^4*(2
*arctan(sqrt(d*x + c)) - log(sqrt(d*x + c) + 1) + log(sqrt(d*x + c) - 1))*e
^(1/2)/d)*d)/d
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^4,x, algorithm="fricas")
```

```
[Out] integral((b^4*arcsin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6*a^2*b^2*arc
sin(d*x + c)^2 + 4*a^3*b*arcsin(d*x + c) + a^4)*sqrt(d*x + c)*e^(1/2), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{e\left(c+dx\right)}\left(a+b\operatorname{asin}\left(c+dx\right)\right)^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**(1/2)*(a+b*asin(d*x+c))**4,x)
```

```
[Out] Integral(sqrt(e*(c + d*x))*(a + b*asin(c + d*x))**4, x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^(1/2)*(a+b*arcsin(d*x+c))^4,x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*e*x + c*e)*(b*arcsin(d*x + c) + a)^4, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{c\,e+d\,e\,x}\,\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^(1/2)*(a + b*asin(c + d*x))^4,x)
```

```
[Out] int((c*e + d*e*x)^(1/2)*(a + b*asin(c + d*x))^4, x)
```

3.305 $\int \frac{(a+b\text{ArcSin}(c+dx))^4}{\sqrt{ce+dex}}\,dx$

Optimal. Leaf size=80

$$\frac{2\sqrt{e(c+dx)}\,(a+b\text{ArcSin}(c+dx))^4}{de}-\frac{8b\text{Int}\left(\frac{\sqrt{e(c+dx)}\,(a+b\text{ArcSin}(c+dx))^3}{\sqrt{1-(c+dx)^2}},x\right)}{e}$$

```
[Out] 2*(a+b*arcsin(d*x+c))^4*(e*(d*x+c))^(1/2)/d/e-8*b*Unintegrable((a+b*arcsin(
d*x+c))^3*(e*(d*x+c))^(1/2)/(1-(d*x+c)^2)^(1/2),x)/e
```

Rubi [A]
time = 0.12, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(a+b\text{ArcSin}(c+dx))^4}{\sqrt{ce+dex}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(a + b*ArcSin[c + d*x])^4/Sqrt[c*e + d*e*x],x]
```

```
[Out] (2*Sqrt[e*(c + d*x)]*(a + b*ArcSin[c + d*x])^4)/(d*e) - (8*b*Defer[Subst][D
efer[Int][(Sqrt[e*x]*(a + b*ArcSin[x])^3)/Sqrt[1 - x^2], x], x, c + d*x])/(
d*e)
```

Rubi steps

$$\int \frac{(a+b\sin^{-1}(c+dx))^4}{\sqrt{ce+dex}}\,dx=\frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^4}{\sqrt{ex}}\,dx,x,c+dx\right)}{d}$$
$$=\frac{2\sqrt{e(c+dx)}\,(a+b\sin^{-1}(c+dx))^4}{de}-\frac{(8b)\text{Subst}\left(\int \frac{\sqrt{ex}\,(a+b\sin^{-1}(x))^3}{\sqrt{1-x^2}}\,dx,x\right.}{de}$$

Mathematica [A]
time = 56.61, size = 0, normalized size = 0.00

$$\int \frac{(a+b\text{ArcSin}(c+dx))^4}{\sqrt{ce+dex}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^4/Sqrt[c*e + d*e*x],x]
[Out] Integrate[(a + b*ArcSin[c + d*x])^4/Sqrt[c*e + d*e*x], x]
```

Maple [A]
time = 180.00, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin(dx+c))^4}{\sqrt{dex+ce}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(1/2),x)
[Out] int((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(1/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(1/2),x, algorithm="maxima")
[Out] 1/2*(4*sqrt(d*x + c)*b^4*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c +
 1))^4*e^(1/2) + (8*a*b^3*d^2*e^(1/2)*integrate(sqrt(d*x + c)*x^2*arctan(d*
x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x -
 c + 1)))^3/(d^3*x^3*e + 3*c*d^2*x^2*e + 3*c^2*d*x*e + c^3*e - d*x*e - c*e)
, x) + 12*a^2*b^2*d^2*e^(1/2)*integrate(sqrt(d*x + c)*x^2*arctan(d*x/(sqrt(
d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))
)^2/(d^3*x^3*e + 3*c*d^2*x^2*e + 3*c^2*d*x*e + c^3*e - d*x*e - c*e), x) + 1
6*a*b^3*c*d*e^(1/2)*integrate(sqrt(d*x + c)*x*arctan(d*x/(sqrt(d*x + c + 1)
*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^3/(d^3*x^3
*e + 3*c*d^2*x^2*e + 3*c^2*d*x*e + c^3*e - d*x*e - c*e), x) + 8*a^3*b*d^2*e
^(1/2)*integrate(sqrt(d*x + c)*x^2*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x
- c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^3*x^3*e + 3*c*d^2*
x^2*e + 3*c^2*d*x*e + c^3*e - d*x*e - c*e), x) + 24*a^2*b^2*c*d*e^(1/2)*int
egrate(sqrt(d*x + c)*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) +
c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^2/(d^3*x^3*e + 3*c*d^2*x^2*e + 3*
c^2*d*x*e + c^3*e - d*x*e - c*e), x) + 8*a*b^3*c^2*e^(1/2)*integrate(sqrt(d
*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c
 + 1)*sqrt(-d*x - c + 1)))^3/(d^3*x^3*e + 3*c*d^2*x^2*e + 3*c^2*d*x*e + c^3
*e - d*x*e - c*e), x) + 16*a^3*b*c*d*e^(1/2)*integrate(sqrt(d*x + c)*x*arct
an(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-
d*x - c + 1)))/(d^3*x^3*e + 3*c*d^2*x^2*e + 3*c^2*d*x*e + c^3*e - d*x*e - c
*e), x) + 12*a^2*b^2*c^2*e^(1/2)*integrate(sqrt(d*x + c)*arctan(d*x/(sqrt(d
*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))
```

```
^2/(d^3*x^3*e + 3*c*d^2*x^2*e + 3*c^2*d*x*e + c^3*e - d*x*e - c*e), x) + 8*
a^3*b*c^2*e^(1/2)*integrate(sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqr
t(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^3*x^3*e + 3
*c*d^2*x^2*e + 3*c^2*d*x*e + c^3*e - d*x*e - c*e), x) - (2*arctan(sqrt(d*x
+ c))*e^(-1) + e^(-1)*log(sqrt(d*x + c) + 1) - e^(-1)*log(sqrt(d*x + c) - 1
))*a^4*c^2*e^(1/2)/d + 16*b^4*d*e^(1/2)*integrate(sqrt(d*x + c + 1)*sqrt(d*
x + c)*sqrt(-d*x - c + 1)*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1
)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^3/(d^3*x^3*e + 3*c*d^2*x^2*e
 + 3*c^2*d*x*e + c^3*e - d*x*e - c*e), x) + 16*b^4*c*e^(1/2)*integrate(sqrt
(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*arctan(d*x/(sqrt(d*x + c + 1
)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^3/(d^3*x^
3*e + 3*c*d^2*x^2*e + 3*c^2*d*x*e + c^3*e - d*x*e - c*e), x) + 2*(2*(c + 1)
*arctan(sqrt(d*x + c))*e^(-1) + (c - 1)*e^(-1)*log(sqrt(d*x + c) + 1) - (c
- 1)*e^(-1)*log(sqrt(d*x + c) - 1))*a^4*c*e^(1/2)/d - 8*a*b^3*e^(1/2)*integ
rate(sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(s
qrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^3/(d^3*x^3*e + 3*c*d^2*x^2*e + 3*c^2*
d*x*e + c^3*e - d*x*e - c*e), x) - 12*a^2*b^2*e^(1/2)*integrate(sqrt(d*x +
c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)
*sqrt(-d*x - c + 1)))^2/(d^3*x^3*e + 3*c*d^2*x^2*e + 3*c^2*d*x*e + c^3*e -
d*x*e - c*e), x) - 8*a^3*b*e^(1/2)*integrate(sqrt(d*x + c)*arctan(d*x/(sqrt
(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)
))/(d^3*x^3*e + 3*c*d^2*x^2*e + 3*c^2*d*x*e + c^3*e - d*x*e - c*e), x) - (2
*(c^2 + 2*c + 1)*arctan(sqrt(d*x + c))*e^(-1) + (c^2 - 2*c + 1)*e^(-1)*log(
sqrt(d*x + c) + 1) - (c^2 - 2*c + 1)*e^(-1)*log(sqrt(d*x + c) - 1) - 4*sqrt
(d*x + c)*e^(-1))*a^4*e^(1/2)/d + (2*arctan(sqrt(d*x + c))*e^(-1) + e^(-1)*
log(sqrt(d*x + c) + 1) - e^(-1)*log(sqrt(d*x + c) - 1))*a^4*e^(1/2)/d)*d*e)
*e^(-1)/d
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((b^4*arcsin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6*a^2*b^2*arc
sin(d*x + c)^2 + 4*a^3*b*arcsin(d*x + c) + a^4)*e^(-1/2)/sqrt(d*x + c), x)
```

Sympy [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**4/(d*e*x+c*e)**(1/2),x)
```

```
[Out] Exception raised: TypeError >> Invalid comparison of non-real zoo
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^4/sqrt(d*e*x + c*e), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\,\mathrm{asin}(c+d\,x))^4}{\sqrt{c\,e+d\,e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^4/(c*e + d*e*x)^(1/2),x)
```

```
[Out] int((a + b*asin(c + d*x))^4/(c*e + d*e*x)^(1/2), x)
```

3.306 $\int \frac{(a+b\text{ArcSin}(c+dx))^4}{(ce+dex)^{3/2}}\,dx$

Optimal. Leaf size=80

$$-\frac{2(a+b\text{ArcSin}(c+dx))^4}{de\sqrt{e(c+dx)}}+\frac{8b\text{Int}\left(\frac{(a+b\text{ArcSin}(c+dx))^3}{\sqrt{e(c+dx)}\sqrt{1-(c+dx)^2}},x\right)}{e}$$

```
[Out] -2*(a+b*arcsin(d*x+c))^4/d/e/(e*(d*x+c))^(1/2)+8*b*Unintegrable((a+b*arcsin
(d*x+c))^3/(e*(d*x+c))^(1/2)/(1-(d*x+c)^2)^(1/2),x)/e
```

Rubi [A]
time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(a+b\text{ArcSin}(c+dx))^4}{(ce+dex)^{3/2}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x)^(3/2),x]
```

```
[Out] (-2*(a + b*ArcSin[c + d*x])^4)/(d*e*Sqrt[e*(c + d*x)]) + (8*b*Defer[Subst][
Defer[Int][(a + b*ArcSin[x])^3/(Sqrt[e*x]*Sqrt[1 - x^2]), x], x, c + d*x])/
(d*e)
```

Rubi steps

$$\begin{aligned}\int \frac{(a+b\sin^{-1}(c+dx))^4}{(ce+dex)^{3/2}}\,dx &= \frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^4}{(ex)^{3/2}}\,dx,x,c+dx\right)}{d}\\ &= -\frac{2(a+b\sin^{-1}(c+dx))^4}{de\sqrt{e(c+dx)}}+\frac{(8b)\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^3}{\sqrt{ex}\sqrt{1-x^2}}\,dx,x,c+dx\right)}{de}\end{aligned}$$

Mathematica [A]
time = 75.60, size = 0, normalized size = 0.00

$$\int \frac{(a+b\text{ArcSin}(c+dx))^4}{(ce+dex)^{3/2}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x)^(3/2),x]
```

```
[Out] Integrate[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x)^(3/2), x]
```

Maple [A]
time = 0.23, size = 0, normalized size = 0.00

$$\int \frac{(a + b \arcsin (dx + c))^4}{(dex + ce)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(3/2),x)
```

```
[Out] int((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(3/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/2*(4*b^4*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^4 - (8*a
*b^3*d^2*e^(1/2)*integrate(sqrt(d*x + c)*x^2*arctan(d*x/(sqrt(d*x + c + 1)*
sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^3/(d^4*x^4*
e^2 + 4*c*d^3*x^3*e^2 + 6*c^2*d^2*x^2*e^2 + 4*c^3*d*x*e^2 + c^4*e^2 - d^2*x
^2*e^2 - 2*c*d*x*e^2 - c^2*e^2), x) + 12*a^2*b^2*d^2*e^(1/2)*integrate(sqrt
(d*x + c)*x^2*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d
*x + c + 1)*sqrt(-d*x - c + 1)))^2/(d^4*x^4*e^2 + 4*c*d^3*x^3*e^2 + 6*c^2*d
^2*x^2*e^2 + 4*c^3*d*x*e^2 + c^4*e^2 - d^2*x^2*e^2 - 2*c*d*x*e^2 - c^2*e^2)
, x) + 16*a*b^3*c*d*e^(1/2)*integrate(sqrt(d*x + c)*x*arctan(d*x/(sqrt(d*x
+ c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^3/
(d^4*x^4*e^2 + 4*c*d^3*x^3*e^2 + 6*c^2*d^2*x^2*e^2 + 4*c^3*d*x*e^2 + c^4*e^
2 - d^2*x^2*e^2 - 2*c*d*x*e^2 - c^2*e^2), x) + 8*a^3*b*d^2*e^(1/2)*integrat
e(sqrt(d*x + c)*x^2*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(
sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^4*x^4*e^2 + 4*c*d^3*x^3*e^2 + 6*c
^2*d^2*x^2*e^2 + 4*c^3*d*x*e^2 + c^4*e^2 - d^2*x^2*e^2 - 2*c*d*x*e^2 - c^2*
e^2), x) + 24*a^2*b^2*c*d*e^(1/2)*integrate(sqrt(d*x + c)*x*arctan(d*x/(sqr
t(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1
)))^2/(d^4*x^4*e^2 + 4*c*d^3*x^3*e^2 + 6*c^2*d^2*x^2*e^2 + 4*c^3*d*x*e^2 +
c^4*e^2 - d^2*x^2*e^2 - 2*c*d*x*e^2 - c^2*e^2), x) + 8*a*b^3*c^2*e^(1/2)*in
tegrate(sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c
/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^3/(d^4*x^4*e^2 + 4*c*d^3*x^3*e^2 +
 6*c^2*d^2*x^2*e^2 + 4*c^3*d*x*e^2 + c^4*e^2 - d^2*x^2*e^2 - 2*c*d*x*e^2 -
c^2*e^2), x) + 16*a^3*b*c*d*e^(1/2)*integrate(sqrt(d*x + c)*x*arctan(d*x/(s
```

```
qrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c +
 1)))/(d^4*x^4*e^2 + 4*c*d^3*x^3*e^2 + 6*c^2*d^2*x^2*e^2 + 4*c^3*d*x*e^2 +
c^4*e^2 - d^2*x^2*e^2 - 2*c*d*x*e^2 - c^2*e^2), x) + 12*a^2*b^2*c^2*e^(1/2)
*integrate(sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))
+ c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^2/(d^4*x^4*e^2 + 4*c*d^3*x^3*e^
2 + 6*c^2*d^2*x^2*e^2 + 4*c^3*d*x*e^2 + c^4*e^2 - d^2*x^2*e^2 - 2*c*d*x*e^2
 - c^2*e^2), x) + 8*a^3*b*c^2*e^(1/2)*integrate(sqrt(d*x + c)*arctan(d*x/(s
qrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c +
 1)))/(d^4*x^4*e^2 + 4*c*d^3*x^3*e^2 + 6*c^2*d^2*x^2*e^2 + 4*c^3*d*x*e^2 +
c^4*e^2 - d^2*x^2*e^2 - 2*c*d*x*e^2 - c^2*e^2), x) + (2*arctan(sqrt(d*x + c
))*e^(-2) - e^(-2)*log(sqrt(d*x + c) + 1) + e^(-2)*log(sqrt(d*x + c) - 1) +
 4*e^(-2)/sqrt(d*x + c))*a^4*c^2*e^(1/2)/d - 16*b^4*d*e^(1/2)*integrate(sqr
t(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*x*arctan(d*x/(sqrt(d*x + c
+ 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^3/(d^4
*x^4*e^2 + 4*c*d^3*x^3*e^2 + 6*c^2*d^2*x^2*e^2 + 4*c^3*d*x*e^2 + c^4*e^2 -
d^2*x^2*e^2 - 2*c*d*x*e^2 - c^2*e^2), x) - 16*b^4*c*e^(1/2)*integrate(sqrt(
d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*arctan(d*x/(sqrt(d*x + c + 1)
*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^3/(d^4*x^4
*e^2 + 4*c*d^3*x^3*e^2 + 6*c^2*d^2*x^2*e^2 + 4*c^3*d*x*e^2 + c^4*e^2 - d^2*
x^2*e^2 - 2*c*d*x*e^2 - c^2*e^2), x) - 2*(2*(c + 1)*arctan(sqrt(d*x + c))*e
^(-2) - (c - 1)*e^(-2)*log(sqrt(d*x + c) + 1) + (c - 1)*e^(-2)*log(sqrt(d*x
 + c) - 1) + 4*c*e^(-2)/sqrt(d*x + c))*a^4*c*e^(1/2)/d - 8*a*b^3*e^(1/2)*in
tegrate(sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c
/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^3/(d^4*x^4*e^2 + 4*c*d^3*x^3*e^2 +
 6*c^2*d^2*x^2*e^2 + 4*c^3*d*x*e^2 + c^4*e^2 - d^2*x^2*e^2 - 2*c*d*x*e^2 -
c^2*e^2), x) - 12*a^2*b^2*e^(1/2)*integrate(sqrt(d*x + c)*arctan(d*x/(sqrt(
d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))
)^2/(d^4*x^4*e^2 + 4*c*d^3*x^3*e^2 + 6*c^2*d^2*x^2*e^2 + 4*c^3*d*x*e^2 + c^
4*e^2 - d^2*x^2*e^2 - 2*c*d*x*e^2 - c^2*e^2), x) - 8*a^3*b*e^(1/2)*integrat
e(sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt
(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^4*x^4*e^2 + 4*c*d^3*x^3*e^2 + 6*c^2*d
^2*x^2*e^2 + 4*c^3*d*x*e^2 + c^4*e^2 - d^2*x^2*e^2 - 2*c*d*x*e^2 - c^2*e^2)
, x) + (2*(c^2 + 2*c + 1)*arctan(sqrt(d*x + c))*e^(-2) - (c^2 - 2*c + 1)*e^
(-2)*log(sqrt(d*x + c) + 1) + (c^2 - 2*c + 1)*e^(-2)*log(sqrt(d*x + c) - 1)
 + 4*c^2*e^(-2)/sqrt(d*x + c))*a^4*e^(1/2)/d - (2*arctan(sqrt(d*x + c))*e^(
-2) - e^(-2)*log(sqrt(d*x + c) + 1) + e^(-2)*log(sqrt(d*x + c) - 1) + 4*e^(
-2)/sqrt(d*x + c))*a^4*e^(1/2)/d)*sqrt(d*x + c)*d*e^(3/2))*e^(-3/2)/(sqrt(d
*x + c)*d)
```

Fricas [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((b^4*arcsin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6*a^2*b^2*arc
sin(d*x + c)^2 + 4*a^3*b*arcsin(d*x + c) + a^4)*sqrt(d*x + c)*e^(-3/2)/(d^2
*x^2 + 2*c*d*x + c^2), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(c + dx))^4}{(e(c + dx))^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**4/(d*e*x+c*e)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**4/(e*(c + d*x))**(3/2), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^4/(d*e*x + c*e)^(3/2), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a + b \operatorname{asin}(c + d\,x))^4}{(c\,e + d\,e\,x)^{3/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^4/(c*e + d*e*x)^(3/2),x)
```

```
[Out] int((a + b*asin(c + d*x))^4/(c*e + d*e*x)^(3/2), x)
```

3.307 $\int \frac{(a+b\text{ArcSin}(c+dx))^4}{(ce+dex)^{5/2}}\,dx$

Optimal. Leaf size=84

$$-\frac{2(a+b\text{ArcSin}(c+dx))^4}{3de(e(c+dx))^{3/2}}+\frac{8b\text{Int}\left(\frac{(a+b\text{ArcSin}(c+dx))^3}{(e(c+dx))^{3/2}\sqrt{1-(c+dx)^2}},x\right)}{3e}$$

```
[Out] -2/3*(a+b*arcsin(d*x+c))^4/d/e/(e*(d*x+c))^(3/2)+8/3*b*Unintegrable((a+b*ar
csin(d*x+c))^3/(e*(d*x+c))^(3/2)/(1-(d*x+c)^2)^(1/2),x)/e
```

Rubi [A]
time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}=0.000$, Rules used = {}

$$\int \frac{(a+b\text{ArcSin}(c+dx))^4}{(ce+dex)^{5/2}}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x)^(5/2),x]
```

```
[Out] (-2*(a + b*ArcSin[c + d*x])^4)/(3*d*e*(e*(c + d*x))^(3/2)) + (8*b*Defer[Sub
st][Defer[Int][(a + b*ArcSin[x])^3/((e*x)^(3/2)*Sqrt[1 - x^2]), x], x, c +
d*x])/(3*d*e)
```

Rubi steps

$$\begin{aligned}\int \frac{(a+b\sin^{-1}(c+dx))^4}{(ce+dex)^{5/2}}\,dx&=\frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^4}{(ex)^{5/2}}\,dx,x,c+dx\right)}{d}\\&=-\frac{2(a+b\sin^{-1}(c+dx))^4}{3de(e(c+dx))^{3/2}}+\frac{(8b)\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^3}{(ex)^{3/2}\sqrt{1-x^2}}\,dx,x,c+dx\right)}{3de}\end{aligned}$$

Mathematica [A]
time = 93.67, size = 0, normalized size = 0.00

$$\int \frac{(a+b\text{ArcSin}(c+dx))^4}{(ce+dex)^{5/2}}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x)^(5/2),x]
[Out] Integrate[(a + b*ArcSin[c + d*x])^4/(c*e + d*e*x)^(5/2), x]
```

Maple [A]
time = 0.22, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin(dx+c))^4}{(dex+ce)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(5/2),x)
[Out] int((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(5/2),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(5/2),x, algorithm="maxima")
[Out] -1/6*(4*b^4*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^4*e^(1/2
) - (72*a*b^3*d^2*e^(1/2)*integrate(1/3*sqrt(d*x + c)*x^2*arctan(d*x/(sqrt(
d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))
)^3/(d^5*x^5*e^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3*e^3 + 10*c^3*d^2*x^2*e^
3 + 5*c^4*d*x*e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2*x^2*e^3 - 3*c^2*d*x*e^3
 - c^3*e^3), x) + 108*a^2*b^2*d^2*e^(1/2)*integrate(1/3*sqrt(d*x + c)*x^2*a
rctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqr
t(-d*x - c + 1)))^2/(d^5*x^5*e^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3*e^3 + 1
0*c^3*d^2*x^2*e^3 + 5*c^4*d*x*e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2*x^2*e^3
 - 3*c^2*d*x*e^3 - c^3*e^3), x) + 144*a*b^3*c*d*e^(1/2)*integrate(1/3*sqrt(
d*x + c)*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x
+ c + 1)*sqrt(-d*x - c + 1)))^3/(d^5*x^5*e^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3
*x^3*e^3 + 10*c^3*d^2*x^2*e^3 + 5*c^4*d*x*e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c
*d^2*x^2*e^3 - 3*c^2*d*x*e^3 - c^3*e^3), x) + 72*a^3*b*d^2*e^(1/2)*integrat
e(1/3*sqrt(d*x + c)*x^2*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) +
 c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))/(d^5*x^5*e^3 + 5*c*d^4*x^4*e^3 +
 10*c^2*d^3*x^3*e^3 + 10*c^3*d^2*x^2*e^3 + 5*c^4*d*x*e^3 - d^3*x^3*e^3 + c^
5*e^3 - 3*c*d^2*x^2*e^3 - 3*c^2*d*x*e^3 - c^3*e^3), x) + 216*a^2*b^2*c*d*e^
(1/2)*integrate(1/3*sqrt(d*x + c)*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x
 - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^2/(d^5*x^5*e^3 + 5*c
*d^4*x^4*e^3 + 10*c^2*d^3*x^3*e^3 + 10*c^3*d^2*x^2*e^3 + 5*c^4*d*x*e^3 - d^
3*x^3*e^3 + c^5*e^3 - 3*c*d^2*x^2*e^3 - 3*c^2*d*x*e^3 - c^3*e^3), x) + 72*a
*b^3*c^2*e^(1/2)*integrate(1/3*sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c + 1)*
```

```
sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^3/(d^5*x^5*
e^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3*e^3 + 10*c^3*d^2*x^2*e^3 + 5*c^4*d*x
*e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2*x^2*e^3 - 3*c^2*d*x*e^3 - c^3*e^3),
x) + 144*a^3*b*c*d*e^(1/2)*integrate(1/3*sqrt(d*x + c)*x*arctan(d*x/(sqrt(d
*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))
/(d^5*x^5*e^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3*e^3 + 10*c^3*d^2*x^2*e^3 +
 5*c^4*d*x*e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2*x^2*e^3 - 3*c^2*d*x*e^3 -
c^3*e^3), x) + 108*a^2*b^2*c^2*e^(1/2)*integrate(1/3*sqrt(d*x + c)*arctan(d
*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x
- c + 1)))^2/(d^5*x^5*e^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3*e^3 + 10*c^3*d
^2*x^2*e^3 + 5*c^4*d*x*e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2*x^2*e^3 - 3*c^
2*d*x*e^3 - c^3*e^3), x) + 72*a^3*b*c^2*e^(1/2)*integrate(1/3*sqrt(d*x + c)
*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*s
qrt(-d*x - c + 1)))/(d^5*x^5*e^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3*e^3 + 1
0*c^3*d^2*x^2*e^3 + 5*c^4*d*x*e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2*x^2*e^3
 - 3*c^2*d*x*e^3 - c^3*e^3), x) - (6*arctan(sqrt(d*x + c))*e^(-3) + 3*e^(-3
)*log(sqrt(d*x + c) + 1) - 3*e^(-3)*log(sqrt(d*x + c) - 1) - 4*e^(-3)/(d*x
+ c)^(3/2))*a^4*c^2*e^(1/2)/d - 48*b^4*d*e^(1/2)*integrate(1/3*sqrt(d*x + c
 + 1)*sqrt(d*x + c)*sqrt(-d*x - c + 1)*x*arctan(d*x/(sqrt(d*x + c + 1)*sqrt
(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^3/(d^5*x^5*e^3
+ 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3*e^3 + 10*c^3*d^2*x^2*e^3 + 5*c^4*d*x*e^3
 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2*x^2*e^3 - 3*c^2*d*x*e^3 - c^3*e^3), x) -
 48*b^4*c*e^(1/2)*integrate(1/3*sqrt(d*x + c + 1)*sqrt(d*x + c)*sqrt(-d*x -
 c + 1)*arctan(d*x/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c
 + 1)*sqrt(-d*x - c + 1)))^3/(d^5*x^5*e^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^
3*e^3 + 10*c^3*d^2*x^2*e^3 + 5*c^4*d*x*e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^
2*x^2*e^3 - 3*c^2*d*x*e^3 - c^3*e^3), x) + 2*(6*(c + 1)*arctan(sqrt(d*x + c
))*e^(-3) + 3*(c - 1)*e^(-3)*log(sqrt(d*x + c) + 1) - 3*(c - 1)*e^(-3)*log(
sqrt(d*x + c) - 1) + 4*(3*d*x + 2*c)*e^(-3)/(d*x + c)^(3/2))*a^4*c*e^(1/2)/
d - 72*a*b^3*e^(1/2)*integrate(1/3*sqrt(d*x + c)*arctan(d*x/(sqrt(d*x + c +
 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))^3/(d^5*
x^5*e^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3*e^3 + 10*c^3*d^2*x^2*e^3 + 5*c^4
*d*x*e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2*x^2*e^3 - 3*c^2*d*x*e^3 - c^3*e^
3), x) - 108*a^2*b^2*e^(1/2)*integrate(1/3*sqrt(d*x + c)*arctan(d*x/(sqrt(d
*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)))
^2/(d^5*x^5*e^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3*e^3 + 10*c^3*d^2*x^2*e^3
 + 5*c^4*d*x*e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2*x^2*e^3 - 3*c^2*d*x*e^3
- c^3*e^3), x) - 72*a^3*b*e^(1/2)*integrate(1/3*sqrt(d*x + c)*arctan(d*x/(s
qrt(d*x + c + 1)*sqrt(-d*x - c + 1)) + c/(sqrt(d*x + c + 1)*sqrt(-d*x - c +
 1)))/(d^5*x^5*e^3 + 5*c*d^4*x^4*e^3 + 10*c^2*d^3*x^3*e^3 + 10*c^3*d^2*x^2*
e^3 + 5*c^4*d*x*e^3 - d^3*x^3*e^3 + c^5*e^3 - 3*c*d^2*x^2*e^3 - 3*c^2*d*x*e
^3 - c^3*e^3), x) - (6*(c^2 + 2*c + 1)*arctan(sqrt(d*x + c))*e^(-3) + 3*(c^
2 - 2*c + 1)*e^(-3)*log(sqrt(d*x + c) + 1) - 3*(c^2 - 2*c + 1)*e^(-3)*log(s
qrt(d*x + c) - 1) + 4*(6*(d*x + c)*c - c^2)*e^(...
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((b^4*arcsin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6*a^2*b^2*arc
sin(d*x + c)^2 + 4*a^3*b*arcsin(d*x + c) + a^4)*sqrt(d*x + c)*e^(-5/2)/(d^3
*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}{(c + dx)})^4}{(e (c + dx))^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x+c))**4/(d*e*x+c*e)**(5/2),x)
```

```
[Out] Integral((a + b*asin(c + d*x))**4/(e*(c + d*x))**(5/2), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x+c))^4/(d*e*x+c*e)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^4/(d*e*x + c*e)^(5/2), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a + b \operatorname{asin}(c + d\,x))^4}{(c\,e + d\,e\,x)^{5/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x))^4/(c*e + d*e*x)^(5/2),x)
```

```
[Out] int((a + b*asin(c + d*x))^4/(c*e + d*e*x)^(5/2), x)
```

3.308 $\int (ce+dex)^m(a+b\textbf{ArcSin}(c+dx))^4\,dx$

Optimal. Leaf size=89

$$\frac{(e(c+dx))^{1+m}(a+b\text{ArcSin}(c+dx))^4}{de(1+m)}-\frac{4b\text{Int}\left(\frac{(e(c+dx))^{1+m}(a+b\text{ArcSin}(c+dx))^3}{\sqrt{1-(c+dx)^2}},x\right)}{e(1+m)}$$

```
[Out] (e*(d*x+c))^(1+m)*(a+b*arcsin(d*x+c))^4/d/e/(1+m)-4*b*Unintegrable((e*(d*x+
c))^(1+m)*(a+b*arcsin(d*x+c))^3/(1-(d*x+c)^2)^(1/2),x)/e/(1+m)
```

Rubi [A]
time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}=0.000$, Rules used = {}

$$\int (ce+dex)^m(a+b\text{ArcSin}(c+dx))^4\,dx$$

Verification is not applicable to the result.

```
[In] Int[(c*e + d*e*x)^m*(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] ((e*(c + d*x))^(1 + m)*(a + b*ArcSin[c + d*x])^4)/(d*e*(1 + m)) - (4*b*Defe
r[Subst][Defer[Int][((e*x)^(1 + m)*(a + b*ArcSin[x])^3)/Sqrt[1 - x^2], x],
x, c + d*x])/(d*e*(1 + m))
```

Rubi steps

$$\int (ce+dex)^m\left(a+b\sin^{-1}(c+dx)\right)^4\,dx=\frac{\text{Subst}\left(\int (ex)^m\left(a+b\sin^{-1}(x)\right)^4\,dx,x,c+dx\right)}{d}$$

$$=\frac{(e(c+dx))^{1+m}\left(a+b\sin^{-1}(c+dx)\right)^4}{de(1+m)}-\frac{(4b)\text{Subst}\left(\int\frac{(ex)^{1+m}(a+}{\sqrt{1-}}\right.}{de(1}$$

Mathematica [A]
time = 2.64, size = 0, normalized size = 0.00

$$\int (ce+dex)^m(a+b\text{ArcSin}(c+dx))^4\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(c*e + d*e*x)^m*(a + b*ArcSin[c + d*x])^4,x]
```

```
[Out] Integrate[(c*e + d*e*x)^m*(a + b*ArcSin[c + d*x])^4, x]
```

Maple [A]
time = 1.12, size = 0, normalized size = 0.00

$$\int (dex + ce)^m (a + b \arcsin (dx + c))^4 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^4,x)
```

```
[Out] int((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^4,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^4,x, algorithm="maxima")
```

```
[Out] (d*x*e + c*e)^(m + 1)*a^4*e^(-1)/(d*(m + 1)) + ((b^4*d*x*e^m + b^4*c*e^m)*(
d*x + c)^m*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^4 + (d*m
+ d)*integrate(2*(2*(b^4*d*x*e^m + b^4*c*e^m)*sqrt(d*x + c + 1)*sqrt(-d*x -
 c + 1)*(d*x + c)^m*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^
3 + 2*((a*b^3*d^2*m + a*b^3*d^2)*x^2*e^m + 2*(a*b^3*c*d*m + a*b^3*c*d)*x*e^
m + (a*b^3*c^2 - a*b^3 + (a*b^3*c^2 - a*b^3)*m)*e^m)*(d*x + c)^m*arctan2(d*
x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^3 + 3*((a^2*b^2*d^2*m + a^2*b^
2*d^2)*x^2*e^m + 2*(a^2*b^2*c*d*m + a^2*b^2*c*d)*x*e^m + (a^2*b^2*c^2 - a^2
*b^2 + (a^2*b^2*c^2 - a^2*b^2)*m)*e^m)*(d*x + c)^m*arctan2(d*x + c, sqrt(d*
x + c + 1)*sqrt(-d*x - c + 1))^2 + 2*((a^3*b*d^2*m + a^3*b*d^2)*x^2*e^m + 2
*(a^3*b*c*d*m + a^3*b*c*d)*x*e^m + (a^3*b*c^2 - a^3*b + (a^3*b*c^2 - a^3*b)
*m)*e^m)*(d*x + c)^m*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))
)/((d^2*m + d^2)*x^2 + c^2 + (c^2 - 1)*m + 2*(c*d*m + c*d)*x - 1), x))/(d*m
 + d)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^4,x, algorithm="fricas")
```

```
[Out] integral((b^4*arcsin(d*x + c)^4 + 4*a*b^3*arcsin(d*x + c)^3 + 6*a^2*b^2*arc
sin(d*x + c)^2 + 4*a^3*b*arcsin(d*x + c) + a^4)*((d*x + c)*e)^m, x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int (e(c+dx))^m (a+b\operatorname{asin}(c+dx))^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**m*(a+b*asin(d*x+c))**4,x)
```

```
[Out] Integral((e*(c + d*x))**m*(a + b*asin(c + d*x))**4, x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^4,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^4*(d*e*x + c*e)^m, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int (c\,e+d\,e\,x)^m\,(a+b\,\mathrm{asin}(c+d\,x))^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^m*(a + b*asin(c + d*x))^4,x)
```

```
[Out] int((c*e + d*e*x)^m*(a + b*asin(c + d*x))^4, x)
```

3.309 $\int (ce+dex)^m(a+b\textbf{ArcSin}(c+dx))^3\,dx$

Optimal. Leaf size=89

$$\frac{(e(c+dx))^{1+m}(a+b\text{ArcSin}(c+dx))^3}{de(1+m)}-\frac{3b\text{Int}\left(\frac{(e(c+dx))^{1+m}(a+b\text{ArcSin}(c+dx))^2}{\sqrt{1-(c+dx)^2}},x\right)}{e(1+m)}$$

```
[Out] (e*(d*x+c))^(1+m)*(a+b*arcsin(d*x+c))^3/d/e/(1+m)-3*b*Unintegrable((e*(d*x+
c))^(1+m)*(a+b*arcsin(d*x+c))^2/(1-(d*x+c)^2)^(1/2),x)/e/(1+m)
```

Rubi [A]
time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}=0.000$, Rules used = {}

$$\int (ce+dex)^m(a+b\text{ArcSin}(c+dx))^3\,dx$$

Verification is not applicable to the result.

```
[In] Int[(c*e + d*e*x)^m*(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] ((e*(c + d*x))^(1 + m)*(a + b*ArcSin[c + d*x])^3)/(d*e*(1 + m)) - (3*b*Defe
r[Subst][Defer[Int][((e*x)^(1 + m)*(a + b*ArcSin[x])^2)/Sqrt[1 - x^2], x],
x, c + d*x])/(d*e*(1 + m))
```

Rubi steps

$$\begin{aligned}\int (ce+dex)^m\left(a+b\sin^{-1}(c+dx)\right)^3\,dx&=\frac{\text{Subst}\left(\int (ex)^m\left(a+b\sin^{-1}(x)\right)^3\,dx,x,c+dx\right)}{d}\\&=\frac{(e(c+dx))^{1+m}\left(a+b\sin^{-1}(c+dx)\right)^3}{de(1+m)}-\frac{(3b)\text{Subst}\left(\int \frac{(ex)^{1+m}(a+b}{\sqrt{1-}}\right.}{de(1-}\end{aligned}$$

Mathematica [A]
time = 1.59, size = 0, normalized size = 0.00

$$\int (ce+dex)^m(a+b\text{ArcSin}(c+dx))^3\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(c*e + d*e*x)^m*(a + b*ArcSin[c + d*x])^3,x]
```

```
[Out] Integrate[(c*e + d*e*x)^m*(a + b*ArcSin[c + d*x])^3, x]
```

Maple [A]
time = 0.62, size = 0, normalized size = 0.00

$$\int \left(dex+ce\right)^{m} \left(a+b\arcsin \left(dx+c\right)\right)^{3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^3,x)
```

```
[Out] int((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^3,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] (d*x*e + c*e)^(m + 1)*a^3*e^(-1)/(d*(m + 1)) + ((b^3*d*x*e^m + b^3*c*e^m)*(
d*x + c)^m*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^3 + (d*m
+ d)*integrate(3*((b^3*d*x*e^m + b^3*c*e^m)*sqrt(d*x + c + 1)*sqrt(-d*x - c
 + 1)*(d*x + c)^m*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2
+ ((a*b^2*d^2*m + a*b^2*d^2)*x^2*e^m + 2*(a*b^2*c*d*m + a*b^2*c*d)*x*e^m +
(a*b^2*c^2 - a*b^2 + (a*b^2*c^2 - a*b^2)*m)*e^m)*(d*x + c)^m*arctan2(d*x +
c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2 + ((a^2*b*d^2*m + a^2*b*d^2)*x^2
*e^m + 2*(a^2*b*c*d*m + a^2*b*c*d)*x*e^m + (a^2*b*c^2 - a^2*b + (a^2*b*c^2
- a^2*b)*m)*e^m)*(d*x + c)^m*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x -
 c + 1)))/((d^2*m + d^2)*x^2 + c^2 + (c^2 - 1)*m + 2*(c*d*m + c*d)*x - 1),
x))/(d*m + d)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] integral((b^3*arcsin(d*x + c)^3 + 3*a*b^2*arcsin(d*x + c)^2 + 3*a^2*b*arcsi
n(d*x + c) + a^3)*((d*x + c)*e)^m, x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(e \left(c + dx\right)\right)^{m} \left(a + b \operatorname{asin}{\left(c + dx \right)}\right)^{3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**m*(a+b*asin(d*x+c))**3,x)
```

```
[Out] Integral((e*(c + d*x))**m*(a + b*asin(c + d*x))**3, x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^3*(d*e*x + c*e)^m, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.01

$$\int (c\,e+d\,e\,x)^m\,(a+b\,\mathrm{asin}(c+d\,x))^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^m*(a + b*asin(c + d*x))^3,x)
```

```
[Out] int((c*e + d*e*x)^m*(a + b*asin(c + d*x))^3, x)
```

3.310 $\int (ce+dex)^m(a+b\mathbf{ArcSin}(c+dx))^2\,dx$

Optimal. Leaf size=183

$$\frac{(e(c+dx))^{1+m}(a+b\text{ArcSin}(c+dx))^2}{de(1+m)}-\frac{2b(e(c+dx))^{2+m}(a+b\text{ArcSin}(c+dx))\,{}_2F_1\left(\frac{1}{2},\frac{2+m}{2};\frac{4+m}{2};(c+dx)^2\right.}{de^2(1+m)(2+m)}$$

```
[Out] (e*(d*x+c))^(1+m)*(a+b*arcsin(d*x+c))^2/d/e/(1+m)-2*b*(e*(d*x+c))^(2+m)*(a+
b*arcsin(d*x+c))*hypergeom([1/2, 1+1/2*m],[2+1/2*m],(d*x+c)^2)/d/e^2/(1+m)/
(2+m)+2*b^2*(e*(d*x+c))^(3+m)*hypergeom([1, 3/2+1/2*m, 3/2+1/2*m],[2+1/2*m,
 5/2+1/2*m],(d*x+c)^2)/d/e^3/(3+m)/(m^2+3*m+2)
```

Rubi [A]
time = 0.15, antiderivative size = 183, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.130$, Rules used = {4889, 4723, 4805}

$$\frac{2b^2(e(c+dx))^{m+3}\,{}_3F_2\left(1,\frac{m}{2}+\frac{3}{2},\frac{m}{2}+\frac{3}{2};\frac{m}{2}+2,\frac{m}{2}+\frac{5}{2};(c+dx)^2\right)}{de^3(m+1)(m+2)(m+3)}-\frac{2b(e(c+dx))^{m+2}\,{}_2F_1\left(\frac{1}{2},\frac{m+2}{2};\frac{m+4}{2};(c+dx)^2\right)(a+b\text{ArcSin}(c+dx))}{de^2(m+1)(m+2)}+\frac{(e(c+dx))^{m+1}(a+b\text{ArcSin}(c+dx))^2}{de(m+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^m*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] ((e*(c + d*x))^(1 + m)*(a + b*ArcSin[c + d*x])^2)/(d*e*(1 + m)) - (2*b*(e*(
c + d*x))^(2 + m)*(a + b*ArcSin[c + d*x])*Hypergeometric2F1[1/2, (2 + m)/2,
 (4 + m)/2, (c + d*x)^2])/(d*e^2*(1 + m)*(2 + m)) + (2*b^2*(e*(c + d*x))^(3
 + m)*HypergeometricPFQ[{1, 3/2 + m/2, 3/2 + m/2}, {2 + m/2, 5/2 + m/2}, (c
 + d*x)^2])/(d*e^3*(1 + m)*(2 + m)*(3 + m))
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4805

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)/(f*(m + 1)))*Simp[Sqrt[1 - c^2*
x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])*Hypergeometric2F1[1/2, (1 + m)/2,
 (3 + m)/2, c^2*x^2], x] - Simp[b*c*((f*x)^(m + 2)/(f^2*(m + 1)*(m + 2)))*S
imp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*HypergeometricPFQ[{1, 1 + m/2, 1 + m
/2}, {3/2 + m/2, 2 + m/2}, c^2*x^2], x] /; FreeQ[{a, b, c, d, e, f, m}, x]
&& EqQ[c^2*d + e, 0] &&  !IntegerQ[m]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)^m \left(a+b\sin^{-1}(c+dx)\right)^2 dx = \frac{\text{Subst}\left(\int (ex)^m \left(a+b\sin^{-1}(x)\right)^2 dx, x, c+dx\right)}{d}$$

$$= \frac{(e(c+dx))^{1+m}\left(a+b\sin^{-1}(c+dx)\right)^2}{de(1+m)} - \frac{(2b)\text{Subst}\left(\int \frac{(ex)^{1+m}(a+b}{\sqrt{1-}}\right.}{de(1+}$$

$$= \frac{(e(c+dx))^{1+m}\left(a+b\sin^{-1}(c+dx)\right)^2}{de(1+m)} - \frac{2b(e(c+dx))^{2+m}(a+b}{}$$

Mathematica [A]
time = 0.08, size = 151, normalized size = 0.83

$$\frac{(c+dx)(e(c+dx))^m \left((a+b\text{ArcSin}(c+dx))^2 - \frac{2b(c+dx)(a+b\text{ArcSin}(c+dx))\, {}_2F_1\left(\frac{1}{2},\frac{2+m}{2};\frac{4+m}{2};(c+dx)^2\right)}{2+m} + \frac{2b^2(c+dx)^2\, {}_3F_2\left(1,\frac{3}{2}+\frac{m}{2},\frac{3}{2}+\frac{m}{2};2+\frac{m}{2},\frac{5}{2}+\frac{m}{2};(c+dx)^2\right)}{(2+m)(3+m)}\right)}{d(1+m)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^m*(a + b*ArcSin[c + d*x])^2,x]
```

```
[Out] ((c + d*x)*(e*(c + d*x))^m*((a + b*ArcSin[c + d*x])^2 - (2*b*(c + d*x)*(a +
 b*ArcSin[c + d*x])*Hypergeometric2F1[1/2, (2 + m)/2, (4 + m)/2, (c + d*x)^
2])/(2 + m) + (2*b^2*(c + d*x)^2*HypergeometricPFQ[{1, 3/2 + m/2, 3/2 + m/2
}, {2 + m/2, 5/2 + m/2}, (c + d*x)^2])/((2 + m)*(3 + m))))/(d*(1 + m))
```

Maple [F]
time = 1.38, size = 0, normalized size = 0.00

$$\int (dex+ce)^m \left(a+b\arcsin(dx+c)\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^2,x)
```

```
[Out] int((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] (d*x*e + c*e)^(m + 1)*a^2*e^(-1)/(d*(m + 1)) + ((b^2*d*x*e^m + b^2*c*e^m)*(
d*x + c)^m*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1))^2 + (d*m
+ d)*integrate(2*((b^2*d*x*e^m + b^2*c*e^m)*sqrt(d*x + c + 1)*sqrt(-d*x - c
 + 1)*(d*x + c)^m*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x - c + 1)) +
((a*b*d^2*m + a*b*d^2)*x^2*e^m + 2*(a*b*c*d*m + a*b*c*d)*x*e^m + (a*b*c^2 -
 a*b + (a*b*c^2 - a*b)*m)*e^m)*(d*x + c)^m*arctan2(d*x + c, sqrt(d*x + c +
1)*sqrt(-d*x - c + 1)))/((d^2*m + d^2)*x^2 + c^2 + (c^2 - 1)*m + 2*(c*d*m +
 c*d)*x - 1), x))/(d*m + d)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*arcsin(d*x + c)^2 + 2*a*b*arcsin(d*x + c) + a^2)*((d*x + c)*e
)^m, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int (e(c+dx))^m (a+b\operatorname{asin}(c+dx))^2\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**m*(a+b*asin(d*x+c))**2,x)
```

```
[Out] Integral((e*(c + d*x))**m*(a + b*asin(c + d*x))**2, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m*(a+b*arcsin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x + c) + a)^2*(d*e*x + c*e)^m, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int {\left(c\,e+d\,e\,x\right)}^m\,{\left(a+b\,\mathrm{asin}\left(c+d\,x\right)\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^m*(a + b*asin(c + d*x))^2,x)
[Out] int((c*e + d*e*x)^m*(a + b*asin(c + d*x))^2, x)
```

3.311 $\int (ce+dex)^m(a+b\mathbf{ArcSin}(c+dx))\,dx$

Optimal. Leaf size=89

$$\frac{(e(c+dx))^{1+m}(a+b\text{ArcSin}(c+dx))}{de(1+m)}-\frac{b(e(c+dx))^{2+m}\,{}_2F_1\left(\frac{1}{2},\frac{2+m}{2};\frac{4+m}{2};(c+dx)^2\right)}{de^2(1+m)(2+m)}$$

```
[Out] (e*(d*x+c))^(1+m)*(a+b*arcsin(d*x+c))/d/e/(1+m)-b*(e*(d*x+c))^(2+m)*hyperge
om([1/2, 1+1/2*m],[2+1/2*m],(d*x+c)^2)/d/e^2/(1+m)/(2+m)
```

Rubi [A]
time = 0.04, antiderivative size = 89, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {4889, 4723, 371}

$$\frac{(e(c+dx))^{m+1}(a+b\text{ArcSin}(c+dx))}{de(m+1)}-\frac{b(e(c+dx))^{m+2}\,{}_2F_1\left(\frac{1}{2},\frac{m+2}{2};\frac{m+4}{2};(c+dx)^2\right)}{de^2(m+1)(m+2)}$$

Antiderivative was successfully verified.

```
[In] Int[(c*e + d*e*x)^m*(a + b*ArcSin[c + d*x]),x]
```

```
[Out] ((e*(c + d*x))^(1 + m)*(a + b*ArcSin[c + d*x]))/(d*e*(1 + m)) - (b*(e*(c +
d*x))^(2 + m)*Hypergeometric2F1[1/2, (2 + m)/2, (4 + m)/2, (c + d*x)^2])/(d
*e^2*(1 + m)*(2 + m))
```

Rule 371

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[a^p
*((c*x)^(m + 1)/(c*(m + 1)))*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1
, (-b)*(x^n/a)], x] /; FreeQ[{a, b, c, m, n, p}, x] && !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int (ce+dex)^m \left(a+b\sin^{-1}(c+dx)\right)\,dx = \frac{\text{Subst}\left(\int (ex)^m \left(a+b\sin^{-1}(x)\right)\,dx, x, c+dx\right)}{d}$$

$$= \frac{(e(c+dx))^{1+m}\left(a+b\sin^{-1}(c+dx)\right)}{de(1+m)} - \frac{b\text{Subst}\left(\int \frac{(ex)^{1+m}}{\sqrt{1-x^2}}\,dx, x,\right.}{de(1+m)}$$

$$= \frac{(e(c+dx))^{1+m}\left(a+b\sin^{-1}(c+dx)\right)}{de(1+m)} - \frac{b(e(c+dx))^{2+m}\,{}_2F_1\left(\frac{1}{2},\frac{2+}{2}\right.}{de^2(1+m)(2}$$

Mathematica [A]
time = 0.03, size = 77, normalized size = 0.87

$$-\frac{(c+dx)(e(c+dx))^m\left(-((2+m)(a+b\text{ArcSin}(c+dx)))+b(c+dx)\,{}_2F_1\left(\frac{1}{2},\frac{2+m}{2};\frac{4+m}{2};(c+dx)^2\right)\right)}{d(1+m)(2+m)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*e + d*e*x)^m*(a + b*ArcSin[c + d*x]),x]
[Out] -(((c + d*x)*(e*(c + d*x))^m*(-((2 + m)*(a + b*ArcSin[c + d*x])) + b*(c + d
*x)*Hypergeometric2F1[1/2, (2 + m)/2, (4 + m)/2, (c + d*x)^2]))/(d*(1 + m)*
(2 + m)))
```

Maple [F]
time = 1.68, size = 0, normalized size = 0.00

$$\int (dex+ce)^m \left(a+b\arcsin(dx+c)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^m*(a+b*arcsin(d*x+c)),x)
[Out] int((d*e*x+c*e)^m*(a+b*arcsin(d*x+c)),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m*(a+b*arcsin(d*x+c)),x, algorithm="maxima")
[Out] ((d*x*e^m + c*e^m)*(d*x + c)^m*arctan2(d*x + c, sqrt(d*x + c + 1)*sqrt(-d*x
 - c + 1)) + (d*m + d)*integrate((d*x*e^m + c*e^m)*sqrt(d*x + c + 1)*sqrt(-
```

```
d*x - c + 1)*(d*x + c)^m/((d^2*m + d^2)*x^2 + c^2 + (c^2 - 1)*m + 2*(c*d*m
+ c*d)*x - 1), x))*b/(d*m + d) + (d*x*e + c*e)^(m + 1)*a*e^(-1)/(d*(m + 1))
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m*(a+b*arcsin(d*x+c)),x, algorithm="fricas")
[Out] integral((b*arcsin(d*x + c) + a)*((d*x + c)*e)^m, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int (e(c+dx))^m (a+b\,\mathrm{asin}\,(c+dx))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**m*(a+b*asin(d*x+c)),x)
[Out] Integral((e*(c + d*x))**m*(a + b*asin(c + d*x)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m*(a+b*arcsin(d*x+c)),x, algorithm="giac")
[Out] integrate((b*arcsin(d*x + c) + a)*(d*e*x + c*e)^m, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int (c\,e+d\,e\,x)^m\,(a+b\,\mathrm{asin}(c+d\,x))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^m*(a + b*asin(c + d*x)),x)
[Out] int((c*e + d*e*x)^m*(a + b*asin(c + d*x)), x)
```

3.312 $\int \frac{(ce+dex)^m}{a+b\text{ArcSin}(c+dx)}\,dx$

Optimal. Leaf size=25

$$\text{Int}\left(\frac{(e(c+dx))^m}{a+b\text{ArcSin}(c+dx)},x\right)$$

```
[Out] Unintegrable((e*(d*x+c))^m/(a+b*arcsin(d*x+c)),x)
```

Rubi [A]
time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(ce+dex)^m}{a+b\text{ArcSin}(c+dx)}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(c*e + d*e*x)^m/(a + b*ArcSin[c + d*x]),x]
[Out] Defer[Subst][Defer[Int][(e*x)^m/(a + b*ArcSin[x]), x], x, c + d*x]/d
```

Rubi steps

$$\int \frac{(ce+dex)^m}{a+b\sin^{-1}(c+dx)}\,dx = \frac{\text{Subst}\left(\int \frac{(ex)^m}{a+b\sin^{-1}(x)}\,dx, x, c+dx\right)}{d}$$

Mathematica [A]
time = 2.22, size = 0, normalized size = 0.00

$$\int \frac{(ce+dex)^m}{a+b\text{ArcSin}(c+dx)}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(c*e + d*e*x)^m/(a + b*ArcSin[c + d*x]),x]
[Out] Integrate[(c*e + d*e*x)^m/(a + b*ArcSin[c + d*x]), x]
```

Maple [A]
time = 1.98, size = 0, normalized size = 0.00

$$\int \frac{(dex+ce)^m}{a+b\arcsin(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*e*x+c*e)^m/(a+b*arcsin(d*x+c)),x)
```

```
[Out] int((d*e*x+c*e)^m/(a+b*arcsin(d*x+c)),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m/(a+b*arcsin(d*x+c)),x, algorithm="maxima")
```

```
[Out] integrate((d*x*e + c*e)^m/(b*arcsin(d*x + c) + a), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m/(a+b*arcsin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(((d*x + c)*e)^m/(b*arcsin(d*x + c) + a), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(e(c+dx))^m}{a+b\operatorname{asin}(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)**m/(a+b*asin(d*x+c)),x)
```

```
[Out] Integral((e*(c + d*x))**m/(a + b*asin(c + d*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*e*x+c*e)^m/(a+b*arcsin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((d*e*x + c*e)^m/(b*arcsin(d*x + c) + a), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{(ce+dex)^m}{a+b\,\mathrm{asin}\,(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*e + d*e*x)^m/(a + b*asin(c + d*x)),x)
[Out] int((c*e + d*e*x)^m/(a + b*asin(c + d*x)), x)
```

3.313 $\int \sqrt{1-a^2-2abx-b^2x^2}\,\mathbf{ArcSin}(a+bx)^3\,dx$

Optimal. Leaf size=135

$$\frac{3(a+bx)^2}{8b}-\frac{3(a+bx)\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)}{4b}+\frac{3\text{ArcSin}(a+bx)^2}{8b}-\frac{3(a+bx)^2\text{ArcSin}(a+bx)^2}{4b}+\frac{(a$$

[Out] 3/8*(b*x+a)^2/b+3/8*arcsin(b*x+a)^2/b-3/4*(b*x+a)^2*arcsin(b*x+a)^2/b+1/8*arcsin(b*x+a)^4/b-3/4*(b*x+a)*arcsin(b*x+a)*(1-(b*x+a)^2)^(1/2)/b+1/2*(b*x+a)*arcsin(b*x+a)^3*(1-(b*x+a)^2)^(1/2)/b

Rubi [A]
time = 0.13, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.182$, Rules used = {4891, 4741, 4737, 4723, 4795, 30}

$$\frac{\text{ArcSin}(a+bx)^4}{8b}+\frac{(a+bx)\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)^3}{2b}-\frac{3(a+bx)^2\text{ArcSin}(a+bx)^2}{4b}+\frac{3\text{ArcSin}(a+bx)^2}{8b}-\frac{3(a+bx)\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)}{4b}+\frac{3(a+bx)^2}{8b}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x]^3,x]
```

```
[Out] (3*(a + b*x)^2)/(8*b) - (3*(a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/(4*b) + (3*ArcSin[a + b*x]^2)/(8*b) - (3*(a + b*x)^2*ArcSin[a + b*x]^2)/(4*b) + ((a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^3)/(2*b) + ArcSin[a + b*x]^4/(8*b)
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && NeQ[m, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol] :> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && NeQ[n, -1]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[x*Sqrt[d + e*x^2]*((a + b*ArcSin[c*x])^n/2), x] + (Dist[(1/2
)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[(a + b*ArcSin[c*x])^n/Sqrt[1
 - c^2*x^2], x], x] - Dist[b*c*(n/2)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]
], Int[x*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x]
&& EqQ[c^2*d + e, 0] && GtQ[n, 0]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4891

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-C/d^2 + (C/d^2)*x^2)
^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C,
n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\int \sqrt{1-a^2-2abx-b^2x^2}\,\sin^{-1}(a+bx)^3\,dx = \frac{\text{Subst}\left(\int \sqrt{1-x^2}\,\sin^{-1}(x)^3\,dx,x,a+bx\right)}{b}$$

$$= \frac{(a+bx)\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)^3}{2b} + \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)}{\sqrt{1-x}}\right.}{2}$$

$$= -\frac{3(a+bx)^2\sin^{-1}(a+bx)^2}{4b} + \frac{(a+bx)\sqrt{1-(a+bx)^2}\,\sin^{-}}{2b}$$

$$= -\frac{3(a+bx)\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)}{4b} - \frac{3(a+bx)^2\sin^{-}}{4b}$$

$$= \frac{3(a+bx)^2}{8b} - \frac{3(a+bx)\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)}{4b} + \frac{3\,\mathrm{si}}{}$$

Mathematica [A]

time = 0.09, size = 133, normalized size = 0.99

$$\frac{3bx(2a+bx)-6(a+bx)\sqrt{1-a^2-2abx-b^2x^2}\,\text{ArcSin}(a+bx)-3(-1+2a^2+4abx+2b^2x^2)\,\text{ArcSin}(a+bx)^2+4(a+bx)\sqrt{1-a^2-2abx-b^2x^2}\,\text{ArcSin}(a+bx)^3+\text{ArcSin}(a+bx)^4}{8b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x]^3,x]
```

```
[Out] (3*b*x*(2*a + b*x) - 6*(a + b*x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a
 + b*x] - 3*(-1 + 2*a^2 + 4*a*b*x + 2*b^2*x^2)*ArcSin[a + b*x]^2 + 4*(a + b
*x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x]^3 + ArcSin[a + b*x]^4
)/(8*b)
```

Maple [A]
time = 0.75, size = 215, normalized size = 1.59

method	result
default	$4\arcsin(bx+a)^3\sqrt{-b^2x^2-2abx-a^2+1}\;bx-6\arcsin(bx+a)^2b^2x^2+4\arcsin(bx+a)^3\sqrt{-b^2x^2-2abx-a^2+1}\;a$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)^3*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x,method=_RETURNVERBOSE)
```

```
[Out] 1/8*(4*arcsin(b*x+a)^3*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*b*x-6*arcsin(b*x+a)^2
*b^2*x^2+4*arcsin(b*x+a)^3*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*a-12*arcsin(b*x+a
)^2*a*b*x+arcsin(b*x+a)^4-6*arcsin(b*x+a)^2*a^2-6*arcsin(b*x+a)*(-b^2*x^2-2
*a*b*x-a^2+1)^(1/2)*b*x+3*b^2*x^2-6*arcsin(b*x+a)*(-b^2*x^2-2*a*b*x-a^2+1)^
(1/2)*a+6*a*b*x+3*arcsin(b*x+a)^2+3*a^2)/b
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^3*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="maxi
ma")
```

```
[Out] integrate(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*arcsin(b*x + a)^3, x)
```

Fricas [A]
time = 3.69, size = 110, normalized size = 0.81

$$\frac{3\,b^2x^2+\arcsin\left(bx+a\right)^4+6\,abx-3\,(2\,b^2x^2+4\,abx+2\,a^2-1)\arcsin\left(bx+a\right)^2+2\,\sqrt{-b^2x^2-2\,abx-a^2+1}\,\left(2\,(bx+a)\arcsin\left(bx+a\right)^3-3\,(bx+a)\arcsin\left(bx+a\right)\right)}{8\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^3*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="fric
as")
```

```
[Out] 1/8*(3*b^2*x^2 + arcsin(b*x + a)^4 + 6*a*b*x - 3*(2*b^2*x^2 + 4*a*b*x + 2*a
^2 - 1)*arcsin(b*x + a)^2 + 2*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(2*(b*x +
a)*arcsin(b*x + a)^3 - 3*(b*x + a)*arcsin(b*x + a)))/b
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-\left(a+bx-1\right)\left(a+bx+1\right)}\,\operatorname{asin}^{3}\left(a+bx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**3*(-b**2*x**2-2*a*b*x-a**2+1)**(1/2),x)
```

```
[Out] Integral(sqrt(-(a + b*x - 1)*(a + b*x + 1))*asin(a + b*x)**3, x)
```

Giac [A]
time = 0.48, size = 162, normalized size = 1.20

$$\frac{\sqrt{-b^2x^2-2\,abx-a^2+1}\,(bx+a)\arcsin\left(bx+a\right)^3}{2\,b}+\frac{\arcsin\left(bx+a\right)^4}{8\,b}-\frac{3\,(b^2x^2+2\,abx+a^2-1)\arcsin\left(bx+a\right)^2}{4\,b}-\frac{3\,\sqrt{-b^2x^2-2\,abx-a^2+1}\,(bx+a)\arcsin\left(bx+a\right)}{4\,b}-\frac{3\,\arcsin\left(bx+a\right)^2}{8\,b}+\frac{3\,(b^2x^2+2\,abx+a^2-1)}{8\,b}+\frac{3}{16\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^3*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="giac
")
```

```
[Out] 1/2*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*x + a)*arcsin(b*x + a)^3/b + 1/8*
arcsin(b*x + a)^4/b - 3/4*(b^2*x^2 + 2*a*b*x + a^2 - 1)*arcsin(b*x + a)^2/b
 - 3/4*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*x + a)*arcsin(b*x + a)/b - 3/8
*arcsin(b*x + a)^2/b + 3/8*(b^2*x^2 + 2*a*b*x + a^2 - 1)/b + 3/16/b
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int {\mathrm{asin}\left(a+b\,x\right)}^3\,\sqrt{-a^2-2\,a\,b\,x-b^2\,x^2+1}\,\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)^3*(1 - b^2*x^2 - 2*a*b*x - a^2)^(1/2),x)
```

```
[Out] int(asin(a + b*x)^3*(1 - b^2*x^2 - 2*a*b*x - a^2)^(1/2), x)
```

3.314 $\int \sqrt{1-a^2-2abx-b^2x^2}\, \textbf{ArcSin}(a+bx)^2\, dx$

Optimal. Leaf size=111

$$-\frac{(a+bx)\sqrt{1-(a+bx)^2}}{4b}+\frac{\text{ArcSin}(a+bx)}{4b}-\frac{(a+bx)^2\text{ArcSin}(a+bx)}{2b}+\frac{(a+bx)\sqrt{1-(a+bx)^2}\,\text{ArcSin}(}{2b}$$

```
[Out] 1/4*arcsin(b*x+a)/b-1/2*(b*x+a)^2*arcsin(b*x+a)/b+1/6*arcsin(b*x+a)^3/b-1/4
*(b*x+a)*(1-(b*x+a)^2)^(1/2)/b+1/2*(b*x+a)*arcsin(b*x+a)^2*(1-(b*x+a)^2)^(1
/2)/b
```

Rubi [A]
time = 0.09, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.182$, Rules used = {4891, 4741, 4737, 4723, 327, 222}

$$\frac{\text{ArcSin}(a+bx)^3}{6b}+\frac{(a+bx)\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)^2}{2b}-\frac{(a+bx)^2\text{ArcSin}(a+bx)}{2b}+\frac{\text{ArcSin}(a+bx)}{4b}-\frac{(a+bx)\sqrt{1-(a+bx)^2}}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x]^2,x]
```

```
[Out] -1/4*((a + b*x)*Sqrt[1 - (a + b*x)^2])/b + ArcSin[a + b*x]/(4*b) - ((a + b*
x)^2*ArcSin[a + b*x])/(2*b) + ((a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b
*x]^2)/(2*b) + ArcSin[a + b*x]^3/(6*b)
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[x*Sqrt[d + e*x^2]*((a + b*ArcSin[c*x])^n/2), x] + (Dist[(1/2
)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[(a + b*ArcSin[c*x])^n/Sqrt[1
 - c^2*x^2], x], x] - Dist[b*c*(n/2)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]
], Int[x*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x]
&& EqQ[c^2*d + e, 0] && GtQ[n, 0]
```

Rule 4891

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-C/d^2 + (C/d^2)*x^2)
^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C,
n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\int \sqrt{1-a^2-2abx-b^2x^2}\,\sin^{-1}(a+bx)^2\,dx = \frac{\text{Subst}\left(\int \sqrt{1-x^2}\,\sin^{-1}(x)^2\,dx, x, a+bx\right)}{b}$$

$$= \frac{(a+bx)\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)^2}{2b} + \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)}{\sqrt{1-x}}\right.}{2}$$

$$= -\frac{(a+bx)^2\sin^{-1}(a+bx)}{2b} + \frac{(a+bx)\sqrt{1-(a+bx)^2}\,\sin^{-1}(}{2b}$$

$$= -\frac{(a+bx)\sqrt{1-(a+bx)^2}}{4b} - \frac{(a+bx)^2\sin^{-1}(a+bx)}{2b} + \frac{(a-}{}$$

$$= -\frac{(a+bx)\sqrt{1-(a+bx)^2}}{4b} + \frac{\sin^{-1}(a+bx)}{4b} - \frac{(a+bx)^2\sin^{-}}{2b}$$

Mathematica [A]
time = 0.07, size = 116, normalized size = 1.05

$$\frac{-3(a+bx)\sqrt{1-a^2-2abx-b^2x^2} - 3(-1+2a^2+4abx+2b^2x^2)\,\text{ArcSin}(a+bx) + 6(a+bx)\sqrt{1-a^2-2abx-b^2x^2}\,\text{ArcSin}(a+bx)^2 + 2\text{ArcSin}(a+bx)^3}{12b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x]^2,x]
```

```
[Out] (-3*(a + b*x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2] - 3*(-1 + 2*a^2 + 4*a*b*x +
 2*b^2*x^2)*ArcSin[a + b*x] + 6*(a + b*x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]
*ArcSin[a + b*x]^2 + 2*ArcSin[a + b*x]^3)/(12*b)
```

Maple [A]
time = 0.42, size = 179, normalized size = 1.61

method	result
default	$\frac{6 \arcsin(bx+a)^2 \sqrt{-b^2x^2-2abx-a^2+1}\, bx - 6 \arcsin(bx+a) b^2x^2 + 6 \arcsin(bx+a)^2 \sqrt{-b^2x^2-2abx-a^2+1}\, a-}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)^2*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x,method=_RETURNVERBOSE)
```

```
[Out] 1/12*(6*arcsin(b*x+a)^2*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*b*x-6*arcsin(b*x+a)*
b^2*x^2+6*arcsin(b*x+a)^2*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*a-12*arcsin(b*x+a)
*a*b*x+2*arcsin(b*x+a)^3-6*arcsin(b*x+a)*a^2-3*(-b^2*x^2-2*a*b*x-a^2+1)^(1/
2)*b*x-3*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*a+3*arcsin(b*x+a))/b
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="maxi
ma")
```

```
[Out] integrate(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*arcsin(b*x + a)^2, x)
```

Fricas [A]
time = 7.71, size = 91, normalized size = 0.82

$$\frac{2 \arcsin(bx+a)^3 - 3(2b^2x^2 + 4abx + 2a^2 - 1)\arcsin(bx+a) + 3\sqrt{-b^2x^2 - 2abx - a^2 + 1}\left(2(bx+a)\arcsin(bx+a)^2 - bx - a\right)}{12b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="fric
as")
```

```
[Out] 1/12*(2*arcsin(b*x + a)^3 - 3*(2*b^2*x^2 + 4*a*b*x + 2*a^2 - 1)*arcsin(b*x
+ a) + 3*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(2*(b*x + a)*arcsin(b*x + a)^2
- b*x - a))/b
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-\left(a+bx-1\right)\left(a+bx+1\right)}\ \operatorname{asin}^{2}\left(a+bx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**2*(-b**2*x**2-2*a*b*x-a**2+1)**(1/2),x)
```

```
[Out] Integral(sqrt(-(a + b*x - 1)*(a + b*x + 1))*asin(a + b*x)**2, x)
```

Giac [A]
time = 0.46, size = 125, normalized size = 1.13

$$\frac{\sqrt{-b^2x^2-2\,abx-a^2+1}\,(bx+a)\arcsin\left(bx+a\right)^2}{2\,b}+\frac{\arcsin\left(bx+a\right)^3}{6\,b}-\frac{\left(b^2x^2+2\,abx+a^2-1\right)\arcsin\left(bx+a\right)}{2\,b}-\frac{\sqrt{-b^2x^2-2\,abx-a^2+1}\,(bx+a)}{4\,b}-\frac{\arcsin\left(bx+a\right)}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="giac
")
```

```
[Out] 1/2*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*x + a)*arcsin(b*x + a)^2/b + 1/6*
arcsin(b*x + a)^3/b - 1/2*(b^2*x^2 + 2*a*b*x + a^2 - 1)*arcsin(b*x + a)/b -
 1/4*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*x + a)/b - 1/4*arcsin(b*x + a)/b
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \operatorname{asin}(a+b\,x)^2\,\sqrt{-a^2-2\,a\,b\,x-b^2\,x^2+1}\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)^2*(1 - b^2*x^2 - 2*a*b*x - a^2)^(1/2),x)
```

```
[Out] int(asin(a + b*x)^2*(1 - b^2*x^2 - 2*a*b*x - a^2)^(1/2), x)
```

3.315 $\int \sqrt{1-a^2-2abx-b^2x^2}\,\mathbf{ArcSin}(a+bx)\,dx$

Optimal. Leaf size=63

$$-\frac{(a+bx)^2}{4b}+\frac{(a+bx)\sqrt{1-(a+bx)^2}\,\mathrm{ArcSin}(a+bx)}{2b}+\frac{\mathrm{ArcSin}(a+bx)^2}{4b}$$

```
[Out] -1/4*(b*x+a)^2/b+1/4*arcsin(b*x+a)^2/b+1/2*(b*x+a)*arcsin(b*x+a)*(1-(b*x+a)
^2)^(1/2)/b
```

Rubi [A]
time = 0.05, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.129$, Rules used = {4891, 4741, 4737, 30}

$$\frac{\sqrt{1-(a+bx)^2}\,(a+bx)\mathrm{ArcSin}(a+bx)}{2b}+\frac{\mathrm{ArcSin}(a+bx)^2}{4b}-\frac{(a+bx)^2}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x],x]
```

```
[Out] -1/4*(a + b*x)^2/b + ((a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x])/(2*b
) + ArcSin[a + b*x]^2/(4*b)
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[x*Sqrt[d + e*x^2]*((a + b*ArcSin[c*x])^n/2), x] + (Dist[(1/2
)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[(a + b*ArcSin[c*x])^n/Sqrt[1
 - c^2*x^2], x], x] - Dist[b*c*(n/2)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]
], Int[x*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x]
&& EqQ[c^2*d + e, 0] && GtQ[n, 0]
```

Rule 4891

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-C/d^2 + (C/d^2)*x^2)
^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C,
n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\int \sqrt{1-a^2-2abx-b^2x^2}\,\sin^{-1}(a+bx)\,dx = \frac{\text{Subst}\left(\int \sqrt{1-x^2}\,\sin^{-1}(x)\,dx, x, a+bx\right)}{b}$$

$$= \frac{(a+bx)\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)}{2b} - \frac{\text{Subst}(\int x\,dx, x, a-}{2b}$$

$$= -\frac{(a+bx)^2}{4b} + \frac{(a+bx)\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)}{2b} + \frac{\sin^{-}}{}$$

Mathematica [A]
time = 0.04, size = 64, normalized size = 1.02

$$\frac{-bx(2a+bx)+2(a+bx)\sqrt{1-a^2-2abx-b^2x^2}\,\text{ArcSin}(a+bx)+\text{ArcSin}(a+bx)^2}{4b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x],x]
```

```
[Out] (-(b*x*(2*a + b*x)) + 2*(a + b*x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[
a + b*x] + ArcSin[a + b*x]^2)/(4*b)
```

Maple [A]
time = 0.42, size = 96, normalized size = 1.52

method	result
default	$\frac{2\arcsin(bx+a)\sqrt{-b^2x^2-2abx-a^2+1}\,bx-b^2x^2+2\arcsin(bx+a)\sqrt{-b^2x^2-2abx-a^2+1}\,a-2abx+\arcsin(bx+}{4b}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x,method=_RETURNVERBOSE)
```

```
[Out] 1/4*(2*arcsin(b*x+a)*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*b*x-b^2*x^2+2*arcsin(b*
x+a)*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*a-2*a*b*x+arcsin(b*x+a)^2-a^2)/b
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 240 vs. $2(55) = 110$.

time = 0.49, size = 240, normalized size = 3.81

$$-\frac{1}{4}\left(x^2+\frac{2\,ax}{b}-\frac{2\arcsin\left(bx+a\right)\arcsin\left(-\frac{b^2x+ab}{\sqrt{a^2b^2-(a^2-1)b^2}}\right)}{b^2}-\frac{\arcsin\left(-\frac{b^2x+ab}{\sqrt{a^2b^2-(a^2-1)b^2}}\right)^2}{b^2}\right)b-\frac{1}{2}\left(\frac{a^2\arcsin\left(-\frac{b^2x+ab}{\sqrt{a^2b^2-(a^2-1)b^2}}\right)}{b}-\sqrt{-b^2x^2-2\,abx-a^2+1}\,x-\frac{(a^2-1)\arcsin\left(-\frac{b^2x+ab}{\sqrt{a^2b^2-(a^2-1)b^2}}\right)}{b}-\frac{\sqrt{-b^2x^2-2\,abx-a^2+1}\,a}{b}\right)\arcsin\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="maxima
")
```

```
[Out] -1/4*(x^2 + 2*a*x/b - 2*arcsin(b*x + a)*arcsin(-(b^2*x + a*b)/sqrt(a^2*b^2
- (a^2 - 1)*b^2))/b^2 - arcsin(-(b^2*x + a*b)/sqrt(a^2*b^2 - (a^2 - 1)*b^2)
)^2/b^2)*b - 1/2*(a^2*arcsin(-(b^2*x + a*b)/sqrt(a^2*b^2 - (a^2 - 1)*b^2))/
b - sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*x - (a^2 - 1)*arcsin(-(b^2*x + a*b)/
sqrt(a^2*b^2 - (a^2 - 1)*b^2))/b - sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*a/b)*
arcsin(b*x + a)
```

Fricas [A]
time = 7.37, size = 63, normalized size = 1.00

$$-\frac{b^2x^2+2\,abx-2\sqrt{-b^2x^2-2\,abx-a^2+1}\,(bx+a)\arcsin\left(bx+a\right)-\arcsin\left(bx+a\right)^2}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="fricas
")
```

```
[Out] -1/4*(b^2*x^2 + 2*a*b*x - 2*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*x + a)*ar
csin(b*x + a) - arcsin(b*x + a)^2)/b
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int\sqrt{-(a+bx-1)(a+bx+1)}\,\operatorname{asin}\left(a+bx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)*(-b**2*x**2-2*a*b*x-a**2+1)**(1/2),x)
```

```
[Out] Integral(sqrt(-(a + b*x - 1)*(a + b*x + 1))*asin(a + b*x), x)
```

Giac [A]
time = 0.44, size = 79, normalized size = 1.25

$$\frac{\sqrt{-b^2x^2-2\,abx-a^2+1}\,(bx+a)\arcsin\left(bx+a\right)}{2\,b}+\frac{\arcsin\left(bx+a\right)^2}{4\,b}-\frac{b^2x^2+2\,abx+a^2-1}{4\,b}-\frac{1}{8\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*x + a)*arcsin(b*x + a)/b + 1/4*ar
csin(b*x + a)^2/b - 1/4*(b^2*x^2 + 2*a*b*x + a^2 - 1)/b - 1/8/b
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.02

$$\int \operatorname{asin}(a+b\,x)\,\sqrt{-a^2-2\,a\,b\,x-b^2\,x^2+1}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)*(1 - b^2*x^2 - 2*a*b*x - a^2)^(1/2),x)
```

```
[Out] int(asin(a + b*x)*(1 - b^2*x^2 - 2*a*b*x - a^2)^(1/2), x)
```

3.316 $\int \frac{\sqrt{1-a^2-2abx-b^2x^2}}{\mathbf{ArcSin}(a+bx)}\,dx$

Optimal. Leaf size=31

$$\frac{\text{CosIntegral}(2\text{ArcSin}(a+bx))}{2b}+\frac{\log(\text{ArcSin}(a+bx))}{2b}$$

```
[Out] 1/2*Ci(2*arcsin(b*x+a))/b+1/2*ln(arcsin(b*x+a))/b
```

Rubi [A]
time = 0.08, antiderivative size = 31, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {4891, 4753, 3393, 3383}

$$\frac{\text{CosIntegral}(2\text{ArcSin}(a+bx))}{2b}+\frac{\log(\text{ArcSin}(a+bx))}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]/ArcSin[a + b*x],x]
```

```
[Out] CosIntegral[2*ArcSin[a + b*x]]/(2*b) + Log[ArcSin[a + b*x]]/(2*b)
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3393

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 4753

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[(1/(b*c))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Subst[Int[x
^n*Cos[-a/b + x/b]^(2*p + 1), x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b,
 c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IGtQ[2*p, 0]
```

Rule 4891

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-C/d^2 + (C/d^2)*x^2)
^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C,
```

```
n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sqrt{1-a^2-2abx-b^2x^2}}{\sin^{-1}(a+bx)}\,dx &= \frac{\text{Subst}\left(\int \frac{\sqrt{1-x^2}}{\sin^{-1}(x)}\,dx, x, a+bx\right)}{b} \\
&= \frac{\text{Subst}\left(\int \frac{\cos^2(x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b} \\
&= \frac{\text{Subst}\left(\int \left(\frac{1}{2x}+\frac{\cos(2x)}{2x}\right)\,dx, x, \sin^{-1}(a+bx)\right)}{b} \\
&= \frac{\log\left(\sin^{-1}(a+bx)\right)}{2b} + \frac{\text{Subst}\left(\int \frac{\cos(2x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{2b} \\
&= \frac{\text{Ci}(2\sin^{-1}(a+bx))}{2b} + \frac{\log\left(\sin^{-1}(a+bx)\right)}{2b}
\end{aligned}$$

Mathematica [A]
time = 0.05, size = 24, normalized size = 0.77

$$\frac{\text{CosIntegral}(2\text{ArcSin}(a+bx)) + \log(\text{ArcSin}(a+bx))}{2b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]/ArcSin[a + b*x],x]
[Out] (CosIntegral[2*ArcSin[a + b*x]] + Log[ArcSin[a + b*x]])/(2*b)
```

Maple [A]
time = 0.49, size = 23, normalized size = 0.74

method	result	size
default	$\frac{\ln(\arcsin(bx+a))+\text{cosineIntegral}(2\arcsin(bx+a))}{2b}$	23

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a),x,method=_RETURNVERBOSE)
[Out] 1/2*(ln(arcsin(b*x+a))+Ci(2*arcsin(b*x+a)))/b
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a),x, algorithm="maxima
")
```

```
[Out] integrate(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)/arcsin(b*x + a), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a),x, algorithm="fricas
")
```

```
[Out] integral(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)/arcsin(b*x + a), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-(a+bx-1)(a+bx+1)}}{\operatorname{asin}(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b**2*x**2-2*a*b*x-a**2+1)**(1/2)/asin(b*x+a),x)
```

```
[Out] Integral(sqrt(-(a + b*x - 1)*(a + b*x + 1))/asin(a + b*x), x)
```

Giac [A]
time = 0.45, size = 27, normalized size = 0.87

$$\frac{\operatorname{Ci}(2\arcsin(bx+a))}{2b}+\frac{\log(\arcsin(bx+a))}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*cos_integral(2*arcsin(b*x + a))/b + 1/2*log(arcsin(b*x + a))/b
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sqrt{-a^2-2\,a\,b\,x-b^2\,x^2+1}}{\operatorname{asin}(a+b\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - b^2*x^2 - 2*a*b*x - a^2)^(1/2)/asin(a + b*x),x)
```

```
[Out] int((1 - b^2*x^2 - 2*a*b*x - a^2)^(1/2)/asin(a + b*x), x)
```

3.317 $\int \frac{\sqrt{1-a^2-2abx-b^2x^2}}{\text{ArcSin}(a+bx)^2}\,dx$

Optimal. Leaf size=39

$$-\frac{1-(a+bx)^2}{b\text{ArcSin}(a+bx)}-\frac{\text{Si}(2\text{ArcSin}(a+bx))}{b}$$

```
[Out] (-1+(b*x+a)^2)/b/arcsin(b*x+a)-Si(2*arcsin(b*x+a))/b
```

Rubi [A]
time = 0.09, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.182$, Rules used = {4891, 4751, 4731, 4491, 12, 3380}

$$-\frac{\text{Si}(2\text{ArcSin}(a+bx))}{b}-\frac{1-(a+bx)^2}{b\text{ArcSin}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]/ArcSin[a + b*x]^2,x]
[Out] -((1 - (a + b*x)^2)/(b*ArcSin[a + b*x])) - SinIntegral[2*ArcSin[a + b*x]]/b
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4751

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*((a + b*ArcSin[c*x])^(n + 1
)/(b*c*(n + 1))), x] + Dist[c*((2*p + 1)/(b*(n + 1)))*Simp[(d + e*x^2)^p/(1
 - c^2*x^2)^p], Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1),
x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && LtQ[n, -1]
```

Rule 4891

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-C/d^2 + (C/d^2)*x^2)
^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C,
n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sqrt{1-a^2-2abx-b^2x^2}}{\sin^{-1}(a+bx)^2}\,dx &= \frac{\text{Subst}\left(\int \frac{\sqrt{1-x^2}}{\sin^{-1}(x)^2}\,dx,x,a+bx\right)}{b}\\
&= -\frac{1-(a+bx)^2}{b\sin^{-1}(a+bx)}-\frac{2\text{Subst}\left(\int \frac{x}{\sin^{-1}(x)}\,dx,x,a+bx\right)}{b}\\
&= -\frac{1-(a+bx)^2}{b\sin^{-1}(a+bx)}-\frac{2\text{Subst}\left(\int \frac{\cos(x)\sin(x)}{x}\,dx,x,\sin^{-1}(a+bx)\right)}{b}\\
&= -\frac{1-(a+bx)^2}{b\sin^{-1}(a+bx)}-\frac{2\text{Subst}\left(\int \frac{\sin(2x)}{2x}\,dx,x,\sin^{-1}(a+bx)\right)}{b}\\
&= -\frac{1-(a+bx)^2}{b\sin^{-1}(a+bx)}-\frac{\text{Subst}\left(\int \frac{\sin(2x)}{x}\,dx,x,\sin^{-1}(a+bx)\right)}{b}\\
&= -\frac{1-(a+bx)^2}{b\sin^{-1}(a+bx)}-\frac{\text{Si}(2\sin^{-1}(a+bx))}{b}
\end{aligned}
$$

Mathematica [A]
time = 0.05, size = 46, normalized size = 1.18

$$
\frac{-1+a^2+2abx+b^2x^2-\text{ArcSin}(a+bx)\text{Si}(2\text{ArcSin}(a+bx))}{b\text{ArcSin}(a+bx)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]/ArcSin[a + b*x]^2,x]
```

```
[Out] (-1 + a^2 + 2*a*b*x + b^2*x^2 - ArcSin[a + b*x]*SinIntegral[2*ArcSin[a + b*
x]])/(b*ArcSin[a + b*x])
```

Maple [A]
time = 0.46, size = 42, normalized size = 1.08

method	result	size
default	$-\frac{2\,\mathrm{sinIntegral}(2\arcsin(bx+a))\arcsin(bx+a)+\cos(2\arcsin(bx+a))+1}{2b\arcsin(bx+a)}$	42

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a)^2,x,method=_RETURNVERBOSE)
```

```
[Out] -1/2/b*(2*Si(2*arcsin(b*x+a))*arcsin(b*x+a)+cos(2*arcsin(b*x+a))+1)/arcsin(
b*x+a)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a)^2,x, algorithm="maxi
ma")
```

```
[Out] (b^2*x^2 + 2*a*b*x - b*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1
))*integrate(2*(b*x + a)/arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a +
 1)), x) + a^2 - 1)/(b*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1
)))
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a)^2,x, algorithm="fric
as")
```

```
[Out] integral(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)/arcsin(b*x + a)^2, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-\left(a+bx-1\right)\left(a+bx+1\right)}}{\operatorname{asin}^{2}\left(a+bx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b**2*x**2-2*a*b*x-a**2+1)**(1/2)/asin(b*x+a)**2,x)
```

```
[Out] Integral(sqrt(-(a + b*x - 1)*(a + b*x + 1))/asin(a + b*x)**2, x)
```

Giac [A]
time = 0.49, size = 44, normalized size = 1.13

$$-\frac{\operatorname{Si}\left(2 \arcsin\left(bx+a\right)\right)}{b}+\frac{b^{2}x^{2}+2\,abx+a^{2}-1}{b\arcsin\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a)^2,x, algorithm="giac
")
```

```
[Out] -sin_integral(2*arcsin(b*x + a))/b + (b^2*x^2 + 2*a*b*x + a^2 - 1)/(b*arcsi
n(b*x + a))
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sqrt{-a^2-2\,a\,b\,x-b^2\,x^2+1}}{{\mathrm{asin}\left(a+b\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - b^2*x^2 - 2*a*b*x - a^2)^(1/2)/asin(a + b*x)^2,x)
```

```
[Out] int((1 - b^2*x^2 - 2*a*b*x - a^2)^(1/2)/asin(a + b*x)^2, x)
```

3.318 $\int \frac{\sqrt{1-a^2-2abx-b^2x^2}}{\mathbf{ArcSin}(a+bx)^3}\,dx$

Optimal. Leaf size=71

$$\frac{-1+(a+bx)^2}{2b\text{ArcSin}(a+bx)^2}+\frac{(a+bx)\sqrt{1-(a+bx)^2}}{b\text{ArcSin}(a+bx)}-\frac{\text{CosIntegral}(2\text{ArcSin}(a+bx))}{b}$$

```
[Out] 1/2*(-1+(b*x+a)^2)/b/arcsin(b*x+a)^2-Ci(2*arcsin(b*x+a))/b+(b*x+a)*(1-(b*x+
a)^2)^(1/2)/b/arcsin(b*x+a)
```

Rubi [A]
time = 0.08, antiderivative size = 73, normalized size of antiderivative = 1.03, number of steps used = 4, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.121$, Rules used = {4891, 4751, 4727, 3383}

$$-\frac{\text{CosIntegral}(2\text{ArcSin}(a+bx))}{b}+\frac{\sqrt{1-(a+bx)^2}\,(a+bx)}{b\text{ArcSin}(a+bx)}-\frac{1-(a+bx)^2}{2b\text{ArcSin}(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]/ArcSin[a + b*x]^3,x]
```

```
[Out] -1/2*(1 - (a + b*x)^2)/(b*ArcSin[a + b*x]^2) + ((a + b*x)*Sqrt[1 - (a + b*x
)^2])/(b*ArcSin[a + b*x]) - CosIntegral[2*ArcSin[a + b*x]]/b
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 4727

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] - Dist
[1/(b^2*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[x^(n + 1), Sin[-a/b
+ x/b]^(m - 1)*(m - (m + 1)*Sin[-a/b + x/b]^2), x], x], x, a + b*ArcSin[c*x
]], x] /; FreeQ[{a, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4751

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*((a + b*ArcSin[c*x])^(n + 1
)/(b*c*(n + 1))), x] + Dist[c*((2*p + 1)/(b*(n + 1)))*Simp[(d + e*x^2)^p/(1
 - c^2*x^2)^p], Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1),
x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && LtQ[n, -1]
```

Rule 4891

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-C/d^2 + (C/d^2)*x^2)
^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C,
n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\int \frac{\sqrt{1-a^2-2abx-b^2x^2}}{\sin^{-1}(a+bx)^3}\,dx = \frac{\text{Subst}\left(\int \frac{\sqrt{1-x^2}}{\sin^{-1}(x)^3}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{1-(a+bx)^2}{2b\sin^{-1}(a+bx)^2} - \frac{\text{Subst}\left(\int \frac{x}{\sin^{-1}(x)^2}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{1-(a+bx)^2}{2b\sin^{-1}(a+bx)^2} + \frac{(a+bx)\sqrt{1-(a+bx)^2}}{b\sin^{-1}(a+bx)} - \frac{\text{Subst}\left(\int \frac{\cos(2x)}{x}\,dx, x, \text{s}\right.}{b}$$

$$= -\frac{1-(a+bx)^2}{2b\sin^{-1}(a+bx)^2} + \frac{(a+bx)\sqrt{1-(a+bx)^2}}{b\sin^{-1}(a+bx)} - \frac{\text{Ci}(2\sin^{-1}(a+bx))}{b}$$

Mathematica [A]
time = 0.18, size = 88, normalized size = 1.24

$$\frac{-1+a^2+2abx+b^2x^2+2(a+bx)\sqrt{1-a^2-2abx-b^2x^2}\,\text{ArcSin}(a+bx)-2\text{ArcSin}(a+bx)^2\text{CosIntegral}(2\text{ArcSin}(a+bx))}{2b\text{ArcSin}(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]/ArcSin[a + b*x]^3,x]
```

```
[Out] (-1 + a^2 + 2*a*b*x + b^2*x^2 + 2*(a + b*x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^
2]*ArcSin[a + b*x] - 2*ArcSin[a + b*x]^2*CosIntegral[2*ArcSin[a + b*x]])/(2
*b*ArcSin[a + b*x]^2)
```

Maple [A]
time = 0.45, size = 61, normalized size = 0.86

method	result	size
default	$-\frac{4\,\text{cosineIntegral}(2\arcsin(bx+a))\arcsin(bx+a)^2-2\sin(2\arcsin(bx+a))\arcsin(bx+a)+\cos(2\arcsin(bx+a))+1}{4b\arcsin(bx+a)^2}$	61

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a)^3,x,method=_RETURNVERBOSE)
```

```
[Out] -1/4/b*(4*Ci(2*arcsin(b*x+a))*arcsin(b*x+a)^2-2*sin(2*arcsin(b*x+a))*arcsin
(b*x+a)+cos(2*arcsin(b*x+a))+1)/arcsin(b*x+a)^2
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a)^3,x, algorithm="maxi
ma")
```

```
[Out] 1/2*(b^2*x^2 - 2*b*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))^2
*integrate((2*b^2*x^2 + 4*a*b*x + 2*a^2 - 1)*sqrt(b*x + a + 1)*sqrt(-b*x -
a + 1)/((b^2*x^2 + 2*a*b*x + a^2 - 1)*arctan2(b*x + a, sqrt(b*x + a + 1)*sq
rt(-b*x - a + 1))), x) + 2*a*b*x + 2*sqrt(b*x + a + 1)*(b*x + a)*sqrt(-b*x
- a + 1)*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)) + a^2 - 1)/
(b*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))^2)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a)^3,x, algorithm="fric
as")
```

```
[Out] integral(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)/arcsin(b*x + a)^3, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-\left(a+bx-1\right)\left(a+bx+1\right)}}{\operatorname{asin}^{3}\left(a+bx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b**2*x**2-2*a*b*x-a**2+1)**(1/2)/asin(b*x+a)**3,x)
```

```
[Out] Integral(sqrt(-(a + b*x - 1)*(a + b*x + 1))/asin(a + b*x)**3, x)
```

Giac [A]
time = 0.49, size = 84, normalized size = 1.18

$$-\frac{\operatorname{Ci}\left(2\arcsin\left(bx+a\right)\right)}{b}+\frac{\sqrt{-b^{2}x^{2}-2\,abx-a^{2}+1}\,\left(bx+a\right)}{b\arcsin\left(bx+a\right)}+\frac{b^{2}x^{2}+2\,abx+a^{2}-1}{2\,b\arcsin\left(bx+a\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a)^3,x, algorithm="giac
")
```

```
[Out] -cos_integral(2*arcsin(b*x + a))/b + sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*
x + a)/(b*arcsin(b*x + a)) + 1/2*(b^2*x^2 + 2*a*b*x + a^2 - 1)/(b*arcsin(b*
x + a)^2)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{-a^2-2\,a\,b\,x-b^2\,x^2+1}}{\mathrm{asin}\left(a+b\,x\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - b^2*x^2 - 2*a*b*x - a^2)^(1/2)/asin(a + b*x)^3,x)
```

```
[Out] int((1 - b^2*x^2 - 2*a*b*x - a^2)^(1/2)/asin(a + b*x)^3, x)
```

3.319 $\int \frac{\sqrt{1-a^2-2abx-b^2x^2}}{\mathbf{ArcSin}(a+bx)^4}\,dx$

Optimal. Leaf size=115

$$-\frac{1-(a+bx)^2}{3b\mathrm{ArcSin}(a+bx)^3}+\frac{(a+bx)\sqrt{1-(a+bx)^2}}{3b\mathrm{ArcSin}(a+bx)^2}+\frac{1}{3b\mathrm{ArcSin}(a+bx)}-\frac{2(a+bx)^2}{3b\mathrm{ArcSin}(a+bx)}+\frac{2\mathrm{Si}(2\mathrm{ArcSin}(a+bx))}{3b}$$

```
[Out] 1/3*(-1+(b*x+a)^2)/b/arcsin(b*x+a)^3+1/3/b/arcsin(b*x+a)-2/3*(b*x+a)^2/b/ar
csin(b*x+a)+2/3*Si(2*arcsin(b*x+a))/b+1/3*(b*x+a)*(1-(b*x+a)^2)^(1/2)/b/arc
sin(b*x+a)^2
```

Rubi [A]
time = 0.16, antiderivative size = 115, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 9, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {4891, 4751, 4729, 4807, 4731, 4491, 12, 3380, 4737}

$$\frac{2\mathrm{Si}(2\mathrm{ArcSin}(a+bx))}{3b}-\frac{2(a+bx)^2}{3b\mathrm{ArcSin}(a+bx)}+\frac{\sqrt{1-(a+bx)^2}\,(a+bx)}{3b\mathrm{ArcSin}(a+bx)^2}+\frac{1}{3b\mathrm{ArcSin}(a+bx)}-\frac{1-(a+bx)^2}{3b\mathrm{ArcSin}(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]/ArcSin[a + b*x]^4,x]
```

```
[Out] -1/3*(1 - (a + b*x)^2)/(b*ArcSin[a + b*x]^3) + ((a + b*x)*Sqrt[1 - (a + b*x
)^2])/(3*b*ArcSin[a + b*x]^2) + 1/(3*b*ArcSin[a + b*x]) - (2*(a + b*x)^2)/(
3*b*ArcSin[a + b*x]) + (2*SinIntegral[2*ArcSin[a + b*x]])/(3*b)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[x
^m*Sqrt[1 - c^2*x^2]*((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + (Dis
```

```
t[c*((m + 1)/(b*(n + 1))), Int[x^(m + 1)*((a + b*ArcSin[c*x])^(n + 1)/Sqrt[
1 - c^2*x^2]), x], x] - Dist[m/(b*c*(n + 1)), Int[x^(m - 1)*((a + b*ArcSin[
c*x])^(n + 1)/Sqrt[1 - c^2*x^2]), x], x]) /; FreeQ[{a, b, c}, x] && IGtQ[m,
 0] && LtQ[n, -2]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4751

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*((a + b*ArcSin[c*x])^(n + 1
)/(b*c*(n + 1))), x] + Dist[c*((2*p + 1)/(b*(n + 1)))*Simp[(d + e*x^2)^p/(1
 - c^2*x^2)^p], Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1),
x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && LtQ[n, -1]
```

Rule 4807

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m/(b*c*(n + 1)))*Simp[Sqrt[1 - c^
2*x^2]/Sqrt[d + e*x^2]]*(a + b*ArcSin[c*x])^(n + 1), x] - Dist[f*(m/(b*c*(n
 + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[(f*x)^(m - 1)*(a + b*A
rcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d
 + e, 0] && LtQ[n, -1]
```

Rule 4891

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-C/d^2 + (C/d^2)*x^2)
^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C,
n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\int \frac{\sqrt{1-a^2-2abx-b^2x^2}}{\sin^{-1}(a+bx)^4}\,dx = \frac{\text{Subst}\left(\int \frac{\sqrt{1-x^2}}{\sin^{-1}(x)^4}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{1-(a+bx)^2}{3b\sin^{-1}(a+bx)^3} - \frac{2\text{Subst}\left(\int \frac{x}{\sin^{-1}(x)^3}\,dx, x, a+bx\right)}{3b}$$

$$= -\frac{1-(a+bx)^2}{3b\sin^{-1}(a+bx)^3} + \frac{(a+bx)\sqrt{1-(a+bx)^2}}{3b\sin^{-1}(a+bx)^2} - \frac{\text{Subst}\left(\int \frac{1}{\sqrt{1-x^2}\sin^{-1}(\ldots}\right.}{3b}$$

$$= -\frac{1-(a+bx)^2}{3b\sin^{-1}(a+bx)^3} + \frac{(a+bx)\sqrt{1-(a+bx)^2}}{3b\sin^{-1}(a+bx)^2} + \frac{1}{3b\sin^{-1}(a+bx)} - \frac{2(\ldots}{3b\sin\ldots}$$

$$= -\frac{1-(a+bx)^2}{3b\sin^{-1}(a+bx)^3} + \frac{(a+bx)\sqrt{1-(a+bx)^2}}{3b\sin^{-1}(a+bx)^2} + \frac{1}{3b\sin^{-1}(a+bx)} - \frac{2(\ldots}{3b\sin\ldots}$$

$$= -\frac{1-(a+bx)^2}{3b\sin^{-1}(a+bx)^3} + \frac{(a+bx)\sqrt{1-(a+bx)^2}}{3b\sin^{-1}(a+bx)^2} + \frac{1}{3b\sin^{-1}(a+bx)} - \frac{2(\ldots}{3b\sin\ldots}$$

$$= -\frac{1-(a+bx)^2}{3b\sin^{-1}(a+bx)^3} + \frac{(a+bx)\sqrt{1-(a+bx)^2}}{3b\sin^{-1}(a+bx)^2} + \frac{1}{3b\sin^{-1}(a+bx)} - \frac{2(\ldots}{3b\sin\ldots}$$

$$= -\frac{1-(a+bx)^2}{3b\sin^{-1}(a+bx)^3} + \frac{(a+bx)\sqrt{1-(a+bx)^2}}{3b\sin^{-1}(a+bx)^2} + \frac{1}{3b\sin^{-1}(a+bx)} - \frac{2(\ldots}{3b\sin\ldots}$$

Mathematica [A]
time = 0.07, size = 117, normalized size = 1.02

$$\frac{-1+a^2+2abx+b^2x^2+(a+bx)\sqrt{1-a^2-2abx-b^2x^2}\,\text{ArcSin}(a+bx)-(-1+2a^2+4abx+2b^2x^2)\,\text{ArcSin}(a+bx)^2+2\text{ArcSin}(a+bx)^3\text{Si}(2\text{ArcSin}(a+bx))}{3b\text{ArcSin}(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]/ArcSin[a + b*x]^4,x]
```

```
[Out] (-1 + a^2 + 2*a*b*x + b^2*x^2 + (a + b*x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]
*ArcSin[a + b*x] - (-1 + 2*a^2 + 4*a*b*x + 2*b^2*x^2)*ArcSin[a + b*x]^2 + 2
*ArcSin[a + b*x]^3*SinIntegral[2*ArcSin[a + b*x]])/(3*b*ArcSin[a + b*x]^3)
```

Maple [A]
time = 0.46, size = 81, normalized size = 0.70

method	result

default	$\frac{4\,\mathrm{sinIntegral}(2\arcsin(bx+a))\arcsin(bx+a)^3+2\cos(2\arcsin(bx+a))\arcsin(bx+a)^2+\sin(2\arcsin(bx+a))\arcsin(bx+a)-\cos(2\arcsin(}{6b\arcsin(bx+a)^3}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a)^4,x,method=_RETURNVERBOSE)
```

```
[Out] 1/6/b*(4*Si(2*arcsin(b*x+a))*arcsin(b*x+a)^3+2*cos(2*arcsin(b*x+a))*arcsin(
b*x+a)^2+sin(2*arcsin(b*x+a))*arcsin(b*x+a)-cos(2*arcsin(b*x+a))-1)/arcsin(
b*x+a)^3
```

Maxima [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a)^4,x, algorithm="maxi
ma")
```

```
[Out] Timed out
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a)^4,x, algorithm="fric
as")
```

```
[Out] integral(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)/arcsin(b*x + a)^4, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-(a+bx-1)(a+bx+1)}}{\operatorname{asin}^4(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b**2*x**2-2*a*b*x-a**2+1)**(1/2)/asin(b*x+a)**4,x)
```

```
[Out] Integral(sqrt(-(a + b*x - 1)*(a + b*x + 1))/asin(a + b*x)**4, x)
```

Giac [A]
time = 0.48, size = 128, normalized size = 1.11

$$\frac{2\,\mathrm{Si}(2\arcsin(bx+a))}{3\,b}-\frac{2\,(b^2x^2+2\,abx+a^2-1)}{3\,b\arcsin(bx+a)}+\frac{\sqrt{-b^2x^2-2\,abx-a^2+1}\,(bx+a)}{3\,b\arcsin(bx+a)^2}-\frac{1}{3\,b\arcsin(bx+a)}+\frac{b^2x^2+2\,abx+a^2-1}{3\,b\arcsin(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/arcsin(b*x+a)^4,x, algorithm="giac
")
```

```
[Out] 2/3*sin_integral(2*arcsin(b*x + a))/b - 2/3*(b^2*x^2 + 2*a*b*x + a^2 - 1)/(
b*arcsin(b*x + a)) + 1/3*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*x + a)/(b*ar
csin(b*x + a)^2) - 1/3/(b*arcsin(b*x + a)) + 1/3*(b^2*x^2 + 2*a*b*x + a^2 -
 1)/(b*arcsin(b*x + a)^3)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{-a^2-2\,a\,b\,x-b^2\,x^2+1}}{\mathrm{asin}\left(a+b\,x\right)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - b^2*x^2 - 2*a*b*x - a^2)^(1/2)/asin(a + b*x)^4,x)
```

```
[Out] int((1 - b^2*x^2 - 2*a*b*x - a^2)^(1/2)/asin(a + b*x)^4, x)
```

3.320 $\int (1-a^2-2abx-b^2x^2)^{3/2} \textbf{ArcSin}(a+bx)^3 \, dx$

Optimal. Leaf size=245

$$\frac{51(a+bx)^2}{128b}-\frac{3(a+bx)^4}{128b}-\frac{45(a+bx)\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)}{64b}-\frac{3(a+bx)\left(1-(a+bx)^2\right)^{3/2}\text{ArcSin}}{32b}$$

```
[Out] 51/128*(b*x+a)^2/b-3/128*(b*x+a)^4/b-3/32*(b*x+a)*(1-(b*x+a)^2)^(3/2)*arcsi
n(b*x+a)/b+27/128*arcsin(b*x+a)^2/b-9/16*(b*x+a)^2*arcsin(b*x+a)^2/b+3/16*(
1-(b*x+a)^2)^2*arcsin(b*x+a)^2/b+1/4*(b*x+a)*(1-(b*x+a)^2)^(3/2)*arcsin(b*x
+a)^3/b+3/32*arcsin(b*x+a)^4/b-45/64*(b*x+a)*arcsin(b*x+a)*(1-(b*x+a)^2)^(1
/2)/b+3/8*(b*x+a)*arcsin(b*x+a)^3*(1-(b*x+a)^2)^(1/2)/b
```

Rubi [A]
time = 0.23, antiderivative size = 245, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 9, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {4891, 4743, 4741, 4737, 4723, 4795, 30, 4767, 14}

$$-\frac{9(a+bx)^2\text{ArcSin}(a+bx)^2}{16b}+\frac{\left(1-(a+bx)^2\right)^{3/2}(a+bx)\text{ArcSin}(a+bx)^3}{4b}+\frac{3\sqrt{1-(a+bx)^2}\,(a+bx)\text{ArcSin}(a+bx)^3}{8b}-\frac{3\left(1-(a+bx)^2\right)^{3/2}(a+bx)\text{ArcSin}(a+bx)}{32b}-\frac{45\sqrt{1-(a+bx)^2}\,(a+bx)\text{ArcSin}(a+bx)}{64b}+\frac{3\text{ArcSin}(a+bx)^4}{32b}+\frac{3\left(1-(a+bx)^2\right)^2\text{ArcSin}(a+bx)^2}{16b}+\frac{27\text{ArcSin}(a+bx)^2}{128b}-\frac{3(a+bx)^4}{128b}+\frac{51(a+bx)^2}{128b}$$

Antiderivative was successfully verified.

```
[In] Int[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)*ArcSin[a + b*x]^3,x]
```

```
[Out] (51*(a + b*x)^2)/(128*b) - (3*(a + b*x)^4)/(128*b) - (45*(a + b*x)*Sqrt[1 -
 (a + b*x)^2]*ArcSin[a + b*x])/(64*b) - (3*(a + b*x)*(1 - (a + b*x)^2)^(3/2
)*ArcSin[a + b*x])/(32*b) + (27*ArcSin[a + b*x]^2)/(128*b) - (9*(a + b*x)^2
*ArcSin[a + b*x]^2)/(16*b) + (3*(1 - (a + b*x)^2)^2*ArcSin[a + b*x]^2)/(16*
b) + (3*(a + b*x)*Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^3)/(8*b) + ((a + b*
x)*(1 - (a + b*x)^2)^(3/2)*ArcSin[a + b*x]^3)/(4*b) + (3*ArcSin[a + b*x]^4)
/(32*b)
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
```

```
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[x*Sqrt[d + e*x^2]*((a + b*ArcSin[c*x])^n/2), x] + (Dist[(1/2
)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[(a + b*ArcSin[c*x])^n/Sqrt[1
 - c^2*x^2], x], x] - Dist[b*c*(n/2)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]
], Int[x*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x]
&& EqQ[c^2*d + e, 0] && GtQ[n, 0]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[x*(d + e*x^2)^p*((a + b*ArcSin[c*x])^n/(2*p + 1)), x] + (D
ist[2*d*(p/(2*p + 1)), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[b*c*(n/(2*p + 1))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[x*(1 -
c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c,
d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4795

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*((a +
 b*ArcSin[c*x])^n/(e*(m + 2*p + 1))), x] + (Dist[f^2*((m - 1)/(c^2*(m + 2*p
 + 1))), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[b*f*(n/(c*(m + 2*p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; Fr
eeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && IGtQ[m,
```

```
1] && NeQ[m + 2*p + 1, 0]
```

Rule 4891

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-C/d^2 + (C/d^2)*x^2)
^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C,
n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\int \left(1-a^2-2abx-b^2x^2\right)^{3/2}\sin^{-1}(a+bx)^3\,dx = \frac{\text{Subst}\left(\int \left(1-x^2\right)^{3/2}\sin^{-1}(x)^3\,dx, x, a+bx\right)}{b}$$

$$= \frac{(a+bx)\left(1-(a+bx)^2\right)^{3/2}\sin^{-1}(a+bx)^3}{4b} - \frac{3\text{Subst}\left(\int x(\right.}{}$$

$$= \frac{3\left(1-(a+bx)^2\right)^2\sin^{-1}(a+bx)^2}{16b} + \frac{3(a+bx)\sqrt{1-(a+}}{8b}$$

$$= -\frac{3(a+bx)\left(1-(a+bx)^2\right)^{3/2}\sin^{-1}(a+bx)}{32b} - \frac{9(a+bx)^2}{}$$

$$= -\frac{45(a+bx)\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)}{64b} - \frac{3(a+bx)\,(}{}$$

$$= \frac{51(a+bx)^2}{128b} - \frac{3(a+bx)^4}{128b} - \frac{45(a+bx)\sqrt{1-(a+bx)^2}\,\mathrm{s}}{64b}$$

Mathematica [A]
time = 0.15, size = 272, normalized size = 1.11

$$\frac{6a(17-2a^2)\,bx+3(17-6a^2)\,b^2x^2-12ab^3x^3-3b^4x^4+6\sqrt{1-a^2-2abx-b^2x^2}\,(-17a+2a^3-17bx+6a^2bx+6ab^2x^2+2b^3x^3)\,\text{ArcSin}(a+bx)+3(17+8a^4+32a^3bx-40b^2x^2+8b^4x^4+16abx(-5+2b^2x^2)+8a^2(-5+6b^2x^2))\,\text{ArcSin}(a+bx)^2-16\sqrt{1-a^2-2abx-b^2x^2}\,(-5a+2a^3-5bx+6a^2bx+6ab^2x^2+2b^3x^3)\,\text{ArcSin}(a+bx)^3+12\text{ArcSin}(a+bx)^4}{128b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)*ArcSin[a + b*x]^3,x]
```

```
[Out] (6*a*(17 - 2*a^2)*b*x + 3*(17 - 6*a^2)*b^2*x^2 - 12*a*b^3*x^3 - 3*b^4*x^4 +
 6*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*(-17*a + 2*a^3 - 17*b*x + 6*a^2*b*x +
6*a*b^2*x^2 + 2*b^3*x^3)*ArcSin[a + b*x] + 3*(17 + 8*a^4 + 32*a^3*b*x - 40*
b^2*x^2 + 8*b^4*x^4 + 16*a*b*x*(-5 + 2*b^2*x^2) + 8*a^2*(-5 + 6*b^2*x^2))*A
rcSin[a + b*x]^2 - 16*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*(-5*a + 2*a^3 - 5*b
```

```
*x + 6*a^2*b*x + 6*a*b^2*x^2 + 2*b^3*x^3)*ArcSin[a + b*x]^3 + 12*ArcSin[a +
 b*x]^4)/(128*b)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 627 vs. $2(217) = 434$.
time = 0.50, size = 628, normalized size = 2.56

method	result
default	$\frac{-75+408abx+48\arcsin(bx+a)^4+320\arcsin(bx+a)^3\sqrt{-b^2x^2-2abx-a^2+1}\,bx-960\arcsin(bx+a)^2abx-408\arcsin(bx+a)}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)*arcsin(b*x+a)^3,x,method=_RETURNVERBOSE)
```

```
[Out] 1/512*(-75+408*a*b*x+48*arcsin(b*x+a)^4+320*arcsin(b*x+a)^3*(-b^2*x^2-2*a*b
*x-a^2+1)^(1/2)*b*x-960*arcsin(b*x+a)^2*a*b*x-408*arcsin(b*x+a)*(-b^2*x^2-2
*a*b*x-a^2+1)^(1/2)*b*x+204*a^2-12*b^4*x^4+96*arcsin(b*x+a)^2*a^4-128*(-b^2
*x^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)^3*b^3*x^3+48*(-b^2*x^2-2*a*b*x-a^2+
1)^(1/2)*arcsin(b*x+a)*b^3*x^3+384*arcsin(b*x+a)^2*a*b^3*x^3+576*arcsin(b*x
+a)^2*a^2*b^2*x^2+384*arcsin(b*x+a)^2*a^3*b*x+96*arcsin(b*x+a)^2*b^4*x^4-12
8*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)^3*a^3+48*(-b^2*x^2-2*a*b*x-a
^2+1)^(1/2)*arcsin(b*x+a)*a^3-48*a*b^3*x^3-72*a^2*b^2*x^2-48*a^3*b*x-12*a^4
-480*arcsin(b*x+a)^2*b^2*x^2+320*arcsin(b*x+a)^3*(-b^2*x^2-2*a*b*x-a^2+1)^(
1/2)*a-408*arcsin(b*x+a)*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*a-480*arcsin(b*x+a)
^2*a^2+204*arcsin(b*x+a)^2+204*b^2*x^2+144*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*a
rcsin(b*x+a)*a^2*b*x-384*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)^3*a*b
^2*x^2-384*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)^3*a^2*b*x+144*(-b^2
*x^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)*a*b^2*x^2)/b
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)*arcsin(b*x+a)^3,x, algorithm="maxi
ma")
```

```
[Out] integrate((-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)*arcsin(b*x + a)^3, x)
```

Fricas [A]
time = 2.62, size = 243, normalized size = 0.99

$$-\frac{3\,b^4x^4+12\,ab^3x^3+3\,(6\,a^2-17)b^2x^2-12\,\arcsin(bx+a)^4+6\,(2\,a^3-17\,a)bx-3\,(8\,b^4x^4+32\,ab^3x^3+8\,(6\,a^2-5)b^2x^2+8\,a^4+16\,(2\,a^3-5\,a)bx-40\,a^2+17)\arcsin(bx+a)^2+2\,\sqrt{-b^2x^2-2\,abx-a^2+1}\,(8\,(2\,b^3x^3+6\,ab^2x^2+2\,a^3+(6\,a^2-5)bx-5\,a)\arcsin(bx+a)^3-3\,(2\,b^3x^3+6\,ab^2x^2+2\,a^3+(6\,a^2-17)bx-17\,a)\arcsin(bx+a))}{128\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)*arcsin(b*x+a)^3,x, algorithm="fric
as")
```

```
[Out] -1/128*(3*b^4*x^4 + 12*a*b^3*x^3 + 3*(6*a^2 - 17)*b^2*x^2 - 12*arcsin(b*x +
 a)^4 + 6*(2*a^3 - 17*a)*b*x - 3*(8*b^4*x^4 + 32*a*b^3*x^3 + 8*(6*a^2 - 5)*
b^2*x^2 + 8*a^4 + 16*(2*a^3 - 5*a)*b*x - 40*a^2 + 17)*arcsin(b*x + a)^2 + 2
*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(8*(2*b^3*x^3 + 6*a*b^2*x^2 + 2*a^3 + (
6*a^2 - 5)*b*x - 5*a)*arcsin(b*x + a)^3 - 3*(2*b^3*x^3 + 6*a*b^2*x^2 + 2*a^
3 + (6*a^2 - 17)*b*x - 17*a)*arcsin(b*x + a)))/b
```

Sympy [**B**] Leaf count of result is larger than twice the leaf count of optimal. 694 vs. $2(223) = 446$.
time = 1.47, size = 694, normalized size = 2.83

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b**2*x**2-2*a*b*x-a**2+1)**(3/2)*asin(b*x+a)**3,x)
```

```
[Out] Piecewise((3*a**4*asin(a + b*x)**2/(16*b) + 3*a**3*x*asin(a + b*x)**2/4 - 3
*a**3*x/32 - a**3*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)**3/(4
*b) + 3*a**3*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/(32*b) + 9
*a**2*b*x**2*asin(a + b*x)**2/8 - 9*a**2*b*x**2/64 - 3*a**2*x*sqrt(-a**2 -
2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)**3/4 + 9*a**2*x*sqrt(-a**2 - 2*a*b*x
 - b**2*x**2 + 1)*asin(a + b*x)/32 - 15*a**2*asin(a + b*x)**2/(16*b) + 3*a*
b**2*x**3*asin(a + b*x)**2/4 - 3*a*b**2*x**3/32 - 3*a*b*x**2*sqrt(-a**2 - 2
*a*b*x - b**2*x**2 + 1)*asin(a + b*x)**3/4 + 9*a*b*x**2*sqrt(-a**2 - 2*a*b*
x - b**2*x**2 + 1)*asin(a + b*x)/32 - 15*a*x*asin(a + b*x)**2/8 + 51*a*x/64
 + 5*a*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)**3/(8*b) - 51*a*
sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/(64*b) + 3*b**3*x**4*as
in(a + b*x)**2/16 - 3*b**3*x**4/128 - b**2*x**3*sqrt(-a**2 - 2*a*b*x - b**2
*x**2 + 1)*asin(a + b*x)**3/4 + 3*b**2*x**3*sqrt(-a**2 - 2*a*b*x - b**2*x**
2 + 1)*asin(a + b*x)/32 - 15*b*x**2*asin(a + b*x)**2/16 + 51*b*x**2/128 + 5
*x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)**3/8 - 51*x*sqrt(-a*
*2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)/64 + 3*asin(a + b*x)**4/(32*b)
+ 51*asin(a + b*x)**2/(128*b), Ne(b, 0)), (x*(1 - a**2)**(3/2)*asin(a)**3,
True))
```

Giac [**A**]
time = 0.51, size = 296, normalized size = 1.21

$$\frac{(-b^2x^2 - 2abx - a^2 + 1)^{\frac{3}{2}}(bx+a)\arcsin(bx+a)^3}{4b} + \frac{3\sqrt{-b^2x^2 - 2abx - a^2 + 1}\,(bx+a)\arcsin(bx+a)^3}{8b} + \frac{3(b^2x^2 + 2abx + a^2 - 1)^2\arcsin(bx+a)^2}{16b} + \frac{3\arcsin(bx+a)^4}{32b} - \frac{3(-b^2x^2 - 2abx - a^2 + 1)^{\frac{3}{2}}(bx+a)\arcsin(bx+a)}{32b} - \frac{9(b^2x^2 + 2abx + a^2 - 1)\arcsin(bx+a)^2}{16b} - \frac{45\sqrt{-b^2x^2 - 2abx - a^2 + 1}\,(bx+a)\arcsin(bx+a)}{64b} - \frac{3(b^2x^2 + 2abx + a^2 - 1)^2}{128b} - \frac{45\arcsin(bx+a)^2}{128b} + \frac{45(b^2x^2 + 2abx + a^2 - 1)}{128b} + \frac{189}{1024b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)*arcsin(b*x+a)^3,x, algorithm="giac
")
```

```
[Out] 1/4*(-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)*(b*x + a)*arcsin(b*x + a)^3/b + 3/
8*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*x + a)*arcsin(b*x + a)^3/b + 3/16*(
b^2*x^2 + 2*a*b*x + a^2 - 1)^2*arcsin(b*x + a)^2/b + 3/32*arcsin(b*x + a)^4
/b - 3/32*(-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)*(b*x + a)*arcsin(b*x + a)/b
- 9/16*(b^2*x^2 + 2*a*b*x + a^2 - 1)*arcsin(b*x + a)^2/b - 45/64*sqrt(-b^2*
x^2 - 2*a*b*x - a^2 + 1)*(b*x + a)*arcsin(b*x + a)/b - 3/128*(b^2*x^2 + 2*a
*b*x + a^2 - 1)^2/b - 45/128*arcsin(b*x + a)^2/b + 45/128*(b^2*x^2 + 2*a*b*
x + a^2 - 1)/b + 189/1024/b
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \mathrm{asin}(a+b\,x)^3\,{\left(-a^2-2\,a\,b\,x-b^2\,x^2+1\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)^3*(1 - b^2*x^2 - 2*a*b*x - a^2)^(3/2),x)
```

```
[Out] int(asin(a + b*x)^3*(1 - b^2*x^2 - 2*a*b*x - a^2)^(3/2), x)
```

3.321 $\int (1-a^2-2abx-b^2x^2)^{3/2} \text{ArcSin}(a+bx)^2 \, dx$

Optimal. Leaf size=199

$$-\frac{15(a+bx)\sqrt{1-(a+bx)^2}}{64b}-\frac{(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{32b}+\frac{9\text{ArcSin}(a+bx)}{64b}-\frac{3(a+bx)^2\text{ArcSin}(a+bx)}{8b}+$$

```
[Out] -1/32*(b*x+a)*(1-(b*x+a)^2)^(3/2)/b+9/64*arcsin(b*x+a)/b-3/8*(b*x+a)^2*arcs
in(b*x+a)/b+1/8*(1-(b*x+a)^2)^2*arcsin(b*x+a)/b+1/4*(b*x+a)*(1-(b*x+a)^2)^(
3/2)*arcsin(b*x+a)^2/b+1/8*arcsin(b*x+a)^3/b-15/64*(b*x+a)*(1-(b*x+a)^2)^(1
/2)/b+3/8*(b*x+a)*arcsin(b*x+a)^2*(1-(b*x+a)^2)^(1/2)/b
```

Rubi [A]
time = 0.15, antiderivative size = 199, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 9, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {4891, 4743, 4741, 4737, 4723, 327, 222, 4767, 201}

$$\frac{\text{ArcSin}(a+bx)^3}{8b}+\frac{(a+bx)\left(1-(a+bx)^2\right)^{3/2}\text{ArcSin}(a+bx)^2}{4b}+\frac{3(a+bx)\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)^2}{8b}-\frac{3(a+bx)^2\text{ArcSin}(a+bx)}{8b}+\frac{\left(1-(a+bx)^2\right)^2\text{ArcSin}(a+bx)}{8b}+\frac{9\text{ArcSin}(a+bx)}{64b}-\frac{(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{32b}-\frac{15(a+bx)\sqrt{1-(a+bx)^2}}{64b}$$

Antiderivative was successfully verified.

```
[In] Int[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)*ArcSin[a + b*x]^2,x]
```

```
[Out] (-15*(a + b*x)*Sqrt[1 - (a + b*x)^2])/(64*b) - ((a + b*x)*(1 - (a + b*x)^2)
^(3/2))/(32*b) + (9*ArcSin[a + b*x])/(64*b) - (3*(a + b*x)^2*ArcSin[a + b*x
])/(8*b) + ((1 - (a + b*x)^2)^2*ArcSin[a + b*x])/(8*b) + (3*(a + b*x)*Sqrt[
1 - (a + b*x)^2]*ArcSin[a + b*x]^2)/(8*b) + ((a + b*x)*(1 - (a + b*x)^2)^(3
/2)*ArcSin[a + b*x]^2)/(4*b) + ArcSin[a + b*x]^3/(8*b)
```

Rule 201

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[x*((a + b*x^n)^p/(n*p
+ 1)), x] + Dist[a*n*(p/(n*p + 1)), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
```

```
x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^n/(d*(m + 1))), x] - Dist[b*c*(n
/(d*(m + 1))), Int[(d*x)^(m + 1)*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 - c^2*
x^2]), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[x*Sqrt[d + e*x^2]*((a + b*ArcSin[c*x])^n/2), x] + (Dist[(1/2
)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[(a + b*ArcSin[c*x])^n/Sqrt[1
 - c^2*x^2], x], x] - Dist[b*c*(n/2)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]
], Int[x*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x]
&& EqQ[c^2*d + e, 0] && GtQ[n, 0]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[x*(d + e*x^2)^p*((a + b*ArcSin[c*x])^n/(2*p + 1)), x] + (D
ist[2*d*(p/(2*p + 1)), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[b*c*(n/(2*p + 1))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[x*(1 -
c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c,
d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0]
```

Rule 4767

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[(d + e*x^2)^(p + 1)*((a + b*ArcSin[c*x])^n/(2*e*(p +
1))), x] + Dist[b*(n/(2*c*(p + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], In
t[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a,
b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && NeQ[p, -1]
```

Rule 4891

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-C/d^2 + (C/d^2)*x^2)
```

```
^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C,
n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\int \left(1-a^2-2abx-b^2x^2\right)^{3/2}\sin^{-1}(a+bx)^2\,dx = \frac{\text{Subst}\left(\int \left(1-x^2\right)^{3/2}\sin^{-1}(x)^2\,dx, x, a+bx\right)}{b}$$

$$= \frac{(a+bx)\left(1-(a+bx)^2\right)^{3/2}\sin^{-1}(a+bx)^2}{4b} - \frac{\text{Subst}\left(\int x(1\right.}{}$$

$$= \frac{\left(1-(a+bx)^2\right)^2\sin^{-1}(a+bx)}{8b} + \frac{3(a+bx)\sqrt{1-(a+bx}}{8b}$$

$$= -\frac{(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{32b} - \frac{3(a+bx)^2\sin^{-1}(a+bx)}{8b}$$

$$= -\frac{15(a+bx)\sqrt{1-(a+bx)^2}}{64b} - \frac{(a+bx)\left(1-(a+bx)^2\right)^{3}}{32b}$$

$$= -\frac{15(a+bx)\sqrt{1-(a+bx)^2}}{64b} - \frac{(a+bx)\left(1-(a+bx)^2\right)^{3}}{32b}$$

Mathematica [A]
time = 0.12, size = 216, normalized size = 1.09

$$\frac{\sqrt{1-a^2-2abx-b^2x^2}\left(-17a+2a^3-17bx+6a^2bx+6ab^2x^2+2b^3x^3\right)+\left(17-40a^2+8a^4\right)\text{ArcSin}(a+bx)+8bx\left(-10a+4a^3-5bx+6a^2bx+4ab^2x^2+b^3x^3\right)\text{ArcSin}(a+bx)-8\sqrt{1-a^2-2abx-b^2x^2}\left(-5a+2a^3-5bx+6a^2bx+6ab^2x^2+2b^3x^3\right)\text{ArcSin}(a+bx)^2+8\text{ArcSin}(a+bx)^3}{64b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)*ArcSin[a + b*x]^2,x]
```

```
[Out] (Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*(-17*a + 2*a^3 - 17*b*x + 6*a^2*b*x + 6*
a*b^2*x^2 + 2*b^3*x^3) + (17 - 40*a^2 + 8*a^4)*ArcSin[a + b*x] + 8*b*x*(-10
*a + 4*a^3 - 5*b*x + 6*a^2*b*x + 4*a*b^2*x^2 + b^3*x^3)*ArcSin[a + b*x] - 8
*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*(-5*a + 2*a^3 - 5*b*x + 6*a^2*b*x + 6*a*
b^2*x^2 + 2*b^3*x^3)*ArcSin[a + b*x]^2 + 8*ArcSin[a + b*x]^3)/(64*b)
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 514 vs. 2(175) = 350.
time = 0.47, size = 515, normalized size = 2.59

method	result

default	$\frac{-16\sqrt{-b^2x^2-2abx-a^2+1}\,\arcsin(bx+a)^2b^3x^3+8\arcsin(bx+a)b^4x^4-48\sqrt{-b^2x^2-2abx-a^2+1}\,\arcsin(bx+a}{}$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)*arcsin(b*x+a)^2,x,method=_RETURNVERBOSE)

[Out] 1/64*(-16*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)^2*b^3*x^3+8*arcsin(b*x+a)*b^4*x^4-48*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)^2*a*b^2*x^2+32*arcsin(b*x+a)*a*b^3*x^3-48*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)^2*a^2*b*x+48*arcsin(b*x+a)*a^2*b^2*x^2+2*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*b^3*x^3-16*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)^2*a^3+32*arcsin(b*x+a)*a^3*b*x+6*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*a*b^2*x^2+40*arcsin(b*x+a)^2*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*b*x+8*arcsin(b*x+a)*a^4-40*arcsin(b*x+a)*b^2*x^2+6*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*a^2*b*x+40*arcsin(b*x+a)^2*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*a-80*arcsin(b*x+a)*a*b*x+2*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*a^3+8*arcsin(b*x+a)^3-40*arcsin(b*x+a)*a^2-17*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*b*x-17*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*a+17*arcsin(b*x+a))/b

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)*arcsin(b*x+a)^2,x, algorithm="maxima")

[Out] integrate((-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)*arcsin(b*x + a)^2, x)

Fricas [A]
time = 2.22, size = 185, normalized size = 0.93

$$\frac{8\arcsin(bx+a)^3+(8b^4x^4+32ab^3x^3+8(6a^2-5)b^2x^2+8a^4+16(2a^3-5a)bx-40a^2+17)\arcsin(bx+a)+(2b^3x^3+6ab^2x^2+2a^3+(6a^2-17)bx-8(2b^3x^3+6ab^2x^2+2a^3+(6a^2-5)bx-5a)\arcsin(bx+a)^2-17a)\sqrt{-b^2x^2-2abx-a^2+1}}{64b}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)*arcsin(b*x+a)^2,x, algorithm="fricas")

[Out] 1/64*(8*arcsin(b*x + a)^3 + (8*b^4*x^4 + 32*a*b^3*x^3 + 8*(6*a^2 - 5)*b^2*x^2 + 8*a^4 + 16*(2*a^3 - 5*a)*b*x - 40*a^2 + 17)*arcsin(b*x + a) + (2*b^3*x^3 + 6*a*b^2*x^2 + 2*a^3 + (6*a^2 - 17)*b*x - 8*(2*b^3*x^3 + 6*a*b^2*x^2 + 2*a^3 + (6*a^2 - 5)*b*x - 5*a)*arcsin(b*x + a)^2 - 17*a)*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1))/b

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 568 vs. $2(175) = 350$.
time = 0.95, size = 568, normalized size = 2.85

$$\begin{cases} \frac{a^{4}\operatorname{asin}{\left(a+bx\right)}}{8b}+\frac{a^{3}x\operatorname{asin}{\left(a+bx\right)}}{2}-\frac{a^{3}\sqrt{-a^{2}-2abx-b^{2}x^{2}+1}\operatorname{asin}^{2}{\left(a+bx\right)}}{4b}+\frac{a^{3}\sqrt{-a^{2}-2abx-b^{2}x^{2}+1}}{32b}+\frac{3a^{2}bx^{2}\operatorname{asin}{\left(a+bx\right)}}{4}-\frac{3a^{2}x\sqrt{-a^{2}-2abx-b^{2}x^{2}+1}\operatorname{asin}^{2}{\left(a+bx\right)}}{4}+\frac{3a^{2}x\sqrt{-a^{2}-2abx-b^{2}x^{2}+1}}{32}-\frac{5a^{2}\operatorname{asin}{\left(a+bx\right)}}{8b}+\frac{ab^{2}x^{3}\operatorname{asin}{\left(a+bx\right)}}{2}-\frac{3abx^{2}\sqrt{-a^{2}-2abx-b^{2}x^{2}+1}\operatorname{asin}^{2}{\left(a+bx\right)}}{4}+\frac{3abx^{2}\sqrt{-a^{2}-2abx-b^{2}x^{2}+1}}{32}-\frac{5ax\operatorname{asin}{\left(a+bx\right)}}{4}+\frac{5a\sqrt{-a^{2}-2abx-b^{2}x^{2}+1}\operatorname{asin}^{2}{\left(a+bx\right)}}{8b}-\frac{17a\sqrt{-a^{2}-2abx-b^{2}x^{2}+1}}{64b}+\frac{b^{3}x^{4}\operatorname{asin}{\left(a+bx\right)}}{8}-\frac{b^{2}x^{3}\sqrt{-a^{2}-2abx-b^{2}x^{2}+1}\operatorname{asin}^{2}{\left(a+bx\right)}}{4}+\frac{b^{2}x^{3}\sqrt{-a^{2}-2abx-b^{2}x^{2}+1}}{32}-\frac{5bx^{2}\operatorname{asin}{\left(a+bx\right)}}{8}+\frac{5x\sqrt{-a^{2}-2abx-b^{2}x^{2}+1}\operatorname{asin}^{2}{\left(a+bx\right)}}{8}-\frac{17x\sqrt{-a^{2}-2abx-b^{2}x^{2}+1}}{64}+\frac{\operatorname{asin}^{3}{\left(a+bx\right)}}{8b}+\frac{17\operatorname{asin}{\left(a+bx\right)}}{64b} & \text{for}\: b \neq 0 \\ x\left(1-a^{2}\right)^{\frac{3}{2}}\operatorname{asin}^{2}{\left(a\right)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((-b**2*x**2-2*a*b*x-a**2+1)**(3/2)*asin(b*x+a)**2,x)

[Out] Piecewise((a**4*asin(a + b*x)/(8*b) + a**3*x*asin(a + b*x)/2 - a**3*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)**2/(4*b) + a**3*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/(32*b) + 3*a**2*b*x**2*asin(a + b*x)/4 - 3*a**2*x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)**2/4 + 3*a**2*x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/32 - 5*a**2*asin(a + b*x)/(8*b) + a*b**2*x**3*asin(a + b*x)/2 - 3*a*b*x**2*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)**2/4 + 3*a*b*x**2*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/32 - 5*a*x*asin(a + b*x)/4 + 5*a*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)**2/(8*b) - 17*a*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/(64*b) + b**3*x**4*asin(a + b*x)/8 - b**2*x**3*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)**2/4 + b**2*x**3*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/32 - 5*b*x**2*asin(a + b*x)/8 + 5*x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b*x)**2/8 - 17*x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)/64 + asin(a + b*x)**3/(8*b) + 17*asin(a + b*x)/(64*b), Ne(b, 0)), (x*(1 - a**2)**(3/2)*asin(a)**2, True))

Giac [A]
time = 0.49, size = 227, normalized size = 1.14

$$\frac{\left(-b^{2}x^{2}-2\,abx-a^{2}+1\right)^{\frac{3}{2}}\left(bx+a\right)\arcsin\left(bx+a\right)^{2}}{4\,b}+\frac{3\,\sqrt{-b^{2}x^{2}-2\,abx-a^{2}+1}\left(bx+a\right)\arcsin\left(bx+a\right)^{2}}{8\,b}+\frac{\left(b^{2}x^{2}+2\,abx+a^{2}-1\right)^{2}\arcsin\left(bx+a\right)}{8\,b}+\frac{\arcsin\left(bx+a\right)^{3}}{8\,b}-\frac{\left(-b^{2}x^{2}-2\,abx-a^{2}+1\right)^{\frac{3}{2}}\left(bx+a\right)}{32\,b}-\frac{3\left(b^{2}x^{2}+2\,abx+a^{2}-1\right)\arcsin\left(bx+a\right)}{8\,b}-\frac{15\,\sqrt{-b^{2}x^{2}-2\,abx-a^{2}+1}\left(bx+a\right)}{64\,b}-\frac{15\,\arcsin\left(bx+a\right)}{64\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)*arcsin(b*x+a)^2,x, algorithm="giac")

[Out] 1/4*(-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)*(b*x + a)*arcsin(b*x + a)^2/b + 3/8*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*x + a)*arcsin(b*x + a)^2/b + 1/8*(b^2*x^2 + 2*a*b*x + a^2 - 1)^2*arcsin(b*x + a)/b + 1/8*arcsin(b*x + a)^3/b - 1/32*(-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)*(b*x + a)/b - 3/8*(b^2*x^2 + 2*a*b*x + a^2 - 1)*arcsin(b*x + a)/b - 15/64*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*x + a)/b - 15/64*arcsin(b*x + a)/b

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \mathrm{asin}\left(a+b\,x\right)^2\,{\left(-a^2-2\,a\,b\,x-b^2\,x^2+1\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)^2*(1 - b^2*x^2 - 2*a*b*x - a^2)^(3/2),x)
[Out] int(asin(a + b*x)^2*(1 - b^2*x^2 - 2*a*b*x - a^2)^(3/2), x)
```

3.322 $\int (1-a^2-2abx-b^2x^2)^{3/2} \text{ArcSin}(a+bx)\,dx$

Optimal. Leaf size=110

$$-\frac{5(a+bx)^2}{16b}+\frac{(a+bx)^4}{16b}+\frac{3(a+bx)\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)}{8b}+\frac{(a+bx)\left(1-(a+bx)^2\right)^{3/2}\text{ArcSin}(a+bx)}{4b}$$

```
[Out] -5/16*(b*x+a)^2/b+1/16*(b*x+a)^4/b+1/4*(b*x+a)*(1-(b*x+a)^2)^(3/2)*arcsin(b
*x+a)/b+3/16*arcsin(b*x+a)^2/b+3/8*(b*x+a)*arcsin(b*x+a)*(1-(b*x+a)^2)^(1/2
)/b
```

Rubi [A]
time = 0.08, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.194$, Rules used = {4891, 4743, 4741, 4737, 30, 14}

$$\frac{\left(1-(a+bx)^2\right)^{3/2}(a+bx)\text{ArcSin}(a+bx)}{4b}+\frac{3\sqrt{1-(a+bx)^2}\,(a+bx)\text{ArcSin}(a+bx)}{8b}+\frac{3\text{ArcSin}(a+bx)^2}{16b}+\frac{(a+bx)^4}{16b}-\frac{5(a+bx)^2}{16b}$$

Antiderivative was successfully verified.

```
[In] Int[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)*ArcSin[a + b*x],x]
```

```
[Out] (-5*(a + b*x)^2)/(16*b) + (a + b*x)^4/(16*b) + (3*(a + b*x)*Sqrt[1 - (a + b
*x)^2]*ArcSin[a + b*x])/(8*b) + ((a + b*x)*(1 - (a + b*x)^2)^(3/2)*ArcSin[a
 + b*x])/(4*b) + (3*ArcSin[a + b*x]^2)/(16*b)
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[x*Sqrt[d + e*x^2]*((a + b*ArcSin[c*x])^n/2), x] + (Dist[(1/2
```

```
)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]], Int[(a + b*ArcSin[c*x])^n/Sqrt[1
 - c^2*x^2], x], x] - Dist[b*c*(n/2)*Simp[Sqrt[d + e*x^2]/Sqrt[1 - c^2*x^2]
], Int[x*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x]
&& EqQ[c^2*d + e, 0] && GtQ[n, 0]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[x*(d + e*x^2)^p*((a + b*ArcSin[c*x])^n/(2*p + 1)), x] + (D
ist[2*d*(p/(2*p + 1)), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[b*c*(n/(2*p + 1))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[x*(1 -
c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c,
d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0]
```

Rule 4891

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-C/d^2 + (C/d^2)*x^2)
^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C,
n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\int \left(1-a^2-2abx-b^2x^2\right)^{3/2}\sin^{-1}(a+bx)\,dx = \frac{\text{Subst}\left(\int \left(1-x^2\right)^{3/2}\sin^{-1}(x)\,dx, x, a+bx\right)}{b}$$

$$= \frac{(a+bx)\left(1-(a+bx)^2\right)^{3/2}\sin^{-1}(a+bx)}{4b} - \frac{\text{Subst}\left(\int x(1-\right.}{4}$$

$$= \frac{3(a+bx)\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)}{8b} + \frac{(a+bx)\left(1-(a\right.}{}$$

$$= -\frac{5(a+bx)^2}{16b} + \frac{(a+bx)^4}{16b} + \frac{3(a+bx)\sqrt{1-(a+bx)^2}\,\sin^{-1}}{8b}$$

Mathematica [A]
time = 0.05, size = 129, normalized size = 1.17

$$\frac{1}{16}\left(2a\left(-5+2a^2\right)x+\left(-5+6a^2\right)bx^2+4ab^2x^3+b^3x^4-\frac{2\sqrt{1-a^2-2abx-b^2x^2}\left(-5a+2a^3-5bx+6a^2bx+6ab^2x^2+2b^3x^3\right)\text{ArcSin}(a+bx)}{b}+\frac{3\text{ArcSin}(a+bx)^2}{b}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)*ArcSin[a + b*x],x]
```

```
[Out] (2*a*(-5 + 2*a^2)*x + (-5 + 6*a^2)*b*x^2 + 4*a*b^2*x^3 + b^3*x^4 - (2*Sqrt[
1 - a^2 - 2*a*b*x - b^2*x^2]*(-5*a + 2*a^3 - 5*b*x + 6*a^2*b*x + 6*a*b^2*x^
2 + 2*b^3*x^3)*ArcSin[a + b*x])/b + (3*ArcSin[a + b*x]^2)/b)/16
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 279 vs. $2(96) = 192$.
time = 0.42, size = 280, normalized size = 2.55

method	result
default	$-16\sqrt{-b^2x^2-2abx-a^2+1}\,\arcsin(bx+a)b^3x^3+4b^4x^4-48\sqrt{-b^2x^2-2abx-a^2+1}\,\arcsin(bx+a)a\,b^2x^2+16a$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)*arcsin(b*x+a),x,method=_RETURNVERBOSE)
```

```
[Out] 1/64*(-16*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)*b^3*x^3+4*b^4*x^4-48
*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)*a*b^2*x^2+16*a*b^3*x^3-48*(-b
^2*x^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)*a^2*b*x+24*a^2*b^2*x^2-16*(-b^2*x
^2-2*a*b*x-a^2+1)^(1/2)*arcsin(b*x+a)*a^3+16*a^3*b*x+40*arcsin(b*x+a)*(-b^2
*x^2-2*a*b*x-a^2+1)^(1/2)*b*x+4*a^4-20*b^2*x^2+40*arcsin(b*x+a)*(-b^2*x^2-2
*a*b*x-a^2+1)^(1/2)*a-40*a*b*x+12*arcsin(b*x+a)^2-20*a^2+25)/b
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 402 vs. $2(96) = 192$.
time = 0.49, size = 402, normalized size = 3.65

$$\frac{1}{16}\left(b^2x^4+4\,abx^3+6\,a^2x^2+\frac{4\,a^3x}{b}-5\,x^2-\frac{10\,ax}{b}+\frac{6\,\arcsin\left(bx+a\right)\arcsin\left(-\frac{b^2x+ab}{\sqrt{a^2b^2-(a^2-1)b^2}}\right)}{b^2}+\frac{3\,\arcsin\left(-\frac{b^2x+ab}{\sqrt{a^2b^2-(a^2-1)b^2}}\right)^2}{b^2}\right)b+\frac{1}{8}\left(2\left(-b^2x^2-2\,abx-a^2+1\right)^{\frac{3}{2}}x+\frac{2\left(-b^2x^2-2\,abx-a^2+1\right)^{\frac{3}{2}}a}{b}-\frac{3\left(a^2b^2-(a^2-1)b^2\right)a^2\arcsin\left(-\frac{b^2x+ab}{\sqrt{a^2b^2-(a^2-1)b^2}}\right)}{b^3}+\frac{3\left(a^2b^2-(a^2-1)b^2\right)\sqrt{-b^2x^2-2\,abx-a^2+1}\,x}{b^2}+\frac{3\left(a^2b^2-(a^2-1)b^2\right)(a^2-1)\arcsin\left(-\frac{b^2x+ab}{\sqrt{a^2b^2-(a^2-1)b^2}}\right)}{b^3}+\frac{3\left(a^2b^2-(a^2-1)b^2\right)\sqrt{-b^2x^2-2\,abx-a^2+1}\,a}{b^3}\right)\arcsin\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)*arcsin(b*x+a),x, algorithm="maxima
")
```

```
[Out] 1/16*(b^2*x^4 + 4*a*b*x^3 + 6*a^2*x^2 + 4*a^3*x/b - 5*x^2 - 10*a*x/b + 6*ar
csin(b*x + a)*arcsin(-(b^2*x + a*b)/sqrt(a^2*b^2 - (a^2 - 1)*b^2))/b^2 + 3*
arcsin(-(b^2*x + a*b)/sqrt(a^2*b^2 - (a^2 - 1)*b^2))^2/b^2)*b + 1/8*(2*(-b^
2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)*x + 2*(-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)
*a/b - 3*(a^2*b^2 - (a^2 - 1)*b^2)*a^2*arcsin(-(b^2*x + a*b)/sqrt(a^2*b^2 -
 (a^2 - 1)*b^2))/b^3 + 3*(a^2*b^2 - (a^2 - 1)*b^2)*sqrt(-b^2*x^2 - 2*a*b*x
- a^2 + 1)*x/b^2 + 3*(a^2*b^2 - (a^2 - 1)*b^2)*(a^2 - 1)*arcsin(-(b^2*x + a
*b)/sqrt(a^2*b^2 - (a^2 - 1)*b^2))/b^3 + 3*(a^2*b^2 - (a^2 - 1)*b^2)*sqrt(-
b^2*x^2 - 2*a*b*x - a^2 + 1)*a/b^3)*arcsin(b*x + a)
```

Fricas [A]
time = 3.35, size = 125, normalized size = 1.14

$$\frac{b^4x^4+4\,ab^3x^3+(6\,a^2-5)b^2x^2+2\,(2\,a^3-5\,a)bx-2\,(2\,b^3x^3+6\,ab^2x^2+2\,a^3+(6\,a^2-5)bx-5\,a)\sqrt{-b^2x^2-2\,abx-a^2+1}\,\arcsin\left(bx+a\right)+3\,\arcsin\left(bx+a\right)^2}{16\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)*arcsin(b*x+a),x, algorithm="fricas
")
```

```
[Out] 1/16*(b^4*x^4 + 4*a*b^3*x^3 + (6*a^2 - 5)*b^2*x^2 + 2*(2*a^3 - 5*a)*b*x - 2
*(2*b^3*x^3 + 6*a*b^2*x^2 + 2*a^3 + (6*a^2 - 5)*b*x - 5*a)*sqrt(-b^2*x^2 -
2*a*b*x - a^2 + 1)*arcsin(b*x + a) + 3*arcsin(b*x + a)^2)/b
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 298 vs. $2(95) = 190$.
time = 0.62, size = 298, normalized size = 2.71

$$\begin{cases} \frac{a^3x}{4} - \frac{a^3\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}(a+bx)}{4b} + \frac{3a^2bx^2}{8} - \frac{3a^2x\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}(a+bx)}{4} + \frac{ab^2x^3}{4} - \frac{3abx^2\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}(a+bx)}{4} - \frac{5ax}{8} + \frac{5a\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}(a+bx)}{8b} + \frac{b^3x^4}{16} - \frac{b^2x^3\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}(a+bx)}{4} - \frac{5bx^2}{16} + \frac{5x\sqrt{-a^2-2abx-b^2x^2+1}\operatorname{asin}(a+bx)}{8} + \frac{3\operatorname{asin}^2(a+bx)}{16b} & \text{for } b \neq 0 \\ x(1-a^2)^{\frac{3}{2}}\operatorname{asin}(a) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b**2*x**2-2*a*b*x-a**2+1)**(3/2)*asin(b*x+a),x)
```

```
[Out] Piecewise((a**3*x/4 - a**3*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*asin(a + b
*x)/(4*b) + 3*a**2*b*x**2/8 - 3*a**2*x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1
)*asin(a + b*x)/4 + a*b**2*x**3/4 - 3*a*b*x**2*sqrt(-a**2 - 2*a*b*x - b**2*
x**2 + 1)*asin(a + b*x)/4 - 5*a*x/8 + 5*a*sqrt(-a**2 - 2*a*b*x - b**2*x**2
+ 1)*asin(a + b*x)/(8*b) + b**3*x**4/16 - b**2*x**3*sqrt(-a**2 - 2*a*b*x -
b**2*x**2 + 1)*asin(a + b*x)/4 - 5*b*x**2/16 + 5*x*sqrt(-a**2 - 2*a*b*x - b
**2*x**2 + 1)*asin(a + b*x)/8 + 3*asin(a + b*x)**2/(16*b), Ne(b, 0)), (x*(1
 - a**2)**(3/2)*asin(a), True))
```

Giac [A]
time = 0.46, size = 141, normalized size = 1.28

$$\frac{(-b^2x^2-2abx-a^2+1)^{\frac{3}{2}}(bx+a)\arcsin(bx+a)}{4b} + \frac{3\sqrt{-b^2x^2-2abx-a^2+1}\,(bx+a)\arcsin(bx+a)}{8b} + \frac{(b^2x^2+2abx+a^2-1)^2}{16b} + \frac{3\arcsin(bx+a)^2}{16b} - \frac{3(b^2x^2+2abx+a^2-1)}{16b} - \frac{15}{128b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)*arcsin(b*x+a),x, algorithm="giac")
```

```
[Out] 1/4*(-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)*(b*x + a)*arcsin(b*x + a)/b + 3/8*
sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*x + a)*arcsin(b*x + a)/b + 1/16*(b^2*
x^2 + 2*a*b*x + a^2 - 1)^2/b + 3/16*arcsin(b*x + a)^2/b - 3/16*(b^2*x^2 + 2
*a*b*x + a^2 - 1)/b - 15/128/b
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \operatorname{asin}(a+b\,x)\,\left(-a^2-2\,a\,b\,x-b^2\,x^2+1\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)*(1 - b^2*x^2 - 2*a*b*x - a^2)^(3/2),x)
```

```
[Out] int(asin(a + b*x)*(1 - b^2*x^2 - 2*a*b*x - a^2)^(3/2), x)
```

3.323 $\int \frac{(1-a^2-2abx-b^2x^2)^{3/2}}{\text{ArcSin}(a+bx)}\,dx$

Optimal. Leaf size=47

$$\frac{\text{CosIntegral}(2\text{ArcSin}(a+bx))}{2b}+\frac{\text{CosIntegral}(4\text{ArcSin}(a+bx))}{8b}+\frac{3\log(\text{ArcSin}(a+bx))}{8b}$$

```
[Out] 1/2*Ci(2*arcsin(b*x+a))/b+1/8*Ci(4*arcsin(b*x+a))/b+3/8*ln(arcsin(b*x+a))/b
```

Rubi [A]
time = 0.10, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.121$, Rules used = {4891, 4753, 3393, 3383}

$$\frac{\text{CosIntegral}(2\text{ArcSin}(a+bx))}{2b}+\frac{\text{CosIntegral}(4\text{ArcSin}(a+bx))}{8b}+\frac{3\log(\text{ArcSin}(a+bx))}{8b}$$

Antiderivative was successfully verified.

```
[In] Int[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)/ArcSin[a + b*x],x]
```

```
[Out] CosIntegral[2*ArcSin[a + b*x]]/(2*b) + CosIntegral[4*ArcSin[a + b*x]]/(8*b)
 + (3*Log[ArcSin[a + b*x]])/(8*b)
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3393

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 4753

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[(1/(b*c))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Subst[Int[x
^n*Cos[-a/b + x/b]^(2*p + 1), x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b,
 c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IGtQ[2*p, 0]
```

Rule 4891

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-C/d^2 + (C/d^2)*x^2)
```

```
^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C,
n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(1-a^2-2abx-b^2x^2)^{3/2}}{\sin^{-1}(a+bx)}\,dx &= \frac{\text{Subst}\left(\int \frac{(1-x^2)^{3/2}}{\sin^{-1}(x)}\,dx,x,a+bx\right)}{b}\\ &= \frac{\text{Subst}\left(\int \frac{\cos^4(x)}{x}\,dx,x,\sin^{-1}(a+bx)\right)}{b}\\ &= \frac{\text{Subst}\left(\int \left(\frac{3}{8x}+\frac{\cos(2x)}{2x}+\frac{\cos(4x)}{8x}\right)dx,x,\sin^{-1}(a+bx)\right)}{b}\\ &= \frac{3\log\left(\sin^{-1}(a+bx)\right)}{8b}+\frac{\text{Subst}\left(\int \frac{\cos(4x)}{x}\,dx,x,\sin^{-1}(a+bx)\right)}{8b}+\frac{\text{Subst}\left(\int \right.}{}\\ &= \frac{\text{Ci}(2\sin^{-1}(a+bx))}{2b}+\frac{\text{Ci}(4\sin^{-1}(a+bx))}{8b}+\frac{3\log\left(\sin^{-1}(a+bx)\right)}{8b}\end{aligned}$$

Mathematica [A]
time = 0.19, size = 37, normalized size = 0.79

$$\frac{4\text{CosIntegral}(2\text{ArcSin}(a+bx))+\text{CosIntegral}(4\text{ArcSin}(a+bx))+3\log(\text{ArcSin}(a+bx))}{8b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)/ArcSin[a + b*x],x]
[Out] (4*CosIntegral[2*ArcSin[a + b*x]] + CosIntegral[4*ArcSin[a + b*x]] + 3*Log[
ArcSin[a + b*x]])/(8*b)
```

Maple [A]
time = 0.42, size = 36, normalized size = 0.77

method	result	size
default	$\frac{3\ln(\arcsin(bx+a))+4\,\text{cosineIntegral}(2\arcsin(bx+a))+\text{cosineIntegral}(4\arcsin(bx+a))}{8b}$	36

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a),x,method=_RETURNVERBOSE)
[Out] 1/8*(3*ln(arcsin(b*x+a))+4*Ci(2*arcsin(b*x+a))+Ci(4*arcsin(b*x+a)))/b
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a),x, algorithm="maxima
")
```

```
[Out] integrate((-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)/arcsin(b*x + a), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a),x, algorithm="fricas
")
```

```
[Out] integral((-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)/arcsin(b*x + a), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(-(a+bx-1)(a+bx+1))^{\frac{3}{2}}}{\operatorname{asin}(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b**2*x**2-2*a*b*x-a**2+1)**(3/2)/asin(b*x+a),x)
```

```
[Out] Integral((-(a + b*x - 1)*(a + b*x + 1))**(3/2)/asin(a + b*x), x)
```

Giac [A]
time = 0.46, size = 41, normalized size = 0.87

$$\frac{\operatorname{Ci}(4 \arcsin(bx+a))}{8b} + \frac{\operatorname{Ci}(2 \arcsin(bx+a))}{2b} + \frac{3 \log(\arcsin(bx+a))}{8b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a),x, algorithm="giac")
```

```
[Out] 1/8*cos_integral(4*arcsin(b*x + a))/b + 1/2*cos_integral(2*arcsin(b*x + a))
/b + 3/8*log(arcsin(b*x + a))/b
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\left(-a^2-2\,a\,b\,x-b^2\,x^2+1\right)^{3/2}}{\mathrm{asin}\left(a+b\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - b^2*x^2 - 2*a*b*x - a^2)^(3/2)/asin(a + b*x),x)
[Out] int((1 - b^2*x^2 - 2*a*b*x - a^2)^(3/2)/asin(a + b*x), x)
```

3.324 $\int \frac{\left(1-a^2-2abx-b^2x^2\right)^{3/2}}{\mathbf{ArcSin}(a+bx)^2} dx$

Optimal. Leaf size=57

$$-\frac{(1-(a+bx)^2)^2}{b\text{ArcSin}(a+bx)}-\frac{\text{Si}(2\text{ArcSin}(a+bx))}{b}-\frac{\text{Si}(4\text{ArcSin}(a+bx))}{2b}$$

```
[Out] -(1-(b*x+a)^2)^2/b/arcsin(b*x+a)-Si(2*arcsin(b*x+a))/b-1/2*Si(4*arcsin(b*x+
a))/b
```

Rubi [A]
time = 0.11, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.152$, Rules used = {4891, 4751, 4809, 4491, 3380}

$$-\frac{\text{Si}(2\text{ArcSin}(a+bx))}{b}-\frac{\text{Si}(4\text{ArcSin}(a+bx))}{2b}-\frac{(1-(a+bx)^2)^2}{b\text{ArcSin}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)/ArcSin[a + b*x]^2,x]
```

```
[Out] -((1 - (a + b*x)^2)^2/(b*ArcSin[a + b*x])) - SinIntegral[2*ArcSin[a + b*x]]
/b - SinIntegral[4*ArcSin[a + b*x]]/(2*b)
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4751

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*((a + b*ArcSin[c*x])^(n + 1
)/(b*c*(n + 1))), x] + Dist[c*((2*p + 1)/(b*(n + 1)))*Simp[(d + e*x^2)^p/(1
 - c^2*x^2)^p], Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1),
x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && LtQ[n, -1]
```

Rule 4809

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[(1/(b*c^(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x
^2)^p], Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b]^(2*p + 1), x], x, a
 + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0]
&& IGtQ[2*p + 2, 0] && IGtQ[m, 0]
```

Rule 4891

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-C/d^2 + (C/d^2)*x^2)
^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C,
n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(1-a^2-2abx-b^2x^2)^{3/2}}{\sin^{-1}(a+bx)^2}\,dx &= \frac{\text{Subst}\left(\int \frac{(1-x^2)^{3/2}}{\sin^{-1}(x)^2}\,dx, x, a+bx\right)}{b}\\
&= -\frac{(1-(a+bx)^2)^2}{b\sin^{-1}(a+bx)} - \frac{4\text{Subst}\left(\int \frac{x(1-x^2)}{\sin^{-1}(x)}\,dx, x, a+bx\right)}{b}\\
&= -\frac{(1-(a+bx)^2)^2}{b\sin^{-1}(a+bx)} - \frac{4\text{Subst}\left(\int \frac{\cos^3(x)\sin(x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{b}\\
&= -\frac{(1-(a+bx)^2)^2}{b\sin^{-1}(a+bx)} - \frac{4\text{Subst}\left(\int \left(\frac{\sin(2x)}{4x}+\frac{\sin(4x)}{8x}\right)\,dx, x, \sin^{-1}(a+bx)\right)}{b}\\
&= -\frac{(1-(a+bx)^2)^2}{b\sin^{-1}(a+bx)} - \frac{\text{Subst}\left(\int \frac{\sin(4x)}{x}\,dx, x, \sin^{-1}(a+bx)\right)}{2b} - \frac{\text{Subst}\left(\int \frac{\sin(\cdots}{\cdots}\right.}{\cdots}\\
&= -\frac{(1-(a+bx)^2)^2}{b\sin^{-1}(a+bx)} - \frac{\text{Si}(2\sin^{-1}(a+bx))}{b} - \frac{\text{Si}(4\sin^{-1}(a+bx))}{2b}
\end{aligned}$$

Mathematica [A]
time = 0.19, size = 70, normalized size = 1.23

$$-\frac{2(-1+a^2+2abx+b^2x^2)^2+2\text{ArcSin}(a+bx)\text{Si}(2\text{ArcSin}(a+bx))+\text{ArcSin}(a+bx)\text{Si}(4\text{ArcSin}(a+bx))}{2b\text{ArcSin}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)/ArcSin[a + b*x]^2,x]
```

[Out] -1/2*(2*(-1 + a^2 + 2*a*b*x + b^2*x^2)^2 + 2*ArcSin[a + b*x]*SinIntegral[2*ArcSin[a + b*x]] + ArcSin[a + b*x]*SinIntegral[4*ArcSin[a + b*x]])/(b*ArcSin[a + b*x])

Maple [A]
time = 0.44, size = 70, normalized size = 1.23

method	result
default	$-\frac{8\,\mathrm{sinIntegral}(2\arcsin(bx+a))\arcsin(bx+a)+4\,\mathrm{sinIntegral}(4\arcsin(bx+a))\arcsin(bx+a)+4\cos(2\arcsin(bx+a))+\cos(4\arcsin(bx+}{8b\arcsin(bx+a)}$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^2,x,method=_RETURNVERBOSE)

[Out] -1/8/b*(8*Si(2*arcsin(b*x+a))*arcsin(b*x+a)+4*Si(4*arcsin(b*x+a))*arcsin(b*x+a)+4*cos(2*arcsin(b*x+a))+cos(4*arcsin(b*x+a))+3)/arcsin(b*x+a)

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^2,x, algorithm="maxima")

[Out] -(b^4*x^4 + 4*a*b^3*x^3 + 2*(3*a^2 - 1)*b^2*x^2 + a^4 + 4*(a^3 - a)*b*x - b*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))*integrate(4*(b^3*x^3 + 3*a*b^2*x^2 + a^3 + (3*a^2 - 1)*b*x - a)/arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)), x) - 2*a^2 + 1)/(b*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)))

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^2,x, algorithm="fricas")

[Out] integral((-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)/arcsin(b*x + a)^2, x)

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(a+bx-1\right)\left(a+bx+1\right)\right)^{\frac{3}{2}}}{\operatorname{asin}^{2}\left(a+bx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b**2*x**2-2*a*b*x-a**2+1)**(3/2)/asin(b*x+a)**2,x)
```

```
[Out] Integral((-(a + b*x - 1)*(a + b*x + 1))**(3/2)/asin(a + b*x)**2, x)
```

Giac [A]
time = 0.51, size = 61, normalized size = 1.07

$$-\frac{\left(b^2x^2+2\,abx+a^2-1\right)^2}{b\arcsin\left(bx+a\right)}-\frac{\mathrm{Si}\left(4\,\arcsin\left(bx+a\right)\right)}{2\,b}-\frac{\mathrm{Si}\left(2\,\arcsin\left(bx+a\right)\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^2,x, algorithm="giac
")
```

```
[Out] -(b^2*x^2 + 2*a*b*x + a^2 - 1)^2/(b*arcsin(b*x + a)) - 1/2*sin_integral(4*a
rcsin(b*x + a))/b - sin_integral(2*arcsin(b*x + a))/b
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{{\left(-a^2-2\,a\,b\,x-b^2\,x^2+1\right)}^{3/2}}{{\mathrm{asin}\left(a+b\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - b^2*x^2 - 2*a*b*x - a^2)^(3/2)/asin(a + b*x)^2,x)
```

```
[Out] int((1 - b^2*x^2 - 2*a*b*x - a^2)^(3/2)/asin(a + b*x)^2, x)
```

3.325 $\int \frac{(1-a^2-2abx-b^2x^2)^{3/2}}{\mathbf{ArcSin}(a+bx)^3}\,dx$

Optimal. Leaf size=90

$$-\frac{(1-(a+bx)^2)^2}{2b\text{ArcSin}(a+bx)^2}+\frac{2(a+bx)\,(1-(a+bx)^2)^{3/2}}{b\text{ArcSin}(a+bx)}-\frac{\text{CosIntegral}(2\text{ArcSin}(a+bx))}{b}-\frac{\text{CosIntegral}(4\text{ArcSin}(}{b}$$

```
[Out] -1/2*(1-(b*x+a)^2)^2/b/arcsin(b*x+a)^2+2*(b*x+a)*(1-(b*x+a)^2)^(3/2)/b/arcs
in(b*x+a)-Ci(2*arcsin(b*x+a))/b-Ci(4*arcsin(b*x+a))/b
```

Rubi [A]
time = 0.20, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.242$, Rules used = {4891, 4751, 4799, 4753, 3393, 3383, 4809, 4491}

$$-\frac{\text{CosIntegral}(2\text{ArcSin}(a+bx))}{b}-\frac{\text{CosIntegral}(4\text{ArcSin}(a+bx))}{b}-\frac{(1-(a+bx)^2)^2}{2b\text{ArcSin}(a+bx)^2}+\frac{2(a+bx)\,(1-(a+bx)^2)^{3/2}}{b\text{ArcSin}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)/ArcSin[a + b*x]^3,x]
```

```
[Out] -1/2*(1 - (a + b*x)^2)^2/(b*ArcSin[a + b*x]^2) + (2*(a + b*x)*(1 - (a + b*x
)^2)^(3/2))/(b*ArcSin[a + b*x]) - CosIntegral[2*ArcSin[a + b*x]]/b - CosInt
egral[4*ArcSin[a + b*x]]/b
```

Rule 3383

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3393

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4751

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*((a + b*ArcSin[c*x])^(n + 1
)/(b*c*(n + 1))), x] + Dist[c*((2*p + 1)/(b*(n + 1)))*Simp[(d + e*x^2)^p/(1
 - c^2*x^2)^p], Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1),
x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && LtQ[n, -1]
```

Rule 4753

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[(1/(b*c))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Subst[Int[x
^n*Cos[-a/b + x/b]^(2*p + 1), x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b,
 c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IGtQ[2*p, 0]
```

Rule 4799

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[(f*x)^m*Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*
((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + (-Dist[f*(m/(b*c*(n + 1))
)*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p -
 1/2)*(a + b*ArcSin[c*x])^(n + 1), x], x] + Dist[c*((m + 2*p + 1)/(b*f*(n +
 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)^(m + 1)*(1 - c^2*x^2)^
(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1), x], x]) /; FreeQ[{a, b, c, d, e, f},
 x] && EqQ[c^2*d + e, 0] && LtQ[n, -1] && IGtQ[2*p, 0] && NeQ[m + 2*p + 1,
0] && IGtQ[m, -3]
```

Rule 4809

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[(1/(b*c^(m + 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x
^2)^p], Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b]^(2*p + 1), x], x, a
 + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0]
&& IGtQ[2*p + 2, 0] && IGtQ[m, 0]
```

Rule 4891

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-C/d^2 + (C/d^2)*x^2)
^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C,
n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\int \frac{(1-a^2-2abx-b^2x^2)^{3/2}}{\sin^{-1}(a+bx)^3}\,dx = \frac{\text{Subst}\left(\int \frac{(1-x^2)^{3/2}}{\sin^{-1}(x)^3}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{(1-(a+bx)^2)^2}{2b\sin^{-1}(a+bx)^2} - \frac{2\text{Subst}\left(\int \frac{x(1-x^2)}{\sin^{-1}(x)^2}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{(1-(a+bx)^2)^2}{2b\sin^{-1}(a+bx)^2} + \frac{2(a+bx)\,(1-(a+bx)^2)^{3/2}}{b\sin^{-1}(a+bx)} - \frac{2\text{Subst}\left(\int \frac{\sqrt{1-x}}{\sin^{-1}(x)}\right.}{b}$$

$$= -\frac{(1-(a+bx)^2)^2}{2b\sin^{-1}(a+bx)^2} + \frac{2(a+bx)\,(1-(a+bx)^2)^{3/2}}{b\sin^{-1}(a+bx)} - \frac{2\text{Subst}\left(\int \frac{\cos^2(x)}{x}\,dx\right.}{}$$

$$= -\frac{(1-(a+bx)^2)^2}{2b\sin^{-1}(a+bx)^2} + \frac{2(a+bx)\,(1-(a+bx)^2)^{3/2}}{b\sin^{-1}(a+bx)} - \frac{2\text{Subst}\left(\int \left(\frac{1}{2x}+\right.\right.}{}$$

$$= -\frac{(1-(a+bx)^2)^2}{2b\sin^{-1}(a+bx)^2} + \frac{2(a+bx)\,(1-(a+bx)^2)^{3/2}}{b\sin^{-1}(a+bx)} - \frac{\text{Subst}\left(\int \frac{\cos(2x)}{x}\,dx,\right.}{b}$$

$$= -\frac{(1-(a+bx)^2)^2}{2b\sin^{-1}(a+bx)^2} + \frac{2(a+bx)\,(1-(a+bx)^2)^{3/2}}{b\sin^{-1}(a+bx)} - \frac{\text{Ci}(2\sin^{-1}(a+bx)}{b}$$

Mathematica [A]
time = 0.27, size = 110, normalized size = 1.22

$$-\frac{\frac{(-1+a^2+2abx+b^2x^2)\left(-1+a^2+2abx+b^2x^2+4(a+bx)\sqrt{1-a^2-2abx-b^2x^2}\,\text{ArcSin}(a+bx)\right)}{\text{ArcSin}(a+bx)^2}+2\text{CosIntegral}(2\text{ArcSin}(a+bx))+2\text{CosIntegral}(4\text{ArcSin}(a+bx))}{2b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)/ArcSin[a + b*x]^3,x]
```

```
[Out] -1/2*(((-1 + a^2 + 2*a*b*x + b^2*x^2)*(-1 + a^2 + 2*a*b*x + b^2*x^2 + 4*(a
+ b*x)*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x]))/ArcSin[a + b*x]^
2 + 2*CosIntegral[2*ArcSin[a + b*x]] + 2*CosIntegral[4*ArcSin[a + b*x]])/b
```

Maple [A]
time = 0.42, size = 108, normalized size = 1.20

method	result
default	$-\frac{16\,\text{cosineIntegral}(2\arcsin(bx+a))\arcsin(bx+a)^2+16\,\text{cosineIntegral}(4\arcsin(bx+a))\arcsin(bx+a)^2-4\sin(4\arcsin(bx+a))\arcsin(}{16b\arcsin(bx+a)^2}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^3,x,method=_RETURNVERBOSE)
```

```
[Out] -1/16/b*(16*Ci(2*arcsin(b*x+a))*arcsin(b*x+a)^2+16*Ci(4*arcsin(b*x+a))*arcs
in(b*x+a)^2-4*sin(4*arcsin(b*x+a))*arcsin(b*x+a)-8*sin(2*arcsin(b*x+a))*arc
sin(b*x+a)+4*cos(2*arcsin(b*x+a))+cos(4*arcsin(b*x+a))+3)/arcsin(b*x+a)^2
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^3,x, algorithm="maxi
ma")
```

```
[Out] -1/2*(b^4*x^4 + 4*a*b^3*x^3 + 2*(3*a^2 - 1)*b^2*x^2 + a^4 - 2*b*arctan2(b*x
 + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))^2*integrate(2*(4*b^2*x^2 + 8*a*
b*x + 4*a^2 - 1)*sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)/arctan2(b*x + a, sqrt
(b*x + a + 1)*sqrt(-b*x - a + 1)), x) + 4*(a^3 - a)*b*x + 4*(b^3*x^3 + 3*a*
b^2*x^2 + a^3 + (3*a^2 - 1)*b*x - a)*sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)*a
rctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)) - 2*a^2 + 1)/(b*arcta
n2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))^2)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^3,x, algorithm="fric
as")
```

```
[Out] integral((-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)/arcsin(b*x + a)^3, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(a+bx-1\right)\left(a+bx+1\right)\right)^{\frac{3}{2}}}{\operatorname{asin}^{3}\left(a+bx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b**2*x**2-2*a*b*x-a**2+1)**(3/2)/asin(b*x+a)**3,x)
```

```
[Out] Integral((-(a + b*x - 1)*(a + b*x + 1))**(3/2)/asin(a + b*x)**3, x)
```

Giac [A]
time = 0.49, size = 101, normalized size = 1.12

$$\frac{2\left(-b^{2}x^{2}-2\,abx-a^{2}+1\right)^{\frac{3}{2}}\left(bx+a\right)}{b\arcsin\left(bx+a\right)}-\frac{\operatorname{Ci}\left(4\,\arcsin\left(bx+a\right)\right)}{b}-\frac{\operatorname{Ci}\left(2\,\arcsin\left(bx+a\right)\right)}{b}-\frac{\left(b^{2}x^{2}+2\,abx+a^{2}-1\right)^{2}}{2\,b\arcsin\left(bx+a\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^3,x, algorithm="giac
")
```

```
[Out] 2*(-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)*(b*x + a)/(b*arcsin(b*x + a)) - cos_
integral(4*arcsin(b*x + a))/b - cos_integral(2*arcsin(b*x + a))/b - 1/2*(b^
2*x^2 + 2*a*b*x + a^2 - 1)^2/(b*arcsin(b*x + a)^2)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(-a^2-2\,a\,b\,x-b^2\,x^2+1\right)^{3/2}}{{\mathrm{asin}\left(a+b\,x\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - b^2*x^2 - 2*a*b*x - a^2)^(3/2)/asin(a + b*x)^3,x)
```

```
[Out] int((1 - b^2*x^2 - 2*a*b*x - a^2)^(3/2)/asin(a + b*x)^3, x)
```

3.326 $\int \frac{(1-a^2-2abx-b^2x^2)^{3/2}}{\mathbf{ArcSin}(a+bx)^4}\,dx$

Optimal. Leaf size=155

$$-\frac{(1-(a+bx)^2)^2}{3b\text{ArcSin}(a+bx)^3}+\frac{2(a+bx)\,(1-(a+bx)^2)^{3/2}}{3b\text{ArcSin}(a+bx)^2}+\frac{2(1-(a+bx)^2)}{3b\text{ArcSin}(a+bx)}-\frac{8(a+bx)^2\,(1-(a+bx)^2)}{3b\text{ArcSin}(a+bx)}+\frac{2\text{Si}(2\text{Ar}$$

```
[Out] -1/3*(1-(b*x+a)^2)^2/b/arcsin(b*x+a)^3+2/3*(b*x+a)*(1-(b*x+a)^2)^(3/2)/b/ar
csin(b*x+a)^2+2/3*(1-(b*x+a)^2)/b/arcsin(b*x+a)-8/3*(b*x+a)^2*(1-(b*x+a)^2)
/b/arcsin(b*x+a)+2/3*Si(2*arcsin(b*x+a))/b+4/3*Si(4*arcsin(b*x+a))/b
```

Rubi [A]
time = 0.24, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 7, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.212$, Rules used = {4891, 4751, 4799, 4731, 4491, 12, 3380}

$$\frac{2\text{Si}(2\text{ArcSin}(a+bx))}{3b}+\frac{4\text{Si}(4\text{ArcSin}(a+bx))}{3b}-\frac{8(1-(a+bx)^2)\,(a+bx)^2}{3b\text{ArcSin}(a+bx)}+\frac{2(1-(a+bx)^2)^{3/2}\,(a+bx)}{3b\text{ArcSin}(a+bx)^2}+\frac{2(1-(a+bx)^2)}{3b\text{ArcSin}(a+bx)}-\frac{(1-(a+bx)^2)^2}{3b\text{ArcSin}(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)/ArcSin[a + b*x]^4,x]
```

```
[Out] -1/3*(1 - (a + b*x)^2)^2/(b*ArcSin[a + b*x]^3) + (2*(a + b*x)*(1 - (a + b*x
)^2)^(3/2))/(3*b*ArcSin[a + b*x]^2) + (2*(1 - (a + b*x)^2))/(3*b*ArcSin[a +
 b*x]) - (8*(a + b*x)^2*(1 - (a + b*x)^2))/(3*b*ArcSin[a + b*x]) + (2*SinIn
tegral[2*ArcSin[a + b*x]])/(3*b) + (4*SinIntegral[4*ArcSin[a + b*x]])/(3*b)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3380

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 4491

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/(b*c^(m + 1)), Subst[Int[x^n*Sin[-a/b + x/b]^m*Cos[-a/b + x/b], x], x, a +
 b*ArcSin[c*x]], x] /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4751

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*((a + b*ArcSin[c*x])^(n + 1
)/(b*c*(n + 1))), x] + Dist[c*((2*p + 1)/(b*(n + 1)))*Simp[(d + e*x^2)^p/(1
 - c^2*x^2)^p], Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1),
x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && LtQ[n, -1]
```

Rule 4799

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[(f*x)^m*Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*
((a + b*ArcSin[c*x])^(n + 1)/(b*c*(n + 1))), x] + (-Dist[f*(m/(b*c*(n + 1))
)*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p -
 1/2)*(a + b*ArcSin[c*x])^(n + 1), x], x] + Dist[c*((m + 2*p + 1)/(b*f*(n +
 1)))*Simp[(d + e*x^2)^p/(1 - c^2*x^2)^p], Int[(f*x)^(m + 1)*(1 - c^2*x^2)^
(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1), x], x]) /; FreeQ[{a, b, c, d, e, f},
 x] && EqQ[c^2*d + e, 0] && LtQ[n, -1] && IGtQ[2*p, 0] && NeQ[m + 2*p + 1,
0] && IGtQ[m, -3]
```

Rule 4891

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-C/d^2 + (C/d^2)*x^2)
^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C,
n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\int \frac{\left(1-a^2-2abx-b^2x^2\right)^{3/2}}{\sin^{-1}(a+bx)^4}\,dx = \frac{\text{Subst}\left(\int \frac{\left(1-x^2\right)^{3/2}}{\sin^{-1}(x)^4}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{\left(1-(a+bx)^2\right)^2}{3b\sin^{-1}(a+bx)^3} - \frac{4\text{Subst}\left(\int \frac{x\left(1-x^2\right)}{\sin^{-1}(x)^3}\,dx, x, a+bx\right)}{3b}$$

$$= -\frac{\left(1-(a+bx)^2\right)^2}{3b\sin^{-1}(a+bx)^3} + \frac{2(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{3b\sin^{-1}(a+bx)^2} - \frac{2\text{Subst}\left(\int \frac{\sqrt{1-x^2}}{\sin^{-1}(x)^2}\right.}{3b}$$

$$= -\frac{\left(1-(a+bx)^2\right)^2}{3b\sin^{-1}(a+bx)^3} + \frac{2(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{3b\sin^{-1}(a+bx)^2} + \frac{2\left(1-(a+bx)^2\right)}{3b\sin^{-1}(a+bx)} -$$

$$= -\frac{\left(1-(a+bx)^2\right)^2}{3b\sin^{-1}(a+bx)^3} + \frac{2(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{3b\sin^{-1}(a+bx)^2} + \frac{2\left(1-(a+bx)^2\right)}{3b\sin^{-1}(a+bx)} -$$

$$= -\frac{\left(1-(a+bx)^2\right)^2}{3b\sin^{-1}(a+bx)^3} + \frac{2(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{3b\sin^{-1}(a+bx)^2} + \frac{2\left(1-(a+bx)^2\right)}{3b\sin^{-1}(a+bx)} -$$

$$= -\frac{\left(1-(a+bx)^2\right)^2}{3b\sin^{-1}(a+bx)^3} + \frac{2(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{3b\sin^{-1}(a+bx)^2} + \frac{2\left(1-(a+bx)^2\right)}{3b\sin^{-1}(a+bx)} -$$

$$= -\frac{\left(1-(a+bx)^2\right)^2}{3b\sin^{-1}(a+bx)^3} + \frac{2(a+bx)\left(1-(a+bx)^2\right)^{3/2}}{3b\sin^{-1}(a+bx)^2} + \frac{2\left(1-(a+bx)^2\right)}{3b\sin^{-1}(a+bx)} -$$

Mathematica [A]
time = 0.27, size = 143, normalized size = 0.92

$$\frac{\frac{\left(-1+a^2+2abx+b^2x^2\right)\left(1-a^2-2abx-b^2x^2-2(a+bx)\sqrt{1-a^2-2abx-b^2x^2}\,\text{ArcSin}(a+bx)+2\left(-1+4a^2+8abx+4b^2x^2\right)\text{ArcSin}(a+bx)^2\right)}{\text{ArcSin}(a+bx)^3}+2\text{Si}(2\text{ArcSin}(a+bx))+4\text{Si}(4\text{ArcSin}(a+bx))}{3b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)/ArcSin[a + b*x]^4,x]
```

```
[Out] (((-1 + a^2 + 2*a*b*x + b^2*x^2)*(1 - a^2 - 2*a*b*x - b^2*x^2 - 2*(a + b*x)
*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x] + 2*(-1 + 4*a^2 + 8*a*b*
x + 4*b^2*x^2)*ArcSin[a + b*x]^2))/ArcSin[a + b*x]^3 + 2*SinIntegral[2*ArcS
in[a + b*x]] + 4*SinIntegral[4*ArcSin[a + b*x]])/(3*b)
```

Maple [A]
time = 0.42, size = 148, normalized size = 0.95

method	result

default	$\frac{16\,\mathrm{sinIntegral}(2\arcsin(bx+a))\arcsin(bx+a)^3+32\,\mathrm{sinIntegral}(4\arcsin(bx+a))\arcsin(bx+a)^3+8\cos(2\arcsin(bx+a))\arcsin(bx+a)^2+}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^4,x,method=_RETURNVERBOSE)
```

```
[Out] 1/24/b*(16*Si(2*arcsin(b*x+a))*arcsin(b*x+a)^3+32*Si(4*arcsin(b*x+a))*arcsi
n(b*x+a)^3+8*cos(2*arcsin(b*x+a))*arcsin(b*x+a)^2+8*cos(4*arcsin(b*x+a))*ar
csin(b*x+a)^2+4*sin(2*arcsin(b*x+a))*arcsin(b*x+a)+2*sin(4*arcsin(b*x+a))*a
rcsin(b*x+a)-4*cos(2*arcsin(b*x+a))-cos(4*arcsin(b*x+a))-3)/arcsin(b*x+a)^3
```

Maxima [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^4,x, algorithm="maxi
ma")
```

```
[Out] Timed out
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^4,x, algorithm="fric
as")
```

```
[Out] integral((-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)/arcsin(b*x + a)^4, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(a+bx-1\right)\left(a+bx+1\right)\right)^{\frac{3}{2}}}{\operatorname{asin}^4\left(a+bx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b**2*x**2-2*a*b*x-a**2+1)**(3/2)/asin(b*x+a)**4,x)
```

```
[Out] Integral((-(a + b*x - 1)*(a + b*x + 1))**(3/2)/asin(a + b*x)**4, x)
```

Giac [A]
time = 0.50, size = 163, normalized size = 1.05

$$\frac{8\left(b^2x^2+2\,abx+a^2-1\right)^2}{3\,b\arcsin\left(bx+a\right)}+\frac{4\,\mathrm{Si}\left(4\,\arcsin\left(bx+a\right)\right)}{3\,b}+\frac{2\,\mathrm{Si}\left(2\,\arcsin\left(bx+a\right)\right)}{3\,b}+\frac{2\left(-b^2x^2-2\,abx-a^2+1\right)^{\frac{3}{2}}\left(bx+a\right)}{3\,b\arcsin\left(bx+a\right)^2}+\frac{2\left(b^2x^2+2\,abx+a^2-1\right)}{b\arcsin\left(bx+a\right)}-\frac{\left(b^2x^2+2\,abx+a^2-1\right)^2}{3\,b\arcsin\left(bx+a\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^4,x, algorithm="giac
")
```

```
[Out] 8/3*(b^2*x^2 + 2*a*b*x + a^2 - 1)^2/(b*arcsin(b*x + a)) + 4/3*sin_integral(
4*arcsin(b*x + a))/b + 2/3*sin_integral(2*arcsin(b*x + a))/b + 2/3*(-b^2*x^
2 - 2*a*b*x - a^2 + 1)^(3/2)*(b*x + a)/(b*arcsin(b*x + a)^2) + 2*(b^2*x^2 +
 2*a*b*x + a^2 - 1)/(b*arcsin(b*x + a)) - 1/3*(b^2*x^2 + 2*a*b*x + a^2 - 1)
^2/(b*arcsin(b*x + a)^3)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(-a^2-2\,a\,b\,x-b^2\,x^2+1\right)}^{3/2}}{{\mathrm{asin}\left(a+b\,x\right)}^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - b^2*x^2 - 2*a*b*x - a^2)^(3/2)/asin(a + b*x)^4,x)
```

```
[Out] int((1 - b^2*x^2 - 2*a*b*x - a^2)^(3/2)/asin(a + b*x)^4, x)
```

3.327 $\int \frac{\text{ArcSin}(a+bx)^n}{\sqrt{1-a^2-2abx-b^2x^2}}\,dx$

Optimal. Leaf size=19

$$\frac{\text{ArcSin}(a+bx)^{1+n}}{b(1+n)}$$

```
[Out] arcsin(b*x+a)^(1+n)/b/(1+n)
```

Rubi [A]
time = 0.05, antiderivative size = 19, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {4891, 4737}

$$\frac{\text{ArcSin}(a+bx)^{n+1}}{b(n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^n/Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2],x]
```

```
[Out] ArcSin[a + b*x]^(1 + n)/(b*(1 + n))
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4891

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-C/d^2 + (C/d^2)*x^2)
^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C,
n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sin^{-1}(a+bx)^n}{\sqrt{1-a^2-2abx-b^2x^2}}\,dx &= \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)^n}{\sqrt{1-x^2}}\,dx, x, a+bx\right)}{b}\\
&= \frac{\sin^{-1}(a+bx)^{1+n}}{b(1+n)}
\end{aligned}$$

Mathematica [A]
time = 0.02, size = 19, normalized size = 1.00

$$\frac{\text{ArcSin}(a+bx)^{1+n}}{b(1+n)}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^n/Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2],x]
```

```
[Out] ArcSin[a + b*x]^(1 + n)/(b*(1 + n))
```

Maple [A]
time = 0.52, size = 20, normalized size = 1.05

method	result	size
default	$\frac{\arcsin(bx+a)^{1+n}}{b(1+n)}$	20

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)^n/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x,method=_RETURNVERBOSE)
```

```
[Out] arcsin(b*x+a)^(1+n)/b/(1+n)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^n/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="maxi
ma")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

Fricas [A]
time = 3.84, size = 22, normalized size = 1.16

$$\frac{\arcsin\left(bx+a\right)^{n}\arcsin\left(bx+a\right)}{bn+b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^n/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="fric
as")
```

```
[Out] arcsin(b*x + a)^n*arcsin(b*x + a)/(b*n + b)
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 60 vs. $2(14) = 28$.
time = 0.57, size = 60, normalized size = 3.16

$$\begin{cases} \frac{x}{\sqrt{1-a^2}\operatorname{asin}(a)} & \text{for } b = 0 \wedge n = -1 \\ \frac{x\operatorname{asin}^n(a)}{\sqrt{1-a^2}} & \text{for } b = 0 \\ \frac{\log(\operatorname{asin}(a+bx))}{b} & \text{for } n = -1 \\ \frac{\operatorname{asin}(a+bx)\operatorname{asin}^n(a+bx)}{bn+b} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**n/(-b**2*x**2-2*a*b*x-a**2+1)**(1/2),x)
```

```
[Out] Piecewise((x/(sqrt(1 - a**2)*asin(a)), Eq(b, 0) & Eq(n, -1)), (x*asin(a)**n
/sqrt(1 - a**2), Eq(b, 0)), (log(asin(a + b*x))/b, Eq(n, -1)), (asin(a + b*
x)*asin(a + b*x)**n/(b*n + b), True))
```

Giac [A]
time = 0.43, size = 19, normalized size = 1.00

$$\frac{\arcsin(bx+a)^{n+1}}{b(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^n/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="giac
")
```

```
[Out] arcsin(b*x + a)^(n + 1)/(b*(n + 1))
```

Mupad [B]
time = 0.49, size = 37, normalized size = 1.95

$$\begin{cases} \frac{\ln(\operatorname{asin}(a+b\,x))}{b} & \text{if } n = -1 \\ \frac{\operatorname{asin}(a+b\,x)^{n+1}}{b\,(n+1)} & \text{if } n \neq -1 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)^n/(1 - b^2*x^2 - 2*a*b*x - a^2)^(1/2),x)
```

```
[Out] piecewise(n == -1, log(asin(a + b*x))/b, n ~= -1, asin(a + b*x)^(n + 1)/(b*
(n + 1)))
```

3.328 $\int \frac{\text{ArcSin}(a+bx)^2}{\sqrt{1-a^2-2abx-b^2x^2}}\,dx$

Optimal. Leaf size=15

$$\frac{\text{ArcSin}(a+bx)^3}{3b}$$

```
[Out] 1/3*arcsin(b*x+a)^3/b
```

Rubi [A]
time = 0.05, antiderivative size = 15, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {4891, 4737}

$$\frac{\text{ArcSin}(a+bx)^3}{3b}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^2/Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2],x]
```

```
[Out] ArcSin[a + b*x]^3/(3*b)
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4891

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-C/d^2 + (C/d^2)*x^2)
^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C,
n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\sin^{-1}(a+bx)^2}{\sqrt{1-a^2-2abx-b^2x^2}}\,dx &= \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)^2}{\sqrt{1-x^2}}\,dx, x, a+bx\right)}{b}\\ &= \frac{\sin^{-1}(a+bx)^3}{3b}\end{aligned}$$

Mathematica [A]
time = 0.02, size = 15, normalized size = 1.00

$$\frac{\text{ArcSin}(a+bx)^3}{3b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^2/Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2],x]
```

```
[Out] ArcSin[a + b*x]^3/(3*b)
```

Maple [A]
time = 0.37, size = 14, normalized size = 0.93

method	result	size
default	$\frac{\arcsin(bx+a)^3}{3b}$	14

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)^2/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x,method=_RETURNVERBOSE)
```

```
[Out] 1/3*arcsin(b*x+a)^3/b
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 130 vs. 2(13) = 26.
time = 0.50, size = 130, normalized size = 8.67

$$-\frac{\arcsin(bx+a)^2\arcsin\left(-\frac{b^2x+ab}{\sqrt{a^2b^2-(a^2-1)b^2}}\right)}{b}-\frac{\arcsin(bx+a)\arcsin\left(-\frac{b^2x+ab}{\sqrt{a^2b^2-(a^2-1)b^2}}\right)^2}{b}-\frac{\arcsin\left(-\frac{b^2x+ab}{\sqrt{a^2b^2-(a^2-1)b^2}}\right)^3}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="maxi
ma")
```

```
[Out] -arcsin(b*x + a)^2*arcsin(-(b^2*x + a*b)/sqrt(a^2*b^2 - (a^2 - 1)*b^2))/b -
 arcsin(b*x + a)*arcsin(-(b^2*x + a*b)/sqrt(a^2*b^2 - (a^2 - 1)*b^2))^2/b -
 1/3*arcsin(-(b^2*x + a*b)/sqrt(a^2*b^2 - (a^2 - 1)*b^2))^3/b
```

Fricas [A]
time = 2.14, size = 13, normalized size = 0.87

$$\frac{\arcsin(bx+a)^3}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="fric
as")
```

```
[Out] 1/3*arcsin(b*x + a)^3/b
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 26 vs. $2(10) = 20$.
time = 0.42, size = 26, normalized size = 1.73

$$\begin{cases} \frac{\operatorname{asin}^3(a+bx)}{3b} & \text{for } b \neq 0 \\ \frac{x\operatorname{asin}^2(a)}{\sqrt{1-a^2}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**2/(-b**2*x**2-2*a*b*x-a**2+1)**(1/2),x)
```

```
[Out] Piecewise((asin(a + b*x)**3/(3*b), Ne(b, 0)), (x*asin(a)**2/sqrt(1 - a**2),
 True))
```

Giac [A]
time = 0.45, size = 13, normalized size = 0.87

$$\frac{\arcsin(bx+a)^3}{3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="giac
")
```

```
[Out] 1/3*arcsin(b*x + a)^3/b
```

Mupad [B]
time = 0.28, size = 13, normalized size = 0.87

$$\frac{\operatorname{asin}(a+b\,x)^3}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)^2/(1 - b^2*x^2 - 2*a*b*x - a^2)^(1/2),x)
```

```
[Out] asin(a + b*x)^3/(3*b)
```

3.329 $\int \frac{\text{ArcSin}(a+bx)}{\sqrt{1-a^2-2abx-b^2x^2}} \, dx$

Optimal. Leaf size=15

$$\frac{\text{ArcSin}(a+bx)^2}{2b}$$

```
[Out] 1/2*arcsin(b*x+a)^2/b
```

Rubi [A]
time = 0.03, antiderivative size = 15, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {4891, 4737}

$$\frac{\text{ArcSin}(a+bx)^2}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]/Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2],x]
```

```
[Out] ArcSin[a + b*x]^2/(2*b)
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4891

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-C/d^2 + (C/d^2)*x^2)
^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C,
n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sin^{-1}(a+bx)}{\sqrt{1-a^2-2abx-b^2x^2}} \, dx &= \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)}{\sqrt{1-x^2}} \, dx, x, a+bx\right)}{b} \\
&= \frac{\sin^{-1}(a+bx)^2}{2b}
\end{aligned}$$

Mathematica [A]
time = 0.01, size = 15, normalized size = 1.00

$$\frac{\text{ArcSin}(a+bx)^2}{2b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]/Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2],x]
```

```
[Out] ArcSin[a + b*x]^2/(2*b)
```

Maple [A]
time = 0.36, size = 14, normalized size = 0.93

method	result	size
default	$\frac{\arcsin(bx+a)^2}{2b}$	14

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x,method=_RETURNVERBOSE)
```

```
[Out] 1/2*arcsin(b*x+a)^2/b
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 83 vs. 2(13) = 26.
time = 0.48, size = 83, normalized size = 5.53

$$-\frac{\arcsin\left(bx+a\right)\arcsin\left(-\frac{b^2x+ab}{\sqrt{a^2b^2-(a^2-1)b^2}}\right)}{b}-\frac{\arcsin\left(-\frac{b^2x+ab}{\sqrt{a^2b^2-(a^2-1)b^2}}\right)^2}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="maxima
")
```

```
[Out] -arcsin(b*x + a)*arcsin(-(b^2*x + a*b)/sqrt(a^2*b^2 - (a^2 - 1)*b^2))/b - 1
/2*arcsin(-(b^2*x + a*b)/sqrt(a^2*b^2 - (a^2 - 1)*b^2))^2/b
```

Fricas [A]
time = 2.58, size = 13, normalized size = 0.87

$$\frac{\arcsin\left(bx+a\right)^2}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="fricas
")
```

```
[Out] 1/2*arcsin(b*x + a)^2/b
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 24 vs. $2(10) = 20$.
time = 0.39, size = 24, normalized size = 1.60

$$\begin{cases} \frac{\operatorname{asin}^2(a+bx)}{2b} & \text{for } b \neq 0 \\ \frac{x \operatorname{asin}(a)}{\sqrt{1-a^2}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)/(-b**2*x**2-2*a*b*x-a**2+1)**(1/2),x)
[Out] Piecewise((asin(a + b*x)**2/(2*b), Ne(b, 0)), (x*asin(a)/sqrt(1 - a**2), Tr
ue))
```

Giac [A]
time = 0.43, size = 13, normalized size = 0.87

$$\frac{\arcsin(bx+a)^2}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="giac")
[Out] 1/2*arcsin(b*x + a)^2/b
```

Mupad [B]
time = 0.26, size = 13, normalized size = 0.87

$$\frac{\operatorname{asin}(a+b\,x)^2}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)/(1 - b^2*x^2 - 2*a*b*x - a^2)^(1/2),x)
[Out] asin(a + b*x)^2/(2*b)
```

3.330 $\int \frac{1}{\sqrt{1-a^2-2abx-b^2x^2}\,\mathbf{ArcSin}(a+bx)}\,dx$

Optimal. Leaf size=11

$$\frac{\log(\text{ArcSin}(a+bx))}{b}$$

[Out] ln(arcsin(b*x+a))/b

Rubi [A]
time = 0.05, antiderivative size = 11, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {4891, 4735}

$$\frac{\log(\text{ArcSin}(a+bx))}{b}$$

Antiderivative was successfully verified.

[In] Int[1/(Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x]),x]

[Out] Log[ArcSin[a + b*x]]/b

Rule 4735

```
Int[1/(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*Sqrt[(d_) + (e_.)*(x_)^2]), x_Sym
bol] :> Simp[(1/(b*c))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*Log[a + b*Ar
cSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
```

Rule 4891

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-C/d^2 + (C/d^2)*x^2)
^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C,
n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{1}{\sqrt{1-a^2-2abx-b^2x^2}\,\sin^{-1}(a+bx)}\,dx &= \frac{\text{Subst}\left(\int \frac{1}{\sqrt{1-x^2}\,\sin^{-1}(x)}\,dx, x, a+bx\right)}{b}\\
&= \frac{\log\left(\sin^{-1}(a+bx)\right)}{b}
\end{aligned}$$

Mathematica [A]
time = 0.03, size = 11, normalized size = 1.00

$$\frac{\log(\text{ArcSin}(a+bx))}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x]),x]
[Out] Log[ArcSin[a + b*x]]/b
```

Maple [A]
time = 0.36, size = 12, normalized size = 1.09

method	result	size
default	$\frac{\ln(\arcsin(bx+a))}{b}$	12

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/arcsin(b*x+a)/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x,method=_RETURNVERBOSE)
[Out] ln(arcsin(b*x+a))/b
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="maxi
ma")
[Out] integrate(1/(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*arcsin(b*x + a)), x)
```

Fricas [A]
time = 2.27, size = 13, normalized size = 1.18

$$\frac{\log\left(-\arcsin\left(bx+a\right)\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="fric
as")
[Out] log(-arcsin(b*x + a))/b
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 22 vs. $2(8) = 16$.
time = 0.51, size = 22, normalized size = 2.00

$$\begin{cases} \frac{\log(\operatorname{asin}(a+bx))}{b} & \text{for } b \neq 0 \\ \frac{x}{\sqrt{1-a^2}\operatorname{asin}(a)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/asin(b*x+a)/(-b**2*x**2-2*a*b*x-a**2+1)**(1/2),x)
```

```
[Out] Piecewise((log(asin(a + b*x))/b, Ne(b, 0)), (x/(sqrt(1 - a**2)*asin(a)), Tr
ue))
```

Giac [A]
time = 0.43, size = 12, normalized size = 1.09

$$\frac{\log(|\arcsin(bx+a)|)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="giac
")
```

```
[Out] log(abs(arcsin(b*x + a)))/b
```

Mupad [B]
time = 0.28, size = 11, normalized size = 1.00

$$\frac{\ln(\operatorname{asin}(a+b\,x))}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(asin(a + b*x)*(1 - b^2*x^2 - 2*a*b*x - a^2)^(1/2)),x)
```

```
[Out] log(asin(a + b*x))/b
```

3.331 $\int \frac{1}{\sqrt{1-a^2-2abx-b^2x^2}\,\mathbf{ArcSin}(a+bx)^2}\,dx$

Optimal. Leaf size=13

$$-\frac{1}{b\text{ArcSin}(a+bx)}$$

```
[Out] -1/b/arcsin(b*x+a)
```

Rubi [A]
time = 0.05, antiderivative size = 13, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {4891, 4737}

$$-\frac{1}{b\text{ArcSin}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x]^2),x]
```

```
[Out] -(1/(b*ArcSin[a + b*x]))
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4891

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-C/d^2 + (C/d^2)*x^2)
^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C,
n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{1}{\sqrt{1-a^2-2abx-b^2x^2}\,\sin^{-1}(a+bx)^2}\,dx &= \frac{\text{Subst}\left(\int \frac{1}{\sqrt{1-x^2}\,\sin^{-1}(x)^2}\,dx,x,a+bx\right)}{b}\\ &= -\frac{1}{b\sin^{-1}(a+bx)}\end{aligned}$$

Mathematica [A]
time = 0.01, size = 13, normalized size = 1.00

$$-\frac{1}{b\text{ArcSin}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x]^2),x]
```

```
[Out] -(1/(b*ArcSin[a + b*x]))
```

Maple [A]
time = 0.37, size = 14, normalized size = 1.08

method	result	size
default	$-\frac{1}{b\arcsin(bx+a)}$	14

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/arcsin(b*x+a)^2/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x,method=_RETURNVERBOS
E)
```

```
[Out] -1/b/arcsin(b*x+a)
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 33 vs. 2(13) = 26.
time = 0.73, size = 33, normalized size = 2.54

$$-\frac{1}{b\arctan\left(bx+a,\sqrt{bx+a+1}\sqrt{-bx-a+1}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)^2/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="ma
xima")
```

```
[Out] -1/(b*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)))
```

Fricas [A]
time = 1.61, size = 13, normalized size = 1.00

$$-\frac{1}{b\arcsin\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)^2/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="fr
icas")
```

```
[Out] -1/(b*arcsin(b*x + a))
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 26 vs. $2(10) = 20$.
time = 0.65, size = 26, normalized size = 2.00

$$\begin{cases} -\frac{1}{b \operatorname{asin}(a+bx)} & \text{for } b \neq 0 \\ \frac{x}{\sqrt{1-a^2} \operatorname{asin}^2(a)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/asin(b*x+a)**2/(-b**2*x**2-2*a*b*x-a**2+1)**(1/2),x)
```

```
[Out] Piecewise((-1/(b*asin(a + b*x)), Ne(b, 0)), (x/(sqrt(1 - a**2)*asin(a)**2),
 True))
```

Giac [A]
time = 0.48, size = 13, normalized size = 1.00

$$-\frac{1}{b \arcsin(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)^2/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="gi
ac")
```

```
[Out] -1/(b*arcsin(b*x + a))
```

Mupad [B]
time = 0.27, size = 13, normalized size = 1.00

$$-\frac{1}{b \operatorname{asin}(a+b\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(asin(a + b*x)^2*(1 - b^2*x^2 - 2*a*b*x - a^2)^(1/2)),x)
```

```
[Out] -1/(b*asin(a + b*x))
```

3.332 $\int \frac{1}{\sqrt{1-a^2-2abx-b^2x^2}\,\mathbf{ArcSin}(a+bx)^3}\,dx$

Optimal. Leaf size=15

$$-\frac{1}{2b\mathrm{ArcSin}(a+bx)^2}$$

```
[Out] -1/2/b/arcsin(b*x+a)^2
```

Rubi [A]
time = 0.05, antiderivative size = 15, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {4891, 4737}

$$-\frac{1}{2b\mathrm{ArcSin}(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x]^3),x]
```

```
[Out] -1/2*1/(b*ArcSin[a + b*x]^2)
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4891

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-C/d^2 + (C/d^2)*x^2)
^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C,
n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{1}{\sqrt{1-a^2-2abx-b^2x^2}\,\sin^{-1}(a+bx)^3}\,dx &= \frac{\mathrm{Subst}\left(\int \frac{1}{\sqrt{1-x^2}\,\sin^{-1}(x)^3}\,dx,x,a+bx\right)}{b}\\ &= -\frac{1}{2b\sin^{-1}(a+bx)^2}\end{aligned}$$

Mathematica [A]
time = 0.01, size = 15, normalized size = 1.00

$$-\frac{1}{2b\text{ArcSin}(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2]*ArcSin[a + b*x]^3),x]
```

```
[Out] -1/2*1/(b*ArcSin[a + b*x]^2)
```

Maple [A]
time = 0.37, size = 14, normalized size = 0.93

method	result	size
default	$-\frac{1}{2b\arcsin(bx+a)^2}$	14

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/arcsin(b*x+a)^3/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x,method=_RETURNVERBOS
E)
```

```
[Out] -1/2/b/arcsin(b*x+a)^2
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 33 vs. 2(13) = 26.
time = 16.59, size = 33, normalized size = 2.20

$$-\frac{1}{2\,b\arctan\left(bx+a,\sqrt{bx+a+1}\,\sqrt{-bx-a+1}\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)^3/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="ma
xima")
```

```
[Out] -1/2/(b*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1))^2)
```

Fricas [A]
time = 1.62, size = 13, normalized size = 0.87

$$-\frac{1}{2\,b\arcsin\left(bx+a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)^3/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="fr
icas")
```

```
[Out] -1/2/(b*arcsin(b*x + a)^2)
```

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 29 vs. $2(14) = 28$.
time = 0.75, size = 29, normalized size = 1.93

$$\begin{cases} -\frac{1}{2b\operatorname{asin}^2(a+bx)} & \text{for } b \neq 0 \\ \frac{x}{\sqrt{1-a^2}\operatorname{asin}^3(a)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/asin(b*x+a)**3/(-b**2*x**2-2*a*b*x-a**2+1)**(1/2),x)
```

```
[Out] Piecewise((-1/(2*b*asin(a + b*x)**2), Ne(b, 0)), (x/(sqrt(1 - a**2)*asin(a)
**3), True))
```

Giac [A]
time = 0.48, size = 13, normalized size = 0.87

$$-\frac{1}{2\,b\arcsin\left(bx+a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(b*x+a)^3/(-b^2*x^2-2*a*b*x-a^2+1)^(1/2),x, algorithm="gi
ac")
```

```
[Out] -1/2/(b*arcsin(b*x + a)^2)
```

Mupad [B]
time = 0.26, size = 13, normalized size = 0.87

$$-\frac{1}{2\,b\operatorname{asin}\left(a+b\,x\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(asin(a + b*x)^3*(1 - b^2*x^2 - 2*a*b*x - a^2)^(1/2)),x)
```

```
[Out] -1/(2*b*asin(a + b*x)^2)
```

3.333 $\int \frac{\text{ArcSin}(a+bx)^3}{(1-a^2-2abx-b^2x^2)^{3/2}}\,dx$

Optimal. Leaf size=128

$$-\frac{i\text{ArcSin}(a+bx)^3}{b}+\frac{(a+bx)\text{ArcSin}(a+bx)^3}{b\sqrt{1-(a+bx)^2}}+\frac{3\text{ArcSin}(a+bx)^2\log\left(1+e^{2i\text{ArcSin}(a+bx)}\right)}{b}-\frac{3i\text{ArcSin}(a+bx}{}$$

```
[Out] -I*arcsin(b*x+a)^3/b+3*arcsin(b*x+a)^2*ln(1+(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))
^2)/b-3*I*arcsin(b*x+a)*polylog(2,-(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))^2)/b+3/2
*polylog(3,-(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))^2)/b+(b*x+a)*arcsin(b*x+a)^3/b/
(1-(b*x+a)^2)^(1/2)
```

Rubi [A]
time = 0.14, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.242$, Rules used = {4891, 4745, 4765, 3800, 2221, 2611, 2320, 6724}

$$-\frac{3i\text{ArcSin}(a+bx)\text{Li}_2\left(-e^{2i\text{ArcSin}(a+bx)}\right)}{b}+\frac{3\text{Li}_3\left(-e^{2i\text{ArcSin}(a+bx)}\right)}{2b}+\frac{(a+bx)\text{ArcSin}(a+bx)^3}{b\sqrt{1-(a+bx)^2}}-\frac{i\text{ArcSin}(a+bx)^3}{b}+\frac{3\text{ArcSin}(a+bx)^2\log\left(1+e^{2i\text{ArcSin}(a+bx)}\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^3/(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2),x]
```

```
[Out] ((-I)*ArcSin[a + b*x]^3)/b + ((a + b*x)*ArcSin[a + b*x]^3)/(b*Sqrt[1 - (a +
 b*x)^2]) + (3*ArcSin[a + b*x]^2*Log[1 + E^((2*I)*ArcSin[a + b*x])])/b - ((
3*I)*ArcSin[a + b*x]*PolyLog[2, -E^((2*I)*ArcSin[a + b*x])])/b + (3*PolyLog
[3, -E^((2*I)*ArcSin[a + b*x])])/(2*b)
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 3800

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[I
*((c + d*x)^(m + 1)/(d*(m + 1))), x] - Dist[2*I, Int[(c + d*x)^m*(E^(2*I*(e
 + f*x))/(1 + E^(2*I*(e + f*x)))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4745

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[x*((a + b*ArcSin[c*x])^n/(d*Sqrt[d + e*x^2])), x] - Dist[b
*c*(n/d)*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[x*((a + b*ArcSin[c*x]
)^(n - 1)/(1 - c^2*x^2)), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
+ e, 0] && GtQ[n, 0]
```

Rule 4765

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Dist[-e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4891

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-C/d^2 + (C/d^2)*x^2)
^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C,
n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\sin^{-1}(a+bx)^3}{(1-a^2-2abx-b^2x^2)^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)^3}{(1-x^2)^{3/2}}\,dx, x, a+bx\right)}{b}$$

$$= \frac{(a+bx)\sin^{-1}(a+bx)^3}{b\sqrt{1-(a+bx)^2}} - \frac{3\text{Subst}\left(\int \frac{x\sin^{-1}(x)^2}{1-x^2}\,dx, x, a+bx\right)}{b}$$

$$= \frac{(a+bx)\sin^{-1}(a+bx)^3}{b\sqrt{1-(a+bx)^2}} - \frac{3\text{Subst}\left(\int x^2\tan(x)\,dx, x, \sin^{-1}(a+bx)\right)}{b}$$

$$= -\frac{i\sin^{-1}(a+bx)^3}{b} + \frac{(a+bx)\sin^{-1}(a+bx)^3}{b\sqrt{1-(a+bx)^2}} + \frac{(6i)\text{Subst}\left(\int \frac{e^{2ix}x^2}{1+e^{2ix}}\,dx, x,\right.}{b}$$

$$= -\frac{i\sin^{-1}(a+bx)^3}{b} + \frac{(a+bx)\sin^{-1}(a+bx)^3}{b\sqrt{1-(a+bx)^2}} + \frac{3\sin^{-1}(a+bx)^2\log\left(1+\right.}{b}$$

$$= -\frac{i\sin^{-1}(a+bx)^3}{b} + \frac{(a+bx)\sin^{-1}(a+bx)^3}{b\sqrt{1-(a+bx)^2}} + \frac{3\sin^{-1}(a+bx)^2\log\left(1+\right.}{b}$$

$$= -\frac{i\sin^{-1}(a+bx)^3}{b} + \frac{(a+bx)\sin^{-1}(a+bx)^3}{b\sqrt{1-(a+bx)^2}} + \frac{3\sin^{-1}(a+bx)^2\log\left(1+\right.}{b}$$

$$= -\frac{i\sin^{-1}(a+bx)^3}{b} + \frac{(a+bx)\sin^{-1}(a+bx)^3}{b\sqrt{1-(a+bx)^2}} + \frac{3\sin^{-1}(a+bx)^2\log\left(1+\right.}{b}$$

Mathematica [A]
time = 0.39, size = 144, normalized size = 1.12

$$\frac{2\text{ArcSin}(a+bx)^2\left(\frac{\left(a+bx-i\sqrt{1-a^2-2abx-b^2x^2}\right)\text{ArcSin}(a+bx)}{\sqrt{1-a^2-2abx-b^2x^2}}+3\log\left(1+e^{2i\text{ArcSin}(a+bx)}\right)\right)-6i\text{ArcSin}(a+bx)\text{PolyLog}\left(2,-e^{2i\text{ArcSin}(a+bx)}\right)+3\text{PolyLog}\left(3,-e^{2i\text{ArcSin}(a+bx)}\right)}{2b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^3/(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2),x]
```

```
[Out] (2*ArcSin[a + b*x]^2*(((a + b*x - I*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2])*ArcS
in[a + b*x])/Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2] + 3*Log[1 + E^((2*I)*ArcSin[
a + b*x])]) - (6*I)*ArcSin[a + b*x]*PolyLog[2, -E^((2*I)*ArcSin[a + b*x])]
+ 3*PolyLog[3, -E^((2*I)*ArcSin[a + b*x])])/(2*b)
```

Maple [A]
time = 0.90, size = 229, normalized size = 1.79

method	result
default	$\frac{\left(-\sqrt{-b^2x^2-2abx-a^2+1}\,bx+ib^2x^2-\sqrt{-b^2x^2-2abx-a^2+1}\,a+2iabx+ia^2-i\right)\arcsin(bx+a)^3}{b(b^2x^2+2abx+a^2-1)} - \frac{4i\arcsin(}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)^3/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2),x,method=_RETURNVERBOSE)
```

```
[Out] (-(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*b*x+I*b^2*x^2-(-b^2*x^2-2*a*b*x-a^2+1)^(1/
2)*a+2*I*a*b*x+I*a^2-I)/b/(b^2*x^2+2*a*b*x+a^2-1)*arcsin(b*x+a)^3-1/2*(4*I*
arcsin(b*x+a)^3-6*arcsin(b*x+a)^2*ln(1+(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))^2)+6
*I*arcsin(b*x+a)*polylog(2,-(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))^2)-3*polylog(3,
-(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))^2))/b
```

Maxima [A]
time = 0.62, size = 137, normalized size = 1.07

$$\frac{3}{2}b\left(\frac{\log(bx+a+1)}{b^2}+\frac{\log(bx+a-1)}{b^2}\right)\arcsin(bx+a)^2+\left(\frac{b^2x}{(a^2b^2-(a^2-1)b^2)\sqrt{-b^2x^2-2abx-a^2+1}}+\frac{ab}{(a^2b^2-(a^2-1)b^2)\sqrt{-b^2x^2-2abx-a^2+1}}\right)\arcsin(bx+a)^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^3/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2),x, algorithm="maxi
ma")
```

```
[Out] 3/2*b*(log(b*x + a + 1)/b^2 + log(b*x + a - 1)/b^2)*arcsin(b*x + a)^2 + (b^
2*x/((a^2*b^2 - (a^2 - 1)*b^2)*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)) + a*b/((
a^2*b^2 - (a^2 - 1)*b^2)*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)))*arcsin(b*x +
a)^3
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^3/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2),x, algorithm="fric
as")
```

```
[Out] integral(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*arcsin(b*x + a)^3/(b^4*x^4 + 4*
a*b^3*x^3 + 2*(3*a^2 - 1)*b^2*x^2 + a^4 + 4*(a^3 - a)*b*x - 2*a^2 + 1), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}^3(a+bx)}{\left(-(a+bx-1)(a+bx+1)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**3/(-b**2*x**2-2*a*b*x-a**2+1)**(3/2),x)
```

```
[Out] Integral(asin(a + b*x)**3/(-(a + b*x - 1)*(a + b*x + 1))**(3/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^3/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2),x, algorithm="giac
")
```

```
[Out] integrate(arcsin(b*x + a)^3/(-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\mathrm{asin}(a+b\,x)^3}{{\left(-a^2-2\,a\,b\,x-b^2\,x^2+1\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)^3/(1 - b^2*x^2 - 2*a*b*x - a^2)^(3/2),x)
```

```
[Out] int(asin(a + b*x)^3/(1 - b^2*x^2 - 2*a*b*x - a^2)^(3/2), x)
```

3.334 $\int \frac{\text{ArcSin}(a+bx)^2}{\left(1-a^2-2abx-b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=97

$$-\frac{i\text{ArcSin}(a+bx)^2}{b}+\frac{(a+bx)\text{ArcSin}(a+bx)^2}{b\sqrt{1-(a+bx)^2}}+\frac{2\text{ArcSin}(a+bx)\log\left(1+e^{2i\text{ArcSin}(a+bx)}\right)}{b}-\frac{i\text{PolyLog}\left(2,-e^{2i\text{A}}\right.}{b}$$

```
[Out] -I*arcsin(b*x+a)^2/b+2*arcsin(b*x+a)*ln(1+(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))^2
)/b-I*polylog(2,-(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))^2)/b+(b*x+a)*arcsin(b*x+a)
^2/b/(1-(b*x+a)^2)^(1/2)
```

Rubi [A]
time = 0.11, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.212$, Rules used = {4891, 4745, 4765, 3800, 2221, 2317, 2438}

$$-\frac{i\text{Li}_2\left(-e^{2i\text{ArcSin}(a+bx)}\right)}{b}+\frac{(a+bx)\text{ArcSin}(a+bx)^2}{b\sqrt{1-(a+bx)^2}}-\frac{i\text{ArcSin}(a+bx)^2}{b}+\frac{2\text{ArcSin}(a+bx)\log\left(1+e^{2i\text{ArcSin}(a+bx)}\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]^2/(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2),x]
```

```
[Out] ((-I)*ArcSin[a + b*x]^2)/b + ((a + b*x)*ArcSin[a + b*x]^2)/(b*Sqrt[1 - (a +
 b*x)^2]) + (2*ArcSin[a + b*x]*Log[1 + E^((2*I)*ArcSin[a + b*x])])/b - (I*P
olyLog[2, -E^((2*I)*ArcSin[a + b*x])])/b
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3800

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[I
*((c + d*x)^(m + 1)/(d*(m + 1))), x] - Dist[2*I, Int[(c + d*x)^m*(E^(2*I*(e
 + f*x))/(1 + E^(2*I*(e + f*x)))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4745

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[x*((a + b*ArcSin[c*x])^n/(d*Sqrt[d + e*x^2])), x] - Dist[b
*c*(n/d)*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[x*((a + b*ArcSin[c*x]
)^(n - 1)/(1 - c^2*x^2)), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
+ e, 0] && GtQ[n, 0]
```

Rule 4765

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Dist[-e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4891

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-C/d^2 + (C/d^2)*x^2)
^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C,
n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\int \frac{\sin^{-1}(a+bx)^2}{(1-a^2-2abx-b^2x^2)^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)^2}{(1-x^2)^{3/2}}\,dx, x, a+bx\right)}{b}$$

$$= \frac{(a+bx)\sin^{-1}(a+bx)^2}{b\sqrt{1-(a+bx)^2}} - \frac{2\text{Subst}\left(\int \frac{x\sin^{-1}(x)}{1-x^2}\,dx, x, a+bx\right)}{b}$$

$$= \frac{(a+bx)\sin^{-1}(a+bx)^2}{b\sqrt{1-(a+bx)^2}} - \frac{2\text{Subst}\left(\int x\tan(x)\,dx, x, \sin^{-1}(a+bx)\right)}{b}$$

$$= -\frac{i\sin^{-1}(a+bx)^2}{b} + \frac{(a+bx)\sin^{-1}(a+bx)^2}{b\sqrt{1-(a+bx)^2}} + \frac{(4i)\text{Subst}\left(\int \frac{e^{2ix}x}{1+e^{2ix}}\,dx, x, \text{s}\right.}{b}$$

$$= -\frac{i\sin^{-1}(a+bx)^2}{b} + \frac{(a+bx)\sin^{-1}(a+bx)^2}{b\sqrt{1-(a+bx)^2}} + \frac{2\sin^{-1}(a+bx)\log\left(1+e^{2}\right.}{b}$$

$$= -\frac{i\sin^{-1}(a+bx)^2}{b} + \frac{(a+bx)\sin^{-1}(a+bx)^2}{b\sqrt{1-(a+bx)^2}} + \frac{2\sin^{-1}(a+bx)\log\left(1+e^{2}\right.}{b}$$

$$= -\frac{i\sin^{-1}(a+bx)^2}{b} + \frac{(a+bx)\sin^{-1}(a+bx)^2}{b\sqrt{1-(a+bx)^2}} + \frac{2\sin^{-1}(a+bx)\log\left(1+e^{2}\right.}{b}$$

Mathematica [A]
time = 0.25, size = 114, normalized size = 1.18

$$\frac{\text{ArcSin}(a+bx)\left(\frac{\left(a+bx-i\sqrt{1-a^2-2abx-b^2x^2}\right)\text{ArcSin}(a+bx)}{\sqrt{1-a^2-2abx-b^2x^2}}+2\log\left(1+e^{2i\text{ArcSin}(a+bx)}\right)\right)-i\text{PolyLog}\left(2,-e^{2i\text{ArcSin}(a+bx)}\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]^2/(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2),x]
```

```
[Out] (ArcSin[a + b*x]*(((a + b*x - I*Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2])*ArcSin[a
 + b*x])/Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2] + 2*Log[1 + E^((2*I)*ArcSin[a +
b*x])]) - I*PolyLog[2, -E^((2*I)*ArcSin[a + b*x])])/b
```

Maple [A]
time = 0.65, size = 189, normalized size = 1.95

method	result

default	$\frac{\left(-\sqrt{-b^2x^2-2abx-a^2+1}\,bx+ib^2x^2-\sqrt{-b^2x^2-2abx-a^2+1}\,a+2iabx+ia^2-i\right)\arcsin(bx+a)^2}{(b^2x^2+2abx+a^2-1)b}-\frac{i\left(2i\,\mathrm{ar}\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)^2/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2),x,method=_RETURNVERBOSE)
```

```
[Out] (-(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)*b*x+I*b^2*x^2-(-b^2*x^2-2*a*b*x-a^2+1)^(1/
2)*a+2*I*a*b*x+I*a^2-I)/(b^2*x^2+2*a*b*x+a^2-1)/b*arcsin(b*x+a)^2-I*(2*I*ar
csin(b*x+a)*ln(1+(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))^2)+2*arcsin(b*x+a)^2+polyl
og(2,-(I*(b*x+a)+(1-(b*x+a)^2)^(1/2))^2))/b
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2),x, algorithm="maxi
ma")
```

```
[Out] integrate(arcsin(b*x + a)^2/(-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2),x, algorithm="fric
as")
```

```
[Out] integral(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*arcsin(b*x + a)^2/(b^4*x^4 + 4*
a*b^3*x^3 + 2*(3*a^2 - 1)*b^2*x^2 + a^4 + 4*(a^3 - a)*b*x - 2*a^2 + 1), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}^2(a+bx)}{\left(-(a+bx-1)(a+bx+1)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)**2/(-b**2*x**2-2*a*b*x-a**2+1)**(3/2),x)
```

```
[Out] Integral(asin(a + b*x)**2/(-(a + b*x - 1)*(a + b*x + 1))**(3/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)^2/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2),x, algorithm="giac
")
```

```
[Out] integrate(arcsin(b*x + a)^2/(-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\mathrm{asin}(a+b\,x)^2}{{\left(-a^2-2\,a\,b\,x-b^2\,x^2+1\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)^2/(1 - b^2*x^2 - 2*a*b*x - a^2)^(3/2),x)
```

```
[Out] int(asin(a + b*x)^2/(1 - b^2*x^2 - 2*a*b*x - a^2)^(3/2), x)
```

3.335 $\int \frac{\text{ArcSin}(a+bx)}{(1-a^2-2abx-b^2x^2)^{3/2}}\,dx$

Optimal. Leaf size=50

$$\frac{(a+bx)\text{ArcSin}(a+bx)}{b\sqrt{1-(a+bx)^2}}+\frac{\log\left(1-(a+bx)^2\right)}{2b}$$

```
[Out] 1/2*ln(1-(b*x+a)^2)/b+(b*x+a)*arcsin(b*x+a)/b/(1-(b*x+a)^2)^(1/2)
```

Rubi [A]
time = 0.04, antiderivative size = 50, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.097$, Rules used = {4891, 4745, 266}

$$\frac{(a+bx)\text{ArcSin}(a+bx)}{b\sqrt{1-(a+bx)^2}}+\frac{\log\left(1-(a+bx)^2\right)}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]/(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2),x]
```

```
[Out] ((a + b*x)*ArcSin[a + b*x])/(b*Sqrt[1 - (a + b*x)^2]) + Log[1 - (a + b*x)^2
]/(2*b)
```

Rule 266

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 4745

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[x*((a + b*ArcSin[c*x])^n/(d*Sqrt[d + e*x^2])), x] - Dist[b
*c*(n/d)*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]], Int[x*((a + b*ArcSin[c*x]
)^(n - 1)/(1 - c^2*x^2)), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
+ e, 0] && GtQ[n, 0]
```

Rule 4891

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-C/d^2 + (C/d^2)*x^2)
^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C,
n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\int \frac{\sin^{-1}(a+bx)}{(1-a^2-2abx-b^2x^2)^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)}{(1-x^2)^{3/2}}\,dx, x, a+bx\right)}{b}$$
$$= \frac{(a+bx)\sin^{-1}(a+bx)}{b\sqrt{1-(a+bx)^2}} - \frac{\text{Subst}\left(\int \frac{x}{1-x^2}\,dx, x, a+bx\right)}{b}$$
$$= \frac{(a+bx)\sin^{-1}(a+bx)}{b\sqrt{1-(a+bx)^2}} + \frac{\log\left(1-(a+bx)^2\right)}{2b}$$

Mathematica [**A**]
time = 0.07, size = 66, normalized size = 1.32

$$\frac{\frac{2(a+bx)\text{ArcSin}(a+bx)}{\sqrt{1-a^2-2abx-b^2x^2}} + \log\left(1-a^2-2abx-b^2x^2\right)}{2b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]/(1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2),x]
```

```
[Out] ((2*(a + b*x)*ArcSin[a + b*x])/Sqrt[1 - a^2 - 2*a*b*x - b^2*x^2] + Log[1 -
a^2 - 2*a*b*x - b^2*x^2])/(2*b)
```

Maple [**B**] Leaf count of result is larger than twice the leaf count of optimal. 154 vs. $2(46) = 92$.
time = 0.45, size = 155, normalized size = 3.10

method	result
default	$-\frac{-\ln\left(1-(bx+a)^2\right)b^2x^2+2\arcsin(bx+a)\sqrt{-b^2x^2-2abx-a^2+1}\,bx-2\ln\left(1-(bx+a)^2\right)abx+2\arcsin(bx+a)\sqrt{-b^2x^2-}}{2b(b^2x^2+2abx+a^2-1)}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/2/b*(-ln(1-(b*x+a)^2)*b^2*x^2+2*arcsin(b*x+a)*(-b^2*x^2-2*a*b*x-a^2+1)^(
1/2)*b*x-2*ln(1-(b*x+a)^2)*a*b*x+2*arcsin(b*x+a)*(-b^2*x^2-2*a*b*x-a^2+1)^(
1/2)*a-ln(1-(b*x+a)^2)*a^2+ln(1-(b*x+a)^2))/(b^2*x^2+2*a*b*x+a^2-1)
```

Maxima [**B**] Leaf count of result is larger than twice the leaf count of optimal. 160 vs. $2(46) = 92$.
time = 0.49, size = 160, normalized size = 3.20

$$-\frac{1}{2}\left(a\left(\frac{\log(bx+a+1)}{b^2} - \frac{\log(bx+a-1)}{b^2}\right) - \frac{(a+1)\log(bx+a+1)}{b^2} + \frac{(a-1)\log(bx+a-1)}{b^2}\right)b + \left(\frac{b^2x}{(a^2b^2-(a^2-1)b^2)\sqrt{-b^2x^2-2\,abx-a^2+1}} + \frac{ab}{(a^2b^2-(a^2-1)b^2)\sqrt{-b^2x^2-2\,abx-a^2+1}}\right)\arcsin(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2),x, algorithm="maxima
")
```

```
[Out] -1/2*(a*(log(b*x + a + 1)/b^2 - log(b*x + a - 1)/b^2) - (a + 1)*log(b*x + a
 + 1)/b^2 + (a - 1)*log(b*x + a - 1)/b^2)*b + (b^2*x/((a^2*b^2 - (a^2 - 1)*
b^2)*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)) + a*b/((a^2*b^2 - (a^2 - 1)*b^2)*s
qrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)))*arcsin(b*x + a)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 99 vs. $2(46) = 92$.
time = 1.87, size = 99, normalized size = 1.98

$$-\frac{2\sqrt{-b^2x^2-2\,abx-a^2+1}\,(bx+a)\arcsin(bx+a)-(b^2x^2+2\,abx+a^2-1)\log(b^2x^2+2\,abx+a^2-1)}{2\,(b^3x^2+2\,ab^2x+(a^2-1)b)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2),x, algorithm="fricas
")
```

```
[Out] -1/2*(2*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(b*x + a)*arcsin(b*x + a) - (b^2
*x^2 + 2*a*b*x + a^2 - 1)*log(b^2*x^2 + 2*a*b*x + a^2 - 1))/(b^3*x^2 + 2*a*
b^2*x + (a^2 - 1)*b)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\operatorname{asin}(a+bx)}{\left(-(a+bx-1)\,(a+bx+1)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)/(-b**2*x**2-2*a*b*x-a**2+1)**(3/2),x)
```

```
[Out] Integral(asin(a + b*x)/(-(a + b*x - 1)*(a + b*x + 1))**(3/2), x)
```

Giac [A]
time = 0.48, size = 83, normalized size = 1.66

$$-\frac{\sqrt{-b^2x^2-2\,abx-a^2+1}\,\left(x+\frac{a}{b}\right)\arcsin(bx+a)}{b^2x^2+2\,abx+a^2-1}+\frac{\log(|bx+a+1|)}{2\,b}+\frac{\log(|bx+a-1|)}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2),x, algorithm="giac")
```

```
[Out] -sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(x + a/b)*arcsin(b*x + a)/(b^2*x^2 + 2*
a*b*x + a^2 - 1) + 1/2*log(abs(b*x + a + 1))/b + 1/2*log(abs(b*x + a - 1))/
b
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\operatorname{asin}(a+b\,x)}{\left(-a^2-2\,a\,b\,x-b^2\,x^2+1\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)/(1 - b^2*x^2 - 2*a*b*x - a^2)^(3/2),x)
[Out] int(asin(a + b*x)/(1 - b^2*x^2 - 2*a*b*x - a^2)^(3/2), x)
```

3.336 $\int \frac{1}{(1-a^2-2abx-b^2x^2)^{3/2}\textbf{ArcSin}(a+bx)}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{1}{(1-(a+bx)^2)^{3/2}\,\text{ArcSin}(a+bx)},x\right)$$

[Out] Unintegrable(1/(1-(b*x+a)^2)^(3/2)/arcsin(b*x+a),x)

Rubi [A]
time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(1-a^2-2abx-b^2x^2)^{3/2}\,\text{ArcSin}(a+bx)}\,dx$$

Verification is not applicable to the result.

[In] Int[1/((1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)*ArcSin[a + b*x]),x]

[Out] Defer[Subst][Defer[Int][1/((1 - x^2)^(3/2)*ArcSin[x]), x], x, a + b*x]/b

Rubi steps

$$\int \frac{1}{(1-a^2-2abx-b^2x^2)^{3/2}\sin^{-1}(a+bx)}\,dx = \frac{\text{Subst}\left(\int \frac{1}{(1-x^2)^{3/2}\sin^{-1}(x)}\,dx,x,a+bx\right)}{b}$$

Mathematica [A]
time = 0.55, size = 0, normalized size = 0.00

$$\int \frac{1}{(1-a^2-2abx-b^2x^2)^{3/2}\,\text{ArcSin}(a+bx)}\,dx$$

Verification is not applicable to the result.

[In] Integrate[1/((1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)*ArcSin[a + b*x]),x]

[Out] Integrate[1/((1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)*ArcSin[a + b*x]), x]

Maple [A]
time = 1.35, size = 0, normalized size = 0.00

$$\int \frac{1}{(-b^2x^2-2abx-a^2+1)^{\frac{3}{2}}\arcsin(bx+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a),x)
```

```
[Out] int(1/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a),x, algorithm="maxi
ma")
```

```
[Out] integrate(1/((-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)*arcsin(b*x + a)), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a),x, algorithm="fric
as")
```

```
[Out] integral(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)/((b^4*x^4 + 4*a*b^3*x^3 + 2*(3*
a^2 - 1)*b^2*x^2 + a^4 + 4*(a^3 - a)*b*x - 2*a^2 + 1)*arcsin(b*x + a)), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-\left(a+bx-1\right)\left(a+bx+1\right)\right)^{\frac{3}{2}}\operatorname{asin}\left(a+bx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-b**2*x**2-2*a*b*x-a**2+1)**(3/2)/asin(b*x+a),x)
```

```
[Out] Integral(1/((-(a + b*x - 1)*(a + b*x + 1))**(3/2)*asin(a + b*x)), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a),x, algorithm="giac
")
```

```
[Out] integrate(1/((-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)*arcsin(b*x + a)), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\mathrm{asin}\left(a+b\,x\right)\,{\left(-a^2-2\,a\,b\,x-b^2\,x^2+1\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(asin(a + b*x)*(1 - b^2*x^2 - 2*a*b*x - a^2)^(3/2)),x)
```

```
[Out] int(1/(asin(a + b*x)*(1 - b^2*x^2 - 2*a*b*x - a^2)^(3/2)), x)
```

3.337 $\int \frac{1}{(1-a^2-2abx-b^2x^2)^{3/2}\mathbf{ArcSin}(a+bx)^2}\,dx$

Optimal. Leaf size=59

$$-\frac{1}{b\left(1-(a+bx)^2\right)\mathrm{ArcSin}(a+bx)}+2\mathrm{Int}\left(\frac{a+bx}{\left(1-(a+bx)^2\right)^2\mathrm{ArcSin}(a+bx)},x\right)$$

```
[Out] -1/b/(1-(b*x+a)^2)/arcsin(b*x+a)+2*Unintegrable((b*x+a)/(1-(b*x+a)^2)^2/arc
sin(b*x+a),x)
```

Rubi [A]
time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(1-a^2-2abx-b^2x^2)^{3/2}\,\mathrm{ArcSin}(a+bx)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)*ArcSin[a + b*x]^2),x]
```

```
[Out] -(1/(b*(1 - (a + b*x)^2)*ArcSin[a + b*x])) + (2*Defer[Subst][Defer[Int][x/(
(1 - x^2)^2*ArcSin[x]), x], x, a + b*x])/b
```

Rubi steps

$$\int \frac{1}{(1-a^2-2abx-b^2x^2)^{3/2}\sin^{-1}(a+bx)^2}\,dx = \frac{\mathrm{Subst}\left(\int \frac{1}{(1-x^2)^{3/2}\sin^{-1}(x)^2}\,dx,x,a+bx\right)}{b}$$
$$= -\frac{1}{b\left(1-(a+bx)^2\right)\sin^{-1}(a+bx)}+\frac{2\mathrm{Subst}\left(\int \frac{x}{(1-x^2)^2\sin^{-1}(x}\right.}{b}$$

Mathematica [A]
time = 7.55, size = 0, normalized size = 0.00

$$\int \frac{1}{(1-a^2-2abx-b^2x^2)^{3/2}\,\mathrm{ArcSin}(a+bx)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)*ArcSin[a + b*x]^2),x]
```

```
[Out] Integrate[1/((1 - a^2 - 2*a*b*x - b^2*x^2)^(3/2)*ArcSin[a + b*x]^2), x]
```

Maple [A]
time = 1.18, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-b^2x^2-2abx-a^2+1\right)^{\frac{3}{2}} \arcsin\left(bx+a\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^2,x)
```

```
[Out] int(1/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^2,x, algorithm="ma
xima")
```

```
[Out] ((b^3*x^2 + 2*a*b^2*x + (a^2 - 1)*b)*arctan2(b*x + a, sqrt(b*x + a + 1)*sqr
t(-b*x - a + 1))*integrate(2*(b*x + a)/((b^4*x^4 + 4*a*b^3*x^3 + 2*(3*a^2 -
 1)*b^2*x^2 + a^4 + 4*(a^3 - a)*b*x - 2*a^2 + 1)*arctan2(b*x + a, sqrt(b*x
+ a + 1)*sqrt(-b*x - a + 1))), x) + 1)/((b^3*x^2 + 2*a*b^2*x + (a^2 - 1)*b)
*arctan2(b*x + a, sqrt(b*x + a + 1)*sqrt(-b*x - a + 1)))
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^2,x, algorithm="fr
icas")
```

```
[Out] integral(sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)/((b^4*x^4 + 4*a*b^3*x^3 + 2*(3*
a^2 - 1)*b^2*x^2 + a^4 + 4*(a^3 - a)*b*x - 2*a^2 + 1)*arcsin(b*x + a)^2), x
)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-\left(a+bx-1\right)\left(a+bx+1\right)\right)^{\frac{3}{2}} \operatorname{asin}^{2}\left(a+bx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-b**2*x**2-2*a*b*x-a**2+1)**(3/2)/asin(b*x+a)**2,x)
```

```
[Out] Integral(1/((-(a + b*x - 1)*(a + b*x + 1))**(3/2)*asin(a + b*x)**2), x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-b^2*x^2-2*a*b*x-a^2+1)^(3/2)/arcsin(b*x+a)^2,x, algorithm="gi
ac")
```

```
[Out] integrate(1/((-b^2*x^2 - 2*a*b*x - a^2 + 1)^(3/2)*arcsin(b*x + a)^2), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{1}{\operatorname{asin}\left(a+b\,x\right)^2\,{\left(-a^2-2\,a\,b\,x-b^2\,x^2+1\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(asin(a + b*x)^2*(1 - b^2*x^2 - 2*a*b*x - a^2)^(3/2)),x)
```

```
[Out] int(1/(asin(a + b*x)^2*(1 - b^2*x^2 - 2*a*b*x - a^2)^(3/2)), x)
```

3.338 $\int \frac{\text{ArcSin}(a+bx)}{\sqrt{c-c(a+bx)^2}}\,dx$

Optimal. Leaf size=46

$$\frac{\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)^2}{2b\sqrt{c-c(a+bx)^2}}$$

```
[Out] 1/2*arcsin(b*x+a)^2*(1-(b*x+a)^2)^(1/2)/b/(c-c*(b*x+a)^2)^(1/2)
```

Rubi [A]
time = 0.10, antiderivative size = 46, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$, Rules used = {253, 223, 209, 4737}

$$\frac{\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)^2}{2b\sqrt{c-c(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]/Sqrt[c - c*(a + b*x)^2],x]
```

```
[Out] (Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^2)/(2*b*Sqrt[c - c*(a + b*x)^2])
```

Rule 209

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1/(Rt[a, 2]*Rt[b, 2]))*A
rcTan[Rt[b, 2]*(x/Rt[a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 223

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 253

```
Int[((a_.) + (b_.)*(v_)^(n_))^(p_), x_Symbol] :> Dist[1/Coefficient[v, x, 1
], Subst[Int[(a + b*x^n)^p, x], x, v], x] /; FreeQ[{a, b, n, p}, x] && Line
arQ[v, x] && NeQ[v, x]
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sin^{-1}(a+bx)}{\sqrt{c-c(a+bx)^2}}\,dx &= \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)}{\sqrt{c-cx^2}}\,dx, x, a+bx\right)}{b}\\
&= \frac{\sqrt{1-(a+bx)^2}\,\text{Subst}\left(\int \frac{\sin^{-1}(x)}{\sqrt{1-x^2}}\,dx, x, a+bx\right)}{b\sqrt{c-c(a+bx)^2}}\\
&= \frac{\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)^2}{2b\sqrt{c-c(a+bx)^2}}
\end{aligned}
$$

Mathematica [**A**]
time = 0.05, size = 46, normalized size = 1.00

$$\frac{\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)^2}{2b\sqrt{-c\left(-1+(a+bx)^2\right)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]/Sqrt[c - c*(a + b*x)^2],x]
```

```
[Out] (Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^2)/(2*b*Sqrt[-(c*(-1 + (a + b*x)^2))
])
```

Maple [**A**]
time = 0.36, size = 80, normalized size = 1.74

method	result	size
default	$-\frac{\sqrt{-c\left(b^2x^2+2abx+a^2-1\right)}\,\sqrt{-b^2x^2-2abx-a^2+1}\,\arcsin(bx+a)^2}{2bc\left(b^2x^2+2abx+a^2-1\right)}$	80

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)/(c-c*(b*x+a)^2)^(1/2),x,method=_RETURNVERBOSE)
```

```
[Out] -1/2*(-c*(b^2*x^2+2*a*b*x+a^2-1))^(1/2)*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/b/c/
(b^2*x^2+2*a*b*x+a^2-1)*arcsin(b*x+a)^2
```

Maxima [**B**] Leaf count of result is larger than twice the leaf count of optimal. 206 vs. 2(40) = 80.
time = 0.49, size = 206, normalized size = 4.48

$$\frac{\sqrt{c}\,\arcsin\left(-\frac{b^2x+ab}{\sqrt{a^2b^2-(a^2-1)b^2}}\right)^2}{2\sqrt{a^2b^2c^2-(a^2c-c)b^2c}}-\frac{\arcsin(bx+a)\arcsin\left(-\frac{b^2cx+abc}{\sqrt{a^2b^2c^2-(a^2c-c)b^2c}}\right)}{b\sqrt{c}}-\frac{\arcsin\left(-\frac{b^2cx+abc}{\sqrt{a^2b^2c^2-(a^2c-c)b^2c}}\right)\arcsin\left(-\frac{b^2x+ab}{\sqrt{a^2b^2-(a^2-1)b^2}}\right)}{b\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/(c-c*(b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(c)*arcsin(-(b^2*x + a*b)/sqrt(a^2*b^2 - (a^2 - 1)*b^2))^2/sqrt(a^2
*b^2*c^2 - (a^2*c - c)*b^2*c) - arcsin(b*x + a)*arcsin(-(b^2*c*x + a*b*c)/s
qrt(a^2*b^2*c^2 - (a^2*c - c)*b^2*c))/(b*sqrt(c)) - arcsin(-(b^2*c*x + a*b*
c)/sqrt(a^2*b^2*c^2 - (a^2*c - c)*b^2*c))*arcsin(-(b^2*x + a*b)/sqrt(a^2*b^
2 - (a^2 - 1)*b^2))/(b*sqrt(c))
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/(c-c*(b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-b^2*c*x^2 - 2*a*b*c*x - (a^2 - 1)*c)*arcsin(b*x + a)/(b^2*c
*x^2 + 2*a*b*c*x + (a^2 - 1)*c), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}(a+bx)}{\sqrt{-c(a+bx-1)(a+bx+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)/(c-c*(b*x+a)**2)**(1/2),x)
```

```
[Out] Integral(asin(a + b*x)/sqrt(-c*(a + b*x - 1)*(a + b*x + 1)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/(c-c*(b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(arcsin(b*x + a)/sqrt(-(b*x + a)^2*c + c), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\operatorname{asin}(a+b\,x)}{\sqrt{c-c\,{(a+b\,x)}^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)/(c - c*(a + b*x)^2)^(1/2),x)
```

```
[Out] int(asin(a + b*x)/(c - c*(a + b*x)^2)^(1/2), x)
```

3.339 $\int \frac{\mathbf{ArcSin}(a+bx)}{\sqrt{(1-a^2)\,c-2abcx-b^2cx^2}}\,dx$

Optimal. Leaf size=46

$$\frac{\sqrt{1-(a+bx)^2}\,\mathrm{ArcSin}(a+bx)^2}{2b\sqrt{c-c(a+bx)^2}}$$

```
[Out] 1/2*arcsin(b*x+a)^2*(1-(b*x+a)^2)^(1/2)/b/(c-c*(b*x+a)^2)^(1/2)
```

Rubi [A]
time = 0.05, antiderivative size = 46, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}} = 0.056$, Rules used = {4891, 4737}

$$\frac{\sqrt{1-(a+bx)^2}\,\mathrm{ArcSin}(a+bx)^2}{2b\sqrt{c-c(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a + b*x]/Sqrt[(1 - a^2)*c - 2*a*b*c*x - b^2*c*x^2],x]
```

```
[Out] (Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^2)/(2*b*Sqrt[c - c*(a + b*x)^2])
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4891

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/d, Subst[Int[(-C/d^2 + (C/d^2)*x^2)
^p*(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C,
n, p}, x] && EqQ[B*(1 - c^2) + 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\int \frac{\sin^{-1}(a+bx)}{\sqrt{(1-a^2)\,c-2abcx-b^2cx^2}}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^{-1}(x)}{\sqrt{c-cx^2}}\,dx,x,a+bx\right)}{b}$$
$$= \frac{\sqrt{1-(a+bx)^2}\,\text{Subst}\left(\int \frac{\sin^{-1}(x)}{\sqrt{1-x^2}}\,dx,x,a+bx\right)}{b\sqrt{c-c(a+bx)^2}}$$
$$= \frac{\sqrt{1-(a+bx)^2}\,\sin^{-1}(a+bx)^2}{2b\sqrt{c-c(a+bx)^2}}$$

Mathematica [**A**]
time = 0.03, size = 54, normalized size = 1.17

$$\frac{\sqrt{1-(a+bx)^2}\,\text{ArcSin}(a+bx)^2}{2b\sqrt{-c\left(-1+a^2+2abx+b^2x^2\right)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a + b*x]/Sqrt[(1 - a^2)*c - 2*a*b*c*x - b^2*c*x^2],x]
```

```
[Out] (Sqrt[1 - (a + b*x)^2]*ArcSin[a + b*x]^2)/(2*b*Sqrt[-(c*(-1 + a^2 + 2*a*b*x
 + b^2*x^2))])
```

Maple [**A**]
time = 0.36, size = 80, normalized size = 1.74

method	result	size
default	$-\frac{\sqrt{-c\left(b^2x^2+2abx+a^2-1\right)}\,\sqrt{-b^2x^2-2abx-a^2+1}\,\arcsin(bx+a)^2}{2bc(b^2x^2+2abx+a^2-1)}$	80

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(b*x+a)/((-a^2+1)*c-2*a*b*c*x-b^2*c*x^2)^(1/2),x,method=_RETURNVE
RBOSE)
```

```
[Out] -1/2*(-c*(b^2*x^2+2*a*b*x+a^2-1))^(1/2)*(-b^2*x^2-2*a*b*x-a^2+1)^(1/2)/b/c/
(b^2*x^2+2*a*b*x+a^2-1)*arcsin(b*x+a)^2
```

Maxima [**B**] Leaf count of result is larger than twice the leaf count of optimal. 200 vs. 2(40) = 80.
time = 0.48, size = 200, normalized size = 4.35

$$\frac{\sqrt{c}\,\arcsin\left(-\frac{b^2x+ab}{\sqrt{a^2b^2-(a^2-1)b^2}}\right)^2}{2\sqrt{a^2b^2c^2-(a^2-1)b^2c^2}} - \frac{\arcsin(bx+a)\arcsin\left(-\frac{b^2cx+abc}{\sqrt{a^2b^2c^2-(a^2-1)b^2c^2}}\right)}{b\sqrt{c}} - \frac{\arcsin\left(-\frac{b^2cx+abc}{\sqrt{a^2b^2c^2-(a^2-1)b^2c^2}}\right)\arcsin\left(-\frac{b^2x+ab}{\sqrt{a^2b^2-(a^2-1)b^2}}\right)}{b\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/((-a^2+1)*c-2*a*b*c*x-b^2*c*x^2)^(1/2),x, algorithm
="maxima")
```

```
[Out] 1/2*sqrt(c)*arcsin(-(b^2*x + a*b)/sqrt(a^2*b^2 - (a^2 - 1)*b^2))^2/sqrt(a^2
*b^2*c^2 - (a^2 - 1)*b^2*c^2) - arcsin(b*x + a)*arcsin(-(b^2*c*x + a*b*c)/s
qrt(a^2*b^2*c^2 - (a^2 - 1)*b^2*c^2))/(b*sqrt(c)) - arcsin(-(b^2*c*x + a*b*
c)/sqrt(a^2*b^2*c^2 - (a^2 - 1)*b^2*c^2))*arcsin(-(b^2*x + a*b)/sqrt(a^2*b^
2 - (a^2 - 1)*b^2))/(b*sqrt(c))
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/((-a^2+1)*c-2*a*b*c*x-b^2*c*x^2)^(1/2),x, algorithm
="fricas")
```

```
[Out] integral(-sqrt(-b^2*c*x^2 - 2*a*b*c*x - (a^2 - 1)*c)*arcsin(b*x + a)/(b^2*c
*x^2 + 2*a*b*c*x + (a^2 - 1)*c), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}(a+bx)}{\sqrt{-c(a+bx-1)(a+bx+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(b*x+a)/((-a**2+1)*c-2*a*b*c*x-b**2*c*x**2)**(1/2),x)
```

```
[Out] Integral(asin(a + b*x)/sqrt(-c*(a + b*x - 1)*(a + b*x + 1)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(b*x+a)/((-a^2+1)*c-2*a*b*c*x-b^2*c*x^2)^(1/2),x, algorithm
="giac")
```

```
[Out] integrate(arcsin(b*x + a)/sqrt(-b^2*c*x^2 - 2*a*b*c*x - (a^2 - 1)*c), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\mathrm{asin}(a+b\,x)}{\sqrt{-c\,b^2\,x^2-2\,a\,c\,b\,x-c\,\left(a^2-1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a + b*x)/(- c*(a^2 - 1) - b^2*c*x^2 - 2*a*b*c*x)^(1/2),x)
[Out] int(asin(a + b*x)/(- c*(a^2 - 1) - b^2*c*x^2 - 2*a*b*c*x)^(1/2), x)
```

3.340 $\int x^9(a+b\text{ArcSin}(cx^2))\,dx$

Optimal. Leaf size=84

$$\frac{b\sqrt{1-c^2x^4}}{10c^5}-\frac{b(1-c^2x^4)^{3/2}}{15c^5}+\frac{b(1-c^2x^4)^{5/2}}{50c^5}+\frac{1}{10}x^{10}(a+b\text{ArcSin}(cx^2))$$

```
[Out] -1/15*b*(-c^2*x^4+1)^(3/2)/c^5+1/50*b*(-c^2*x^4+1)^(5/2)/c^5+1/10*x^10*(a+b
*arcsin(c*x^2))+1/10*b*(-c^2*x^4+1)^(1/2)/c^5
```

Rubi [A]
time = 0.04, antiderivative size = 84, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}=0.286$, Rules used = {4926, 12, 272, 45}

$$\frac{1}{10}x^{10}(a+b\text{ArcSin}(cx^2))+\frac{b(1-c^2x^4)^{5/2}}{50c^5}-\frac{b(1-c^2x^4)^{3/2}}{15c^5}+\frac{b\sqrt{1-c^2x^4}}{10c^5}$$

Antiderivative was successfully verified.

```
[In] Int[x^9*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (b*Sqrt[1 - c^2*x^4])/(10*c^5) - (b*(1 - c^2*x^4)^(3/2))/(15*c^5) + (b*(1 -
 c^2*x^4)^(5/2))/(50*c^5) + (x^10*(a + b*ArcSin[c*x^2]))/10
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
```

```
x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\begin{aligned}
\int x^9\left(a+b\sin^{-1}\left(cx^2\right)\right)\,dx &= \frac{1}{10}x^{10}\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{10}b\int\frac{2cx^{11}}{\sqrt{1-c^2x^4}}\,dx\\
&= \frac{1}{10}x^{10}\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{5}(bc)\int\frac{x^{11}}{\sqrt{1-c^2x^4}}\,dx\\
&= \frac{1}{10}x^{10}\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{20}(bc)\text{Subst}\left(\int\frac{x^2}{\sqrt{1-c^2x}}\,dx,x,x^4\right)\\
&= \frac{1}{10}x^{10}\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{20}(bc)\text{Subst}\left(\int\left(\frac{1}{c^4\sqrt{1-c^2x}}-\frac{2\sqrt{1-c^2x}}{c^4}+\right.\right.\\
&= \frac{b\sqrt{1-c^2x^4}}{10c^5}-\frac{b\left(1-c^2x^4\right)^{3/2}}{15c^5}+\frac{b\left(1-c^2x^4\right)^{5/2}}{50c^5}+\frac{1}{10}x^{10}\left(a+b\sin^{-1}\left(cx^2\right)\right)
\end{aligned}$$

Mathematica [A]
time = 0.04, size = 60, normalized size = 0.71

$$\frac{1}{150}\left(15ax^{10}+\frac{b\sqrt{1-c^2x^4}\left(8+4c^2x^4+3c^4x^8\right)}{c^5}+15bx^{10}\text{ArcSin}\left(cx^2\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^9*(a + b*ArcSin[c*x^2]),x]
[Out] (15*a*x^10 + (b*Sqrt[1 - c^2*x^4]*(8 + 4*c^2*x^4 + 3*c^4*x^8))/c^5 + 15*b*x
^10*ArcSin[c*x^2])/150
```

Maple [A]
time = 0.03, size = 71, normalized size = 0.85

method	result	size
default	$\frac{x^{10}a}{10}+b\left(\frac{x^{10}\arcsin\left(c\,x^{2}\right)}{10}-\frac{\left(c\,x^{2}-1\right)\left(c\,x^{2}+1\right)\left(3c^{4}x^{8}+4c^{2}x^{4}+8\right)}{150c^{5}\sqrt{-c^{2}x^{4}+1}}\right)$	71

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^9*(a+b*arcsin(c*x^2)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/10*x^10*a+b*(1/10*x^10*arcsin(c*x^2)-1/150/c^5*(c*x^2-1)*(c*x^2+1)*(3*c^4
*x^8+4*c^2*x^4+8)/(-c^2*x^4+1)^(1/2))
```

Maxima [A]
time = 0.47, size = 76, normalized size = 0.90

$$\frac{1}{10}\,ax^{10}+\frac{1}{150}\left(15\,x^{10}\arcsin\left(cx^{2}\right)+c\left(\frac{3\left(-c^{2}x^{4}+1\right)^{\frac{5}{2}}}{c^{6}}-\frac{10\left(-c^{2}x^{4}+1\right)^{\frac{3}{2}}}{c^{6}}+\frac{15\sqrt{-c^{2}x^{4}+1}}{c^{6}}\right)\right)b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^9*(a+b*arcsin(c*x^2)),x, algorithm="maxima")
```

```
[Out] 1/10*a*x^10 + 1/150*(15*x^10*arcsin(c*x^2) + c*(3*(-c^2*x^4 + 1)^(5/2)/c^6
- 10*(-c^2*x^4 + 1)^(3/2)/c^6 + 15*sqrt(-c^2*x^4 + 1)/c^6))*b
```

Fricas [A]
time = 3.37, size = 65, normalized size = 0.77

$$\frac{15\,bc^{5}x^{10}\arcsin\left(cx^{2}\right)+15\,ac^{5}x^{10}+\left(3\,bc^{4}x^{8}+4\,bc^{2}x^{4}+8\,b\right)\sqrt{-c^{2}x^{4}+1}}{150\,c^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^9*(a+b*arcsin(c*x^2)),x, algorithm="fricas")
```

```
[Out] 1/150*(15*b*c^5*x^10*arcsin(c*x^2) + 15*a*c^5*x^10 + (3*b*c^4*x^8 + 4*b*c^2
*x^4 + 8*b)*sqrt(-c^2*x^4 + 1))/c^5
```

Sympy [A]
time = 1.87, size = 90, normalized size = 1.07

$$\begin{cases}\frac{ax^{10}}{10}+\frac{bx^{10}\operatorname{asin}\left(cx^{2}\right)}{10}+\frac{bx^{8}\sqrt{-c^{2}x^{4}+1}}{50c}+\frac{2bx^{4}\sqrt{-c^{2}x^{4}+1}}{75c^{3}}+\frac{4b\sqrt{-c^{2}x^{4}+1}}{75c^{5}} & \text{for}\: c\neq 0\\ \frac{ax^{10}}{10} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**9*(a+b*asin(c*x**2)),x)
```

```
[Out] Piecewise((a*x**10/10 + b*x**10*asin(c*x**2)/10 + b*x**8*sqrt(-c**2*x**4 +
1)/(50*c) + 2*b*x**4*sqrt(-c**2*x**4 + 1)/(75*c**3) + 4*b*sqrt(-c**2*x**4 +
 1)/(75*c**5), Ne(c, 0)), (a*x**10/10, True))
```

Giac [A]
time = 0.42, size = 140, normalized size = 1.67

$$\frac{15\,acx^{10}+\left(\frac{15\left(c^{2}x^{4}-1\right)^{2}x^{2}\arcsin\left(cx^{2}\right)}{c^{3}}+\frac{30\left(c^{2}x^{4}-1\right)x^{2}\arcsin\left(cx^{2}\right)}{c^{3}}+\frac{15\,x^{2}\arcsin\left(cx^{2}\right)}{c^{3}}+\frac{3\left(c^{2}x^{4}-1\right)^{2}\sqrt{-c^{2}x^{4}+1}}{c^{4}}-\frac{10\left(-c^{2}x^{4}+1\right)^{\frac{3}{2}}}{c^{4}}+\frac{15\sqrt{-c^{2}x^{4}+1}}{c^{4}}\right)b}{150\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^9*(a+b*arcsin(c*x^2)),x, algorithm="giac")
```

```
[Out] 1/150*(15*a*c*x^10 + (15*(c^2*x^4 - 1)^2*x^2*arcsin(c*x^2)/c^3 + 30*(c^2*x^
4 - 1)*x^2*arcsin(c*x^2)/c^3 + 15*x^2*arcsin(c*x^2)/c^3 + 3*(c^2*x^4 - 1)^2
*sqrt(-c^2*x^4 + 1)/c^4 - 10*(-c^2*x^4 + 1)^(3/2)/c^4 + 15*sqrt(-c^2*x^4 +
1)/c^4)*b)/c
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int x^9 \left(a + b \operatorname{asin}\left(c x^2\right)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^9*(a + b*asin(c*x^2)),x)
```

```
[Out] int(x^9*(a + b*asin(c*x^2)), x)
```

3.341 $\int x^7(a+b\textbf{ArcSin}(cx^2))\,dx$

Optimal. Leaf size=82

$$\frac{3bx^2\sqrt{1-c^2x^4}}{64c^3}+\frac{bx^6\sqrt{1-c^2x^4}}{32c}-\frac{3b\text{ArcSin}(cx^2)}{64c^4}+\frac{1}{8}x^8(a+b\text{ArcSin}(cx^2))$$

```
[Out] -3/64*b*arcsin(c*x^2)/c^4+1/8*x^8*(a+b*arcsin(c*x^2))+3/64*b*x^2*(-c^2*x^4+
1)^(1/2)/c^3+1/32*b*x^6*(-c^2*x^4+1)^(1/2)/c
```

Rubi [A]
time = 0.04, antiderivative size = 82, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357, Rules used = {4926, 12, 281, 327, 222}

$$\frac{1}{8}x^8(a+b\text{ArcSin}(cx^2))-\frac{3b\text{ArcSin}(cx^2)}{64c^4}+\frac{bx^6\sqrt{1-c^2x^4}}{32c}+\frac{3bx^2\sqrt{1-c^2x^4}}{64c^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^7*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (3*b*x^2*Sqrt[1 - c^2*x^4])/(64*c^3) + (b*x^6*Sqrt[1 - c^2*x^4])/(32*c) - (
3*b*ArcSin[c*x^2])/(64*c^4) + (x^8*(a + b*ArcSin[c*x^2]))/8
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 281

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k = GCD[m
+ 1, n]}, Dist[1/k, Subst[Int[x^((m + 1)/k - 1)*(a + b*x^(n/k))^p, x], x, x
^k], x] /; k != 1] /; FreeQ[{a, b, p}, x] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\begin{aligned}\int x^7\left(a+b\sin^{-1}\left(cx^2\right)\right)\,dx &= \frac{1}{8}x^8\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{8}b\int\frac{2cx^9}{\sqrt{1-c^2x^4}}\,dx\\ &= \frac{1}{8}x^8\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{4}(bc)\int\frac{x^9}{\sqrt{1-c^2x^4}}\,dx\\ &= \frac{1}{8}x^8\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{8}(bc)\text{Subst}\left(\int\frac{x^4}{\sqrt{1-c^2x^2}}\,dx,x,x^2\right)\\ &= \frac{bx^6\sqrt{1-c^2x^4}}{32c}+\frac{1}{8}x^8\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{(3b)\text{Subst}\left(\int\frac{x^2}{\sqrt{1-c^2x^2}}\,dx,x,x\right.}{32c}\\ &= \frac{3bx^2\sqrt{1-c^2x^4}}{64c^3}+\frac{bx^6\sqrt{1-c^2x^4}}{32c}+\frac{1}{8}x^8\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{(3b)\text{Subst}\left(\int\right.}{}\\ &= \frac{3bx^2\sqrt{1-c^2x^4}}{64c^3}+\frac{bx^6\sqrt{1-c^2x^4}}{32c}-\frac{3b\sin^{-1}\left(cx^2\right)}{64c^4}+\frac{1}{8}x^8\left(a+b\sin^{-1}\left(cx^2\right)\right)\end{aligned}$$

Mathematica [A]
time = 0.02, size = 87, normalized size = 1.06

$$\frac{ax^8}{8}+\frac{3bx^2\sqrt{1-c^2x^4}}{64c^3}+\frac{bx^6\sqrt{1-c^2x^4}}{32c}-\frac{3b\text{ArcSin}(cx^2)}{64c^4}+\frac{1}{8}bx^8\text{ArcSin}(cx^2)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^7*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (a*x^8)/8 + (3*b*x^2*Sqrt[1 - c^2*x^4])/(64*c^3) + (b*x^6*Sqrt[1 - c^2*x^4]
)/(32*c) - (3*b*ArcSin[c*x^2])/(64*c^4) + (b*x^8*ArcSin[c*x^2])/8
```

Maple [A]
time = 0.02, size = 95, normalized size = 1.16

method	result	size
default	$\frac{x^{8} a}{8}+\frac{b\,x^{8} \arcsin \left(c\,x^{2}\right)}{8}+\frac{b\,x^{6} \sqrt{-c^{2} x^{4}+1}}{32 c}+\frac{3 b\,x^{2} \sqrt{-c^{2} x^{4}+1}}{64 c^{3}}-\frac{3 b \arctan \left(\frac{\sqrt{c^{2}}\, x^{2}}{\sqrt{-c^{2} x^{4}+1}}\right)}{64 c^{3} \sqrt{c^{2}}}$	95

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^7*(a+b*arcsin(c*x^2)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/8*x^8*a+1/8*b*x^8*arcsin(c*x^2)+1/32*b*x^6*(-c^2*x^4+1)^(1/2)/c+3/64*b*x^
2*(-c^2*x^4+1)^(1/2)/c^3-3/64*b/c^3/(c^2)^(1/2)*arctan((c^2)^(1/2)*x^2/(-c^
2*x^4+1)^(1/2))
```

Maxima [A]
time = 0.48, size = 130, normalized size = 1.59

$$\frac{1}{8}\,ax^{8}+\frac{1}{64}\left(8\,x^{8}\arcsin\left(cx^{2}\right)+c\left(\frac{\frac{5\sqrt{-c^{2}x^{4}+1}\,c^{2}}{x^{2}}+\frac{3\,\left(-c^{2}x^{4}+1\right)^{\frac{3}{2}}}{x^{6}}}{c^{8}-\frac{2\,\left(c^{2}x^{4}-1\right)c^{6}}{x^{4}}+\frac{\left(c^{2}x^{4}-1\right)^{2}c^{4}}{x^{8}}}+\frac{3\,\arctan\left(\frac{\sqrt{-c^{2}x^{4}+1}}{cx^{2}}\right)}{c^{5}}\right)\right)b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*(a+b*arcsin(c*x^2)),x, algorithm="maxima")
```

```
[Out] 1/8*a*x^8 + 1/64*(8*x^8*arcsin(c*x^2) + c*((5*sqrt(-c^2*x^4 + 1)*c^2/x^2 +
3*(-c^2*x^4 + 1)^(3/2)/x^6)/(c^8 - 2*(c^2*x^4 - 1)*c^6/x^4 + (c^2*x^4 - 1)^
2*c^4/x^8) + 3*arctan(sqrt(-c^2*x^4 + 1)/(c*x^2))/c^5))*b
```

Fricas [A]
time = 2.39, size = 65, normalized size = 0.79

$$\frac{8\,ac^{4}x^{8}+\left(8\,bc^{4}x^{8}-3\,b\right)\arcsin\left(cx^{2}\right)+\left(2\,bc^{3}x^{6}+3\,bcx^{2}\right)\sqrt{-c^{2}x^{4}+1}}{64\,c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*(a+b*arcsin(c*x^2)),x, algorithm="fricas")
```

```
[Out] 1/64*(8*a*c^4*x^8 + (8*b*c^4*x^8 - 3*b)*arcsin(c*x^2) + (2*b*c^3*x^6 + 3*b*
c*x^2)*sqrt(-c^2*x^4 + 1))/c^4
```

Sympy [A]
time = 0.94, size = 85, normalized size = 1.04

$$\begin{cases} \frac{ax^{8}}{8}+\frac{bx^{8}\operatorname{asin}\left(cx^{2}\right)}{8}+\frac{bx^{6}\sqrt{-c^{2}x^{4}+1}}{32c}+\frac{3bx^{2}\sqrt{-c^{2}x^{4}+1}}{64c^{3}}-\frac{3b\operatorname{asin}\left(cx^{2}\right)}{64c^{4}} & \text{for}\: c\neq 0 \\ \frac{ax^{8}}{8} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**7*(a+b*asin(c*x**2)),x)
```

```
[Out] Piecewise((a*x**8/8 + b*x**8*asin(c*x**2)/8 + b*x**6*sqrt(-c**2*x**4 + 1)/(
32*c) + 3*b*x**2*sqrt(-c**2*x**4 + 1)/(64*c**3) - 3*b*asin(c*x**2)/(64*c**4
), Ne(c, 0)), (a*x**8/8, True))
```

Giac [A]
time = 0.43, size = 110, normalized size = 1.34

$$\frac{8\,acx^8-\left(\frac{2\,(-c^2x^4+1)^{\frac{3}{2}}x^2}{c^2}-\frac{5\,\sqrt{-c^2x^4+1}\,x^2}{c^2}-\frac{8\,(c^2x^4-1)^2\arcsin(cx^2)}{c^3}-\frac{16\,(c^2x^4-1)\arcsin(cx^2)}{c^3}-\frac{5\arcsin(cx^2)}{c^3}\right)b}{64\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*(a+b*arcsin(c*x^2)),x, algorithm="giac")
```

```
[Out] 1/64*(8*a*c*x^8 - (2*(-c^2*x^4 + 1)^(3/2)*x^2/c^2 - 5*sqrt(-c^2*x^4 + 1)*x^
2/c^2 - 8*(c^2*x^4 - 1)^2*arcsin(c*x^2)/c^3 - 16*(c^2*x^4 - 1)*arcsin(c*x^2
)/c^3 - 5*arcsin(c*x^2)/c^3)*b)/c
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int x^7\,\left(a+b\,\mathrm{asin}\left(c\,x^2\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^7*(a + b*asin(c*x^2)),x)
```

```
[Out] int(x^7*(a + b*asin(c*x^2)), x)
```

3.342 $\int x^5(a+b\text{ArcSin}(cx^2))\,dx$

Optimal. Leaf size=62

$$\frac{b\sqrt{1-c^2x^4}}{6c^3}-\frac{b(1-c^2x^4)^{3/2}}{18c^3}+\frac{1}{6}x^6\left(a+b\text{ArcSin}\left(cx^2\right)\right)$$

```
[Out] -1/18*b*(-c^2*x^4+1)^(3/2)/c^3+1/6*x^6*(a+b*arcsin(c*x^2))+1/6*b*(-c^2*x^4+
1)^(1/2)/c^3
```

Rubi [A]
time = 0.03, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}=0.286$, Rules used = {4926, 12, 272, 45}

$$\frac{1}{6}x^6\left(a+b\text{ArcSin}\left(cx^2\right)\right)-\frac{b(1-c^2x^4)^{3/2}}{18c^3}+\frac{b\sqrt{1-c^2x^4}}{6c^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^5*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (b*Sqrt[1 - c^2*x^4])/(6*c^3) - (b*(1 - c^2*x^4)^(3/2))/(18*c^3) + (x^6*(a
+ b*ArcSin[c*x^2]))/6
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
```

```
x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$
\begin{aligned}
\int x^5 \left(a+b \sin^{-1}\left(cx^2\right)\right) \, dx &= \frac{1}{6}x^6\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{6}b\int \frac{2cx^7}{\sqrt{1-c^2x^4}}\,dx\\
&= \frac{1}{6}x^6\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{3}(bc)\int \frac{x^7}{\sqrt{1-c^2x^4}}\,dx\\
&= \frac{1}{6}x^6\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{12}(bc)\text{Subst}\left(\int \frac{x}{\sqrt{1-c^2x}}\,dx,x,x^4\right)\\
&= \frac{1}{6}x^6\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{12}(bc)\text{Subst}\left(\int \left(\frac{1}{c^2\sqrt{1-c^2x}}-\frac{\sqrt{1-c^2x}}{c^2}\right)dx\right.\\
&= \frac{b\sqrt{1-c^2x^4}}{6c^3}-\frac{b\left(1-c^2x^4\right)^{3/2}}{18c^3}+\frac{1}{6}x^6\left(a+b\sin^{-1}\left(cx^2\right)\right)
\end{aligned}
$$

Mathematica [A]
time = 0.03, size = 70, normalized size = 1.13

$$\frac{ax^6}{6}+\frac{b\sqrt{1-c^2x^4}}{9c^3}+\frac{bx^4\sqrt{1-c^2x^4}}{18c}+\frac{1}{6}bx^6\text{ArcSin}\left(cx^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^5*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (a*x^6)/6 + (b*Sqrt[1 - c^2*x^4])/(9*c^3) + (b*x^4*Sqrt[1 - c^2*x^4])/(18*c
) + (b*x^6*ArcSin[c*x^2])/6
```

Maple [A]
time = 0.01, size = 62, normalized size = 1.00

method	result	size
default	$\frac{a\,x^6}{6}+b\left(\frac{x^6\arcsin\left(c\,x^2\right)}{6}-\frac{\left(c\,x^2-1\right)\left(c\,x^2+1\right)\left(c^2x^4+2\right)}{18c^3\sqrt{-c^2x^4+1}}\right)$	62

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(a+b*arcsin(c*x^2)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/6*a*x^6+b*(1/6*x^6*arcsin(c*x^2)-1/18/c^3*(c*x^2-1)*(c*x^2+1)*(c^2*x^4+2)
/(-c^2*x^4+1)^(1/2))
```

Maxima [A]
time = 0.47, size = 59, normalized size = 0.95

$$\frac{1}{6}\,ax^6+\frac{1}{18}\left(3\,x^6\arcsin\left(cx^2\right)-c\left(\frac{\left(-c^2x^4+1\right)^{\frac{3}{2}}}{c^4}-\frac{3\,\sqrt{-c^2x^4+1}}{c^4}\right)\right)b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x^2)),x, algorithm="maxima")
```

```
[Out] 1/6*a*x^6 + 1/18*(3*x^6*arcsin(c*x^2) - c*((-c^2*x^4 + 1)^(3/2)/c^4 - 3*sqr
t(-c^2*x^4 + 1)/c^4))*b
```

Fricas [A]
time = 2.24, size = 55, normalized size = 0.89

$$\frac{3\,bc^3x^6\arcsin\left(cx^2\right)+3\,ac^3x^6+\left(bc^2x^4+2\,b\right)\sqrt{-c^2x^4+1}}{18\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x^2)),x, algorithm="fricas")
```

```
[Out] 1/18*(3*b*c^3*x^6*arcsin(c*x^2) + 3*a*c^3*x^6 + (b*c^2*x^4 + 2*b)*sqrt(-c^2
*x^4 + 1))/c^3
```

Sympy [A]
time = 0.44, size = 65, normalized size = 1.05

$$\begin{cases}\frac{ax^6}{6}+\frac{bx^6\operatorname{asin}\left(cx^2\right)}{6}+\frac{bx^4\sqrt{-c^2x^4+1}}{18c}+\frac{b\sqrt{-c^2x^4+1}}{9c^3} & \text{for}\ c\neq 0\\ \frac{ax^6}{6} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(a+b*asin(c*x**2)),x)
```

```
[Out] Piecewise((a*x**6/6 + b*x**6*asin(c*x**2)/6 + b*x**4*sqrt(-c**2*x**4 + 1)/(
18*c) + b*sqrt(-c**2*x**4 + 1)/(9*c**3), Ne(c, 0)), (a*x**6/6, True))
```

Giac [A]
time = 0.41, size = 87, normalized size = 1.40

$$\frac{3\,acx^6+\left(\frac{3\left(c^2x^4-1\right)x^2\arcsin\left(cx^2\right)}{c}+\frac{3\,x^2\arcsin\left(cx^2\right)}{c}-\frac{\left(-c^2x^4+1\right)^{\frac{3}{2}}}{c^2}+\frac{3\,\sqrt{-c^2x^4+1}}{c^2}\right)b}{18\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x^2)),x, algorithm="giac")
```

```
[Out] 1/18*(3*a*c*x^6 + (3*(c^2*x^4 - 1)*x^2*arcsin(c*x^2)/c + 3*x^2*arcsin(c*x^2
)/c - (-c^2*x^4 + 1)^(3/2)/c^2 + 3*sqrt(-c^2*x^4 + 1)/c^2)*b)/c
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.02

$$\int x^5\,\left(a+b\,\mathrm{asin}\left(c\,x^2\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(a + b*asin(c*x^2)),x)
```

```
[Out] int(x^5*(a + b*asin(c*x^2)), x)
```

3.343 $\int x^3(a+b\mathbf{ArcSin}(cx^2))\,dx$

Optimal. Leaf size=57

$$\frac{bx^2\sqrt{1-c^2x^4}}{8c}-\frac{b\text{ArcSin}(cx^2)}{8c^2}+\frac{1}{4}x^4\left(a+b\text{ArcSin}\left(cx^2\right)\right)$$

```
[Out] -1/8*b*arcsin(c*x^2)/c^2+1/4*x^4*(a+b*arcsin(c*x^2))+1/8*b*x^2*(-c^2*x^4+1)
^(1/2)/c
```

Rubi [A]
time = 0.03, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}=0.357$, Rules used = {4926, 12, 281, 327, 222}

$$\frac{1}{4}x^4\left(a+b\text{ArcSin}\left(cx^2\right)\right)-\frac{b\text{ArcSin}(cx^2)}{8c^2}+\frac{bx^2\sqrt{1-c^2x^4}}{8c}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (b*x^2*Sqrt[1 - c^2*x^4])/(8*c) - (b*ArcSin[c*x^2])/(8*c^2) + (x^4*(a + b*A
rcSin[c*x^2]))/4
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 281

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k = GCD[m
+ 1, n]}, Dist[1/k, Subst[Int[x^((m + 1)/k - 1)*(a + b*x^(n/k))^p, x], x, x
^k], x] /; k != 1] /; FreeQ[{a, b, p}, x] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\begin{aligned}\int x^3\left(a+b\sin^{-1}\left(cx^2\right)\right)\,dx &= \frac{1}{4}x^4\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{4}b\int\frac{2cx^5}{\sqrt{1-c^2x^4}}\,dx\\ &= \frac{1}{4}x^4\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{2}(bc)\int\frac{x^5}{\sqrt{1-c^2x^4}}\,dx\\ &= \frac{1}{4}x^4\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{4}(bc)\text{Subst}\left(\int\frac{x^2}{\sqrt{1-c^2x^2}}\,dx,x,x^2\right)\\ &= \frac{bx^2\sqrt{1-c^2x^4}}{8c}+\frac{1}{4}x^4\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{b\text{Subst}\left(\int\frac{1}{\sqrt{1-c^2x^2}}\,dx,x,x^2\right)}{8c}\\ &= \frac{bx^2\sqrt{1-c^2x^4}}{8c}-\frac{b\sin^{-1}\left(cx^2\right)}{8c^2}+\frac{1}{4}x^4\left(a+b\sin^{-1}\left(cx^2\right)\right)\end{aligned}$$

Mathematica [A]
time = 0.02, size = 62, normalized size = 1.09

$$\frac{ax^4}{4}+\frac{bx^2\sqrt{1-c^2x^4}}{8c}-\frac{b\text{ArcSin}(cx^2)}{8c^2}+\frac{1}{4}bx^4\text{ArcSin}\left(cx^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(a + b*ArcSin[c*x^2]),x]
[Out] (a*x^4)/4 + (b*x^2*Sqrt[1 - c^2*x^4])/(8*c) - (b*ArcSin[c*x^2])/(8*c^2) + (
b*x^4*ArcSin[c*x^2])/4
```

Maple [A]
time = 0.01, size = 74, normalized size = 1.30

method	result	size

default	$\frac{x^4 a}{4}+\frac{b\,x^4\arcsin(c\,x^2)}{4}+\frac{b\,x^2\sqrt{-c^2x^4+1}}{8c}-\frac{b\arctan\left(\frac{\sqrt{c^2}\,x^2}{\sqrt{-c^2x^4+1}}\right)}{8c\sqrt{c^2}}$	74

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*arcsin(c*x^2)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/4*x^4*a+1/4*b*x^4*arcsin(c*x^2)+1/8*b*x^2*(-c^2*x^4+1)^(1/2)/c-1/8*b/c/(c
^2)^(1/2)*arctan((c^2)^(1/2)*x^2/(-c^2*x^4+1)^(1/2))
```

Maxima [A]
time = 0.47, size = 88, normalized size = 1.54

$$\frac{1}{4}\,ax^4+\frac{1}{8}\left(2\,x^4\arcsin\left(cx^2\right)+c\left(\frac{\arctan\left(\frac{\sqrt{-c^2x^4+1}}{cx^2}\right)}{c^3}+\frac{\sqrt{-c^2x^4+1}}{\left(c^4-\frac{(c^2x^4-1)c^2}{x^4}\right)x^2}\right)\right)b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x^2)),x, algorithm="maxima")
```

```
[Out] 1/4*a*x^4 + 1/8*(2*x^4*arcsin(c*x^2) + c*(arctan(sqrt(-c^2*x^4 + 1)/(c*x^2)
)/c^3 + sqrt(-c^2*x^4 + 1)/((c^4 - (c^2*x^4 - 1)*c^2/x^4)*x^2)))*b
```

Fricas [A]
time = 2.42, size = 53, normalized size = 0.93

$$\frac{2\,ac^2x^4+\sqrt{-c^2x^4+1}\,bcx^2+\left(2\,bc^2x^4-b\right)\arcsin\left(cx^2\right)}{8\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x^2)),x, algorithm="fricas")
```

```
[Out] 1/8*(2*a*c^2*x^4 + sqrt(-c^2*x^4 + 1)*b*c*x^2 + (2*b*c^2*x^4 - b)*arcsin(c*
x^2))/c^2
```

Sympy [A]
time = 0.19, size = 60, normalized size = 1.05

$$\begin{cases}\frac{ax^4}{4}+\frac{bx^4\operatorname{asin}\left(cx^2\right)}{4}+\frac{bx^2\sqrt{-c^2x^4+1}}{8c}-\frac{b\operatorname{asin}\left(cx^2\right)}{8c^2} & \text{for } c\neq 0\\ \frac{ax^4}{4} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*asin(c*x**2)),x)
```

```
[Out] Piecewise((a*x**4/4 + b*x**4*asin(c*x**2)/4 + b*x**2*sqrt(-c**2*x**4 + 1)/(
8*c) - b*asin(c*x**2)/(8*c**2), Ne(c, 0)), (a*x**4/4, True))
```

Giac [A]
time = 0.41, size = 59, normalized size = 1.04

$$\frac{2\,acx^4 + \frac{\left(\sqrt{-c^2x^4+1}\,cx^2+2\,(c^2x^4-1)\arcsin\left(cx^2\right)+\arcsin\left(cx^2\right)\right)b}{c}}{8\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x^2)),x, algorithm="giac")
```

```
[Out] 1/8*(2*a*c*x^4 + (sqrt(-c^2*x^4 + 1)*c*x^2 + 2*(c^2*x^4 - 1)*arcsin(c*x^2)
+ arcsin(c*x^2))*b/c)/c
```

Mupad [B]
time = 0.35, size = 50, normalized size = 0.88

$$\frac{a\,x^4}{4} + \frac{b\,\left(\frac{\mathrm{asin}\left(c\,x^2\right)\,\left(2\,c^2\,x^4-1\right)}{4} + \frac{c\,x^2\,\sqrt{1-c^2\,x^4}}{4}\right)}{2\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + b*asin(c*x^2)),x)
```

```
[Out] (a*x^4)/4 + (b*((asin(c*x^2)*(2*c^2*x^4 - 1))/4 + (c*x^2*(1 - c^2*x^4)^(1/2
))/4))/(2*c^2)
```

3.344 $\int x(a+b\text{ArcSin}(cx^2))\,dx$

Optimal. Leaf size=45

$$\frac{ax^2}{2}+\frac{b\sqrt{1-c^2x^4}}{2c}+\frac{1}{2}bx^2\text{ArcSin}(cx^2)$$

```
[Out] 1/2*a*x^2+1/2*b*x^2*arcsin(c*x^2)+1/2*b*(-c^2*x^4+1)^(1/2)/c
```

Rubi [A]
time = 0.03, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {6847, 4715, 267}

$$\frac{ax^2}{2}+\frac{1}{2}bx^2\text{ArcSin}(cx^2)+\frac{b\sqrt{1-c^2x^4}}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (a*x^2)/2 + (b*Sqrt[1 - c^2*x^4])/(2*c) + (b*x^2*ArcSin[c*x^2])/2
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 6847

```
Int[(u_)*(x_)^(m_.), x_Symbol] :> Dist[1/(m + 1), Subst[Int[SubstFor[x^(m +
 1), u, x], x], x, x^(m + 1)], x] /; FreeQ[m, x] && NeQ[m, -1] && FunctionO
fQ[x^(m + 1), u, x]
```

Rubi steps

$$\begin{aligned}\int x\left(a+b\sin^{-1}\left(cx^2\right)\right)\,dx &= \frac{1}{2}\text{Subst}\left(\int\left(a+b\sin^{-1}(cx)\right)\,dx,x,x^2\right)\\ &= \frac{ax^2}{2}+\frac{1}{2}b\text{Subst}\left(\int\sin^{-1}(cx)\,dx,x,x^2\right)\\ &= \frac{ax^2}{2}+\frac{1}{2}bx^2\sin^{-1}\left(cx^2\right)-\frac{1}{2}(bc)\text{Subst}\left(\int\frac{x}{\sqrt{1-c^2x^2}}\,dx,x,x^2\right)\\ &= \frac{ax^2}{2}+\frac{b\sqrt{1-c^2x^4}}{2c}+\frac{1}{2}bx^2\sin^{-1}\left(cx^2\right)\end{aligned}$$

Mathematica [A]
time = 0.01, size = 43, normalized size = 0.96

$$\frac{ax^2}{2}+\frac{1}{2}b\left(\frac{\sqrt{1-c^2x^4}}{c}+x^2\text{ArcSin}\left(cx^2\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*ArcSin[c*x^2]),x]
[Out] (a*x^2)/2 + (b*(Sqrt[1 - c^2*x^4]/c + x^2*ArcSin[c*x^2]))/2
```

Maple [A]
time = 0.07, size = 39, normalized size = 0.87

method	result	size
derivativedivides	$\frac{c\,x^2a+b\left(c\,x^2\arcsin\left(c\,x^2\right)+\sqrt{-c^2x^4+1}\right)}{2c}$	39
default	$\frac{c\,x^2a+b\left(c\,x^2\arcsin\left(c\,x^2\right)+\sqrt{-c^2x^4+1}\right)}{2c}$	39

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(c*x^2)),x,method=_RETURNVERBOSE)
[Out] 1/2/c*(c*x^2*a+b*(c*x^2*arcsin(c*x^2)+(-c^2*x^4+1)^(1/2)))
```

Maxima [A]
time = 0.47, size = 37, normalized size = 0.82

$$\frac{1}{2}\,ax^2+\frac{\left(cx^2\arcsin\left(cx^2\right)+\sqrt{-c^2x^4+1}\right)b}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x^2)),x, algorithm="maxima")
```

```
[Out] 1/2*a*x^2 + 1/2*(c*x^2*arcsin(c*x^2) + sqrt(-c^2*x^4 + 1))*b/c
```

Fricas [A]
time = 2.44, size = 38, normalized size = 0.84

$$\frac{bcx^2\arcsin\left(cx^2\right)+acx^2+\sqrt{-c^2x^4+1}\,b}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x^2)),x, algorithm="fricas")
```

```
[Out] 1/2*(b*c*x^2*arcsin(c*x^2) + a*c*x^2 + sqrt(-c^2*x^4 + 1)*b)/c
```

Sympy [A]
time = 0.09, size = 42, normalized size = 0.93

$$\begin{cases}\frac{ax^2}{2}+\frac{bx^2\operatorname{asin}\left(cx^2\right)}{2}+\frac{b\sqrt{-c^2x^4+1}}{2c} & \text{for } c\neq 0\\ \frac{ax^2}{2} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(c*x**2)),x)
```

```
[Out] Piecewise((a*x**2/2 + b*x**2*asin(c*x**2)/2 + b*sqrt(-c**2*x**4 + 1)/(2*c),
 Ne(c, 0)), (a*x**2/2, True))
```

Giac [A]
time = 0.41, size = 38, normalized size = 0.84

$$\frac{acx^2+\left(cx^2\arcsin\left(cx^2\right)+\sqrt{-c^2x^4+1}\right)b}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x^2)),x, algorithm="giac")
```

```
[Out] 1/2*(a*c*x^2 + (c*x^2*arcsin(c*x^2) + sqrt(-c^2*x^4 + 1))*b)/c
```

Mupad [B]
time = 0.37, size = 37, normalized size = 0.82

$$\frac{a\,x^2}{2}+\frac{b\,\sqrt{1-c^2\,x^4}}{2\,c}+\frac{b\,x^2\,\mathrm{asin}\left(c\,x^2\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c*x^2)),x)
```

```
[Out] (a*x^2)/2 + (b*(1 - c^2*x^4)^(1/2))/(2*c) + (b*x^2*asin(c*x^2))/2
```

3.345 $\int \frac{a+b\mathbf{ArcSin}(cx^2)}{x}\,dx$

Optimal. Leaf size=69

$$-\frac{1}{4}ib\text{ArcSin}(cx^2)^2+\frac{1}{2}b\text{ArcSin}(cx^2)\log\left(1-e^{2i\text{ArcSin}(cx^2)}\right)+a\log(x)-\frac{1}{4}ib\text{PolyLog}\left(2,e^{2i\text{ArcSin}(cx^2)}\right)$$

```
[Out] -1/4*I*b*arcsin(c*x^2)^2+1/2*b*arcsin(c*x^2)*ln(1-(I*c*x^2+(-c^2*x^4+1)^(1/
2))^2)+a*ln(x)-1/4*I*b*polylog(2,(I*c*x^2+(-c^2*x^4+1)^(1/2))^2)
```

Rubi [A]
time = 0.07, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.429$, Rules used = {6874, 4914, 3798, 2221, 2317, 2438}

$$a\log(x)-\frac{1}{4}ib\text{Li}_2\left(e^{2i\text{ArcSin}(cx^2)}\right)-\frac{1}{4}ib\text{ArcSin}(cx^2)^2+\frac{1}{2}b\text{ArcSin}(cx^2)\log\left(1-e^{2i\text{ArcSin}(cx^2)}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^2])/x,x]
```

```
[Out] (-1/4*I)*b*ArcSin[c*x^2]^2 + (b*ArcSin[c*x^2]*Log[1 - E^((2*I)*ArcSin[c*x^2
])])/2 + a*Log[x] - (I/4)*b*PolyLog[2, E^((2*I)*ArcSin[c*x^2])]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3798

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[I*((c + d*x)^(m + 1)/(d*(m + 1))), x] - Dist[2*I, Int[(c + d*x)^m
```

```
*E^(2*I*k*Pi)*(E^(2*I*(e + f*x))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x)))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4914

```
Int[ArcSin[(a_.)*(x_)^(p_)]^(n_.)/(x_), x_Symbol] :> Dist[1/p, Subst[Int[x^
n*Cot[x], x], x, ArcSin[a*x^p]], x] /; FreeQ[{a, p}, x] && IGtQ[n, 0]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$
\begin{aligned}
\int \frac{a+b\sin^{-1}(cx^2)}{x}\,dx &= \int \left(\frac{a}{x}+\frac{b\sin^{-1}(cx^2)}{x}\right) dx\\
&= a\log(x)+b\int \frac{\sin^{-1}(cx^2)}{x}\,dx\\
&= a\log(x)+\frac{1}{2}b\text{Subst}\left(\int x\cot(x)\,dx,x,\sin^{-1}(cx^2)\right)\\
&= -\frac{1}{4}ib\sin^{-1}(cx^2)^2+a\log(x)-(ib)\text{Subst}\left(\int \frac{e^{2ix}x}{1-e^{2ix}}\,dx,x,\sin^{-1}(cx^2)\right)\\
&= -\frac{1}{4}ib\sin^{-1}(cx^2)^2+\frac{1}{2}b\sin^{-1}(cx^2)\log\left(1-e^{2i\sin^{-1}(cx^2)}\right)+a\log(x)-\frac{1}{2}b\text{Subst}\Bigg(\int\\
&= -\frac{1}{4}ib\sin^{-1}(cx^2)^2+\frac{1}{2}b\sin^{-1}(cx^2)\log\left(1-e^{2i\sin^{-1}(cx^2)}\right)+a\log(x)+\frac{1}{4}(ib)\text{Subst}\Bigg(\\
&= -\frac{1}{4}ib\sin^{-1}(cx^2)^2+\frac{1}{2}b\sin^{-1}(cx^2)\log\left(1-e^{2i\sin^{-1}(cx^2)}\right)+a\log(x)-\frac{1}{4}ib\text{Li}_2\Big(e^{2i\sin}
\end{aligned}
$$

Mathematica [A]
time = 0.03, size = 64, normalized size = 0.93

$$a\log(x)+\frac{1}{2}b\left(\text{ArcSin}(cx^2)\log\left(1-e^{2i\text{ArcSin}(cx^2)}\right)-\frac{1}{2}i\left(\text{ArcSin}(cx^2)^2+\text{PolyLog}\left(2,e^{2i\text{ArcSin}(cx^2)}\right)\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^2])/x,x]
```

```
[Out] a*Log[x] + (b*(ArcSin[c*x^2]*Log[1 - E^((2*I)*ArcSin[c*x^2])] - (I/2)*(ArcS
in[c*x^2]^2 + PolyLog[2, E^((2*I)*ArcSin[c*x^2])])))/2
```

Maple [F]
time = 0.06, size = 0, normalized size = 0.00

$$\int \frac{a+b \arcsin \left(c \,x^{2}\right)}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^2))/x,x)
[Out] int((a+b*arcsin(c*x^2))/x,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x,x, algorithm="maxima")
[Out] b*integrate(arctan2(c*x^2, sqrt(c*x^2 + 1)*sqrt(-c*x^2 + 1))/x, x) + a*log(
x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x,x, algorithm="fricas")
[Out] integral((b*arcsin(c*x^2) + a)/x, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b \operatorname{asin}{\left(c x^{2} \right)}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**2))/x,x)
[Out] Integral((a + b*asin(c*x**2))/x, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x^2) + a)/x, x)
```

Mupad [B]
time = 0.43, size = 57, normalized size = 0.83

$$a\,\ln\left(x\right)-\frac{b\,\mathrm{asin}\left(c\,x^2\right)^2\,1{}\mathrm{i}}{4}-\frac{b\,\mathrm{polylog}\left(2,{\mathrm{e}}^{\mathrm{asin}\left(c\,x^2\right)\,2{}\mathrm{i}}\right)\,1{}\mathrm{i}}{4}+\frac{b\,\ln\left(1-{\mathrm{e}}^{\mathrm{asin}\left(c\,x^2\right)\,2{}\mathrm{i}}\right)\,\mathrm{asin}\left(c\,x^2\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x^2))/x,x)
```

```
[Out] a*log(x) - (b*asin(c*x^2)^2*1i)/4 - (b*polylog(2, exp(asin(c*x^2)*2i))*1i)/
4 + (b*log(1 - exp(asin(c*x^2)*2i))*asin(c*x^2))/2
```

3.346 $\int \frac{a+b\text{ArcSin}(cx^2)}{x^3} dx$

Optimal. Leaf size=39

$$-\frac{a+b\text{ArcSin}(cx^2)}{2x^2}-\frac{1}{2}bc\tanh^{-1}\left(\sqrt{1-c^2x^4}\right)$$

```
[Out] 1/2*(-a-b*arcsin(c*x^2))/x^2-1/2*b*c*arctanh((-c^2*x^4+1)^(1/2))
```

Rubi [A]
time = 0.03, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.357$, Rules used = {4926, 12, 272, 65, 214}

$$-\frac{a+b\text{ArcSin}(cx^2)}{2x^2}-\frac{1}{2}bc\tanh^{-1}\left(\sqrt{1-c^2x^4}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^2])/x^3,x]
```

```
[Out] -1/2*(a + b*ArcSin[c*x^2])/x^2 - (b*c*ArcTanh[Sqrt[1 - c^2*x^4]])/2
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}(cx^2)}{x^3}\,dx &= -\frac{a+b\sin^{-1}(cx^2)}{2x^2}+\frac{1}{2}b\int \frac{2c}{x\sqrt{1-c^2x^4}}\,dx\\
&= -\frac{a+b\sin^{-1}(cx^2)}{2x^2}+(bc)\int \frac{1}{x\sqrt{1-c^2x^4}}\,dx\\
&= -\frac{a+b\sin^{-1}(cx^2)}{2x^2}+\frac{1}{4}(bc)\text{Subst}\left(\int \frac{1}{x\sqrt{1-c^2x}}\,dx,x,x^4\right)\\
&= -\frac{a+b\sin^{-1}(cx^2)}{2x^2}-\frac{b\text{Subst}\left(\int \frac{1}{\frac{1}{c^2}-\frac{x^2}{c^2}}\,dx,x,\sqrt{1-c^2x^4}\right)}{2c}\\
&= -\frac{a+b\sin^{-1}(cx^2)}{2x^2}-\frac{1}{2}bc\tanh^{-1}\left(\sqrt{1-c^2x^4}\right)
\end{aligned}$$

Mathematica [A]
time = 0.01, size = 44, normalized size = 1.13

$$-\frac{a}{2x^2}-\frac{b\text{ArcSin}(cx^2)}{2x^2}-\frac{1}{2}bc\tanh^{-1}\left(\sqrt{1-c^2x^4}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^2])/x^3,x]
[Out] -1/2*a/x^2 - (b*ArcSin[c*x^2])/(2*x^2) - (b*c*ArcTanh[Sqrt[1 - c^2*x^4]])/2
```

Maple [A]
time = 0.01, size = 38, normalized size = 0.97

method	result	size
default	$-\frac{a}{2x^2}+b\left(-\frac{\arcsin(c\,x^2)}{2x^2}-\frac{c\,\mathrm{arctanh}\left(\frac{1}{\sqrt{-c^2x^4+1}}\right)}{2}\right)$	38

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^2))/x^3,x,method=_RETURNVERBOSE)
```

```
[Out] -1/2*a/x^2+b*(-1/2/x^2*arcsin(c*x^2)-1/2*c*arctanh(1/(-c^2*x^4+1)^(1/2)))
```

Maxima [A]
time = 0.47, size = 57, normalized size = 1.46

$$-\frac{1}{4}\left(c\left(\log\left(\sqrt{-c^2x^4+1}+1\right)-\log\left(\sqrt{-c^2x^4+1}-1\right)\right)+\frac{2\arcsin\left(cx^2\right)}{x^2}\right)b-\frac{a}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^3,x, algorithm="maxima")
```

```
[Out] -1/4*(c*(log(sqrt(-c^2*x^4 + 1) + 1) - log(sqrt(-c^2*x^4 + 1) - 1)) + 2*arc
sin(c*x^2)/x^2)*b - 1/2*a/x^2
```

Fricas [A]
time = 2.28, size = 61, normalized size = 1.56

$$-\frac{bcx^2\log\left(\sqrt{-c^2x^4+1}+1\right)-bcx^2\log\left(\sqrt{-c^2x^4+1}-1\right)+2\,b\arcsin\left(cx^2\right)+2\,a}{4\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^3,x, algorithm="fricas")
```

```
[Out] -1/4*(b*c*x^2*log(sqrt(-c^2*x^4 + 1) + 1) - b*c*x^2*log(sqrt(-c^2*x^4 + 1)
- 1) + 2*b*arcsin(c*x^2) + 2*a)/x^2
```

Sympy [A]
time = 1.10, size = 54, normalized size = 1.38

$$-\frac{a}{2x^2}+bc\left(\begin{cases}-\frac{\operatorname{acosh}\left(\frac{1}{cx^2}\right)}{2} & \text{for}\ \frac{1}{|c^2x^4|}>1\\ \frac{i\operatorname{asin}\left(\frac{1}{cx^2}\right)}{2} & \text{otherwise}\end{cases}\right)-\frac{b\operatorname{asin}\left(cx^2\right)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**2))/x**3,x)
```

```
[Out] -a/(2*x**2) + b*c*Piecewise((-acosh(1/(c*x**2))/2, 1/Abs(c**2*x**4) > 1), (
I*asin(1/(c*x**2))/2, True)) - b*asin(c*x**2)/(2*x**2)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 354 vs. 2(33) = 66.
time = 0.46, size = 354, normalized size = 9.08

$$-\frac{\frac{\sqrt{-c^2x^4+1}\,bc^3x^2\arcsin\left(cx^2\right)}{\left(\sqrt{-c^2x^4+1}+1\right)^2}+\frac{bc^3x^2\arcsin\left(cx^2\right)}{\left(\sqrt{-c^2x^4+1}+1\right)^2}+\frac{\sqrt{-c^2x^4+1}\,ac^3x^2}{\left(\sqrt{-c^2x^4+1}+1\right)^2}+\frac{ac^3x^2}{\left(\sqrt{-c^2x^4+1}+1\right)^2}-\frac{2\sqrt{-c^2x^4+1}\,bc^2\log\left(x^2|c|\right)}{\sqrt{-c^2x^4+1}+1}+\frac{2\sqrt{-c^2x^4+1}\,bc^2\log\left(\sqrt{-c^2x^4+1}+1\right)}{\sqrt{-c^2x^4+1}+1}-\frac{2\,bc^2\log\left(x^2|c|\right)}{\sqrt{-c^2x^4+1}+1}+\frac{2\,bc^2\log\left(\sqrt{-c^2x^4+1}+1\right)}{\sqrt{-c^2x^4+1}+1}+\frac{\sqrt{-c^2x^4+1}\,bc\arcsin\left(cx^2\right)}{x^2}+\frac{bc\arcsin\left(cx^2\right)}{x^2}+\frac{\sqrt{-c^2x^4+1}\,ac}{x^2}+\frac{ac}{x^2}}{4\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^3,x, algorithm="giac")
```

```
[Out] -1/4*(sqrt(-c^2*x^4 + 1)*b*c^3*x^2*arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1)^2
 + b*c^3*x^2*arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1)^2 + sqrt(-c^2*x^4 + 1)*
a*c^3*x^2/(sqrt(-c^2*x^4 + 1) + 1)^2 + a*c^3*x^2/(sqrt(-c^2*x^4 + 1) + 1)^2
 - 2*sqrt(-c^2*x^4 + 1)*b*c^2*log(x^2*abs(c))/(sqrt(-c^2*x^4 + 1) + 1) + 2*
sqrt(-c^2*x^4 + 1)*b*c^2*log(sqrt(-c^2*x^4 + 1) + 1)/(sqrt(-c^2*x^4 + 1) +
1) - 2*b*c^2*log(x^2*abs(c))/(sqrt(-c^2*x^4 + 1) + 1) + 2*b*c^2*log(sqrt(-c
^2*x^4 + 1) + 1)/(sqrt(-c^2*x^4 + 1) + 1) + sqrt(-c^2*x^4 + 1)*b*c*arcsin(c
*x^2)/x^2 + b*c*arcsin(c*x^2)/x^2 + sqrt(-c^2*x^4 + 1)*a*c/x^2 + a*c/x^2)/c
```

Mupad [B]
time = 0.32, size = 36, normalized size = 0.92

$$-\frac{a}{2\,x^2}-\frac{b\,c\,\mathrm{atanh}\left(\frac{1}{\sqrt{1-c^2\,x^4}}\right)}{2}-\frac{b\,\mathrm{asin}\left(c\,x^2\right)}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x^2))/x^3,x)
```

```
[Out] - a/(2*x^2) - (b*c*atanh(1/(1 - c^2*x^4)^(1/2)))/2 - (b*asin(c*x^2))/(2*x^2
)
```

3.347 $\int \frac{a+b\text{ArcSin}(cx^2)}{x^5}\,dx$

Optimal. Leaf size=41

$$-\frac{bc\sqrt{1-c^2x^4}}{4x^2}-\frac{a+b\text{ArcSin}(cx^2)}{4x^4}$$

```
[Out] 1/4*(-a-b*arcsin(c*x^2))/x^4-1/4*b*c*(-c^2*x^4+1)^(1/2)/x^2
```

Rubi [A]
time = 0.02, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.214$, Rules used = {4926, 12, 270}

$$-\frac{a+b\text{ArcSin}(cx^2)}{4x^4}-\frac{bc\sqrt{1-c^2x^4}}{4x^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^2])/x^5,x]
```

```
[Out] -1/4*(b*c*Sqrt[1 - c^2*x^4])/x^2 - (a + b*ArcSin[c*x^2])/(4*x^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c*
x)^(m + 1)*((a + b*x^n)^(p + 1)/(a*c*(m + 1))), x] /; FreeQ[{a, b, c, m, n,
 p}, x] && EqQ[(m + 1)/n + p + 1, 0] && NeQ[m, -1]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx^2)}{x^5}\,dx = -\frac{a+b\sin^{-1}(cx^2)}{4x^4}+\frac{1}{4}b\int \frac{2c}{x^3\sqrt{1-c^2x^4}}\,dx$$
$$= -\frac{a+b\sin^{-1}(cx^2)}{4x^4}+\frac{1}{2}(bc)\int \frac{1}{x^3\sqrt{1-c^2x^4}}\,dx$$
$$= -\frac{bc\sqrt{1-c^2x^4}}{4x^2}-\frac{a+b\sin^{-1}(cx^2)}{4x^4}$$

Mathematica [A]
time = 0.01, size = 46, normalized size = 1.12

$$-\frac{a}{4x^4}-\frac{bc\sqrt{1-c^2x^4}}{4x^2}-\frac{b\text{ArcSin}(cx^2)}{4x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^2])/x^5,x]
[Out] -1/4*a/x^4 - (b*c*Sqrt[1 - c^2*x^4])/(4*x^2) - (b*ArcSin[c*x^2])/(4*x^4)
```

Maple [A]
time = 0.02, size = 54, normalized size = 1.32

method	result	size
default	$-\frac{a}{4x^4}+b\left(-\frac{\arcsin(c\,x^2)}{4x^4}+\frac{c\,(c\,x^2-1)\,(c\,x^2+1)}{4x^2\sqrt{-c^2x^4+1}}\right)$	54

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^2))/x^5,x,method=_RETURNVERBOSE)
[Out] -1/4*a/x^4+b*(-1/4/x^4*arcsin(c*x^2)+1/4*c/x^2*(c*x^2-1)*(c*x^2+1)/(-c^2*x^
4+1)^(1/2))
```

Maxima [A]
time = 0.47, size = 38, normalized size = 0.93

$$-\frac{1}{4}\,b\left(\frac{\sqrt{-c^2x^4+1}\,c}{x^2}+\frac{\arcsin(cx^2)}{x^4}\right)-\frac{a}{4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^5,x, algorithm="maxima")
[Out] -1/4*b*(sqrt(-c^2*x^4 + 1)*c/x^2 + arcsin(c*x^2)/x^4) - 1/4*a/x^4
```

Fricas [A]
time = 2.71, size = 42, normalized size = 1.02

$$\frac{ax^4 - \sqrt{-c^2x^4 + 1}\, bcx^2 - b \arcsin(cx^2) - a}{4\, x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^5,x, algorithm="fricas")
[Out] 1/4*(a*x^4 - sqrt(-c^2*x^4 + 1)*b*c*x^2 - b*arcsin(c*x^2) - a)/x^4
```

Sympy [A]
time = 1.06, size = 70, normalized size = 1.71

$$-\frac{a}{4x^4} + \frac{bc\left(\begin{cases} -\frac{i\sqrt{c^2x^4 - 1}}{2x^2} & \text{for}\ |c^2x^4| > 1 \\ -\frac{\sqrt{-c^2x^4 + 1}}{2x^2} & \text{otherwise} \end{cases}\right)}{2} - \frac{b \operatorname{asin}(cx^2)}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**2))/x**5,x)
[Out] -a/(4*x**4) + b*c*Piecewise((-I*sqrt(c**2*x**4 - 1)/(2*x**2), Abs(c**2*x**4
) > 1), (-sqrt(-c**2*x**4 + 1)/(2*x**2), True))/2 - b*asin(c*x**2)/(4*x**4)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 176 vs. 2(35) = 70.
time = 0.42, size = 176, normalized size = 4.29

$$-\frac{\frac{bc^5x^4 \arcsin(cx^2)}{\left(\sqrt{-c^2x^4+1}+1\right)^2} + \frac{ac^5x^4}{\left(\sqrt{-c^2x^4+1}+1\right)^2} - \frac{2\,bc^4x^2}{\sqrt{-c^2x^4+1}+1} + 2\,bc^3 \arcsin(cx^2) + 2\,ac^3 + \frac{2\,bc^2\left(\sqrt{-c^2x^4+1}+1\right)}{x^2} + \frac{bc\left(\sqrt{-c^2x^4+1}+1\right)^2 \arcsin(cx^2)}{x^4} + \frac{ac\left(\sqrt{-c^2x^4+1}+1\right)^2}{x^4}}{16\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^5,x, algorithm="giac")
[Out] -1/16*(b*c^5*x^4*arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1)^2 + a*c^5*x^4/(sqrt
(-c^2*x^4 + 1) + 1)^2 - 2*b*c^4*x^2/(sqrt(-c^2*x^4 + 1) + 1) + 2*b*c^3*arcs
in(c*x^2) + 2*a*c^3 + 2*b*c^2*(sqrt(-c^2*x^4 + 1) + 1)/x^2 + b*c*(sqrt(-c^2
*x^4 + 1) + 1)^2*arcsin(c*x^2)/x^4 + a*c*(sqrt(-c^2*x^4 + 1) + 1)^2/x^4)/c
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{a + b \operatorname{asin}(c\, x^2)}{x^5}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x^2))/x^5,x)
[Out] int((a + b*asin(c*x^2))/x^5, x)
```

3.348 $\int \frac{a+b\mathbf{ArcSin}(cx^2)}{x^7}\,dx$

Optimal. Leaf size=64

$$-\frac{bc\sqrt{1-c^2x^4}}{12x^4}-\frac{a+b\text{ArcSin}(cx^2)}{6x^6}-\frac{1}{12}bc^3\tanh^{-1}\left(\sqrt{1-c^2x^4}\right)$$

```
[Out] 1/6*(-a-b*arcsin(c*x^2))/x^6-1/12*b*c^3*arctanh((-c^2*x^4+1)^(1/2))-1/12*b*
c*(-c^2*x^4+1)^(1/2)/x^4
```

Rubi [A]
time = 0.03, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {4926, 12, 272, 44, 65, 214}

$$-\frac{a+b\text{ArcSin}(cx^2)}{6x^6}-\frac{bc\sqrt{1-c^2x^4}}{12x^4}-\frac{1}{12}bc^3\tanh^{-1}\left(\sqrt{1-c^2x^4}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^2])/x^7,x]
```

```
[Out] -1/12*(b*c*Sqrt[1 - c^2*x^4])/x^4 - (a + b*ArcSin[c*x^2])/(6*x^6) - (b*c^3*
ArcTanh[Sqrt[1 - c^2*x^4]])/12
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] - Dist[d*((
m + n + 2)/((b*c - a*d)*(m + 1))), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, -1] &&  !Int
egerQ[n] && LtQ[n, 0]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}(cx^2)}{x^7}\,dx &= -\frac{a+b\sin^{-1}(cx^2)}{6x^6}+\frac{1}{6}b\int \frac{2c}{x^5\sqrt{1-c^2x^4}}\,dx\\
&= -\frac{a+b\sin^{-1}(cx^2)}{6x^6}+\frac{1}{3}(bc)\int \frac{1}{x^5\sqrt{1-c^2x^4}}\,dx\\
&= -\frac{a+b\sin^{-1}(cx^2)}{6x^6}+\frac{1}{12}(bc)\text{Subst}\left(\int \frac{1}{x^2\sqrt{1-c^2x}}\,dx,x,x^4\right)\\
&= -\frac{bc\sqrt{1-c^2x^4}}{12x^4}-\frac{a+b\sin^{-1}(cx^2)}{6x^6}+\frac{1}{24}\left(bc^3\right)\text{Subst}\left(\int \frac{1}{x\sqrt{1-c^2x}}\,dx,x,x^4\right)\\
&= -\frac{bc\sqrt{1-c^2x^4}}{12x^4}-\frac{a+b\sin^{-1}(cx^2)}{6x^6}-\frac{1}{12}(bc)\text{Subst}\left(\int \frac{1}{\frac{1}{c^2}-\frac{x^2}{c^2}}\,dx,x,\sqrt{1-c^2x^4}\right)\\
&= -\frac{bc\sqrt{1-c^2x^4}}{12x^4}-\frac{a+b\sin^{-1}(cx^2)}{6x^6}-\frac{1}{12}bc^3\tanh^{-1}\left(\sqrt{1-c^2x^4}\right)
\end{aligned}$$

Mathematica [A]
time = 0.02, size = 69, normalized size = 1.08

$$-\frac{a}{6x^6}-\frac{bc\sqrt{1-c^2x^4}}{12x^4}-\frac{b\text{ArcSin}(cx^2)}{6x^6}-\frac{1}{12}bc^3\tanh^{-1}\left(\sqrt{1-c^2x^4}\right)$$

Antiderivative was successfully verified.

[In] Integrate[(a + b*ArcSin[c*x^2])/x^7,x]

[Out] -1/6*a/x^6 - (b*c*Sqrt[1 - c^2*x^4])/(12*x^4) - (b*ArcSin[c*x^2])/(6*x^6) - (b*c^3*ArcTanh[Sqrt[1 - c^2*x^4]])/12

Maple [A]
time = 0.01, size = 61, normalized size = 0.95

method	result	size
default	$-\frac{a}{6x^6}+b\left(-\frac{\arcsin(c\,x^2)}{6x^6}+\frac{c\left(-\frac{\sqrt{-c^2x^4+1}}{4x^4}-\frac{c^2\,\mathrm{arctanh}\left(\frac{1}{\sqrt{-c^2x^4+1}}\right)}{4}\right)}{3}\right)$	61

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a+b*arcsin(c*x^2))/x^7,x,method=_RETURNVERBOSE)

[Out] -1/6*a/x^6+b*(-1/6/x^6*arcsin(c*x^2)+1/3*c*(-1/4/x^4*(-c^2*x^4+1)^(1/2)-1/4*c^2*arctanh(1/(-c^2*x^4+1)^(1/2))))

Maxima [A]
time = 0.47, size = 81, normalized size = 1.27

$$-\frac{1}{24}\left(\left(c^2\log\left(\sqrt{-c^2x^4+1}+1\right)-c^2\log\left(\sqrt{-c^2x^4+1}-1\right)+\frac{2\sqrt{-c^2x^4+1}}{x^4}\right)c+\frac{4\arcsin\left(cx^2\right)}{x^6}\right)b-\frac{a}{6\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*arcsin(c*x^2))/x^7,x, algorithm="maxima")

[Out] -1/24*((c^2*log(sqrt(-c^2*x^4 + 1) + 1) - c^2*log(sqrt(-c^2*x^4 + 1) - 1) + 2*sqrt(-c^2*x^4 + 1)/x^4)*c + 4*arcsin(c*x^2)/x^6)*b - 1/6*a/x^6

Fricas [A]
time = 3.18, size = 84, normalized size = 1.31

$$-\frac{bc^3x^6\log\left(\sqrt{-c^2x^4+1}+1\right)-bc^3x^6\log\left(\sqrt{-c^2x^4+1}-1\right)+2\sqrt{-c^2x^4+1}\,bcx^2+4\,b\arcsin\left(cx^2\right)+4\,a}{24\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*arcsin(c*x^2))/x^7,x, algorithm="fricas")

[Out] -1/24*(b*c^3*x^6*log(sqrt(-c^2*x^4 + 1) + 1) - b*c^3*x^6*log(sqrt(-c^2*x^4 + 1) - 1) + 2*sqrt(-c^2*x^4 + 1)*b*c*x^2 + 4*b*arcsin(c*x^2) + 4*a)/x^6

Sympy [A]
time = 2.25, size = 126, normalized size = 1.97

$$-\frac{a}{6x^6}+\frac{bc\left(\begin{cases}-\frac{c^2\operatorname{acosh}\left(\frac{1}{cx^2}\right)}{4}+\frac{c}{4x^2\sqrt{-1+\frac{1}{c^2x^4}}}-\frac{1}{4cx^6\sqrt{-1+\frac{1}{c^2x^4}}} & \text{for } \frac{1}{|c^2x^4|}>1\\ \frac{ic^2\operatorname{asin}\left(\frac{1}{cx^2}\right)}{4}-\frac{ic\sqrt{1-\frac{1}{c^2x^4}}}{4x^2} & \text{otherwise}\end{cases}\right)}{3}-\frac{b\operatorname{asin}\left(cx^2\right)}{6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**2))/x**7,x)
```

```
[Out] -a/(6*x**6) + b*c*Piecewise((-c**2*acosh(1/(c*x**2))/4 + c/(4*x**2*sqrt(-1
+ 1/(c**2*x**4))) - 1/(4*c*x**6*sqrt(-1 + 1/(c**2*x**4))), 1/Abs(c**2*x**4)
 > 1), (I*c**2*asin(1/(c*x**2))/4 - I*c*sqrt(1 - 1/(c**2*x**4))/(4*x**2), T
rue))/3 - b*asin(c*x**2)/(6*x**6)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 301 vs. 2(54) = 108.
time = 0.61, size = 301, normalized size = 4.70

$$-\frac{\frac{bc^7x^6\arcsin\left(cx^2\right)}{\left(\sqrt{-c^2x^4+1}+1\right)^3}+\frac{ac^7x^6}{\left(\sqrt{-c^2x^4+1}+1\right)^3}-\frac{bc^6x^4}{\left(\sqrt{-c^2x^4+1}+1\right)^2}+\frac{3bc^5x^2\arcsin\left(cx^2\right)}{\sqrt{-c^2x^4+1}+1}+\frac{3ac^5x^2}{\sqrt{-c^2x^4+1}+1}-4bc^4\log\left(x^2|c|\right)+4bc^4\log\left(\sqrt{-c^2x^4+1}+1\right)+\frac{3bc^3\left(\sqrt{-c^2x^4+1}+1\right)\arcsin\left(cx^2\right)}{x^2}+\frac{3ac^3\left(\sqrt{-c^2x^4+1}+1\right)}{x^2}+\frac{bc^2\left(\sqrt{-c^2x^4+1}+1\right)^2}{x^4}+\frac{bc\left(\sqrt{-c^2x^4+1}+1\right)^3\arcsin\left(cx^2\right)}{x^6}+\frac{ac\left(\sqrt{-c^2x^4+1}+1\right)^3}{x^6}}{48c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^7,x, algorithm="giac")
```

```
[Out] -1/48*(b*c^7*x^6*arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1)^3 + a*c^7*x^6/(sqrt
(-c^2*x^4 + 1) + 1)^3 - b*c^6*x^4/(sqrt(-c^2*x^4 + 1) + 1)^2 + 3*b*c^5*x^2*
arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1) + 3*a*c^5*x^2/(sqrt(-c^2*x^4 + 1) +
1) - 4*b*c^4*log(x^2*abs(c)) + 4*b*c^4*log(sqrt(-c^2*x^4 + 1) + 1) + 3*b*c^
3*(sqrt(-c^2*x^4 + 1) + 1)*arcsin(c*x^2)/x^2 + 3*a*c^3*(sqrt(-c^2*x^4 + 1)
+ 1)/x^2 + b*c^2*(sqrt(-c^2*x^4 + 1) + 1)^2/x^4 + b*c*(sqrt(-c^2*x^4 + 1) +
 1)^3*arcsin(c*x^2)/x^6 + a*c*(sqrt(-c^2*x^4 + 1) + 1)^3/x^6)/c
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{a+b\operatorname{asin}\left(c\,x^2\right)}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x^2))/x^7,x)
```

```
[Out] int((a + b*asin(c*x^2))/x^7, x)
```

3.349 $\int \frac{a+b\text{ArcSin}(cx^2)}{x^9}\,dx$

Optimal. Leaf size=66

$$-\frac{bc\sqrt{1-c^2x^4}}{24x^6}-\frac{bc^3\sqrt{1-c^2x^4}}{12x^2}-\frac{a+b\text{ArcSin}(cx^2)}{8x^8}$$

```
[Out] 1/8*(-a-b*arcsin(c*x^2))/x^8-1/24*b*c*(-c^2*x^4+1)^(1/2)/x^6-1/12*b*c^3*(-c
^2*x^4+1)^(1/2)/x^2
```

Rubi [A]
time = 0.02, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {4926, 12, 277, 270}

$$-\frac{a+b\text{ArcSin}(cx^2)}{8x^8}-\frac{bc\sqrt{1-c^2x^4}}{24x^6}-\frac{bc^3\sqrt{1-c^2x^4}}{12x^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^2])/x^9,x]
```

```
[Out] -1/24*(b*c*Sqrt[1 - c^2*x^4])/x^6 - (b*c^3*Sqrt[1 - c^2*x^4])/(12*x^2) - (a
 + b*ArcSin[c*x^2])/(8*x^8)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c*
x)^(m + 1)*((a + b*x^n)^(p + 1)/(a*c*(m + 1))), x] /; FreeQ[{a, b, c, m, n,
 p}, x] && EqQ[(m + 1)/n + p + 1, 0] && NeQ[m, -1]
```

Rule 277

```
Int[(x_)^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[x^(m + 1)*((
a + b*x^n)^(p + 1)/(a*(m + 1))), x] - Dist[b*((m + n*(p + 1) + 1)/(a*(m + 1
))), Int[x^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, m, n, p}, x] && IL
tQ[Simplify[(m + 1)/n + p + 1], 0] && NeQ[m, -1]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
```

```
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}(cx^2)}{x^9}\,dx &= -\frac{a+b\sin^{-1}(cx^2)}{8x^8}+\frac{1}{8}b\int \frac{2c}{x^7\sqrt{1-c^2x^4}}\,dx\\
&= -\frac{a+b\sin^{-1}(cx^2)}{8x^8}+\frac{1}{4}(bc)\int \frac{1}{x^7\sqrt{1-c^2x^4}}\,dx\\
&= -\frac{bc\sqrt{1-c^2x^4}}{24x^6}-\frac{a+b\sin^{-1}(cx^2)}{8x^8}+\frac{1}{6}\left(bc^3\right)\int \frac{1}{x^3\sqrt{1-c^2x^4}}\,dx\\
&= -\frac{bc\sqrt{1-c^2x^4}}{24x^6}-\frac{bc^3\sqrt{1-c^2x^4}}{12x^2}-\frac{a+b\sin^{-1}(cx^2)}{8x^8}
\end{aligned}$$

Mathematica [A]
time = 0.03, size = 60, normalized size = 0.91

$$-\frac{a}{8x^8}+\frac{1}{2}b\left(-\frac{c\sqrt{1-c^2x^4}\,(1+2c^2x^4)}{12x^6}-\frac{\text{ArcSin}(cx^2)}{4x^8}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^2])/x^9,x]
```

```
[Out] -1/8*a/x^8 + (b*(-1/12*(c*Sqrt[1 - c^2*x^4]*(1 + 2*c^2*x^4))/x^6 - ArcSin[c
*x^2]/(4*x^8)))/2
```

Maple [A]
time = 0.01, size = 64, normalized size = 0.97

method	result	size
default	$-\frac{a}{8x^8}+b\left(-\frac{\arcsin(c\,x^2)}{8x^8}+\frac{c(c\,x^2-1)\,(c\,x^2+1)\,(2c^2x^4+1)}{24x^6\sqrt{-c^2x^4+1}}\right)$	64

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^2))/x^9,x,method=_RETURNVERBOSE)
```

```
[Out] -1/8*a/x^8+b*(-1/8/x^8*arcsin(c*x^2)+1/24*c*(c*x^2-1)*(c*x^2+1)*(2*c^2*x^4+
1)/x^6/(-c^2*x^4+1)^(1/2))
```

Maxima [A]
time = 0.50, size = 61, normalized size = 0.92

$$-\frac{1}{24}\left(c\left(\frac{3\sqrt{-c^2x^4+1}\,c^2}{x^2}+\frac{\left(-c^2x^4+1\right)^{\frac{3}{2}}}{x^6}\right)+\frac{3\arcsin\left(cx^2\right)}{x^8}\right)b-\frac{a}{8\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^9,x, algorithm="maxima")
```

```
[Out] -1/24*(c*(3*sqrt(-c^2*x^4 + 1)*c^2/x^2 + (-c^2*x^4 + 1)^(3/2)/x^6) + 3*arcs
in(c*x^2)/x^8)*b - 1/8*a/x^8
```

Fricas [A]
time = 2.84, size = 54, normalized size = 0.82

$$\frac{3\,ax^8-3\,b\arcsin\left(cx^2\right)-\left(2\,bc^3x^6+bcx^2\right)\sqrt{-c^2x^4+1}-3\,a}{24\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^9,x, algorithm="fricas")
```

```
[Out] 1/24*(3*a*x^8 - 3*b*arcsin(c*x^2) - (2*b*c^3*x^6 + b*c*x^2)*sqrt(-c^2*x^4 +
 1) - 3*a)/x^8
```

Sympy [A]
time = 2.50, size = 112, normalized size = 1.70

$$-\frac{a}{8x^8}+\frac{bc\left(\begin{cases}-\frac{ic^2\sqrt{c^2x^4-1}}{3x^2}-\frac{i\sqrt{c^2x^4-1}}{6x^6} & \text{for}\ \left|c^2x^4\right|>1\\ -\frac{c^2\sqrt{-c^2x^4+1}}{3x^2}-\frac{\sqrt{-c^2x^4+1}}{6x^6} & \text{otherwise}\end{cases}\right)}{4}-\frac{b\operatorname{asin}\left(cx^2\right)}{8x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**2))/x**9,x)
```

```
[Out] -a/(8*x**8) + b*c*Piecewise((-I*c**2*sqrt(c**2*x**4 - 1)/(3*x**2) - I*sqrt(
c**2*x**4 - 1)/(6*x**6), Abs(c**2*x**4) > 1), (-c**2*sqrt(-c**2*x**4 + 1)/(
3*x**2) - sqrt(-c**2*x**4 + 1)/(6*x**6), True))/4 - b*asin(c*x**2)/(8*x**8)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 342 vs. 2(56) = 112.
time = 0.44, size = 342, normalized size = 5.18

$$-\frac{\frac{3\,bc^9x^8\arcsin\left(cx^2\right)}{\left(\sqrt{-c^2x^4+1}+1\right)^4}+\frac{3\,ac^9x^8}{\left(\sqrt{-c^2x^4+1}+1\right)^4}-\frac{2\,bc^8x^6}{\left(\sqrt{-c^2x^4+1}+1\right)^3}+\frac{12\,bc^7x^4\arcsin\left(cx^2\right)}{\left(\sqrt{-c^2x^4+1}+1\right)^2}+\frac{12\,ac^7x^4}{\left(\sqrt{-c^2x^4+1}+1\right)^2}-\frac{18\,bc^6x^2}{\sqrt{-c^2x^4+1}+1}+18\,bc^5\arcsin\left(cx^2\right)+18\,ac^5+\frac{18\,bc^4\left(\sqrt{-c^2x^4+1}+1\right)}{x^2}+\frac{12\,bc^3\left(\sqrt{-c^2x^4+1}+1\right)^2\arcsin\left(cx^2\right)}{x^4}+\frac{12\,ac^3\left(\sqrt{-c^2x^4+1}+1\right)^2}{x^4}+\frac{2\,bc^2\left(\sqrt{-c^2x^4+1}+1\right)^3}{x^6}+\frac{3\,bc\left(\sqrt{-c^2x^4+1}+1\right)^4\arcsin\left(cx^2\right)}{x^8}+\frac{3\,ac\left(\sqrt{-c^2x^4+1}+1\right)^4}{x^8}}{384\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^9,x, algorithm="giac")
```

```
[Out] -1/384*(3*b*c^9*x^8*arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1)^4 + 3*a*c^9*x^8/
(sqrt(-c^2*x^4 + 1) + 1)^4 - 2*b*c^8*x^6/(sqrt(-c^2*x^4 + 1) + 1)^3 + 12*b*
c^7*x^4*arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1)^2 + 12*a*c^7*x^4/(sqrt(-c^2*
x^4 + 1) + 1)^2 - 18*b*c^6*x^2/(sqrt(-c^2*x^4 + 1) + 1) + 18*b*c^5*arcsin(c
*x^2) + 18*a*c^5 + 18*b*c^4*(sqrt(-c^2*x^4 + 1) + 1)/x^2 + 12*b*c^3*(sqrt(-
c^2*x^4 + 1) + 1)^2*arcsin(c*x^2)/x^4 + 12*a*c^3*(sqrt(-c^2*x^4 + 1) + 1)^2
/x^4 + 2*b*c^2*(sqrt(-c^2*x^4 + 1) + 1)^3/x^6 + 3*b*c*(sqrt(-c^2*x^4 + 1) +
 1)^4*arcsin(c*x^2)/x^8 + 3*a*c*(sqrt(-c^2*x^4 + 1) + 1)^4/x^8)/c
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{a + b\,\mathrm{asin}(c\,x^2)}{x^9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x^2))/x^9,x)
```

```
[Out] int((a + b*asin(c*x^2))/x^9, x)
```

3.350 $\int \frac{a+b\textbf{ArcSin}(cx^2)}{x^{11}}\,dx$

Optimal. Leaf size=89

$$-\frac{bc\sqrt{1-c^2x^4}}{40x^8}-\frac{3bc^3\sqrt{1-c^2x^4}}{80x^4}-\frac{a+b\text{ArcSin}(cx^2)}{10x^{10}}-\frac{3}{80}bc^5\tanh^{-1}\left(\sqrt{1-c^2x^4}\right)$$

```
[Out] 1/10*(-a-b*arcsin(c*x^2))/x^10-3/80*b*c^5*arctanh((-c^2*x^4+1)^(1/2))-1/40*
b*c*(-c^2*x^4+1)^(1/2)/x^8-3/80*b*c^3*(-c^2*x^4+1)^(1/2)/x^4
```

Rubi [A]
time = 0.04, antiderivative size = 89, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.429$, Rules used = {4926, 12, 272, 44, 65, 214}

$$-\frac{a+b\text{ArcSin}(cx^2)}{10x^{10}}-\frac{bc\sqrt{1-c^2x^4}}{40x^8}-\frac{3}{80}bc^5\tanh^{-1}\left(\sqrt{1-c^2x^4}\right)-\frac{3bc^3\sqrt{1-c^2x^4}}{80x^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^2])/x^11,x]
```

```
[Out] -1/40*(b*c*Sqrt[1 - c^2*x^4])/x^8 - (3*b*c^3*Sqrt[1 - c^2*x^4])/(80*x^4) -
(a + b*ArcSin[c*x^2])/(10*x^10) - (3*b*c^5*ArcTanh[Sqrt[1 - c^2*x^4]])/80
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] - Dist[d*((
m + n + 2)/((b*c - a*d)*(m + 1))), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, -1] &&  !Int
egerQ[n] && LtQ[n, 0]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\sin^{-1}(cx^2)}{x^{11}}\,dx &= -\frac{a+b\sin^{-1}(cx^2)}{10x^{10}}+\frac{1}{10}b\int \frac{2c}{x^9\sqrt{1-c^2x^4}}\,dx\\ &= -\frac{a+b\sin^{-1}(cx^2)}{10x^{10}}+\frac{1}{5}(bc)\int \frac{1}{x^9\sqrt{1-c^2x^4}}\,dx\\ &= -\frac{a+b\sin^{-1}(cx^2)}{10x^{10}}+\frac{1}{20}(bc)\text{Subst}\left(\int \frac{1}{x^3\sqrt{1-c^2x}}\,dx,x,x^4\right)\\ &= -\frac{bc\sqrt{1-c^2x^4}}{40x^8}-\frac{a+b\sin^{-1}(cx^2)}{10x^{10}}+\frac{1}{80}\left(3bc^3\right)\text{Subst}\left(\int \frac{1}{x^2\sqrt{1-c^2x}}\,dx,x,x^4\right)\\ &= -\frac{bc\sqrt{1-c^2x^4}}{40x^8}-\frac{3bc^3\sqrt{1-c^2x^4}}{80x^4}-\frac{a+b\sin^{-1}(cx^2)}{10x^{10}}+\frac{1}{160}\left(3bc^5\right)\text{Subst}\left(\int \frac{}{x\sqrt{}}\right.\\ &= -\frac{bc\sqrt{1-c^2x^4}}{40x^8}-\frac{3bc^3\sqrt{1-c^2x^4}}{80x^4}-\frac{a+b\sin^{-1}(cx^2)}{10x^{10}}-\frac{1}{80}\left(3bc^3\right)\text{Subst}\left(\int \frac{1}{\frac{1}{c^2}-}\right.\\ &= -\frac{bc\sqrt{1-c^2x^4}}{40x^8}-\frac{3bc^3\sqrt{1-c^2x^4}}{80x^4}-\frac{a+b\sin^{-1}(cx^2)}{10x^{10}}-\frac{3}{80}bc^5\tanh^{-1}\left(\sqrt{1-c^2x}\right.\end{aligned}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 3 in optimal.
time = 0.02, size = 63, normalized size = 0.71

$$-\frac{a}{10x^{10}}-\frac{b\text{ArcSin}(cx^2)}{10x^{10}}-\frac{1}{10}bc^5\sqrt{1-c^2x^4}\ {}_2F_1\left(\frac{1}{2},3;\frac{3}{2};1-c^2x^4\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^2])/x^11,x]
```

```
[Out] -1/10*a/x^10 - (b*ArcSin[c*x^2])/(10*x^10) - (b*c^5*Sqrt[1 - c^2*x^4]*Hyper
geometric2F1[1/2, 3, 3/2, 1 - c^2*x^4])/10
```

Maple [A]
time = 0.02, size = 84, normalized size = 0.94

method	result	si
default	$-\frac{a}{10x^{10}}+b\left(-\frac{\arcsin(c\,x^{2})}{10x^{10}}+\frac{c\left(-\frac{\sqrt{-c^{2}x^{4}+1}}{8x^{8}}+\frac{3c^{2}\left(-\frac{\sqrt{-c^{2}x^{4}+1}}{2x^{4}}-\frac{c^{2}\,\mathrm{arctanh}\left(\frac{1}{\sqrt{-c^{2}x^{4}+1}}\right)}{2}\right)}{8}\right)}{5}\right)$	84

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^2))/x^11,x,method=_RETURNVERBOSE)
```

```
[Out] -1/10*a/x^10+b*(-1/10/x^10*arcsin(c*x^2)+1/5*c*(-1/8/x^8*(-c^2*x^4+1)^(1/2)
+3/8*c^2*(-1/2/x^4*(-c^2*x^4+1)^(1/2)-1/2*c^2*arctanh(1/(-c^2*x^4+1)^(1/2))
)))
```

Maxima [A]
time = 0.47, size = 125, normalized size = 1.40

$$-\frac{1}{160}\left(\left(3\,c^{4}\log\left(\sqrt{-c^{2}x^{4}+1}+1\right)-3\,c^{4}\log\left(\sqrt{-c^{2}x^{4}+1}-1\right)-\frac{2\left(3\left(-c^{2}x^{4}+1\right)^{\frac{3}{2}}c^{4}-5\sqrt{-c^{2}x^{4}+1}\,c^{4}\right)}{2\,c^{2}x^{4}+\left(c^{2}x^{4}-1\right)^{2}-1}\right)c+\frac{16\,\arcsin\left(cx^{2}\right)}{x^{10}}\right)b-\frac{a}{10\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^11,x, algorithm="maxima")
```

```
[Out] -1/160*((3*c^4*log(sqrt(-c^2*x^4 + 1) + 1) - 3*c^4*log(sqrt(-c^2*x^4 + 1) -
 1) - 2*(3*(-c^2*x^4 + 1)^(3/2)*c^4 - 5*sqrt(-c^2*x^4 + 1)*c^4)/(2*c^2*x^4
+ (c^2*x^4 - 1)^2 - 1))*c + 16*arcsin(c*x^2)/x^10)*b - 1/10*a/x^10
```

Fricas [A]
time = 3.51, size = 97, normalized size = 1.09

$$-\frac{3\,bc^5x^{10}\log\left(\sqrt{-c^2x^4+1}+1\right)-3\,bc^5x^{10}\log\left(\sqrt{-c^2x^4+1}-1\right)+16\,b\arcsin\left(cx^2\right)+2\left(3\,bc^3x^6+2\,bcx^2\right)\sqrt{-c^2x^4+1}+16\,a}{160\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^11,x, algorithm="fricas")
```

```
[Out] -1/160*(3*b*c^5*x^10*log(sqrt(-c^2*x^4 + 1) + 1) - 3*b*c^5*x^10*log(sqrt(-c
^2*x^4 + 1) - 1) + 16*b*arcsin(c*x^2) + 2*(3*b*c^3*x^6 + 2*b*c*x^2)*sqrt(-c
^2*x^4 + 1) + 16*a)/x^10
```

Sympy [A]
time = 5.89, size = 201, normalized size = 2.26

$$-\frac{a}{10x^{10}}+\frac{bc\left(\begin{cases}-\frac{3c^4\operatorname{acosh}\left(\frac{1}{cx^2}\right)}{16}+\frac{3c^3}{16x^2\sqrt{-1+\frac{1}{c^2x^4}}}-\frac{c}{16x^6\sqrt{-1+\frac{1}{c^2x^4}}}-\frac{1}{8cx^{10}\sqrt{-1+\frac{1}{c^2x^4}}} & \text{for}\ \frac{1}{|c^2x^4|}>1\\ \frac{3ic^4\operatorname{asin}\left(\frac{1}{cx^2}\right)}{16}-\frac{3ic^3}{16x^2\sqrt{1-\frac{1}{c^2x^4}}}+\frac{ic}{16x^6\sqrt{1-\frac{1}{c^2x^4}}}+\frac{i}{8cx^{10}\sqrt{1-\frac{1}{c^2x^4}}} & \text{otherwise}\end{cases}\right)}{5}-\frac{b\operatorname{asin}\left(cx^2\right)}{10x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**2))/x**11,x)
```

```
[Out] -a/(10*x**10) + b*c*Piecewise((-3*c**4*acosh(1/(c*x**2))/16 + 3*c**3/(16*x*
*2*sqrt(-1 + 1/(c**2*x**4))) - c/(16*x**6*sqrt(-1 + 1/(c**2*x**4))) - 1/(8*
c*x**10*sqrt(-1 + 1/(c**2*x**4))), 1/Abs(c**2*x**4) > 1), (3*I*c**4*asin(1/
(c*x**2))/16 - 3*I*c**3/(16*x**2*sqrt(1 - 1/(c**2*x**4))) + I*c/(16*x**6*sq
rt(1 - 1/(c**2*x**4))) + I/(8*c*x**10*sqrt(1 - 1/(c**2*x**4))), True))/5 -
b*asin(c*x**2)/(10*x**10)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 467 vs. 2(75) = 150.
time = 1.09, size = 467, normalized size = 5.25

$$-\frac{\frac{2\,bc^{11}x^{10}\arcsin\left(cx^2\right)}{\left(\sqrt{-c^2x^4+1}+1\right)^5}+\frac{2\,ac^{11}x^{10}}{\left(\sqrt{-c^2x^4+1}+1\right)^5}-\frac{bc^{10}x^8}{\left(\sqrt{-c^2x^4+1}+1\right)^4}+\frac{10\,bc^9x^6\arcsin\left(cx^2\right)}{\left(\sqrt{-c^2x^4+1}+1\right)^3}+\frac{10\,ac^9x^6}{\left(\sqrt{-c^2x^4+1}+1\right)^3}-\frac{8\,bc^8x^4}{\left(\sqrt{-c^2x^4+1}+1\right)^2}+\frac{20\,bc^7x^2\arcsin\left(cx^2\right)}{\sqrt{-c^2x^4+1}+1}+\frac{20\,ac^7x^2}{\sqrt{-c^2x^4+1}+1}-24\,bc^6\log\left(x^2|c|\right)+24\,bc^6\log\left(\sqrt{-c^2x^4+1}+1\right)+\frac{20\,bc^5\left(\sqrt{-c^2x^4+1}+1\right)\arcsin\left(cx^2\right)}{x^2}+\frac{20\,ac^5\left(\sqrt{-c^2x^4+1}+1\right)}{x^2}+\frac{8\,bc^4\left(\sqrt{-c^2x^4+1}+1\right)^2}{x^4}+\frac{10\,bc^3\left(\sqrt{-c^2x^4+1}+1\right)^3\arcsin\left(cx^2\right)}{x^6}+\frac{10\,ac^3\left(\sqrt{-c^2x^4+1}+1\right)^3}{x^6}+\frac{bc^2\left(\sqrt{-c^2x^4+1}+1\right)^4}{x^8}+\frac{2\,bc\left(\sqrt{-c^2x^4+1}+1\right)^5\arcsin\left(cx^2\right)}{x^{10}}+\frac{2\,ac\left(\sqrt{-c^2x^4+1}+1\right)^5}{x^{10}}}{640\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^11,x, algorithm="giac")
```

```
[Out] -1/640*(2*b*c^11*x^10*arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1)^5 + 2*a*c^11*x
^10/(sqrt(-c^2*x^4 + 1) + 1)^5 - b*c^10*x^8/(sqrt(-c^2*x^4 + 1) + 1)^4 + 10
*b*c^9*x^6*arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1)^3 + 10*a*c^9*x^6/(sqrt(-c
^2*x^4 + 1) + 1)^3 - 8*b*c^8*x^4/(sqrt(-c^2*x^4 + 1) + 1)^2 + 20*b*c^7*x^2*
arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1) + 20*a*c^7*x^2/(sqrt(-c^2*x^4 + 1) +
```

```
 1) - 24*b*c^6*log(x^2*abs(c)) + 24*b*c^6*log(sqrt(-c^2*x^4 + 1) + 1) + 20*
b*c^5*(sqrt(-c^2*x^4 + 1) + 1)*arcsin(c*x^2)/x^2 + 20*a*c^5*(sqrt(-c^2*x^4
+ 1) + 1)/x^2 + 8*b*c^4*(sqrt(-c^2*x^4 + 1) + 1)^2/x^4 + 10*b*c^3*(sqrt(-c^
2*x^4 + 1) + 1)^3*arcsin(c*x^2)/x^6 + 10*a*c^3*(sqrt(-c^2*x^4 + 1) + 1)^3/x
^6 + b*c^2*(sqrt(-c^2*x^4 + 1) + 1)^4/x^8 + 2*b*c*(sqrt(-c^2*x^4 + 1) + 1)^
5*arcsin(c*x^2)/x^10 + 2*a*c*(sqrt(-c^2*x^4 + 1) + 1)^5/x^10)/c
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\mathrm{asin}(c\,x^2)}{x^{11}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x^2))/x^11,x)
```

```
[Out] int((a + b*asin(c*x^2))/x^11, x)
```

3.351 $\int \frac{a+b\textbf{ArcSin}(cx^2)}{x^{13}}\,dx$

Optimal. Leaf size=91

$$-\frac{bc\sqrt{1-c^2x^4}}{60x^{10}}-\frac{bc^3\sqrt{1-c^2x^4}}{45x^6}-\frac{2bc^5\sqrt{1-c^2x^4}}{45x^2}-\frac{a+b\text{ArcSin}(cx^2)}{12x^{12}}$$

```
[Out] 1/12*(-a-b*arcsin(c*x^2))/x^12-1/60*b*c*(-c^2*x^4+1)^(1/2)/x^10-1/45*b*c^3*
(-c^2*x^4+1)^(1/2)/x^6-2/45*b*c^5*(-c^2*x^4+1)^(1/2)/x^2
```

Rubi [A]
time = 0.03, antiderivative size = 91, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {4926, 12, 277, 270}

$$-\frac{a+b\text{ArcSin}(cx^2)}{12x^{12}}-\frac{bc\sqrt{1-c^2x^4}}{60x^{10}}-\frac{2bc^5\sqrt{1-c^2x^4}}{45x^2}-\frac{bc^3\sqrt{1-c^2x^4}}{45x^6}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^2])/x^13,x]
```

```
[Out] -1/60*(b*c*Sqrt[1 - c^2*x^4])/x^10 - (b*c^3*Sqrt[1 - c^2*x^4])/(45*x^6) - (
2*b*c^5*Sqrt[1 - c^2*x^4])/(45*x^2) - (a + b*ArcSin[c*x^2])/(12*x^12)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c*
x)^(m + 1)*((a + b*x^n)^(p + 1)/(a*c*(m + 1))), x] /; FreeQ[{a, b, c, m, n,
 p}, x] && EqQ[(m + 1)/n + p + 1, 0] && NeQ[m, -1]
```

Rule 277

```
Int[(x_)^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[x^(m + 1)*((
a + b*x^n)^(p + 1)/(a*(m + 1))), x] - Dist[b*((m + n*(p + 1) + 1)/(a*(m + 1
))), Int[x^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, m, n, p}, x] && IL
tQ[Simplify[(m + 1)/n + p + 1], 0] && NeQ[m, -1]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
```

```
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}(cx^2)}{x^{13}}\,dx &= -\frac{a+b\sin^{-1}(cx^2)}{12x^{12}}+\frac{1}{12}b\int \frac{2c}{x^{11}\sqrt{1-c^2x^4}}\,dx\\
&= -\frac{a+b\sin^{-1}(cx^2)}{12x^{12}}+\frac{1}{6}(bc)\int \frac{1}{x^{11}\sqrt{1-c^2x^4}}\,dx\\
&= -\frac{bc\sqrt{1-c^2x^4}}{60x^{10}}-\frac{a+b\sin^{-1}(cx^2)}{12x^{12}}+\frac{1}{15}\left(2bc^3\right)\int \frac{1}{x^7\sqrt{1-c^2x^4}}\,dx\\
&= -\frac{bc\sqrt{1-c^2x^4}}{60x^{10}}-\frac{bc^3\sqrt{1-c^2x^4}}{45x^6}-\frac{a+b\sin^{-1}(cx^2)}{12x^{12}}+\frac{1}{45}\left(4bc^5\right)\int \frac{1}{x^3\sqrt{1-c^2x^4}}\\
&= -\frac{bc\sqrt{1-c^2x^4}}{60x^{10}}-\frac{bc^3\sqrt{1-c^2x^4}}{45x^6}-\frac{2bc^5\sqrt{1-c^2x^4}}{45x^2}-\frac{a+b\sin^{-1}(cx^2)}{12x^{12}}
\end{aligned}$$

Mathematica [A]
time = 0.03, size = 68, normalized size = 0.75

$$-\frac{a}{12x^{12}}+\frac{1}{2}b\left(-\frac{c\sqrt{1-c^2x^4}\,(3+4c^2x^4+8c^4x^8)}{90x^{10}}-\frac{\text{ArcSin}(cx^2)}{6x^{12}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^2])/x^13,x]
[Out] -1/12*a/x^12 + (b*(-1/90*(c*Sqrt[1 - c^2*x^4]*(3 + 4*c^2*x^4 + 8*c^4*x^8))/
x^10 - ArcSin[c*x^2]/(6*x^12)))/2
```

Maple [A]
time = 0.02, size = 72, normalized size = 0.79

method	result	size
default	$-\frac{a}{12x^{12}}+b\left(-\frac{\arcsin(c\,x^2)}{12x^{12}}+\frac{c(c\,x^2-1)\,(c\,x^2+1)\,(8c^4x^8+4c^2x^4+3)}{180x^{10}\sqrt{-c^2x^4+1}}\right)$	72

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^2))/x^13,x,method=_RETURNVERBOSE)
```

```
[Out] -1/12*a/x^12+b*(-1/12/x^12*arcsin(c*x^2)+1/180*c*(c*x^2-1)*(c*x^2+1)*(8*c^4
*x^8+4*c^2*x^4+3)/x^10/(-c^2*x^4+1)^(1/2))
```

Maxima [A]
time = 0.48, size = 82, normalized size = 0.90

$$-\frac{1}{180}\left(\left(\frac{15\sqrt{-c^2x^4+1}\,c^4}{x^2}+\frac{10\left(-c^2x^4+1\right)^{\frac{3}{2}}c^2}{x^6}+\frac{3\left(-c^2x^4+1\right)^{\frac{5}{2}}}{x^{10}}\right)c+\frac{15\arcsin\left(cx^2\right)}{x^{12}}\right)b-\frac{a}{12\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^13,x, algorithm="maxima")
```

```
[Out] -1/180*((15*sqrt(-c^2*x^4 + 1)*c^4/x^2 + 10*(-c^2*x^4 + 1)^(3/2)*c^2/x^6 +
3*(-c^2*x^4 + 1)^(5/2)/x^10)*c + 15*arcsin(c*x^2)/x^12)*b - 1/12*a/x^12
```

Fricas [A]
time = 3.70, size = 64, normalized size = 0.70

$$\frac{15\,ax^{12}-15\,b\arcsin\left(cx^2\right)-\left(8\,bc^5x^{10}+4\,bc^3x^6+3\,bcx^2\right)\sqrt{-c^2x^4+1}-15\,a}{180\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^13,x, algorithm="fricas")
```

```
[Out] 1/180*(15*a*x^12 - 15*b*arcsin(c*x^2) - (8*b*c^5*x^10 + 4*b*c^3*x^6 + 3*b*c
*x^2)*sqrt(-c^2*x^4 + 1) - 15*a)/x^12
```

Sympy [A]
time = 6.58, size = 170, normalized size = 1.87

$$-\frac{a}{12x^{12}}+\frac{bc\left(\begin{cases}-\frac{4c^5\sqrt{-1+\frac{1}{c^2x^4}}}{15}-\frac{2c^3\sqrt{-1+\frac{1}{c^2x^4}}}{15x^4}-\frac{c\sqrt{-1+\frac{1}{c^2x^4}}}{10x^8} & \text{for}\ \frac{1}{|c^2x^4|}>1\\ -\frac{4ic^5\sqrt{1-\frac{1}{c^2x^4}}}{15}-\frac{2ic^3\sqrt{1-\frac{1}{c^2x^4}}}{15x^4}-\frac{ic\sqrt{1-\frac{1}{c^2x^4}}}{10x^8} & \text{otherwise}\end{cases}\right)}{6}-\frac{b\,\mathrm{asin}\left(cx^2\right)}{12x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**2))/x**13,x)
```

```
[Out] -a/(12*x**12) + b*c*Piecewise((-4*c**5*sqrt(-1 + 1/(c**2*x**4))/15 - 2*c**3
*sqrt(-1 + 1/(c**2*x**4))/(15*x**4) - c*sqrt(-1 + 1/(c**2*x**4))/(10*x**8),
 1/Abs(c**2*x**4) > 1), (-4*I*c**5*sqrt(1 - 1/(c**2*x**4))/15 - 2*I*c**3*sq
rt(1 - 1/(c**2*x**4))/(15*x**4) - I*c*sqrt(1 - 1/(c**2*x**4))/(10*x**8), Tr
ue))/6 - b*asin(c*x**2)/(12*x**12)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 504 vs. 2(77) = 154.

time = 0.43, size = 504, normalized size = 5.54

$$-\frac{\frac{15\,bc^{13}x^{12}\arcsin\left(cx^{2}\right)}{\left(\sqrt{-c^{2}x^{4}+1}+1\right)^{6}}+\frac{15\,ac^{13}x^{12}}{\left(\sqrt{-c^{2}x^{4}+1}+1\right)^{6}}-\frac{6\,bc^{12}x^{10}}{\left(\sqrt{-c^{2}x^{4}+1}+1\right)^{5}}+\frac{90\,bc^{11}x^{8}\arcsin\left(cx^{2}\right)}{\left(\sqrt{-c^{2}x^{4}+1}+1\right)^{4}}+\frac{90\,ac^{11}x^{8}}{\left(\sqrt{-c^{2}x^{4}+1}+1\right)^{4}}-\frac{50\,bc^{10}x^{6}}{\left(\sqrt{-c^{2}x^{4}+1}+1\right)^{3}}+\frac{225\,bc^{9}x^{4}\arcsin\left(cx^{2}\right)}{\left(\sqrt{-c^{2}x^{4}+1}+1\right)^{2}}+\frac{225\,ac^{9}x^{4}}{\left(\sqrt{-c^{2}x^{4}+1}+1\right)^{2}}-\frac{300\,bc^{8}x^{2}}{\sqrt{-c^{2}x^{4}+1}+1}+300\,bc^{7}\arcsin\left(cx^{2}\right)+300\,ac^{7}+\frac{300\,bc^{6}\left(\sqrt{-c^{2}x^{4}+1}+1\right)}{x^{2}}+\frac{225\,bc^{5}\left(\sqrt{-c^{2}x^{4}+1}+1\right)^{2}\arcsin\left(cx^{2}\right)}{x^{4}}+\frac{225\,ac^{5}\left(\sqrt{-c^{2}x^{4}+1}+1\right)^{2}}{x^{4}}+\frac{50\,bc^{4}\left(\sqrt{-c^{2}x^{4}+1}+1\right)^{3}}{x^{6}}+\frac{90\,bc^{3}\left(\sqrt{-c^{2}x^{4}+1}+1\right)^{4}\arcsin\left(cx^{2}\right)}{x^{8}}+\frac{90\,ac^{3}\left(\sqrt{-c^{2}x^{4}+1}+1\right)^{4}}{x^{8}}+\frac{6\,bc^{2}\left(\sqrt{-c^{2}x^{4}+1}+1\right)^{5}}{x^{10}}+\frac{15\,bc\left(\sqrt{-c^{2}x^{4}+1}+1\right)^{6}\arcsin\left(cx^{2}\right)}{x^{12}}+\frac{15\,ac\left(\sqrt{-c^{2}x^{4}+1}+1\right)^{6}}{x^{12}}}{11520\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^13,x, algorithm="giac")
```

```
[Out] -1/11520*(15*b*c^13*x^12*arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1)^6 + 15*a*c^
13*x^12/(sqrt(-c^2*x^4 + 1) + 1)^6 - 6*b*c^12*x^10/(sqrt(-c^2*x^4 + 1) + 1)
^5 + 90*b*c^11*x^8*arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1)^4 + 90*a*c^11*x^8
/(sqrt(-c^2*x^4 + 1) + 1)^4 - 50*b*c^10*x^6/(sqrt(-c^2*x^4 + 1) + 1)^3 + 22
5*b*c^9*x^4*arcsin(c*x^2)/(sqrt(-c^2*x^4 + 1) + 1)^2 + 225*a*c^9*x^4/(sqrt(
-c^2*x^4 + 1) + 1)^2 - 300*b*c^8*x^2/(sqrt(-c^2*x^4 + 1) + 1) + 300*b*c^7*a
rcsin(c*x^2) + 300*a*c^7 + 300*b*c^6*(sqrt(-c^2*x^4 + 1) + 1)/x^2 + 225*b*c
^5*(sqrt(-c^2*x^4 + 1) + 1)^2*arcsin(c*x^2)/x^4 + 225*a*c^5*(sqrt(-c^2*x^4
+ 1) + 1)^2/x^4 + 50*b*c^4*(sqrt(-c^2*x^4 + 1) + 1)^3/x^6 + 90*b*c^3*(sqrt(
-c^2*x^4 + 1) + 1)^4*arcsin(c*x^2)/x^8 + 90*a*c^3*(sqrt(-c^2*x^4 + 1) + 1)^
4/x^8 + 6*b*c^2*(sqrt(-c^2*x^4 + 1) + 1)^5/x^10 + 15*b*c*(sqrt(-c^2*x^4 + 1
) + 1)^6*arcsin(c*x^2)/x^12 + 15*a*c*(sqrt(-c^2*x^4 + 1) + 1)^6/x^12)/c
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\mathrm{asin}\left(c\,x^2\right)}{x^{13}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x^2))/x^13,x)
```

```
[Out] int((a + b*asin(c*x^2))/x^13, x)
```

3.352 $\int x^6(a+b\text{ArcSin}(cx^2))\,dx$

Optimal. Leaf size=86

$$\frac{10bx\sqrt{1-c^2x^4}}{147c^3}+\frac{2bx^5\sqrt{1-c^2x^4}}{49c}+\frac{1}{7}x^7\left(a+b\text{ArcSin}\left(cx^2\right)\right)-\frac{10bF\left(\text{ArcSin}\left(\sqrt{c}\,x\right)\middle|-1\right)}{147c^{7/2}}$$

```
[Out] 1/7*x^7*(a+b*arcsin(c*x^2))-10/147*b*EllipticF(x*c^(1/2),I)/c^(7/2)+10/147*
b*x*(-c^2*x^4+1)^(1/2)/c^3+2/49*b*x^5*(-c^2*x^4+1)^(1/2)/c
```

Rubi [A]
time = 0.03, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}=0.286$, Rules used = {4926, 12, 327, 227}

$$\frac{1}{7}x^7\left(a+b\text{ArcSin}\left(cx^2\right)\right)-\frac{10bF\left(\text{ArcSin}\left(\sqrt{c}\,x\right)\middle|-1\right)}{147c^{7/2}}+\frac{2bx^5\sqrt{1-c^2x^4}}{49c}+\frac{10bx\sqrt{1-c^2x^4}}{147c^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^6*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (10*b*x*Sqrt[1 - c^2*x^4])/(147*c^3) + (2*b*x^5*Sqrt[1 - c^2*x^4])/(49*c) +
 (x^7*(a + b*ArcSin[c*x^2]))/7 - (10*b*EllipticF[ArcSin[Sqrt[c]*x], -1])/(1
47*c^(7/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 227

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[Rt[-b,
4]*(x/Rt[a, 4])], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
b/a] && GtQ[a, 0]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
```

```
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\begin{aligned}\int x^6\left(a+b\sin^{-1}\left(cx^2\right)\right)\,dx &= \frac{1}{7}x^7\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{7}b\int\frac{2cx^8}{\sqrt{1-c^2x^4}}\,dx\\
&= \frac{1}{7}x^7\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{7}(2bc)\int\frac{x^8}{\sqrt{1-c^2x^4}}\,dx\\
&= \frac{2bx^5\sqrt{1-c^2x^4}}{49c}+\frac{1}{7}x^7\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{(10b)\int\frac{x^4}{\sqrt{1-c^2x^4}}\,dx}{49c}\\
&= \frac{10bx\sqrt{1-c^2x^4}}{147c^3}+\frac{2bx^5\sqrt{1-c^2x^4}}{49c}+\frac{1}{7}x^7\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{(10b)\int\frac{1}{\sqrt{1-}}}{147c^3}\\
&= \frac{10bx\sqrt{1-c^2x^4}}{147c^3}+\frac{2bx^5\sqrt{1-c^2x^4}}{49c}+\frac{1}{7}x^7\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{10bF\left(\sin^{-1}\left(\right.\right.}{147c}\end{aligned}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.14, size = 82, normalized size = 0.95

$$\frac{1}{147}\left(21ax^7+\frac{2bx\sqrt{1-c^2x^4}\left(5+3c^2x^4\right)}{c^3}+21bx^7\text{ArcSin}\left(cx^2\right)-\frac{10ibF\left(i\sinh^{-1}\left(\sqrt{-c}\,x\right)\middle|-1\right)}{(-c)^{7/2}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^6*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (21*a*x^7 + (2*b*x*Sqrt[1 - c^2*x^4]*(5 + 3*c^2*x^4))/c^3 + 21*b*x^7*ArcSin
[c*x^2] - ((10*I)*b*EllipticF[I*ArcSinh[Sqrt[-c]*x], -1])/(-c)^(7/2))/147
```

Maple [A]
time = 0.01, size = 108, normalized size = 1.26

method	result
default	$\frac{x^7a}{7}+b\left(\frac{x^7\arcsin(c\,x^2)}{7}-\frac{2c\left(-\frac{x^5\sqrt{-c^2x^4+1}}{7c^2}-\frac{5x\sqrt{-c^2x^4+1}}{21c^4}+\frac{5\sqrt{-c\,x^2+1}\,\sqrt{c\,x^2+1}\,\text{EllipticF}\left(x\sqrt{c}\right.}{21c^{\frac{9}{2}}\sqrt{-c^2x^4+1}}\right.}{7}\right.$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^6*(a+b*arcsin(c*x^2)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/7*x^7*a+b*(1/7*x^7*arcsin(c*x^2)-2/7*c*(-1/7/c^2*x^5*(-c^2*x^4+1)^(1/2)-5
/21/c^4*x*(-c^2*x^4+1)^(1/2)+5/21/c^(9/2)*(-c*x^2+1)^(1/2)*(c*x^2+1)^(1/2)/
(-c^2*x^4+1)^(1/2)*EllipticF(x*c^(1/2),I)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(a+b*arcsin(c*x^2)),x, algorithm="maxima")
```

```
[Out] 1/7*a*x^7 + 1/7*(x^7*arctan2(c*x^2, sqrt(c*x^2 + 1)*sqrt(-c*x^2 + 1)) + 14*
c*integrate(1/7*x^8*e^(1/2*log(c*x^2 + 1) + 1/2*log(-c*x^2 + 1))/(c^4*x^8 -
 c^2*x^4 + (c^2*x^4 - 1)*e^(log(c*x^2 + 1) + log(-c*x^2 + 1))), x))*b
```

Fricas [A]
time = 0.81, size = 58, normalized size = 0.67

$$\frac{21\,bc^3x^7\arcsin\left(cx^2\right)+21\,ac^3x^7+2\left(3\,bc^2x^5+5\,bx\right)\sqrt{-c^2x^4+1}}{147\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(a+b*arcsin(c*x^2)),x, algorithm="fricas")
```

```
[Out] 1/147*(21*b*c^3*x^7*arcsin(c*x^2) + 21*a*c^3*x^7 + 2*(3*b*c^2*x^5 + 5*b*x)*
sqrt(-c^2*x^4 + 1))/c^3
```

Sympy [A]
time = 1.66, size = 58, normalized size = 0.67

$$\frac{ax^7}{7}-\frac{bcx^9\Gamma\left(\frac{9}{4}\right){}_2F_1\left(\begin{matrix}\frac{1}{2},\frac{9}{4}\\\frac{13}{4}\end{matrix}\middle|c^2x^4e^{2i\pi}\right)}{14\Gamma\left(\frac{13}{4}\right)}+\frac{bx^7\operatorname{asin}\left(cx^2\right)}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**6*(a+b*asin(c*x**2)),x)
```

```
[Out] a*x**7/7 - b*c*x**9*gamma(9/4)*hyper((1/2, 9/4), (13/4,), c**2*x**4*exp_pol
ar(2*I*pi))/(14*gamma(13/4)) + b*x**7*asin(c*x**2)/7
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(a+b*arcsin(c*x^2)),x, algorithm="giac")
[Out] integrate((b*arcsin(c*x^2) + a)*x^6, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int x^6\,\left(a+b\,\mathrm{asin}\left(c\,x^2\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^6*(a + b*asin(c*x^2)),x)
[Out] int(x^6*(a + b*asin(c*x^2)), x)
```

3.353 $\int x^4(a+b\mathbf{ArcSin}(cx^2))\,dx$

Optimal. Leaf size=83

$$\frac{2bx^3\sqrt{1-c^2x^4}}{25c}+\frac{1}{5}x^5\left(a+b\text{ArcSin}\left(cx^2\right)\right)-\frac{6bE\left(\text{ArcSin}\left(\sqrt{c}\,x\right)\middle|-1\right)}{25c^{5/2}}+\frac{6bF\left(\text{ArcSin}\left(\sqrt{c}\,x\right)\middle|-1\right)}{25c^{5/2}}$$

```
[Out] 1/5*x^5*(a+b*arcsin(c*x^2))-6/25*b*EllipticE(x*c^(1/2),I)/c^(5/2)+6/25*b*El
lipticF(x*c^(1/2),I)/c^(5/2)+2/25*b*x^3*(-c^2*x^4+1)^(1/2)/c
```

Rubi [A]
time = 0.04, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {4926, 12, 327, 313, 227, 1213, 435}

$$\frac{1}{5}x^5\left(a+b\text{ArcSin}\left(cx^2\right)\right)+\frac{6bF\left(\text{ArcSin}\left(\sqrt{c}\,x\right)\middle|-1\right)}{25c^{5/2}}-\frac{6bE\left(\text{ArcSin}\left(\sqrt{c}\,x\right)\middle|-1\right)}{25c^{5/2}}+\frac{2bx^3\sqrt{1-c^2x^4}}{25c}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (2*b*x^3*Sqrt[1 - c^2*x^4])/(25*c) + (x^5*(a + b*ArcSin[c*x^2]))/5 - (6*b*E
llipticE[ArcSin[Sqrt[c]*x], -1])/(25*c^(5/2)) + (6*b*EllipticF[ArcSin[Sqrt[
c]*x], -1])/(25*c^(5/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 227

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[Rt[-b,
4]*(x/Rt[a, 4])], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
b/a] && GtQ[a, 0]
```

Rule 313

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[-b/a, 2]},
Dist[-q^(-1), Int[1/Sqrt[a + b*x^4], x], x] + Dist[1/q, Int[(1 + q*x^2)/Sqr
t[a + b*x^4], x], x]] /; FreeQ[{a, b}, x] && NegQ[b/a]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
```

```
x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 435

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]/(Sqrt[c]*Rt[-d/c, 2]))*EllipticE[ArcSin[Rt[-d/c, 2]*x], b*(c/(a*d)
)], x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 1213

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> Dist[d/Sq
rt[a], Int[Sqrt[1 + e*(x^2/d)]/Sqrt[1 - e*(x^2/d)], x], x] /; FreeQ[{a, c,
d, e}, x] && NegQ[c/a] && EqQ[c*d^2 + a*e^2, 0] && GtQ[a, 0]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$
\begin{aligned}
\int x^4\left(a+b\sin^{-1}\left(cx^2\right)\right)\,dx &= \frac{1}{5}x^5\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{5}b\int\frac{2cx^6}{\sqrt{1-c^2x^4}}\,dx\\
&= \frac{1}{5}x^5\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{5}(2bc)\int\frac{x^6}{\sqrt{1-c^2x^4}}\,dx\\
&= \frac{2bx^3\sqrt{1-c^2x^4}}{25c}+\frac{1}{5}x^5\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{(6b)\int\frac{x^2}{\sqrt{1-c^2x^4}}\,dx}{25c}\\
&= \frac{2bx^3\sqrt{1-c^2x^4}}{25c}+\frac{1}{5}x^5\left(a+b\sin^{-1}\left(cx^2\right)\right)+\frac{(6b)\int\frac{1}{\sqrt{1-c^2x^4}}\,dx}{25c^2}-\frac{(6b)\int\frac{}{\sqrt{}}}{}\\
&= \frac{2bx^3\sqrt{1-c^2x^4}}{25c}+\frac{1}{5}x^5\left(a+b\sin^{-1}\left(cx^2\right)\right)+\frac{6bF\left(\sin^{-1}\left(\sqrt{c}\,x\right)\middle|-1\right)}{25c^{5/2}}-\frac{(6b)}{}\\
&= \frac{2bx^3\sqrt{1-c^2x^4}}{25c}+\frac{1}{5}x^5\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{6bE\left(\sin^{-1}\left(\sqrt{c}\,x\right)\middle|-1\right)}{25c^{5/2}}+\frac{6bF(}{}
\end{aligned}
$$

Mathematica [C] Result contains complex when optimal does not.

time = 0.16, size = 93, normalized size = 1.12

$$\frac{1}{25}\left(5ax^5+\frac{2bx^3\sqrt{1-c^2x^4}}{c}+5bx^5\text{ArcSin}(cx^2)+\frac{6ib\left(E\left(i\sinh^{-1}\left(\sqrt{-c}\,x\right)\middle|-1\right)-F\left(i\sinh^{-1}\left(\sqrt{-c}\,x\right)\middle|-1\right)\right)}{(-c)^{5/2}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (5*a*x^5 + (2*b*x^3*Sqrt[1 - c^2*x^4])/c + 5*b*x^5*ArcSin[c*x^2] + ((6*I)*b
*(EllipticE[I*ArcSinh[Sqrt[-c]*x], -1] - EllipticF[I*ArcSinh[Sqrt[-c]*x], -
1]))/(-c)^(5/2))/25
```

Maple [A]
time = 0.01, size = 101, normalized size = 1.22

method	result
default	$\frac{a x^5}{5}+b\left(\frac{x^5\arcsin(c x^2)}{5}-\frac{2c\left(-\frac{x^3\sqrt{-c^2x^4+1}}{5c^2}-\frac{3\sqrt{-c x^2+1}\,\sqrt{c x^2+1}\,\left(\text{EllipticF}\left(x\sqrt{c},i\right)-\text{EllipticE}\left(x\sqrt{c}\right.\right.}{5c^{\frac{7}{2}}\sqrt{-c^2x^4+1}}\right.}{5}\right.$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*arcsin(c*x^2)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/5*a*x^5+b*(1/5*x^5*arcsin(c*x^2)-2/5*c*(-1/5/c^2*x^3*(-c^2*x^4+1)^(1/2)-3
/5/c^(7/2)*(-c*x^2+1)^(1/2)*(c*x^2+1)^(1/2)/(-c^2*x^4+1)^(1/2)*(EllipticF(x
*c^(1/2),I)-EllipticE(x*c^(1/2),I))))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x^2)),x, algorithm="maxima")
```

```
[Out] 1/5*a*x^5 + 1/5*(x^5*arctan2(c*x^2, sqrt(c*x^2 + 1)*sqrt(-c*x^2 + 1)) + 10*
c*integrate(1/5*x^6*e^(1/2*log(c*x^2 + 1) + 1/2*log(-c*x^2 + 1))/(c^4*x^8 -
 c^2*x^4 + (c^2*x^4 - 1)*e^(log(c*x^2 + 1) + log(-c*x^2 + 1))), x))*b
```

Fricas [A]
time = 0.68, size = 59, normalized size = 0.71

$$\frac{5\,bc^3x^6\arcsin\left(cx^2\right)+5\,ac^3x^6+2\,\left(bc^2x^4+3\,b\right)\sqrt{-c^2x^4+1}}{25\,c^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x^2)),x, algorithm="fricas")
```

```
[Out] 1/25*(5*b*c^3*x^6*arcsin(c*x^2) + 5*a*c^3*x^6 + 2*(b*c^2*x^4 + 3*b)*sqrt(-c
^2*x^4 + 1))/(c^3*x)
```

Sympy [A]
time = 1.29, size = 58, normalized size = 0.70

$$\frac{ax^5}{5} - \frac{bcx^7\Gamma\left(\frac{7}{4}\right){}_2F_1\left(\begin{matrix}\frac{1}{2}, \frac{7}{4}\\ \frac{11}{4}\end{matrix}\middle| c^2x^4e^{2i\pi}\right)}{10\Gamma\left(\frac{11}{4}\right)} + \frac{bx^5 \operatorname{asin}\left(cx^2\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*asin(c*x**2)),x)
```

```
[Out] a*x**5/5 - b*c*x**7*gamma(7/4)*hyper((1/2, 7/4), (11/4,), c**2*x**4*exp_pol
ar(2*I*pi))/(10*gamma(11/4)) + b*x**5*asin(c*x**2)/5
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x^2)),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x^2) + a)*x^4, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int x^4\,\left(a+b\,\mathrm{asin}\left(c\,x^2\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a + b*asin(c*x^2)),x)
```

```
[Out] int(x^4*(a + b*asin(c*x^2)), x)
```

3.354 $\int x^2(a+b\text{ArcSin}(cx^2))\,dx$

Optimal. Leaf size=61

$$\frac{2bx\sqrt{1-c^2x^4}}{9c}+\frac{1}{3}x^3\left(a+b\text{ArcSin}\left(cx^2\right)\right)-\frac{2bF\left(\text{ArcSin}\left(\sqrt{c}\,x\right)\middle|-1\right)}{9c^{3/2}}$$

```
[Out] 1/3*x^3*(a+b*arcsin(c*x^2))-2/9*b*EllipticF(x*c^(1/2),I)/c^(3/2)+2/9*b*x*(-
c^2*x^4+1)^(1/2)/c
```

Rubi [A]
time = 0.02, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4926, 12, 327, 227}

$$\frac{1}{3}x^3\left(a+b\text{ArcSin}\left(cx^2\right)\right)-\frac{2bF\left(\text{ArcSin}\left(\sqrt{c}\,x\right)\middle|-1\right)}{9c^{3/2}}+\frac{2bx\sqrt{1-c^2x^4}}{9c}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (2*b*x*Sqrt[1 - c^2*x^4])/(9*c) + (x^3*(a + b*ArcSin[c*x^2]))/3 - (2*b*Elli
pticF[ArcSin[Sqrt[c]*x], -1])/(9*c^(3/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 227

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[Rt[-b,
4]*(x/Rt[a, 4])], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
b/a] && GtQ[a, 0]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
```

```
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\begin{aligned}\int x^2\left(a+b\sin^{-1}\left(cx^2\right)\right)\,dx &= \frac{1}{3}x^3\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{3}b\int\frac{2cx^4}{\sqrt{1-c^2x^4}}\,dx\\ &= \frac{1}{3}x^3\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{1}{3}(2bc)\int\frac{x^4}{\sqrt{1-c^2x^4}}\,dx\\ &= \frac{2bx\sqrt{1-c^2x^4}}{9c}+\frac{1}{3}x^3\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{(2b)\int\frac{1}{\sqrt{1-c^2x^4}}\,dx}{9c}\\ &= \frac{2bx\sqrt{1-c^2x^4}}{9c}+\frac{1}{3}x^3\left(a+b\sin^{-1}\left(cx^2\right)\right)-\frac{2bF\left(\sin^{-1}\left(\sqrt{c}\,x\right)\middle|-1\right)}{9c^{3/2}}\end{aligned}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.10, size = 72, normalized size = 1.18

$$\frac{1}{9}\left(3ax^3+\frac{2bx\sqrt{1-c^2x^4}}{c}+3bx^3\text{ArcSin}\left(cx^2\right)-\frac{2ibF\left(i\sinh^{-1}\left(\sqrt{-c}\,x\right)\middle|-1\right)}{(-c)^{3/2}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(a + b*ArcSin[c*x^2]),x]
```

```
[Out] (3*a*x^3 + (2*b*x*Sqrt[1 - c^2*x^4])/c + 3*b*x^3*ArcSin[c*x^2] - ((2*I)*b*E
llipticF[I*ArcSinh[Sqrt[-c]*x], -1])/(-c)^(3/2))/9
```

Maple [A]
time = 0.01, size = 88, normalized size = 1.44

method	result	size
default	$\frac{x^3 a}{3}+b\left(\frac{x^3\arcsin\left(c\,x^2\right)}{3}-\frac{2c\left(-\frac{x\sqrt{-c^2x^4+1}}{3c^2}+\frac{\sqrt{-c\,x^2+1}\,\sqrt{c\,x^2+1}\,\text{EllipticF}\left(x\sqrt{c},i\right)}{3c^{\frac{5}{2}}\sqrt{-c^2x^4+1}}\right)}{3}\right)$	88

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(c*x^2)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/3*x^3*a+b*(1/3*x^3*arcsin(c*x^2)-2/3*c*(-1/3/c^2*x*(-c^2*x^4+1)^(1/2)+1/3
/c^(5/2)*(-c*x^2+1)^(1/2)*(c*x^2+1)^(1/2)/(-c^2*x^4+1)^(1/2)*EllipticF(x*c^
(1/2),I)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x^2)),x, algorithm="maxima")
```

```
[Out] 1/3*a*x^3 + 1/3*(x^3*arctan2(c*x^2, sqrt(c*x^2 + 1)*sqrt(-c*x^2 + 1)) + 6*c
*integrate(1/3*x^4*e^(1/2*log(c*x^2 + 1) + 1/2*log(-c*x^2 + 1))/(c^4*x^8 -
c^2*x^4 + (c^2*x^4 - 1)*e^(log(c*x^2 + 1) + log(-c*x^2 + 1))), x))*b
```

Fricas [A]
time = 0.45, size = 42, normalized size = 0.69

$$\frac{3\,bcx^3\arcsin\left(cx^2\right)+3\,acx^3+2\,\sqrt{-c^2x^4+1}\,bx}{9\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x^2)),x, algorithm="fricas")
```

```
[Out] 1/9*(3*b*c*x^3*arcsin(c*x^2) + 3*a*c*x^3 + 2*sqrt(-c^2*x^4 + 1)*b*x)/c
```

Sympy [A]
time = 1.09, size = 58, normalized size = 0.95

$$\frac{ax^3}{3}-\frac{bcx^5\Gamma\left(\frac{5}{4}\right){}_2F_1\left(\begin{matrix}\frac{1}{2},\frac{5}{4}\\\frac{9}{4}\end{matrix}\middle|c^2x^4e^{2i\pi}\right)}{6\Gamma\left(\frac{9}{4}\right)}+\frac{bx^3\operatorname{asin}\left(cx^2\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(c*x**2)),x)
```

```
[Out] a*x**3/3 - b*c*x**5*gamma(5/4)*hyper((1/2, 5/4), (9/4,), c**2*x**4*exp_pola
r(2*I*pi))/(6*gamma(9/4)) + b*x**3*asin(c*x**2)/3
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x^2)),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x^2) + a)*x^2, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.02

$$\int x^2 \left(a + b\,\mathrm{asin}\left(c\,x^2\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c*x^2)),x)
```

```
[Out] int(x^2*(a + b*asin(c*x^2)), x)
```

3.355 $\int (a + b\textbf{ArcSin}(cx^2))\, dx$

Optimal. Leaf size=49

$$ax + bx\text{ArcSin}(cx^2) - \frac{2bE(\text{ArcSin}(\sqrt{c}\,x)|-1)}{\sqrt{c}} + \frac{2bF(\text{ArcSin}(\sqrt{c}\,x)|-1)}{\sqrt{c}}$$

```
[Out] a*x+b*x*arcsin(c*x^2)-2*b*EllipticE(x*c^(1/2),I)/c^(1/2)+2*b*EllipticF(x*c^
(1/2),I)/c^(1/2)
```

Rubi [A]
time = 0.03, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.600$, Rules used = {4924, 12, 313, 227, 1213, 435}

$$ax + bx\text{ArcSin}(cx^2) + \frac{2bF(\text{ArcSin}(\sqrt{c}\,x)|-1)}{\sqrt{c}} - \frac{2bE(\text{ArcSin}(\sqrt{c}\,x)|-1)}{\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In] Int[a + b*ArcSin[c*x^2],x]
```

```
[Out] a*x + b*x*ArcSin[c*x^2] - (2*b*EllipticE[ArcSin[Sqrt[c]*x], -1])/Sqrt[c] +
(2*b*EllipticF[ArcSin[Sqrt[c]*x], -1])/Sqrt[c]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 227

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[Rt[-b,
4]*(x/Rt[a, 4])], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
b/a] && GtQ[a, 0]
```

Rule 313

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[-b/a, 2]},
Dist[-q^(-1), Int[1/Sqrt[a + b*x^4], x], x] + Dist[1/q, Int[(1 + q*x^2)/Sqr
t[a + b*x^4], x], x]] /; FreeQ[{a, b}, x] && NegQ[b/a]
```

Rule 435

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]/(Sqrt[c]*Rt[-d/c, 2]))*EllipticE[ArcSin[Rt[-d/c, 2]*x], b*(c/(a*d)
)], x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 1213

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> Dist[d/Sq
rt[a], Int[Sqrt[1 + e*(x^2/d)]/Sqrt[1 - e*(x^2/d)], x], x] /; FreeQ[{a, c,
d, e}, x] && NegQ[c/a] && EqQ[c*d^2 + a*e^2, 0] && GtQ[a, 0]
```

Rule 4924

```
Int[ArcSin[u_], x_Symbol] :> Simp[x*ArcSin[u], x] - Int[SimplifyIntegrand[x
*(D[u, x]/Sqrt[1 - u^2]), x], x] /; InverseFunctionFreeQ[u, x] &&  !Functio
nOfExponentialQ[u, x]
```

Rubi steps

$$\begin{aligned}
\int \left(a+b\sin^{-1}\left(cx^2\right)\right)\,dx &= ax+b\int \sin^{-1}\left(cx^2\right)\,dx\\
&= ax+bx\sin^{-1}\left(cx^2\right)-b\int \frac{2cx^2}{\sqrt{1-c^2x^4}}\,dx\\
&= ax+bx\sin^{-1}\left(cx^2\right)-(2bc)\int \frac{x^2}{\sqrt{1-c^2x^4}}\,dx\\
&= ax+bx\sin^{-1}\left(cx^2\right)+(2b)\int \frac{1}{\sqrt{1-c^2x^4}}\,dx-(2b)\int \frac{1+cx^2}{\sqrt{1-c^2x^4}}\,dx\\
&= ax+bx\sin^{-1}\left(cx^2\right)+\frac{2bF\left(\sin^{-1}\left(\sqrt{c}\,x\right)\middle|-1\right)}{\sqrt{c}}-(2b)\int \frac{\sqrt{1+cx^2}}{\sqrt{1-cx^2}}\,dx\\
&= ax+bx\sin^{-1}\left(cx^2\right)-\frac{2bE\left(\sin^{-1}\left(\sqrt{c}\,x\right)\middle|-1\right)}{\sqrt{c}}+\frac{2bF\left(\sin^{-1}\left(\sqrt{c}\,x\right)\middle|-1\right)}{\sqrt{c}}
\end{aligned}$$

Mathematica [C] Result contains higher order function than in optimal. Order 5 vs. order 4 in optimal.
time = 10.01, size = 39, normalized size = 0.80

$$ax+bx\text{ArcSin}\left(cx^2\right)-\frac{2}{3}bcx^3\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};c^2x^4\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*ArcSin[c*x^2],x]
```

```
[Out] a*x + b*x*ArcSin[c*x^2] - (2*b*c*x^3*Hypergeometric2F1[1/2, 3/4, 7/4, c^2*x
^4])/3
```

Maple [A]
time = 0.02, size = 71, normalized size = 1.45

method	result	size
default	$ax+b\left(x\arcsin\left(c\,x^{2}\right)+\frac{2\sqrt{-c\,x^{2}+1}\,\sqrt{c\,x^{2}+1}\,\left(\mathrm{EllipticF}\left(x\sqrt{c},i\right)-\mathrm{EllipticE}\left(x\sqrt{c},i\right)\right)}{\sqrt{c}\,\sqrt{-c^{2}x^{4}+1}}\right)$	71

Verification of antiderivative is not currently implemented for this CAS.

[In] int(a+b*arcsin(c*x^2),x,method=_RETURNVERBOSE)

[Out] a*x+b*(x*arcsin(c*x^2)+2/c^(1/2)*(-c*x^2+1)^(1/2)*(c*x^2+1)^(1/2)/(-c^2*x^4 +1)^(1/2)*(EllipticF(x*c^(1/2),I)-EllipticE(x*c^(1/2),I)))

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(a+b*arcsin(c*x^2),x, algorithm="maxima")

[Out] (x*arctan2(c*x^2, sqrt(c*x^2 + 1)*sqrt(-c*x^2 + 1)) + 2*c*integrate(x^2*e^(1/2*log(c*x^2 + 1) + 1/2*log(-c*x^2 + 1))/(c^4*x^8 - c^2*x^4 + (c^2*x^4 - 1)*e^(log(c*x^2 + 1) + log(-c*x^2 + 1))), x))*b + a*x

Fricas [A]
time = 0.40, size = 41, normalized size = 0.84

$$\frac{bcx^{2}\arcsin\left(cx^{2}\right)+acx^{2}+2\sqrt{-c^{2}x^{4}+1}\,b}{cx}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(a+b*arcsin(c*x^2),x, algorithm="fricas")

[Out] (b*c*x^2*arcsin(c*x^2) + a*c*x^2 + 2*sqrt(-c^2*x^4 + 1)*b)/(c*x)

Sympy [A]
time = 0.61, size = 49, normalized size = 1.00

$$ax+b\left(-\frac{cx^{3}\Gamma\left(\frac{3}{4}\right){}_{2}F_{1}\left(\begin{matrix}\frac{1}{2},\frac{3}{4}\\\frac{7}{4}\end{matrix}\middle|c^{2}x^{4}e^{2i\pi}\right)}{2\Gamma\left(\frac{7}{4}\right)}+x\operatorname{asin}\left(cx^{2}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*asin(c*x**2),x)
```

```
[Out] a*x + b*(-c*x**3*gamma(3/4)*hyper((1/2, 3/4), (7/4,), c**2*x**4*exp_polar(2
*I*pi))/(2*gamma(7/4)) + x*asin(c*x**2))
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(c*x^2),x, algorithm="giac")
```

```
[Out] integrate(b*arcsin(c*x^2) + a, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.02

$$\int a + b\,\mathrm{asin}\left(c\,x^2\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a + b*asin(c*x^2),x)
```

```
[Out] int(a + b*asin(c*x^2), x)
```

3.356 $\int \frac{a+b\text{ArcSin}(cx^2)}{x^2}\,dx$

Optimal. Leaf size=34

$$-\frac{a+b\text{ArcSin}(cx^2)}{x}+2b\sqrt{c}\,F\left(\text{ArcSin}\left(\sqrt{c}\,x\right)\middle|-1\right)$$

```
[Out] (-a-b*arcsin(c*x^2))/x+2*b*EllipticF(x*c^(1/2),I)*c^(1/2)
```

Rubi [A]
time = 0.01, antiderivative size = 34, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}=0.214$, Rules used = {4926, 12, 227}

$$2b\sqrt{c}\,F\left(\text{ArcSin}\left(\sqrt{c}\,x\right)\middle|-1\right)-\frac{a+b\text{ArcSin}(cx^2)}{x}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^2])/x^2,x]
```

```
[Out] -((a + b*ArcSin[c*x^2])/x) + 2*b*Sqrt[c]*EllipticF[ArcSin[Sqrt[c]*x], -1]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 227

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[Rt[-b,
4]*(x/Rt[a, 4])], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
b/a] && GtQ[a, 0]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx^2)}{x^2}\,dx = -\frac{a+b\sin^{-1}(cx^2)}{x} + b\int \frac{2c}{\sqrt{1-c^2x^4}}\,dx$$
$$= -\frac{a+b\sin^{-1}(cx^2)}{x} + (2bc)\int \frac{1}{\sqrt{1-c^2x^4}}\,dx$$
$$= -\frac{a+b\sin^{-1}(cx^2)}{x} + 2b\sqrt{c}\,F\left(\sin^{-1}\left(\sqrt{c}\,x\right)\middle|-1\right)$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.05, size = 44, normalized size = 1.29

$$-\frac{a+b\text{ArcSin}(cx^2)-2ib\sqrt{-c}\,xF\left(i\sinh^{-1}\left(\sqrt{-c}\,x\right)\middle|-1\right)}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^2])/x^2,x]
[Out] -((a + b*ArcSin[c*x^2] - (2*I)*b*Sqrt[-c]*x*EllipticF[I*ArcSinh[Sqrt[-c]*x]
, -1])/x)
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 65 vs. 2(32) = 64.
time = 0.01, size = 66, normalized size = 1.94

method	result	size
default	$-\frac{a}{x}+b\left(-\frac{\arcsin(c\,x^2)}{x}+\frac{2\sqrt{c}\,\sqrt{-c\,x^2+1}\,\sqrt{c\,x^2+1}\,\text{EllipticF}\left(x\sqrt{c}\,,i\right)}{\sqrt{-c^2x^4+1}}\right)$	66

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^2))/x^2,x,method=_RETURNVERBOSE)
[Out] -a/x+b*(-1/x*arcsin(c*x^2)+2*c^(1/2)*(-c*x^2+1)^(1/2)*(c*x^2+1)^(1/2)/(-c^2
*x^4+1)^(1/2)*EllipticF(x*c^(1/2),I))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^2,x, algorithm="maxima")
```

```
[Out] -(2*c*x*integrate(e^(1/2*log(c*x^2 + 1) + 1/2*log(-c*x^2 + 1))/(c^4*x^8 - c
^2*x^4 + (c^2*x^4 - 1)*e^(log(c*x^2 + 1) + log(-c*x^2 + 1))), x) + arctan2(
c*x^2, sqrt(c*x^2 + 1)*sqrt(-c*x^2 + 1)))*b/x - a/x
```

Fricas [A]
time = 0.71, size = 45, normalized size = 1.32

$$\frac{bx\arctan\left(\frac{\sqrt{-c^2x^4+1}}{cx^2}\right)+(bx-b)\arcsin\left(cx^2\right)-a}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^2,x, algorithm="fricas")
[Out] (b*x*arctan(sqrt(-c^2*x^4 + 1)/(c*x^2)) + (b*x - b)*arcsin(c*x^2) - a)/x
```

Sympy [A]
time = 0.81, size = 49, normalized size = 1.44

$$-\frac{a}{x}+\frac{bcx\Gamma\left(\frac{1}{4}\right){}_2F_1\left(\begin{matrix}\frac{1}{4},\frac{1}{2}\\ \frac{5}{4}\end{matrix}\middle|c^2x^4e^{2i\pi}\right)}{2\Gamma\left(\frac{5}{4}\right)}-\frac{b\operatorname{asin}\left(cx^2\right)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**2))/x**2,x)
[Out] -a/x + b*c*x*gamma(1/4)*hyper((1/4, 1/2), (5/4,), c**2*x**4*exp_polar(2*I*p
i))/(2*gamma(5/4)) - b*asin(c*x**2)/x
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^2,x, algorithm="giac")
[Out] integrate((b*arcsin(c*x^2) + a)/x^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{a+b\operatorname{asin}(c\,x^2)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x^2))/x^2,x)
[Out] int((a + b*asin(c*x^2))/x^2, x)
```

3.357 $\int \frac{a+b\text{ArcSin}(cx^2)}{x^4}\,dx$

Optimal. Leaf size=81

$$-\frac{2bc\sqrt{1-c^2x^4}}{3x}-\frac{a+b\text{ArcSin}(cx^2)}{3x^3}-\frac{2}{3}bc^{3/2}E\left(\text{ArcSin}\left(\sqrt{c}\,x\right)\middle|-1\right)+\frac{2}{3}bc^{3/2}F\left(\text{ArcSin}\left(\sqrt{c}\,x\right)\middle|-1\right)$$

```
[Out] 1/3*(-a-b*arcsin(c*x^2))/x^3-2/3*b*c^(3/2)*EllipticE(x*c^(1/2),I)+2/3*b*c^(
3/2)*EllipticF(x*c^(1/2),I)-2/3*b*c*(-c^2*x^4+1)^(1/2)/x
```

Rubi [A]
time = 0.04, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {4926, 12, 331, 313, 227, 1213, 435}

$$-\frac{a+b\text{ArcSin}(cx^2)}{3x^3}+\frac{2}{3}bc^{3/2}F\left(\text{ArcSin}\left(\sqrt{c}\,x\right)\middle|-1\right)-\frac{2}{3}bc^{3/2}E\left(\text{ArcSin}\left(\sqrt{c}\,x\right)\middle|-1\right)-\frac{2bc\sqrt{1-c^2x^4}}{3x}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^2])/x^4,x]
```

```
[Out] (-2*b*c*Sqrt[1 - c^2*x^4])/(3*x) - (a + b*ArcSin[c*x^2])/(3*x^3) - (2*b*c^(
3/2)*EllipticE[ArcSin[Sqrt[c]*x], -1])/3 + (2*b*c^(3/2)*EllipticF[ArcSin[Sq
rt[c]*x], -1])/3
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 227

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[Rt[-b,
4]*(x/Rt[a, 4])], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
b/a] && GtQ[a, 0]
```

Rule 313

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[-b/a, 2]},
Dist[-q^(-1), Int[1/Sqrt[a + b*x^4], x], x] + Dist[1/q, Int[(1 + q*x^2)/Sqr
t[a + b*x^4], x], x]] /; FreeQ[{a, b}, x] && NegQ[b/a]
```

Rule 331

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c*x
)^(m + 1)*((a + b*x^n)^(p + 1)/(a*c*(m + 1))), x] - Dist[b*((m + n*(p + 1)
+ 1)/(a*c^n*(m + 1))), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
```

```
b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
x]
```

Rule 435

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]/(Sqrt[c]*Rt[-d/c, 2]))*EllipticE[ArcSin[Rt[-d/c, 2]*x], b*(c/(a*d)
)], x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 1213

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> Dist[d/Sq
rt[a], Int[Sqrt[1 + e*(x^2/d)]/Sqrt[1 - e*(x^2/d)], x], x] /; FreeQ[{a, c,
d, e}, x] && NegQ[c/a] && EqQ[c*d^2 + a*e^2, 0] && GtQ[a, 0]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}(cx^2)}{x^4}\,dx &= -\frac{a+b\sin^{-1}(cx^2)}{3x^3}+\frac{1}{3}b\int \frac{2c}{x^2\sqrt{1-c^2x^4}}\,dx \\
&= -\frac{a+b\sin^{-1}(cx^2)}{3x^3}+\frac{1}{3}(2bc)\int \frac{1}{x^2\sqrt{1-c^2x^4}}\,dx \\
&= -\frac{2bc\sqrt{1-c^2x^4}}{3x}-\frac{a+b\sin^{-1}(cx^2)}{3x^3}-\frac{1}{3}\left(2bc^3\right)\int \frac{x^2}{\sqrt{1-c^2x^4}}\,dx \\
&= -\frac{2bc\sqrt{1-c^2x^4}}{3x}-\frac{a+b\sin^{-1}(cx^2)}{3x^3}+\frac{1}{3}\left(2bc^2\right)\int \frac{1}{\sqrt{1-c^2x^4}}\,dx-\frac{1}{3}\left(2bc^2\right)\int \frac{}{\sqrt{}} \\
&= -\frac{2bc\sqrt{1-c^2x^4}}{3x}-\frac{a+b\sin^{-1}(cx^2)}{3x^3}+\frac{2}{3}bc^{3/2}F\left(\sin^{-1}\left(\sqrt{c}\,x\right)\middle|-1\right)-\frac{1}{3}\left(2bc^2\right)\int \\
&= -\frac{2bc\sqrt{1-c^2x^4}}{3x}-\frac{a+b\sin^{-1}(cx^2)}{3x^3}-\frac{2}{3}bc^{3/2}E\left(\sin^{-1}\left(\sqrt{c}\,x\right)\middle|-1\right)+\frac{2}{3}bc^{3/2}F(\mathrm{s}
\end{aligned}$$

Mathematica [C] Result contains complex when optimal does not.

time = 0.13, size = 89, normalized size = 1.10

$$-\frac{a+2bcx^2\sqrt{1-c^2x^4}+b\text{ArcSin}(cx^2)+2ib\sqrt{-c}\,cx^3\left(E\left(i\sinh^{-1}\left(\sqrt{-c}\,x\right)\middle|-1\right)-F\left(i\sinh^{-1}\left(\sqrt{-c}\,x\right)\middle|-1\right)\right)}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^2])/x^4,x]
```

```
[Out] -1/3*(a + 2*b*c*x^2*Sqrt[1 - c^2*x^4] + b*ArcSin[c*x^2] + (2*I)*b*Sqrt[-c]*
c*x^3*(EllipticE[I*ArcSinh[Sqrt[-c]*x], -1] - EllipticF[I*ArcSinh[Sqrt[-c]*
x], -1]))/x^3
```

Maple [A]
time = 0.01, size = 97, normalized size = 1.20

method	result
default	$-\frac{a}{3x^3}+b\left(-\frac{\arcsin(c\,x^2)}{3x^3}+\frac{2c\left(-\frac{\sqrt{-c^2x^4+1}}{x}+\frac{\sqrt{c}\,\sqrt{-c\,x^2+1}\,\sqrt{c\,x^2+1}\,\left(\text{EllipticF}\left(x\sqrt{c}\,,i\right)-\text{EllipticE}\left(x\sqrt{\right.\right.}{\sqrt{-c^2x^4+1}}\right)}{3}\right.$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^2))/x^4,x,method=_RETURNVERBOSE)
```

```
[Out] -1/3*a/x^3+b*(-1/3/x^3*arcsin(c*x^2)+2/3*c*(-(-c^2*x^4+1)^(1/2)/x+c^(1/2)*(
-c*x^2+1)^(1/2)*(c*x^2+1)^(1/2)/(-c^2*x^4+1)^(1/2)*(EllipticF(x*c^(1/2),I)-
EllipticE(x*c^(1/2),I))))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^4,x, algorithm="maxima")
```

```
[Out] -1/3*(6*c*x^3*integrate(1/3*e^(1/2*log(c*x^2 + 1) + 1/2*log(-c*x^2 + 1))/(c
^4*x^10 - c^2*x^6 + (c^2*x^6 - x^2)*e^(log(c*x^2 + 1) + log(-c*x^2 + 1))),
x) + arctan2(c*x^2, sqrt(c*x^2 + 1)*sqrt(-c*x^2 + 1)))*b/x^3 - 1/3*a/x^3
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^4,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(c*x^2) + a)/x^4, x)
```

Sympy [A]
time = 1.03, size = 60, normalized size = 0.74

$$-\frac{a}{3x^3} + \frac{bc\Gamma\left(-\frac{1}{4}\right) {}_2F_1\left(\begin{matrix} -\frac{1}{4}, \frac{1}{2} \\ \frac{3}{4} \end{matrix}\middle| c^2x^4e^{2i\pi}\right)}{6x\Gamma\left(\frac{3}{4}\right)} - \frac{b\,\text{asin}\,(cx^2)}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**2))/x**4,x)
```

```
[Out] -a/(3*x**3) + b*c*gamma(-1/4)*hyper((-1/4, 1/2), (3/4,), c**2*x**4*exp_pola
r(2*I*pi))/(6*x*gamma(3/4)) - b*asin(c*x**2)/(3*x**3)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^4,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x^2) + a)/x^4, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a + b\,\text{asin}(c\,x^2)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x^2))/x^4,x)
```

```
[Out] int((a + b*asin(c*x^2))/x^4, x)
```

3.358 $\int \frac{a+b\text{ArcSin}(cx^2)}{x^6}\,dx$

Optimal. Leaf size=61

$$-\frac{2bc\sqrt{1-c^2x^4}}{15x^3}-\frac{a+b\text{ArcSin}(cx^2)}{5x^5}+\frac{2}{15}bc^{5/2}F\left(\text{ArcSin}\left(\sqrt{c}\,x\right)\middle|-1\right)$$

```
[Out] 1/5*(-a-b*arcsin(c*x^2))/x^5+2/15*b*c^(5/2)*EllipticF(x*c^(1/2),I)-2/15*b*c
*(-c^2*x^4+1)^(1/2)/x^3
```

Rubi [A]
time = 0.02, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4926, 12, 331, 227}

$$-\frac{a+b\text{ArcSin}(cx^2)}{5x^5}+\frac{2}{15}bc^{5/2}F\left(\text{ArcSin}\left(\sqrt{c}\,x\right)\middle|-1\right)-\frac{2bc\sqrt{1-c^2x^4}}{15x^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^2])/x^6,x]
```

```
[Out] (-2*b*c*Sqrt[1 - c^2*x^4])/(15*x^3) - (a + b*ArcSin[c*x^2])/(5*x^5) + (2*b*
c^(5/2)*EllipticF[ArcSin[Sqrt[c]*x], -1])/15
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 227

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[Rt[-b,
4]*(x/Rt[a, 4])], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
b/a] && GtQ[a, 0]
```

Rule 331

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c*x
)^(m + 1)*((a + b*x^n)^(p + 1)/(a*c*(m + 1))), x] - Dist[b*((m + n*(p + 1)
+ 1)/(a*c^n*(m + 1))), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
```

```
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] && !FunctionOfQ[(c + d*x)^(m + 1), u, x] && !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\sin^{-1}\left(cx^2\right)}{x^6}\,dx &= -\frac{a+b\sin^{-1}\left(cx^2\right)}{5x^5}+\frac{1}{5}b\int \frac{2c}{x^4\sqrt{1-c^2x^4}}\,dx\\ &= -\frac{a+b\sin^{-1}\left(cx^2\right)}{5x^5}+\frac{1}{5}(2bc)\int \frac{1}{x^4\sqrt{1-c^2x^4}}\,dx\\ &= -\frac{2bc\sqrt{1-c^2x^4}}{15x^3}-\frac{a+b\sin^{-1}\left(cx^2\right)}{5x^5}+\frac{1}{15}\left(2bc^3\right)\int \frac{1}{\sqrt{1-c^2x^4}}\,dx\\ &= -\frac{2bc\sqrt{1-c^2x^4}}{15x^3}-\frac{a+b\sin^{-1}\left(cx^2\right)}{5x^5}+\frac{2}{15}bc^{5/2}F\left(\sin^{-1}\left(\sqrt{c}\,x\right)\middle|-1\right)\end{aligned}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.10, size = 72, normalized size = 1.18

$$-\frac{3a+2bcx^2\sqrt{1-c^2x^4}+3b\text{ArcSin}(cx^2)-2ib(-c)^{5/2}x^5F\left(i\sinh^{-1}\left(\sqrt{-c}\,x\right)\middle|-1\right)}{15x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^2])/x^6,x]
```

```
[Out] -1/15*(3*a + 2*b*c*x^2*Sqrt[1 - c^2*x^4] + 3*b*ArcSin[c*x^2] - (2*I)*b*(-c)
^(5/2)*x^5*EllipticF[I*ArcSinh[Sqrt[-c]*x], -1])/x^5
```

Maple [A]
time = 0.01, size = 87, normalized size = 1.43

method	result	size
default	$-\frac{a}{5x^5}+b\left(-\frac{\arcsin(c\,x^2)}{5x^5}+\frac{2c\left(-\frac{\sqrt{-c^2x^4+1}}{3x^3}+\frac{c^{\frac{3}{2}}\sqrt{-c\,x^2+1}\,\sqrt{c\,x^2+1}\,\text{EllipticF}\left(x\sqrt{c}\,,i\right)}{3\sqrt{-c^2x^4+1}}\right)}{5}\right)$	87

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^2))/x^6,x,method=_RETURNVERBOSE)
```

```
[Out] -1/5*a/x^5+b*(-1/5/x^5*arcsin(c*x^2)+2/5*c*(-1/3*(-c^2*x^4+1)^(1/2)/x^3+1/3
*c^(3/2)*(-c*x^2+1)^(1/2)*(c*x^2+1)^(1/2)/(-c^2*x^4+1)^(1/2)*EllipticF(x*c^
(1/2),I)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^6,x, algorithm="maxima")
```

```
[Out] -1/5*(10*c*x^5*integrate(1/5*e^(1/2*log(c*x^2 + 1) + 1/2*log(-c*x^2 + 1))/(
c^4*x^12 - c^2*x^8 + (c^2*x^8 - x^4)*e^(log(c*x^2 + 1) + log(-c*x^2 + 1))),
 x) + arctan2(c*x^2, sqrt(c*x^2 + 1)*sqrt(-c*x^2 + 1)))*b/x^5 - 1/5*a/x^5
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^6,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(c*x^2) + a)/x^6, x)
```

Sympy [A]
time = 1.36, size = 61, normalized size = 1.00

$$-\frac{a}{5x^5}+\frac{bc\Gamma\left(-\frac{3}{4}\right){}_2F_1\left(\begin{matrix}-\frac{3}{4},\frac{1}{2}\\\frac{1}{4}\end{matrix}\middle|c^2x^4e^{2i\pi}\right)}{10x^3\Gamma\left(\frac{1}{4}\right)}-\frac{b\,\mathrm{asin}\left(cx^2\right)}{5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**2))/x**6,x)
```

```
[Out] -a/(5*x**5) + b*c*gamma(-3/4)*hyper((-3/4, 1/2), (1/4,), c**2*x**4*exp_pola
r(2*I*pi))/(10*x**3*gamma(1/4)) - b*asin(c*x**2)/(5*x**5)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^6,x, algorithm="giac")
[Out] integrate((b*arcsin(c*x^2) + a)/x^6, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{a + b \operatorname{asin}(c x^2)}{x^6} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x^2))/x^6,x)
[Out] int((a + b*asin(c*x^2))/x^6, x)
```

3.359 $\int \frac{a+b\textbf{ArcSin}(cx^2)}{x^8}\,dx$

Optimal. Leaf size=106

$$-\frac{2bc\sqrt{1-c^2x^4}}{35x^5}-\frac{6bc^3\sqrt{1-c^2x^4}}{35x}-\frac{a+b\text{ArcSin}(cx^2)}{7x^7}-\frac{6}{35}bc^{7/2}E\big(\text{ArcSin}\big(\sqrt{c}\,x\big)\big|-1\big)+\frac{6}{35}bc^{7/2}F\big(\text{ArcSin}\big(\cdots$$

```
[Out] 1/7*(-a-b*arcsin(c*x^2))/x^7-6/35*b*c^(7/2)*EllipticE(x*c^(1/2),I)+6/35*b*c
^(7/2)*EllipticF(x*c^(1/2),I)-2/35*b*c*(-c^2*x^4+1)^(1/2)/x^5-6/35*b*c^3*(-
c^2*x^4+1)^(1/2)/x
```

Rubi [A]
time = 0.05, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {4926, 12, 331, 313, 227, 1213, 435}

$$-\frac{a+b\text{ArcSin}(cx^2)}{7x^7}+\frac{6}{35}bc^{7/2}F\big(\text{ArcSin}\big(\sqrt{c}\,x\big)\big|-1\big)-\frac{6}{35}bc^{7/2}E\big(\text{ArcSin}\big(\sqrt{c}\,x\big)\big|-1\big)-\frac{2bc\sqrt{1-c^2x^4}}{35x^5}-\frac{6bc^3\sqrt{1-c^2x^4}}{35x}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^2])/x^8,x]
```

```
[Out] (-2*b*c*Sqrt[1 - c^2*x^4])/(35*x^5) - (6*b*c^3*Sqrt[1 - c^2*x^4])/(35*x) -
(a + b*ArcSin[c*x^2])/(7*x^7) - (6*b*c^(7/2)*EllipticE[ArcSin[Sqrt[c]*x], -
1])/35 + (6*b*c^(7/2)*EllipticF[ArcSin[Sqrt[c]*x], -1])/35
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 227

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> Simp[EllipticF[ArcSin[Rt[-b,
4]*(x/Rt[a, 4])], -1]/(Rt[a, 4]*Rt[-b, 4]), x] /; FreeQ[{a, b}, x] && NegQ[
b/a] && GtQ[a, 0]
```

Rule 313

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[-b/a, 2]},
Dist[-q^(-1), Int[1/Sqrt[a + b*x^4], x], x] + Dist[1/q, Int[(1 + q*x^2)/Sqr
t[a + b*x^4], x], x]] /; FreeQ[{a, b}, x] && NegQ[b/a]
```

Rule 331

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c*x
)^(m + 1)*((a + b*x^n)^(p + 1)/(a*c*(m + 1))), x] - Dist[b*((m + n*(p + 1)
```

```
+ 1)/(a*c^n*(m + 1))), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 435

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]/(Sqrt[c]*Rt[-d/c, 2]))*EllipticE[ArcSin[Rt[-d/c, 2]*x], b*(c/(a*d)
)], x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 1213

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> Dist[d/Sq
rt[a], Int[Sqrt[1 + e*(x^2/d)]/Sqrt[1 - e*(x^2/d)], x], x] /; FreeQ[{a, c,
d, e}, x] && NegQ[c/a] && EqQ[c*d^2 + a*e^2, 0] && GtQ[a, 0]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}(cx^2)}{x^8}\,dx &= -\frac{a+b\sin^{-1}(cx^2)}{7x^7}+\frac{1}{7}b\int \frac{2c}{x^6\sqrt{1-c^2x^4}}\,dx\\
&= -\frac{a+b\sin^{-1}(cx^2)}{7x^7}+\frac{1}{7}(2bc)\int \frac{1}{x^6\sqrt{1-c^2x^4}}\,dx\\
&= -\frac{2bc\sqrt{1-c^2x^4}}{35x^5}-\frac{a+b\sin^{-1}(cx^2)}{7x^7}+\frac{1}{35}\left(6bc^3\right)\int \frac{1}{x^2\sqrt{1-c^2x^4}}\,dx\\
&= -\frac{2bc\sqrt{1-c^2x^4}}{35x^5}-\frac{6bc^3\sqrt{1-c^2x^4}}{35x}-\frac{a+b\sin^{-1}(cx^2)}{7x^7}-\frac{1}{35}\left(6bc^5\right)\int \frac{x^2}{\sqrt{1-c^2x^4}}\\
&= -\frac{2bc\sqrt{1-c^2x^4}}{35x^5}-\frac{6bc^3\sqrt{1-c^2x^4}}{35x}-\frac{a+b\sin^{-1}(cx^2)}{7x^7}+\frac{1}{35}\left(6bc^4\right)\int \frac{1}{\sqrt{1-c^2x^4}}\\
&= -\frac{2bc\sqrt{1-c^2x^4}}{35x^5}-\frac{6bc^3\sqrt{1-c^2x^4}}{35x}-\frac{a+b\sin^{-1}(cx^2)}{7x^7}+\frac{6}{35}bc^{7/2}F\left(\sin^{-1}\left(\sqrt{c}\,x\right)\right.\\
&= -\frac{2bc\sqrt{1-c^2x^4}}{35x^5}-\frac{6bc^3\sqrt{1-c^2x^4}}{35x}-\frac{a+b\sin^{-1}(cx^2)}{7x^7}-\frac{6}{35}bc^{7/2}E\left(\sin^{-1}\left(\sqrt{c}\,x\right)\right.
\end{aligned}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.17, size = 100, normalized size = 0.94

$$-\frac{5a+2bx^2\sqrt{1-c^2x^4}\,(c+3c^3x^4)+5b\text{ArcSin}(cx^2)-6ib(-c)^{7/2}x^7\left(E\left(i\sinh^{-1}\left(\sqrt{-c}\,x\right)\middle|-1\right)-F\left(i\sinh^{-1}\left(\sqrt{-c}\,x\right)\middle|-1\right)\right)}{35x^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^2])/x^8,x]
```

```
[Out] -1/35*(5*a + 2*b*x^2*Sqrt[1 - c^2*x^4]*(c + 3*c^3*x^4) + 5*b*ArcSin[c*x^2]
- (6*I)*b*(-c)^(7/2)*x^7*(EllipticE[I*ArcSinh[Sqrt[-c]*x], -1] - EllipticF[
I*ArcSinh[Sqrt[-c]*x], -1]))/x^7
```

Maple [A]
time = 0.01, size = 118, normalized size = 1.11

method	result
default	$-\frac{a}{7x^7}+b\left(-\frac{\arcsin(c\,x^2)}{7x^7}+\frac{2c\left(-\frac{\sqrt{-c^2x^4+1}}{5x^5}-\frac{3c^2\sqrt{-c^2x^4+1}}{5x}+\frac{3c^{\frac{5}{2}}\sqrt{-c\,x^2+1}\,\sqrt{c\,x^2+1}\,\left(\text{EllipticF}\left(x\right.\right.}{5\sqrt{-c^2x^4+1}}\right.}{7}\right.$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^2))/x^8,x,method=_RETURNVERBOSE)
```

```
[Out] -1/7*a/x^7+b*(-1/7/x^7*arcsin(c*x^2)+2/7*c*(-1/5*(-c^2*x^4+1)^(1/2)/x^5-3/5
*c^2*(-c^2*x^4+1)^(1/2)/x+3/5*c^(5/2)*(-c*x^2+1)^(1/2)*(c*x^2+1)^(1/2)/(-c^
2*x^4+1)^(1/2)*(EllipticF(x*c^(1/2),I)-EllipticE(x*c^(1/2),I))))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^8,x, algorithm="maxima")
```

```
[Out] -1/7*(14*c*x^7*integrate(1/7*e^(1/2*log(c*x^2 + 1) + 1/2*log(-c*x^2 + 1))/(
c^4*x^14 - c^2*x^10 + (c^2*x^10 - x^6)*e^(log(c*x^2 + 1) + log(-c*x^2 + 1))
), x) + arctan2(c*x^2, sqrt(c*x^2 + 1)*sqrt(-c*x^2 + 1)))*b/x^7 - 1/7*a/x^7
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^8,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(c*x^2) + a)/x^8, x)
```

Sympy [A]
time = 2.08, size = 65, normalized size = 0.61

$$-\frac{a}{7x^7}+\frac{bc\Gamma\left(-\frac{5}{4}\right){}_2F_1\left(\begin{matrix}-\frac{5}{4},\frac{1}{2}\\-\frac{1}{4}\end{matrix}\middle|c^2x^4e^{2i\pi}\right)}{14x^5\Gamma\left(-\frac{1}{4}\right)}-\frac{b\operatorname{asin}\left(cx^2\right)}{7x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**2))/x**8,x)
```

```
[Out] -a/(7*x**7) + b*c*gamma(-5/4)*hyper((-5/4, 1/2), (-1/4,), c**2*x**4*exp_pol
ar(2*I*pi))/(14*x**5*gamma(-1/4)) - b*asin(c*x**2)/(7*x**7)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^2))/x^8,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x^2) + a)/x^8, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\operatorname{asin}(c\,x^2)}{x^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x^2))/x^8,x)
```

```
[Out] int((a + b*asin(c*x^2))/x^8, x)
```

3.360 $\int \frac{\text{ArcSin}(ax^5)}{x} \, dx$

Optimal. Leaf size=62

$$-\frac{1}{10}i\text{ArcSin}(ax^5)^2 + \frac{1}{5}\text{ArcSin}(ax^5)\log\left(1 - e^{2i\text{ArcSin}(ax^5)}\right) - \frac{1}{10}i\text{PolyLog}\left(2, e^{2i\text{ArcSin}(ax^5)}\right)$$

```
[Out] -1/10*I*arcsin(a*x^5)^2+1/5*arcsin(a*x^5)*ln(1-(I*a*x^5+(-a^2*x^10+1)^(1/2)
)^2)-1/10*I*polylog(2,(I*a*x^5+(-a^2*x^10+1)^(1/2))^2)
```

Rubi [A]

time = 0.04, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {4914, 3798, 2221, 2317, 2438}

$$-\frac{1}{10}i\text{Li}_2\left(e^{2i\text{ArcSin}(ax^5)}\right) - \frac{1}{10}i\text{ArcSin}(ax^5)^2 + \frac{1}{5}\text{ArcSin}(ax^5)\log\left(1 - e^{2i\text{ArcSin}(ax^5)}\right)$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a*x^5]/x,x]
```

```
[Out] (-1/10*I)*ArcSin[a*x^5]^2 + (ArcSin[a*x^5]*Log[1 - E^((2*I)*ArcSin[a*x^5])]
)/5 - (I/10)*PolyLog[2, E^((2*I)*ArcSin[a*x^5])]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3798

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[I*((c + d*x)^(m + 1)/(d*(m + 1))), x] - Dist[2*I, Int[(c + d*x)^m
```

```
*E^(2*I*k*Pi)*(E^(2*I*(e + f*x))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x)))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4914

```
Int[ArcSin[(a_.)*(x_)^(p_)]^(n_.)/(x_), x_Symbol] :> Dist[1/p, Subst[Int[x^
n*Cot[x], x], x, ArcSin[a*x^p]], x] /; FreeQ[{a, p}, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sin^{-1}(ax^5)}{x}\,dx &= \frac{1}{5}\text{Subst}\left(\int x\cot(x)\,dx, x, \sin^{-1}(ax^5)\right) \\
&= -\frac{1}{10}i\sin^{-1}(ax^5)^2 - \frac{2}{5}i\text{Subst}\left(\int \frac{e^{2ix}x}{1-e^{2ix}}\,dx, x, \sin^{-1}(ax^5)\right) \\
&= -\frac{1}{10}i\sin^{-1}(ax^5)^2 + \frac{1}{5}\sin^{-1}(ax^5)\log\left(1-e^{2i\sin^{-1}(ax^5)}\right) - \frac{1}{5}\text{Subst}\left(\int \log\left(1-e^{2ix}\right)\,d\right. \\
&= -\frac{1}{10}i\sin^{-1}(ax^5)^2 + \frac{1}{5}\sin^{-1}(ax^5)\log\left(1-e^{2i\sin^{-1}(ax^5)}\right) + \frac{1}{10}i\text{Subst}\left(\int \frac{\log(1-x)}{x}\,dx\right. \\
&= -\frac{1}{10}i\sin^{-1}(ax^5)^2 + \frac{1}{5}\sin^{-1}(ax^5)\log\left(1-e^{2i\sin^{-1}(ax^5)}\right) - \frac{1}{10}i\text{Li}_2\left(e^{2i\sin^{-1}(ax^5)}\right)
\end{aligned}$$

Mathematica [A]
time = 0.03, size = 58, normalized size = 0.94

$$\frac{1}{5}\left(\text{ArcSin}(ax^5)\log\left(1-e^{2i\text{ArcSin}(ax^5)}\right) - \frac{1}{2}i\left(\text{ArcSin}(ax^5)^2 + \text{PolyLog}\left(2, e^{2i\text{ArcSin}(ax^5)}\right)\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a*x^5]/x,x]
```

```
[Out] (ArcSin[a*x^5]*Log[1 - E^((2*I)*ArcSin[a*x^5])] - (I/2)*(ArcSin[a*x^5]^2 +
PolyLog[2, E^((2*I)*ArcSin[a*x^5])]))/5
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(a\,x^5)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x^5)/x,x)
```

```
[Out] int(arcsin(a*x^5)/x,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x^5)/x,x, algorithm="maxima")
[Out] integrate(arcsin(a*x^5)/x, x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x^5)/x,x, algorithm="fricas")
[Out] integral(arcsin(a*x^5)/x, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}(ax^5)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x**5)/x,x)
[Out] Integral(asin(a*x**5)/x, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x^5)/x,x, algorithm="giac")
[Out] integrate(arcsin(a*x^5)/x, x)
```

Mupad [B]
time = 0.37, size = 50, normalized size = 0.81

$$-\frac{\mathrm{polylog}\left(2,\mathrm{e}^{\mathrm{asin}(a\,x^5)\,2\mathrm{i}}\right)\,1\mathrm{i}}{10}+\frac{\ln\left(1-\mathrm{e}^{\mathrm{asin}(a\,x^5)\,2\mathrm{i}}\right)\,\mathrm{asin}(a\,x^5)}{5}-\frac{\mathrm{asin}(a\,x^5)^2\,1\mathrm{i}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x^5)/x,x)
```

```
[Out] (log(1 - exp(asin(a*x^5)*2i))*asin(a*x^5))/5 - (polylog(2, exp(asin(a*x^5)*
2i))*1i)/10 - (asin(a*x^5)^2*1i)/10
```

3.361 $\int x^2 \text{ArcSin}(\sqrt{x})\,dx$

Optimal. Leaf size=78

$$\frac{5}{48}\sqrt{1-x}\,\sqrt{x}+\frac{5}{72}\sqrt{1-x}\,x^{3/2}+\frac{1}{18}\sqrt{1-x}\,x^{5/2}+\frac{5}{96}\text{ArcSin}(1-2x)+\frac{1}{3}x^3\text{ArcSin}(\sqrt{x})$$

```
[Out] -5/96*arcsin(-1+2*x)+1/3*x^3*arcsin(x^(1/2))+5/72*x^(3/2)*(1-x)^(1/2)+1/18*
x^(5/2)*(1-x)^(1/2)+5/48*(1-x)^(1/2)*x^(1/2)
```

Rubi [A]
time = 0.02, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.600$, Rules used = {4926, 12, 52, 55, 633, 222}

$$\frac{1}{3}x^3\text{ArcSin}(\sqrt{x})+\frac{5}{96}\text{ArcSin}(1-2x)+\frac{1}{18}\sqrt{1-x}\,x^{5/2}+\frac{5}{72}\sqrt{1-x}\,x^{3/2}+\frac{5}{48}\sqrt{1-x}\,\sqrt{x}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcSin[Sqrt[x]],x]
```

```
[Out] (5*Sqrt[1 - x]*Sqrt[x])/48 + (5*Sqrt[1 - x]*x^(3/2))/72 + (Sqrt[1 - x]*x^(5
/2))/18 + (5*ArcSin[1 - 2*x])/96 + (x^3*ArcSin[Sqrt[x]])/3
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 52

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^n/(b*(m + n + 1))), x] + Dist[n*((b*c - a*d)/(
b*(m + n + 1))), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 55

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)]*Sqrt[(c_.) + (d_.)*(x_)]), x_Symbol] :> Int[
1/Sqrt[a*c - b*(a - c)*x - b^2*x^2], x] /; FreeQ[{a, b, c, d}, x] && EqQ[b
+ d, 0] && GtQ[a + c, 0]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 633

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[1/(2*c*(-4*
(c/(b^2 - 4*a*c)))^p), Subst[Int[Simp[1 - x^2/(b^2 - 4*a*c), x]^p, x], x, b
 + 2*c*x], x] /; FreeQ[{a, b, c, p}, x] && GtQ[4*a - b^2/c, 0]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$
\begin{aligned}
\int x^2 \sin^{-1}\left(\sqrt{x}\right) dx &= \frac{1}{3}x^3\sin^{-1}\left(\sqrt{x}\right) - \frac{1}{3}\int \frac{x^{5/2}}{2\sqrt{1-x}}\,dx \\
&= \frac{1}{3}x^3\sin^{-1}\left(\sqrt{x}\right) - \frac{1}{6}\int \frac{x^{5/2}}{\sqrt{1-x}}\,dx \\
&= \frac{1}{18}\sqrt{1-x}\,x^{5/2} + \frac{1}{3}x^3\sin^{-1}\left(\sqrt{x}\right) - \frac{5}{36}\int \frac{x^{3/2}}{\sqrt{1-x}}\,dx \\
&= \frac{5}{72}\sqrt{1-x}\,x^{3/2} + \frac{1}{18}\sqrt{1-x}\,x^{5/2} + \frac{1}{3}x^3\sin^{-1}\left(\sqrt{x}\right) - \frac{5}{48}\int \frac{\sqrt{x}}{\sqrt{1-x}}\,dx \\
&= \frac{5}{48}\sqrt{1-x}\,\sqrt{x} + \frac{5}{72}\sqrt{1-x}\,x^{3/2} + \frac{1}{18}\sqrt{1-x}\,x^{5/2} + \frac{1}{3}x^3\sin^{-1}\left(\sqrt{x}\right) - \frac{5}{96}\int \\
&= \frac{5}{48}\sqrt{1-x}\,\sqrt{x} + \frac{5}{72}\sqrt{1-x}\,x^{3/2} + \frac{1}{18}\sqrt{1-x}\,x^{5/2} + \frac{1}{3}x^3\sin^{-1}\left(\sqrt{x}\right) - \frac{5}{96}\int \\
&= \frac{5}{48}\sqrt{1-x}\,\sqrt{x} + \frac{5}{72}\sqrt{1-x}\,x^{3/2} + \frac{1}{18}\sqrt{1-x}\,x^{5/2} + \frac{1}{3}x^3\sin^{-1}\left(\sqrt{x}\right) + \frac{5}{96}\text{Subst} \\
&= \frac{5}{48}\sqrt{1-x}\,\sqrt{x} + \frac{5}{72}\sqrt{1-x}\,x^{3/2} + \frac{1}{18}\sqrt{1-x}\,x^{5/2} + \frac{5}{96}\sin^{-1}(1-2x) + \frac{1}{3}x^3\sin^{-}
\end{aligned}
$$

Mathematica [A]
time = 0.02, size = 64, normalized size = 0.82

$$\frac{1}{144}\left(10\sqrt{1-x}\,x^{3/2} + 8\sqrt{1-x}\,x^{5/2} + 15\sqrt{-((-1+x)x)} + 3\left(-5+16x^3\right)\text{ArcSin}\left(\sqrt{x}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcSin[Sqrt[x]],x]
```

```
[Out] (10*Sqrt[1 - x]*x^(3/2) + 8*Sqrt[1 - x]*x^(5/2) + 15*Sqrt[-((-1 + x)*x)] +
3*(-5 + 16*x^3)*ArcSin[Sqrt[x]])/144
```

Maple [A]
time = 0.04, size = 53, normalized size = 0.68

method	result	size
derivativedivides	$\frac{x^{3} \arcsin \left(\sqrt{x}\right)}{3}+\frac{x^{\frac{5}{2}} \sqrt{1-x}}{18}+\frac{5 x^{\frac{3}{2}} \sqrt{1-x}}{72}+\frac{5 \sqrt{1-x}\, \sqrt{x}}{48}-\frac{5 \arcsin \left(\sqrt{x}\right)}{48}$	53
default	$\frac{x^{3} \arcsin \left(\sqrt{x}\right)}{3}+\frac{x^{\frac{5}{2}} \sqrt{1-x}}{18}+\frac{5 x^{\frac{3}{2}} \sqrt{1-x}}{72}+\frac{5 \sqrt{1-x}\, \sqrt{x}}{48}-\frac{5 \arcsin \left(\sqrt{x}\right)}{48}$	53

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arcsin(x^(1/2)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/3*x^3*arcsin(x^(1/2))+1/18*x^(5/2)*(1-x)^(1/2)+5/72*x^(3/2)*(1-x)^(1/2)+5
/48*(1-x)^(1/2)*x^(1/2)-5/48*arcsin(x^(1/2))
```

Maxima [A]
time = 0.48, size = 52, normalized size = 0.67

$$\frac{1}{3} x^{3} \arcsin \left(\sqrt{x}\right)+\frac{1}{18} x^{\frac{5}{2}} \sqrt{-x+1}+\frac{5}{72} x^{\frac{3}{2}} \sqrt{-x+1}+\frac{5}{48} \sqrt{x} \sqrt{-x+1}-\frac{5}{48} \arcsin \left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(x^(1/2)),x, algorithm="maxima")
```

```
[Out] 1/3*x^3*arcsin(sqrt(x)) + 1/18*x^(5/2)*sqrt(-x + 1) + 5/72*x^(3/2)*sqrt(-x
+ 1) + 5/48*sqrt(x)*sqrt(-x + 1) - 5/48*arcsin(sqrt(x))
```

Fricas [A]
time = 2.41, size = 36, normalized size = 0.46

$$\frac{1}{144} \left(8 x^{2}+10 x+15\right) \sqrt{x} \sqrt{-x+1}+\frac{1}{48} \left(16 x^{3}-5\right) \arcsin \left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(x^(1/2)),x, algorithm="fricas")
```

```
[Out] 1/144*(8*x^2 + 10*x + 15)*sqrt(x)*sqrt(-x + 1) + 1/48*(16*x^3 - 5)*arcsin(s
qrt(x))
```

Sympy [A]
time = 4.93, size = 82, normalized size = 1.05

$$\frac{x^{3} \operatorname{asin}\left(\sqrt{x}\right)}{3}-\frac{\begin{cases} \frac{x^{\frac{3}{2}} \left(1-x\right)^{\frac{3}{2}}}{6}+\frac{3 \sqrt{x} \left(1-2 x\right) \sqrt{1-x}}{16}-\frac{\sqrt{x} \sqrt{1-x}}{2}+\frac{5 \operatorname{asin}\left(\sqrt{x}\right)}{16} & \text{for}\ \sqrt{x} > -1 \wedge \sqrt{x} < 1 \end{cases}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*asin(x**(1/2)),x)
```

```
[Out] x**3*asin(sqrt(x))/3 - Piecewise((x**(3/2)*(1 - x)**(3/2)/6 + 3*sqrt(x)*(1
- 2*x)*sqrt(1 - x)/16 - sqrt(x)*sqrt(1 - x)/2 + 5*asin(sqrt(x))/16, (sqrt(x
) > -1) & (sqrt(x) < 1)))/3
```

Giac [A]
time = 0.39, size = 77, normalized size = 0.99

$$\frac{1}{3}(x-1)^3 \arcsin\left(\sqrt{x}\right) + \frac{1}{18}(x-1)^2\sqrt{x}\sqrt{-x+1} + (x-1)^2 \arcsin\left(\sqrt{x}\right) - \frac{13}{72}\sqrt{x}(-x+1)^{\frac{3}{2}} + (x-1)\arcsin\left(\sqrt{x}\right) + \frac{11}{48}\sqrt{x}\sqrt{-x+1} + \frac{11}{48}\arcsin\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(x^(1/2)),x, algorithm="giac")
```

```
[Out] 1/3*(x - 1)^3*arcsin(sqrt(x)) + 1/18*(x - 1)^2*sqrt(x)*sqrt(-x + 1) + (x -
1)^2*arcsin(sqrt(x)) - 13/72*sqrt(x)*(-x + 1)^(3/2) + (x - 1)*arcsin(sqrt(x
)) + 11/48*sqrt(x)*sqrt(-x + 1) + 11/48*arcsin(sqrt(x))
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int x^2 \operatorname{asin}\left(\sqrt{x}\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*asin(x^(1/2)),x)
```

```
[Out] int(x^2*asin(x^(1/2)), x)
```

3.362 $\int x\mathbf{ArcSin}\left(\sqrt{x}\right)\,dx$

Optimal. Leaf size=60

$$\frac{3}{16}\sqrt{1-x}\,\sqrt{x}+\frac{1}{8}\sqrt{1-x}\,x^{3/2}+\frac{3}{32}\text{ArcSin}(1-2x)+\frac{1}{2}x^2\text{ArcSin}\left(\sqrt{x}\right)$$

```
[Out] -3/32*arcsin(-1+2*x)+1/2*x^2*arcsin(x^(1/2))+1/8*x^(3/2)*(1-x)^(1/2)+3/16*(
1-x)^(1/2)*x^(1/2)
```

Rubi [A]
time = 0.01, antiderivative size = 60, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.750, Rules used = {4926, 12, 52, 55, 633, 222}

$$\frac{1}{2}x^2\text{ArcSin}\left(\sqrt{x}\right)+\frac{3}{32}\text{ArcSin}(1-2x)+\frac{1}{8}\sqrt{1-x}\,x^{3/2}+\frac{3}{16}\sqrt{1-x}\,\sqrt{x}$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcSin[Sqrt[x]],x]
```

```
[Out] (3*Sqrt[1 - x]*Sqrt[x])/16 + (Sqrt[1 - x]*x^(3/2))/8 + (3*ArcSin[1 - 2*x])/
32 + (x^2*ArcSin[Sqrt[x]])/2
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 52

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^n/(b*(m + n + 1))), x] + Dist[n*((b*c - a*d)/(
b*(m + n + 1))), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 55

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)]*Sqrt[(c_.) + (d_.)*(x_)]), x_Symbol] :> Int[
1/Sqrt[a*c - b*(a - c)*x - b^2*x^2], x] /; FreeQ[{a, b, c, d}, x] && EqQ[b
+ d, 0] && GtQ[a + c, 0]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 633

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[1/(2*c*(-4*
(c/(b^2 - 4*a*c)))^p), Subst[Int[Simp[1 - x^2/(b^2 - 4*a*c), x]^p, x], x, b
 + 2*c*x], x] /; FreeQ[{a, b, c, p}, x] && GtQ[4*a - b^2/c, 0]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\begin{aligned}
\int x\sin^{-1}\left(\sqrt{x}\right)\,dx &= \frac{1}{2}x^2\sin^{-1}\left(\sqrt{x}\right)-\frac{1}{2}\int\frac{x^{3/2}}{2\sqrt{1-x}}\,dx\\
&= \frac{1}{2}x^2\sin^{-1}\left(\sqrt{x}\right)-\frac{1}{4}\int\frac{x^{3/2}}{\sqrt{1-x}}\,dx\\
&= \frac{1}{8}\sqrt{1-x}\,x^{3/2}+\frac{1}{2}x^2\sin^{-1}\left(\sqrt{x}\right)-\frac{3}{16}\int\frac{\sqrt{x}}{\sqrt{1-x}}\,dx\\
&= \frac{3}{16}\sqrt{1-x}\,\sqrt{x}+\frac{1}{8}\sqrt{1-x}\,x^{3/2}+\frac{1}{2}x^2\sin^{-1}\left(\sqrt{x}\right)-\frac{3}{32}\int\frac{1}{\sqrt{1-x}\,\sqrt{x}}\,dx\\
&= \frac{3}{16}\sqrt{1-x}\,\sqrt{x}+\frac{1}{8}\sqrt{1-x}\,x^{3/2}+\frac{1}{2}x^2\sin^{-1}\left(\sqrt{x}\right)-\frac{3}{32}\int\frac{1}{\sqrt{x-x^2}}\,dx\\
&= \frac{3}{16}\sqrt{1-x}\,\sqrt{x}+\frac{1}{8}\sqrt{1-x}\,x^{3/2}+\frac{1}{2}x^2\sin^{-1}\left(\sqrt{x}\right)+\frac{3}{32}\text{Subst}\left(\int\frac{1}{\sqrt{1-x^2}}\,dx,x,\right.\\
&= \frac{3}{16}\sqrt{1-x}\,\sqrt{x}+\frac{1}{8}\sqrt{1-x}\,x^{3/2}+\frac{3}{32}\sin^{-1}(1-2x)+\frac{1}{2}x^2\sin^{-1}\left(\sqrt{x}\right)
\end{aligned}$$

Mathematica [A]
time = 0.02, size = 47, normalized size = 0.78

$$\frac{1}{16}\left(2\sqrt{1-x}\,x^{3/2}+3\sqrt{-((-1+x)x)}+\left(-3+8x^2\right)\text{ArcSin}\left(\sqrt{x}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcSin[Sqrt[x]],x]
```

```
[Out] (2*Sqrt[1 - x]*x^(3/2) + 3*Sqrt[-((-1 + x)*x)] + (-3 + 8*x^2)*ArcSin[Sqrt[x
]])/16
```

Maple [A]
time = 0.01, size = 41, normalized size = 0.68

method	result	size
derivativedivides	$\frac{x^{2} \arcsin\left(\sqrt{x}\right)}{2}+\frac{x^{\frac{3}{2}} \sqrt{1-x}}{8}+\frac{3 \sqrt{1-x}\, \sqrt{x}}{16}-\frac{3 \arcsin\left(\sqrt{x}\right)}{16}$	41
default	$\frac{x^{2} \arcsin\left(\sqrt{x}\right)}{2}+\frac{x^{\frac{3}{2}} \sqrt{1-x}}{8}+\frac{3 \sqrt{1-x}\, \sqrt{x}}{16}-\frac{3 \arcsin\left(\sqrt{x}\right)}{16}$	41

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arcsin(x^(1/2)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/2*x^2*arcsin(x^(1/2))+1/8*x^(3/2)*(1-x)^(1/2)+3/16*(1-x)^(1/2)*x^(1/2)-3/
16*arcsin(x^(1/2))
```

Maxima [A]
time = 0.47, size = 40, normalized size = 0.67

$$\frac{1}{2} x^{2} \arcsin\left(\sqrt{x}\right)+\frac{1}{8} x^{\frac{3}{2}} \sqrt{-x+1}+\frac{3}{16} \sqrt{x} \sqrt{-x+1}-\frac{3}{16} \arcsin\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(x^(1/2)),x, algorithm="maxima")
```

```
[Out] 1/2*x^2*arcsin(sqrt(x)) + 1/8*x^(3/2)*sqrt(-x + 1) + 3/16*sqrt(x)*sqrt(-x +
 1) - 3/16*arcsin(sqrt(x))
```

Fricas [A]
time = 2.20, size = 31, normalized size = 0.52

$$\frac{1}{16} \left(2 x+3\right) \sqrt{x} \sqrt{-x+1}+\frac{1}{16} \left(8 x^{2}-3\right) \arcsin\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(x^(1/2)),x, algorithm="fricas")
```

```
[Out] 1/16*(2*x + 3)*sqrt(x)*sqrt(-x + 1) + 1/16*(8*x^2 - 3)*arcsin(sqrt(x))
```

Sympy [A]
time = 2.16, size = 66, normalized size = 1.10

$$\frac{x^{2} \operatorname{asin}\left(\sqrt{x}\right)}{2}-\frac{\begin{cases} \frac{\sqrt{x} \left(1-2x\right) \sqrt{1-x}}{8}-\frac{\sqrt{x} \sqrt{1-x}}{2}+\frac{3 \operatorname{asin}\left(\sqrt{x}\right)}{8} & \text{for}\ \sqrt{x}>-1 \wedge \sqrt{x}<1 \end{cases}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*asin(x**(1/2)),x)
```

[Out] x**2*asin(sqrt(x))/2 - Piecewise((sqrt(x)*(1 - 2*x)*sqrt(1 - x)/8 - sqrt(x)
*sqrt(1 - x)/2 + 3*asin(sqrt(x))/8, (sqrt(x) > -1) & (sqrt(x) < 1)))/2

Giac [A]
time = 0.40, size = 50, normalized size = 0.83

$$\frac{1}{2}(x-1)^2\arcsin\left(\sqrt{x}\right)-\frac{1}{8}\sqrt{x}(-x+1)^{\frac{3}{2}}+(x-1)\arcsin\left(\sqrt{x}\right)+\frac{5}{16}\sqrt{x}\sqrt{-x+1}+\frac{5}{16}\arcsin\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x*arcsin(x^(1/2)),x, algorithm="giac")

[Out] 1/2*(x - 1)^2*arcsin(sqrt(x)) - 1/8*sqrt(x)*(-x + 1)^(3/2) + (x - 1)*arcsin
(sqrt(x)) + 5/16*sqrt(x)*sqrt(-x + 1) + 5/16*arcsin(sqrt(x))

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int x\,\mathrm{asin}\left(\sqrt{x}\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(x*asin(x^(1/2)),x)

[Out] int(x*asin(x^(1/2)), x)

3.363 $\int \text{ArcSin}\left(\sqrt{x}\right) dx$

Optimal. Leaf size=37

$$\frac{1}{2}\sqrt{1-x}\,\sqrt{x}+\frac{1}{4}\text{ArcSin}(1-2x)+x\text{ArcSin}\left(\sqrt{x}\right)$$

```
[Out] -1/4*arcsin(-1+2*x)+x*arcsin(x^(1/2))+1/2*(1-x)^(1/2)*x^(1/2)
```

Rubi [A]
time = 0.01, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 6, $\frac{\text{number of rules}}{\text{integrand size}} = 1.000$, Rules used = {4924, 12, 52, 55, 633, 222}

$$\frac{1}{4}\text{ArcSin}(1-2x)+x\text{ArcSin}\left(\sqrt{x}\right)+\frac{1}{2}\sqrt{1-x}\,\sqrt{x}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[Sqrt[x]],x]
```

```
[Out] (Sqrt[1 - x]*Sqrt[x])/2 + ArcSin[1 - 2*x]/4 + x*ArcSin[Sqrt[x]]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 52

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^n/(b*(m + n + 1))), x] + Dist[n*((b*c - a*d)/(
b*(m + n + 1))), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 55

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)]*Sqrt[(c_.) + (d_.)*(x_)]), x_Symbol] :> Int[
1/Sqrt[a*c - b*(a - c)*x - b^2*x^2], x] /; FreeQ[{a, b, c, d}, x] && EqQ[b
+ d, 0] && GtQ[a + c, 0]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 633

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[1/(2*c*(-4*
(c/(b^2 - 4*a*c)))^p), Subst[Int[Simp[1 - x^2/(b^2 - 4*a*c), x]^p, x], x, b
 + 2*c*x], x] /; FreeQ[{a, b, c, p}, x] && GtQ[4*a - b^2/c, 0]
```

Rule 4924

```
Int[ArcSin[u_], x_Symbol] :> Simp[x*ArcSin[u], x] - Int[SimplifyIntegrand[x
*(D[u, x]/Sqrt[1 - u^2]), x], x] /; InverseFunctionFreeQ[u, x] &&  !Functio
nOfExponentialQ[u, x]
```

Rubi steps

$$
\begin{aligned}
\int \sin^{-1}\left(\sqrt{x}\right)\,dx &= x\sin^{-1}\left(\sqrt{x}\right)-\int \frac{\sqrt{x}}{2\sqrt{1-x}}\,dx\\
&= x\sin^{-1}\left(\sqrt{x}\right)-\frac{1}{2}\int \frac{\sqrt{x}}{\sqrt{1-x}}\,dx\\
&= \frac{1}{2}\sqrt{1-x}\,\sqrt{x}+x\sin^{-1}\left(\sqrt{x}\right)-\frac{1}{4}\int \frac{1}{\sqrt{1-x}\,\sqrt{x}}\,dx\\
&= \frac{1}{2}\sqrt{1-x}\,\sqrt{x}+x\sin^{-1}\left(\sqrt{x}\right)-\frac{1}{4}\int \frac{1}{\sqrt{x-x^2}}\,dx\\
&= \frac{1}{2}\sqrt{1-x}\,\sqrt{x}+x\sin^{-1}\left(\sqrt{x}\right)+\frac{1}{4}\text{Subst}\left(\int \frac{1}{\sqrt{1-x^2}}\,dx,x,1-2x\right)\\
&= \frac{1}{2}\sqrt{1-x}\,\sqrt{x}+\frac{1}{4}\sin^{-1}(1-2x)+x\sin^{-1}\left(\sqrt{x}\right)
\end{aligned}
$$

Mathematica [A]
time = 0.07, size = 46, normalized size = 1.24

$$x\text{ArcSin}\left(\sqrt{x}\right)+\frac{1}{2}\left(\sqrt{-((-1+x)x)}-2\text{ArcTan}\left(\frac{\sqrt{x}}{-1+\sqrt{1-x}}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[Sqrt[x]],x]
```

```
[Out] x*ArcSin[Sqrt[x]] + (Sqrt[-((-1 + x)*x)] - 2*ArcTan[Sqrt[x]/(-1 + Sqrt[1 -
x])])/2
```

Maple [A]
time = 0.01, size = 26, normalized size = 0.70

method	result	size
derivativedivides	$x \arcsin\left(\sqrt{x}\right)+\frac{\sqrt{1-x}\,\sqrt{x}}{2}-\frac{\arcsin\left(\sqrt{x}\right)}{2}$	26
default	$x \arcsin\left(\sqrt{x}\right)+\frac{\sqrt{1-x}\,\sqrt{x}}{2}-\frac{\arcsin\left(\sqrt{x}\right)}{2}$	26

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(x^(1/2)),x,method=_RETURNVERBOSE)
[Out] x*arcsin(x^(1/2))+1/2*(1-x)^(1/2)*x^(1/2)-1/2*arcsin(x^(1/2))
```

Maxima [A]
time = 0.48, size = 25, normalized size = 0.68

$$x \arcsin\left(\sqrt{x}\right)+\frac{1}{2}\sqrt{x}\,\sqrt{-x+1}-\frac{1}{2}\arcsin\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2)),x, algorithm="maxima")
[Out] x*arcsin(sqrt(x)) + 1/2*sqrt(x)*sqrt(-x + 1) - 1/2*arcsin(sqrt(x))
```

Fricas [A]
time = 2.90, size = 24, normalized size = 0.65

$$\frac{1}{2}(2x-1)\arcsin\left(\sqrt{x}\right)+\frac{1}{2}\sqrt{x}\,\sqrt{-x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2)),x, algorithm="fricas")
[Out] 1/2*(2*x - 1)*arcsin(sqrt(x)) + 1/2*sqrt(x)*sqrt(-x + 1)
```

Sympy [A]
time = 0.10, size = 29, normalized size = 0.78

$$\frac{\sqrt{x}\,\sqrt{1-x}}{2}+x \operatorname{asin}\left(\sqrt{x}\right)-\frac{\operatorname{asin}\left(\sqrt{x}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(x**(1/2)),x)
[Out] sqrt(x)*sqrt(1 - x)/2 + x*asin(sqrt(x)) - asin(sqrt(x))/2
```

Giac [A]
time = 0.41, size = 27, normalized size = 0.73

$$(x-1)\arcsin\left(\sqrt{x}\right)+\frac{1}{2}\sqrt{x}\,\sqrt{-x+1}+\frac{1}{2}\arcsin\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2)),x, algorithm="giac")
```

```
[Out] (x - 1)*arcsin(sqrt(x)) + 1/2*sqrt(x)*sqrt(-x + 1) + 1/2*arcsin(sqrt(x))
```

Mupad [B]
time = 0.74, size = 37, normalized size = 1.00

$$x\,\mathrm{asin}\left(\sqrt{x}\right)-\mathrm{atan}\left(\frac{\sqrt{x}}{\sqrt{1-x}-1}\right)+\frac{\sqrt{x}\,\sqrt{1-x}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(x^(1/2)),x)
```

```
[Out] x*asin(x^(1/2)) - atan(x^(1/2)/((1 - x)^(1/2) - 1)) + (x^(1/2)*(1 - x)^(1/2
))/2
```

3.364 $\int \frac{\text{ArcSin}\left(\sqrt{x}\right)}{x} \, dx$

Optimal. Leaf size=56

$$-i\text{ArcSin}\left(\sqrt{x}\right)^2+2\text{ArcSin}\left(\sqrt{x}\right)\log\left(1-e^{2i\text{ArcSin}\left(\sqrt{x}\right)}\right)-i\text{PolyLog}\left(2,e^{2i\text{ArcSin}\left(\sqrt{x}\right)}\right)$$

```
[Out] -I*arcsin(x^(1/2))^2+2*arcsin(x^(1/2))*ln(1-(I*x^(1/2)+(1-x)^(1/2))^2)-I*po
lylog(2,(I*x^(1/2)+(1-x)^(1/2))^2)
```

Rubi [A]
time = 0.04, antiderivative size = 56, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {4914, 3798, 2221, 2317, 2438}

$$-i\text{Li}_2\left(e^{2i\text{ArcSin}\left(\sqrt{x}\right)}\right)-i\text{ArcSin}\left(\sqrt{x}\right)^2+2\text{ArcSin}\left(\sqrt{x}\right)\log\left(1-e^{2i\text{ArcSin}\left(\sqrt{x}\right)}\right)$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[Sqrt[x]]/x,x]
```

```
[Out] (-I)*ArcSin[Sqrt[x]]^2 + 2*ArcSin[Sqrt[x]]*Log[1 - E^((2*I)*ArcSin[Sqrt[x]]
)] - I*PolyLog[2, E^((2*I)*ArcSin[Sqrt[x]])]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3798

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[I*((c + d*x)^(m + 1)/(d*(m + 1))), x] - Dist[2*I, Int[(c + d*x)^m
```

```
*E^(2*I*k*Pi)*(E^(2*I*(e + f*x))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x)))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4914

```
Int[ArcSin[(a_.)*(x_)^(p_)]^(n_.)/(x_), x_Symbol] :> Dist[1/p, Subst[Int[x^
n*Cot[x], x], x, ArcSin[a*x^p]], x] /; FreeQ[{a, p}, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\sin^{-1}\left(\sqrt{x}\right)}{x}\,dx &= 2\text{Subst}\left(\int x\cot(x)\,dx, x, \sin^{-1}\left(\sqrt{x}\right)\right)\\ &= -i\sin^{-1}\left(\sqrt{x}\right)^2 - 4i\text{Subst}\left(\int \frac{e^{2ix}x}{1-e^{2ix}}\,dx, x, \sin^{-1}\left(\sqrt{x}\right)\right)\\ &= -i\sin^{-1}\left(\sqrt{x}\right)^2 + 2\sin^{-1}\left(\sqrt{x}\right)\log\left(1-e^{2i\sin^{-1}\left(\sqrt{x}\right)}\right) - 2\text{Subst}\left(\int \log\left(1-e^{2ix}\right)\,dx\right.\\ &= -i\sin^{-1}\left(\sqrt{x}\right)^2 + 2\sin^{-1}\left(\sqrt{x}\right)\log\left(1-e^{2i\sin^{-1}\left(\sqrt{x}\right)}\right) + i\text{Subst}\left(\int \frac{\log(1-x)}{x}\,dx, x\right.\\ &= -i\sin^{-1}\left(\sqrt{x}\right)^2 + 2\sin^{-1}\left(\sqrt{x}\right)\log\left(1-e^{2i\sin^{-1}\left(\sqrt{x}\right)}\right) - i\text{Li}_2\left(e^{2i\sin^{-1}\left(\sqrt{x}\right)}\right)\end{aligned}$$

Mathematica [A]
time = 0.03, size = 53, normalized size = 0.95

$$2\text{ArcSin}\left(\sqrt{x}\right)\log\left(1-e^{2i\text{ArcSin}\left(\sqrt{x}\right)}\right) - i\left(\text{ArcSin}\left(\sqrt{x}\right)^2 + \text{PolyLog}\left(2, e^{2i\text{ArcSin}\left(\sqrt{x}\right)}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[Sqrt[x]]/x,x]
```

```
[Out] 2*ArcSin[Sqrt[x]]*Log[1 - E^((2*I)*ArcSin[Sqrt[x]])] - I*(ArcSin[Sqrt[x]]^2
 + PolyLog[2, E^((2*I)*ArcSin[Sqrt[x]])])
```

Maple [A]
time = 0.33, size = 97, normalized size = 1.73

method	result
derivativedivides	$-i\arcsin\left(\sqrt{x}\right)^2 + 2\arcsin\left(\sqrt{x}\right)\ln\left(1-i\sqrt{x}-\sqrt{1-x}\right) + 2\arcsin\left(\sqrt{x}\right)\ln\left(1+i\right.$
default	$-i\arcsin\left(\sqrt{x}\right)^2 + 2\arcsin\left(\sqrt{x}\right)\ln\left(1-i\sqrt{x}-\sqrt{1-x}\right) + 2\arcsin\left(\sqrt{x}\right)\ln\left(1+i\right.$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(x^(1/2))/x,x,method=_RETURNVERBOSE)
```

```
[Out] -I*arcsin(x^(1/2))^2+2*arcsin(x^(1/2))*ln(1-I*x^(1/2)-(1-x)^(1/2))+2*arcsin
(x^(1/2))*ln(1+I*x^(1/2)+(1-x)^(1/2))-2*I*polylog(2,I*x^(1/2)+(1-x)^(1/2))-
2*I*polylog(2,-I*x^(1/2)-(1-x)^(1/2))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x,x, algorithm="maxima")
```

```
[Out] integrate(arcsin(sqrt(x))/x, x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x,x, algorithm="fricas")
```

```
[Out] integral(arcsin(sqrt(x))/x, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}\left(\sqrt{x}\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(x**(1/2))/x,x)
```

```
[Out] Integral(asin(sqrt(x))/x, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x,x, algorithm="giac")
```

```
[Out] integrate(arcsin(sqrt(x))/x, x)
```

Mupad [B]
time = 0.53, size = 42, normalized size = 0.75

$$-\mathrm{polylog}\left(2,\mathrm{e}^{\mathrm{asin}\left(\sqrt{x}\right)\,2\mathrm{i}}\right)\,1\mathrm{i}-\mathrm{asin}\left(\sqrt{x}\right)^2\,1\mathrm{i}+2\,\ln\left(1-\mathrm{e}^{\mathrm{asin}\left(\sqrt{x}\right)\,2\mathrm{i}}\right)\,\mathrm{asin}\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(x^(1/2))/x,x)
```

```
[Out] 2*log(1 - exp(asin(x^(1/2))*2i))*asin(x^(1/2)) - asin(x^(1/2))^2*1i - polyl
og(2, exp(asin(x^(1/2))*2i))*1i
```

3.365 $\int \frac{\text{ArcSin}(\sqrt{x})}{x^2} dx$

Optimal. Leaf size=28

$$-\frac{\sqrt{1-x}}{\sqrt{x}}-\frac{\text{ArcSin}(\sqrt{x})}{x}$$

```
[Out] -arcsin(x^(1/2))/x-(1-x)^(1/2)/x^(1/2)
```

Rubi [A]
time = 0.01, antiderivative size = 28, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.300$, Rules used = {4926, 12, 37}

$$-\frac{\text{ArcSin}(\sqrt{x})}{x}-\frac{\sqrt{1-x}}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[Sqrt[x]]/x^2,x]
```

```
[Out] -(Sqrt[1 - x]/Sqrt[x]) - ArcSin[Sqrt[x]]/x
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\int \frac{\sin^{-1}\left(\sqrt{x}\right)}{x^2}\,dx = -\frac{\sin^{-1}\left(\sqrt{x}\right)}{x} + \int \frac{1}{2\sqrt{1-x}\,x^{3/2}}\,dx$$
$$= -\frac{\sin^{-1}\left(\sqrt{x}\right)}{x} + \frac{1}{2}\int \frac{1}{\sqrt{1-x}\,x^{3/2}}\,dx$$
$$= -\frac{\sqrt{1-x}}{\sqrt{x}} - \frac{\sin^{-1}\left(\sqrt{x}\right)}{x}$$

<u>**Mathematica**</u> [**A**]
time = 0.01, size = 23, normalized size = 0.82

$$-\frac{\sqrt{x-x^2}+\text{ArcSin}\left(\sqrt{x}\right)}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[Sqrt[x]]/x^2,x]
```

```
[Out] -((Sqrt[x - x^2] + ArcSin[Sqrt[x]])/x)
```

<u>**Maple**</u> [**A**]
time = 0.00, size = 23, normalized size = 0.82

method	result	size
derivativedivides	$-\frac{\arcsin\left(\sqrt{x}\right)}{x}-\frac{\sqrt{1-x}}{\sqrt{x}}$	23
default	$-\frac{\arcsin\left(\sqrt{x}\right)}{x}-\frac{\sqrt{1-x}}{\sqrt{x}}$	23

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(x^(1/2))/x^2,x,method=_RETURNVERBOSE)
```

```
[Out] -arcsin(x^(1/2))/x-(1-x)^(1/2)/x^(1/2)
```

<u>**Maxima**</u> [**A**]
time = 0.47, size = 22, normalized size = 0.79

$$-\frac{\sqrt{-x+1}}{\sqrt{x}}-\frac{\arcsin\left(\sqrt{x}\right)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x^2,x, algorithm="maxima")
```

```
[Out] -sqrt(-x + 1)/sqrt(x) - arcsin(sqrt(x))/x
```

Fricas [A]
time = 2.23, size = 21, normalized size = 0.75

$$-\frac{\sqrt{x}\,\sqrt{-x+1}+\arcsin\left(\sqrt{x}\right)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x^2,x, algorithm="fricas")
```

```
[Out] -(sqrt(x)*sqrt(-x + 1) + arcsin(sqrt(x)))/x
```

Sympy [C] Result contains complex when optimal does not.
time = 1.87, size = 42, normalized size = 1.50

$$\frac{\begin{cases} -\frac{2i\sqrt{x-1}}{\sqrt{x}} & \text{for}\ |x|>1 \\ -\frac{2\sqrt{1-x}}{\sqrt{x}} & \text{otherwise} \end{cases}}{2}-\frac{\operatorname{asin}\left(\sqrt{x}\right)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(x**(1/2))/x**2,x)
```

```
[Out] Piecewise((-2*I*sqrt(x - 1)/sqrt(x), Abs(x) > 1), (-2*sqrt(1 - x)/sqrt(x),
True))/2 - asin(sqrt(x))/x
```

Giac [A]
time = 0.40, size = 40, normalized size = 1.43

$$-\frac{\sqrt{-x+1}-1}{2\sqrt{x}}-\frac{\arcsin\left(\sqrt{x}\right)}{x}+\frac{\sqrt{x}}{2\left(\sqrt{-x+1}-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x^2,x, algorithm="giac")
```

```
[Out] -1/2*(sqrt(-x + 1) - 1)/sqrt(x) - arcsin(sqrt(x))/x + 1/2*sqrt(x)/(sqrt(-x
+ 1) - 1)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\operatorname{asin}\left(\sqrt{x}\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(x^(1/2))/x^2,x)
```

```
[Out] int(asin(x^(1/2))/x^2, x)
```

3.366 $\int \frac{\text{ArcSin}\left(\sqrt{x}\right)}{x^3} \, dx$

Optimal. Leaf size=50

$$-\frac{\sqrt{1-x}}{6x^{3/2}}-\frac{\sqrt{1-x}}{3\sqrt{x}}-\frac{\text{ArcSin}\left(\sqrt{x}\right)}{2x^2}$$

```
[Out] -1/2*arcsin(x^(1/2))/x^2-1/6*(1-x)^(1/2)/x^(3/2)-1/3*(1-x)^(1/2)/x^(1/2)
```

Rubi [A]
time = 0.01, antiderivative size = 50, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$, Rules used = {4926, 12, 47, 37}

$$-\frac{\text{ArcSin}\left(\sqrt{x}\right)}{2x^2}-\frac{\sqrt{1-x}}{6x^{3/2}}-\frac{\sqrt{1-x}}{3\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[Sqrt[x]]/x^3,x]
```

```
[Out] -1/6*Sqrt[1 - x]/x^(3/2) - Sqrt[1 - x]/(3*Sqrt[x]) - ArcSin[Sqrt[x]]/(2*x^2
)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] - Dist[d*(S
implify[m + n + 2]/((b*c - a*d)*(m + 1))), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\begin{aligned}\int \frac{\sin^{-1}\left(\sqrt{x}\right)}{x^3}\,dx &= -\frac{\sin^{-1}\left(\sqrt{x}\right)}{2x^2}+\frac{1}{2}\int \frac{1}{2\sqrt{1-x}\,x^{5/2}}\,dx\\ &= -\frac{\sin^{-1}\left(\sqrt{x}\right)}{2x^2}+\frac{1}{4}\int \frac{1}{\sqrt{1-x}\,x^{5/2}}\,dx\\ &= -\frac{\sqrt{1-x}}{6x^{3/2}}-\frac{\sin^{-1}\left(\sqrt{x}\right)}{2x^2}+\frac{1}{6}\int \frac{1}{\sqrt{1-x}\,x^{3/2}}\,dx\\ &= -\frac{\sqrt{1-x}}{6x^{3/2}}-\frac{\sqrt{1-x}}{3\sqrt{x}}-\frac{\sin^{-1}\left(\sqrt{x}\right)}{2x^2}\end{aligned}$$

Mathematica [A]
time = 0.03, size = 32, normalized size = 0.64

$$-\frac{\sqrt{-((-1+x)x)}\,(1+2x)+3\text{ArcSin}\left(\sqrt{x}\right)}{6x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[Sqrt[x]]/x^3,x]
[Out] -1/6*(Sqrt[-((-1 + x)*x)]*(1 + 2*x) + 3*ArcSin[Sqrt[x]])/x^2
```

Maple [A]
time = 0.01, size = 35, normalized size = 0.70

method	result	size
derivativedivides	$-\frac{\arcsin\left(\sqrt{x}\right)}{2x^2}-\frac{\sqrt{1-x}}{6x^{\frac{3}{2}}}-\frac{\sqrt{1-x}}{3\sqrt{x}}$	35
default	$-\frac{\arcsin\left(\sqrt{x}\right)}{2x^2}-\frac{\sqrt{1-x}}{6x^{\frac{3}{2}}}-\frac{\sqrt{1-x}}{3\sqrt{x}}$	35

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(x^(1/2))/x^3,x,method=_RETURNVERBOSE)
[Out] -1/2*arcsin(x^(1/2))/x^2-1/6*(1-x)^(1/2)/x^(3/2)-1/3*(1-x)^(1/2)/x^(1/2)
```

Maxima [A]
time = 0.47, size = 34, normalized size = 0.68

$$-\frac{\sqrt{-x+1}}{3\sqrt{x}}-\frac{\sqrt{-x+1}}{6\,x^{\frac{3}{2}}}-\frac{\arcsin\left(\sqrt{x}\right)}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x^3,x, algorithm="maxima")
[Out] -1/3*sqrt(-x + 1)/sqrt(x) - 1/6*sqrt(-x + 1)/x^(3/2) - 1/2*arcsin(sqrt(x))/
x^2
```

Fricas [A]
time = 2.85, size = 28, normalized size = 0.56

$$-\frac{(2\,x+1)\sqrt{x}\,\sqrt{-x+1}+3\,\arcsin\left(\sqrt{x}\right)}{6\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x^3,x, algorithm="fricas")
[Out] -1/6*((2*x + 1)*sqrt(x)*sqrt(-x + 1) + 3*arcsin(sqrt(x)))/x^2
```

Sympy [A]
time = 4.67, size = 51, normalized size = 1.02

$$\frac{\begin{cases}-\frac{\sqrt{1-x}}{\sqrt{x}}-\frac{(1-x)^{\frac{3}{2}}}{3x^{\frac{3}{2}}} & \text{for}\ \sqrt{x}>-1\wedge\sqrt{x}<1\end{cases}}{2}-\frac{\operatorname{asin}\left(\sqrt{x}\right)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(x**(1/2))/x**3,x)
[Out] Piecewise((-sqrt(1 - x)/sqrt(x) - (1 - x)**(3/2)/(3*x**(3/2)), (sqrt(x) > -
1) & (sqrt(x) < 1)))/2 - asin(sqrt(x))/(2*x**2)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 74 vs. 2(34) = 68.
time = 0.42, size = 74, normalized size = 1.48

$$-\frac{\left(\sqrt{-x+1}-1\right)^3}{48\,x^{\frac{3}{2}}}-\frac{3\left(\sqrt{-x+1}-1\right)}{16\sqrt{x}}+\frac{x^{\frac{3}{2}}\left(\frac{9\left(\sqrt{-x+1}-1\right)^2}{x}+1\right)}{48\left(\sqrt{-x+1}-1\right)^3}-\frac{\arcsin\left(\sqrt{x}\right)}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x^3,x, algorithm="giac")
```

```
[Out] -1/48*(sqrt(-x + 1) - 1)^3/x^(3/2) - 3/16*(sqrt(-x + 1) - 1)/sqrt(x) + 1/48
*x^(3/2)*(9*(sqrt(-x + 1) - 1)^2/x + 1)/(sqrt(-x + 1) - 1)^3 - 1/2*arcsin(s
qrt(x))/x^2
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\operatorname{asin}\left(\sqrt{x}\right)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(x^(1/2))/x^3,x)
```

```
[Out] int(asin(x^(1/2))/x^3, x)
```

3.367 $\int \frac{\text{ArcSin}(\sqrt{x})}{x^4} \, dx$

Optimal. Leaf size=68

$$-\frac{\sqrt{1-x}}{15x^{5/2}}-\frac{4\sqrt{1-x}}{45x^{3/2}}-\frac{8\sqrt{1-x}}{45\sqrt{x}}-\frac{\text{ArcSin}(\sqrt{x})}{3x^3}$$

```
[Out] -1/3*arcsin(x^(1/2))/x^3-1/15*(1-x)^(1/2)/x^(5/2)-4/45*(1-x)^(1/2)/x^(3/2)-
8/45*(1-x)^(1/2)/x^(1/2)
```

Rubi [A]
time = 0.02, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$, Rules used = {4926, 12, 47, 37}

$$-\frac{\text{ArcSin}(\sqrt{x})}{3x^3}-\frac{4\sqrt{1-x}}{45x^{3/2}}-\frac{\sqrt{1-x}}{15x^{5/2}}-\frac{8\sqrt{1-x}}{45\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[Sqrt[x]]/x^4,x]
```

```
[Out] -1/15*Sqrt[1 - x]/x^(5/2) - (4*Sqrt[1 - x])/(45*x^(3/2)) - (8*Sqrt[1 - x])/
(45*Sqrt[x]) - ArcSin[Sqrt[x]]/(3*x^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] - Dist[d*(S
implify[m + n + 2]/((b*c - a*d)*(m + 1))), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sin^{-1}\left(\sqrt{x}\right)}{x^4}\,dx &= -\frac{\sin^{-1}\left(\sqrt{x}\right)}{3x^3}+\frac{1}{3}\int \frac{1}{2\sqrt{1-x}\,x^{7/2}}\,dx\\
&= -\frac{\sin^{-1}\left(\sqrt{x}\right)}{3x^3}+\frac{1}{6}\int \frac{1}{\sqrt{1-x}\,x^{7/2}}\,dx\\
&= -\frac{\sqrt{1-x}}{15x^{5/2}}-\frac{\sin^{-1}\left(\sqrt{x}\right)}{3x^3}+\frac{2}{15}\int \frac{1}{\sqrt{1-x}\,x^{5/2}}\,dx\\
&= -\frac{\sqrt{1-x}}{15x^{5/2}}-\frac{4\sqrt{1-x}}{45x^{3/2}}-\frac{\sin^{-1}\left(\sqrt{x}\right)}{3x^3}+\frac{4}{45}\int \frac{1}{\sqrt{1-x}\,x^{3/2}}\,dx\\
&= -\frac{\sqrt{1-x}}{15x^{5/2}}-\frac{4\sqrt{1-x}}{45x^{3/2}}-\frac{8\sqrt{1-x}}{45\sqrt{x}}-\frac{\sin^{-1}\left(\sqrt{x}\right)}{3x^3}
\end{aligned}$$

Mathematica [A]
time = 0.02, size = 44, normalized size = 0.65

$$2\left(-\frac{\sqrt{1-x}\,(3+4x+8x^2)}{90x^{5/2}}-\frac{\mathrm{ArcSin}\left(\sqrt{x}\right)}{6x^3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[Sqrt[x]]/x^4,x]
[Out] 2*(-1/90*(Sqrt[1 - x]*(3 + 4*x + 8*x^2))/x^(5/2) - ArcSin[Sqrt[x]]/(6*x^3))
```

Maple [A]
time = 0.01, size = 47, normalized size = 0.69

method	result	size
derivativedivides	$-\frac{\arcsin\left(\sqrt{x}\right)}{3x^{3}}-\frac{\sqrt{1-x}}{15x^{\frac{5}{2}}}-\frac{4\sqrt{1-x}}{45x^{\frac{3}{2}}}-\frac{8\sqrt{1-x}}{45\sqrt{x}}$	47

default	$-\frac{\arcsin\left(\sqrt{x}\right)}{3x^{3}}-\frac{\sqrt{1-x}}{15x^{\frac{5}{2}}}-\frac{4\sqrt{1-x}}{45x^{\frac{3}{2}}}-\frac{8\sqrt{1-x}}{45\sqrt{x}}$	47

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(x^(1/2))/x^4,x,method=_RETURNVERBOSE)
```

```
[Out] -1/3*arcsin(x^(1/2))/x^3-1/15*(1-x)^(1/2)/x^(5/2)-4/45*(1-x)^(1/2)/x^(3/2)-
8/45*(1-x)^(1/2)/x^(1/2)
```

Maxima [A]
time = 0.48, size = 46, normalized size = 0.68

$$-\frac{8\sqrt{-x+1}}{45\sqrt{x}}-\frac{4\sqrt{-x+1}}{45\,x^{\frac{3}{2}}}-\frac{\sqrt{-x+1}}{15\,x^{\frac{5}{2}}}-\frac{\arcsin\left(\sqrt{x}\right)}{3\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x^4,x, algorithm="maxima")
```

```
[Out] -8/45*sqrt(-x + 1)/sqrt(x) - 4/45*sqrt(-x + 1)/x^(3/2) - 1/15*sqrt(-x + 1)/
x^(5/2) - 1/3*arcsin(sqrt(x))/x^3
```

Fricas [A]
time = 2.01, size = 33, normalized size = 0.49

$$-\frac{(8\,x^{2}+4\,x+3)\sqrt{x}\,\sqrt{-x+1}+15\,\arcsin\left(\sqrt{x}\right)}{45\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x^4,x, algorithm="fricas")
```

```
[Out] -1/45*((8*x^2 + 4*x + 3)*sqrt(x)*sqrt(-x + 1) + 15*arcsin(sqrt(x)))/x^3
```

Sympy [A]
time = 11.90, size = 66, normalized size = 0.97

$$\frac{\begin{cases}-\frac{\sqrt{1-x}}{\sqrt{x}}-\frac{2(1-x)^{\frac{3}{2}}}{3x^{\frac{3}{2}}}-\frac{(1-x)^{\frac{5}{2}}}{5x^{\frac{5}{2}}} & \text{for}\ \sqrt{x}>-1\wedge\sqrt{x}<1\end{cases}}{3}-\frac{\operatorname{asin}\left(\sqrt{x}\right)}{3x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(x**(1/2))/x**4,x)
```

```
[Out] Piecewise((-sqrt(1 - x)/sqrt(x) - 2*(1 - x)**(3/2)/(3*x**(3/2)) - (1 - x)**
(5/2)/(5*x**(5/2)), (sqrt(x) > -1) & (sqrt(x) < 1)))/3 - asin(sqrt(x))/(3*x
**3)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 106 vs. 2(46) = 92.

time = 0.41, size = 106, normalized size = 1.56

$$-\frac{\left(\sqrt{-x+1}-1\right)^{5}}{480\,x^{\frac{5}{2}}}-\frac{5\left(\sqrt{-x+1}-1\right)^{3}}{288\,x^{\frac{3}{2}}}-\frac{5\left(\sqrt{-x+1}-1\right)}{48\sqrt{x}}+\frac{\left(\frac{150\left(\sqrt{-x+1}-1\right)^{4}}{x^{2}}+\frac{25\left(\sqrt{-x+1}-1\right)^{2}}{x}+3\right)x^{\frac{5}{2}}}{1440\left(\sqrt{-x+1}-1\right)^{5}}-\frac{\arcsin\left(\sqrt{x}\right)}{3\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x^4,x, algorithm="giac")
```

```
[Out] -1/480*(sqrt(-x + 1) - 1)^5/x^(5/2) - 5/288*(sqrt(-x + 1) - 1)^3/x^(3/2) -
5/48*(sqrt(-x + 1) - 1)/sqrt(x) + 1/1440*(150*(sqrt(-x + 1) - 1)^4/x^2 + 25
*(sqrt(-x + 1) - 1)^2/x + 3)*x^(5/2)/(sqrt(-x + 1) - 1)^5 - 1/3*arcsin(sqrt
(x))/x^3
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\mathrm{asin}\left(\sqrt{x}\right)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(x^(1/2))/x^4,x)
```

```
[Out] int(asin(x^(1/2))/x^4, x)
```

3.368 $\int \frac{\text{ArcSin}(\sqrt{x})}{x^5} dx$

Optimal. Leaf size=86

$$-\frac{\sqrt{1-x}}{28x^{7/2}}-\frac{3\sqrt{1-x}}{70x^{5/2}}-\frac{2\sqrt{1-x}}{35x^{3/2}}-\frac{4\sqrt{1-x}}{35\sqrt{x}}-\frac{\text{ArcSin}(\sqrt{x})}{4x^4}$$

```
[Out] -1/4*arcsin(x^(1/2))/x^4-1/28*(1-x)^(1/2)/x^(7/2)-3/70*(1-x)^(1/2)/x^(5/2)-
2/35*(1-x)^(1/2)/x^(3/2)-4/35*(1-x)^(1/2)/x^(1/2)
```

Rubi [A]
time = 0.02, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$, Rules used = {4926, 12, 47, 37}

$$-\frac{\text{ArcSin}(\sqrt{x})}{4x^4}-\frac{2\sqrt{1-x}}{35x^{3/2}}-\frac{3\sqrt{1-x}}{70x^{5/2}}-\frac{\sqrt{1-x}}{28x^{7/2}}-\frac{4\sqrt{1-x}}{35\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[Sqrt[x]]/x^5,x]
```

```
[Out] -1/28*Sqrt[1 - x]/x^(7/2) - (3*Sqrt[1 - x])/(70*x^(5/2)) - (2*Sqrt[1 - x])/
(35*x^(3/2)) - (4*Sqrt[1 - x])/(35*Sqrt[x]) - ArcSin[Sqrt[x]]/(4*x^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] - Dist[d*(S
implify[m + n + 2]/((b*c - a*d)*(m + 1))), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sin^{-1}(\sqrt{x})}{x^5}\,dx &= -\frac{\sin^{-1}(\sqrt{x})}{4x^4}+\frac{1}{4}\int \frac{1}{2\sqrt{1-x}\,x^{9/2}}\,dx\\
&= -\frac{\sin^{-1}(\sqrt{x})}{4x^4}+\frac{1}{8}\int \frac{1}{\sqrt{1-x}\,x^{9/2}}\,dx\\
&= -\frac{\sqrt{1-x}}{28x^{7/2}}-\frac{\sin^{-1}(\sqrt{x})}{4x^4}+\frac{3}{28}\int \frac{1}{\sqrt{1-x}\,x^{7/2}}\,dx\\
&= -\frac{\sqrt{1-x}}{28x^{7/2}}-\frac{3\sqrt{1-x}}{70x^{5/2}}-\frac{\sin^{-1}(\sqrt{x})}{4x^4}+\frac{3}{35}\int \frac{1}{\sqrt{1-x}\,x^{5/2}}\,dx\\
&= -\frac{\sqrt{1-x}}{28x^{7/2}}-\frac{3\sqrt{1-x}}{70x^{5/2}}-\frac{2\sqrt{1-x}}{35x^{3/2}}-\frac{\sin^{-1}(\sqrt{x})}{4x^4}+\frac{2}{35}\int \frac{1}{\sqrt{1-x}\,x^{3/2}}\,dx\\
&= -\frac{\sqrt{1-x}}{28x^{7/2}}-\frac{3\sqrt{1-x}}{70x^{5/2}}-\frac{2\sqrt{1-x}}{35x^{3/2}}-\frac{4\sqrt{1-x}}{35\sqrt{x}}-\frac{\sin^{-1}(\sqrt{x})}{4x^4}
\end{aligned}$$

Mathematica [A]
time = 0.02, size = 49, normalized size = 0.57

$$2\left(-\frac{\sqrt{1-x}\,(5+6x+8x^2+16x^3)}{280x^{7/2}}-\frac{\text{ArcSin}(\sqrt{x})}{8x^4}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[Sqrt[x]]/x^5,x]
```

```
[Out] 2*(-1/280*(Sqrt[1 - x]*(5 + 6*x + 8*x^2 + 16*x^3))/x^(7/2) - ArcSin[Sqrt[x]
]/(8*x^4))
```

Maple [A]
time = 0.01, size = 59, normalized size = 0.69

method	result	size

derivativedivides	$-\frac{\arcsin\left(\sqrt{x}\right)}{4x^4}-\frac{\sqrt{1-x}}{28x^{\frac{7}{2}}}-\frac{3\sqrt{1-x}}{70x^{\frac{5}{2}}}-\frac{2\sqrt{1-x}}{35x^{\frac{3}{2}}}-\frac{4\sqrt{1-x}}{35\sqrt{x}}$	59
default	$-\frac{\arcsin\left(\sqrt{x}\right)}{4x^4}-\frac{\sqrt{1-x}}{28x^{\frac{7}{2}}}-\frac{3\sqrt{1-x}}{70x^{\frac{5}{2}}}-\frac{2\sqrt{1-x}}{35x^{\frac{3}{2}}}-\frac{4\sqrt{1-x}}{35\sqrt{x}}$	59

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(x^(1/2))/x^5,x,method=_RETURNVERBOSE)
```

```
[Out] -1/4*arcsin(x^(1/2))/x^4-1/28*(1-x)^(1/2)/x^(7/2)-3/70*(1-x)^(1/2)/x^(5/2)-
2/35*(1-x)^(1/2)/x^(3/2)-4/35*(1-x)^(1/2)/x^(1/2)
```

Maxima [A]
time = 0.48, size = 58, normalized size = 0.67

$$-\frac{4\sqrt{-x+1}}{35\sqrt{x}}-\frac{2\sqrt{-x+1}}{35x^{\frac{3}{2}}}-\frac{3\sqrt{-x+1}}{70x^{\frac{5}{2}}}-\frac{\sqrt{-x+1}}{28x^{\frac{7}{2}}}-\frac{\arcsin\left(\sqrt{x}\right)}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x^5,x, algorithm="maxima")
```

```
[Out] -4/35*sqrt(-x + 1)/sqrt(x) - 2/35*sqrt(-x + 1)/x^(3/2) - 3/70*sqrt(-x + 1)/
x^(5/2) - 1/28*sqrt(-x + 1)/x^(7/2) - 1/4*arcsin(sqrt(x))/x^4
```

Fricas [A]
time = 2.52, size = 38, normalized size = 0.44

$$-\frac{(16x^3+8x^2+6x+5)\sqrt{x}\sqrt{-x+1}+35\arcsin\left(\sqrt{x}\right)}{140x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x^5,x, algorithm="fricas")
```

```
[Out] -1/140*((16*x^3 + 8*x^2 + 6*x + 5)*sqrt(x)*sqrt(-x + 1) + 35*arcsin(sqrt(x)
))/x^4
```

Sympy [A]
time = 31.74, size = 78, normalized size = 0.91

$$\frac{\begin{cases}-\frac{\sqrt{1-x}}{\sqrt{x}}-\frac{(1-x)^{\frac{3}{2}}}{x^{\frac{3}{2}}}-\frac{3(1-x)^{\frac{5}{2}}}{5x^{\frac{5}{2}}}-\frac{(1-x)^{\frac{7}{2}}}{7x^{\frac{7}{2}}} & \text{for}\ \sqrt{x}>-1\wedge\sqrt{x}<1\end{cases}}{4}-\frac{\operatorname{asin}\left(\sqrt{x}\right)}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(x**(1/2))/x**5,x)
```

```
[Out] Piecewise((-sqrt(1 - x)/sqrt(x) - (1 - x)**(3/2)/x**(3/2) - 3*(1 - x)**(5/2
)/(5*x**(5/2)) - (1 - x)**(7/2)/(7*x**(7/2)), (sqrt(x) > -1) & (sqrt(x) < 1
)))/4 - asin(sqrt(x))/(4*x**4)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 138 vs. 2(58) = 116.
time = 0.40, size = 138, normalized size = 1.60

$$-\frac{\left(\sqrt{-x+1}-1\right)^{7}}{3584\,x^{\frac{7}{2}}}-\frac{7\left(\sqrt{-x+1}-1\right)^{5}}{2560\,x^{\frac{5}{2}}}-\frac{7\left(\sqrt{-x+1}-1\right)^{3}}{512\,x^{\frac{3}{2}}}-\frac{35\left(\sqrt{-x+1}-1\right)}{512\,\sqrt{x}}+\frac{\left(\frac{1225\left(\sqrt{-x+1}-1\right)^{6}}{x^{3}}+\frac{245\left(\sqrt{-x+1}-1\right)^{4}}{x^{2}}+\frac{49\left(\sqrt{-x+1}-1\right)^{2}}{x}+5\right)x^{\frac{7}{2}}}{17920\left(\sqrt{-x+1}-1\right)^{7}}-\frac{\arcsin\left(\sqrt{x}\right)}{4\,x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^(1/2))/x^5,x, algorithm="giac")
```

```
[Out] -1/3584*(sqrt(-x + 1) - 1)^7/x^(7/2) - 7/2560*(sqrt(-x + 1) - 1)^5/x^(5/2)
- 7/512*(sqrt(-x + 1) - 1)^3/x^(3/2) - 35/512*(sqrt(-x + 1) - 1)/sqrt(x) +
1/17920*(1225*(sqrt(-x + 1) - 1)^6/x^3 + 245*(sqrt(-x + 1) - 1)^4/x^2 + 49*
(sqrt(-x + 1) - 1)^2/x + 5)*x^(7/2)/(sqrt(-x + 1) - 1)^7 - 1/4*arcsin(sqrt(
x))/x^4
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\mathrm{asin}\left(\sqrt{x}\right)}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(x^(1/2))/x^5,x)
```

```
[Out] int(asin(x^(1/2))/x^5, x)
```

3.369 $\int x^4\left(a+b\mathbf{ArcSin}\left(\frac{c}{x}\right)\right)\,dx$

Optimal. Leaf size=89

$$\frac{3}{40}bc^3\sqrt{1-\frac{c^2}{x^2}}\,x^2+\frac{1}{20}bc\sqrt{1-\frac{c^2}{x^2}}\,x^4+\frac{1}{5}x^5\left(a+b\text{ArcSin}\left(\frac{c}{x}\right)\right)+\frac{3}{40}bc^5\tanh^{-1}\left(\sqrt{1-\frac{c^2}{x^2}}\right)$$

```
[Out] 1/5*x^5*(a+b*arcsin(c/x))+3/40*b*c^5*arctanh((1-c^2/x^2)^(1/2))+3/40*b*c^3*
x^2*(1-c^2/x^2)^(1/2)+1/20*b*c*x^4*(1-c^2/x^2)^(1/2)
```

Rubi [A]
time = 0.04, antiderivative size = 89, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {4926, 12, 272, 44, 65, 214}

$$\frac{1}{5}x^5\left(a+b\text{ArcSin}\left(\frac{c}{x}\right)\right)+\frac{1}{20}bcx^4\sqrt{1-\frac{c^2}{x^2}}+\frac{3}{40}bc^5\tanh^{-1}\left(\sqrt{1-\frac{c^2}{x^2}}\right)+\frac{3}{40}bc^3x^2\sqrt{1-\frac{c^2}{x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(a + b*ArcSin[c/x]),x]
```

```
[Out] (3*b*c^3*Sqrt[1 - c^2/x^2]*x^2)/40 + (b*c*Sqrt[1 - c^2/x^2]*x^4)/20 + (x^5*
(a + b*ArcSin[c/x]))/5 + (3*b*c^5*ArcTanh[Sqrt[1 - c^2/x^2]])/40
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] - Dist[d*((
m + n + 2)/((b*c - a*d)*(m + 1))), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, -1] &&  !Int
egerQ[n] && LtQ[n, 0]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$
\begin{aligned}
\int x^4\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)\,dx &= \frac{1}{5}x^5\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{5}b\int\frac{cx^3}{\sqrt{1-\frac{c^2}{x^2}}}\,dx\\
&= \frac{1}{5}x^5\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{5}(bc)\int\frac{x^3}{\sqrt{1-\frac{c^2}{x^2}}}\,dx\\
&= \frac{1}{5}x^5\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)-\frac{1}{10}(bc)\text{Subst}\left(\int\frac{1}{x^3\sqrt{1-c^2x}}\,dx,x,\frac{1}{x^2}\right)\\
&= \frac{1}{20}bc\sqrt{1-\frac{c^2}{x^2}}\,x^4+\frac{1}{5}x^5\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)-\frac{1}{40}\left(3bc^3\right)\text{Subst}\left(\int\frac{1}{x^2\sqrt{1-c^2x}}\right.\\
&= \frac{3}{40}bc^3\sqrt{1-\frac{c^2}{x^2}}\,x^2+\frac{1}{20}bc\sqrt{1-\frac{c^2}{x^2}}\,x^4+\frac{1}{5}x^5\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)-\frac{1}{80}\left(3bc^5\right)\text{S}\\
&= \frac{3}{40}bc^3\sqrt{1-\frac{c^2}{x^2}}\,x^2+\frac{1}{20}bc\sqrt{1-\frac{c^2}{x^2}}\,x^4+\frac{1}{5}x^5\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{40}\left(3bc^3\right)\text{S}\\
&= \frac{3}{40}bc^3\sqrt{1-\frac{c^2}{x^2}}\,x^2+\frac{1}{20}bc\sqrt{1-\frac{c^2}{x^2}}\,x^4+\frac{1}{5}x^5\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{3}{40}bc^5\tanh
\end{aligned}
$$

Mathematica [**A**]

time = 0.05, size = 91, normalized size = 1.02

$$\frac{ax^5}{5}+b\sqrt{\frac{-c^2+x^2}{x^2}}\left(\frac{3c^3x^2}{40}+\frac{cx^4}{20}\right)+\frac{1}{5}bx^5\mathrm{ArcSin}\left(\frac{c}{x}\right)+\frac{3}{40}bc^5\log\left(x\left(1+\sqrt{\frac{-c^2+x^2}{x^2}}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(a + b*ArcSin[c/x]),x]
```

```
[Out] (a*x^5)/5 + b*Sqrt[(-c^2 + x^2)/x^2]*((3*c^3*x^2)/40 + (c*x^4)/20) + (b*x^5
*ArcSin[c/x])/5 + (3*b*c^5*Log[x*(1 + Sqrt[(-c^2 + x^2)/x^2])])/40
```

Maple [A]
time = 0.15, size = 88, normalized size = 0.99

method	result
derivativedivides	$-c^5\left(-\frac{a\,x^5}{5c^5}+b\left(-\frac{x^5\arcsin\left(\frac{c}{x}\right)}{5c^5}-\frac{x^4\sqrt{1-\frac{c^2}{x^2}}}{20c^4}-\frac{3x^2\sqrt{1-\frac{c^2}{x^2}}}{40c^2}-\frac{3\,\mathrm{arctanh}\left(\frac{1}{\sqrt{1-\frac{c^2}{x^2}}}\right)}{40}\right)\right)$
default	$-c^5\left(-\frac{a\,x^5}{5c^5}+b\left(-\frac{x^5\arcsin\left(\frac{c}{x}\right)}{5c^5}-\frac{x^4\sqrt{1-\frac{c^2}{x^2}}}{20c^4}-\frac{3x^2\sqrt{1-\frac{c^2}{x^2}}}{40c^2}-\frac{3\,\mathrm{arctanh}\left(\frac{1}{\sqrt{1-\frac{c^2}{x^2}}}\right)}{40}\right)\right)$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*arcsin(c/x)),x,method=_RETURNVERBOSE)
```

```
[Out] -c^5*(-1/5*a/c^5*x^5+b*(-1/5/c^5*x^5*arcsin(c/x)-1/20/c^4*x^4*(1-c^2/x^2)^(
1/2)-3/40/c^2*x^2*(1-c^2/x^2)^(1/2)-3/40*arctanh(1/(1-c^2/x^2)^(1/2))))
```

Maxima [A]
time = 0.48, size = 125, normalized size = 1.40

$$\frac{1}{5}\,ax^5+\frac{1}{80}\left(16\,x^5\arcsin\left(\frac{c}{x}\right)+\left(3\,c^4\log\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)-3\,c^4\log\left(\sqrt{-\frac{c^2}{x^2}+1}-1\right)-\frac{2\left(3\,c^4\left(-\frac{c^2}{x^2}+1\right)^{\frac{3}{2}}-5\,c^4\sqrt{-\frac{c^2}{x^2}+1}\right)}{\left(\frac{c^2}{x^2}-1\right)^2+\frac{2\,c^2}{x^2}-1}\right)c\right)b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c/x)),x, algorithm="maxima")
```

```
[Out] 1/5*a*x^5 + 1/80*(16*x^5*arcsin(c/x) + (3*c^4*log(sqrt(-c^2/x^2 + 1) + 1) -
 3*c^4*log(sqrt(-c^2/x^2 + 1) - 1) - 2*(3*c^4*(-c^2/x^2 + 1)^(3/2) - 5*c^4*
sqrt(-c^2/x^2 + 1))/((c^2/x^2 - 1)^2 + 2*c^2/x^2 - 1))*c)*b
```

Fricas [A]
time = 3.36, size = 118, normalized size = 1.33

$$-\frac{3}{40}\,bc^5\log\left(x\sqrt{-\frac{c^2-x^2}{x^2}}-x\right)+\frac{1}{5}\,ax^5+\frac{1}{5}\,(bx^5-b)\arcsin\left(\frac{c}{x}\right)-\frac{2}{5}\,b\arctan\left(\frac{x\sqrt{-\frac{c^2-x^2}{x^2}}-x}{c}\right)+\frac{1}{40}\,(3\,bc^3x^2+2\,bcx^4)\sqrt{-\frac{c^2-x^2}{x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c/x)),x, algorithm="fricas")
```

```
[Out] -3/40*b*c^5*log(x*sqrt(-(c^2 - x^2)/x^2) - x) + 1/5*a*x^5 + 1/5*(b*x^5 - b)
*arcsin(c/x) - 2/5*b*arctan((x*sqrt(-(c^2 - x^2)/x^2) - x)/c) + 1/40*(3*b*c
^3*x^2 + 2*b*c*x^4)*sqrt(-(c^2 - x^2)/x^2)
```

Sympy [A]
time = 4.00, size = 175, normalized size = 1.97

$$\frac{ax^5}{5}+\frac{bc\left(\begin{cases}\frac{3c^4\operatorname{acosh}\left(\frac{x}{c}\right)}{8}-\frac{3c^3x}{8\sqrt{-1+\frac{x^2}{c^2}}}+\frac{cx^3}{8\sqrt{-1+\frac{x^2}{c^2}}}+\frac{x^5}{4c\sqrt{-1+\frac{x^2}{c^2}}} & \text{for } \left|\frac{x^2}{c^2}\right|>1\\ -\frac{3ic^4\operatorname{asin}\left(\frac{x}{c}\right)}{8}+\frac{3ic^3x}{8\sqrt{1-\frac{x^2}{c^2}}}-\frac{icx^3}{8\sqrt{1-\frac{x^2}{c^2}}}-\frac{ix^5}{4c\sqrt{1-\frac{x^2}{c^2}}} & \text{otherwise}\end{cases}\right)}{5}+\frac{bx^5\operatorname{asin}\left(\frac{c}{x}\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*asin(c/x)),x)
```

```
[Out] a*x**5/5 + b*c*Piecewise((3*c**4*acosh(x/c)/8 - 3*c**3*x/(8*sqrt(-1 + x**2/
c**2)) + c*x**3/(8*sqrt(-1 + x**2/c**2)) + x**5/(4*c*sqrt(-1 + x**2/c**2)),
 Abs(x**2/c**2) > 1), (-3*I*c**4*asin(x/c)/8 + 3*I*c**3*x/(8*sqrt(1 - x**2/
c**2)) - I*c*x**3/(8*sqrt(1 - x**2/c**2)) - I*x**5/(4*c*sqrt(1 - x**2/c**2)
), True))/5 + b*x**5*asin(c/x)/5
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 464 vs. 2(75) = 150.
time = 1.11, size = 464, normalized size = 5.21

$$\frac{2\,bcx^5\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^5\arcsin\left(\frac{c}{x}\right)+2\,acx^5\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^5+bc^2x^4\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^4+10\,bc^3x^3\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^3\arcsin\left(\frac{c}{x}\right)+10\,ac^3x^3\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^3+8\,bc^4x^2\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^2+20\,bc^5x\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)\arcsin\left(\frac{c}{x}\right)+20\,ac^5x\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)+24\,bc^6\log\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)-24\,bc^6\log\left(\frac{|c|}{|x|}\right)+\frac{20\,bc^7\arcsin\left(\frac{c}{x}\right)}{x\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)}+\frac{20\,ac^7}{x\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)}-\frac{8\,bc^8}{x^2\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^2}+\frac{10\,bc^9\arcsin\left(\frac{c}{x}\right)}{x^3\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^3}+\frac{10\,ac^9}{x^3\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^3}-\frac{bc^{10}}{x^4\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^4}+\frac{2\,bc^{11}\arcsin\left(\frac{c}{x}\right)}{x^5\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^5}+\frac{2\,ac^{11}}{x^5\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^5}}{320\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c/x)),x, algorithm="giac")
```

```
[Out] 1/320*(2*b*c*x^5*(sqrt(-c^2/x^2 + 1) + 1)^5*arcsin(c/x) + 2*a*c*x^5*(sqrt(-
c^2/x^2 + 1) + 1)^5 + b*c^2*x^4*(sqrt(-c^2/x^2 + 1) + 1)^4 + 10*b*c^3*x^3*(
```

```
sqrt(-c^2/x^2 + 1) + 1)^3*arcsin(c/x) + 10*a*c^3*x^3*(sqrt(-c^2/x^2 + 1) +
1)^3 + 8*b*c^4*x^2*(sqrt(-c^2/x^2 + 1) + 1)^2 + 20*b*c^5*x*(sqrt(-c^2/x^2 +
 1) + 1)*arcsin(c/x) + 20*a*c^5*x*(sqrt(-c^2/x^2 + 1) + 1) + 24*b*c^6*log(s
qrt(-c^2/x^2 + 1) + 1) - 24*b*c^6*log(abs(c)/abs(x)) + 20*b*c^7*arcsin(c/x)
/(x*(sqrt(-c^2/x^2 + 1) + 1)) + 20*a*c^7/(x*(sqrt(-c^2/x^2 + 1) + 1)) - 8*b
*c^8/(x^2*(sqrt(-c^2/x^2 + 1) + 1)^2) + 10*b*c^9*arcsin(c/x)/(x^3*(sqrt(-c^
2/x^2 + 1) + 1)^3) + 10*a*c^9/(x^3*(sqrt(-c^2/x^2 + 1) + 1)^3) - b*c^10/(x^
4*(sqrt(-c^2/x^2 + 1) + 1)^4) + 2*b*c^11*arcsin(c/x)/(x^5*(sqrt(-c^2/x^2 +
1) + 1)^5) + 2*a*c^11/(x^5*(sqrt(-c^2/x^2 + 1) + 1)^5))/c
```

Mupad [**F**]

time = 0.00, size = -1, normalized size = -0.01

$$\int x^4\left(a+b\,\mathrm{asin}\left(\frac{c}{x}\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a + b*asin(c/x)),x)
```

```
[Out] int(x^4*(a + b*asin(c/x)), x)
```

3.370 $\int x^3\left(a+b\text{ArcSin}\left(\frac{c}{x}\right)\right)\,dx$

Optimal. Leaf size=64

$$\frac{1}{6}bc^3\sqrt{1-\frac{c^2}{x^2}}\,x+\frac{1}{12}bc\sqrt{1-\frac{c^2}{x^2}}\,x^3+\frac{1}{4}x^4\left(a+b\text{ArcSin}\left(\frac{c}{x}\right)\right)$$

```
[Out] 1/4*x^4*(a+b*arcsin(c/x))+1/6*b*c^3*x*(1-c^2/x^2)^(1/2)+1/12*b*c*x^3*(1-c^2
/x^2)^(1/2)
```

Rubi [A]
time = 0.03, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {4926, 12, 277, 197}

$$\frac{1}{4}x^4\left(a+b\text{ArcSin}\left(\frac{c}{x}\right)\right)+\frac{1}{12}bcx^3\sqrt{1-\frac{c^2}{x^2}}+\frac{1}{6}bc^3x\sqrt{1-\frac{c^2}{x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(a + b*ArcSin[c/x]),x]
```

```
[Out] (b*c^3*Sqrt[1 - c^2/x^2]*x)/6 + (b*c*Sqrt[1 - c^2/x^2]*x^3)/12 + (x^4*(a +
b*ArcSin[c/x]))/4
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 197

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[x*((a + b*x^n)^(p + 1)
/a), x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 277

```
Int[(x_)^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[x^(m + 1)*((
a + b*x^n)^(p + 1)/(a*(m + 1))), x] - Dist[b*((m + n*(p + 1) + 1)/(a*(m + 1
))), Int[x^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, m, n, p}, x] && IL
tQ[Simplify[(m + 1)/n + p + 1], 0] && NeQ[m, -1]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
```

```
] && !FunctionOfQ[(c + d*x)^(m + 1), u, x] && !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\begin{aligned}
\int x^3\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)\,dx &= \frac{1}{4}x^4\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{4}b\int\frac{cx^2}{\sqrt{1-\frac{c^2}{x^2}}}\,dx\\
&= \frac{1}{4}x^4\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{4}(bc)\int\frac{x^2}{\sqrt{1-\frac{c^2}{x^2}}}\,dx\\
&= \frac{1}{12}bc\sqrt{1-\frac{c^2}{x^2}}\,x^3+\frac{1}{4}x^4\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{6}\left(bc^3\right)\int\frac{1}{\sqrt{1-\frac{c^2}{x^2}}}\,dx\\
&= \frac{1}{6}bc^3\sqrt{1-\frac{c^2}{x^2}}\,x+\frac{1}{12}bc\sqrt{1-\frac{c^2}{x^2}}\,x^3+\frac{1}{4}x^4\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)
\end{aligned}$$

Mathematica [A]
time = 0.03, size = 59, normalized size = 0.92

$$\frac{ax^4}{4}+b\sqrt{\frac{-c^2+x^2}{x^2}}\left(\frac{c^3x}{6}+\frac{cx^3}{12}\right)+\frac{1}{4}bx^4\text{ArcSin}\left(\frac{c}{x}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(a + b*ArcSin[c/x]),x]
[Out] (a*x^4)/4 + b*Sqrt[(-c^2 + x^2)/x^2]*((c^3*x)/6 + (c*x^3)/12) + (b*x^4*ArcS
in[c/x])/4
```

Maple [A]
time = 0.01, size = 71, normalized size = 1.11

method	result	size
derivativedivides	$-c^4\left(-\frac{a\,x^4}{4c^4}+b\left(-\frac{x^4\arcsin\left(\frac{c}{x}\right)}{4c^4}-\frac{x^3\sqrt{1-\frac{c^2}{x^2}}}{12c^3}-\frac{x\sqrt{1-\frac{c^2}{x^2}}}{6c}\right)\right)$	71
default	$-c^4\left(-\frac{a\,x^4}{4c^4}+b\left(-\frac{x^4\arcsin\left(\frac{c}{x}\right)}{4c^4}-\frac{x^3\sqrt{1-\frac{c^2}{x^2}}}{12c^3}-\frac{x\sqrt{1-\frac{c^2}{x^2}}}{6c}\right)\right)$	71

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*arcsin(c/x)),x,method=_RETURNVERBOSE)
```

```
[Out] -c^4*(-1/4*a/c^4*x^4+b*(-1/4/c^4*x^4*arcsin(c/x)-1/12/c^3*x^3*(1-c^2/x^2)^(
1/2)-1/6/c*x*(1-c^2/x^2)^(1/2)))
```

Maxima [A]
time = 0.47, size = 59, normalized size = 0.92

$$\frac{1}{4}\,ax^4 + \frac{1}{12}\left(3\,x^4\arcsin\left(\frac{c}{x}\right) + \left(x^3\left(-\frac{c^2}{x^2}+1\right)^{\frac{3}{2}} + 3\,c^2x\sqrt{-\frac{c^2}{x^2}+1}\right)c\right)b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c/x)),x, algorithm="maxima")
```

```
[Out] 1/4*a*x^4 + 1/12*(3*x^4*arcsin(c/x) + (x^3*(-c^2/x^2 + 1)^(3/2) + 3*c^2*x*s
qrt(-c^2/x^2 + 1))*c)*b
```

Fricas [A]
time = 2.81, size = 51, normalized size = 0.80

$$\frac{1}{4}\,bx^4\arcsin\left(\frac{c}{x}\right) + \frac{1}{4}\,ax^4 + \frac{1}{12}\left(2\,bc^3x + bcx^3\right)\sqrt{-\frac{c^2-x^2}{x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c/x)),x, algorithm="fricas")
```

```
[Out] 1/4*b*x^4*arcsin(c/x) + 1/4*a*x^4 + 1/12*(2*b*c^3*x + b*c*x^3)*sqrt(-(c^2 -
 x^2)/x^2)
```

Sympy [A]
time = 1.73, size = 107, normalized size = 1.67

$$\frac{ax^4}{4} + \frac{bc\left(\begin{cases}\frac{2c^3\sqrt{-1+\frac{x^2}{c^2}}}{3} + \frac{cx^2\sqrt{-1+\frac{x^2}{c^2}}}{3} & \text{for}\ \left|\frac{x^2}{c^2}\right| > 1\\ \frac{2ic^3\sqrt{1-\frac{x^2}{c^2}}}{3} + \frac{icx^2\sqrt{1-\frac{x^2}{c^2}}}{3} & \text{otherwise}\end{cases}\right)}{4} + \frac{bx^4\operatorname{asin}\left(\frac{c}{x}\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*asin(c/x)),x)
```

```
[Out] a*x**4/4 + b*c*Piecewise((2*c**3*sqrt(-1 + x**2/c**2)/3 + c*x**2*sqrt(-1 +
x**2/c**2)/3, Abs(x**2/c**2) > 1), (2*I*c**3*sqrt(1 - x**2/c**2)/3 + I*c*x*
*2*sqrt(1 - x**2/c**2)/3, True))/4 + b*x**4*asin(c/x)/4
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 340 vs. 2(54) = 108.
time = 0.45, size = 340, normalized size = 5.31

$$\frac{3\,bcx^4\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^4\arcsin\left(\frac{c}{x}\right)+3\,acx^4\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^4+2\,bc^2x^3\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^3+12\,bc^3x^2\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^2\arcsin\left(\frac{c}{x}\right)+12\,ac^3x^2\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^2+18\,bc^4x\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)+18\,bc^5\arcsin\left(\frac{c}{x}\right)+18\,ac^5-\frac{18\,bc^6}{x\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)}+\frac{12\,bc^7\arcsin\left(\frac{c}{x}\right)}{x^2\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^2}+\frac{12\,ac^7}{x^2\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^2}-\frac{2\,bc^8}{x^3\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^3}+\frac{3\,bc^9\arcsin\left(\frac{c}{x}\right)}{x^4\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^4}+\frac{3\,ac^9}{x^4\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^4}}{192\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c/x)),x, algorithm="giac")
```

```
[Out] 1/192*(3*b*c*x^4*(sqrt(-c^2/x^2 + 1) + 1)^4*arcsin(c/x) + 3*a*c*x^4*(sqrt(-
c^2/x^2 + 1) + 1)^4 + 2*b*c^2*x^3*(sqrt(-c^2/x^2 + 1) + 1)^3 + 12*b*c^3*x^2
*(sqrt(-c^2/x^2 + 1) + 1)^2*arcsin(c/x) + 12*a*c^3*x^2*(sqrt(-c^2/x^2 + 1)
+ 1)^2 + 18*b*c^4*x*(sqrt(-c^2/x^2 + 1) + 1) + 18*b*c^5*arcsin(c/x) + 18*a*
c^5 - 18*b*c^6/(x*(sqrt(-c^2/x^2 + 1) + 1)) + 12*b*c^7*arcsin(c/x)/(x^2*(sq
rt(-c^2/x^2 + 1) + 1)^2) + 12*a*c^7/(x^2*(sqrt(-c^2/x^2 + 1) + 1)^2) - 2*b*
c^8/(x^3*(sqrt(-c^2/x^2 + 1) + 1)^3) + 3*b*c^9*arcsin(c/x)/(x^4*(sqrt(-c^2/
x^2 + 1) + 1)^4) + 3*a*c^9/(x^4*(sqrt(-c^2/x^2 + 1) + 1)^4))/c
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int x^3\,\left(a+b\,\mathrm{asin}\left(\frac{c}{x}\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + b*asin(c/x)),x)
```

```
[Out] int(x^3*(a + b*asin(c/x)), x)
```

3.371 $\int x^2\left(a+b\text{ArcSin}\left(\frac{c}{x}\right)\right)\,dx$

Optimal. Leaf size=64

$$\frac{1}{6}bc\sqrt{1-\frac{c^2}{x^2}}\,x^2+\frac{1}{3}x^3\left(a+b\text{ArcSin}\left(\frac{c}{x}\right)\right)+\frac{1}{6}bc^3\tanh^{-1}\left(\sqrt{1-\frac{c^2}{x^2}}\right)$$

```
[Out] 1/3*x^3*(a+b*arcsin(c/x))+1/6*b*c^3*arctanh((1-c^2/x^2)^(1/2))+1/6*b*c*x^2*
(1-c^2/x^2)^(1/2)
```

Rubi [A]
time = 0.03, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}=0.429$, Rules used = {4926, 12, 272, 44, 65, 214}

$$\frac{1}{3}x^3\left(a+b\text{ArcSin}\left(\frac{c}{x}\right)\right)+\frac{1}{6}bcx^2\sqrt{1-\frac{c^2}{x^2}}+\frac{1}{6}bc^3\tanh^{-1}\left(\sqrt{1-\frac{c^2}{x^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(a + b*ArcSin[c/x]),x]
```

```
[Out] (b*c*Sqrt[1 - c^2/x^2]*x^2)/6 + (x^3*(a + b*ArcSin[c/x]))/3 + (b*c^3*ArcTan
h[Sqrt[1 - c^2/x^2]])/6
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
(a + b*x)^(m + 1)*((c + d*x)^(n + 1)/((b*c - a*d)*(m + 1))), x] - Dist[d*((
m + n + 2)/((b*c - a*d)*(m + 1))), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, -1] &&  !Int
egerQ[n] && LtQ[n, 0]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$
\begin{aligned}
\int x^2\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)\,dx &= \frac{1}{3}x^3\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{3}b\int\frac{cx}{\sqrt{1-\frac{c^2}{x^2}}}\,dx\\
&= \frac{1}{3}x^3\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{3}(bc)\int\frac{x}{\sqrt{1-\frac{c^2}{x^2}}}\,dx\\
&= \frac{1}{3}x^3\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)-\frac{1}{6}(bc)\text{Subst}\left(\int\frac{1}{x^2\sqrt{1-c^2x}}\,dx,x,\frac{1}{x^2}\right)\\
&= \frac{1}{6}bc\sqrt{1-\frac{c^2}{x^2}}\,x^2+\frac{1}{3}x^3\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)-\frac{1}{12}\left(bc^3\right)\text{Subst}\left(\int\frac{1}{x\sqrt{1-c^2x}}\,d\right.\\
&= \frac{1}{6}bc\sqrt{1-\frac{c^2}{x^2}}\,x^2+\frac{1}{3}x^3\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{6}(bc)\text{Subst}\left(\int\frac{1}{\frac{1}{c^2}-\frac{x^2}{c^2}}\,dx,x,\sqrt{\right.\\
&= \frac{1}{6}bc\sqrt{1-\frac{c^2}{x^2}}\,x^2+\frac{1}{3}x^3\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{6}bc^3\tanh^{-1}\left(\sqrt{1-\frac{c^2}{x^2}}\right)
\end{aligned}
$$

Mathematica [A]
time = 0.04, size = 79, normalized size = 1.23

$$
\frac{ax^3}{3}+\frac{1}{6}bcx^2\sqrt{\frac{-c^2+x^2}{x^2}}+\frac{1}{3}bx^3\text{ArcSin}\left(\frac{c}{x}\right)+\frac{1}{6}bc^3\log\left(x\left(1+\sqrt{\frac{-c^2+x^2}{x^2}}\right)\right)
$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(a + b*ArcSin[c/x]),x]
```

```
[Out] (a*x^3)/3 + (b*c*x^2*Sqrt[(-c^2 + x^2)/x^2])/6 + (b*x^3*ArcSin[c/x])/3 + (b
*c^3*Log[x*(1 + Sqrt[(-c^2 + x^2)/x^2])])/6
```

Maple [A]
time = 0.01, size = 68, normalized size = 1.06

method	result	size
derivativedivides	$-c^{3}\left(-\frac{a\,x^{3}}{3c^{3}}+b\left(-\frac{x^{3}\arcsin\left(\frac{c}{x}\right)}{3c^{3}}-\frac{x^{2}\sqrt{1-\frac{c^{2}}{x^{2}}}}{6c^{2}}-\frac{\operatorname{arctanh}\left(\frac{1}{\sqrt{1-\frac{c^{2}}{x^{2}}}}\right)}{6}\right)\right)$	68
default	$-c^{3}\left(-\frac{a\,x^{3}}{3c^{3}}+b\left(-\frac{x^{3}\arcsin\left(\frac{c}{x}\right)}{3c^{3}}-\frac{x^{2}\sqrt{1-\frac{c^{2}}{x^{2}}}}{6c^{2}}-\frac{\operatorname{arctanh}\left(\frac{1}{\sqrt{1-\frac{c^{2}}{x^{2}}}}\right)}{6}\right)\right)$	68

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(c/x)),x,method=_RETURNVERBOSE)
```

```
[Out] -c^3*(-1/3*a/c^3*x^3+b*(-1/3/c^3*x^3*arcsin(c/x)-1/6/c^2*x^2*(1-c^2/x^2)^(1
/2)-1/6*arctanh(1/(1-c^2/x^2)^(1/2))))
```

Maxima [A]
time = 0.47, size = 81, normalized size = 1.27

$$\frac{1}{3}\,ax^{3}+\frac{1}{12}\left(4\,x^{3}\arcsin\left(\frac{c}{x}\right)+\left(c^{2}\log\left(\sqrt{-\frac{c^{2}}{x^{2}}+1}+1\right)-c^{2}\log\left(\sqrt{-\frac{c^{2}}{x^{2}}+1}-1\right)+2\,x^{2}\sqrt{-\frac{c^{2}}{x^{2}}+1}\right)c\right)b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c/x)),x, algorithm="maxima")
```

```
[Out] 1/3*a*x^3 + 1/12*(4*x^3*arcsin(c/x) + (c^2*log(sqrt(-c^2/x^2 + 1) + 1) - c^
2*log(sqrt(-c^2/x^2 + 1) - 1) + 2*x^2*sqrt(-c^2/x^2 + 1))*c)*b
```

Fricas [A]
time = 2.52, size = 106, normalized size = 1.66

$$-\frac{1}{6}\,bc^{3}\log\left(x\sqrt{-\frac{c^{2}-x^{2}}{x^{2}}}-x\right)+\frac{1}{6}\,bcx^{2}\sqrt{-\frac{c^{2}-x^{2}}{x^{2}}}+\frac{1}{3}\,ax^{3}+\frac{1}{3}\,(bx^{3}-b)\arcsin\left(\frac{c}{x}\right)-\frac{2}{3}\,b\arctan\left(\frac{x\sqrt{-\frac{c^{2}-x^{2}}{x^{2}}}-x}{c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c/x)),x, algorithm="fricas")
```

```
[Out] -1/6*b*c^3*log(x*sqrt(-(c^2 - x^2)/x^2) - x) + 1/6*b*c*x^2*sqrt(-(c^2 - x^2
)/x^2) + 1/3*a*x^3 + 1/3*(b*x^3 - b)*arcsin(c/x) - 2/3*b*arctan((x*sqrt(-(c
^2 - x^2)/x^2) - x)/c)
```

Sympy [A]
time = 2.11, size = 105, normalized size = 1.64

$$\frac{ax^3}{3} + \frac{bc\left(\begin{cases} \frac{c^2 \operatorname{acosh}\left(\frac{x}{c}\right)}{2} - \frac{cx}{2\sqrt{-1+\frac{x^2}{c^2}}} + \frac{x^3}{2c\sqrt{-1+\frac{x^2}{c^2}}} & \text{for}\ \left|\frac{x^2}{c^2}\right| > 1 \\ -\frac{ic^2 \operatorname{asin}\left(\frac{x}{c}\right)}{2} + \frac{icx\sqrt{1-\frac{x^2}{c^2}}}{2} & \text{otherwise} \end{cases}\right)}{3} + \frac{bx^3 \operatorname{asin}\left(\frac{c}{x}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(c/x)),x)
```

```
[Out] a*x**3/3 + b*c*Piecewise((c**2*acosh(x/c)/2 - c*x/(2*sqrt(-1 + x**2/c**2))
+ x**3/(2*c*sqrt(-1 + x**2/c**2)), Abs(x**2/c**2) > 1), (-I*c**2*asin(x/c)/
2 + I*c*x*sqrt(1 - x**2/c**2)/2, True))/3 + b*x**3*asin(c/x)/3
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 298 vs. 2(54) = 108.
time = 0.59, size = 298, normalized size = 4.66

$$\frac{bcx^3\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^3 \arcsin\left(\frac{c}{x}\right) + acx^3\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^3 + bc^2x^2\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^2 + 3\,bc^3x\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)\arcsin\left(\frac{c}{x}\right) + 3\,ac^3x\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right) + 4\,bc^4\log\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right) - 4\,bc^4\log\left(\frac{|c|}{|x|}\right) + \frac{3\,bc^5\arcsin\left(\frac{c}{x}\right)}{x\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)} + \frac{3\,ac^5}{x\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)} - \frac{bc^6}{x^2\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^2} + \frac{bc^7\arcsin\left(\frac{c}{x}\right)}{x^3\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^3} + \frac{ac^7}{x^3\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^3}}{24\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c/x)),x, algorithm="giac")
```

```
[Out] 1/24*(b*c*x^3*(sqrt(-c^2/x^2 + 1) + 1)^3*arcsin(c/x) + a*c*x^3*(sqrt(-c^2/x
^2 + 1) + 1)^3 + b*c^2*x^2*(sqrt(-c^2/x^2 + 1) + 1)^2 + 3*b*c^3*x*(sqrt(-c^
2/x^2 + 1) + 1)*arcsin(c/x) + 3*a*c^3*x*(sqrt(-c^2/x^2 + 1) + 1) + 4*b*c^4*
log(sqrt(-c^2/x^2 + 1) + 1) - 4*b*c^4*log(abs(c)/abs(x)) + 3*b*c^5*arcsin(c
/x)/(x*(sqrt(-c^2/x^2 + 1) + 1)) + 3*a*c^5/(x*(sqrt(-c^2/x^2 + 1) + 1)) - b
*c^6/(x^2*(sqrt(-c^2/x^2 + 1) + 1)^2) + b*c^7*arcsin(c/x)/(x^3*(sqrt(-c^2/x
^2 + 1) + 1)^3) + a*c^7/(x^3*(sqrt(-c^2/x^2 + 1) + 1)^3))/c
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int x^2\left(a+b\operatorname{asin}\left(\frac{c}{x}\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c/x)),x)
```

```
[Out] int(x^2*(a + b*asin(c/x)), x)
```

3.372 $\int x\left(a+b\text{ArcSin}\left(\frac{c}{x}\right)\right)\,dx$

Optimal. Leaf size=39

$$\frac{1}{2}bc\sqrt{1-\frac{c^2}{x^2}}\,x+\frac{1}{2}x^2\left(a+b\text{ArcSin}\left(\frac{c}{x}\right)\right)$$

```
[Out] 1/2*x^2*(a+b*arcsin(c/x))+1/2*b*c*x*(1-c^2/x^2)^(1/2)
```

Rubi [A]
time = 0.01, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {4926, 12, 197}

$$\frac{1}{2}x^2\left(a+b\text{ArcSin}\left(\frac{c}{x}\right)\right)+\frac{1}{2}bcx\sqrt{1-\frac{c^2}{x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*ArcSin[c/x]),x]
```

```
[Out] (b*c*Sqrt[1 - c^2/x^2]*x)/2 + (x^2*(a + b*ArcSin[c/x]))/2
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 197

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[x*((a + b*x^n)^(p + 1)
/a), x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\int x\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)\,dx=\frac{1}{2}x^2\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{2}b\int\frac{c}{\sqrt{1-\frac{c^2}{x^2}}}\,dx$$
$$=\frac{1}{2}x^2\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)+\frac{1}{2}(bc)\int\frac{1}{\sqrt{1-\frac{c^2}{x^2}}}\,dx$$
$$=\frac{1}{2}bc\sqrt{1-\frac{c^2}{x^2}}\,x+\frac{1}{2}x^2\left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right)$$

Mathematica [A]
time = 0.03, size = 47, normalized size = 1.21

$$\frac{ax^2}{2}+\frac{1}{2}bcx\sqrt{\frac{-c^2+x^2}{x^2}}+\frac{1}{2}bx^2\text{ArcSin}\left(\frac{c}{x}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*ArcSin[c/x]),x]
[Out] (a*x^2)/2 + (b*c*x*Sqrt[(-c^2 + x^2)/x^2])/2 + (b*x^2*ArcSin[c/x])/2
```

Maple [A]
time = 0.02, size = 51, normalized size = 1.31

method	result	size
derivativedivides	$-c^2\left(-\frac{a\,x^2}{2c^2}+b\left(-\frac{x^2\arcsin\left(\frac{c}{x}\right)}{2c^2}-\frac{x\sqrt{1-\frac{c^2}{x^2}}}{2c}\right)\right)$	51
default	$-c^2\left(-\frac{a\,x^2}{2c^2}+b\left(-\frac{x^2\arcsin\left(\frac{c}{x}\right)}{2c^2}-\frac{x\sqrt{1-\frac{c^2}{x^2}}}{2c}\right)\right)$	51

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(c/x)),x,method=_RETURNVERBOSE)
[Out] -c^2*(-1/2*a/c^2*x^2+b*(-1/2/c^2*x^2*arcsin(c/x)-1/2/c*x*(1-c^2/x^2)^(1/2))
)
```

Maxima [A]
time = 0.47, size = 36, normalized size = 0.92

$$\frac{1}{2}ax^2+\frac{1}{2}\left(x^2\arcsin\left(\frac{c}{x}\right)+cx\sqrt{-\frac{c^2}{x^2}+1}\right)b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c/x)),x, algorithm="maxima")
```

```
[Out] 1/2*a*x^2 + 1/2*(x^2*arcsin(c/x) + c*x*sqrt(-c^2/x^2 + 1))*b
```

Fricas [**A**]
time = 2.42, size = 40, normalized size = 1.03

$$\frac{1}{2}\,bx^2\arcsin\left(\frac{c}{x}\right)+\frac{1}{2}\,bcx\sqrt{-\frac{c^2-x^2}{x^2}}+\frac{1}{2}\,ax^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c/x)),x, algorithm="fricas")
```

```
[Out] 1/2*b*x^2*arcsin(c/x) + 1/2*b*c*x*sqrt(-(c^2 - x^2)/x^2) + 1/2*a*x^2
```

Sympy [**A**]
time = 1.21, size = 58, normalized size = 1.49

$$\frac{ax^2}{2}+\frac{bc\left(\begin{cases} c\sqrt{-1+\frac{x^2}{c^2}} & \text{for}\ \left|\frac{x^2}{c^2}\right|>1\\ ic\sqrt{1-\frac{x^2}{c^2}} & \text{otherwise}\end{cases}\right)}{2}+\frac{bx^2\operatorname{asin}\left(\frac{c}{x}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(c/x)),x)
```

```
[Out] a*x**2/2 + b*c*Piecewise((c*sqrt(-1 + x**2/c**2), Abs(x**2/c**2) > 1), (I*c
*sqrt(1 - x**2/c**2), True))/2 + b*x**2*asin(c/x)/2
```

Giac [**B**] Leaf count of result is larger than twice the leaf count of optimal. 174 vs. 2(33) = 66.
time = 0.42, size = 174, normalized size = 4.46

$$\frac{bcx^2\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^2\arcsin\left(\frac{c}{x}\right)+acx^2\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^2+2\,bc^2x\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)+2\,bc^3\arcsin\left(\frac{c}{x}\right)+2\,ac^3-\frac{2\,bc^4}{x\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)}+\frac{bc^5\arcsin\left(\frac{c}{x}\right)}{x^2\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^2}+\frac{ac^5}{x^2\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right)^2}}{8\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c/x)),x, algorithm="giac")
```

```
[Out] 1/8*(b*c*x^2*(sqrt(-c^2/x^2 + 1) + 1)^2*arcsin(c/x) + a*c*x^2*(sqrt(-c^2/x^
2 + 1) + 1)^2 + 2*b*c^2*x*(sqrt(-c^2/x^2 + 1) + 1) + 2*b*c^3*arcsin(c/x) +
2*a*c^3 - 2*b*c^4/(x*(sqrt(-c^2/x^2 + 1) + 1)) + b*c^5*arcsin(c/x)/(x^2*(sq
rt(-c^2/x^2 + 1) + 1)^2) + a*c^5/(x^2*(sqrt(-c^2/x^2 + 1) + 1)^2))/c
```

Mupad [B]
time = 0.29, size = 36, normalized size = 0.92

$$\frac{a\,x^2}{2}+\frac{b\,x^2\,\mathrm{asin}\left(\frac{c}{x}\right)}{2}+\frac{b\,c\,x\,\sqrt{1-\frac{c^2}{x^2}}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c/x)),x)
```

```
[Out] (a*x^2)/2 + (b*x^2*asin(c/x))/2 + (b*c*x*(1 - c^2/x^2)^(1/2))/2
```

3.373 $\int \left(a+b\text{ArcSin}\left(\frac{c}{x}\right)\right) \, dx$

Optimal. Leaf size=31

$$ax+bx\csc^{-1}\left(\frac{x}{c}\right)+bc\tanh^{-1}\left(\sqrt{1-\frac{c^2}{x^2}}\right)$$

```
[Out] a*x+b*x*arccsc(x/c)+b*c*arctanh((1-c^2/x^2)^(1/2))
```

Rubi [A]
time = 0.02, antiderivative size = 31, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {4916, 5323, 272, 65, 214}

$$ax+bc\tanh^{-1}\left(\sqrt{1-\frac{c^2}{x^2}}\right)+bx\csc^{-1}\left(\frac{x}{c}\right)$$

Antiderivative was successfully verified.

```
[In] Int[a + b*ArcSin[c/x],x]
```

```
[Out] a*x + b*x*ArcCsc[x/c] + b*c*ArcTanh[Sqrt[1 - c^2/x^2]]
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 214

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-a/b, 2]/a)*ArcTanh[x
/Rt[-a/b, 2]], x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4916

```
Int[ArcSin[(c_.)/((a_.) + (b_.)*(x_)^(n_.))]^(m_.)*(u_.), x_Symbol] :> Int[
u*ArcCsc[a/c + b*(x^n/c)]^m, x] /; FreeQ[{a, b, c, n, m}, x]
```

Rule 5323

```
Int[ArcCsc[(c_.)*(x_)], x_Symbol] :> Simp[x*ArcCsc[c*x], x] + Dist[1/c, Int
[1/(x*Sqrt[1 - 1/(c^2*x^2)]), x], x] /; FreeQ[c, x]
```

Rubi steps

$$
\begin{aligned}
\int \left(a+b\sin^{-1}\left(\frac{c}{x}\right)\right) dx &= ax+b\int \sin^{-1}\left(\frac{c}{x}\right) dx \\
&= ax+b\int \csc^{-1}\left(\frac{x}{c}\right) dx \\
&= ax+bx\csc^{-1}\left(\frac{x}{c}\right)+(bc)\int \frac{1}{\sqrt{1-\frac{c^2}{x^2}}\,x} dx \\
&= ax+bx\csc^{-1}\left(\frac{x}{c}\right)-\frac{1}{2}(bc)\text{Subst}\left(\int \frac{1}{x\sqrt{1-c^2x}} dx, x, \frac{1}{x^2}\right) \\
&= ax+bx\csc^{-1}\left(\frac{x}{c}\right)+\frac{b\text{Subst}\left(\int \frac{1}{\frac{1}{c^2}-\frac{x^2}{c^2}} dx, x, \sqrt{1-\frac{c^2}{x^2}}\right)}{c} \\
&= ax+bx\csc^{-1}\left(\frac{x}{c}\right)+bc\tanh^{-1}\left(\sqrt{1-\frac{c^2}{x^2}}\right)
\end{aligned}
$$

Mathematica [**B**] Leaf count is larger than twice the leaf count of optimal. 89 vs. 2(31) = 62.
time = 0.06, size = 89, normalized size = 2.87

$$
ax+bx\text{ArcSin}\left(\frac{c}{x}\right)+\frac{bc\sqrt{-c^2+x^2}\left(-\log\left(1-\frac{x}{\sqrt{-c^2+x^2}}\right)+\log\left(1+\frac{x}{\sqrt{-c^2+x^2}}\right)\right)}{2\sqrt{1-\frac{c^2}{x^2}}\,x}
$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*ArcSin[c/x],x]
```

```
[Out] a*x + b*x*ArcSin[c/x] + (b*c*Sqrt[-c^2 + x^2]*(-Log[1 - x/Sqrt[-c^2 + x^2]]
 + Log[1 + x/Sqrt[-c^2 + x^2]]))/(2*Sqrt[1 - c^2/x^2]*x)
```

Maple [**A**]
time = 0.02, size = 37, normalized size = 1.19

method	result	size
default	$ax-bc\left(-\frac{x\arcsin\left(\frac{c}{x}\right)}{c}-\operatorname{arctanh}\left(\frac{1}{\sqrt{1-\frac{c^{2}}{x^{2}}}}\right)\right)$	37
derivativedivides	$-c\left(-\frac{ax}{c}+b\left(-\frac{x\arcsin\left(\frac{c}{x}\right)}{c}-\operatorname{arctanh}\left(\frac{1}{\sqrt{1-\frac{c^{2}}{x^{2}}}}\right)\right)\right)$	42

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a+b*arcsin(c/x),x,method=_RETURNVERBOSE)
```

```
[Out] a*x-b*c*(-1/c*x*arcsin(c/x)-arctanh(1/(1-c^2/x^2)^(1/2)))
```

Maxima [A]
time = 0.47, size = 52, normalized size = 1.68

$$\frac{1}{2}\left(c\left(\log\left(\sqrt{-\frac{c^{2}}{x^{2}}+1}+1\right)-\log\left(\sqrt{-\frac{c^{2}}{x^{2}}+1}-1\right)\right)+2\,x\arcsin\left(\frac{c}{x}\right)\right)b+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(c/x),x, algorithm="maxima")
```

```
[Out] 1/2*(c*(log(sqrt(-c^2/x^2 + 1) + 1) - log(sqrt(-c^2/x^2 + 1) - 1)) + 2*x*ar
csin(c/x))*b + a*x
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 75 vs. $2(29) = 58$.
time = 2.68, size = 75, normalized size = 2.42

$$-bc\log\left(x\sqrt{-\frac{c^{2}-x^{2}}{x^{2}}}-x\right)+ax+(bx-b)\arcsin\left(\frac{c}{x}\right)-2\,b\arctan\left(\frac{x\sqrt{-\frac{c^{2}-x^{2}}{x^{2}}}-x}{c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(c/x),x, algorithm="fricas")
```

```
[Out] -b*c*log(x*sqrt(-(c^2 - x^2)/x^2) - x) + a*x + (b*x - b)*arcsin(c/x) - 2*b*
arctan((x*sqrt(-(c^2 - x^2)/x^2) - x)/c)
```

Sympy [A]
time = 1.09, size = 32, normalized size = 1.03

$$ax+b\left(c\left(\begin{cases}\operatorname{acosh}\left(\frac{x}{c}\right) & \text{for}\ \left|\frac{x^{2}}{c^{2}}\right|>1\\-i\operatorname{asin}\left(\frac{x}{c}\right) & \text{otherwise}\end{cases}\right)+x\operatorname{asin}\left(\frac{c}{x}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*asin(c/x),x)
```

```
[Out] a*x + b*(c*Piecewise((acosh(x/c), Abs(x**2/c**2) > 1), (-I*asin(x/c), True)
) + x*asin(c/x))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 60 vs. $2(29) = 58$.
time = 0.41, size = 60, normalized size = 1.94

$$ax + \frac{\left(c^2\left(\log\left(\sqrt{-\frac{c^2}{x^2}+1}+1\right) - \log\left(-\sqrt{-\frac{c^2}{x^2}+1}+1\right)\right) + 2\,cx\arcsin\left(\frac{c}{x}\right)\right)b}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(c/x),x, algorithm="giac")
```

```
[Out] a*x + 1/2*(c^2*(log(sqrt(-c^2/x^2 + 1) + 1) - log(-sqrt(-c^2/x^2 + 1) + 1))
 + 2*c*x*arcsin(c/x))*b/c
```

Mupad [B]
time = 0.74, size = 32, normalized size = 1.03

$$a\,x + b\,x\,\mathrm{asin}\left(\frac{c}{x}\right) + b\,c\,\mathrm{sign}(x)\,\ln\left(x + \sqrt{x^2 - c^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a + b*asin(c/x),x)
```

```
[Out] a*x + b*x*asin(c/x) + b*c*sign(x)*log(x + (x^2 - c^2)^(1/2))
```

3.374 $\int \frac{a+b\text{ArcSin}\left(\frac{c}{x}\right)}{x}\,dx$

Optimal. Leaf size=67

$$\frac{1}{2}ib\text{ArcSin}\left(\frac{c}{x}\right)^2-b\text{ArcSin}\left(\frac{c}{x}\right)\log\left(1-e^{2i\text{ArcSin}\left(\frac{c}{x}\right)}\right)+a\log(x)+\frac{1}{2}ib\text{PolyLog}\left(2,e^{2i\text{ArcSin}\left(\frac{c}{x}\right)}\right)$$

```
[Out] 1/2*I*b*arcsin(c/x)^2-b*arcsin(c/x)*ln(1-(I*c/x+(1-c^2/x^2)^(1/2))^2)+a*ln(
x)+1/2*I*b*polylog(2,(I*c/x+(1-c^2/x^2)^(1/2))^2)
```

Rubi [A]
time = 0.07, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.429$, Rules used = {6874, 4914, 3798, 2221, 2317, 2438}

$$a\log(x)+\frac{1}{2}ib\text{Li}_2\left(e^{2i\text{ArcSin}\left(\frac{c}{x}\right)}\right)+\frac{1}{2}ib\text{ArcSin}\left(\frac{c}{x}\right)^2-b\text{ArcSin}\left(\frac{c}{x}\right)\log\left(1-e^{2i\text{ArcSin}\left(\frac{c}{x}\right)}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c/x])/x,x]
```

```
[Out] (I/2)*b*ArcSin[c/x]^2 - b*ArcSin[c/x]*Log[1 - E^((2*I)*ArcSin[c/x])] + a*Lo
g[x] + (I/2)*b*PolyLog[2, E^((2*I)*ArcSin[c/x])]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3798

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[I*((c + d*x)^(m + 1)/(d*(m + 1))), x] - Dist[2*I, Int[(c + d*x)^m
```

```
*E^(2*I*k*Pi)*(E^(2*I*(e + f*x))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x)))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4914

```
Int[ArcSin[(a_.)*(x_)^(p_)]^(n_.)/(x_), x_Symbol] :> Dist[1/p, Subst[Int[x^
n*Cot[x], x], x, ArcSin[a*x^p]], x] /; FreeQ[{a, p}, x] && IGtQ[n, 0]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{x}\,dx &= \int \left(\frac{a}{x}+\frac{b\sin^{-1}\left(\frac{c}{x}\right)}{x}\right)dx \\
&= a\log(x)+b\int \frac{\sin^{-1}\left(\frac{c}{x}\right)}{x}\,dx \\
&= a\log(x)-b\text{Subst}\left(\int x\cot(x)\,dx,x,\sin^{-1}\left(\frac{c}{x}\right)\right) \\
&= \frac{1}{2}ib\sin^{-1}\left(\frac{c}{x}\right)^2+a\log(x)+(2ib)\text{Subst}\left(\int \frac{e^{2ix}x}{1-e^{2ix}}\,dx,x,\sin^{-1}\left(\frac{c}{x}\right)\right) \\
&= \frac{1}{2}ib\sin^{-1}\left(\frac{c}{x}\right)^2-b\sin^{-1}\left(\frac{c}{x}\right)\log\left(1-e^{2i\sin^{-1}\left(\frac{c}{x}\right)}\right)+a\log(x)+b\text{Subst}\left(\int \log\left(1-e\right.\right. \\
&= \frac{1}{2}ib\sin^{-1}\left(\frac{c}{x}\right)^2-b\sin^{-1}\left(\frac{c}{x}\right)\log\left(1-e^{2i\sin^{-1}\left(\frac{c}{x}\right)}\right)+a\log(x)-\frac{1}{2}(ib)\text{Subst}\left(\int \frac{\log(1}{}\right. \\
&= \frac{1}{2}ib\sin^{-1}\left(\frac{c}{x}\right)^2-b\sin^{-1}\left(\frac{c}{x}\right)\log\left(1-e^{2i\sin^{-1}\left(\frac{c}{x}\right)}\right)+a\log(x)+\frac{1}{2}ib\text{Li}_2\left(e^{2i\sin^{-1}\left(\frac{c}{x}\right)}\right)
\end{aligned}$$

Mathematica [A]
time = 0.03, size = 61, normalized size = 0.91

$$-b\text{ArcSin}\left(\frac{c}{x}\right)\log\left(1-e^{2i\text{ArcSin}\left(\frac{c}{x}\right)}\right)+a\log(x)+\frac{1}{2}ib\left(\text{ArcSin}\left(\frac{c}{x}\right)^2+\text{PolyLog}\left(2,e^{2i\text{ArcSin}\left(\frac{c}{x}\right)}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c/x])/x,x]
[Out] -(b*ArcSin[c/x]*Log[1 - E^((2*I)*ArcSin[c/x])]) + a*Log[x] + (I/2)*b*(ArcSi
n[c/x]^2 + PolyLog[2, E^((2*I)*ArcSin[c/x])])
```

Maple [A]
time = 0.42, size = 141, normalized size = 2.10

method	result
derivativedivides	$-a\ln\left(\frac{c}{x}\right)+\frac{ib\arcsin\left(\frac{c}{x}\right)^2}{2}-b\arcsin\left(\frac{c}{x}\right)\ln\left(1-\frac{ic}{x}-\sqrt{1-\frac{c^2}{x^2}}\right)-b\arcsin\left(\frac{c}{x}\right)\ln\left(1+\frac{ic}{x}\right.$
default	$-a\ln\left(\frac{c}{x}\right)+\frac{ib\arcsin\left(\frac{c}{x}\right)^2}{2}-b\arcsin\left(\frac{c}{x}\right)\ln\left(1-\frac{ic}{x}-\sqrt{1-\frac{c^2}{x^2}}\right)-b\arcsin\left(\frac{c}{x}\right)\ln\left(1+\frac{ic}{x}\right.$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c/x))/x,x,method=_RETURNVERBOSE)
```

```
[Out] -a*ln(c/x)+1/2*I*b*arcsin(c/x)^2-b*arcsin(c/x)*ln(1-I*c/x-(1-c^2/x^2)^(1/2)
)-b*arcsin(c/x)*ln(1+I*c/x+(1-c^2/x^2)^(1/2))+I*b*polylog(2,I*c/x+(1-c^2/x^
2)^(1/2))+I*b*polylog(2,-I*c/x-(1-c^2/x^2)^(1/2))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x,x, algorithm="maxima")
```

```
[Out] (c*integrate(-sqrt(c + x)*sqrt(-c + x)*log(x)/(c^2*x - x^3), x) + arctan2(c
, sqrt(c + x)*sqrt(-c + x))*log(x))*b + a*log(x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(c/x) + a)/x, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{a+b\operatorname{asin}\left(\frac{c}{x}\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c/x))/x,x)
```

```
[Out] Integral((a + b*asin(c/x))/x, x)
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x,x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(sageVARx)]Undef/
Unsigned
```

Mupad [B]
time = 0.44, size = 57, normalized size = 0.85

$$\frac{b\,\mathrm{asin}\left(\frac{c}{x}\right)^2\,1\mathrm{i}}{2}+a\,\ln\left(x\right)+\frac{b\,\mathrm{polylog}\left(2,{\mathrm{e}}^{\mathrm{asin}\left(\frac{c}{x}\right)\,2\mathrm{i}}\right)\,1\mathrm{i}}{2}-b\,\ln\left(1-{\mathrm{e}}^{\mathrm{asin}\left(\frac{c}{x}\right)\,2\mathrm{i}}\right)\,\mathrm{asin}\left(\frac{c}{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c/x))/x,x)
```

```
[Out] (b*asin(c/x)^2*1i)/2 + a*log(x) + (b*polylog(2, exp(asin(c/x)*2i))*1i)/2 -
b*log(1 - exp(asin(c/x)*2i))*asin(c/x)
```

3.375 $\int \frac{a+b\text{ArcSin}\left(\frac{c}{x}\right)}{x^2}\,dx$

Optimal. Leaf size=39

$$-\frac{b\sqrt{1-\frac{c^2}{x^2}}}{c}-\frac{a}{x}-\frac{b\csc^{-1}\left(\frac{x}{c}\right)}{x}$$

```
[Out] -a/x-b*arccsc(x/c)/x-b*(1-c^2/x^2)^(1/2)/c
```

Rubi [A]
time = 0.03, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {6847, 4715, 267}

$$-\frac{a}{x}-\frac{b\sqrt{1-\frac{c^2}{x^2}}}{c}-\frac{b\csc^{-1}\left(\frac{x}{c}\right)}{x}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c/x])/x^2,x]
```

```
[Out] -((b*Sqrt[1 - c^2/x^2])/c) - a/x - (b*ArcCsc[x/c])/x
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 6847

```
Int[(u_)*(x_)^(m_.), x_Symbol] :> Dist[1/(m + 1), Subst[Int[SubstFor[x^(m +
 1), u, x], x], x, x^(m + 1)], x] /; FreeQ[m, x] && NeQ[m, -1] && FunctionO
fQ[x^(m + 1), u, x]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{x^2}\,dx = -\text{Subst}\left(\int \left(a+b\sin^{-1}(cx)\right)\,dx, x, \frac{1}{x}\right)$$
$$= -\frac{a}{x} - b\text{Subst}\left(\int \sin^{-1}(cx)\,dx, x, \frac{1}{x}\right)$$
$$= -\frac{a}{x} - \frac{b\csc^{-1}\left(\frac{x}{c}\right)}{x} + (bc)\text{Subst}\left(\int \frac{x}{\sqrt{1-c^2x^2}}\,dx, x, \frac{1}{x}\right)$$
$$= -\frac{b\sqrt{1-\frac{c^2}{x^2}}}{c} - \frac{a}{x} - \frac{b\csc^{-1}\left(\frac{x}{c}\right)}{x}$$

Mathematica [A]
time = 0.02, size = 39, normalized size = 1.00

$$-\frac{b\sqrt{1-\frac{c^2}{x^2}}}{c} - \frac{a}{x} - \frac{b\text{ArcSin}\left(\frac{c}{x}\right)}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c/x])/x^2,x]
[Out] -((b*Sqrt[1 - c^2/x^2])/c) - a/x - (b*ArcSin[c/x])/x
```

Maple [A]
time = 0.06, size = 39, normalized size = 1.00

method	result	size
derivativedivides	$-\frac{\frac{ca}{x}+b\left(\frac{c\arcsin\left(\frac{c}{x}\right)}{x}+\sqrt{1-\frac{c^2}{x^2}}\right)}{c}$	39
default	$-\frac{\frac{ca}{x}+b\left(\frac{c\arcsin\left(\frac{c}{x}\right)}{x}+\sqrt{1-\frac{c^2}{x^2}}\right)}{c}$	39

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c/x))/x^2,x,method=_RETURNVERBOSE)
[Out] -1/c*(c/x*a+b*(c/x*arcsin(c/x)+(1-c^2/x^2)^(1/2)))
```

Maxima [A]
time = 0.48, size = 37, normalized size = 0.95

$$-\frac{b\left(\frac{c\arcsin\left(\frac{c}{x}\right)}{x}+\sqrt{-\frac{c^2}{x^2}+1}\right)}{c} - \frac{a}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x^2,x, algorithm="maxima")
```

```
[Out] -b*(c*arcsin(c/x)/x + sqrt(-c^2/x^2 + 1))/c - a/x
```

Fricas [A]
time = 2.61, size = 40, normalized size = 1.03

$$-\frac{bc\arcsin\left(\frac{c}{x}\right)+bx\sqrt{-\frac{c^2-x^2}{x^2}}+ac}{cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x^2,x, algorithm="fricas")
```

```
[Out] -(b*c*arcsin(c/x) + b*x*sqrt(-(c^2 - x^2)/x^2) + a*c)/(c*x)
```

Sympy [A]
time = 0.44, size = 32, normalized size = 0.82

$$\begin{cases} -\frac{a}{x}-\frac{b\operatorname{asin}\left(\frac{c}{x}\right)}{x}-\frac{b\sqrt{-\frac{c^2}{x^2}+1}}{c} & \text{for}\ c\neq 0\\ -\frac{a}{x} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c/x))/x**2,x)
```

```
[Out] Piecewise((-a/x - b*asin(c/x)/x - b*sqrt(-c**2/x**2 + 1)/c, Ne(c, 0)), (-a/
x, True))
```

Giac [A]
time = 0.41, size = 38, normalized size = 0.97

$$-\frac{\frac{bc\arcsin\left(\frac{c}{x}\right)}{x}+b\sqrt{-\frac{c^2}{x^2}+1}+\frac{ac}{x}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x^2,x, algorithm="giac")
```

```
[Out] -(b*c*arcsin(c/x)/x + b*sqrt(-c^2/x^2 + 1) + a*c/x)/c
```

Mupad [B]
time = 0.29, size = 37, normalized size = 0.95

$$-\frac{a}{x}-\frac{b\sqrt{1-\frac{c^2}{x^2}}}{c}-\frac{b\operatorname{asin}\left(\frac{c}{x}\right)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c/x))/x^2,x)
[Out] - a/x - (b*(1 - c^2/x^2)^(1/2))/c - (b*asin(c/x))/x
```

3.376 $\int \frac{a+b\text{ArcSin}\left(\frac{c}{x}\right)}{x^3} \, dx$

Optimal. Leaf size=57

$$-\frac{b\sqrt{1-\frac{c^2}{x^2}}}{4cx}+\frac{b\csc^{-1}\left(\frac{x}{c}\right)}{4c^2}-\frac{a+b\text{ArcSin}\left(\frac{c}{x}\right)}{2x^2}$$

```
[Out] 1/4*b*arccsc(x/c)/c^2+1/2*(-a-b*arcsin(c/x))/x^2-1/4*b*(1-c^2/x^2)^(1/2)/c/
x
```

Rubi [A]
time = 0.03, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.357$, Rules used = {4926, 12, 342, 327, 222}

$$-\frac{a+b\text{ArcSin}\left(\frac{c}{x}\right)}{2x^2}-\frac{b\sqrt{1-\frac{c^2}{x^2}}}{4cx}+\frac{b\csc^{-1}\left(\frac{x}{c}\right)}{4c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c/x])/x^3,x]
```

```
[Out] -1/4*(b*Sqrt[1 - c^2/x^2])/(c*x) + (b*ArcCsc[x/c])/(4*c^2) - (a + b*ArcSin[
c/x])/(2*x^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 342

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Subst[Int[(a +
b/x^n)^p/x^(m + 2), x], x, 1/x] /; FreeQ[{a, b, p}, x] && ILtQ[n, 0] && Int
egerQ[m]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u]))/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$
\begin{aligned}
\int \frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{x^3}\,dx &= -\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{2x^2}-\frac{1}{2}b\int \frac{c}{\sqrt{1-\frac{c^2}{x^2}}\,x^4}\,dx\\
&= -\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{2x^2}-\frac{1}{2}(bc)\int \frac{1}{\sqrt{1-\frac{c^2}{x^2}}\,x^4}\,dx\\
&= -\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{2x^2}+\frac{1}{2}(bc)\text{Subst}\left(\int \frac{x^2}{\sqrt{1-c^2x^2}}\,dx,x,\frac{1}{x}\right)\\
&= -\frac{b\sqrt{1-\frac{c^2}{x^2}}}{4cx}-\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{2x^2}+\frac{b\text{Subst}\left(\int \frac{1}{\sqrt{1-c^2x^2}}\,dx,x,\frac{1}{x}\right)}{4c}\\
&= -\frac{b\sqrt{1-\frac{c^2}{x^2}}}{4cx}+\frac{b\csc^{-1}\left(\frac{x}{c}\right)}{4c^2}-\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{2x^2}
\end{aligned}
$$

Mathematica [A]
time = 0.02, size = 65, normalized size = 1.14

$$
-\frac{a}{2x^2}-\frac{b\sqrt{\frac{-c^2+x^2}{x^2}}}{4cx}+\frac{b\text{ArcSin}\left(\frac{c}{x}\right)}{4c^2}-\frac{b\text{ArcSin}\left(\frac{c}{x}\right)}{2x^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c/x])/x^3,x]
[Out] -1/2*a/x^2 - (b*Sqrt[(-c^2 + x^2)/x^2])/(4*c*x) + (b*ArcSin[c/x])/(4*c^2) -
 (b*ArcSin[c/x])/(2*x^2)
```

Maple [A]
time = 0.01, size = 59, normalized size = 1.04

method	result	size
derivativedivides	$-\frac{\frac{a\,c^2}{2x^2}+b\left(\frac{c^2\arcsin\left(\frac{c}{x}\right)}{2x^2}+\frac{c\sqrt{1-\frac{c^2}{x^2}}}{4x}-\frac{\arcsin\left(\frac{c}{x}\right)}{4}\right)}{c^2}$	59
default	$-\frac{\frac{a\,c^2}{2x^2}+b\left(\frac{c^2\arcsin\left(\frac{c}{x}\right)}{2x^2}+\frac{c\sqrt{1-\frac{c^2}{x^2}}}{4x}-\frac{\arcsin\left(\frac{c}{x}\right)}{4}\right)}{c^2}$	59

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c/x))/x^3,x,method=_RETURNVERBOSE)
[Out] -1/c^2*(1/2*a*c^2/x^2+b*(1/2*c^2/x^2*arcsin(c/x)+1/4*c/x*(1-c^2/x^2)^(1/2)-
1/4*arcsin(c/x)))
```

Maxima [A]
time = 0.47, size = 86, normalized size = 1.51

$$\frac{1}{4}\left(c\left(\frac{x\sqrt{-\frac{c^2}{x^2}+1}}{c^2x^2\left(\frac{c^2}{x^2}-1\right)-c^4}-\frac{\arctan\left(\frac{x\sqrt{-\frac{c^2}{x^2}+1}}{c}\right)}{c^3}\right)-\frac{2\arcsin\left(\frac{c}{x}\right)}{x^2}\right)b-\frac{a}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x^3,x, algorithm="maxima")
[Out] 1/4*(c*(x*sqrt(-c^2/x^2 + 1)/(c^2*x^2*(c^2/x^2 - 1) - c^4) - arctan(x*sqrt(
-c^2/x^2 + 1)/c)/c^3) - 2*arcsin(c/x)/x^2)*b - 1/2*a/x^2
```

Fricas [A]
time = 2.14, size = 55, normalized size = 0.96

$$-\frac{bcx\sqrt{-\frac{c^2-x^2}{x^2}}+2\,ac^2+\left(2\,bc^2-bx^2\right)\arcsin\left(\frac{c}{x}\right)}{4\,c^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x^3,x, algorithm="fricas")
```

```
[Out] -1/4*(b*c*x*sqrt(-(c^2 - x^2)/x^2) + 2*a*c^2 + (2*b*c^2 - b*x^2)*arcsin(c/x
))/(c^2*x^2)
```

Sympy [A]
time = 1.99, size = 112, normalized size = 1.96

$$-\frac{a}{2x^2}-\frac{bc\left(\begin{cases}\frac{i\sqrt{\frac{c^2}{x^2}-1}}{2c^2x}+\frac{i\,\mathrm{acosh}\left(\frac{c}{x}\right)}{2c^3} & \text{for } \left|\frac{c^2}{x^2}\right|>1\\ -\frac{1}{2x^3\sqrt{-\frac{c^2}{x^2}+1}}+\frac{1}{2c^2x\sqrt{-\frac{c^2}{x^2}+1}}-\frac{\mathrm{asin}\left(\frac{c}{x}\right)}{2c^3} & \text{otherwise}\end{cases}\right)}{2}-\frac{b\,\mathrm{asin}\left(\frac{c}{x}\right)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c/x))/x**3,x)
```

```
[Out] -a/(2*x**2) - b*c*Piecewise((I*sqrt(c**2/x**2 - 1)/(2*c**2*x) + I*acosh(c/x
)/(2*c**3), Abs(c**2/x**2) > 1), (-1/(2*x**3*sqrt(-c**2/x**2 + 1)) + 1/(2*c
**2*x*sqrt(-c**2/x**2 + 1)) - asin(c/x)/(2*c**3), True))/2 - b*asin(c/x)/(2
*x**2)
```

Giac [A]
time = 0.41, size = 70, normalized size = 1.23

$$-\frac{\frac{2\,b\left(\frac{c^2}{x^2}-1\right)\arcsin\left(\frac{c}{x}\right)}{c}+\frac{2\,a\left(\frac{c^2}{x^2}-1\right)}{c}+\frac{b\arcsin\left(\frac{c}{x}\right)}{c}+\frac{b\sqrt{-\frac{c^2}{x^2}+1}}{x}}{4\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x^3,x, algorithm="giac")
```

```
[Out] -1/4*(2*b*(c^2/x^2 - 1)*arcsin(c/x)/c + 2*a*(c^2/x^2 - 1)/c + b*arcsin(c/x)
/c + b*sqrt(-c^2/x^2 + 1)/x)/c
```

Mupad [B]
time = 0.34, size = 50, normalized size = 0.88

$$-\frac{a}{2\,x^2}-\frac{b\,\sqrt{1-\frac{c^2}{x^2}}}{4\,c\,x}-\frac{b\,\mathrm{asin}\left(\frac{c}{x}\right)\,\left(\frac{2\,c^2}{x^2}-1\right)}{4\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c/x))/x^3,x)
```

```
[Out] - a/(2*x^2) - (b*(1 - c^2/x^2)^(1/2))/(4*c*x) - (b*asin(c/x)*((2*c^2)/x^2 -
 1))/(4*c^2)
```

3.377 $\int \frac{a+b\text{ArcSin}\left(\frac{c}{x}\right)}{x^4}\,dx$

Optimal. Leaf size=62

$$-\frac{b\sqrt{1-\frac{c^2}{x^2}}}{3c^3}+\frac{b\left(1-\frac{c^2}{x^2}\right)^{3/2}}{9c^3}-\frac{a+b\text{ArcSin}\left(\frac{c}{x}\right)}{3x^3}$$

```
[Out] 1/9*b*(1-c^2/x^2)^(3/2)/c^3+1/3*(-a-b*arcsin(c/x))/x^3-1/3*b*(1-c^2/x^2)^(1
/2)/c^3
```

Rubi [A]
time = 0.03, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4926, 12, 272, 45}

$$-\frac{a+b\text{ArcSin}\left(\frac{c}{x}\right)}{3x^3}+\frac{b\left(1-\frac{c^2}{x^2}\right)^{3/2}}{9c^3}-\frac{b\sqrt{1-\frac{c^2}{x^2}}}{3c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c/x])/x^4,x]
```

```
[Out] -1/3*(b*Sqrt[1 - c^2/x^2])/c^3 + (b*(1 - c^2/x^2)^(3/2))/(9*c^3) - (a + b*A
rcSin[c/x])/(3*x^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{x^4}\,dx &= -\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{3x^3}-\frac{1}{3}b\int \frac{c}{\sqrt{1-\frac{c^2}{x^2}}\,x^5}\,dx\\
&= -\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{3x^3}-\frac{1}{3}(bc)\int \frac{1}{\sqrt{1-\frac{c^2}{x^2}}\,x^5}\,dx\\
&= -\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{3x^3}+\frac{1}{6}(bc)\text{Subst}\left(\int \frac{x}{\sqrt{1-c^2x}}\,dx,x,\frac{1}{x^2}\right)\\
&= -\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{3x^3}+\frac{1}{6}(bc)\text{Subst}\left(\int \left(\frac{1}{c^2\sqrt{1-c^2x}}-\frac{\sqrt{1-c^2x}}{c^2}\right)dx,x,\frac{1}{x^2}\right)\\
&= -\frac{b\sqrt{1-\frac{c^2}{x^2}}}{3c^3}+\frac{b\left(1-\frac{c^2}{x^2}\right)^{3/2}}{9c^3}-\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{3x^3}
\end{aligned}$$

Mathematica [A]
time = 0.04, size = 60, normalized size = 0.97

$$-\frac{a}{3x^3}+b\left(-\frac{2}{9c^3}-\frac{1}{9cx^2}\right)\sqrt{\frac{-c^2+x^2}{x^2}}-\frac{b\text{ArcSin}\left(\frac{c}{x}\right)}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c/x])/x^4,x]
```

```
[Out] -1/3*a/x^3 + b*(-2/(9*c^3) - 1/(9*c*x^2))*Sqrt[(-c^2 + x^2)/x^2] - (b*ArcSi
n[c/x])/(3*x^3)
```

Maple [A]
time = 0.01, size = 67, normalized size = 1.08

method	result	size

derivativedivides	$-\frac{\frac{a c^3}{3x^3}+b\left(\frac{c^3 \arcsin\left(\frac{c}{x}\right)}{3x^3}+\frac{c^2\sqrt{1-\frac{c^2}{x^2}}}{9x^2}+\frac{2\sqrt{1-\frac{c^2}{x^2}}}{9}\right)}{c^3}$	67
default	$-\frac{\frac{a c^3}{3x^3}+b\left(\frac{c^3 \arcsin\left(\frac{c}{x}\right)}{3x^3}+\frac{c^2\sqrt{1-\frac{c^2}{x^2}}}{9x^2}+\frac{2\sqrt{1-\frac{c^2}{x^2}}}{9}\right)}{c^3}$	67

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c/x))/x^4,x,method=_RETURNVERBOSE)
```

```
[Out] -1/c^3*(1/3*a*c^3/x^3+b*(1/3*c^3/x^3*arcsin(c/x)+1/9*c^2/x^2*(1-c^2/x^2)^(1
/2)+2/9*(1-c^2/x^2)^(1/2)))
```

Maxima [A]
time = 0.48, size = 58, normalized size = 0.94

$$\frac{1}{9}\left(c\left(\frac{\left(-\frac{c^2}{x^2}+1\right)^{\frac{3}{2}}}{c^4}-\frac{3\sqrt{-\frac{c^2}{x^2}+1}}{c^4}\right)-\frac{3 \arcsin\left(\frac{c}{x}\right)}{x^3}\right)b-\frac{a}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x^4,x, algorithm="maxima")
```

```
[Out] 1/9*(c*((-c^2/x^2 + 1)^(3/2)/c^4 - 3*sqrt(-c^2/x^2 + 1)/c^4) - 3*arcsin(c/x
)/x^3)*b - 1/3*a/x^3
```

Fricas [A]
time = 2.37, size = 57, normalized size = 0.92

$$-\frac{3\,bc^3 \arcsin\left(\frac{c}{x}\right)+3\,ac^3+\left(bc^2x+2\,bx^3\right)\sqrt{-\frac{c^2-x^2}{x^2}}}{9\,c^3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x^4,x, algorithm="fricas")
```

```
[Out] -1/9*(3*b*c^3*arcsin(c/x) + 3*a*c^3 + (b*c^2*x + 2*b*x^3)*sqrt(-(c^2 - x^2)
/x^2))/(c^3*x^3)
```

Sympy [A]
time = 1.79, size = 112, normalized size = 1.81

$$-\frac{a}{3x^3}-\frac{bc\left(\begin{cases}\frac{\sqrt{-1+\frac{x^2}{c^2}}}{3cx^3}+\frac{2\sqrt{-1+\frac{x^2}{c^2}}}{3c^3x} & \text{for } \left|\frac{x^2}{c^2}\right|>1\\ \frac{i\sqrt{1-\frac{x^2}{c^2}}}{3cx^3}+\frac{2i\sqrt{1-\frac{x^2}{c^2}}}{3c^3x} & \text{otherwise}\end{cases}\right)}{3}-\frac{b\operatorname{asin}\left(\frac{c}{x}\right)}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c/x))/x**4,x)
[Out] -a/(3*x**3) - b*c*Piecewise((sqrt(-1 + x**2/c**2)/(3*c*x**3) + 2*sqrt(-1 +
x**2/c**2)/(3*c**3*x), Abs(x**2/c**2) > 1), (I*sqrt(1 - x**2/c**2)/(3*c*x**
3) + 2*I*sqrt(1 - x**2/c**2)/(3*c**3*x), True))/3 - b*asin(c/x)/(3*x**3)
```

Giac [A]
time = 0.40, size = 88, normalized size = 1.42

$$-\frac{\frac{3b\left(\frac{c^2}{x^2}-1\right)\arcsin\left(\frac{c}{x}\right)}{cx}-\frac{b\left(-\frac{c^2}{x^2}+1\right)^{\frac{3}{2}}}{c^2}+\frac{3b\arcsin\left(\frac{c}{x}\right)}{cx}+\frac{3b\sqrt{-\frac{c^2}{x^2}+1}}{c^2}+\frac{3ac}{x^3}}{9c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x^4,x, algorithm="giac")
[Out] -1/9*(3*b*(c^2/x^2 - 1)*arcsin(c/x)/(c*x) - b*(-c^2/x^2 + 1)^(3/2)/c^2 + 3*
b*arcsin(c/x)/(c*x) + 3*b*sqrt(-c^2/x^2 + 1)/c^2 + 3*a*c/x^3)/c
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{a+b\operatorname{asin}\left(\frac{c}{x}\right)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c/x))/x^4,x)
[Out] int((a + b*asin(c/x))/x^4, x)
```

3.378 $\int \frac{a+b\text{ArcSin}\left(\frac{c}{x}\right)}{x^5}\,dx$

Optimal. Leaf size=82

$$-\frac{b\sqrt{1-\frac{c^2}{x^2}}}{16cx^3}-\frac{3b\sqrt{1-\frac{c^2}{x^2}}}{32c^3x}+\frac{3b\csc^{-1}\left(\frac{x}{c}\right)}{32c^4}-\frac{a+b\text{ArcSin}\left(\frac{c}{x}\right)}{4x^4}$$

```
[Out] 3/32*b*arccsc(x/c)/c^4+1/4*(-a-b*arcsin(c/x))/x^4-1/16*b*(1-c^2/x^2)^(1/2)/
c/x^3-3/32*b*(1-c^2/x^2)^(1/2)/c^3/x
```

Rubi [A]
time = 0.04, antiderivative size = 82, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.357$, Rules used = {4926, 12, 342, 327, 222}

$$-\frac{a+b\text{ArcSin}\left(\frac{c}{x}\right)}{4x^4}+\frac{3b\csc^{-1}\left(\frac{x}{c}\right)}{32c^4}-\frac{b\sqrt{1-\frac{c^2}{x^2}}}{16cx^3}-\frac{3b\sqrt{1-\frac{c^2}{x^2}}}{32c^3x}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c/x])/x^5,x]
```

```
[Out] -1/16*(b*Sqrt[1 - c^2/x^2])/(c*x^3) - (3*b*Sqrt[1 - c^2/x^2])/(32*c^3*x) +
(3*b*ArcCsc[x/c])/(32*c^4) - (a + b*ArcSin[c/x])/(4*x^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 327

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[c^(n
 - 1)*(c*x)^(m - n + 1)*((a + b*x^n)^(p + 1)/(b*(m + n*p + 1))), x] - Dist[
a*c^n*((m - n + 1)/(b*(m + n*p + 1))), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 342

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Subst[Int[(a +
b/x^n)^p/x^(m + 2), x], x, 1/x] /; FreeQ[{a, b, p}, x] && ILtQ[n, 0] && Int
egerQ[m]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{x^5}\,dx &= -\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{4x^4}-\frac{1}{4}b\int \frac{c}{\sqrt{1-\frac{c^2}{x^2}}\,x^6}\,dx\\
&= -\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{4x^4}-\frac{1}{4}(bc)\int \frac{1}{\sqrt{1-\frac{c^2}{x^2}}\,x^6}\,dx\\
&= -\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{4x^4}+\frac{1}{4}(bc)\text{Subst}\left(\int \frac{x^4}{\sqrt{1-c^2x^2}}\,dx,x,\frac{1}{x}\right)\\
&= -\frac{b\sqrt{1-\frac{c^2}{x^2}}}{16cx^3}-\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{4x^4}+\frac{(3b)\text{Subst}\left(\int \frac{x^2}{\sqrt{1-c^2x^2}}\,dx,x,\frac{1}{x}\right)}{16c}\\
&= -\frac{b\sqrt{1-\frac{c^2}{x^2}}}{16cx^3}-\frac{3b\sqrt{1-\frac{c^2}{x^2}}}{32c^3x}-\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{4x^4}+\frac{(3b)\text{Subst}\left(\int \frac{1}{\sqrt{1-c^2x^2}}\,dx,x,\frac{1}{x}\right)}{32c^3}\\
&= -\frac{b\sqrt{1-\frac{c^2}{x^2}}}{16cx^3}-\frac{3b\sqrt{1-\frac{c^2}{x^2}}}{32c^3x}+\frac{3b\csc^{-1}\left(\frac{x}{c}\right)}{32c^4}-\frac{a+b\sin^{-1}\left(\frac{c}{x}\right)}{4x^4}
\end{aligned}$$

Mathematica [A]
time = 0.03, size = 77, normalized size = 0.94

$$-\frac{a}{4x^4}+b\left(-\frac{1}{16cx^3}-\frac{3}{32c^3x}\right)\sqrt{\frac{-c^2+x^2}{x^2}}+\frac{3b\text{ArcSin}\left(\frac{c}{x}\right)}{32c^4}-\frac{b\text{ArcSin}\left(\frac{c}{x}\right)}{4x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c/x])/x^5,x]
```

```
[Out] -1/4*a/x^4 + b*(-1/16*1/(c*x^3) - 3/(32*c^3*x))*Sqrt[(-c^2 + x^2)/x^2] + (3
*b*ArcSin[c/x])/(32*c^4) - (b*ArcSin[c/x])/(4*x^4)
```

Maple [A]
time = 0.01, size = 79, normalized size = 0.96

method	result	size
derivativedivides	$-\frac{\frac{a c^4}{4x^4}+b\left(\frac{c^4 \arcsin\left(\frac{c}{x}\right)}{4x^4}+\frac{c^3\sqrt{1-\frac{c^2}{x^2}}}{16x^3}+\frac{3c\sqrt{1-\frac{c^2}{x^2}}}{32x}-\frac{3\arcsin\left(\frac{c}{x}\right)}{32}\right)}{c^4}$	79
default	$-\frac{\frac{a c^4}{4x^4}+b\left(\frac{c^4 \arcsin\left(\frac{c}{x}\right)}{4x^4}+\frac{c^3\sqrt{1-\frac{c^2}{x^2}}}{16x^3}+\frac{3c\sqrt{1-\frac{c^2}{x^2}}}{32x}-\frac{3\arcsin\left(\frac{c}{x}\right)}{32}\right)}{c^4}$	79

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c/x))/x^5,x,method=_RETURNVERBOSE)
```

```
[Out] -1/c^4*(1/4*a*c^4/x^4+b*(1/4*c^4/x^4*arcsin(c/x)+1/16*c^3/x^3*(1-c^2/x^2)^(
1/2)+3/32*c/x*(1-c^2/x^2)^(1/2)-3/32*arcsin(c/x)))
```

Maxima [A]
time = 0.47, size = 126, normalized size = 1.54

$$-\frac{1}{32}\left(c\left(\frac{3\,x^3\left(-\frac{c^2}{x^2}+1\right)^{\frac{3}{2}}+5\,c^2x\sqrt{-\frac{c^2}{x^2}+1}}{c^4x^4\left(\frac{c^2}{x^2}-1\right)^2-2\,c^6x^2\left(\frac{c^2}{x^2}-1\right)+c^8}+\frac{3\,\arctan\left(\frac{x\sqrt{-\frac{c^2}{x^2}+1}}{c}\right)}{c^5}\right)+\frac{8\,\arcsin\left(\frac{c}{x}\right)}{x^4}\right)b-\frac{a}{4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x^5,x, algorithm="maxima")
```

```
[Out] -1/32*(c*((3*x^3*(-c^2/x^2 + 1)^(3/2) + 5*c^2*x*sqrt(-c^2/x^2 + 1))/(c^4*x^
4*(c^2/x^2 - 1)^2 - 2*c^6*x^2*(c^2/x^2 - 1) + c^8) + 3*arctan(x*sqrt(-c^2/x
^2 + 1)/c)/c^5) + 8*arcsin(c/x)/x^4)*b - 1/4*a/x^4
```

Fricas [A]
time = 4.38, size = 67, normalized size = 0.82

$$-\frac{8\,ac^4+\left(8\,bc^4-3\,bx^4\right)\arcsin\left(\frac{c}{x}\right)+\left(2\,bc^3x+3\,bcx^3\right)\sqrt{-\frac{c^2-x^2}{x^2}}}{32\,c^4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x^5,x, algorithm="fricas")
```

```
[Out] -1/32*(8*a*c^4 + (8*b*c^4 - 3*b*x^4)*arcsin(c/x) + (2*b*c^3*x + 3*b*c*x^3)*
sqrt(-(c^2 - x^2)/x^2))/(c^4*x^4)
```

Sympy [A]
time = 3.94, size = 180, normalized size = 2.20

$$-\frac{a}{4x^4} - \frac{bc\left(\begin{cases} \frac{i}{4x^5\sqrt{\frac{c^2}{x^2}-1}} + \frac{i}{8c^2x^3\sqrt{\frac{c^2}{x^2}-1}} - \frac{3i}{8c^4x\sqrt{\frac{c^2}{x^2}-1}} + \frac{3i\operatorname{acosh}\left(\frac{c}{x}\right)}{8c^5} & \text{for}\ \left|\frac{c^2}{x^2}\right| > 1 \\ -\frac{1}{4x^5\sqrt{-\frac{c^2}{x^2}+1}} - \frac{1}{8c^2x^3\sqrt{-\frac{c^2}{x^2}+1}} + \frac{3}{8c^4x\sqrt{-\frac{c^2}{x^2}+1}} - \frac{3\operatorname{asin}\left(\frac{c}{x}\right)}{8c^5} & \text{otherwise} \end{cases}\right)}{4} - \frac{b\operatorname{asin}\left(\frac{c}{x}\right)}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c/x))/x**5,x)
```

```
[Out] -a/(4*x**4) - b*c*Piecewise((I/(4*x**5*sqrt(c**2/x**2 - 1)) + I/(8*c**2*x**
3*sqrt(c**2/x**2 - 1)) - 3*I/(8*c**4*x*sqrt(c**2/x**2 - 1)) + 3*I*acosh(c/x
)/(8*c**5), Abs(c**2/x**2) > 1), (-1/(4*x**5*sqrt(-c**2/x**2 + 1)) - 1/(8*c
**2*x**3*sqrt(-c**2/x**2 + 1)) + 3/(8*c**4*x*sqrt(-c**2/x**2 + 1)) - 3*asin
(c/x)/(8*c**5), True))/4 - b*asin(c/x)/(4*x**4)
```

Giac [A]
time = 0.41, size = 111, normalized size = 1.35

$$-\frac{\frac{8\,b\left(\frac{c^2}{x^2}-1\right)^2\arcsin\left(\frac{c}{x}\right)}{c^3} + \frac{16\,b\left(\frac{c^2}{x^2}-1\right)\arcsin\left(\frac{c}{x}\right)}{c^3} - \frac{2\,b\left(-\frac{c^2}{x^2}+1\right)^{\frac{3}{2}}}{c^2x} + \frac{5\,b\arcsin\left(\frac{c}{x}\right)}{c^3} + \frac{5\,b\sqrt{-\frac{c^2}{x^2}+1}}{c^2x} + \frac{8\,ac}{x^4}}{32\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c/x))/x^5,x, algorithm="giac")
```

```
[Out] -1/32*(8*b*(c^2/x^2 - 1)^2*arcsin(c/x)/c^3 + 16*b*(c^2/x^2 - 1)*arcsin(c/x)
/c^3 - 2*b*(-c^2/x^2 + 1)^(3/2)/(c^2*x) + 5*b*arcsin(c/x)/c^3 + 5*b*sqrt(-c
^2/x^2 + 1)/(c^2*x) + 8*a*c/x^4)/c
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a + b\operatorname{asin}\left(\frac{c}{x}\right)}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c/x))/x^5,x)
```

```
[Out] int((a + b*asin(c/x))/x^5, x)
```

3.379 $\int x^m(a+b\mathbf{ArcSin}(cx^n))\,dx$

Optimal. Leaf size=81

$$\frac{x^{1+m}(a+b\text{ArcSin}(cx^n))}{1+m}-\frac{bcnx^{1+m+n}\,{}_2F_1\left(\frac{1}{2},\frac{1+m+n}{2n};\frac{1+m+3n}{2n};c^2x^{2n}\right)}{(1+m)(1+m+n)}$$

```
[Out] x^(1+m)*(a+b*arcsin(c*x^n))/(1+m)-b*c*n*x^(1+m+n)*hypergeom([1/2, 1/2*(1+m+n)/n],[1/2*(1+m+3*n)/n],c^2*x^(2*n))/(1+m)/(1+m+n)
```

Rubi [A]
time = 0.04, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {4926, 12, 371}

$$\frac{x^{m+1}(a+b\text{ArcSin}(cx^n))}{m+1}-\frac{bcnx^{m+n+1}\,{}_2F_1\left(\frac{1}{2},\frac{m+n+1}{2n};\frac{m+3n+1}{2n};c^2x^{2n}\right)}{(m+1)(m+n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(a + b*ArcSin[c*x^n]),x]
```

```
[Out] (x^(1 + m)*(a + b*ArcSin[c*x^n]))/(1 + m) - (b*c*n*x^(1 + m + n)*Hypergeometric2F1[1/2, (1 + m + n)/(2*n), (1 + m + 3*n)/(2*n), c^2*x^(2*n)])/((1 + m)*(1 + m + n))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 371

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[a^p*((c*x)^(m + 1)/(c*(m + 1)))*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, (-b)*(x^n/a)], x] /; FreeQ[{a, b, c, m, n, p}, x] && !IGtQ[p, 0] && (ILtQ[p, 0] || GtQ[a, 0])
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x], x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x] && !FunctionOfQ[(c + d*x)^(m + 1), u, x] && !FunctionOfExponentialQ[u, x]
```

Rubi steps

$$\begin{aligned}\int x^m\left(a+b\sin^{-1}\left(cx^n\right)\right)\,dx&=\frac{x^{1+m}(a+b\sin^{-1}\left(cx^n\right))}{1+m}-\frac{b\int\frac{cnx^{m+n}}{\sqrt{1-c^2x^{2n}}}\,dx}{1+m}\\&=\frac{x^{1+m}(a+b\sin^{-1}\left(cx^n\right))}{1+m}-\frac{(bcn)\int\frac{x^{m+n}}{\sqrt{1-c^2x^{2n}}}\,dx}{1+m}\\&=\frac{x^{1+m}(a+b\sin^{-1}\left(cx^n\right))}{1+m}-\frac{bcnx^{1+m+n}\,{}_2F_1\left(\frac{1}{2},\frac{1+m+n}{2n};\frac{1+m+3n}{2n};c^2x^{2n}\right)}{(1+m)(1+m+n)}\end{aligned}$$

Mathematica [**A**]
time = 0.07, size = 78, normalized size = 0.96

$$\frac{x^{1+m}\left((1+m+n)\left(a+b\text{ArcSin}(cx^n)\right)-bcnx^n\,{}_2F_1\left(\frac{1}{2},\frac{1+m+n}{2n};\frac{1+m+3n}{2n};c^2x^{2n}\right)\right)}{(1+m)(1+m+n)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*(a + b*ArcSin[c*x^n]),x]
[Out] (x^(1 + m)*((1 + m + n)*(a + b*ArcSin[c*x^n]) - b*c*n*x^n*Hypergeometric2F1
[1/2, (1 + m + n)/(2*n), (1 + m + 3*n)/(2*n), c^2*x^(2*n)]))/((1 + m)*(1 +
m + n))
```

Maple [**F**]
time = 0.02, size = 0, normalized size = 0.00

$$\int x^m(a+b\arcsin\left(c\,x^n\right))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a+b*arcsin(c*x^n)),x)
[Out] int(x^m*(a+b*arcsin(c*x^n)),x)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x^n)),x, algorithm="maxima")
```

```
[Out] (x*x^m*arctan2(c*x^n, sqrt(c*x^n + 1)*sqrt(-c*x^n + 1)) + (c*m + c)*n*integ
rate(sqrt(c*x^n + 1)*sqrt(-c*x^n + 1)*e^(m*log(x) + n*log(x))/((c^2*m + c^2
)*x^(2*n) - m - 1), x))*b/(m + 1) + a*x^(m + 1)/(m + 1)
```

Fricas [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x^n)),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int x^m(a+b\operatorname{asin}(cx^n))\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(a+b*asin(c*x**n)),x)
```

```
[Out] Integral(x**m*(a + b*asin(c*x**n)), x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x^n)),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x^n) + a)*x^m, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int x^m\,\left(a+b\,\mathrm{asin}\left(c\,x^n\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a + b*asin(c*x^n)),x)
```

```
[Out] int(x^m*(a + b*asin(c*x^n)), x)
```

3.380 $\int x^2(a+b\mathbf{ArcSin}(cx^n))\,dx$

Optimal. Leaf size=68

$$\frac{1}{3}x^3(a+b\text{ArcSin}(cx^n))-\frac{bcnx^{3+n}\,{}_2F_1\left(\frac{1}{2},\frac{3+n}{2n};\frac{3(1+n)}{2n};c^2x^{2n}\right)}{3(3+n)}$$

```
[Out] 1/3*x^3*(a+b*arcsin(c*x^n))-1/3*b*c*n*x^(3+n)*hypergeom([1/2, 1/2*(3+n)/n],
[3/2*(1+n)/n],c^2*x^(2*n))/(3+n)
```

Rubi [A]
time = 0.03, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}=0.214$, Rules used = {4926, 12, 371}

$$\frac{1}{3}x^3(a+b\text{ArcSin}(cx^n))-\frac{bcnx^{n+3}\,{}_2F_1\left(\frac{1}{2},\frac{n+3}{2n};\frac{3(n+1)}{2n};c^2x^{2n}\right)}{3(n+3)}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(a + b*ArcSin[c*x^n]),x]
```

```
[Out] (x^3*(a + b*ArcSin[c*x^n]))/3 - (b*c*n*x^(3 + n)*Hypergeometric2F1[1/2, (3
+ n)/(2*n), (3*(1 + n))/(2*n), c^2*x^(2*n)])/(3*(3 + n))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 371

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[a^p
*((c*x)^(m + 1)/(c*(m + 1)))*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1
, (-b)*(x^n/a)], x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\int x^2\left(a+b\sin^{-1}(cx^n)\right)dx = \frac{1}{3}x^3\left(a+b\sin^{-1}(cx^n)\right)-\frac{1}{3}b\int\frac{cnx^{2+n}}{\sqrt{1-c^2x^{2n}}}dx$$
$$=\frac{1}{3}x^3\left(a+b\sin^{-1}(cx^n)\right)-\frac{1}{3}(bcn)\int\frac{x^{2+n}}{\sqrt{1-c^2x^{2n}}}dx$$
$$=\frac{1}{3}x^3\left(a+b\sin^{-1}(cx^n)\right)-\frac{bcnx^{3+n}\,{}_2F_1\left(\frac{1}{2},\frac{3+n}{2n};\frac{3(1+n)}{2n};c^2x^{2n}\right)}{3(3+n)}$$

Mathematica [A]
time = 0.04, size = 75, normalized size = 1.10

$$\frac{ax^3}{3}+\frac{1}{3}bx^3\text{ArcSin}(cx^n)-\frac{bcnx^{3+n}\,{}_2F_1\left(\frac{1}{2},\frac{3+n}{2n};1+\frac{3+n}{2n};c^2x^{2n}\right)}{3(3+n)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(a + b*ArcSin[c*x^n]),x]
[Out] (a*x^3)/3 + (b*x^3*ArcSin[c*x^n])/3 - (b*c*n*x^(3 + n)*Hypergeometric2F1[1/
2, (3 + n)/(2*n), 1 + (3 + n)/(2*n), c^2*x^(2*n)])/(3*(3 + n))
```

Maple [F]
time = 0.02, size = 0, normalized size = 0.00

$$\int x^2(a+b\arcsin(c\,x^n))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(c*x^n)),x)
[Out] int(x^2*(a+b*arcsin(c*x^n)),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x^n)),x, algorithm="maxima")
[Out] 1/3*a*x^3 + 1/3*(x^3*arctan2(c*x^n, sqrt(c*x^n + 1)*sqrt(-c*x^n + 1)) + 3*c
*n*integrate(1/3*sqrt(c*x^n + 1)*sqrt(-c*x^n + 1)*x^2*x^n/(c^2*x^(2*n) - 1)
, x))*b
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x^n)),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

Sympy [C] Result contains complex when optimal does not.
time = 4.40, size = 66, normalized size = 0.97

$$\frac{ax^3}{3} + \frac{bx^3 \operatorname{asin}(cx^n)}{3} + \frac{ibx^3\Gamma\left(\frac{3}{2n}\right) {}_2F_1\left(\begin{matrix} \frac{1}{2}, -\frac{3}{2n} \\ 1-\frac{3}{2n} \end{matrix}\middle| \frac{x^{-2n}}{c^2}\right)}{6\Gamma\left(1+\frac{3}{2n}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(c*x**n)),x)
```

```
[Out] a*x**3/3 + b*x**3*asin(c*x**n)/3 + I*b*x**3*gamma(3/(2*n))*hyper((1/2, -3/(
2*n)), (1 - 3/(2*n),), 1/(c**2*x**(2*n)))/(6*gamma(1 + 3/(2*n)))
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x^n)),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x^n) + a)*x^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int x^2\,\left(a+b\,\mathrm{asin}\left(c\,x^n\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c*x^n)),x)
```

```
[Out] int(x^2*(a + b*asin(c*x^n)), x)
```

3.381 $\int x(a + b\text{ArcSin}(cx^n))\, dx$

Optimal. Leaf size=69

$$\frac{1}{2}x^2(a + b\text{ArcSin}(cx^n)) - \frac{bcnx^{2+n}\,{}_2F_1\left(\frac{1}{2}, \frac{2+n}{2n}; \frac{1}{2}\left(3 + \frac{2}{n}\right); c^2x^{2n}\right)}{2(2+n)}$$

```
[Out] 1/2*x^2*(a+b*arcsin(c*x^n))-1/2*b*c*n*x^(2+n)*hypergeom([1/2, 1/2*(2+n)/n],
[3/2+1/n],c^2*x^(2*n))/(2+n)
```

Rubi [A]
time = 0.03, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {4926, 12, 371}

$$\frac{1}{2}x^2(a + b\text{ArcSin}(cx^n)) - \frac{bcnx^{n+2}\,{}_2F_1\left(\frac{1}{2}, \frac{n+2}{2n}; \frac{1}{2}\left(3 + \frac{2}{n}\right); c^2x^{2n}\right)}{2(n+2)}$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*ArcSin[c*x^n]),x]
```

```
[Out] (x^2*(a + b*ArcSin[c*x^n]))/2 - (b*c*n*x^(2 + n)*Hypergeometric2F1[1/2, (2
+ n)/(2*n), (3 + 2/n)/2, c^2*x^(2*n)])/(2*(2 + n))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 371

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[a^p
*((c*x)^(m + 1)/(c*(m + 1)))*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1
, (-b)*(x^n/a)], x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\int x\left(a+b\sin^{-1}\left(cx^n\right)\right)\,dx=\frac{1}{2}x^2\left(a+b\sin^{-1}\left(cx^n\right)\right)-\frac{1}{2}b\int\frac{cnx^{1+n}}{\sqrt{1-c^2x^{2n}}}\,dx$$
$$=\frac{1}{2}x^2\left(a+b\sin^{-1}\left(cx^n\right)\right)-\frac{1}{2}(bcn)\int\frac{x^{1+n}}{\sqrt{1-c^2x^{2n}}}\,dx$$
$$=\frac{1}{2}x^2\left(a+b\sin^{-1}\left(cx^n\right)\right)-\frac{bcnx^{2+n}\,{}_2F_1\left(\frac{1}{2},\frac{2+n}{2n};\frac{1}{2}\left(3+\frac{2}{n}\right);c^2x^{2n}\right)}{2(2+n)}$$

Mathematica [A]
time = 0.04, size = 75, normalized size = 1.09

$$\frac{ax^2}{2}+\frac{1}{2}bx^2\text{ArcSin}(cx^n)-\frac{bcnx^{2+n}\,{}_2F_1\left(\frac{1}{2},\frac{2+n}{2n};1+\frac{2+n}{2n};c^2x^{2n}\right)}{2(2+n)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*ArcSin[c*x^n]),x]
```

```
[Out] (a*x^2)/2 + (b*x^2*ArcSin[c*x^n])/2 - (b*c*n*x^(2 + n)*Hypergeometric2F1[1/
2, (2 + n)/(2*n), 1 + (2 + n)/(2*n), c^2*x^(2*n)])/(2*(2 + n))
```

Maple [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int x\left(a+b\arcsin\left(c\,x^n\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(c*x^n)),x)
```

```
[Out] int(x*(a+b*arcsin(c*x^n)),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x^n)),x, algorithm="maxima")
```

```
[Out] 1/2*a*x^2 + 1/2*(x^2*arctan2(c*x^n, sqrt(c*x^n + 1)*sqrt(-c*x^n + 1)) + 2*c
*n*integrate(1/2*sqrt(c*x^n + 1)*sqrt(-c*x^n + 1)*x*x^n/(c^2*x^(2*n) - 1),
x))*b
```

Fricas [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x^n)),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

Sympy [**C**] Result contains complex when optimal does not.
time = 2.50, size = 60, normalized size = 0.87

$$\frac{ax^2}{2} + \frac{bx^2 \operatorname{asin}(cx^n)}{2} + \frac{ibx^2\Gamma\left(\frac{1}{n}\right) {}_2F_1\left(\begin{matrix} \frac{1}{2}, -\frac{1}{n} \\ 1-\frac{1}{n} \end{matrix}\middle| \frac{x^{-2n}}{c^2}\right)}{4\Gamma\left(1+\frac{1}{n}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(c*x**n)),x)
```

```
[Out] a*x**2/2 + b*x**2*asin(c*x**n)/2 + I*b*x**2*gamma(1/n)*hyper((1/2, -1/n), (
1 - 1/n,), 1/(c**2*x**(2*n)))/(4*gamma(1 + 1/n))
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x^n)),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x^n) + a)*x, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int x\,\left(a+b\,\mathrm{asin}\left(c\,x^n\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c*x^n)),x)
```

```
[Out] int(x*(a + b*asin(c*x^n)), x)
```

3.382 $\int (a+b\text{ArcSin}(cx^n))\,dx$

Optimal. Leaf size=60

$$ax+bx\text{ArcSin}(cx^n)-\frac{bcnx^{1+n}\,{}_2F_1\left(\frac{1}{2},\frac{1+n}{2n};\frac{1}{2}\left(3+\frac{1}{n}\right);c^2x^{2n}\right)}{1+n}$$

```
[Out] a*x+b*x*arcsin(c*x^n)-b*c*n*x^(1+n)*hypergeom([1/2, 1/2*(1+n)/n],[3/2+1/2/n
],c^2*x^(2*n))/(1+n)
```

Rubi [A]
time = 0.03, antiderivative size = 60, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.300$, Rules used = {4924, 12, 371}

$$ax+bx\text{ArcSin}(cx^n)-\frac{bcnx^{n+1}\,{}_2F_1\left(\frac{1}{2},\frac{n+1}{2n};\frac{1}{2}\left(3+\frac{1}{n}\right);c^2x^{2n}\right)}{n+1}$$

Antiderivative was successfully verified.

```
[In] Int[a + b*ArcSin[c*x^n],x]
```

```
[Out] a*x + b*x*ArcSin[c*x^n] - (b*c*n*x^(1 + n)*Hypergeometric2F1[1/2, (1 + n)/(
2*n), (3 + n^(-1))/2, c^2*x^(2*n)])/(1 + n)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 371

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[a^p
*((c*x)^(m + 1)/(c*(m + 1)))*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1
, (-b)*(x^n/a)], x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 4924

```
Int[ArcSin[u_], x_Symbol] :> Simp[x*ArcSin[u], x] - Int[SimplifyIntegrand[x
*(D[u, x]/Sqrt[1 - u^2]), x], x] /; InverseFunctionFreeQ[u, x] &&  !Functio
nOfExponentialQ[u, x]
```

Rubi steps

$$\begin{aligned}\int \left(a+b\sin^{-1}\left(cx^n\right)\right)\,dx &= ax+b\int \sin^{-1}\left(cx^n\right)\,dx\\ &= ax+bx\sin^{-1}\left(cx^n\right)-b\int \frac{cnx^n}{\sqrt{1-c^2x^{2n}}}\,dx\\ &= ax+bx\sin^{-1}\left(cx^n\right)-(bcn)\int \frac{x^n}{\sqrt{1-c^2x^{2n}}}\,dx\\ &= ax+bx\sin^{-1}\left(cx^n\right)-\frac{bcnx^{1+n}\,{}_2F_1\left(\frac{1}{2},\frac{1+n}{2n};\frac{1}{2}\left(3+\frac{1}{n}\right);c^2x^{2n}\right)}{1+n}\end{aligned}$$

Mathematica [A]
time = 0.04, size = 60, normalized size = 1.00

$$ax+bx\text{ArcSin}(cx^n)-\frac{bcnx^{1+n}\,{}_2F_1\left(\frac{1}{2},\frac{1+n}{2n};\frac{1}{2}\left(3+\frac{1}{n}\right);c^2x^{2n}\right)}{1+n}$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*ArcSin[c*x^n],x]
[Out] a*x + b*x*ArcSin[c*x^n] - (b*c*n*x^(1 + n)*Hypergeometric2F1[1/2, (1 + n)/(
2*n), (3 + n^(-1))/2, c^2*x^(2*n)])/(1 + n)
```

Maple [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int a+b\arcsin\left(c\,x^n\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a+b*arcsin(c*x^n),x)
[Out] int(a+b*arcsin(c*x^n),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(c*x^n),x, algorithm="maxima")
[Out] (c*n*integrate(sqrt(c*x^n + 1)*sqrt(-c*x^n + 1)*x^n/(c^2*x^(2*n) - 1), x) +
 x*arctan2(c*x^n, sqrt(c*x^n + 1)*sqrt(-c*x^n + 1)))*b + a*x
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(c*x^n),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

Sympy [C] Result contains complex when optimal does not.
time = 1.30, size = 56, normalized size = 0.93

$$ax + b\left(x\operatorname{asin}\left(cx^{n}\right) + \frac{ix\Gamma\left(\frac{1}{2n}\right){}_{2}F_{1}\left(\begin{matrix}\frac{1}{2}, -\frac{1}{2n} \\ 1 - \frac{1}{2n}\end{matrix}\middle| \frac{x^{-2n}}{c^{2}}\right)}{2\Gamma\left(1 + \frac{1}{2n}\right)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*asin(c*x**n),x)
[Out] a*x + b*(x*asin(c*x**n) + I*x*gamma(1/(2*n))*hyper((1/2, -1/(2*n)), (1 - 1/
(2*n),), 1/(c**2*x**(2*n)))/(2*gamma(1 + 1/(2*n))))
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(c*x^n),x, algorithm="giac")
[Out] integrate(b*arcsin(c*x^n) + a, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int a + b\operatorname{asin}(c\,x^n)\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a + b*asin(c*x^n),x)
[Out] int(a + b*asin(c*x^n), x)
```

3.383 $\int \frac{a+b\textbf{ArcSin}(cx^n)}{x} dx$

Optimal. Leaf size=75

$$-\frac{ib\text{ArcSin}(cx^n)^2}{2n}+\frac{b\text{ArcSin}(cx^n)\log\left(1-e^{2i\text{ArcSin}(cx^n)}\right)}{n}+a\log(x)-\frac{ib\text{PolyLog}\left(2,e^{2i\text{ArcSin}(cx^n)}\right)}{2n}$$

```
[Out] -1/2*I*b*arcsin(c*x^n)^2/n+b*arcsin(c*x^n)*ln(1-(I*c*x^n+(1-c^2*(x^n)^2)^(1
/2))^2)/n+a*ln(x)-1/2*I*b*polylog(2,(I*c*x^n+(1-c^2*(x^n)^2)^(1/2))^2)/n
```

Rubi [A]
time = 0.07, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.429$, Rules used = {6874, 4914, 3798, 2221, 2317, 2438}

$$a\log(x)-\frac{ib\text{Li}_2\left(e^{2i\text{ArcSin}(cx^n)}\right)}{2n}-\frac{ib\text{ArcSin}(cx^n)^2}{2n}+\frac{b\text{ArcSin}(cx^n)\log\left(1-e^{2i\text{ArcSin}(cx^n)}\right)}{n}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^n])/x,x]
```

```
[Out] ((-1/2*I)*b*ArcSin[c*x^n]^2)/n + (b*ArcSin[c*x^n]*Log[1 - E^((2*I)*ArcSin[c
*x^n])])/n + a*Log[x] - ((I/2)*b*PolyLog[2, E^((2*I)*ArcSin[c*x^n])])/n
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3798

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[I*((c + d*x)^(m + 1)/(d*(m + 1))), x] - Dist[2*I, Int[(c + d*x)^m
```

```
*E^(2*I*k*Pi)*(E^(2*I*(e + f*x))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x)))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4914

```
Int[ArcSin[(a_.)*(x_)^(p_)]^(n_.)/(x_), x_Symbol] :> Dist[1/p, Subst[Int[x^
n*Cot[x], x], x, ArcSin[a*x^p]], x] /; FreeQ[{a, p}, x] && IGtQ[n, 0]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}(cx^n)}{x}\,dx &= \int \left(\frac{a}{x}+\frac{b\sin^{-1}(cx^n)}{x}\right)dx \\
&= a\log(x)+b\int \frac{\sin^{-1}(cx^n)}{x}\,dx \\
&= a\log(x)+\frac{b\text{Subst}\left(\int x\cot(x)\,dx,x,\sin^{-1}(cx^n)\right)}{n} \\
&= -\frac{ib\sin^{-1}(cx^n)^2}{2n}+a\log(x)-\frac{(2ib)\text{Subst}\left(\int \frac{e^{2ix}x}{1-e^{2ix}}\,dx,x,\sin^{-1}(cx^n)\right)}{n} \\
&= -\frac{ib\sin^{-1}(cx^n)^2}{2n}+\frac{b\sin^{-1}(cx^n)\log\left(1-e^{2i\sin^{-1}(cx^n)}\right)}{n}+a\log(x)-\frac{b\text{Subst}\left(\int \log(1\right.}{} \\
&= -\frac{ib\sin^{-1}(cx^n)^2}{2n}+\frac{b\sin^{-1}(cx^n)\log\left(1-e^{2i\sin^{-1}(cx^n)}\right)}{n}+a\log(x)+\frac{(ib)\text{Subst}\left(\int \frac{\log}{}\right.}{} \\
&= -\frac{ib\sin^{-1}(cx^n)^2}{2n}+\frac{b\sin^{-1}(cx^n)\log\left(1-e^{2i\sin^{-1}(cx^n)}\right)}{n}+a\log(x)-\frac{ib\text{Li}_2\left(e^{2i\sin^{-1}(c\right.}{2n}
\end{aligned}$$

Mathematica [B] Both result and optimal contain complex but leaf count is larger than twice the leaf count of optimal. 157 vs. 2(75) = 150.
time = 0.12, size = 157, normalized size = 2.09

$$a\log(x)+b\text{ArcSin}(cx^n)\log(x)-\frac{bc\left(\log(x)\log\left(\sqrt{-c^2}\,x^n+\sqrt{1-c^2x^{2n}}\right)+\frac{i\left(i\sinh^{-1}\left(\sqrt{-c^2}\,x^n\right)\log\left(1-e^{-2\sinh^{-1}\left(\sqrt{-c^2}\,x^n\right)}\right)-\frac{1}{2}i\left(-\sinh^{-1}\left(\sqrt{-c^2}\,x^n\right)^2+\text{PolyLog}\left(2,e^{-2\sinh^{-1}\left(\sqrt{-c^2}\,x^n\right)}\right)\right)\right)}{n}\right)}{\sqrt{-c^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^n])/x,x]
```

```
[Out] a*Log[x] + b*ArcSin[c*x^n]*Log[x] - (b*c*(Log[x]*Log[Sqrt[-c^2]*x^n + Sqrt[
1 - c^2*x^(2*n)]] + (I*(I*ArcSinh[Sqrt[-c^2]*x^n]*Log[1 - E^(-2*ArcSinh[Sqr
t[-c^2]*x^n])] - (I/2)*(-ArcSinh[Sqrt[-c^2]*x^n]^2 + PolyLog[2, E^(-2*ArcSi
nh[Sqrt[-c^2]*x^n])])))/n))/Sqrt[-c^2]
```

Maple [A]
time = 0.49, size = 150, normalized size = 2.00

method	result
derivativedivides	$\frac{a\ln(c\,x^n)-\frac{ib\arcsin(c\,x^n)^2}{2}+b\arcsin(c\,x^n)\ln\left(1+ic\,x^n+\sqrt{1-c^2x^{2n}}\right)+b\arcsin(c\,x^n)\ln\left(1-ic\,x^n-\sqrt{1-c^2x^{2n}}\right)}{n}$
default	$\frac{a\ln(c\,x^n)-\frac{ib\arcsin(c\,x^n)^2}{2}+b\arcsin(c\,x^n)\ln\left(1+ic\,x^n+\sqrt{1-c^2x^{2n}}\right)+b\arcsin(c\,x^n)\ln\left(1-ic\,x^n-\sqrt{1-c^2x^{2n}}\right)}{n}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^n))/x,x,method=_RETURNVERBOSE)
```

```
[Out] 1/n*(a*ln(c*x^n)-1/2*I*b*arcsin(c*x^n)^2+b*arcsin(c*x^n)*ln(1+I*c*x^n+(1-c^
2*(x^n)^2)^(1/2))+b*arcsin(c*x^n)*ln(1-I*c*x^n-(1-c^2*(x^n)^2)^(1/2))-I*b*p
olylog(2,I*c*x^n+(1-c^2*(x^n)^2)^(1/2))-I*b*polylog(2,-I*c*x^n-(1-c^2*(x^n)
^2)^(1/2)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^n))/x,x, algorithm="maxima")
```

```
[Out] (c*n*integrate(sqrt(c*x^n + 1)*sqrt(-c*x^n + 1)*x^n*log(x)/(c^2*x*x^(2*n) -
 x), x) + arctan2(c*x^n, sqrt(c*x^n + 1)*sqrt(-c*x^n + 1))*log(x))*b + a*lo
g(x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^n))/x,x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b\operatorname{asin}\left(cx^{n}\right)}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**n))/x,x)
```

```
[Out] Integral((a + b*asin(c*x**n))/x, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^n))/x,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x^n) + a)/x, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\mathrm{asin}\left(c\,x^n\right)}{x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x^n))/x,x)
```

```
[Out] int((a + b*asin(c*x^n))/x, x)
```

3.384 $\int \frac{a+b\text{ArcSin}(cx^n)}{x^2} dx$

Optimal. Leaf size=69

$$-\frac{a+b\text{ArcSin}(cx^n)}{x}-\frac{bcnx^{-1+n}\,{}_2F_1\left(\frac{1}{2},-\frac{1-n}{2n};\frac{1}{2}\left(3-\frac{1}{n}\right);c^2x^{2n}\right)}{1-n}$$

```
[Out] (-a-b*arcsin(c*x^n))/x-b*c*n*x^(-1+n)*hypergeom([1/2, 1/2*(-1+n)/n],[3/2-1/
2/n],c^2*x^(2*n))/(1-n)
```

Rubi [A]
time = 0.03, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {4926, 12, 371}

$$-\frac{a+b\text{ArcSin}(cx^n)}{x}-\frac{bcnx^{n-1}\,{}_2F_1\left(\frac{1}{2},-\frac{1-n}{2n};\frac{1}{2}\left(3-\frac{1}{n}\right);c^2x^{2n}\right)}{1-n}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^n])/x^2,x]
```

```
[Out] -((a + b*ArcSin[c*x^n])/x) - (b*c*n*x^(-1 + n)*Hypergeometric2F1[1/2, -1/2*
(1 - n)/n, (3 - n^(-1))/2, c^2*x^(2*n)])/(1 - n)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 371

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[a^p
*((c*x)^(m + 1)/(c*(m + 1)))*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1
, (-b)*(x^n/a)], x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx^n)}{x^2}\,dx = -\frac{a+b\sin^{-1}(cx^n)}{x} + b\int \frac{cnx^{-2+n}}{\sqrt{1-c^2x^{2n}}}\,dx$$
$$= -\frac{a+b\sin^{-1}(cx^n)}{x} + (bcn)\int \frac{x^{-2+n}}{\sqrt{1-c^2x^{2n}}}\,dx$$
$$= -\frac{a+b\sin^{-1}(cx^n)}{x} - \frac{bcnx^{-1+n}\,{}_2F_1\left(\frac{1}{2},-\frac{1-n}{2n};\frac{1}{2}\left(3-\frac{1}{n}\right);c^2x^{2n}\right)}{1-n}$$

Mathematica [A]
time = 0.05, size = 68, normalized size = 0.99

$$-\frac{a}{x} - \frac{b\text{ArcSin}(cx^n)}{x} + \frac{bcnx^{-1+n}\,{}_2F_1\left(\frac{1}{2},\frac{-1+n}{2n};1+\frac{-1+n}{2n};c^2x^{2n}\right)}{-1+n}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^n])/x^2,x]
```

```
[Out] -(a/x) - (b*ArcSin[c*x^n])/x + (b*c*n*x^(-1 + n)*Hypergeometric2F1[1/2, (-1
 + n)/(2*n), 1 + (-1 + n)/(2*n), c^2*x^(2*n)])/(-1 + n)
```

Maple [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\arcsin(c\,x^n)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^n))/x^2,x)
```

```
[Out] int((a+b*arcsin(c*x^n))/x^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^n))/x^2,x, algorithm="maxima")
```

```
[Out] -(c*n*x*integrate(sqrt(c*x^n + 1)*sqrt(-c*x^n + 1)*x^n/(c^2*x^2*x^(2*n) - x
^2), x) + arctan2(c*x^n, sqrt(c*x^n + 1)*sqrt(-c*x^n + 1)))*b/x - a/x
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^n))/x^2,x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

Sympy [C] Result contains complex when optimal does not.
time = 2.63, size = 60, normalized size = 0.87

$$-\frac{a}{x}-\frac{b\operatorname{asin}\left(cx^{n}\right)}{x}-\frac{ib\Gamma\left(-\frac{1}{2n}\right){}_{2}F_{1}\left(\begin{matrix}\frac{1}{2},\frac{1}{2n}\\1+\frac{1}{2n}\end{matrix}\middle|\frac{x^{-2n}}{c^{2}}\right)}{2x\Gamma\left(1-\frac{1}{2n}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**n))/x**2,x)
```

```
[Out] -a/x - b*asin(c*x**n)/x - I*b*gamma(-1/(2*n))*hyper((1/2, 1/(2*n)), (1 + 1/
(2*n),), 1/(c**2*x**(2*n)))/(2*x*gamma(1 - 1/(2*n)))
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^n))/x^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x^n) + a)/x^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\operatorname{asin}(c\,x^n)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x^n))/x^2,x)
```

```
[Out] int((a + b*asin(c*x^n))/x^2, x)
```

3.385 $\int \frac{a+b\mathbf{ArcSin}(cx^n)}{x^3}\,dx$

Optimal. Leaf size=72

$$-\frac{a+b\text{ArcSin}(cx^n)}{2x^2}-\frac{bcnx^{-2+n}\,{}_2F_1\left(\frac{1}{2},\frac{1}{2}\left(1-\frac{2}{n}\right);\frac{1}{2}\left(3-\frac{2}{n}\right);c^2x^{2n}\right)}{2(2-n)}$$

```
[Out] 1/2*(-a-b*arcsin(c*x^n))/x^2-1/2*b*c*n*x^(-2+n)*hypergeom([1/2, 1/2-1/n],[3
/2-1/n],c^2*x^(2*n))/(2-n)
```

Rubi [A]
time = 0.03, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.214$, Rules used = {4926, 12, 371}

$$-\frac{a+b\text{ArcSin}(cx^n)}{2x^2}-\frac{bcnx^{n-2}\,{}_2F_1\left(\frac{1}{2},\frac{1}{2}\left(1-\frac{2}{n}\right);\frac{1}{2}\left(3-\frac{2}{n}\right);c^2x^{2n}\right)}{2(2-n)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x^n])/x^3,x]
```

```
[Out] -1/2*(a + b*ArcSin[c*x^n])/x^2 - (b*c*n*x^(-2 + n)*Hypergeometric2F1[1/2, (
1 - 2/n)/2, (3 - 2/n)/2, c^2*x^(2*n)])/(2*(2 - n))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 371

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[a^p
*((c*x)^(m + 1)/(c*(m + 1)))*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1
, (-b)*(x^n/a)], x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx^n)}{x^3}\,dx = -\frac{a+b\sin^{-1}(cx^n)}{2x^2}+\frac{1}{2}b\int \frac{cnx^{-3+n}}{\sqrt{1-c^2x^{2n}}}\,dx$$
$$= -\frac{a+b\sin^{-1}(cx^n)}{2x^2}+\frac{1}{2}(bcn)\int \frac{x^{-3+n}}{\sqrt{1-c^2x^{2n}}}\,dx$$
$$= -\frac{a+b\sin^{-1}(cx^n)}{2x^2}-\frac{bcnx^{-2+n}\,{}_2F_1\left(\frac{1}{2},\frac{1}{2}\left(1-\frac{2}{n}\right);\frac{1}{2}\left(3-\frac{2}{n}\right);c^2x^{2n}\right)}{2(2-n)}$$

Mathematica [A]
time = 0.04, size = 75, normalized size = 1.04

$$-\frac{a}{2x^2}-\frac{b\text{ArcSin}(cx^n)}{2x^2}+\frac{bcnx^{-2+n}\,{}_2F_1\left(\frac{1}{2},\frac{-2+n}{2n};1+\frac{-2+n}{2n};c^2x^{2n}\right)}{2(-2+n)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x^n])/x^3,x]
[Out] -1/2*a/x^2 - (b*ArcSin[c*x^n])/(2*x^2) + (b*c*n*x^(-2 + n)*Hypergeometric2F
1[1/2, (-2 + n)/(2*n), 1 + (-2 + n)/(2*n), c^2*x^(2*n)])/(2*(-2 + n))
```

Maple [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\arcsin(c\,x^n)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x^n))/x^3,x)
[Out] int((a+b*arcsin(c*x^n))/x^3,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^n))/x^3,x, algorithm="maxima")
[Out] -1/2*(2*c*n*x^2*integrate(1/2*sqrt(c*x^n + 1)*sqrt(-c*x^n + 1)*x^n/(c^2*x^3
*x^(2*n) - x^3), x) + arctan2(c*x^n, sqrt(c*x^n + 1)*sqrt(-c*x^n + 1)))*b/x
^2 - 1/2*a/x^2
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^n))/x^3,x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

Sympy [C] Result contains complex when optimal does not.
time = 5.06, size = 61, normalized size = 0.85

$$-\frac{a}{2x^2}-\frac{b\,\mathrm{asin}\,(cx^n)}{2x^2}-\frac{ib\Gamma\left(-\frac{1}{n}\right){}_2F_1\left(\begin{matrix}\frac{1}{2},\frac{1}{n}\\1+\frac{1}{n}\end{matrix}\middle|\frac{x^{-2n}}{c^2}\right)}{4x^2\Gamma\left(1-\frac{1}{n}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x**n))/x**3,x)
```

```
[Out] -a/(2*x**2) - b*asin(c*x**n)/(2*x**2) - I*b*gamma(-1/n)*hyper((1/2, 1/n), (
1 + 1/n,), 1/(c**2*x**(2*n)))/(4*x**2*gamma(1 - 1/n))
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x^n))/x^3,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x^n) + a)/x^3, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\mathrm{asin}(c\,x^n)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x^n))/x^3,x)
```

```
[Out] int((a + b*asin(c*x^n))/x^3, x)
```

3.386 $\int x^5(a + b\mathbf{ArcSin}(c + dx^2))\,dx$

Optimal. Leaf size=129

$$\frac{bx^4\sqrt{1-c^2-2cdx^2-d^2x^4}}{18d}+\frac{b(4+11c^2-5cdx^2)\sqrt{1-c^2-2cdx^2-d^2x^4}}{36d^3}+\frac{bc(3+2c^2)\,\mathrm{ArcSin}(c+dx^2)}{12d^3}$$

```
[Out] 1/12*b*c*(2*c^2+3)*arcsin(d*x^2+c)/d^3+1/6*x^6*(a+b*arcsin(d*x^2+c))+1/18*b
*x^4*(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)/d+1/36*b*(-5*c*d*x^2+11*c^2+4)*(-d^2*
x^4-2*c*d*x^2-c^2+1)^(1/2)/d^3
```

Rubi [A]
time = 0.12, antiderivative size = 129, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.438$, Rules used = {4926, 12, 1128, 756, 793, 633, 222}

$$\frac{1}{6}x^6(a+b\mathrm{ArcSin}(c+dx^2))+\frac{bc(2c^2+3)\,\mathrm{ArcSin}(c+dx^2)}{12d^3}+\frac{bx^4\sqrt{-c^2-2cdx^2-d^2x^4+1}}{18d}+\frac{b(11c^2-5cdx^2+4)\sqrt{-c^2-2cdx^2-d^2x^4+1}}{36d^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^5*(a + b*ArcSin[c + d*x^2]),x]
```

```
[Out] (b*x^4*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(18*d) + (b*(4 + 11*c^2 - 5*c*d
*x^2)*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(36*d^3) + (b*c*(3 + 2*c^2)*ArcS
in[c + d*x^2])/(12*d^3) + (x^6*(a + b*ArcSin[c + d*x^2]))/6
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 633

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[1/(2*c*(-4*
(c/(b^2 - 4*a*c)))^p), Subst[Int[Simp[1 - x^2/(b^2 - 4*a*c), x]^p, x], x, b
 + 2*c*x], x] /; FreeQ[{a, b, c, p}, x] && GtQ[4*a - b^2/c, 0]
```

Rule 756

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[e*(d + e*x)^(m - 1)*((a + b*x + c*x^2)^(p + 1)/(c*(m + 2*p +
 1))), x] + Dist[1/(c*(m + 2*p + 1)), Int[(d + e*x)^(m - 2)*Simp[c*d^2*(m +
 2*p + 1) - e*(a*e*(m - 1) + b*d*(p + 1)) + e*(2*c*d - b*e)*(m + p)*x, x]*(
```

```
a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && If[Rat
ionalQ[m], GtQ[m, 1], SumSimplerQ[m, -2]] && NeQ[m + 2*p + 1, 0] && IntQuad
raticQ[a, b, c, d, e, m, p, x]
```

Rule 793

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> Simp[(-(b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x))*((a + b*x + c*x^2)^(p + 1)/(2*c^2*(p + 1)*(2*p + 3))),
 x] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p
+ 3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c,
 d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 1128

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.), x_Symbol] :> Dis
t[1/2, Subst[Int[x^((m - 1)/2)*(a + b*x + c*x^2)^p, x], x, x^2], x] /; Free
Q[{a, b, c, p}, x] && IntegerQ[(m - 1)/2]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\int x^5\left(a+b\sin^{-1}\left(c+dx^2\right)\right)\,dx = \frac{1}{6}x^6\left(a+b\sin^{-1}\left(c+dx^2\right)\right)-\frac{1}{6}b\int\frac{2dx^7}{\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$
$$=\frac{1}{6}x^6\left(a+b\sin^{-1}\left(c+dx^2\right)\right)-\frac{1}{3}(bd)\int\frac{x^7}{\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$
$$=\frac{1}{6}x^6\left(a+b\sin^{-1}\left(c+dx^2\right)\right)-\frac{1}{6}(bd)\text{Subst}\left(\int\frac{x^3}{\sqrt{1-c^2-2cdx-d^2x^2}}\,dx\right.$$
$$=\frac{bx^4\sqrt{1-c^2-2cdx^2-d^2x^4}}{18d}+\frac{1}{6}x^6\left(a+b\sin^{-1}\left(c+dx^2\right)\right)+\frac{b\text{Subst}\left(\int\right.}{}$$
$$=\frac{bx^4\sqrt{1-c^2-2cdx^2-d^2x^4}}{18d}+\frac{b(4+11c^2-5cdx^2)\sqrt{1-c^2-2cdx^2-}}{36d^3}$$
$$=\frac{bx^4\sqrt{1-c^2-2cdx^2-d^2x^4}}{18d}+\frac{b(4+11c^2-5cdx^2)\sqrt{1-c^2-2cdx^2-}}{36d^3}$$
$$=\frac{bx^4\sqrt{1-c^2-2cdx^2-d^2x^4}}{18d}+\frac{b(4+11c^2-5cdx^2)\sqrt{1-c^2-2cdx^2-}}{36d^3}$$

Mathematica [A]
time = 0.08, size = 116, normalized size = 0.90

$$\frac{ax^6}{6}+\frac{1}{2}b\left(\frac{4+11c^2}{18d^3}-\frac{5cx^2}{18d^2}+\frac{x^4}{9d}\right)\sqrt{1-c^2-2cdx^2-d^2x^4}+\frac{bc(3+2c^2)\,\text{ArcSin}(c+dx^2)}{12d^3}+\frac{1}{6}bx^6\text{ArcSin}(c+dx^2)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^5*(a + b*ArcSin[c + d*x^2]),x]
```

```
[Out] (a*x^6)/6 + (b*((4 + 11*c^2)/(18*d^3) - (5*c*x^2)/(18*d^2) + x^4/(9*d))*Sqr
t[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/2 + (b*c*(3 + 2*c^2)*ArcSin[c + d*x^2])/(
12*d^3) + (b*x^6*ArcSin[c + d*x^2])/6
```

Maple [B] Leaf count of result is larger than twice the leaf count of optimal. 257 vs. $2(117) = 234$.
time = 0.07, size = 258, normalized size = 2.00

method	result

default	$\frac{a\,x^{6}}{6}+\frac{b\,x^{6}\arcsin\left(d\,x^{2}+c\right)}{6}+\frac{b\,x^{4}\sqrt{-d^{2}x^{4}-2cd\,x^{2}-c^{2}+1}}{18d}-\frac{5bc\,x^{2}\sqrt{-d^{2}x^{4}-2cd\,x^{2}-c^{2}+1}}{36d^{2}}+\frac{11b\,c^{2}}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(a+b*arcsin(d*x^2+c)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/6*a*x^6+1/6*b*x^6*arcsin(d*x^2+c)+1/18*b*x^4*(-d^2*x^4-2*c*d*x^2-c^2+1)^(
1/2)/d-5/36*b*c/d^2*x^2*(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)+11/36*b*c^2/d^3*(-
d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)+1/6*b*c^3/d^2/(d^2)^(1/2)*arctan((d^2)^(1/2)
*(x^2+c/d)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2))+1/4*b*c/d^2/(d^2)^(1/2)*arctan
((d^2)^(1/2)*(x^2+c/d)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2))+1/9*b/d^3*(-d^2*x^
4-2*c*d*x^2-c^2+1)^(1/2)
```

Maxima [B] Leaf count of result is larger than twice the leaf count of optimal. 245 vs. $2(117) = 234$.
time = 0.48, size = 245, normalized size = 1.90

$$\frac{1}{6}ax^{6}+\frac{1}{36}\left(6x^{6}\arcsin\left(dx^{2}+c\right)+\left(\frac{2\sqrt{-d^{2}x^{4}-2cdx^{2}-c^{2}+1}\,x^{4}}{d^{2}}-\frac{5\sqrt{-d^{2}x^{4}-2cdx^{2}-c^{2}+1}\,cx^{2}}{d^{3}}-\frac{15c^{3}\arcsin\left(-\frac{d^{2}x^{2}+cd}{\sqrt{c^{2}d^{2}-(c^{2}-1)d^{2}}}\right)}{d^{4}}+\frac{9(c^{2}-1)c\arcsin\left(-\frac{d^{2}x^{2}+cd}{\sqrt{c^{2}d^{2}-(c^{2}-1)d^{2}}}\right)}{d^{4}}+\frac{15\sqrt{-d^{2}x^{4}-2cdx^{2}-c^{2}+1}\,c^{2}}{d^{4}}-\frac{4\sqrt{-d^{2}x^{4}-2cdx^{2}-c^{2}+1}\,(c^{2}-1)}{d^{4}}\right)d\right)b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(d*x^2+c)),x, algorithm="maxima")
```

```
[Out] 1/6*a*x^6 + 1/36*(6*x^6*arcsin(d*x^2 + c) + (2*sqrt(-d^2*x^4 - 2*c*d*x^2 -
c^2 + 1)*x^4/d^2 - 5*sqrt(-d^2*x^4 - 2*c*d*x^2 - c^2 + 1)*c*x^2/d^3 - 15*c^
3*arcsin(-(d^2*x^2 + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^4 + 9*(c^2 - 1)*
c*arcsin(-(d^2*x^2 + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/d^4 + 15*sqrt(-d^2
*x^4 - 2*c*d*x^2 - c^2 + 1)*c^2/d^4 - 4*sqrt(-d^2*x^4 - 2*c*d*x^2 - c^2 + 1
)*(c^2 - 1)/d^4)*d)*b
```

Fricas [A]
time = 2.21, size = 97, normalized size = 0.75

$$\frac{6\,ad^{3}x^{6}+3\,(2\,bd^{3}x^{6}+2\,bc^{3}+3\,bc)\arcsin\left(dx^{2}+c\right)+\left(2\,bd^{2}x^{4}-5\,bcdx^{2}+11\,bc^{2}+4\,b\right)\sqrt{-d^{2}x^{4}-2\,cdx^{2}-c^{2}+1}}{36\,d^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(d*x^2+c)),x, algorithm="fricas")
```

```
[Out] 1/36*(6*a*d^3*x^6 + 3*(2*b*d^3*x^6 + 2*b*c^3 + 3*b*c)*arcsin(d*x^2 + c) + (
2*b*d^2*x^4 - 5*b*c*d*x^2 + 11*b*c^2 + 4*b)*sqrt(-d^2*x^4 - 2*c*d*x^2 - c^2
 + 1))/d^3
```

Sympy [A]
time = 0.51, size = 204, normalized size = 1.58

$$\begin{cases} \frac{ax^6}{6} + \frac{bc^3 \operatorname{asin}(c+dx^2)}{6d^3} + \frac{11bc^2\sqrt{-c^2-2cdx^2-d^2x^4+1}}{36d^3} - \frac{5bcx^2\sqrt{-c^2-2cdx^2-d^2x^4+1}}{36d^2} + \frac{bc\operatorname{asin}(c+dx^2)}{4d^3} + \frac{bx^6\operatorname{asin}(c+dx^2)}{6} + \frac{bx^4\sqrt{-c^2-2cdx^2-d^2x^4+1}}{18d} + \frac{b\sqrt{-c^2-2cdx^2-d^2x^4+1}}{9d^3} & \text{for } d \neq 0 \\ \frac{x^6(a+b\operatorname{asin}(c))}{6} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(a+b*asin(d*x**2+c)),x)
```

```
[Out] Piecewise((a*x**6/6 + b*c**3*asin(c + d*x**2)/(6*d**3) + 11*b*c**2*sqrt(-c*
*2 - 2*c*d*x**2 - d**2*x**4 + 1)/(36*d**3) - 5*b*c*x**2*sqrt(-c**2 - 2*c*d*
x**2 - d**2*x**4 + 1)/(36*d**2) + b*c*asin(c + d*x**2)/(4*d**3) + b*x**6*as
in(c + d*x**2)/6 + b*x**4*sqrt(-c**2 - 2*c*d*x**2 - d**2*x**4 + 1)/(18*d) +
 b*sqrt(-c**2 - 2*c*d*x**2 - d**2*x**4 + 1)/(9*d**3), Ne(d, 0)), (x**6*(a +
 b*asin(c))/6, True))
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 254 vs. 2(117) = 234.
time = 0.43, size = 254, normalized size = 1.97

$$\frac{(dx^2+c)^3 a}{6\,d^3} + \frac{(dx^2+c)\left((dx^2+c)^2-1\right)b\arcsin(dx^2+c)}{6\,d^3} - \frac{\left((dx^2+c)^2-1\right)bc\arcsin(dx^2+c)}{2\,d^3} - \frac{(dx^2+c)\sqrt{-(dx^2+c)^2+1}\,bc}{4\,d^3} - \frac{\left((dx^2+c)^2-1\right)ac}{2\,d^3} + \frac{(dx^2+c)b\arcsin(dx^2+c)}{6\,d^3} - \frac{bc\arcsin(dx^2+c)}{4\,d^3} - \frac{\left(-(dx^2+c)^2+1\right)^{\frac{3}{2}}b}{18\,d^3} + \frac{\sqrt{-(dx^2+c)^2+1}\,b}{6\,d^3} + \frac{(dx^2+c)ac^2 + \left((dx^2+c)\arcsin(dx^2+c) + \sqrt{-(dx^2+c)^2+1}\right)bc^2}{2\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(d*x^2+c)),x, algorithm="giac")
```

```
[Out] 1/6*(d*x^2 + c)^3*a/d^3 + 1/6*(d*x^2 + c)*((d*x^2 + c)^2 - 1)*b*arcsin(d*x^
2 + c)/d^3 - 1/2*((d*x^2 + c)^2 - 1)*b*c*arcsin(d*x^2 + c)/d^3 - 1/4*(d*x^2
 + c)*sqrt(-(d*x^2 + c)^2 + 1)*b*c/d^3 - 1/2*((d*x^2 + c)^2 - 1)*a*c/d^3 +
1/6*(d*x^2 + c)*b*arcsin(d*x^2 + c)/d^3 - 1/4*b*c*arcsin(d*x^2 + c)/d^3 - 1
/18*(-(d*x^2 + c)^2 + 1)^(3/2)*b/d^3 + 1/6*sqrt(-(d*x^2 + c)^2 + 1)*b/d^3 +
 1/2*((d*x^2 + c)*a*c^2 + ((d*x^2 + c)*arcsin(d*x^2 + c) + sqrt(-(d*x^2 + c
)^2 + 1))*b*c^2)/d^3
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int x^5\,\left(a+b\,\mathrm{asin}\left(d\,x^2+c\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(a + b*asin(c + d*x^2)),x)
```

```
[Out] int(x^5*(a + b*asin(c + d*x^2)), x)
```

3.387 $\int x^3(a+b\mathbf{ArcSin}(c+dx^2))\,dx$

Optimal. Leaf size=115

$$-\frac{3bc\sqrt{1-c^2-2cdx^2-d^2x^4}}{8d^2}+\frac{bx^2\sqrt{1-c^2-2cdx^2-d^2x^4}}{8d}-\frac{b(1+2c^2)\,\mathrm{ArcSin}(c+dx^2)}{8d^2}+\frac{1}{4}x^4(a+b\mathrm{ArcSin}$$

```
[Out] -1/8*b*(2*c^2+1)*arcsin(d*x^2+c)/d^2+1/4*x^4*(a+b*arcsin(d*x^2+c))-3/8*b*c*
(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)/d^2+1/8*b*x^2*(-d^2*x^4-2*c*d*x^2-c^2+1)^(
1/2)/d
```

Rubi [A]
time = 0.09, antiderivative size = 115, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.438$, Rules used = {4926, 12, 1128, 756, 654, 633, 222}

$$\frac{1}{4}x^4(a+b\mathrm{ArcSin}(c+dx^2))-\frac{b(2c^2+1)\,\mathrm{ArcSin}(c+dx^2)}{8d^2}+\frac{bx^2\sqrt{-c^2-2cdx^2-d^2x^4+1}}{8d}-\frac{3bc\sqrt{-c^2-2cdx^2-d^2x^4+1}}{8d^2}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(a + b*ArcSin[c + d*x^2]),x]
```

```
[Out] (-3*b*c*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(8*d^2) + (b*x^2*Sqrt[1 - c^2
- 2*c*d*x^2 - d^2*x^4])/(8*d) - (b*(1 + 2*c^2)*ArcSin[c + d*x^2])/(8*d^2) +
 (x^4*(a + b*ArcSin[c + d*x^2]))/4
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 222

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[Rt[-b, 2]*(x/Sqrt
[a])]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 633

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[1/(2*c*(-4*
(c/(b^2 - 4*a*c)))^p), Subst[Int[Simp[1 - x^2/(b^2 - 4*a*c), x]^p, x], x, b
 + 2*c*x], x] /; FreeQ[{a, b, c, p}, x] && GtQ[4*a - b^2/c, 0]
```

Rule 654

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[e*((a + b*x + c*x^2)^(p + 1)/(2*c*(p + 1))), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
```

```
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 756

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[e*(d + e*x)^(m - 1)*((a + b*x + c*x^2)^(p + 1)/(c*(m + 2*p +
 1))), x] + Dist[1/(c*(m + 2*p + 1)), Int[(d + e*x)^(m - 2)*Simp[c*d^2*(m +
 2*p + 1) - e*(a*e*(m - 1) + b*d*(p + 1)) + e*(2*c*d - b*e)*(m + p)*x, x]*(
a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && If[Rat
ionalQ[m], GtQ[m, 1], SumSimplerQ[m, -2]] && NeQ[m + 2*p + 1, 0] && IntQuad
raticQ[a, b, c, d, e, m, p, x]
```

Rule 1128

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.), x_Symbol] :> Dis
t[1/2, Subst[Int[x^((m - 1)/2)*(a + b*x + c*x^2)^p, x], x, x^2], x] /; Free
Q[{a, b, c, p}, x] && IntegerQ[(m - 1)/2]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\int x^3\left(a+b\sin^{-1}\left(c+dx^2\right)\right)\,dx=\frac{1}{4}x^4\left(a+b\sin^{-1}\left(c+dx^2\right)\right)-\frac{1}{4}b\int\frac{2dx^5}{\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$

$$=\frac{1}{4}x^4\left(a+b\sin^{-1}\left(c+dx^2\right)\right)-\frac{1}{2}(bd)\int\frac{x^5}{\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$

$$=\frac{1}{4}x^4\left(a+b\sin^{-1}\left(c+dx^2\right)\right)-\frac{1}{4}(bd)\text{Subst}\left(\int\frac{x^2}{\sqrt{1-c^2-2cdx-d^2x^2}}\,dx,\right.$$

$$=\frac{bx^2\sqrt{1-c^2-2cdx^2-d^2x^4}}{8d}+\frac{1}{4}x^4\left(a+b\sin^{-1}\left(c+dx^2\right)\right)+\frac{b\text{Subst}\left(\int\frac{}{\sqrt{}}\right.}{}$$

$$=-\frac{3bc\sqrt{1-c^2-2cdx^2-d^2x^4}}{8d^2}+\frac{bx^2\sqrt{1-c^2-2cdx^2-d^2x^4}}{8d}+\frac{1}{4}x^4\left(a+\right.$$

$$=-\frac{3bc\sqrt{1-c^2-2cdx^2-d^2x^4}}{8d^2}+\frac{bx^2\sqrt{1-c^2-2cdx^2-d^2x^4}}{8d}+\frac{1}{4}x^4\left(a+\right.$$

$$=-\frac{3bc\sqrt{1-c^2-2cdx^2-d^2x^4}}{8d^2}+\frac{bx^2\sqrt{1-c^2-2cdx^2-d^2x^4}}{8d}-\frac{b(1+2c}{}$$

Mathematica [A]
time = 0.06, size = 98, normalized size = 0.85

$$\frac{ax^4}{4}+\frac{1}{2}b\left(-\frac{3c}{4d^2}+\frac{x^2}{4d}\right)\sqrt{1-c^2-2cdx^2-d^2x^4}-\frac{b(1+2c^2)\,\text{ArcSin}(c+dx^2)}{8d^2}+\frac{1}{4}bx^4\text{ArcSin}\left(c+dx^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(a + b*ArcSin[c + d*x^2]),x]
```

```
[Out] (a*x^4)/4 + (b*((-3*c)/(4*d^2) + x^2/(4*d))*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*
x^4])/2 - (b*(1 + 2*c^2)*ArcSin[c + d*x^2])/(8*d^2) + (b*x^4*ArcSin[c + d*x
^2])/4
```

Maple [A]
time = 0.02, size = 191, normalized size = 1.66

method	result
default	$\frac{x^4a}{4}+\frac{b\,x^4\arcsin(d\,x^2+c)}{4}+\frac{b\,x^2\sqrt{-d^2x^4-2cd\,x^2-c^2+1}}{8d}-\frac{3bc\sqrt{-d^2x^4-2cd\,x^2-c^2+1}}{8d^2}-\frac{b\,c^2\arctan}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*arcsin(d*x^2+c)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/4*x^4*a+1/4*b*x^4*arcsin(d*x^2+c)+1/8*b*x^2*(-d^2*x^4-2*c*d*x^2-c^2+1)^(1
/2)/d-3/8*b*c*(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)/d^2-1/4*b*c^2/d/(d^2)^(1/2)*
arctan((d^2)^(1/2)*(x^2+c/d)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2))-1/8*b/d/(d^2
)^(1/2)*arctan((d^2)^(1/2)*(x^2+c/d)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2))
```

Maxima [A]
time = 0.49, size = 174, normalized size = 1.51

$$\frac{1}{4}\,ax^4+\frac{1}{8}\left(2\,x^4\arcsin\left(dx^2+c\right)+d\left(\frac{\sqrt{-d^2x^4-2\,cdx^2-c^2+1}\,x^2}{d^2}+\frac{3\,c^2\arcsin\left(-\frac{d^2x^2+cd}{\sqrt{c^2d^2-(c^2-1)d^2}}\right)}{d^3}-\frac{(c^2-1)\arcsin\left(-\frac{d^2x^2+cd}{\sqrt{c^2d^2-(c^2-1)d^2}}\right)}{d^3}-\frac{3\,\sqrt{-d^2x^4-2\,cdx^2-c^2+1}\,c}{d^3}\right)\right)b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(d*x^2+c)),x, algorithm="maxima")
```

```
[Out] 1/4*a*x^4 + 1/8*(2*x^4*arcsin(d*x^2 + c) + d*(sqrt(-d^2*x^4 - 2*c*d*x^2 - c
^2 + 1)*x^2/d^2 + 3*c^2*arcsin(-(d^2*x^2 + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^
2))/d^3 - (c^2 - 1)*arcsin(-(d^2*x^2 + c*d)/sqrt(c^2*d^2 - (c^2 - 1)*d^2))/
d^3 - 3*sqrt(-d^2*x^4 - 2*c*d*x^2 - c^2 + 1)*c/d^3))*b
```

Fricas [A]
time = 2.76, size = 79, normalized size = 0.69

$$\frac{2\,ad^2x^4+\left(2\,bd^2x^4-2\,bc^2-b\right)\arcsin\left(dx^2+c\right)+\sqrt{-d^2x^4-2\,cdx^2-c^2+1}\,\left(bdx^2-3\,bc\right)}{8\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(d*x^2+c)),x, algorithm="fricas")
```

```
[Out] 1/8*(2*a*d^2*x^4 + (2*b*d^2*x^4 - 2*b*c^2 - b)*arcsin(d*x^2 + c) + sqrt(-d^
2*x^4 - 2*c*d*x^2 - c^2 + 1)*(b*d*x^2 - 3*b*c))/d^2
```

Sympy [A]
time = 0.25, size = 133, normalized size = 1.16

$$\begin{cases} \frac{ax^4}{4}-\frac{bc^2\operatorname{asin}\left(c+dx^2\right)}{4d^2}-\frac{3bc\sqrt{-c^2-2cdx^2-d^2x^4+1}}{8d^2}+\frac{bx^4\operatorname{asin}\left(c+dx^2\right)}{4}+\frac{bx^2\sqrt{-c^2-2cdx^2-d^2x^4+1}}{8d}-\frac{b\operatorname{asin}\left(c+dx^2\right)}{8d^2} & \text{for } d\neq 0 \\ \frac{x^4\left(a+b\operatorname{asin}\left(c\right)\right)}{4} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*asin(d*x**2+c)),x)
```

```
[Out] Piecewise((a*x**4/4 - b*c**2*asin(c + d*x**2)/(4*d**2) - 3*b*c*sqrt(-c**2 -
 2*c*d*x**2 - d**2*x**4 + 1)/(8*d**2) + b*x**4*asin(c + d*x**2)/4 + b*x**2*
sqrt(-c**2 - 2*c*d*x**2 - d**2*x**4 + 1)/(8*d) - b*asin(c + d*x**2)/(8*d**2
), Ne(d, 0)), (x**4*(a + b*asin(c))/4, True))
```

Giac [A]
time = 0.40, size = 128, normalized size = 1.11

$$-\frac{(dx^2+c)ac+\left((dx^2+c)\arcsin\left(dx^2+c\right)+\sqrt{-(dx^2+c)^2+1}\right)bc}{2\,d^2}+\frac{2\left((dx^2+c)^2-1\right)b\arcsin\left(dx^2+c\right)+(dx^2+c)\sqrt{-(dx^2+c)^2+1}\,b+2\left((dx^2+c)^2-1\right)a+b\arcsin\left(dx^2+c\right)}{8\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(d*x^2+c)),x, algorithm="giac")
```

```
[Out] -1/2*((d*x^2 + c)*a*c + ((d*x^2 + c)*arcsin(d*x^2 + c) + sqrt(-(d*x^2 + c)^
2 + 1))*b*c)/d^2 + 1/8*(2*((d*x^2 + c)^2 - 1)*b*arcsin(d*x^2 + c) + (d*x^2
+ c)*sqrt(-(d*x^2 + c)^2 + 1)*b + 2*((d*x^2 + c)^2 - 1)*a + b*arcsin(d*x^2
+ c))/d^2
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int x^3\,\left(a+b\,\mathrm{asin}\left(d\,x^2+c\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + b*asin(c + d*x^2)),x)
```

```
[Out] int(x^3*(a + b*asin(c + d*x^2)), x)
```

3.388 $\int x(a+b\textbf{ArcSin}(c+dx^2))\,dx$

Optimal. Leaf size=57

$$\frac{ax^2}{2}+\frac{b\sqrt{1-(c+dx^2)^2}}{2d}+\frac{b(c+dx^2)\operatorname{ArcSin}(c+dx^2)}{2d}$$

```
[Out] 1/2*a*x^2+1/2*b*(d*x^2+c)*arcsin(d*x^2+c)/d+1/2*b*(1-(d*x^2+c)^2)^(1/2)/d
```

Rubi [A]
time = 0.05, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}=0.286$, Rules used = {6847, 4887, 4715, 267}

$$\frac{ax^2}{2}+\frac{b(c+dx^2)\operatorname{ArcSin}(c+dx^2)}{2d}+\frac{b\sqrt{1-(c+dx^2)^2}}{2d}$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*ArcSin[c + d*x^2]),x]
```

```
[Out] (a*x^2)/2 + (b*Sqrt[1 - (c + d*x^2)^2])/(2*d) + (b*(c + d*x^2)*ArcSin[c + d
*x^2])/(2*d)
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 6847

```
Int[(u_)*(x_)^(m_.), x_Symbol] :> Dist[1/(m + 1), Subst[Int[SubstFor[x^(m +
 1), u, x], x], x, x^(m + 1)], x] /; FreeQ[m, x] && NeQ[m, -1] && FunctionO
fQ[x^(m + 1), u, x]
```

Rubi steps

$$
\begin{aligned}
\int x\left(a+b\sin^{-1}\left(c+dx^2\right)\right)\,dx &= \frac{1}{2}\text{Subst}\left(\int\left(a+b\sin^{-1}(c+dx)\right)\,dx,x,x^2\right)\\
&= \frac{ax^2}{2}+\frac{1}{2}b\text{Subst}\left(\int\sin^{-1}(c+dx)\,dx,x,x^2\right)\\
&= \frac{ax^2}{2}+\frac{b\text{Subst}\left(\int\sin^{-1}(x)\,dx,x,c+dx^2\right)}{2d}\\
&= \frac{ax^2}{2}+\frac{b(c+dx^2)\sin^{-1}\left(c+dx^2\right)}{2d}-\frac{b\text{Subst}\left(\int\frac{x}{\sqrt{1-x^2}}\,dx,x,c+dx^2\right)}{2d}\\
&= \frac{ax^2}{2}+\frac{b\sqrt{1-\left(c+dx^2\right)^2}}{2d}+\frac{b(c+dx^2)\sin^{-1}\left(c+dx^2\right)}{2d}
\end{aligned}
$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 183 vs. 2(57) = 114.
time = 0.11, size = 183, normalized size = 3.21

$$
\frac{ax^2}{2}+\frac{1}{2}bx^2\text{ArcSin}\left(c+dx^2\right)+\frac{b\left(2d\sqrt{1-c^2-2cdx^2-d^2x^4}+2cd\text{ArcTan}\left(\frac{\sqrt{-d^2}\,x^2-\sqrt{1-c^2-2cdx^2-d^2x^4}}{c}\right)+c\sqrt{-d^2}\,\log\left(-1+2cdx^2+2d^2x^4+2\sqrt{-d^2}\,x^2\sqrt{1-c^2-2cdx^2-d^2x^4}\right)\right)}{4d^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*ArcSin[c + d*x^2]),x]
```

```
[Out] (a*x^2)/2 + (b*x^2*ArcSin[c + d*x^2])/2 + (b*(2*d*Sqrt[1 - c^2 - 2*c*d*x^2
- d^2*x^4] + 2*c*d*ArcTan[(Sqrt[-d^2]*x^2 - Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*
x^4])/c] + c*Sqrt[-d^2]*Log[-1 + 2*c*d*x^2 + 2*d^2*x^4 + 2*Sqrt[-d^2]*x^2*S
qrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4]]))/(4*d^2)
```

Maple [A]
time = 0.07, size = 50, normalized size = 0.88

method	result	size
derivativedivides	$\frac{(d\,x^2+c)a+b\left((d\,x^2+c)\arcsin(d\,x^2+c)+\sqrt{1-\left(d\,x^2+c\right)^2}\right)}{2d}$	50
default	$\frac{(d\,x^2+c)a+b\left((d\,x^2+c)\arcsin(d\,x^2+c)+\sqrt{1-\left(d\,x^2+c\right)^2}\right)}{2d}$	50

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(d*x^2+c)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/2/d*((d*x^2+c)*a+b*((d*x^2+c)*arcsin(d*x^2+c)+(1-(d*x^2+c)^2)^(1/2)))
```

Maxima [A]
time = 0.47, size = 45, normalized size = 0.79

$$\frac{1}{2}\,ax^2+\frac{\left((dx^2+c)\arcsin\left(dx^2+c\right)+\sqrt{-\left(dx^2+c\right)^2+1}\right)b}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x^2+c)),x, algorithm="maxima")
```

```
[Out] 1/2*a*x^2 + 1/2*((d*x^2 + c)*arcsin(d*x^2 + c) + sqrt(-(d*x^2 + c)^2 + 1))*
b/d
```

Fricas [A]
time = 3.24, size = 57, normalized size = 1.00

$$\frac{adx^2+\left(bdx^2+bc\right)\arcsin\left(dx^2+c\right)+\sqrt{-d^2x^4-2\,cdx^2-c^2+1}\,b}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x^2+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(a*d*x^2 + (b*d*x^2 + b*c)*arcsin(d*x^2 + c) + sqrt(-d^2*x^4 - 2*c*d*x^
2 - c^2 + 1)*b)/d
```

Sympy [A]
time = 0.11, size = 76, normalized size = 1.33

$$\begin{cases}\frac{ax^2}{2}+\frac{bc\,\mathrm{asin}\,(c+dx^2)}{2d}+\frac{bx^2\,\mathrm{asin}\,(c+dx^2)}{2}+\frac{b\sqrt{-c^2-2cdx^2-d^2x^4+1}}{2d} & \text{for } d\neq 0\\ \frac{x^2(a+b\,\mathrm{asin}\,(c))}{2} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(d*x**2+c)),x)
```

```
[Out] Piecewise((a*x**2/2 + b*c*asin(c + d*x**2)/(2*d) + b*x**2*asin(c + d*x**2)/
2 + b*sqrt(-c**2 - 2*c*d*x**2 - d**2*x**4 + 1)/(2*d), Ne(d, 0)), (x**2*(a +
 b*asin(c))/2, True))
```

Giac [A]
time = 0.41, size = 49, normalized size = 0.86

$$\frac{(dx^2+c)a+\left((dx^2+c)\arcsin\left(dx^2+c\right)+\sqrt{-\left(dx^2+c\right)^2+1}\right)b}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(d*x^2+c)),x, algorithm="giac")
```

```
[Out] 1/2*((d*x^2 + c)*a + ((d*x^2 + c)*arcsin(d*x^2 + c) + sqrt(-(d*x^2 + c)^2 +
 1))*b)/d
```

Mupad [B]
time = 0.73, size = 108, normalized size = 1.89

$$\frac{a\,x^2}{2}+\frac{b\,x^2\,\mathrm{asin}(d\,x^2+c)}{2}+\frac{b\,\sqrt{-c^2-2\,c\,d\,x^2-d^2\,x^4+1}}{2\,d}+\frac{b\,c\,\ln\left(\sqrt{-c^2-2\,c\,d\,x^2-d^2\,x^4+1}-\frac{d^2\,x^2+c\,d}{\sqrt{-d^2}}\right)}{2\,\sqrt{-d^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c + d*x^2)),x)
```

```
[Out] (a*x^2)/2 + (b*x^2*asin(c + d*x^2))/2 + (b*(1 - d^2*x^4 - 2*c*d*x^2 - c^2)^
(1/2))/(2*d) + (b*c*log((1 - d^2*x^4 - 2*c*d*x^2 - c^2)^(1/2) - (c*d + d^2*
x^2)/(-d^2)^(1/2)))/(2*(-d^2)^(1/2))
```

3.389 $\int \frac{a+b\text{ArcSin}(c+dx^2)}{x}\,dx$

Optimal. Leaf size=214

$$-\frac{1}{4}ib\text{ArcSin}(c+dx^2)^2+\frac{1}{2}b\text{ArcSin}(c+dx^2)\log\left(1-\frac{e^{i\text{ArcSin}(c+dx^2)}}{ic-\sqrt{1-c^2}}\right)+\frac{1}{2}b\text{ArcSin}(c+dx^2)\log\left(1-\frac{e^{i\text{ArcSi}}}{ic+\sqrt{}}\right.$$

```
[Out] -1/4*I*b*arcsin(d*x^2+c)^2+a*ln(x)+1/2*b*arcsin(d*x^2+c)*ln(1-(I*(d*x^2+c)+
(1-(d*x^2+c)^2)^(1/2))/(I*c-(-c^2+1)^(1/2)))+1/2*b*arcsin(d*x^2+c)*ln(1-(I*
(d*x^2+c)+(1-(d*x^2+c)^2)^(1/2))/(I*c+(-c^2+1)^(1/2)))-1/2*I*b*polylog(2,(I
*(d*x^2+c)+(1-(d*x^2+c)^2)^(1/2))/(I*c-(-c^2+1)^(1/2)))-1/2*I*b*polylog(2,(
I*(d*x^2+c)+(1-(d*x^2+c)^2)^(1/2))/(I*c+(-c^2+1)^(1/2)))
```

Rubi [A]
time = 0.27, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.438$, Rules used = {6874, 4889, 4825, 4617, 2221, 2317, 2438}

$$a\log(x)-\frac{1}{2}ib\text{Li}_2\left(\frac{e^{i\text{ArcSin}(dx^2+c)}}{ic-\sqrt{1-c^2}}\right)-\frac{1}{2}ib\text{Li}_2\left(\frac{e^{i\text{ArcSin}(dx^2+c)}}{ic+\sqrt{1-c^2}}\right)+\frac{1}{2}b\text{ArcSin}(c+dx^2)\log\left(1-\frac{e^{i\text{ArcSin}(c+dx^2)}}{-\sqrt{1-c^2}+ic}\right)+\frac{1}{2}b\text{ArcSin}(c+dx^2)\log\left(1-\frac{e^{i\text{ArcSin}(c+dx^2)}}{\sqrt{1-c^2}+ic}\right)-\frac{1}{4}ib\text{ArcSin}(c+dx^2)^2$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x^2])/x,x]
```

```
[Out] (-1/4*I)*b*ArcSin[c + d*x^2]^2 + (b*ArcSin[c + d*x^2]*Log[1 - E^(I*ArcSin[c
 + d*x^2])/(I*c - Sqrt[1 - c^2])])/2 + (b*ArcSin[c + d*x^2]*Log[1 - E^(I*Ar
cSin[c + d*x^2])/(I*c + Sqrt[1 - c^2])])/2 + a*Log[x] - (I/2)*b*PolyLog[2,
E^(I*ArcSin[c + d*x^2])/(I*c - Sqrt[1 - c^2])] - (I/2)*b*PolyLog[2, E^(I*Ar
cSin[c + d*x^2])/(I*c + Sqrt[1 - c^2])]
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4617

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> Simp[(-I)*((e + f*x)^(m + 1)/(b*f*(m + 1
))), x] + (Dist[I, Int[(e + f*x)^m*(E^(I*(c + d*x))/(I*a - Rt[-a^2 + b^2, 2
] + b*E^(I*(c + d*x)))), x], x] + Dist[I, Int[(e + f*x)^m*(E^(I*(c + d*x))/
(I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x)))), x], x]) /; FreeQ[{a, b, c,
d, e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4825

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[(a + b*x)^n*(Cos[x]/(c*d + e*Sin[x])), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4889

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + f*(x/d))^m*(a + b*Ar
cSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(c+dx^2)}{x}\,dx = \int \left(\frac{a}{x}+\frac{b\sin^{-1}(c+dx^2)}{x}\right)\,dx$$

$$= a\log(x)+b\int \frac{\sin^{-1}(c+dx^2)}{x}\,dx$$

$$= a\log(x)+\frac{1}{2}b\text{Subst}\left(\int \frac{\sin^{-1}(c+dx)}{x}\,dx,x,x^2\right)$$

$$= a\log(x)+\frac{b\text{Subst}\left(\int \frac{\sin^{-1}(x)}{-\frac{c}{d}+\frac{x}{d}}\,dx,x,c+dx^2\right)}{2d}$$

$$= a\log(x)+\frac{b\text{Subst}\left(\int \frac{x\cos(x)}{-\frac{c}{d}+\frac{\sin(x)}{d}}\,dx,x,\sin^{-1}(c+dx^2)\right)}{2d}$$

$$= -\frac{1}{4}ib\sin^{-1}(c+dx^2)^2+a\log(x)+\frac{(ib)\text{Subst}\left(\int \frac{e^{ix}x}{-\frac{ic}{d}-\frac{\sqrt{1-c^2}}{d}+\frac{e^{ix}}{d}}\,dx,x,\sin^{-1}\right.}{2d}$$

$$= -\frac{1}{4}ib\sin^{-1}(c+dx^2)^2+\frac{1}{2}b\sin^{-1}(c+dx^2)\log\left(1-\frac{e^{i\sin^{-1}(c+dx^2)}}{ic-\sqrt{1-c^2}}\right)+\frac{1}{2}b\sin$$

$$= -\frac{1}{4}ib\sin^{-1}(c+dx^2)^2+\frac{1}{2}b\sin^{-1}(c+dx^2)\log\left(1-\frac{e^{i\sin^{-1}(c+dx^2)}}{ic-\sqrt{1-c^2}}\right)+\frac{1}{2}b\sin$$

$$= -\frac{1}{4}ib\sin^{-1}(c+dx^2)^2+\frac{1}{2}b\sin^{-1}(c+dx^2)\log\left(1-\frac{e^{i\sin^{-1}(c+dx^2)}}{ic-\sqrt{1-c^2}}\right)+\frac{1}{2}b\sin$$

__**Mathematica**__ [A]
time = 0.02, size = 230, normalized size = 1.07

$$-\frac{1}{4}ib\text{ArcSin}(c+dx^2)^2+\frac{1}{2}b\text{ArcSin}(c+dx^2)\log\left(1+\frac{e^{i\text{ArcSin}(c+dx^2)}}{\left(-\frac{ic}{d}-\frac{\sqrt{1-c^2}}{d}\right)d}\right)+\frac{1}{2}b\text{ArcSin}(c+dx^2)\log\left(1+\frac{e^{i\text{ArcSin}(c+dx^2)}}{\left(-\frac{ic}{d}+\frac{\sqrt{1-c^2}}{d}\right)d}\right)+a\log(x)-\frac{1}{2}ib\text{PolyLog}\left(2,-\frac{e^{i\text{ArcSin}(c+dx^2)}}{-ic+\sqrt{1-c^2}}\right)-\frac{1}{2}ib\text{PolyLog}\left(2,\frac{e^{i\text{ArcSin}(c+dx^2)}}{ic+\sqrt{1-c^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x^2])/x,x]
[Out] (-1/4*I)*b*ArcSin[c + d*x^2]^2 + (b*ArcSin[c + d*x^2]*Log[1 + E^(I*ArcSin[c
 + d*x^2])/((((-I)*c)/d - Sqrt[1 - c^2]/d)*d)])/2 + (b*ArcSin[c + d*x^2]*Lo
```

```
g[1 + E^(I*ArcSin[c + d*x^2])/((((-I)*c)/d + Sqrt[1 - c^2]/d)*d)])/2 + a*Lo
g[x] - (I/2)*b*PolyLog[2, -(E^(I*ArcSin[c + d*x^2])/((-I)*c + Sqrt[1 - c^2]
))] - (I/2)*b*PolyLog[2, E^(I*ArcSin[c + d*x^2])/(I*c + Sqrt[1 - c^2])]
```

Maple [F]
time = 0.07, size = 0, normalized size = 0.00

$$\int \frac{a+b\arcsin\left(d\,x^{2}+c\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+c))/x,x)
```

```
[Out] int((a+b*arcsin(d*x^2+c))/x,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x,x, algorithm="maxima")
```

```
[Out] b*integrate(arctan2(d*x^2 + c, sqrt(d*x^2 + c + 1)*sqrt(-d*x^2 - c + 1))/x,
 x) + a*log(x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(d*x^2 + c) + a)/x, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\operatorname{asin}\left(c+dx^{2}\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+c))/x,x)
```

```
[Out] Integral((a + b*asin(c + d*x**2))/x, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + c) + a)/x, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\mathrm{asin}\left(d\,x^2+c\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x^2))/x,x)
```

```
[Out] int((a + b*asin(c + d*x^2))/x, x)
```

3.390 $\int \frac{a+b\text{ArcSin}(c+dx^2)}{x^3}\,dx$

Optimal. Leaf size=90

$$-\frac{a+b\text{ArcSin}(c+dx^2)}{2x^2}-\frac{bd\tanh^{-1}\left(\frac{1-c^2-cdx^2}{\sqrt{1-c^2}\,\sqrt{1-c^2-2cdx^2-d^2x^4}}\right)}{2\sqrt{1-c^2}}$$

```
[Out] 1/2*(-a-b*arcsin(d*x^2+c))/x^2-1/2*b*d*arctanh((-c*d*x^2-c^2+1)/(-c^2+1)^(1
/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2))/(-c^2+1)^(1/2)
```

Rubi [A]
time = 0.07, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312, Rules used = {4926, 12, 1128, 738, 212}

$$-\frac{a+b\text{ArcSin}(c+dx^2)}{2x^2}-\frac{bd\tanh^{-1}\left(\frac{-c^2-cdx^2+1}{\sqrt{1-c^2}\,\sqrt{-c^2-2cdx^2-d^2x^4+1}}\right)}{2\sqrt{1-c^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x^2])/x^3,x]
```

```
[Out] -1/2*(a + b*ArcSin[c + d*x^2])/x^2 - (b*d*ArcTanh[(1 - c^2 - c*d*x^2)/(Sqrt
[1 - c^2]*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])])/(2*Sqrt[1 - c^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 212

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1/(Rt[a, 2]*Rt[-b, 2]))*
ArcTanh[Rt[-b, 2]*(x/Rt[a, 2])], x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 738

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 1128

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.), x_Symbol] :> Dis
t[1/2, Subst[Int[x^((m - 1)/2)*(a + b*x + c*x^2)^p, x], x, x^2], x] /; Free
Q[{a, b, c, p}, x] && IntegerQ[(m - 1)/2]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}\left(c+dx^2\right)}{x^3}\,dx = -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{2x^2}+\frac{1}{2}b\int \frac{2d}{x\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$
$$= -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{2x^2}+(bd)\int \frac{1}{x\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$
$$= -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{2x^2}+\frac{1}{2}(bd)\text{Subst}\left(\int \frac{1}{x\sqrt{1-c^2-2cdx-d^2x^2}}\,dx,x,x^2\right)$$
$$= -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{2x^2}-(bd)\text{Subst}\left(\int \frac{1}{4\left(1-c^2\right)-x^2}\,dx,x,\frac{2(1-c^2-}{\sqrt{1-c^2-2cdx}}\right.$$
$$= -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{2x^2}-\frac{bd\tanh^{-1}\left(\frac{1-c^2-cdx^2}{\sqrt{1-c^2}\sqrt{1-c^2-2cdx^2-d^2x^4}}\right)}{2\sqrt{1-c^2}}$$

Mathematica [A]
time = 0.06, size = 81, normalized size = 0.90

$$\frac{1}{2}\left(-\frac{a+b\text{ArcSin}\left(c+dx^2\right)}{x^2}-\frac{bd\tanh^{-1}\left(\frac{1-c^2-cdx^2}{\sqrt{1-c^2}\sqrt{1-\left(c+dx^2\right)^2}}\right)}{\sqrt{1-c^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x^2])/x^3,x]
```

```
[Out] (-((a + b*ArcSin[c + d*x^2])/x^2) - (b*d*ArcTanh[(1 - c^2 - c*d*x^2)/(Sqrt[
1 - c^2]*Sqrt[1 - (c + d*x^2)^2])])/Sqrt[1 - c^2])/2
```

Maple [A]
time = 0.02, size = 89, normalized size = 0.99

method	result	size
default	$-\frac{a}{2x^{2}}-\frac{b\arcsin\left(d\,x^{2}+c\right)}{2x^{2}}-\frac{b d \ln\left(\frac{-2c^{2}+2-2cd\,x^{2}+2\sqrt{-c^{2}+1}\,\sqrt{-d^{2}x^{4}-2cd\,x^{2}-c^{2}+1}}{x^{2}}\right)}{2\sqrt{-c^{2}+1}}$	89

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+c))/x^3,x,method=_RETURNVERBOSE)
```

```
[Out] -1/2*a/x^2-1/2*b/x^2*arcsin(d*x^2+c)-1/2*b*d/(-c^2+1)^(1/2)*ln((-2*c^2+2-2*
c*d*x^2+2*(-c^2+1)^(1/2)*(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2))/x^2)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c-1>0)', see `assume?` for more det
ails)Is
```

Fricas [A]
time = 3.23, size = 280, normalized size = 3.11

$$\left[-\frac{\sqrt{-c^{2}+1}\,bdx^{2}\log\left(\frac{(2\,c^{2}-1)d^{2}x^{4}+2\,c^{4}+4\,(c^{3}-c)dx^{2}+2\,\sqrt{-d^{2}x^{4}-2\,cdx^{2}-c^{2}+1}\,(cdx^{2}+c^{2}-1)\sqrt{-c^{2}+1}-4\,c^{2}+2}{x^{4}}\right)+2\,ac^{2}+2\,(bc^{2}-b)\arcsin\left(dx^{2}+c\right)-2\,a}{4\,(c^{2}-1)x^{2}},\ \frac{\sqrt{c^{2}-1}\,bdx^{2}\arctan\left(\frac{\sqrt{-d^{2}x^{4}-2\,cdx^{2}-c^{2}+1}\,(cdx^{2}+c^{2}-1)\sqrt{c^{2}-1}}{(c^{2}-1)d^{2}x^{4}+c^{4}+2\,(c^{3}-c)dx^{2}-2\,c^{2}+1}\right)-ac^{2}-(bc^{2}-b)\arcsin\left(dx^{2}+c\right)+a}{2\,(c^{2}-1)x^{2}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^3,x, algorithm="fricas")
```

```
[Out] [-1/4*(sqrt(-c^2 + 1)*b*d*x^2*log(((2*c^2 - 1)*d^2*x^4 + 2*c^4 + 4*(c^3 - c
)*d*x^2 + 2*sqrt(-d^2*x^4 - 2*c*d*x^2 - c^2 + 1)*(c*d*x^2 + c^2 - 1)*sqrt(-
c^2 + 1) - 4*c^2 + 2)/x^4) + 2*a*c^2 + 2*(b*c^2 - b)*arcsin(d*x^2 + c) - 2*
a)/((c^2 - 1)*x^2), 1/2*(sqrt(c^2 - 1)*b*d*x^2*arctan(sqrt(-d^2*x^4 - 2*c*d
*x^2 - c^2 + 1)*(c*d*x^2 + c^2 - 1)*sqrt(c^2 - 1)/((c^2 - 1)*d^2*x^4 + c^4
+ 2*(c^3 - c)*d*x^2 - 2*c^2 + 1)) - a*c^2 - (b*c^2 - b)*arcsin(d*x^2 + c) +
 a)/((c^2 - 1)*x^2)]
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\operatorname{asin}\left(c+dx^{2}\right)}{x^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+c))/x**3,x)
```

```
[Out] Integral((a + b*asin(c + d*x**2))/x**3, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^3,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + c) + a)/x^3, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\operatorname{asin}\left(d\,x^{2}+c\right)}{x^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x^2))/x^3,x)
```

```
[Out] int((a + b*asin(c + d*x^2))/x^3, x)
```

3.391 $\int \frac{a+b\text{ArcSin}(c+dx^2)}{x^5} dx$

Optimal. Leaf size=137

$$-\frac{bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{4(1-c^2)x^2}-\frac{a+b\text{ArcSin}(c+dx^2)}{4x^4}-\frac{bcd^2\tanh^{-1}\left(\frac{1-c^2-cdx^2}{\sqrt{1-c^2}\sqrt{1-c^2-2cdx^2-d^2x^4}}\right)}{4(1-c^2)^{3/2}}$$

```
[Out] 1/4*(-a-b*arcsin(d*x^2+c))/x^4-1/4*b*c*d^2*arctanh((-c*d*x^2-c^2+1)/(-c^2+1
)^(1/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2))/(-c^2+1)^(3/2)-1/4*b*d*(-d^2*x^4-
2*c*d*x^2-c^2+1)^(1/2)/(-c^2+1)/x^2
```

Rubi [A]
time = 0.10, antiderivative size = 137, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.375$, Rules used = {4926, 12, 1128, 744, 738, 212}

$$-\frac{a+b\text{ArcSin}(c+dx^2)}{4x^4}-\frac{bd\sqrt{-c^2-2cdx^2-d^2x^4+1}}{4(1-c^2)x^2}-\frac{bcd^2\tanh^{-1}\left(\frac{-c^2-cdx^2+1}{\sqrt{1-c^2}\sqrt{-c^2-2cdx^2-d^2x^4+1}}\right)}{4(1-c^2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x^2])/x^5,x]
```

```
[Out] -1/4*(b*d*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/((1 - c^2)*x^2) - (a + b*Arc
Sin[c + d*x^2])/(4*x^4) - (b*c*d^2*ArcTanh[(1 - c^2 - c*d*x^2)/(Sqrt[1 - c^
2]*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])])/(4*(1 - c^2)^(3/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 212

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1/(Rt[a, 2]*Rt[-b, 2]))*
ArcTanh[Rt[-b, 2]*(x/Rt[a, 2])], x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 738

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 744

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[e*(d + e*x)^(m + 1)*((a + b*x + c*x^2)^(p + 1)/((m + 1)*(c*d
^2 - b*d*e + a*e^2))), x] + Dist[(2*c*d - b*e)/(2*(c*d^2 - b*d*e + a*e^2)),
 Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e,
 m, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2
*c*d - b*e, 0] && EqQ[m + 2*p + 3, 0]
```

Rule 1128

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.), x_Symbol] :> Dis
t[1/2, Subst[Int[x^((m - 1)/2)*(a + b*x + c*x^2)^p, x], x, x^2], x] /; Free
Q[{a, b, c, p}, x] && IntegerQ[(m - 1)/2]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}\left(c+dx^2\right)}{x^5}\,dx &= -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{4x^4}+\frac{1}{4}b\int \frac{2d}{x^3\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx\\
&= -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{4x^4}+\frac{1}{2}(bd)\int \frac{1}{x^3\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx\\
&= -\frac{a+b\sin^{-1}\left(c+dx^2\right)}{4x^4}+\frac{1}{4}(bd)\text{Subst}\left(\int \frac{1}{x^2\sqrt{1-c^2-2cdx-d^2x^2}}\,dx,x,x^2\right.\\
&= -\frac{bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{4\left(1-c^2\right)x^2}-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{4x^4}+\frac{\left(bcd^2\right)\text{Subst}\left(\int \frac{}{x\sqrt{1}}\right.}{}\\
&= -\frac{bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{4\left(1-c^2\right)x^2}-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{4x^4}-\frac{\left(bcd^2\right)\text{Subst}\left(\int \frac{1}{4(1-c}\right.}{}\\
&= -\frac{bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{4\left(1-c^2\right)x^2}-\frac{a+b\sin^{-1}\left(c+dx^2\right)}{4x^4}-\frac{bcd^2\tanh^{-1}\left(\frac{}{\sqrt{1-c}}\right.}{4}
\end{aligned}$$

Mathematica [A]
time = 0.26, size = 148, normalized size = 1.08

$$-\frac{a}{4x^4}+\frac{bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{4\left(-1+c^2\right)x^2}-\frac{b\text{ArcSin}\left(c+dx^2\right)}{4x^4}+\frac{bcd^2\text{ArcTan}\left(\frac{\sqrt{-d^2}\,x^2-\sqrt{1-c^2-2cdx^2-d^2x^4}}{\sqrt{-1+c^2}}\right)}{2(-1+c)(1+c)\sqrt{-1+c^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x^2])/x^5,x]
```

```
[Out] -1/4*a/x^4 + (b*d*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(4*(-1 + c^2)*x^2) -
 (b*ArcSin[c + d*x^2])/(4*x^4) + (b*c*d^2*ArcTan[(Sqrt[-d^2]*x^2 - Sqrt[1 -
 c^2 - 2*c*d*x^2 - d^2*x^4])/Sqrt[-1 + c^2]])/(2*(-1 + c)*(1 + c)*Sqrt[-1 +
 c^2])
```

Maple [A]
time = 0.02, size = 132, normalized size = 0.96

method	result
default	$-\frac{a}{4x^4}-\frac{b\arcsin\left(d\,x^2+c\right)}{4x^4}-\frac{bd\sqrt{-d^2x^4-2cd\,x^2-c^2+1}}{4\left(-c^2+1\right)x^2}-\frac{b\,d^2c\ln\left(\frac{-2c^2+2-2cd\,x^2+2\sqrt{-c^2+1}\,\sqrt{-d^2x^4-}}{x^2}\right.}{4\left(-c^2+1\right)^{\frac{3}{2}}}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+c))/x^5,x,method=_RETURNVERBOSE)
```

```
[Out] -1/4*a/x^4-1/4*b/x^4*arcsin(d*x^2+c)-1/4*b*d*(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/
2)/(-c^2+1)/x^2-1/4*b*d^2*c/(-c^2+1)^(3/2)*ln((-2*c^2+2-2*c*d*x^2+2*(-c^2+1
)^(1/2)*(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2))/x^2)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c-1>0)', see `assume?` for more det
ails)Is
```

Fricas [A]
time = 3.18, size = 392, normalized size = 2.86

$$\left[-\frac{\sqrt{-c^2+1}\,bcd^2x^4\log\left(\frac{\left(2\,c^2-1\right)d^2x^4+2\,c^4+4\left(c^3-c\right)dx^2-2\sqrt{-d^2x^4-2\,cdx^2-c^2+1}\left(cdx^2+c^2-1\right)\sqrt{-c^2+1}-4\,c^2+2}{x^4}\right)+2\,ac^4-2\sqrt{-d^2x^4-2\,cdx^2-c^2+1}\left(bc^2-b\right)dx^2-4\,ac^2+2\left(bc^4-2\,bc^2+b\right)\arcsin\left(dx^2+c\right)+2\,a}{8\left(c^4-2\,c^2+1\right)x^4},-\frac{\sqrt{c^2-1}\,bcd^2x^4\arctan\left(\frac{\sqrt{-d^2x^4-2\,cdx^2-c^2+1}\left(cdx^2+c^2-1\right)\sqrt{c^2-1}}{\left(c^2-1\right)d^2x^4+c^4+2\left(c^3-c\right)dx^2-2\,c^2+1}\right)+ac^4-\sqrt{-d^2x^4-2\,cdx^2-c^2+1}\left(bc^2-b\right)dx^2-2\,ac^2+\left(bc^4-2\,bc^2+b\right)\arcsin\left(dx^2+c\right)+a}{4\left(c^4-2\,c^2+1\right)x^4}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^5,x, algorithm="fricas")
```

```
[Out] [-1/8*(sqrt(-c^2 + 1)*b*c*d^2*x^4*log(((2*c^2 - 1)*d^2*x^4 + 2*c^4 + 4*(c^3
 - c)*d*x^2 - 2*sqrt(-d^2*x^4 - 2*c*d*x^2 - c^2 + 1)*(c*d*x^2 + c^2 - 1)*sq
rt(-c^2 + 1) - 4*c^2 + 2)/x^4) + 2*a*c^4 - 2*sqrt(-d^2*x^4 - 2*c*d*x^2 - c^
2 + 1)*(b*c^2 - b)*d*x^2 - 4*a*c^2 + 2*(b*c^4 - 2*b*c^2 + b)*arcsin(d*x^2 +
 c) + 2*a)/((c^4 - 2*c^2 + 1)*x^4), -1/4*(sqrt(c^2 - 1)*b*c*d^2*x^4*arctan(
sqrt(-d^2*x^4 - 2*c*d*x^2 - c^2 + 1)*(c*d*x^2 + c^2 - 1)*sqrt(c^2 - 1)/((c^
2 - 1)*d^2*x^4 + c^4 + 2*(c^3 - c)*d*x^2 - 2*c^2 + 1)) + a*c^4 - sqrt(-d^2*
x^4 - 2*c*d*x^2 - c^2 + 1)*(b*c^2 - b)*d*x^2 - 2*a*c^2 + (b*c^4 - 2*b*c^2 +
 b)*arcsin(d*x^2 + c) + a)/((c^4 - 2*c^2 + 1)*x^4)]
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b \operatorname{asin}\left(c + dx^{2}\right)}{x^{5}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+c))/x**5,x)
```

```
[Out] Integral((a + b*asin(c + d*x**2))/x**5, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^5,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + c) + a)/x^5, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\mathrm{asin}\left(d\,x^2+c\right)}{x^5} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x^2))/x^5,x)
```

```
[Out] int((a + b*asin(c + d*x^2))/x^5, x)
```

3.392 $\int \frac{a+b\mathbf{ArcSin}(c+dx^2)}{x^7}\,dx$

Optimal. Leaf size=190

$$-\frac{bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{12(1-c^2)x^4}-\frac{bcd^2\sqrt{1-c^2-2cdx^2-d^2x^4}}{4(1-c^2)^2x^2}-\frac{a+b\text{ArcSin}(c+dx^2)}{6x^6}-\frac{b(1+2c^2)d^3\tanh^{-1}\Big(}{}$$

```
[Out] 1/6*(-a-b*arcsin(d*x^2+c))/x^6-1/12*b*(2*c^2+1)*d^3*arctanh((-c*d*x^2-c^2+1
)/(-c^2+1)^(1/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2))/(-c^2+1)^(5/2)-1/12*b*d*
(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)/(-c^2+1)/x^4-1/4*b*c*d^2*(-d^2*x^4-2*c*d*x
^2-c^2+1)^(1/2)/(-c^2+1)^2/x^2
```

Rubi [A]
time = 0.16, antiderivative size = 190, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.438$, Rules used = {4926, 12, 1128, 758, 820, 738, 212}

$$-\frac{a+b\text{ArcSin}(c+dx^2)}{6x^6}-\frac{bcd^2\sqrt{-c^2-2cdx^2-d^2x^4+1}}{4(1-c^2)^2x^2}-\frac{bd\sqrt{-c^2-2cdx^2-d^2x^4+1}}{12(1-c^2)x^4}-\frac{b(2c^2+1)d^3\tanh^{-1}\left(\frac{-c^2-cdx^2+1}{\sqrt{1-c^2}\sqrt{-c^2-2cdx^2-d^2x^4+1}}\right)}{12(1-c^2)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x^2])/x^7,x]
```

```
[Out] -1/12*(b*d*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/((1 - c^2)*x^4) - (b*c*d^2*
Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(4*(1 - c^2)^2*x^2) - (a + b*ArcSin[c
+ d*x^2])/(6*x^6) - (b*(1 + 2*c^2)*d^3*ArcTanh[(1 - c^2 - c*d*x^2)/(Sqrt[1
- c^2]*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])])/(12*(1 - c^2)^(5/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 212

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1/(Rt[a, 2]*Rt[-b, 2]))*
ArcTanh[Rt[-b, 2]*(x/Rt[a, 2])], x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 738

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
```

```
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 758

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[e*(d + e*x)^(m + 1)*((a + b*x + c*x^2)^(p + 1)/((m + 1)*(c*d
^2 - b*d*e + a*e^2))), x] + Dist[1/((m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(
d + e*x)^(m + 1)*Simp[c*d*(m + 1) - b*e*(m + p + 2) - c*e*(m + 2*p + 3)*x,
x]*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^
2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && Ne
Q[m, -1] && ((LtQ[m, -1] && IntQuadraticQ[a, b, c, d, e, m, p, x]) || (SumS
implerQ[m, 1] && IntegerQ[p]) || ILtQ[Simplify[m + 2*p + 3], 0])
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(-(e*f - d*g))*(d + e*x)^(m + 1)*((a +
 b*x + c*x^2)^(p + 1)/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2))), x] - Dist[(b*(e
*f + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(
m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m
+ 2*p + 3], 0]
```

Rule 1128

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.), x_Symbol] :> Dis
t[1/2, Subst[Int[x^((m - 1)/2)*(a + b*x + c*x^2)^p, x], x, x^2], x] /; Free
Q[{a, b, c, p}, x] && IntegerQ[(m - 1)/2]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(c+dx^2)}{x^7}\,dx = -\frac{a+b\sin^{-1}(c+dx^2)}{6x^6}+\frac{1}{6}b\int \frac{2d}{x^5\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$
$$= -\frac{a+b\sin^{-1}(c+dx^2)}{6x^6}+\frac{1}{3}(bd)\int \frac{1}{x^5\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$
$$= -\frac{a+b\sin^{-1}(c+dx^2)}{6x^6}+\frac{1}{6}(bd)\text{Subst}\left(\int \frac{1}{x^3\sqrt{1-c^2-2cdx-d^2x^2}}\,dx,x,x^2\right)$$
$$= -\frac{bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{12(1-c^2)x^4}-\frac{a+b\sin^{-1}(c+dx^2)}{6x^6}-\frac{(bd)\text{Subst}\left(\int \frac{}{x^2\sqrt{1-}}\right.}{12}$$
$$= -\frac{bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{12(1-c^2)x^4}-\frac{bcd^2\sqrt{1-c^2-2cdx^2-d^2x^4}}{4(1-c^2)^2x^2}-\frac{a+b\sin^{-1}(c}{6x^6}$$
$$= -\frac{bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{12(1-c^2)x^4}-\frac{bcd^2\sqrt{1-c^2-2cdx^2-d^2x^4}}{4(1-c^2)^2x^2}-\frac{a+b\sin^{-1}(c}{6x^6}$$
$$= -\frac{bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{12(1-c^2)x^4}-\frac{bcd^2\sqrt{1-c^2-2cdx^2-d^2x^4}}{4(1-c^2)^2x^2}-\frac{a+b\sin^{-1}(c}{6x^6}$$

Mathematica [A]
time = 0.23, size = 174, normalized size = 0.92

$$-\frac{a}{6x^6}+b\left(\frac{d}{12(-1+c^2)x^4}-\frac{cd^2}{4(-1+c^2)^2x^2}\right)\sqrt{1-c^2-2cdx^2-d^2x^4}-\frac{b\text{ArcSin}(c+dx^2)}{6x^6}-\frac{b(1+2c^2)d^3\text{ArcTan}\left(\frac{\sqrt{-d^2}x^2-\sqrt{1-c^2-2cdx^2-d^2x^4}}{\sqrt{-1+c^2}}\right)}{6(-1+c)^2(1+c)^2\sqrt{-1+c^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x^2])/x^7,x]
```

```
[Out] -1/6*a/x^6 + b*(d/(12*(-1 + c^2)*x^4) - (c*d^2)/(4*(-1 + c^2)^2*x^2))*Sqrt[
1 - c^2 - 2*c*d*x^2 - d^2*x^4] - (b*ArcSin[c + d*x^2])/(6*x^6) - (b*(1 + 2*
c^2)*d^3*ArcTan[(Sqrt[-d^2]*x^2 - Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/Sqrt
[-1 + c^2]])/(6*(-1 + c)^2*(1 + c)^2*Sqrt[-1 + c^2])
```

Maple [A]
time = 0.02, size = 246, normalized size = 1.29

method	result

default	$-\frac{a}{6x^6}-\frac{b\arcsin\left(d\,x^2+c\right)}{6x^6}-\frac{bd\sqrt{-d^2x^4-2cd\,x^2-c^2+1}}{12(-c^2+1)x^4}-\frac{bc\,d^2\sqrt{-d^2x^4-2cd\,x^2-c^2+1}}{4(-c^2+1)^2x^2}-\frac{b\,d^3c^2\ln}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+c))/x^7,x,method=_RETURNVERBOSE)
```

```
[Out] -1/6*a/x^6-1/6*b/x^6*arcsin(d*x^2+c)-1/12*b*d*(-d^2*x^4-2*c*d*x^2-c^2+1)^(1
/2)/(-c^2+1)/x^4-1/4*b*c*d^2*(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)/(-c^2+1)^2/x^
2-1/4*b*d^3*c^2/(-c^2+1)^(5/2)*ln((-2*c^2+2-2*c*d*x^2+2*(-c^2+1)^(1/2)*(-d^
2*x^4-2*c*d*x^2-c^2+1)^(1/2))/x^2)-1/12*b*d^3/(-c^2+1)^(3/2)*ln((-2*c^2+2-2
*c*d*x^2+2*(-c^2+1)^(1/2)*(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2))/x^2)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^7,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c-1>0)', see `assume?` for more det
ails)Is
```

Fricas [A]
time = 3.38, size = 496, normalized size = 2.61

$$\left[-\frac{(2bc^2+b)\sqrt{-c^2+1}\,d^3x^6\log\left(\frac{(2c^2-1)d^2x^4+2c^4+4(c^3-c)dx^2+2\sqrt{-d^2x^4-2cdx^2-c^2+1}\,(cdx^2+c^2-1)\sqrt{-c^2+1}-4c^2+2}{x^4}\right)+4ac^6-12ac^4+12ac^2+4(bc^6-3bc^4+3bc^2-b)\arcsin(dx^2+c)+2(3(bc^3-bc)d^2x^4-(bc^4-2bc^2+b)dx^2)\sqrt{-d^2x^4-2cdx^2-c^2+1}-4a}{24(c^6-3c^4+3c^2-1)x^6},\ \frac{(2bc^2+b)\sqrt{c^2-1}\,d^3x^6\arctan\left(\frac{\sqrt{-d^2x^4-2cdx^2-c^2+1}\,(cdx^2+c^2-1)\sqrt{c^2-1}}{(c^2-1)d^2x^4+c^4+2(c^3-c)dx^2-2c^2+1}\right)-2ac^6+6ac^4-6ac^2-2(bc^6-3bc^4+3bc^2-b)\arcsin(dx^2+c)-(3(bc^3-bc)d^2x^4-(bc^4-2bc^2+b)dx^2)\sqrt{-d^2x^4-2cdx^2-c^2+1}+2a}{12(c^6-3c^4+3c^2-1)x^6}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^7,x, algorithm="fricas")
```

```
[Out] [-1/24*((2*b*c^2 + b)*sqrt(-c^2 + 1)*d^3*x^6*log(((2*c^2 - 1)*d^2*x^4 + 2*c
^4 + 4*(c^3 - c)*d*x^2 + 2*sqrt(-d^2*x^4 - 2*c*d*x^2 - c^2 + 1)*(c*d*x^2 +
c^2 - 1)*sqrt(-c^2 + 1) - 4*c^2 + 2)/x^4) + 4*a*c^6 - 12*a*c^4 + 12*a*c^2 +
 4*(b*c^6 - 3*b*c^4 + 3*b*c^2 - b)*arcsin(d*x^2 + c) + 2*(3*(b*c^3 - b*c)*d
^2*x^4 - (b*c^4 - 2*b*c^2 + b)*d*x^2)*sqrt(-d^2*x^4 - 2*c*d*x^2 - c^2 + 1)
- 4*a)/((c^6 - 3*c^4 + 3*c^2 - 1)*x^6), 1/12*((2*b*c^2 + b)*sqrt(c^2 - 1)*d
^3*x^6*arctan(sqrt(-d^2*x^4 - 2*c*d*x^2 - c^2 + 1)*(c*d*x^2 + c^2 - 1)*sqrt
(c^2 - 1)/((c^2 - 1)*d^2*x^4 + c^4 + 2*(c^3 - c)*d*x^2 - 2*c^2 + 1)) - 2*a*
c^6 + 6*a*c^4 - 6*a*c^2 - 2*(b*c^6 - 3*b*c^4 + 3*b*c^2 - b)*arcsin(d*x^2 +
c) - (3*(b*c^3 - b*c)*d^2*x^4 - (b*c^4 - 2*b*c^2 + b)*d*x^2)*sqrt(-d^2*x^4
- 2*c*d*x^2 - c^2 + 1) + 2*a)/((c^6 - 3*c^4 + 3*c^2 - 1)*x^6)]
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b \operatorname{asin}\left(c + dx^{2}\right)}{x^{7}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+c))/x**7,x)
```

```
[Out] Integral((a + b*asin(c + d*x**2))/x**7, x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^7,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + c) + a)/x^7, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a + b \operatorname{asin}(d\, x^2 + c)}{x^7}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x^2))/x^7,x)
```

```
[Out] int((a + b*asin(c + d*x^2))/x^7, x)
```

3.393 $\int x^4(a+b\textbf{ArcSin}(c+dx^2))\,dx$

Optimal. Leaf size=336

$$-\frac{16bcx\sqrt{1-c^2-2cdx^2-d^2x^4}}{75d^2}+\frac{2bx^3\sqrt{1-c^2-2cdx^2-d^2x^4}}{25d}+\frac{1}{5}x^5\left(a+b\text{ArcSin}\left(c+dx^2\right)\right)-\frac{2b\sqrt{1-c}}{}$$

```
[Out] 1/5*x^5*(a+b*arcsin(d*x^2+c))-2/75*b*(1+c)*(23*c^2+9)*EllipticE(x*d^(1/2)/(
1-c)^(1/2),((-1+c)/(1+c))^(1/2))*(1-c)^(1/2)*(1-d*x^2/(1-c))^(1/2)*(1+d*x^2
/(1+c))^(1/2)/d^(5/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)+2/75*b*(1+c)*(15*c^2
+8*c+9)*EllipticF(x*d^(1/2)/(1-c)^(1/2),((-1+c)/(1+c))^(1/2))*(1-c)^(1/2)*(
1-d*x^2/(1-c))^(1/2)*(1+d*x^2/(1+c))^(1/2)/d^(5/2)/(-d^2*x^4-2*c*d*x^2-c^2+
1)^(1/2)-16/75*b*c*x*(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)/d^2+2/25*b*x^3*(-d^2*
x^4-2*c*d*x^2-c^2+1)^(1/2)/d
```

Rubi [A]

time = 0.31, antiderivative size = 336, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {4926, 12, 1136, 1293, 1216, 538, 435, 430}

$$\frac{1}{5}x^5\left(a+b\text{ArcSin}\left(c+dx^2\right)\right)+\frac{2b\sqrt{1-c}\,(c+1)\left(15c^2+8c+9\right)\sqrt{1-\frac{dx^2}{1-c}}\sqrt{\frac{dx^2}{c+1}+1}\,F\left(\text{ArcSin}\left(\frac{\sqrt{d}\,x}{\sqrt{1-c}}\right)|-\frac{1-c}{c+1}\right)}{75d^{5/2}\sqrt{-c^2-2cdx^2-d^2x^4+1}}-\frac{2b\sqrt{1-c}\,(c+1)\left(23c^2+9\right)\sqrt{1-\frac{dx^2}{1-c}}\sqrt{\frac{dx^2}{c+1}+1}\,E\left(\text{ArcSin}\left(\frac{\sqrt{d}\,x}{\sqrt{1-c}}\right)|-\frac{1-c}{c+1}\right)}{75d^{5/2}\sqrt{-c^2-2cdx^2-d^2x^4+1}}-\frac{16bcx\sqrt{-c^2-2cdx^2-d^2x^4+1}}{75d^2}+\frac{2bx^3\sqrt{-c^2-2cdx^2-d^2x^4+1}}{25d}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(a + b*ArcSin[c + d*x^2]),x]
```

```
[Out] (-16*b*c*x*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(75*d^2) + (2*b*x^3*Sqrt[1
- c^2 - 2*c*d*x^2 - d^2*x^4])/(25*d) + (x^5*(a + b*ArcSin[c + d*x^2]))/5 -
(2*b*Sqrt[1 - c]*(1 + c)*(9 + 23*c^2)*Sqrt[1 - (d*x^2)/(1 - c)]*Sqrt[1 + (d
*x^2)/(1 + c)]*EllipticE[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]], -((1 - c)/(1 + c)
)])/(75*d^(5/2)*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4]) + (2*b*Sqrt[1 - c]*(1
+ c)*(9 + 8*c + 15*c^2)*Sqrt[1 - (d*x^2)/(1 - c)]*Sqrt[1 + (d*x^2)/(1 + c)]
*EllipticF[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]], -((1 - c)/(1 + c))])/(75*d^(5/2
)*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 430

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1/(Sqrt[a]*Sqrt[c]*Rt[-d/c, 2]))*EllipticF[ArcSin[Rt[-d/c, 2]*x], b*(c
/(a*d))], x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a,
0] &&  !(NegQ[b/a] && SimplerSqrtQ[-b/a, -d/c])
```

Rule 435

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]/(Sqrt[c]*Rt[-d/c, 2]))*EllipticE[ArcSin[Rt[-d/c, 2]*x], b*(c/(a*d)
)], x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 538

```
Int[((e_) + (f_.)*(x_)^(n_))/(Sqrt[(a_) + (b_.)*(x_)^(n_)]*Sqrt[(c_) + (d_.
)*(x_)^(n_)]), x_Symbol] :> Dist[f/b, Int[Sqrt[a + b*x^n]/Sqrt[c + d*x^n],
x], x] + Dist[(b*e - a*f)/b, Int[1/(Sqrt[a + b*x^n]*Sqrt[c + d*x^n]), x], x
] /; FreeQ[{a, b, c, d, e, f, n}, x] &&  !(EqQ[n, 2] && ((PosQ[b/a] && PosQ
[d/c]) || (NegQ[b/a] && (PosQ[d/c] || (GtQ[a, 0] && ( !GtQ[c, 0] || Simpler
SqrtQ[-b/a, -d/c]))))))
```

Rule 1136

```
Int[((d_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_), x_Symbol]
 :> Simp[d^3*(d*x)^(m - 3)*((a + b*x^2 + c*x^4)^(p + 1)/(c*(m + 4*p + 1))),
 x] - Dist[d^4/(c*(m + 4*p + 1)), Int[(d*x)^(m - 4)*Simp[a*(m - 3) + b*(m +
 2*p - 1)*x^2, x]*(a + b*x^2 + c*x^4)^p, x], x] /; FreeQ[{a, b, c, d, p}, x
] && NeQ[b^2 - 4*a*c, 0] && GtQ[m, 3] && NeQ[m + 4*p + 1, 0] && IntegerQ[2*
p] && (IntegerQ[p] || IntegerQ[m])
```

Rule 1216

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[Sqrt[1 + 2*c*(x^2/(b - q))]*(Sqrt
[1 + 2*c*(x^2/(b + q))]/Sqrt[a + b*x^2 + c*x^4]), Int[(d + e*x^2)/(Sqrt[1 +
 2*c*(x^2/(b - q))]*Sqrt[1 + 2*c*(x^2/(b + q))]), x], x]] /; FreeQ[{a, b, c
, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NegQ[c/a]
```

Rule 1293

```
Int[((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_)^2)*((a_) + (b_.)*(x_)^2 + (c_.)*(
x_)^4)^(p_), x_Symbol] :> Simp[e*f*(f*x)^(m - 1)*((a + b*x^2 + c*x^4)^(p +
1)/(c*(m + 4*p + 3))), x] - Dist[f^2/(c*(m + 4*p + 3)), Int[(f*x)^(m - 2)*(
a + b*x^2 + c*x^4)^p*Simp[a*e*(m - 1) + (b*e*(m + 2*p + 1) - c*d*(m + 4*p +
 3))*x^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, p}, x] && NeQ[b^2 - 4*a*c,
 0] && GtQ[m, 1] && NeQ[m + 4*p + 3, 0] && IntegerQ[2*p] && (IntegerQ[p] ||
 IntegerQ[m])
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
```

```
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\int x^4\left(a+b\sin^{-1}\left(c+dx^2\right)\right)\,dx=\frac{1}{5}x^5\left(a+b\sin^{-1}\left(c+dx^2\right)\right)-\frac{1}{5}b\int\frac{2dx^6}{\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$
$$=\frac{1}{5}x^5\left(a+b\sin^{-1}\left(c+dx^2\right)\right)-\frac{1}{5}(2bd)\int\frac{x^6}{\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$
$$=\frac{2bx^3\sqrt{1-c^2-2cdx^2-d^2x^4}}{25d}+\frac{1}{5}x^5\left(a+b\sin^{-1}\left(c+dx^2\right)\right)-\frac{(2b)\int\frac{}{\sqrt{1}}}{}$$
$$=-\frac{16bcx\sqrt{1-c^2-2cdx^2-d^2x^4}}{75d^2}+\frac{2bx^3\sqrt{1-c^2-2cdx^2-d^2x^4}}{25d}+\frac{1}{5}x^5$$
$$=-\frac{16bcx\sqrt{1-c^2-2cdx^2-d^2x^4}}{75d^2}+\frac{2bx^3\sqrt{1-c^2-2cdx^2-d^2x^4}}{25d}+\frac{1}{5}x^5$$
$$=-\frac{16bcx\sqrt{1-c^2-2cdx^2-d^2x^4}}{75d^2}+\frac{2bx^3\sqrt{1-c^2-2cdx^2-d^2x^4}}{25d}+\frac{1}{5}x^5$$
$$=-\frac{16bcx\sqrt{1-c^2-2cdx^2-d^2x^4}}{75d^2}+\frac{2bx^3\sqrt{1-c^2-2cdx^2-d^2x^4}}{25d}+\frac{1}{5}x^5$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.41, size = 349, normalized size = 1.04

$$\frac{\sqrt{\frac{d}{1+c}}\,x\left(15ad^2x^4\sqrt{1-c^2-2cdx^2-d^2x^4}+2b(-8c+8c^3+3dx^2+13c^2dx^2+2cd^2x^4-3d^3x^6)+15bd^2x^4\sqrt{1-c^2-2cdx^2-d^2x^4}\,\mathrm{ArcSin}(c+dx^2)\right)+2ib(-9+9c-23c^2+23c^3)\sqrt{\frac{-1+c+dx^2}{-1+c}}\sqrt{\frac{1+c+dx^2}{1+c}}\,E\left(i\sinh^{-1}\left(\sqrt{\frac{d}{1+c}}\,x\right)|\frac{1+c}{-1+c}\right)-2ib(-9+17c-23c^2+15c^3)\sqrt{\frac{-1+c+dx^2}{-1+c}}\sqrt{\frac{1+c+dx^2}{1+c}}\,F\left(i\sinh^{-1}\left(\sqrt{\frac{d}{1+c}}\,x\right)|\frac{1+c}{-1+c}\right)}{75d^2\sqrt{\frac{d}{1+c}}\sqrt{1-c^2-2cdx^2-d^2x^4}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(a + b*ArcSin[c + d*x^2]),x]
[Out] (Sqrt[d/(1 + c)]*x*(15*a*d^2*x^4*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4] + 2*b*
(-8*c + 8*c^3 + 3*d*x^2 + 13*c^2*d*x^2 + 2*c*d^2*x^4 - 3*d^3*x^6) + 15*b*d^
```

```
2*x^4*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4]*ArcSin[c + d*x^2]) + (2*I)*b*(-9
+ 9*c - 23*c^2 + 23*c^3)*Sqrt[(-1 + c + d*x^2)/(-1 + c)]*Sqrt[(1 + c + d*x^
2)/(1 + c)]*EllipticE[I*ArcSinh[Sqrt[d/(1 + c)]*x], (1 + c)/(-1 + c)] - (2*
I)*b*(-9 + 17*c - 23*c^2 + 15*c^3)*Sqrt[(-1 + c + d*x^2)/(-1 + c)]*Sqrt[(1
+ c + d*x^2)/(1 + c)]*EllipticF[I*ArcSinh[Sqrt[d/(1 + c)]*x], (1 + c)/(-1 +
 c)])/(75*d^2*Sqrt[d/(1 + c)]*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])
```

Maple [A]
time = 0.03, size = 346, normalized size = 1.03

method	result
default	$\frac{a\,x^{5}}{5}+b\left(\frac{x^{5}\arcsin\left(d\,x^{2}+c\right)}{5}-\frac{2d\left(-\frac{x^{3}\sqrt{-d^{2}x^{4}-2cd\,x^{2}-c^{2}+1}}{5d^{2}}+\frac{8cx\sqrt{-d^{2}x^{4}-2cd\,x^{2}-c^{2}+1}}{15d^{3}}-\frac{8c\left(-c\right.}{}\right.}{}\right.$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*arcsin(d*x^2+c)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/5*a*x^5+b*(1/5*x^5*arcsin(d*x^2+c)-2/5*d*(-1/5/d^2*x^3*(-d^2*x^4-2*c*d*x^
2-c^2+1)^(1/2)+8/15*c/d^3*x*(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)-8/15*c/d^3*(-c
^2+1)/(-d/(-1+c))^(1/2)*(1+d/(-1+c)*x^2)^(1/2)*(1+d*x^2/(1+c))^(1/2)/(-d^2*
x^4-2*c*d*x^2-c^2+1)^(1/2)*EllipticF(x*(-d/(-1+c))^(1/2),(-1+2*c/(1+c))^(1/
2))-2*(1/5/d^2*(-3*c^2+3)+32/15*c^2/d^2)*(-c^2+1)/(-d/(-1+c))^(1/2)*(1+d/(-
1+c)*x^2)^(1/2)*(1+d*x^2/(1+c))^(1/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)/(-2*
c*d+2*d)*(EllipticF(x*(-d/(-1+c))^(1/2),(-1+2*c/(1+c))^(1/2))-EllipticE(x*(
-d/(-1+c))^(1/2),(-1+2*c/(1+c))^(1/2)))))
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(d*x^2+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c-1>0)', see `assume?` for more det
ails)Is
```

Fricas [A]
time = 0.85, size = 88, normalized size = 0.26

$$\frac{15\,bd^3x^6\arcsin\left(dx^2+c\right)+15\,ad^3x^6+2\left(3\,bd^2x^4-8\,bcdx^2+23\,bc^2+9\,b\right)\sqrt{-d^2x^4-2\,cdx^2-c^2+1}}{75\,d^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(d*x^2+c)),x, algorithm="fricas")
[Out] 1/75*(15*b*d^3*x^6*arcsin(d*x^2 + c) + 15*a*d^3*x^6 + 2*(3*b*d^2*x^4 - 8*b*
c*d*x^2 + 23*b*c^2 + 9*b)*sqrt(-d^2*x^4 - 2*c*d*x^2 - c^2 + 1))/(d^3*x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int x^4\left(a+b\,\mathrm{asin}\left(c+dx^2\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*asin(d*x**2+c)),x)
[Out] Integral(x**4*(a + b*asin(c + d*x**2)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(d*x^2+c)),x, algorithm="giac")
[Out] integrate((b*arcsin(d*x^2 + c) + a)*x^4, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int x^4\,\left(a+b\,\mathrm{asin}\left(d\,x^2+c\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a + b*asin(c + d*x^2)),x)
[Out] int(x^4*(a + b*asin(c + d*x^2)), x)
```

3.394 $\int x^2(a + b\mathbf{ArcSin}(c + dx^2))\, dx$

Optimal. Leaf size=287

$$\frac{2bx\sqrt{1-c^2-2cdx^2-d^2x^4}}{9d}+\frac{1}{3}x^3\left(a+b\text{ArcSin}\left(c+dx^2\right)\right)+\frac{8b\sqrt{1-c}\,c(1+c)\sqrt{1-\frac{dx^2}{1-c}}\,\sqrt{1+\frac{dx^2}{1+c}}\,E\Big(}{9d^{3/2}\sqrt{1-c^2-2cdx^2-}}$$

```
[Out] 1/3*x^3*(a+b*arcsin(d*x^2+c))+8/9*b*c*(1+c)*EllipticE(x*d^(1/2)/(1-c)^(1/2)
,((-1+c)/(1+c))^(1/2))*(1-c)^(1/2)*(1-d*x^2/(1-c))^(1/2)*(1+d*x^2/(1+c))^(1
/2)/d^(3/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)-2/9*b*(1+c)*(1+3*c)*EllipticF(
x*d^(1/2)/(1-c)^(1/2),((-1+c)/(1+c))^(1/2))*(1-c)^(1/2)*(1-d*x^2/(1-c))^(1/
2)*(1+d*x^2/(1+c))^(1/2)/d^(3/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)+2/9*b*x*(
-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)/d
```

Rubi [A]

time = 0.23, antiderivative size = 287, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.438$, Rules used = {4926, 12, 1136, 1216, 538, 435, 430}

$$\frac{1}{3}x^3\left(a+b\text{ArcSin}\left(c+dx^2\right)\right)-\frac{2b\sqrt{1-c}\,(c+1)(3c+1)\sqrt{1-\frac{dx^2}{1-c}}\,\sqrt{\frac{dx^2}{c+1}+1}\,F\left(\text{ArcSin}\left(\frac{\sqrt{d}\,x}{\sqrt{1-c}}\right)|-\frac{1-c}{c+1}\right)}{9d^{3/2}\sqrt{-c^2-2cdx^2-d^2x^4+1}}+\frac{8b\sqrt{1-c}\,c(c+1)\sqrt{1-\frac{dx^2}{1-c}}\,\sqrt{\frac{dx^2}{c+1}+1}\,E\left(\text{ArcSin}\left(\frac{\sqrt{d}\,x}{\sqrt{1-c}}\right)|-\frac{1-c}{c+1}\right)}{9d^{3/2}\sqrt{-c^2-2cdx^2-d^2x^4+1}}+\frac{2bx\sqrt{-c^2-2cdx^2-d^2x^4+1}}{9d}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(a + b*ArcSin[c + d*x^2]),x]
```

```
[Out] (2*b*x*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(9*d) + (x^3*(a + b*ArcSin[c +
d*x^2]))/3 + (8*b*Sqrt[1 - c]*c*(1 + c)*Sqrt[1 - (d*x^2)/(1 - c)]*Sqrt[1 +
(d*x^2)/(1 + c)]*EllipticE[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]], -((1 - c)/(1 +
c))])/(9*d^(3/2)*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4]) - (2*b*Sqrt[1 - c]*(1
 + c)*(1 + 3*c)*Sqrt[1 - (d*x^2)/(1 - c)]*Sqrt[1 + (d*x^2)/(1 + c)]*Ellipti
cF[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]], -((1 - c)/(1 + c))])/(9*d^(3/2)*Sqrt[1
- c^2 - 2*c*d*x^2 - d^2*x^4])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 430

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1/(Sqrt[a]*Sqrt[c]*Rt[-d/c, 2]))*EllipticF[ArcSin[Rt[-d/c, 2]*x], b*(c
/(a*d))], x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a,
0] &&  !(NegQ[b/a] && SimplerSqrtQ[-b/a, -d/c])
```

Rule 435

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]/(Sqrt[c]*Rt[-d/c, 2]))*EllipticE[ArcSin[Rt[-d/c, 2]*x], b*(c/(a*d)
)], x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 538

```
Int[((e_) + (f_.)*(x_)^(n_))/(Sqrt[(a_) + (b_.)*(x_)^(n_)]*Sqrt[(c_) + (d_.
)*(x_)^(n_)]), x_Symbol] :> Dist[f/b, Int[Sqrt[a + b*x^n]/Sqrt[c + d*x^n],
x], x] + Dist[(b*e - a*f)/b, Int[1/(Sqrt[a + b*x^n]*Sqrt[c + d*x^n]), x], x
] /; FreeQ[{a, b, c, d, e, f, n}, x] &&  !(EqQ[n, 2] && ((PosQ[b/a] && PosQ
[d/c]) || (NegQ[b/a] && (PosQ[d/c] || (GtQ[a, 0] && ( !GtQ[c, 0] || Simpler
SqrtQ[-b/a, -d/c]))))))
```

Rule 1136

```
Int[((d_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_), x_Symbol]
 :> Simp[d^3*(d*x)^(m - 3)*((a + b*x^2 + c*x^4)^(p + 1)/(c*(m + 4*p + 1))),
 x] - Dist[d^4/(c*(m + 4*p + 1)), Int[(d*x)^(m - 4)*Simp[a*(m - 3) + b*(m +
 2*p - 1)*x^2, x]*(a + b*x^2 + c*x^4)^p, x], x] /; FreeQ[{a, b, c, d, p}, x
] && NeQ[b^2 - 4*a*c, 0] && GtQ[m, 3] && NeQ[m + 4*p + 1, 0] && IntegerQ[2*
p] && (IntegerQ[p] || IntegerQ[m])
```

Rule 1216

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[Sqrt[1 + 2*c*(x^2/(b - q))]*(Sqrt
[1 + 2*c*(x^2/(b + q))]/Sqrt[a + b*x^2 + c*x^4]), Int[(d + e*x^2)/(Sqrt[1 +
 2*c*(x^2/(b - q))]*Sqrt[1 + 2*c*(x^2/(b + q))]), x], x]] /; FreeQ[{a, b, c
, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NegQ[c/a]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\int x^2\left(a+b\sin^{-1}\left(c+dx^2\right)\right)\,dx = \frac{1}{3}x^3\left(a+b\sin^{-1}\left(c+dx^2\right)\right)-\frac{1}{3}b\int\frac{2dx^4}{\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$

$$= \frac{1}{3}x^3\left(a+b\sin^{-1}\left(c+dx^2\right)\right)-\frac{1}{3}(2bd)\int\frac{x^4}{\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$

$$= \frac{2bx\sqrt{1-c^2-2cdx^2-d^2x^4}}{9d}+\frac{1}{3}x^3\left(a+b\sin^{-1}\left(c+dx^2\right)\right)-\frac{(2b)\int \cdots}{\cdots}$$

$$= \frac{2bx\sqrt{1-c^2-2cdx^2-d^2x^4}}{9d}+\frac{1}{3}x^3\left(a+b\sin^{-1}\left(c+dx^2\right)\right)-\frac{\left(2b\sqrt{1-\cdots}\right.}{\cdots}$$

$$= \frac{2bx\sqrt{1-c^2-2cdx^2-d^2x^4}}{9d}+\frac{1}{3}x^3\left(a+b\sin^{-1}\left(c+dx^2\right)\right)+\frac{\left(8bc(1+c)\cdots\right.}{\cdots}$$

$$= \frac{2bx\sqrt{1-c^2-2cdx^2-d^2x^4}}{9d}+\frac{1}{3}x^3\left(a+b\sin^{-1}\left(c+dx^2\right)\right)+\frac{8b\sqrt{1-c}\,c(\cdots}{\cdots}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.36, size = 307, normalized size = 1.07

$$\frac{\sqrt{\frac{d}{1+c}}\,x\left(3adx^2\sqrt{1-c^2-2cdx^2-d^2x^4}-2b(-1+c^2+2cdx^2+d^2x^4)+3bdx^2\sqrt{1-c^2-2cdx^2-d^2x^4}\,\mathrm{ArcSin}(c+dx^2)\right)-8ib(-1+c)c\sqrt{\frac{-1+c+dx^2}{-1+c}}\sqrt{\frac{1+c+dx^2}{1+c}}\,E\left(i\sinh^{-1}\left(\sqrt{\frac{d}{1+c}}\,x\right)\middle|\frac{1+c}{-1+c}\right)+2ib(1-4c+3c^2)\sqrt{\frac{-1+c+dx^2}{-1+c}}\sqrt{\frac{1+c+dx^2}{1+c}}\,F\left(i\sinh^{-1}\left(\sqrt{\frac{d}{1+c}}\,x\right)\middle|\frac{1+c}{-1+c}\right)}{9d\sqrt{\frac{d}{1+c}}\sqrt{1-c^2-2cdx^2-d^2x^4}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(a + b*ArcSin[c + d*x^2]),x]
```

```
[Out] (Sqrt[d/(1 + c)]*x*(3*a*d*x^2*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4] - 2*b*(-1
 + c^2 + 2*c*d*x^2 + d^2*x^4) + 3*b*d*x^2*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^
4]*ArcSin[c + d*x^2]) - (8*I)*b*(-1 + c)*c*Sqrt[(-1 + c + d*x^2)/(-1 + c)]*
Sqrt[(1 + c + d*x^2)/(1 + c)]*EllipticE[I*ArcSinh[Sqrt[d/(1 + c)]*x], (1 +
c)/(-1 + c)] + (2*I)*b*(1 - 4*c + 3*c^2)*Sqrt[(-1 + c + d*x^2)/(-1 + c)]*Sq
rt[(1 + c + d*x^2)/(1 + c)]*EllipticF[I*ArcSinh[Sqrt[d/(1 + c)]*x], (1 + c)
/(-1 + c)])/(9*d*Sqrt[d/(1 + c)]*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])
```

Maple [A]
time = 0.01, size = 295, normalized size = 1.03

method	result
default	$\frac{x^3 a}{3}+b\left(\frac{x^3 \arcsin(d\,x^2+c)}{3}-\frac{2d\left(-\frac{x\sqrt{-d^2x^4-2cd\,x^2-c^2+1}}{3d^2}+\frac{(-c^2+1)\sqrt{1+\frac{d\,x^2}{-1+c}}\,\sqrt{1+\frac{d\,x^2}{1+c}}\,\mathrm{EllipticF}}{3d^2\sqrt{-\frac{d}{-1+c}}\,\sqrt{-d^2x^4-}}\right.}{}\right.$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(d*x^2+c)),x,method=_RETURNVERBOSE)
```

```
[Out] 1/3*x^3*a+b*(1/3*x^3*arcsin(d*x^2+c)-2/3*d*(-1/3/d^2*x*(-d^2*x^4-2*c*d*x^2-
c^2+1)^(1/2)+1/3/d^2*(-c^2+1)/(-d/(-1+c))^(1/2)*(1+d/(-1+c)*x^2)^(1/2)*(1+d
*x^2/(1+c))^(1/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)*EllipticF(x*(-d/(-1+c))^
(1/2),(-1+2*c/(1+c))^(1/2))+8/3*c/d*(-c^2+1)/(-d/(-1+c))^(1/2)*(1+d/(-1+c)*
x^2)^(1/2)*(1+d*x^2/(1+c))^(1/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)/(-2*c*d+2
*d)*(EllipticF(x*(-d/(-1+c))^(1/2),(-1+2*c/(1+c))^(1/2))-EllipticE(x*(-d/(-
1+c))^(1/2),(-1+2*c/(1+c))^(1/2)))))
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(d*x^2+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c-1>0)', see `assume?` for more det
ails)Is
```

Fricas [A]
time = 0.52, size = 72, normalized size = 0.25

$$\frac{3\,bd^2x^4\arcsin\left(dx^2+c\right)+3\,ad^2x^4+2\,\sqrt{-d^2x^4-2\,cdx^2-c^2+1}\,\left(bdx^2-4\,bc\right)}{9\,d^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(d*x^2+c)),x, algorithm="fricas")
```

```
[Out] 1/9*(3*b*d^2*x^4*arcsin(d*x^2 + c) + 3*a*d^2*x^4 + 2*sqrt(-d^2*x^4 - 2*c*d*
x^2 - c^2 + 1)*(b*d*x^2 - 4*b*c))/(d^2*x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int x^2\left(a+b\operatorname{asin}\left(c+dx^2\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(d*x**2+c)),x)
```

```
[Out] Integral(x**2*(a + b*asin(c + d*x**2)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(d*x^2+c)),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + c) + a)*x^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,\left(a+b\,\mathrm{asin}\left(d\,x^2+c\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c + d*x^2)),x)
```

```
[Out] int(x^2*(a + b*asin(c + d*x^2)), x)
```

3.395 $\int \left(a+b\text{ArcSin}(c+dx^2)\right)\,dx$

Optimal. Leaf size=237

$$ax+bx\text{ArcSin}\left(c+dx^2\right)-\frac{2b\sqrt{1-c}\,(1+c)\sqrt{1-\frac{dx^2}{1-c}}\,\sqrt{1+\frac{dx^2}{1+c}}\,E\left(\text{ArcSin}\left(\frac{\sqrt{d}\,x}{\sqrt{1-c}}\right)|-\frac{1-c}{1+c}\right)}{\sqrt{d}\,\sqrt{1-c^2-2cdx^2-d^2x^4}}+\frac{2b\sqrt{1}}{}$$

[Out] a*x+b*x*arcsin(d*x^2+c)-2*b*(1+c)*EllipticE(x*d^(1/2)/(1-c)^(1/2),((-1+c)/(1+c))^(1/2))*(1-c)^(1/2)*(1-d*x^2/(1-c))^(1/2)*(1+d*x^2/(1+c))^(1/2)/d^(1/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)+2*b*(1+c)*EllipticF(x*d^(1/2)/(1-c)^(1/2),((-1+c)/(1+c))^(1/2))*(1-c)^(1/2)*(1-d*x^2/(1-c))^(1/2)*(1+d*x^2/(1+c))^(1/2)/d^(1/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)

Rubi [A]
time = 0.18, antiderivative size = 237, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {4924, 12, 1154, 507, 435, 430}

$$ax+\frac{2b\sqrt{1-c}\,(c+1)\sqrt{1-\frac{dx^2}{1-c}}\,\sqrt{\frac{dx^2}{c+1}+1}\,F\left(\text{ArcSin}\left(\frac{\sqrt{d}\,x}{\sqrt{1-c}}\right)|-\frac{1-c}{c+1}\right)}{\sqrt{d}\,\sqrt{-c^2-2cdx^2-d^2x^4+1}}-\frac{2b\sqrt{1-c}\,(c+1)\sqrt{1-\frac{dx^2}{1-c}}\,\sqrt{\frac{dx^2}{c+1}+1}\,E\left(\text{ArcSin}\left(\frac{\sqrt{d}\,x}{\sqrt{1-c}}\right)|-\frac{1-c}{c+1}\right)}{\sqrt{d}\,\sqrt{-c^2-2cdx^2-d^2x^4+1}}+bx\text{ArcSin}\left(c+dx^2\right)$$

Antiderivative was successfully verified.

[In] Int[a + b*ArcSin[c + d*x^2],x]

[Out] a*x + b*x*ArcSin[c + d*x^2] - (2*b*Sqrt[1 - c]*(1 + c)*Sqrt[1 - (d*x^2)/(1 - c)]*Sqrt[1 + (d*x^2)/(1 + c)]*EllipticE[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]], -((1 - c)/(1 + c))])/(Sqrt[d]*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4]) + (2*b*Sqrt[1 - c]*(1 + c)*Sqrt[1 - (d*x^2)/(1 - c)]*Sqrt[1 + (d*x^2)/(1 + c)]*EllipticF[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]], -((1 - c)/(1 + c))])/(Sqrt[d]*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 430

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1/(Sqrt[a]*Sqrt[c]*Rt[-d/c, 2]))*EllipticF[ArcSin[Rt[-d/c, 2]*x], b*(c
/(a*d))], x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a,
0] &&  !(NegQ[b/a] && SimplerSqrtQ[-b/a, -d/c])
```

Rule 435

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]/(Sqrt[c]*Rt[-d/c, 2]))*EllipticE[ArcSin[Rt[-d/c, 2]*x], b*(c/(a*d)
```

```
)], x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 507

```
Int[(x_)^(n_)/(Sqrt[(a_) + (b_.)*(x_)^(n_)]*Sqrt[(c_) + (d_.)*(x_)^(n_)]),
x_Symbol] :> Dist[1/b, Int[Sqrt[a + b*x^n]/Sqrt[c + d*x^n], x], x] - Dist[a
/b, Int[1/(Sqrt[a + b*x^n]*Sqrt[c + d*x^n]), x], x] /; FreeQ[{a, b, c, d},
x] && NeQ[b*c - a*d, 0] && (EqQ[n, 2] || EqQ[n, 4]) &&  !(EqQ[n, 2] && Simp
lerSqrtQ[-b/a, -d/c])
```

Rule 1154

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Dist[Sqrt[1 + 2*c*(x^2/(b - q))]*(Sqrt[1 + 2*c*(x^2/(
b + q))]/Sqrt[a + b*x^2 + c*x^4]), Int[x^2/(Sqrt[1 + 2*c*(x^2/(b - q))]*Sqr
t[1 + 2*c*(x^2/(b + q))]), x], x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2 - 4*a*
c, 0] && NegQ[c/a]
```

Rule 4924

```
Int[ArcSin[u_], x_Symbol] :> Simp[x*ArcSin[u], x] - Int[SimplifyIntegrand[x
*(D[u, x]/Sqrt[1 - u^2]), x], x] /; InverseFunctionFreeQ[u, x] &&  !Functio
nOfExponentialQ[u, x]
```

Rubi steps

$$\int \left(a+b\sin^{-1}\left(c+dx^2\right)\right)\,dx = ax+b\int \sin^{-1}\left(c+dx^2\right)\,dx$$

$$= ax+bx\sin^{-1}\left(c+dx^2\right)-b\int \frac{2dx^2}{\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$

$$= ax+bx\sin^{-1}\left(c+dx^2\right)-(2bd)\int \frac{x^2}{\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$

$$= ax+bx\sin^{-1}\left(c+dx^2\right)-\frac{\left(2bd\sqrt{1-\frac{2d^2x^2}{-2d-2cd}}\sqrt{1-\frac{2d^2x^2}{2d-2cd}}\right)\int \frac{}{\sqrt{1}}}{\sqrt{1-c^2-2cdx^2-}}$$

$$= ax+bx\sin^{-1}\left(c+dx^2\right)+\frac{\left(2b(1+c)\sqrt{1-\frac{2d^2x^2}{-2d-2cd}}\sqrt{1-\frac{2d^2x^2}{2d-2cd}}\right)}{\sqrt{1-c^2-2cdx^2}}$$

$$= ax+bx\sin^{-1}\left(c+dx^2\right)-\frac{2b\sqrt{1-c}\,(1+c)\sqrt{1-\frac{dx^2}{1-c}}\sqrt{1+\frac{dx^2}{1+c}}\,E\left(\mathrm{si}\right.}{\sqrt{d}\sqrt{1-c^2-2cdx^2-d^2}}$$

Mathematica [C] Result contains complex when optimal does not.
time = 10.09, size = 155, normalized size = 0.65

$$ax+bx\mathrm{ArcSin}\left(c+dx^2\right)+\frac{2ib(-1+c)\sqrt{\frac{-1+c+dx^2}{-1+c}}\sqrt{\frac{1+c+dx^2}{1+c}}\left(E\left(i\sinh^{-1}\left(\sqrt{\frac{d}{1+c}}x\right)|\frac{1+c}{-1+c}\right)-F\left(i\sinh^{-1}\left(\sqrt{\frac{d}{1+c}}x\right)|\frac{1+c}{-1+c}\right)\right)}{\sqrt{\frac{d}{1+c}}\sqrt{1-c^2-2cdx^2-d^2x^4}}$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*ArcSin[c + d*x^2],x]
```

```
[Out] a*x + b*x*ArcSin[c + d*x^2] + ((2*I)*b*(-1 + c)*Sqrt[(-1 + c + d*x^2)/(-1 +
 c)]*Sqrt[(1 + c + d*x^2)/(1 + c)]*(EllipticE[I*ArcSinh[Sqrt[d/(1 + c)]*x],
 (1 + c)/(-1 + c)] - EllipticF[I*ArcSinh[Sqrt[d/(1 + c)]*x], (1 + c)/(-1 +
c)]))/(Sqrt[d/(1 + c)]*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])
```

Maple [A]
time = 0.01, size = 153, normalized size = 0.65

method	result

default	$ax+b\left(x\arcsin\left(d\,x^{2}+c\right)+\frac{4d\left(-c^{2}+1\right)\sqrt{1+\frac{d\,x^{2}}{-1+c}}\,\sqrt{1+\frac{d\,x^{2}}{1+c}}\,\left(\mathrm{EllipticF}\left(x\sqrt{-\frac{d}{-1+c}},\sqrt{-1+\frac{2c}{1+c}}\right)-\right.}{\sqrt{-\frac{d}{-1+c}}\,\sqrt{-d^{2}x^{4}-2cd\,x^{2}-c^{2}+1}\,(-}\right.$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a+b*arcsin(d*x^2+c),x,method=_RETURNVERBOSE)
```

```
[Out] a*x+b*(x*arcsin(d*x^2+c)+4*d*(-c^2+1)/(-d/(-1+c))^(1/2)*(1+d/(-1+c)*x^2)^(1
/2)*(1+d*x^2/(1+c))^(1/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)/(-2*c*d+2*d)*(El
lipticF(x*(-d/(-1+c))^(1/2),(-1+2*c/(1+c))^(1/2))-EllipticE(x*(-d/(-1+c))^(
1/2),(-1+2*c/(1+c))^(1/2))))
```

Maxima [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(d*x^2+c),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c-1>0)', see `assume?` for more det
ails)Is
```

Fricas [**A**]
time = 0.55, size = 55, normalized size = 0.23

$$\frac{bdx^{2}\arcsin\left(dx^{2}+c\right)+adx^{2}+2\sqrt{-d^{2}x^{4}-2\,cdx^{2}-c^{2}+1}\,b}{dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(d*x^2+c),x, algorithm="fricas")
```

```
[Out] (b*d*x^2*arcsin(d*x^2 + c) + a*d*x^2 + 2*sqrt(-d^2*x^4 - 2*c*d*x^2 - c^2 +
1)*b)/(d*x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int\left(a+b\,\mathrm{asin}\left(c+dx^{2}\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*asin(d*x**2+c),x)
```

```
[Out] Integral(a + b*asin(c + d*x**2), x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(d*x^2+c),x, algorithm="giac")
```

```
[Out] integrate(b*arcsin(d*x^2 + c) + a, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int a + b\,\mathrm{asin}\left(d\,x^2 + c\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a + b*asin(c + d*x^2),x)
```

```
[Out] int(a + b*asin(c + d*x^2), x)
```

3.396 $\int \frac{a+b\text{ArcSin}(c+dx^2)}{x^2}\,dx$

Optimal. Leaf size=126

$$-\frac{a+b\text{ArcSin}(c+dx^2)}{x}+\frac{2b\sqrt{1-c}\,\sqrt{d}\,\sqrt{1-\frac{dx^2}{1-c}}\,\sqrt{1+\frac{dx^2}{1+c}}\,F\left(\text{ArcSin}\left(\frac{\sqrt{d}\,x}{\sqrt{1-c}}\right)|-\frac{1-c}{1+c}\right)}{\sqrt{1-c^2-2cdx^2-d^2x^4}}$$

```
[Out] (-a-b*arcsin(d*x^2+c))/x+2*b*EllipticF(x*d^(1/2)/(1-c)^(1/2),((-1+c)/(1+c))
^(1/2))*(1-c)^(1/2)*d^(1/2)*(1-d*x^2/(1-c))^(1/2)*(1+d*x^2/(1+c))^(1/2)/(-d
^2*x^4-2*c*d*x^2-c^2+1)^(1/2)
```

Rubi [A]
time = 0.06, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {4926, 12, 1118, 430}

$$\frac{2b\sqrt{1-c}\,\sqrt{d}\,\sqrt{1-\frac{dx^2}{1-c}}\,\sqrt{\frac{dx^2}{c+1}+1}\,F\left(\text{ArcSin}\left(\frac{\sqrt{d}\,x}{\sqrt{1-c}}\right)|-\frac{1-c}{c+1}\right)}{\sqrt{-c^2-2cdx^2-d^2x^4+1}}-\frac{a+b\text{ArcSin}(c+dx^2)}{x}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x^2])/x^2,x]
```

```
[Out] -((a + b*ArcSin[c + d*x^2])/x) + (2*b*Sqrt[1 - c]*Sqrt[d]*Sqrt[1 - (d*x^2)/
(1 - c)]*Sqrt[1 + (d*x^2)/(1 + c)]*EllipticF[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]
], -((1 - c)/(1 + c))])/Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 430

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1/(Sqrt[a]*Sqrt[c]*Rt[-d/c, 2]))*EllipticF[ArcSin[Rt[-d/c, 2]*x], b*(c
/(a*d))], x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a,
0] &&  !(NegQ[b/a] && SimplerSqrtQ[-b/a, -d/c])
```

Rule 1118

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Dist[Sqrt[1 + 2*c*(x^2/(b - q))]*(Sqrt[1 + 2*c*(x^2/(b + q
))]/Sqrt[a + b*x^2 + c*x^4]), Int[1/(Sqrt[1 + 2*c*(x^2/(b - q))]*Sqrt[1 + 2
*c*(x^2/(b + q))]), x], x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] &
```

```
& NegQ[c/a]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(c+dx^2)}{x^2}\,dx = -\frac{a+b\sin^{-1}(c+dx^2)}{x}+b\int \frac{2d}{\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$
$$= -\frac{a+b\sin^{-1}(c+dx^2)}{x}+(2bd)\int \frac{1}{\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$
$$= -\frac{a+b\sin^{-1}(c+dx^2)}{x}+\frac{\left(2bd\sqrt{1-\frac{2d^2x^2}{-2d-2cd}}\sqrt{1-\frac{2d^2x^2}{2d-2cd}}\right)\int \frac{}{\sqrt{1-}}}{\sqrt{1-c^2-2cdx^2-d^2}}$$
$$= -\frac{a+b\sin^{-1}(c+dx^2)}{x}+\frac{2b\sqrt{1-c}\sqrt{d}\sqrt{1-\frac{dx^2}{1-c}}\sqrt{1+\frac{dx^2}{1+c}}\,F\left(\sin^{-1}\left(\right.\right.}{\sqrt{1-c^2-2cdx^2-d^2x^4}}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.16, size = 140, normalized size = 1.11

$$-\frac{a}{x}-\frac{b\text{ArcSin}(c+dx^2)}{x}-\frac{2ibd\sqrt{1-\frac{dx^2}{-1-c}}\sqrt{1-\frac{dx^2}{1-c}}\,F\left(i\sinh^{-1}\left(\sqrt{-\frac{d}{-1-c}}\,x\right)|\frac{-1-c}{1-c}\right)}{\sqrt{-\frac{d}{-1-c}}\sqrt{1-c^2-2cdx^2-d^2x^4}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x^2])/x^2,x]
```

```
[Out] -(a/x) - (b*ArcSin[c + d*x^2])/x - ((2*I)*b*d*Sqrt[1 - (d*x^2)/(-1 - c)]*Sq
rt[1 - (d*x^2)/(1 - c)]*EllipticF[I*ArcSinh[Sqrt[-(d/(-1 - c))]*x], (-1 - c
)/(1 - c)])/(Sqrt[-(d/(-1 - c))]*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])
```

Maple [A]
time = 0.01, size = 114, normalized size = 0.90

method	result	size
default	$-\frac{a}{x}+b\left(-\frac{\arcsin(d\,x^2+c)}{x}+\frac{2d\sqrt{1+\frac{d\,x^2}{-1+c}}\,\sqrt{1+\frac{d\,x^2}{1+c}}\,\mathrm{EllipticF}\left(x\sqrt{-\frac{d}{-1+c}},\sqrt{-1+\frac{2c}{1+c}}\right)}{\sqrt{-\frac{d}{-1+c}}\,\sqrt{-d^2x^4-2cd\,x^2-c^2+1}}\right)$	114

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+c))/x^2,x,method=_RETURNVERBOSE)
```

```
[Out] -a/x+b*(-1/x*arcsin(d*x^2+c)+2*d/(-d/(-1+c))^(1/2)*(1+d/(-1+c)*x^2)^(1/2)*(
1+d*x^2/(1+c))^(1/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)*EllipticF(x*(-d/(-1+c
))^(1/2),(-1+2*c/(1+c))^(1/2)))
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c-1>0)', see `assume?` for more det
ails)Is
```

Fricas [A]
time = 0.71, size = 17, normalized size = 0.13

$$-\frac{b\arcsin(dx^2+c)+a}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^2,x, algorithm="fricas")
```

```
[Out] -(b*arcsin(d*x^2 + c) + a)/x
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{a+b\,\mathrm{asin}\,(c+dx^2)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+c))/x**2,x)
```

```
[Out] Integral((a + b*asin(c + d*x**2))/x**2, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^2,x, algorithm="giac")
[Out] integrate((b*arcsin(d*x^2 + c) + a)/x^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\mathrm{asin}\left(d\,x^2+c\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x^2))/x^2,x)
[Out] int((a + b*asin(c + d*x^2))/x^2, x)
```

3.397 $\int \frac{a+b\text{ArcSin}(c+dx^2)}{x^4} dx$

Optimal. Leaf size=284

$$-\frac{2bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{3(1-c^2)x}-\frac{a+b\text{ArcSin}(c+dx^2)}{3x^3}-\frac{2bd^{3/2}\sqrt{1-\frac{dx^2}{1-c}}\sqrt{1+\frac{dx^2}{1+c}}E\left(\text{ArcSin}\left(\frac{\sqrt{d}x}{\sqrt{1-c}}\right.\right.}{3\sqrt{1-c}\sqrt{1-c^2-2cdx^2-d^2x^4}}$$

```
[Out] 1/3*(-a-b*arcsin(d*x^2+c))/x^3-2/3*b*d^(3/2)*EllipticE(x*d^(1/2)/(1-c)^(1/2
),((-1+c)/(1+c))^(1/2))*(1-d*x^2/(1-c))^(1/2)*(1+d*x^2/(1+c))^(1/2)/(1-c)^(
1/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)+2/3*b*d^(3/2)*EllipticF(x*d^(1/2)/(1-
c)^(1/2),((-1+c)/(1+c))^(1/2))*(1-d*x^2/(1-c))^(1/2)*(1+d*x^2/(1+c))^(1/2)/
(1-c)^(1/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)-2/3*b*d*(-d^2*x^4-2*c*d*x^2-c^
2+1)^(1/2)/(-c^2+1)/x
```

Rubi [A]
time = 0.21, antiderivative size = 284, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.438$, Rules used = {4926, 12, 1137, 1154, 507, 435, 430}

$$-\frac{a+b\text{ArcSin}(c+dx^2)}{3x^3}+\frac{2bd^{3/2}\sqrt{1-\frac{dx^2}{1-c}}\sqrt{\frac{dx^2}{c+1}+1}\,F\left(\text{ArcSin}\left(\frac{\sqrt{d}x}{\sqrt{1-c}}\right)|-\frac{1-c}{c+1}\right)}{3\sqrt{1-c}\sqrt{-c^2-2cdx^2-d^2x^4+1}}-\frac{2bd^{3/2}\sqrt{1-\frac{dx^2}{1-c}}\sqrt{\frac{dx^2}{c+1}+1}\,E\left(\text{ArcSin}\left(\frac{\sqrt{d}x}{\sqrt{1-c}}\right)|-\frac{1-c}{c+1}\right)}{3\sqrt{1-c}\sqrt{-c^2-2cdx^2-d^2x^4+1}}-\frac{2bd\sqrt{-c^2-2cdx^2-d^2x^4+1}}{3(1-c^2)x}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x^2])/x^4,x]
```

```
[Out] (-2*b*d*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(3*(1 - c^2)*x) - (a + b*ArcSi
n[c + d*x^2])/(3*x^3) - (2*b*d^(3/2)*Sqrt[1 - (d*x^2)/(1 - c)]*Sqrt[1 + (d*
x^2)/(1 + c)]*EllipticE[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]], -((1 - c)/(1 + c))
])/(3*Sqrt[1 - c]*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4]) + (2*b*d^(3/2)*Sqrt[
1 - (d*x^2)/(1 - c)]*Sqrt[1 + (d*x^2)/(1 + c)]*EllipticF[ArcSin[(Sqrt[d]*x)
/Sqrt[1 - c]], -((1 - c)/(1 + c))])/(3*Sqrt[1 - c]*Sqrt[1 - c^2 - 2*c*d*x^2
 - d^2*x^4])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 430

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1/(Sqrt[a]*Sqrt[c]*Rt[-d/c, 2]))*EllipticF[ArcSin[Rt[-d/c, 2]*x], b*(c
/(a*d))], x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a,
0] &&  !(NegQ[b/a] && SimplerSqrtQ[-b/a, -d/c])
```

Rule 435

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]/(Sqrt[c]*Rt[-d/c, 2]))*EllipticE[ArcSin[Rt[-d/c, 2]*x], b*(c/(a*d)
)], x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 507

```
Int[(x_)^(n_)/(Sqrt[(a_) + (b_.)*(x_)^(n_)]*Sqrt[(c_) + (d_.)*(x_)^(n_)]),
x_Symbol] :> Dist[1/b, Int[Sqrt[a + b*x^n]/Sqrt[c + d*x^n], x], x] - Dist[a
/b, Int[1/(Sqrt[a + b*x^n]*Sqrt[c + d*x^n]), x], x] /; FreeQ[{a, b, c, d},
x] && NeQ[b*c - a*d, 0] && (EqQ[n, 2] || EqQ[n, 4]) &&  !(EqQ[n, 2] && Simp
lerSqrtQ[-b/a, -d/c])
```

Rule 1137

```
Int[((d_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*x^2 + c*x^4)^(p + 1)/(a*d*(m + 1))), x] - Dis
t[1/(a*d^2*(m + 1)), Int[(d*x)^(m + 2)*(b*(m + 2*p + 3) + c*(m + 4*p + 5)*x
^2)*(a + b*x^2 + c*x^4)^p, x], x] /; FreeQ[{a, b, c, d, p}, x] && NeQ[b^2 -
 4*a*c, 0] && LtQ[m, -1] && IntegerQ[2*p] && (IntegerQ[p] || IntegerQ[m])
```

Rule 1154

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Dist[Sqrt[1 + 2*c*(x^2/(b - q))]*(Sqrt[1 + 2*c*(x^2/(
b + q))]/Sqrt[a + b*x^2 + c*x^4]), Int[x^2/(Sqrt[1 + 2*c*(x^2/(b - q))]*Sqr
t[1 + 2*c*(x^2/(b + q))]), x], x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2 - 4*a*
c, 0] && NegQ[c/a]
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(c+dx^2)}{x^4}\,dx = -\frac{a+b\sin^{-1}(c+dx^2)}{3x^3}+\frac{1}{3}b\int \frac{2d}{x^2\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$

$$= -\frac{a+b\sin^{-1}(c+dx^2)}{3x^3}+\frac{1}{3}(2bd)\int \frac{1}{x^2\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$

$$= -\frac{2bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{3(1-c^2)x}-\frac{a+b\sin^{-1}(c+dx^2)}{3x^3}-\frac{(2bd)\int \frac{d^2x}{\sqrt{1-c^2-2c}}}{3(1-c}$$

$$= -\frac{2bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{3(1-c^2)x}-\frac{a+b\sin^{-1}(c+dx^2)}{3x^3}-\frac{(2bd^3)\int \frac{x}{\sqrt{1-c^2-2}}}{3(1-c}$$

$$= -\frac{2bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{3(1-c^2)x}-\frac{a+b\sin^{-1}(c+dx^2)}{3x^3}-\frac{\left(2bd^3\sqrt{1-\frac{2d^2x^2}{-2d-2}}\right.}{}$$

$$= -\frac{2bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{3(1-c^2)x}-\frac{a+b\sin^{-1}(c+dx^2)}{3x^3}+\frac{\left(2b(1+c)d^2\sqrt{1-}\right.}{}$$

$$= -\frac{2bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{3(1-c^2)x}-\frac{a+b\sin^{-1}(c+dx^2)}{3x^3}-\frac{2bd^{3/2}\sqrt{1-\frac{dx^2}{1-c}}\sqrt{}}{3\sqrt{1-}}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.28, size = 243, normalized size = 0.86

$$-\frac{a}{3x^3}+\frac{2bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{3(-1+c^2)x}-\frac{b\text{ArcSin}(c+dx^2)}{3x^3}+\frac{2ib(1-c)d^2\sqrt{1-\frac{dx^2}{-1-c}}\sqrt{1-\frac{dx^2}{1-c}}\left(E\left(i\sinh^{-1}\left(\sqrt{-\frac{d}{-1-c}}x\right)|\frac{-1-c}{1-c}\right)-F\left(i\sinh^{-1}\left(\sqrt{-\frac{d}{-1-c}}x\right)|\frac{-1-c}{1-c}\right)\right)}{3(-1+c)(1+c)\sqrt{-\frac{d}{-1-c}}\sqrt{1-c^2-2cdx^2-d^2x^4}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x^2])/x^4,x]
```

```
[Out] -1/3*a/x^3 + (2*b*d*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(3*(-1 + c^2)*x) -
 (b*ArcSin[c + d*x^2])/(3*x^3) + (((2*I)/3)*b*(1 - c)*d^2*Sqrt[1 - (d*x^2)/
(-1 - c)]*Sqrt[1 - (d*x^2)/(1 - c)]*(EllipticE[I*ArcSinh[Sqrt[-(d/(-1 - c))
]*x], (-1 - c)/(1 - c)] - EllipticF[I*ArcSinh[Sqrt[-(d/(-1 - c))]*x], (-1 -
 c)/(1 - c)]))/((-1 + c)*(1 + c)*Sqrt[-(d/(-1 - c))]*Sqrt[1 - c^2 - 2*c*d*x
^2 - d^2*x^4])
```

Maple [A]
time = 0.01, size = 207, normalized size = 0.73

method	result
default	$-\frac{a}{3x^3}+b\left(-\frac{\arcsin(d\,x^2+c)}{3x^3}+\frac{2d\left(\frac{\sqrt{-d^2x^4-2cd\,x^2-c^2+1}}{(c^2-1)x}-\frac{2d^2(-c^2+1)\sqrt{1+\frac{d\,x^2}{-1+c}}\sqrt{1+\frac{d\,x^2}{1+c}}\left(\text{Ellip}\right.}{(c^2-1)\sqrt{-}}\right.}{3}\right.$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+c))/x^4,x,method=_RETURNVERBOSE)
```

```
[Out] -1/3*a/x^3+b*(-1/3/x^3*arcsin(d*x^2+c)+2/3*d*(1/(c^2-1)*(-d^2*x^4-2*c*d*x^2
-c^2+1)^(1/2)/x-2*d^2/(c^2-1)*(-c^2+1)/(-d/(-1+c))^(1/2)*(1+d/(-1+c)*x^2)^(
1/2)*(1+d*x^2/(1+c))^(1/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)/(-2*c*d+2*d)*(E
llipticF(x*(-d/(-1+c))^(1/2),(-1+2*c/(1+c))^(1/2))-EllipticE(x*(-d/(-1+c))^
(1/2),(-1+2*c/(1+c))^(1/2)))))
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c-1>0)', see `assume?` for more det
ails)Is
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^4,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(d*x^2 + c) + a)/x^4, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\,\mathrm{asin}\,(c+dx^2)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+c))/x**4,x)
```

```
[Out] Integral((a + b*asin(c + d*x**2))/x**4, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^4,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + c) + a)/x^4, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\mathrm{asin}\left(d\,x^2+c\right)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x^2))/x^4,x)
```

```
[Out] int((a + b*asin(c + d*x^2))/x^4, x)
```

3.398 $\int \frac{a+b\text{ArcSin}(c+dx^2)}{x^6}\,dx$

Optimal. Leaf size=355

$$-\frac{2bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{15\left(1-c^2\right)x^3}-\frac{8bcd^2\sqrt{1-c^2-2cdx^2-d^2x^4}}{15\left(1-c^2\right)^2x}-\frac{a+b\text{ArcSin}(c+dx^2)}{5x^5}-\frac{8bcd^{5/2}\sqrt{1-\frac{dx^2}{1-}}}{15\sqrt{1-}}$$

```
[Out] 1/5*(-a-b*arcsin(d*x^2+c))/x^5-8/15*b*c*d^(5/2)*EllipticE(x*d^(1/2)/(1-c)^(
1/2),((-1+c)/(1+c))^(1/2))*(1-d*x^2/(1-c))^(1/2)*(1+d*x^2/(1+c))^(1/2)/(-c^
2+1)/(1-c)^(1/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)+2/15*b*(1+3*c)*d^(5/2)*El
lipticF(x*d^(1/2)/(1-c)^(1/2),((-1+c)/(1+c))^(1/2))*(1-d*x^2/(1-c))^(1/2)*(
1+d*x^2/(1+c))^(1/2)/(-c^2+1)/(1-c)^(1/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)-
2/15*b*d*(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)/(-c^2+1)/x^3-8/15*b*c*d^2*(-d^2*x
^4-2*c*d*x^2-c^2+1)^(1/2)/(-c^2+1)^2/x
```

Rubi [A]
time = 0.27, antiderivative size = 355, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {4926, 12, 1137, 1295, 1216, 538, 435, 430}

$$-\frac{a+b\text{ArcSin}(c+dx^2)}{5x^5}+\frac{2b(3c+1)d^{5/2}\sqrt{1-\frac{dx^2}{1-c}}\sqrt{\frac{dx^2}{c+1}+1}\,F\left(\text{ArcSin}\left(\frac{\sqrt{d}x}{\sqrt{1-c}}\right)|-\frac{1-c}{c+1}\right)}{15\sqrt{1-c}\left(1-c^2\right)\sqrt{-c^2-2cdx^2-d^2x^4+1}}-\frac{8bcd^{5/2}\sqrt{1-\frac{dx^2}{1-c}}\sqrt{\frac{dx^2}{c+1}+1}\,E\left(\text{ArcSin}\left(\frac{\sqrt{d}x}{\sqrt{1-c}}\right)|-\frac{1-c}{c+1}\right)}{15\sqrt{1-c}\left(1-c^2\right)\sqrt{-c^2-2cdx^2-d^2x^4+1}}-\frac{8bcd^2\sqrt{-c^2-2cdx^2-d^2x^4+1}}{15\left(1-c^2\right)^2x}-\frac{2bd\sqrt{-c^2-2cdx^2-d^2x^4+1}}{15\left(1-c^2\right)x^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c + d*x^2])/x^6,x]
```

```
[Out] (-2*b*d*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(15*(1 - c^2)*x^3) - (8*b*c*d^
2*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])/(15*(1 - c^2)^2*x) - (a + b*ArcSin[c
 + d*x^2])/(5*x^5) - (8*b*c*d^(5/2)*Sqrt[1 - (d*x^2)/(1 - c)]*Sqrt[1 + (d*x
^2)/(1 + c)]*EllipticE[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]], -((1 - c)/(1 + c))]
)/(15*Sqrt[1 - c]*(1 - c^2)*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4]) + (2*b*(1
+ 3*c)*d^(5/2)*Sqrt[1 - (d*x^2)/(1 - c)]*Sqrt[1 + (d*x^2)/(1 + c)]*Elliptic
F[ArcSin[(Sqrt[d]*x)/Sqrt[1 - c]], -((1 - c)/(1 + c))])/(15*Sqrt[1 - c]*(1
- c^2)*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 430

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1/(Sqrt[a]*Sqrt[c]*Rt[-d/c, 2]))*EllipticF[ArcSin[Rt[-d/c, 2]*x], b*(c
/(a*d))], x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a,
```

```
0] &&  !(NegQ[b/a] && SimplerSqrtQ[-b/a, -d/c])
```

Rule 435

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]/(Sqrt[c]*Rt[-d/c, 2]))*EllipticE[ArcSin[Rt[-d/c, 2]*x], b*(c/(a*d)
)], x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 538

```
Int[((e_) + (f_.)*(x_)^(n_))/(Sqrt[(a_) + (b_.)*(x_)^(n_)]*Sqrt[(c_) + (d_.
)*(x_)^(n_)]), x_Symbol] :> Dist[f/b, Int[Sqrt[a + b*x^n]/Sqrt[c + d*x^n],
x], x] + Dist[(b*e - a*f)/b, Int[1/(Sqrt[a + b*x^n]*Sqrt[c + d*x^n]), x], x
] /; FreeQ[{a, b, c, d, e, f, n}, x] &&  !(EqQ[n, 2] && ((PosQ[b/a] && PosQ
[d/c]) || (NegQ[b/a] && (PosQ[d/c] || (GtQ[a, 0] && ( !GtQ[c, 0] || Simpler
SqrtQ[-b/a, -d/c]))))))
```

Rule 1137

```
Int[((d_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_), x_Symbol]
:> Simp[(d*x)^(m + 1)*((a + b*x^2 + c*x^4)^(p + 1)/(a*d*(m + 1))), x] - Dis
t[1/(a*d^2*(m + 1)), Int[(d*x)^(m + 2)*(b*(m + 2*p + 3) + c*(m + 4*p + 5)*x
^2)*(a + b*x^2 + c*x^4)^p, x], x] /; FreeQ[{a, b, c, d, p}, x] && NeQ[b^2 -
 4*a*c, 0] && LtQ[m, -1] && IntegerQ[2*p] && (IntegerQ[p] || IntegerQ[m])
```

Rule 1216

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[Sqrt[1 + 2*c*(x^2/(b - q))]*(Sqrt
[1 + 2*c*(x^2/(b + q))]/Sqrt[a + b*x^2 + c*x^4]), Int[(d + e*x^2)/(Sqrt[1 +
 2*c*(x^2/(b - q))]*Sqrt[1 + 2*c*(x^2/(b + q))]), x], x]] /; FreeQ[{a, b, c
, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NegQ[c/a]
```

Rule 1295

```
Int[((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_)^2)*((a_) + (b_.)*(x_)^2 + (c_.)*(
x_)^4)^(p_), x_Symbol] :> Simp[d*(f*x)^(m + 1)*((a + b*x^2 + c*x^4)^(p + 1)
/(a*f*(m + 1))), x] + Dist[1/(a*f^2*(m + 1)), Int[(f*x)^(m + 2)*(a + b*x^2
+ c*x^4)^p*Simp[a*e*(m + 1) - b*d*(m + 2*p + 3) - c*d*(m + 4*p + 5)*x^2, x]
, x], x] /; FreeQ[{a, b, c, d, e, f, p}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[m
, -1] && IntegerQ[2*p] && (IntegerQ[p] || IntegerQ[m])
```

Rule 4926

```
Int[((a_.) + ArcSin[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[(c + d*x)^(m + 1)*((a + b*ArcSin[u])/(d*(m + 1))), x] - Dist[b/(d*(m + 1)
```

```
), Int[SimplifyIntegrand[(c + d*x)^(m + 1)*(D[u, x]/Sqrt[1 - u^2]), x], x],
 x] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x
] &&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] &&  !FunctionOfExponentialQ[u,
x]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(c+dx^2)}{x^6}\,dx = -\frac{a+b\sin^{-1}(c+dx^2)}{5x^5}+\frac{1}{5}b\int \frac{2d}{x^4\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$

$$= -\frac{a+b\sin^{-1}(c+dx^2)}{5x^5}+\frac{1}{5}(2bd)\int \frac{1}{x^4\sqrt{1-c^2-2cdx^2-d^2x^4}}\,dx$$

$$= -\frac{2bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{15(1-c^2)x^3}-\frac{a+b\sin^{-1}(c+dx^2)}{5x^5}+\frac{(2bd)\int \frac{4c\ldots}{x^2\sqrt{1-c^2-\ldots}}}{15(1-\ldots}$$

$$= -\frac{2bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{15(1-c^2)x^3}-\frac{8bcd^2\sqrt{1-c^2-2cdx^2-d^2x^4}}{15(1-c^2)^2x}-\frac{a+b\sin^{-\ldots}}{5\ldots}$$

$$= -\frac{2bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{15(1-c^2)x^3}-\frac{8bcd^2\sqrt{1-c^2-2cdx^2-d^2x^4}}{15(1-c^2)^2x}-\frac{a+b\sin^{-\ldots}}{5\ldots}$$

$$= -\frac{2bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{15(1-c^2)x^3}-\frac{8bcd^2\sqrt{1-c^2-2cdx^2-d^2x^4}}{15(1-c^2)^2x}-\frac{a+b\sin^{-\ldots}}{5\ldots}$$

$$= -\frac{2bd\sqrt{1-c^2-2cdx^2-d^2x^4}}{15(1-c^2)x^3}-\frac{8bcd^2\sqrt{1-c^2-2cdx^2-d^2x^4}}{15(1-c^2)^2x}-\frac{a+b\sin^{-\ldots}}{5\ldots}$$

Mathematica [C] Result contains complex when optimal does not.
time = 0.53, size = 370, normalized size = 1.04

$$\frac{\sqrt{\frac{d}{1+c}}\left(-3a(-1+c^2)^2\sqrt{1-c^2-2cdx^2-d^2x^4}+2bdx^2(-1-c^4+2c^3dx^2+d^2x^4+c^2(2+7d^2x^4)+c(-2dx^2+4d^3x^6))-3b(-1+c^2)^2\sqrt{1-c^2-2cdx^2-d^2x^4}\,\mathrm{ArcSin}(c+dx^2)\right)+8ib(-1+c)cd^3x^5\sqrt{\frac{-1+c+dx^2}{-1+c}}\sqrt{\frac{1+c+dx^2}{1+c}}\,E\left(i\sinh^{-1}\left(\sqrt{\frac{d}{1+c}}\,x\right)\middle|\frac{1+c}{-1+c}\right)-2ib(1-4c+3c^2)d^3x^5\sqrt{\frac{-1+c+dx^2}{-1+c}}\sqrt{\frac{1+c+dx^2}{1+c}}\,F\left(i\sinh^{-1}\left(\sqrt{\frac{d}{1+c}}\,x\right)\middle|\frac{1+c}{-1+c}\right)}{15(-1+c^2)^2\sqrt{\frac{d}{1+c}}\,x^5\sqrt{1-c^2-2cdx^2-d^2x^4}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c + d*x^2])/x^6,x]
```

```
[Out] (Sqrt[d/(1 + c)]*(-3*a*(-1 + c^2)^2*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4] + 2
*b*d*x^2*(-1 - c^4 + 2*c^3*d*x^2 + d^2*x^4 + c^2*(2 + 7*d^2*x^4) + c*(-2*d*
```

```
x^2 + 4*d^3*x^6)) - 3*b*(-1 + c^2)^2*Sqrt[1 - c^2 - 2*c*d*x^2 - d^2*x^4]*Ar
cSin[c + d*x^2]) + (8*I)*b*(-1 + c)*c*d^3*x^5*Sqrt[(-1 + c + d*x^2)/(-1 + c
)]*Sqrt[(1 + c + d*x^2)/(1 + c)]*EllipticE[I*ArcSinh[Sqrt[d/(1 + c)]*x], (1
 + c)/(-1 + c)] - (2*I)*b*(1 - 4*c + 3*c^2)*d^3*x^5*Sqrt[(-1 + c + d*x^2)/(
-1 + c)]*Sqrt[(1 + c + d*x^2)/(1 + c)]*EllipticF[I*ArcSinh[Sqrt[d/(1 + c)]*
x], (1 + c)/(-1 + c)])/(15*(-1 + c^2)^2*Sqrt[d/(1 + c)]*x^5*Sqrt[1 - c^2 -
2*c*d*x^2 - d^2*x^4])
```

Maple [A]
time = 0.02, size = 346, normalized size = 0.97

method	result
default	$-\frac{a}{5x^5}+b\left(-\frac{\arcsin(d\,x^2+c)}{5x^5}+\frac{2d\left(\frac{\sqrt{-d^2x^4-2cd\,x^2-c^2+1}}{3(c^2-1)x^3}-\frac{4cd\sqrt{-d^2x^4-2cd\,x^2-c^2+1}}{3(c^2-1)^2x}-\frac{d^2\sqrt{1}}{}\right.}{}\right.$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+c))/x^6,x,method=_RETURNVERBOSE)
```

```
[Out] -1/5*a/x^5+b*(-1/5/x^5*arcsin(d*x^2+c)+2/5*d*(1/3/(c^2-1)*(-d^2*x^4-2*c*d*x
^2-c^2+1)^(1/2)/x^3-4/3*c*d/(c^2-1)^2*(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)/x-1/
3*d^2/(c^2-1)/(-d/(-1+c))^(1/2)*(1+d/(-1+c)*x^2)^(1/2)*(1+d*x^2/(1+c))^(1/2
)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)*EllipticF(x*(-d/(-1+c))^(1/2),(-1+2*c/(1
+c))^(1/2))+8/3*c*d^3/(c^2-1)^2*(-c^2+1)/(-d/(-1+c))^(1/2)*(1+d/(-1+c)*x^2)
^(1/2)*(1+d*x^2/(1+c))^(1/2)/(-d^2*x^4-2*c*d*x^2-c^2+1)^(1/2)/(-2*c*d+2*d)*
(EllipticF(x*(-d/(-1+c))^(1/2),(-1+2*c/(1+c))^(1/2))-EllipticE(x*(-d/(-1+c)
)^(1/2),(-1+2*c/(1+c))^(1/2)))))
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^6,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c-1>0)', see `assume?` for more det
ails)Is
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^6,x, algorithm="fricas")
[Out] integral((b*arcsin(d*x^2 + c) + a)/x^6, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b \operatorname{asin}{\left(c + dx^{2} \right)}}{x^{6}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+c))/x**6,x)
[Out] Integral((a + b*asin(c + d*x**2))/x**6, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+c))/x^6,x, algorithm="giac")
[Out] integrate((b*arcsin(d*x^2 + c) + a)/x^6, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\mathrm{asin}\left(d\,x^2+c\right)}{x^6} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c + d*x^2))/x^6,x)
[Out] int((a + b*asin(c + d*x^2))/x^6, x)
```

3.399 $\int x^3 \mathbf{ArcSin}(a+bx^4)\,dx$

Optimal. Leaf size=47

$$\frac{\sqrt{1-(a+bx^4)^2}}{4b}+\frac{(a+bx^4)\,\mathrm{ArcSin}(a+bx^4)}{4b}$$

```
[Out] 1/4*(b*x^4+a)*arcsin(b*x^4+a)/b+1/4*(1-(b*x^4+a)^2)^(1/2)/b
```

Rubi [A]
time = 0.04, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$, Rules used = {6847, 4887, 4715, 267}

$$\frac{(a+bx^4)\,\mathrm{ArcSin}(a+bx^4)}{4b}+\frac{\sqrt{1-(a+bx^4)^2}}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*ArcSin[a + b*x^4],x]
```

```
[Out] Sqrt[1 - (a + b*x^4)^2]/(4*b) + ((a + b*x^4)*ArcSin[a + b*x^4])/(4*b)
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 6847

```
Int[(u_)*(x_)^(m_.), x_Symbol] :> Dist[1/(m + 1), Subst[Int[SubstFor[x^(m +
 1), u, x], x], x, x^(m + 1)], x] /; FreeQ[m, x] && NeQ[m, -1] && FunctionO
fQ[x^(m + 1), u, x]
```

Rubi steps

$$
\begin{aligned}
\int x^3 \sin^{-1}\left(a+bx^4\right) dx &= \frac{1}{4}\text{Subst}\left(\int \sin^{-1}(a+bx)\,dx, x, x^4\right)\\
&= \frac{\text{Subst}\left(\int \sin^{-1}(x)\,dx, x, a+bx^4\right)}{4b}\\
&= \frac{\left(a+bx^4\right)\sin^{-1}\left(a+bx^4\right)}{4b} - \frac{\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}}\,dx, x, a+bx^4\right)}{4b}\\
&= \frac{\sqrt{1-\left(a+bx^4\right)^2}}{4b} + \frac{\left(a+bx^4\right)\sin^{-1}\left(a+bx^4\right)}{4b}
\end{aligned}
$$

Mathematica [A]
time = 0.02, size = 41, normalized size = 0.87

$$
\frac{\sqrt{1-\left(a+bx^4\right)^2}+\left(a+bx^4\right)\text{ArcSin}\left(a+bx^4\right)}{4b}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*ArcSin[a + b*x^4],x]
[Out] (Sqrt[1 - (a + b*x^4)^2] + (a + b*x^4)*ArcSin[a + b*x^4])/(4*b)
```

Maple [A]
time = 0.01, size = 38, normalized size = 0.81

method	result	size
derivativedivides	$\frac{\left(b\,x^4+a\right)\arcsin\left(b\,x^4+a\right)+\sqrt{1-\left(b\,x^4+a\right)^2}}{4b}$	38
default	$\frac{\left(b\,x^4+a\right)\arcsin\left(b\,x^4+a\right)+\sqrt{1-\left(b\,x^4+a\right)^2}}{4b}$	38

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*arcsin(b*x^4+a),x,method=_RETURNVERBOSE)
[Out] 1/4/b*((b*x^4+a)*arcsin(b*x^4+a)+(1-(b*x^4+a)^2)^(1/2))
```

Maxima [A]
time = 0.49, size = 37, normalized size = 0.79

$$
\frac{\left(bx^4+a\right)\arcsin\left(bx^4+a\right)+\sqrt{-\left(bx^4+a\right)^2+1}}{4\,b}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arcsin(b*x^4+a),x, algorithm="maxima")
```

```
[Out] 1/4*((b*x^4 + a)*arcsin(b*x^4 + a) + sqrt(-(b*x^4 + a)^2 + 1))/b
```

Fricas [A]
time = 2.99, size = 46, normalized size = 0.98

$$\frac{(bx^4+a)\arcsin\left(bx^4+a\right)+\sqrt{-b^2x^8-2\,abx^4-a^2+1}}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arcsin(b*x^4+a),x, algorithm="fricas")
```

```
[Out] 1/4*((b*x^4 + a)*arcsin(b*x^4 + a) + sqrt(-b^2*x^8 - 2*a*b*x^4 - a^2 + 1))/
b
```

Sympy [A]
time = 0.22, size = 61, normalized size = 1.30

$$\begin{cases} \frac{a\operatorname{asin}\left(a+bx^4\right)}{4b}+\frac{x^4\operatorname{asin}\left(a+bx^4\right)}{4}+\frac{\sqrt{-a^2-2abx^4-b^2x^8+1}}{4b} & \text{for } b\neq 0\\ \frac{x^4\operatorname{asin}\left(a\right)}{4} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*asin(b*x**4+a),x)
```

```
[Out] Piecewise((a*asin(a + b*x**4)/(4*b) + x**4*asin(a + b*x**4)/4 + sqrt(-a**2
- 2*a*b*x**4 - b**2*x**8 + 1)/(4*b), Ne(b, 0)), (x**4*asin(a)/4, True))
```

Giac [A]
time = 0.42, size = 37, normalized size = 0.79

$$\frac{(bx^4+a)\arcsin\left(bx^4+a\right)+\sqrt{-\left(bx^4+a\right)^2+1}}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arcsin(b*x^4+a),x, algorithm="giac")
```

```
[Out] 1/4*((b*x^4 + a)*arcsin(b*x^4 + a) + sqrt(-(b*x^4 + a)^2 + 1))/b
```

Mupad [B]
time = 0.71, size = 99, normalized size = 2.11

$$\frac{x^4\,\mathrm{asin}(b\,x^4+a)}{4}+\frac{\sqrt{-a^2-2\,a\,b\,x^4-b^2\,x^8+1}}{4\,b}+\frac{a\,\ln\left(\sqrt{-a^2-2\,a\,b\,x^4-b^2\,x^8+1}-\frac{b^2\,x^4+a\,b}{\sqrt{-b^2}}\right)}{4\,\sqrt{-b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*asin(a + b*x^4),x)
```

```
[Out] (x^4*asin(a + b*x^4))/4 + (1 - b^2*x^8 - 2*a*b*x^4 - a^2)^(1/2)/(4*b) + (a*
log((1 - b^2*x^8 - 2*a*b*x^4 - a^2)^(1/2) - (a*b + b^2*x^4)/(-b^2)^(1/2)))/
(4*(-b^2)^(1/2))
```

3.400 $\int x^{-1+n}\textbf{ArcSin}(a+bx^n)\,dx$

Optimal. Leaf size=47

$$\frac{\sqrt{1-(a+bx^n)^2}}{bn}+\frac{(a+bx^n)\,\text{ArcSin}(a+bx^n)}{bn}$$

```
[Out] (a+b*x^n)*arcsin(a+b*x^n)/b/n+(1-(a+b*x^n)^2)^(1/2)/b/n
```

Rubi [A]
time = 0.04, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}=0.286$, Rules used = {6847, 4887, 4715, 267}

$$\frac{(a+bx^n)\,\text{ArcSin}(a+bx^n)}{bn}+\frac{\sqrt{1-(a+bx^n)^2}}{bn}$$

Antiderivative was successfully verified.

```
[In] Int[x^(-1 + n)*ArcSin[a + b*x^n],x]
```

```
[Out] Sqrt[1 - (a + b*x^n)^2]/(b*n) + ((a + b*x^n)*ArcSin[a + b*x^n])/(b*n)
```

Rule 267

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[x*((a + b*ArcSin[c*x])^(n - 1)/Sqrt[1 -
c^2*x^2]), x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4887

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcSin[x])^n, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, n
}, x]
```

Rule 6847

```
Int[(u_)*(x_)^(m_.), x_Symbol] :> Dist[1/(m + 1), Subst[Int[SubstFor[x^(m +
 1), u, x], x], x, x^(m + 1)], x] /; FreeQ[m, x] && NeQ[m, -1] && FunctionO
fQ[x^(m + 1), u, x]
```

Rubi steps

$$\begin{aligned}\int x^{-1+n}\sin^{-1}(a+bx^n)\,dx &= \frac{\text{Subst}\left(\int \sin^{-1}(a+bx)\,dx, x, x^n\right)}{n}\\ &= \frac{\text{Subst}\left(\int \sin^{-1}(x)\,dx, x, a+bx^n\right)}{bn}\\ &= \frac{(a+bx^n)\sin^{-1}(a+bx^n)}{bn} - \frac{\text{Subst}\left(\int \frac{x}{\sqrt{1-x^2}}\,dx, x, a+bx^n\right)}{bn}\\ &= \frac{\sqrt{1-(a+bx^n)^2}}{bn} + \frac{(a+bx^n)\sin^{-1}(a+bx^n)}{bn}\end{aligned}$$

Mathematica [A]
time = 0.03, size = 47, normalized size = 1.00

$$\frac{\sqrt{1-(a+bx^n)^2}}{bn} + \frac{(a+bx^n)\,\text{ArcSin}(a+bx^n)}{bn}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(-1 + n)*ArcSin[a + b*x^n],x]
[Out] Sqrt[1 - (a + b*x^n)^2]/(b*n) + ((a + b*x^n)*ArcSin[a + b*x^n])/(b*n)
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int x^{n-1}\arcsin\left(a+b\,x^n\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(n-1)*arcsin(a+b*x^n),x)
[Out] int(x^(n-1)*arcsin(a+b*x^n),x)
```

Maxima [A]
time = 0.49, size = 39, normalized size = 0.83

$$\frac{(bx^n+a)\arcsin(bx^n+a)+\sqrt{-(bx^n+a)^2+1}}{bn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-1+n)*arcsin(a+b*x^n),x, algorithm="maxima")
```

[Out] ((b*x^n + a)*arcsin(b*x^n + a) + sqrt(-(b*x^n + a)^2 + 1))/(b*n)

Fricas [A]
time = 2.07, size = 57, normalized size = 1.21

$$\frac{bx^n \arcsin\left(bx^n + a\right) + a \arcsin\left(bx^n + a\right) + \sqrt{-b^2x^{2n} - 2\,abx^n - a^2 + 1}}{bn}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^(-1+n)*arcsin(a+b*x^n),x, algorithm="fricas")

[Out] (b*x^n*arcsin(b*x^n + a) + a*arcsin(b*x^n + a) + sqrt(-b^2*x^(2*n) - 2*a*b*x^n - a^2 + 1))/(b*n)

Sympy [B] Leaf count of result is larger than twice the leaf count of optimal. 76 vs. $2(34) = 68$.
time = 22.11, size = 76, normalized size = 1.62

$$\begin{cases} \log\left(x\right)\operatorname{asin}\left(a\right) & \text{for}\: b = 0 \wedge n = 0 \\ \log\left(x\right)\operatorname{asin}\left(a + b\right) & \text{for}\: n = 0 \\ \frac{x^n \operatorname{asin}\left(a\right)}{n} & \text{for}\: b = 0 \\ \frac{a \operatorname{asin}\left(a + bx^n\right)}{bn} + \frac{x^n \operatorname{asin}\left(a + bx^n\right)}{n} + \frac{\sqrt{-a^2 - 2abx^n - b^2x^{2n} + 1}}{bn} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x**(-1+n)*asin(a+b*x**n),x)

[Out] Piecewise((log(x)*asin(a), Eq(b, 0) & Eq(n, 0)), (log(x)*asin(a + b), Eq(n, 0)), (x**n*asin(a)/n, Eq(b, 0)), (a*asin(a + b*x**n)/(b*n) + x**n*asin(a + b*x**n)/n + sqrt(-a**2 - 2*a*b*x**n - b**2*x**(2*n) + 1)/(b*n), True))

Giac [A]
time = 0.40, size = 39, normalized size = 0.83

$$\frac{\left(bx^n + a\right)\arcsin\left(bx^n + a\right) + \sqrt{-\left(bx^n + a\right)^2 + 1}}{bn}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^(-1+n)*arcsin(a+b*x^n),x, algorithm="giac")

[Out] ((b*x^n + a)*arcsin(b*x^n + a) + sqrt(-(b*x^n + a)^2 + 1))/(b*n)

Mupad [B]
time = 0.35, size = 109, normalized size = 2.32

$$\frac{x^n \operatorname{asin}(a + b\,x^n)}{n} + \frac{\sqrt{1 - b^2\,x^{2\,n} - 2\,a\,b\,x^n - a^2}}{b\,n} + \frac{a\,\ln\left(\sqrt{1 - b^2\,x^{2\,n} - 2\,a\,b\,x^n - a^2} - \frac{a\,b + b^2\,x^n}{\sqrt{-b^2}}\right)}{n\,\sqrt{-b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(n - 1)*asin(a + b*x^n),x)
```

```
[Out] (x^n*asin(a + b*x^n))/n + (1 - b^2*x^(2*n) - 2*a*b*x^n - a^2)^(1/2)/(b*n) +
 (a*log((1 - b^2*x^(2*n) - 2*a*b*x^n - a^2)^(1/2) - (a*b + b^2*x^n)/(-b^2)^
(1/2)))/(n*(-b^2)^(1/2))
```

3.401 $\int \left(a+b\mathbf{ArcSin}(1+dx^2)\right)^4\,dx$

Optimal. Leaf size=127

$$384b^4x-\frac{192b^3\sqrt{-2dx^2-d^2x^4}\,(a+b\text{ArcSin}(1+dx^2))}{dx}-48b^2x\left(a+b\text{ArcSin}\left(1+dx^2\right)\right)^2+\frac{8b\sqrt{-2dx^2-d^2x^4}$$

[Out] 384*b^4*x-48*b^2*x*(a+b*arcsin(d*x^2+1))^2+x*(a+b*arcsin(d*x^2+1))^4-192*b^3*(a+b*arcsin(d*x^2+1))*(-d^2*x^4-2*d*x^2)^(1/2)/d/x+8*b*(a+b*arcsin(d*x^2+1))^3*(-d^2*x^4-2*d*x^2)^(1/2)/d/x

Rubi [A]
time = 0.02, antiderivative size = 127, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {4898, 8}

$$-\frac{192b^3\sqrt{-d^2x^4-2dx^2}\,(a+b\text{ArcSin}(dx^2+1))}{dx}-48b^2x\left(a+b\text{ArcSin}\left(dx^2+1\right)\right)^2+\frac{8b\sqrt{-d^2x^4-2dx^2}\,(a+b\text{ArcSin}(dx^2+1))^3}{dx}+x\left(a+b\text{ArcSin}\left(dx^2+1\right)\right)^4+384b^4x$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[1 + d*x^2])^4,x]
```

```
[Out] 384*b^4*x - (192*b^3*Sqrt[-2*d*x^2 - d^2*x^4]*(a + b*ArcSin[1 + d*x^2]))/(d
*x) - 48*b^2*x*(a + b*ArcSin[1 + d*x^2])^2 + (8*b*Sqrt[-2*d*x^2 - d^2*x^4]*
(a + b*ArcSin[1 + d*x^2])^3)/(d*x) + x*(a + b*ArcSin[1 + d*x^2])^4
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 4898

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
a + b*ArcSin[c + d*x^2])^n, x] + (-Dist[4*b^2*n*(n - 1), Int[(a + b*ArcSin[
c + d*x^2])^(n - 2), x], x] + Simp[2*b*n*Sqrt[-2*c*d*x^2 - d^2*x^4]*((a + b
*ArcSin[c + d*x^2])^(n - 1)/(d*x)), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^
2, 1] && GtQ[n, 1]
```

Rubi steps

$$\begin{aligned}\int \left(a+b\sin^{-1}\left(1+dx^2\right)\right)^4\,dx &= \frac{8b\sqrt{-2dx^2-d^2x^4}\,\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^3}{dx}+x\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^4-(\\ &= -\frac{192b^3\sqrt{-2dx^2-d^2x^4}\,\left(a+b\sin^{-1}\left(1+dx^2\right)\right)}{dx}-48b^2x\left(a+b\sin^{-1}\left(1+dx\right.\right.\\ &= 384b^4x-\frac{192b^3\sqrt{-2dx^2-d^2x^4}\,\left(a+b\sin^{-1}\left(1+dx^2\right)\right)}{dx}-48b^2x\left(a+b\sin^{-1}\right.\end{aligned}$$

Mathematica [A]
time = 0.07, size = 123, normalized size = 0.97

$$\frac{8b\sqrt{-dx^2(2+dx^2)}\,(a+b\text{ArcSin}(1+dx^2))^3}{dx}+x(a+b\text{ArcSin}(1+dx^2))^4-48b^2\left(-8b^2x+\frac{4b\sqrt{-dx^2(2+dx^2)}\,(a+b\text{ArcSin}(1+dx^2))}{dx}+x(a+b\text{ArcSin}(1+dx^2))^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[1 + d*x^2])^4,x]
```

```
[Out] (8*b*Sqrt[-(d*x^2*(2 + d*x^2))]*(a + b*ArcSin[1 + d*x^2])^3)/(d*x) + x*(a +
 b*ArcSin[1 + d*x^2])^4 - 48*b^2*(-8*b^2*x + (4*b*Sqrt[-(d*x^2*(2 + d*x^2))
]*(a + b*ArcSin[1 + d*x^2]))/(d*x) + x*(a + b*ArcSin[1 + d*x^2])^2)
```

Maple [F]
time = 0.06, size = 0, normalized size = 0.00

$$\int \left(a+b\arcsin\left(d\,x^{2}+1\right)\right)^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+1))^4,x)
```

```
[Out] int((a+b*arcsin(d*x^2+1))^4,x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^4,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 sign: argument cannot be imaginary; found sqrt((-_SAGE_VAR_d*_SAGE_VAR_x^2
)-2)
```

Fricas [A]
time = 2.49, size = 207, normalized size = 1.63

$$\frac{b^4dx^2\arcsin(dx^2+1)^4+4\,ab^3dx^2\arcsin(dx^2+1)^3+6\,(a^2b^2-8\,b^4)dx^2\arcsin(dx^2+1)^2+4\,(a^3b-24\,ab^3)dx^2\arcsin(dx^2+1)+(a^4-48\,a^2b^2+384\,b^4)dx^2+8\left(b^4\arcsin(dx^2+1)^3+3\,ab^3\arcsin(dx^2+1)^2+a^3b-24\,ab^3+3\,(a^2b^2-8\,b^4)\arcsin(dx^2+1)\right)\sqrt{-d^2x^4-2\,dx^2}}{dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^4,x, algorithm="fricas")
```

```
[Out] (b^4*d*x^2*arcsin(d*x^2 + 1)^4 + 4*a*b^3*d*x^2*arcsin(d*x^2 + 1)^3 + 6*(a^2
*b^2 - 8*b^4)*d*x^2*arcsin(d*x^2 + 1)^2 + 4*(a^3*b - 24*a*b^3)*d*x^2*arcsin
(d*x^2 + 1) + (a^4 - 48*a^2*b^2 + 384*b^4)*d*x^2 + 8*(b^4*arcsin(d*x^2 + 1)
```

```
^3 + 3*a*b^3*arcsin(d*x^2 + 1)^2 + a^3*b - 24*a*b^3 + 3*(a^2*b^2 - 8*b^4)*a
rcsin(d*x^2 + 1))*sqrt(-d^2*x^4 - 2*d*x^2))/(d*x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b \operatorname{asin}\left(dx^2 + 1\right)\right)^4 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+1))**4,x)
[Out] Integral((a + b*asin(d*x**2 + 1))**4, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^4,x, algorithm="giac")
[Out] integrate((b*arcsin(d*x^2 + 1) + a)^4, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int {\left(a+b\,\mathrm{asin}\left(d\,x^2+1\right)\right)}^4 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(d*x^2 + 1))^4,x)
[Out] int((a + b*asin(d*x^2 + 1))^4, x)
```

3.402 $\int \left(a+b\mathbf{ArcSin}\left(1+dx^2\right)\right)^3\,dx$

Optimal. Leaf size=110

$$-24ab^2x-\frac{48b^3\sqrt{-2dx^2-d^2x^4}}{dx}-24b^3x\text{ArcSin}\left(1+dx^2\right)+\frac{6b\sqrt{-2dx^2-d^2x^4}\left(a+b\text{ArcSin}\left(1+dx^2\right)\right)^2}{dx}+x\left(a\right.$$

```
[Out] -24*a*b^2*x-24*b^3*x*arcsin(d*x^2+1)+x*(a+b*arcsin(d*x^2+1))^3-48*b^3*(-d^2
*x^4-2*d*x^2)^(1/2)/d/x+6*b*(a+b*arcsin(d*x^2+1))^2*(-d^2*x^4-2*d*x^2)^(1/2
)/d/x
```

Rubi [A]

time = 0.04, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {4898, 4924, 12, 1602}

$$\frac{6b\sqrt{-d^2x^4-2dx^2}\left(a+b\text{ArcSin}\left(dx^2+1\right)\right)^2}{dx}+x\left(a+b\text{ArcSin}\left(dx^2+1\right)\right)^3-24ab^2x-24b^3x\text{ArcSin}\left(dx^2+1\right)-\frac{48b^3\sqrt{-d^2x^4-2dx^2}}{dx}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[1 + d*x^2])^3,x]
```

```
[Out] -24*a*b^2*x - (48*b^3*Sqrt[-2*d*x^2 - d^2*x^4])/(d*x) - 24*b^3*x*ArcSin[1 +
 d*x^2] + (6*b*Sqrt[-2*d*x^2 - d^2*x^4]*(a + b*ArcSin[1 + d*x^2])^2)/(d*x)
+ x*(a + b*ArcSin[1 + d*x^2])^3
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1602

```
Int[(Pp_)*(Qq_)^(m_.), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x
]}, Simp[Coeff[Pp, x, p]*x^(p - q + 1)*(Qq^(m + 1)/((p + m*q + 1)*Coeff[Qq,
 x, q])), x] /; NeQ[p + m*q + 1, 0] && EqQ[(p + m*q + 1)*Coeff[Qq, x, q]*Pp
, Coeff[Pp, x, p]*x^(p - q)*((p - q + 1)*Qq + (m + 1)*x*D[Qq, x])]] /; Free
Q[m, x] && PolyQ[Pp, x] && PolyQ[Qq, x] && NeQ[m, -1]
```

Rule 4898

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
a + b*ArcSin[c + d*x^2])^n, x] + (-Dist[4*b^2*n*(n - 1), Int[(a + b*ArcSin[
c + d*x^2])^(n - 2), x], x] + Simp[2*b*n*Sqrt[-2*c*d*x^2 - d^2*x^4]*((a + b
*ArcSin[c + d*x^2])^(n - 1)/(d*x)), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^
2, 1] && GtQ[n, 1]
```

Rule 4924

```
Int[ArcSin[u_], x_Symbol] :> Simp[x*ArcSin[u], x] - Int[SimplifyIntegrand[x
*(D[u, x]/Sqrt[1 - u^2]), x], x] /; InverseFunctionFreeQ[u, x] &&  !Functio
nOfExponentialQ[u, x]
```

Rubi steps

$$\int \left(a+b\sin^{-1}\left(1+dx^2\right)\right)^3\,dx = \frac{6b\sqrt{-2dx^2-d^2x^4}\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^2}{dx} + x\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^3 - ($$

$$= -24ab^2x + \frac{6b\sqrt{-2dx^2-d^2x^4}\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^2}{dx} + x\left(a+b\sin^{-1}\left(1+\right.\right.$$

$$= -24ab^2x - 24b^3x\sin^{-1}\left(1+dx^2\right) + \frac{6b\sqrt{-2dx^2-d^2x^4}\left(a+b\sin^{-1}\left(1+dx\right.\right.}{dx}$$

$$= -24ab^2x - 24b^3x\sin^{-1}\left(1+dx^2\right) + \frac{6b\sqrt{-2dx^2-d^2x^4}\left(a+b\sin^{-1}\left(1+dx\right.\right.}{dx}$$

$$= -24ab^2x - \frac{48b^3\sqrt{-2dx^2-d^2x^4}}{dx} - 24b^3x\sin^{-1}\left(1+dx^2\right) + \frac{6b\sqrt{-2dx^2-\right.}{}$$

Mathematica [A]

time = 0.08, size = 162, normalized size = 1.47

$$\frac{a(a^2-24b^2)dx^2+6b(a^2-8b^2)\sqrt{-dx^2(2+dx^2)}+3b\left(a^2dx^2-8b^2dx^2+4ab\sqrt{-dx^2(2+dx^2)}\right)\text{ArcSin}(1+dx^2)+3b^2\left(adx^2+2b\sqrt{-dx^2(2+dx^2)}\right)\text{ArcSin}(1+dx^2)^2+b^3dx^2\text{ArcSin}(1+dx^2)^3}{dx}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[1 + d*x^2])^3,x]
```

```
[Out] (a*(a^2 - 24*b^2)*d*x^2 + 6*b*(a^2 - 8*b^2)*Sqrt[-(d*x^2*(2 + d*x^2))] + 3*
b*(a^2*d*x^2 - 8*b^2*d*x^2 + 4*a*b*Sqrt[-(d*x^2*(2 + d*x^2))])*ArcSin[1 + d
*x^2] + 3*b^2*(a*d*x^2 + 2*b*Sqrt[-(d*x^2*(2 + d*x^2))])*ArcSin[1 + d*x^2]^
2 + b^3*d*x^2*ArcSin[1 + d*x^2]^3)/(d*x)
```

Maple [F]

time = 0.05, size = 0, normalized size = 0.00

$$\int \left(a+b\arcsin\left(d\,x^2+1\right)\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+1))^3,x)
```

```
[Out] int((a+b*arcsin(d*x^2+1))^3,x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^3,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 sign: argument cannot be imaginary; found sqrt((-_SAGE_VAR_d*_SAGE_VAR_x^2
)-2)
```

Fricas [A]
time = 1.94, size = 144, normalized size = 1.31

$$\frac{b^3dx^2\arcsin\left(dx^2+1\right)^3+3\,ab^2dx^2\arcsin\left(dx^2+1\right)^2+3\left(a^2b-8\,b^3\right)dx^2\arcsin\left(dx^2+1\right)+\left(a^3-24\,ab^2\right)dx^2+6\sqrt{-d^2x^4-2\,dx^2}\left(b^3\arcsin\left(dx^2+1\right)^2+2\,ab^2\arcsin\left(dx^2+1\right)+a^2b-8\,b^3\right)}{dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^3,x, algorithm="fricas")
```

```
[Out] (b^3*d*x^2*arcsin(d*x^2 + 1)^3 + 3*a*b^2*d*x^2*arcsin(d*x^2 + 1)^2 + 3*(a^2
*b - 8*b^3)*d*x^2*arcsin(d*x^2 + 1) + (a^3 - 24*a*b^2)*d*x^2 + 6*sqrt(-d^2*
x^4 - 2*d*x^2)*(b^3*arcsin(d*x^2 + 1)^2 + 2*a*b^2*arcsin(d*x^2 + 1) + a^2*b
 - 8*b^3))/(d*x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a+b\operatorname{asin}\left(dx^2+1\right)\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+1))**3,x)
```

```
[Out] Integral((a + b*asin(d*x**2 + 1))**3, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^3,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + 1) + a)^3, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \left(a + b\,\mathrm{asin}\left(d\,x^2 + 1\right)\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(d*x^2 + 1))^3,x)
[Out] int((a + b*asin(d*x^2 + 1))^3, x)
```

3.403 $\int (a+b\textbf{ArcSin}(1+dx^2))^2\,dx$

Optimal. Leaf size=63

$$-8b^2x+\frac{4b\sqrt{-2dx^2-d^2x^4}\,(a+b\text{ArcSin}(1+dx^2))}{dx}+x\big(a+b\text{ArcSin}\big(1+dx^2\big)\big)^2$$

```
[Out] -8*b^2*x+x*(a+b*arcsin(d*x^2+1))^2+4*b*(a+b*arcsin(d*x^2+1))*(-d^2*x^4-2*d*
x^2)^(1/2)/d/x
```

Rubi [A]
time = 0.01, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}=0.143$, Rules used = {4898, 8}

$$\frac{4b\sqrt{-d^2x^4-2dx^2}\,(a+b\text{ArcSin}(dx^2+1))}{dx}+x\big(a+b\text{ArcSin}\big(dx^2+1\big)\big)^2-8b^2x$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[1 + d*x^2])^2,x]
```

```
[Out] -8*b^2*x + (4*b*Sqrt[-2*d*x^2 - d^2*x^4]*(a + b*ArcSin[1 + d*x^2]))/(d*x) +
 x*(a + b*ArcSin[1 + d*x^2])^2
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 4898

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
a + b*ArcSin[c + d*x^2])^n, x] + (-Dist[4*b^2*n*(n - 1), Int[(a + b*ArcSin[
c + d*x^2])^(n - 2), x], x] + Simp[2*b*n*Sqrt[-2*c*d*x^2 - d^2*x^4]*((a + b
*ArcSin[c + d*x^2])^(n - 1)/(d*x)), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^
2, 1] && GtQ[n, 1]
```

Rubi steps

$$\begin{aligned}\int \left(a+b\sin^{-1}\left(1+dx^2\right)\right)^2\,dx&=\frac{4b\sqrt{-2dx^2-d^2x^4}\,\left(a+b\sin^{-1}\left(1+dx^2\right)\right)}{dx}+x\big(a+b\sin^{-1}\left(1+dx^2\right)\big)^2-\\&=-8b^2x+\frac{4b\sqrt{-2dx^2-d^2x^4}\,\left(a+b\sin^{-1}\left(1+dx^2\right)\right)}{dx}+x\big(a+b\sin^{-1}\left(1+d\right.\end{aligned}$$

Mathematica [A]
time = 0.01, size = 63, normalized size = 1.00

$$-8b^2x+\frac{4b\sqrt{-2dx^2-d^2x^4}\,(a+b\text{ArcSin}(1+dx^2))}{dx}+x\big(a+b\text{ArcSin}\big(1+dx^2\big)\big)^2$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[1 + d*x^2])^2,x]
```

```
[Out] -8*b^2*x + (4*b*Sqrt[-2*d*x^2 - d^2*x^4]*(a + b*ArcSin[1 + d*x^2]))/(d*x) +
 x*(a + b*ArcSin[1 + d*x^2])^2
```

Maple [F]
time = 0.06, size = 0, normalized size = 0.00

$$\int \left(a+b\arcsin\left(d\,x^2+1\right)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+1))^2,x)
```

```
[Out] int((a+b*arcsin(d*x^2+1))^2,x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 sign: argument cannot be imaginary; found sqrt((-_SAGE_VAR_d*_SAGE_VAR_x^2
)-2)
```

Fricas [A]
time = 2.28, size = 91, normalized size = 1.44

$$\frac{b^2dx^2\arcsin\left(dx^2+1\right)^2+2\,abdx^2\arcsin\left(dx^2+1\right)+(a^2-8\,b^2)dx^2+4\,\sqrt{-d^2x^4-2\,dx^2}\,\left(b^2\arcsin\left(dx^2+1\right)+ab\right)}{dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^2,x, algorithm="fricas")
```

```
[Out] (b^2*d*x^2*arcsin(d*x^2 + 1)^2 + 2*a*b*d*x^2*arcsin(d*x^2 + 1) + (a^2 - 8*b
^2)*d*x^2 + 4*sqrt(-d^2*x^4 - 2*d*x^2)*(b^2*arcsin(d*x^2 + 1) + a*b))/(d*x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b \operatorname{asin}\left(dx^2 + 1\right)\right)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+1))**2,x)
```

```
[Out] Integral((a + b*asin(d*x**2 + 1))**2, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + 1) + a)^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int {\left(a+b\,\mathrm{asin}\left(d\,x^2+1\right)\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(d*x^2 + 1))^2,x)
```

```
[Out] int((a + b*asin(d*x^2 + 1))^2, x)
```

3.404 $\int (a + b\textbf{ArcSin}(1 + dx^2))\, dx$

Optimal. Leaf size=43

$$ax + \frac{2b\sqrt{-2dx^2 - d^2x^4}}{dx} + bx\text{ArcSin}\left(1 + dx^2\right)$$

```
[Out] a*x+b*x*arcsin(d*x^2+1)+2*b*(-d^2*x^4-2*d*x^2)^(1/2)/d/x
```

Rubi [A]
time = 0.03, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {4924, 12, 1602}

$$ax + bx\text{ArcSin}\left(dx^2 + 1\right) + \frac{2b\sqrt{-d^2x^4 - 2dx^2}}{dx}$$

Antiderivative was successfully verified.

```
[In] Int[a + b*ArcSin[1 + d*x^2],x]
```

```
[Out] a*x + (2*b*Sqrt[-2*d*x^2 - d^2*x^4])/(d*x) + b*x*ArcSin[1 + d*x^2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1602

```
Int[(Pp_)*(Qq_)^(m_.), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x
]}, Simp[Coeff[Pp, x, p]*x^(p - q + 1)*(Qq^(m + 1)/((p + m*q + 1)*Coeff[Qq,
 x, q])), x] /; NeQ[p + m*q + 1, 0] && EqQ[(p + m*q + 1)*Coeff[Qq, x, q]*Pp
, Coeff[Pp, x, p]*x^(p - q)*((p - q + 1)*Qq + (m + 1)*x*D[Qq, x])]] /; Free
Q[m, x] && PolyQ[Pp, x] && PolyQ[Qq, x] && NeQ[m, -1]
```

Rule 4924

```
Int[ArcSin[u_], x_Symbol] :> Simp[x*ArcSin[u], x] - Int[SimplifyIntegrand[x
*(D[u, x]/Sqrt[1 - u^2]), x], x] /; InverseFunctionFreeQ[u, x] &&  !Functio
nOfExponentialQ[u, x]
```

Rubi steps

$$\begin{aligned}\int \left(a+b\sin^{-1}\left(1+dx^2\right)\right)\,dx &= ax+b\int \sin^{-1}\left(1+dx^2\right)\,dx\\ &= ax+bx\sin^{-1}\left(1+dx^2\right)-b\int \frac{2dx^2}{\sqrt{-2dx^2-d^2x^4}}\,dx\\ &= ax+bx\sin^{-1}\left(1+dx^2\right)-(2bd)\int \frac{x^2}{\sqrt{-2dx^2-d^2x^4}}\,dx\\ &= ax+\frac{2b\sqrt{-2dx^2-d^2x^4}}{dx}+bx\sin^{-1}\left(1+dx^2\right)\end{aligned}$$

Mathematica [A]
time = 0.02, size = 41, normalized size = 0.95

$$ax+\frac{2b\sqrt{-dx^2\left(2+dx^2\right)}}{dx}+bx\text{ArcSin}\left(1+dx^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*ArcSin[1 + d*x^2],x]
[Out] a*x + (2*b*Sqrt[-(d*x^2*(2 + d*x^2))])/(d*x) + b*x*ArcSin[1 + d*x^2]
```

Maple [A]
time = 0.01, size = 45, normalized size = 1.05

method	result	size
default	$ax+b\left(x\arcsin\left(d\,x^2+1\right)-\frac{2x\left(d\,x^2+2\right)}{\sqrt{-d^2x^4-2d\,x^2}}\right)$	45

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a+b*arcsin(d*x^2+1),x,method=_RETURNVERBOSE)
[Out] a*x+b*(x*arcsin(d*x^2+1)-2/(-d^2*x^4-2*d*x^2)^(1/2)*x*(d*x^2+2))
```

Maxima [A]
time = 0.51, size = 45, normalized size = 1.05

$$\left(x\arcsin\left(dx^2+1\right)-\frac{2\left(d^{\frac{3}{2}}x^2+2\sqrt{d}\right)}{\sqrt{-dx^2-2}\,d}\right)b+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(d*x^2+1),x, algorithm="maxima")
```

```
[Out] (x*arcsin(d*x^2 + 1) - 2*(d^(3/2)*x^2 + 2*sqrt(d))/(sqrt(-d*x^2 - 2)*d))*b
+ a*x
```

Fricas [A]
time = 2.51, size = 48, normalized size = 1.12

$$\frac{bdx^2 \arcsin\left(dx^2+1\right)+adx^2+2\sqrt{-d^2x^4-2\,dx^2}\,b}{dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(d*x^2+1),x, algorithm="fricas")
[Out] (b*d*x^2*arcsin(d*x^2 + 1) + a*d*x^2 + 2*sqrt(-d^2*x^4 - 2*d*x^2)*b)/(d*x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a+b \operatorname{asin}\left(dx^2+1\right)\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*asin(d*x**2+1),x)
[Out] Integral(a + b*asin(d*x**2 + 1), x)
```

Giac [A]
time = 0.40, size = 55, normalized size = 1.28

$$\left(x\arcsin\left(dx^2+1\right)-\frac{2\sqrt{2}\,\sqrt{-d}\,\mathrm{sgn}(x)}{d}+\frac{2\sqrt{-d^2x^2-2\,d}}{d\mathrm{sgn}\left(x\right)}\right)b+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(d*x^2+1),x, algorithm="giac")
[Out] (x*arcsin(d*x^2 + 1) - 2*sqrt(2)*sqrt(-d)*sgn(x)/d + 2*sqrt(-d^2*x^2 - 2*d)
/(d*sgn(x)))*b + a*x
```

Mupad [B]
time = 0.51, size = 39, normalized size = 0.91

$$a\,x+b\,x\operatorname{asin}\left(d\,x^2+1\right)+\frac{2\,b\,\sqrt{1-{\left(d\,x^2+1\right)}^2}}{d\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a + b*asin(d*x^2 + 1),x)
[Out] a*x + b*x*asin(d*x^2 + 1) + (2*b*(1 - (d*x^2 + 1)^2)^(1/2))/(d*x)
```

3.405 $\int \frac{1}{a+b\mathbf{ArcSin}(1+dx^2)}\,dx$

Optimal. Leaf size=159

$$-\frac{x\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(1+dx^2)}{2b}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)}{2b\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)\right)}-\frac{x\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{a+b\text{ArcSin}(1+dx^2)}{2b}\right)}{2b\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)\right)}$$

```
[Out] -1/2*x*Ci(1/2*(a+b*arcsin(d*x^2+1))/b)*(cos(1/2*a/b)-sin(1/2*a/b))/b/(cos(1
/2*arcsin(d*x^2+1))-sin(1/2*arcsin(d*x^2+1)))-1/2*x*Si(1/2*(a+b*arcsin(d*x^
2+1))/b)*(cos(1/2*a/b)+sin(1/2*a/b))/b/(cos(1/2*arcsin(d*x^2+1))-sin(1/2*ar
csin(d*x^2+1)))
```

Rubi [A]
time = 0.03, antiderivative size = 159, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.071$, Rules used = {4900}

$$-\frac{x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(dx^2+1)}{2b}\right)}{2b\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)\right)}-\frac{x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{a+b\text{ArcSin}(dx^2+1)}{2b}\right)}{2b\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[1 + d*x^2])^(-1),x]
```

```
[Out] -1/2*(x*CosIntegral[(a + b*ArcSin[1 + d*x^2])/(2*b)]*(Cos[a/(2*b)] - Sin[a/
(2*b)]))/(b*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])) - (x*(Co
s[a/(2*b)] + Sin[a/(2*b)])*SinIntegral[(a + b*ArcSin[1 + d*x^2])/(2*b)])/(2
*b*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]))
```

Rule 4900

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(-1), x_Symbol] :> Simp[(-x
)*(c*Cos[a/(2*b)] - Sin[a/(2*b)])*(CosIntegral[(c/(2*b))*(a + b*ArcSin[c +
d*x^2])]/(2*b*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2]))), x]
 - Simp[x*(c*Cos[a/(2*b)] + Sin[a/(2*b)])*(SinIntegral[(c/(2*b))*(a + b*Arc
Sin[c + d*x^2])]/(2*b*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2
]))), x] /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \frac{1}{a+b\sin^{-1}\left(1+dx^2\right)}\,dx=-\frac{x\text{Ci}\left(\frac{a+b\sin^{-1}(1+dx^2)}{2b}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)}{2b\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1+dx^2\right)\right)\right)}-\frac{x\left(\cos\left(\frac{a}{2b}\right)+\sin\ldots\right.}{2b\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1+\ldots\right.\right.\right.}$$

Mathematica [A]
time = 0.50, size = 120, normalized size = 0.75

$$-\frac{x\left(\text{CosIntegral}\left(\frac{1}{2}\left(\frac{a}{b}+\text{ArcSin}(1+dx^2)\right)\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)+\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{1}{2}\left(\frac{a}{b}+\text{ArcSin}(1+dx^2)\right)\right)\right)}{2b\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[1 + d*x^2])^(-1),x]
```

```
[Out] -1/2*(x*(CosIntegral[(a/b + ArcSin[1 + d*x^2])/2]*(Cos[a/(2*b)] - Sin[a/(2*
b)]) + (Cos[a/(2*b)] + Sin[a/(2*b)])*SinIntegral[(a/b + ArcSin[1 + d*x^2])/
2]))/(b*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]))
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{1}{a+b\arcsin\left(d\,x^2+1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2+1)),x)
```

```
[Out] int(1/(a+b*arcsin(d*x^2+1)),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1)),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 sign: argument cannot be imaginary; found sqrt((-_SAGE_VAR_d*_SAGE_VAR_x^2
)-2)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1)),x, algorithm="fricas")
```

```
[Out] integral(1/(b*arcsin(d*x^2 + 1) + a), x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{a + b \operatorname{asin}(dx^2 + 1)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2+1)),x)
[Out] Integral(1/(a + b*asin(d*x**2 + 1)), x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1)),x, algorithm="giac")
[Out] integrate(1/(b*arcsin(d*x^2 + 1) + a), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{a + b \operatorname{asin}(d x^2 + 1)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(d*x^2 + 1)),x)
[Out] int(1/(a + b*asin(d*x^2 + 1)), x)
```

3.406 $\int \frac{1}{\left(a+b\mathbf{ArcSin}(1+dx^2)\right)^2}\,dx$

Optimal. Leaf size=205

$$-\frac{\sqrt{-2dx^2-d^2x^4}}{2bdx\left(a+b\text{ArcSin}\left(1+dx^2\right)\right)}-\frac{x\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(1+dx^2)}{2b}\right)\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)}{4b^2\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)\right)}+\frac{x\left(\cos\left(\frac{a}{2b}\right)\right.}{4b^2\left(\cos\left(\frac{1}{2}\text{ArcSi}\right.\right.}$$

```
[Out] 1/4*x*Si(1/2*(a+b*arcsin(d*x^2+1))/b)*(cos(1/2*a/b)-sin(1/2*a/b))/b^2/(cos(
1/2*arcsin(d*x^2+1))-sin(1/2*arcsin(d*x^2+1)))-1/4*x*Ci(1/2*(a+b*arcsin(d*x
^2+1))/b)*(cos(1/2*a/b)+sin(1/2*a/b))/b^2/(cos(1/2*arcsin(d*x^2+1))-sin(1/2
*arcsin(d*x^2+1)))-1/2*(-d^2*x^4-2*d*x^2)^(1/2)/b/d/x/(a+b*arcsin(d*x^2+1))
```

Rubi [A]

time = 0.02, antiderivative size = 205, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.071$, Rules used = {4909}

$$-\frac{x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(dx^2+1)}{2b}\right)}{4b^2\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)\right)}+\frac{x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{a+b\text{ArcSin}(dx^2+1)}{2b}\right)}{4b^2\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)\right)}-\frac{\sqrt{-d^2x^4-2dx^2}}{2bdx\left(a+b\text{ArcSin}\left(dx^2+1\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[1 + d*x^2])^(-2),x]
```

```
[Out] -1/2*Sqrt[-2*d*x^2 - d^2*x^4]/(b*d*x*(a + b*ArcSin[1 + d*x^2])) - (x*CosInt
egral[(a + b*ArcSin[1 + d*x^2])/(2*b)]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(4*b^
2*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])) + (x*(Cos[a/(2*b)]
 - Sin[a/(2*b)])*SinIntegral[(a + b*ArcSin[1 + d*x^2])/(2*b)])/(4*b^2*(Cos[
ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]))
```

Rule 4909

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(-2), x_Symbol] :> Simp[-Sq
rt[-2*c*d*x^2 - d^2*x^4]/(2*b*d*x*(a + b*ArcSin[c + d*x^2])), x] + (-Simp[x
*(Cos[a/(2*b)] + c*Sin[a/(2*b)])*(CosIntegral[(c/(2*b))*(a + b*ArcSin[c + d
*x^2])]/(4*b^2*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2]))), x
] + Simp[x*(Cos[a/(2*b)] - c*Sin[a/(2*b)])*(SinIntegral[(c/(2*b))*(a + b*Ar
cSin[c + d*x^2])]/(4*b^2*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2
]/2]))), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^2}\,dx=-\frac{\sqrt{-2dx^2-d^2x^4}}{2bdx\left(a+b\sin^{-1}\left(1+dx^2\right)\right)}-\frac{x\text{Ci}\left(\frac{a+b\sin^{-1}(1+dx^2)}{2b}\right)\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\right.\right.}{4b^2\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(\right.\right.\right.}$$

Mathematica [A]
time = 0.95, size = 164, normalized size = 0.80

$$-\frac{\frac{2b\sqrt{-dx^2\left(2+dx^2\right)}}{d\left(a+b\text{ArcSin}\left(1+dx^2\right)\right)}+\frac{x^2\left(\text{CosIntegral}\left(\frac{1}{2}\left(\frac{a}{b}+\text{ArcSin}\left(1+dx^2\right)\right)\right)\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)+\left(-\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{1}{2}\left(\frac{a}{b}+\text{ArcSin}\left(1+dx^2\right)\right)\right)\right)}{\cos\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)}}{4b^2x}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[1 + d*x^2])^(-2),x]
```

```
[Out] -1/4*((2*b*Sqrt[-(d*x^2*(2 + d*x^2))])/(d*(a + b*ArcSin[1 + d*x^2])) + (x^2
*(CosIntegral[(a/b + ArcSin[1 + d*x^2])/2]*(Cos[a/(2*b)] + Sin[a/(2*b)]) +
(-Cos[a/(2*b)] + Sin[a/(2*b)])*SinIntegral[(a/b + ArcSin[1 + d*x^2])/2]))/(
Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]))/(b^2*x)
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b \arcsin \left(d\,x^{2}+1\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2+1))^2,x)
```

```
[Out] int(1/(a+b*arcsin(d*x^2+1))^2,x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 sign: argument cannot be imaginary; found sqrt((-_SAGE_VAR_d*_SAGE_VAR_x^2
)-2)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(b^2*arcsin(d*x^2 + 1)^2 + 2*a*b*arcsin(d*x^2 + 1) + a^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a + b\operatorname{asin}(dx^2 + 1))^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2+1))**2,x)
[Out] Integral((a + b*asin(d*x**2 + 1))**(-2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^2,x, algorithm="giac")
[Out] integrate((b*arcsin(d*x^2 + 1) + a)^(-2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{1}{(a + b\operatorname{asin}(d\,x^2 + 1))^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(d*x^2 + 1))^2,x)
[Out] int(1/(a + b*asin(d*x^2 + 1))^2, x)
```

3.407 $\int \frac{1}{\left(a+b\text{ArcSin}(1+dx^2)\right)^3}\,dx$

Optimal. Leaf size=227

$$-\frac{\sqrt{-2dx^2-d^2x^4}}{4bdx\left(a+b\text{ArcSin}\left(1+dx^2\right)\right)^2}+\frac{x}{8b^2\left(a+b\text{ArcSin}\left(1+dx^2\right)\right)}+\frac{x\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(1+dx^2)}{2b}\right)\left(\cos\left(\frac{a}{2b}\right.\right.}{16b^3\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcS}\right.\right.}$$

```
[Out] 1/8*x/b^2/(a+b*arcsin(d*x^2+1))+1/16*x*Ci(1/2*(a+b*arcsin(d*x^2+1))/b)*(cos
(1/2*a/b)-sin(1/2*a/b))/b^3/(cos(1/2*arcsin(d*x^2+1))-sin(1/2*arcsin(d*x^2+
1)))+1/16*x*Si(1/2*(a+b*arcsin(d*x^2+1))/b)*(cos(1/2*a/b)+sin(1/2*a/b))/b^3
/(cos(1/2*arcsin(d*x^2+1))-sin(1/2*arcsin(d*x^2+1)))-1/4*(-d^2*x^4-2*d*x^2)
^(1/2)/b/d/x/(a+b*arcsin(d*x^2+1))^2
```

Rubi [A]
time = 0.03, antiderivative size = 227, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {4912, 4900}

$$\frac{x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{CosIntegral}\left(\frac{a+b\text{ArcSin}(dx^2+1)}{2b}\right)}{16b^3\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)\right)}+\frac{x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{a+b\text{ArcSin}(dx^2+1)}{2b}\right)}{16b^3\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)\right)}+\frac{x}{8b^2\left(a+b\text{ArcSin}\left(dx^2+1\right)\right)}-\frac{\sqrt{-d^2x^4-2dx^2}}{4bdx\left(a+b\text{ArcSin}\left(dx^2+1\right)\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[1 + d*x^2])^(-3),x]
```

```
[Out] -1/4*Sqrt[-2*d*x^2 - d^2*x^4]/(b*d*x*(a + b*ArcSin[1 + d*x^2])^2) + x/(8*b^
2*(a + b*ArcSin[1 + d*x^2])) + (x*CosIntegral[(a + b*ArcSin[1 + d*x^2])/(2*
b)]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(16*b^3*(Cos[ArcSin[1 + d*x^2]/2] - Sin[
ArcSin[1 + d*x^2]/2])) + (x*(Cos[a/(2*b)] + Sin[a/(2*b)])*SinIntegral[(a +
b*ArcSin[1 + d*x^2])/(2*b)])/(16*b^3*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin
[1 + d*x^2]/2]))
```

Rule 4900

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(-1), x_Symbol] :> Simp[(-x
)*(c*Cos[a/(2*b)] - Sin[a/(2*b)])*(CosIntegral[(c/(2*b))*(a + b*ArcSin[c +
d*x^2])]/(2*b*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2]))), x]
 - Simp[x*(c*Cos[a/(2*b)] + Sin[a/(2*b)])*(SinIntegral[(c/(2*b))*(a + b*Arc
Sin[c + d*x^2])]/(2*b*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2
]))), x] /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rule 4912

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
(a + b*ArcSin[c + d*x^2])^(n + 2)/(4*b^2*(n + 1)*(n + 2))), x] + (-Dist[1/(
4*b^2*(n + 1)*(n + 2)), Int[(a + b*ArcSin[c + d*x^2])^(n + 2), x], x] + Sim
```

```
p[Sqrt[-2*c*d*x^2 - d^2*x^4]*((a + b*ArcSin[c + d*x^2])^(n + 1)/(2*b*d*(n +
 1)*x)), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1] && LtQ[n, -1] && NeQ[
n, -2]
```

Rubi steps

$$\begin{aligned}\int \frac{1}{\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^3}\,dx &= -\frac{\sqrt{-2dx^2-d^2x^4}}{4bdx\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^2}+\frac{x}{8b^2\left(a+b\sin^{-1}\left(1+dx^2\right)\right)}-\frac{\int \frac{1}{a+b\sin^{-1}(1+\cdots}}{8b^2} \\ &= -\frac{\sqrt{-2dx^2-d^2x^4}}{4bdx\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^2}+\frac{x}{8b^2\left(a+b\sin^{-1}\left(1+dx^2\right)\right)}+\frac{x\text{Ci}\left(\cdots\right.}{16b^3\left(\cos\left(\frac{1}{2}\cdots\right.\right.}\end{aligned}$$

Mathematica [A]
time = 0.36, size = 187, normalized size = 0.82

$$-\frac{\sqrt{-dx^2\left(2+dx^2\right)}}{4bdx\left(a+b\text{ArcSin}\left(1+dx^2\right)\right)^2}+\frac{x}{8b^2\left(a+b\text{ArcSin}\left(1+dx^2\right)\right)}+\frac{x\left(\text{CosIntegral}\left(\frac{1}{2}\left(\frac{a}{b}+\text{ArcSin}(1+dx^2)\right)\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)+\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{1}{2}\left(\frac{a}{b}+\text{ArcSin}(1+dx^2)\right)\right)\right)}{16b^3\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[1 + d*x^2])^(-3),x]
```

```
[Out] -1/4*Sqrt[-(d*x^2*(2 + d*x^2))]/(b*d*x*(a + b*ArcSin[1 + d*x^2])^2) + x/(8*
b^2*(a + b*ArcSin[1 + d*x^2])) + (x*(CosIntegral[(a/b + ArcSin[1 + d*x^2])/
2]*(Cos[a/(2*b)] - Sin[a/(2*b)]) + (Cos[a/(2*b)] + Sin[a/(2*b)])*SinIntegra
l[(a/b + ArcSin[1 + d*x^2])/2]))/(16*b^3*(Cos[ArcSin[1 + d*x^2]/2] - Sin[Ar
cSin[1 + d*x^2]/2]))
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\arcsin\left(d\,x^2+1\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2+1))^3,x)
```

```
[Out] int(1/(a+b*arcsin(d*x^2+1))^3,x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^3,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 sign: argument cannot be imaginary; found sqrt((-_SAGE_VAR_d*_SAGE_VAR_x^2
)-2)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^3,x, algorithm="fricas")
```

```
[Out] integral(1/(b^3*arcsin(d*x^2 + 1)^3 + 3*a*b^2*arcsin(d*x^2 + 1)^2 + 3*a^2*b
*arcsin(d*x^2 + 1) + a^3), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b \operatorname{asin}\left(dx^{2} + 1\right)\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2+1))**3,x)
```

```
[Out] Integral((a + b*asin(d*x**2 + 1))**(-3), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^3,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + 1) + a)^(-3), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{1}{{\left(a+b\,\mathrm{asin}\left(d\,x^2+1\right)\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(d*x^2 + 1))^3,x)
```

```
[Out] int(1/(a + b*asin(d*x^2 + 1))^3, x)
```

3.408 $\int (a - b\mathbf{ArcSin}(1 - dx^2))^4 \, dx$

Optimal. Leaf size=135

$$384b^4x - \frac{192b^3\sqrt{2dx^2 - d^2x^4}\,(a - b\text{ArcSin}(1 - dx^2))}{dx} - 48b^2x\left(a - b\text{ArcSin}\left(1 - dx^2\right)\right)^2 + \frac{8b\sqrt{2dx^2 - d^2x^4}\,(a -}{d}$$

```
[Out] 384*b^4*x-48*b^2*x*(a+b*arcsin(d*x^2-1))^2+x*(a+b*arcsin(d*x^2-1))^4-192*b^
3*(a+b*arcsin(d*x^2-1))*(-d^2*x^4+2*d*x^2)^(1/2)/d/x+8*b*(a+b*arcsin(d*x^2-
1))^3*(-d^2*x^4+2*d*x^2)^(1/2)/d/x
```

Rubi [A]
time = 0.02, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = {4898, 8}

$$-\frac{192b^3\sqrt{2dx^2 - d^2x^4}\,(a - b\text{ArcSin}(1 - dx^2))}{dx} - 48b^2x\left(a - b\text{ArcSin}\left(1 - dx^2\right)\right)^2 + \frac{8b\sqrt{2dx^2 - d^2x^4}\,(a - b\text{ArcSin}(1 - dx^2))^3}{dx} + x\left(a - b\text{ArcSin}\left(1 - dx^2\right)\right)^4 + 384b^4x$$

Antiderivative was successfully verified.

```
[In] Int[(a - b*ArcSin[1 - d*x^2])^4,x]
```

```
[Out] 384*b^4*x - (192*b^3*Sqrt[2*d*x^2 - d^2*x^4]*(a - b*ArcSin[1 - d*x^2]))/(d*
x) - 48*b^2*x*(a - b*ArcSin[1 - d*x^2])^2 + (8*b*Sqrt[2*d*x^2 - d^2*x^4]*(a
 - b*ArcSin[1 - d*x^2])^3)/(d*x) + x*(a - b*ArcSin[1 - d*x^2])^4
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 4898

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
a + b*ArcSin[c + d*x^2])^n, x] + (-Dist[4*b^2*n*(n - 1), Int[(a + b*ArcSin[
c + d*x^2])^(n - 2), x], x] + Simp[2*b*n*Sqrt[-2*c*d*x^2 - d^2*x^4]*((a + b
*ArcSin[c + d*x^2])^(n - 1)/(d*x)), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^
2, 1] && GtQ[n, 1]
```

Rubi steps

$$\begin{aligned}
\int \left(a - b\sin^{-1}\left(1 - dx^2\right)\right)^4 \, dx &= \frac{8b\sqrt{2dx^2 - d^2x^4}\,\left(a - b\sin^{-1}\left(1 - dx^2\right)\right)^3}{dx} + x\left(a - b\sin^{-1}\left(1 - dx^2\right)\right)^4 - (48 \\
&= -\frac{192b^3\sqrt{2dx^2 - d^2x^4}\,\left(a - b\sin^{-1}\left(1 - dx^2\right)\right)}{dx} - 48b^2x\left(a - b\sin^{-1}\left(1 - dx^2\right.\right. \\
&= 384b^4x - \frac{192b^3\sqrt{2dx^2 - d^2x^4}\,\left(a - b\sin^{-1}\left(1 - dx^2\right)\right)}{dx} - 48b^2x\left(a - b\sin^{-1}\left(\right.\right.
\end{aligned}$$

Mathematica [A]
time = 0.08, size = 131, normalized size = 0.97

$$\frac{8b\sqrt{-dx^2(-2+dx^2)}\,(a-b\text{ArcSin}(1-dx^2))^3}{dx}+x(a-b\text{ArcSin}(1-dx^2))^4-48b^2\left(-8b^2x+\frac{4b\sqrt{-dx^2(-2+dx^2)}\,(a-b\text{ArcSin}(1-dx^2))}{dx}+x(a-b\text{ArcSin}(1-dx^2))^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a - b*ArcSin[1 - d*x^2])^4,x]
```

```
[Out] (8*b*Sqrt[-(d*x^2*(-2 + d*x^2))]*(a - b*ArcSin[1 - d*x^2])^3)/(d*x) + x*(a
- b*ArcSin[1 - d*x^2])^4 - 48*b^2*(-8*b^2*x + (4*b*Sqrt[-(d*x^2*(-2 + d*x^2
))]*(a - b*ArcSin[1 - d*x^2]))/(d*x) + x*(a - b*ArcSin[1 - d*x^2])^2)
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int \left(a+b\arcsin\left(d\,x^2-1\right)\right)^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2-1))^4,x)
```

```
[Out] int((a+b*arcsin(d*x^2-1))^4,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^4,x, algorithm="maxima")
```

```
[Out] b^4*x*arctan2(d*x^2 - 1, sqrt(-d*x^2 + 2)*sqrt(d)*x)^4 + 4*(x*arcsin(d*x^2
- 1) - 2*(d^(3/2)*x^2 - 2*sqrt(d))/(sqrt(-d*x^2 + 2)*d))*a^3*b + a^4*x + in
tegrate(2*(4*sqrt(-d*x^2 + 2)*b^4*sqrt(d)*x*arctan2(d*x^2 - 1, sqrt(-d*x^2
+ 2)*sqrt(d)*x)^3 + 2*(a*b^3*d*x^2 - 2*a*b^3)*arctan2(d*x^2 - 1, sqrt(-d*x^
2 + 2)*sqrt(d)*x)^3 + 3*(a^2*b^2*d*x^2 - 2*a^2*b^2)*arctan2(d*x^2 - 1, sqrt
(-d*x^2 + 2)*sqrt(d)*x)^2)/(d*x^2 - 2), x)
```

Fricas [A]
time = 2.61, size = 207, normalized size = 1.53

$$\frac{b^4dx^2\arcsin\left(dx^2-1\right)^4+4\,ab^3dx^2\arcsin\left(dx^2-1\right)^3+6\left(a^2b^2-8\,b^4\right)dx^2\arcsin\left(dx^2-1\right)^2+4\left(a^3b-24\,ab^3\right)dx^2\arcsin\left(dx^2-1\right)+\left(a^4-48\,a^2b^2+384\,b^4\right)dx^2+8\left(b^4\arcsin\left(dx^2-1\right)^3+3\,ab^3\arcsin\left(dx^2-1\right)^2+a^3b-24\,ab^3+3\left(a^2b^2-8\,b^4\right)\arcsin\left(dx^2-1\right)\right)\sqrt{-d^2x^4+2\,dx^2}}{dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^4,x, algorithm="fricas")
```

```
[Out] (b^4*d*x^2*arcsin(d*x^2 - 1)^4 + 4*a*b^3*d*x^2*arcsin(d*x^2 - 1)^3 + 6*(a^2
*b^2 - 8*b^4)*d*x^2*arcsin(d*x^2 - 1)^2 + 4*(a^3*b - 24*a*b^3)*d*x^2*arcsin
(d*x^2 - 1) + (a^4 - 48*a^2*b^2 + 384*b^4)*d*x^2 + 8*(b^4*arcsin(d*x^2 - 1)
^3 + 3*a*b^3*arcsin(d*x^2 - 1)^2 + a^3*b - 24*a*b^3 + 3*(a^2*b^2 - 8*b^4)*a
rcsin(d*x^2 - 1))*sqrt(-d^2*x^4 + 2*d*x^2))/(d*x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b \operatorname{asin}\left(dx^{2} - 1\right)\right)^{4}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2-1))**4,x)
```

```
[Out] Integral((a + b*asin(d*x**2 - 1))**4, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^4,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^4, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int {\left(a+b\,\mathrm{asin}\left(d\,x^2-1\right)\right)}^4 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(d*x^2 - 1))^4,x)
```

```
[Out] int((a + b*asin(d*x^2 - 1))^4, x)
```

3.409 $\int \left(a-b\mathbf{ArcSin}\left(1-dx^2\right)\right)^3\,dx$

Optimal. Leaf size=115

$$-24ab^2x-\frac{48b^3\sqrt{2dx^2-d^2x^4}}{dx}+24b^3x\text{ArcSin}\left(1-dx^2\right)+\frac{6b\sqrt{2dx^2-d^2x^4}\left(a-b\text{ArcSin}\left(1-dx^2\right)\right)^2}{dx}+x\big(a-$$

```
[Out] -24*a*b^2*x-24*b^3*x*arcsin(d*x^2-1)+x*(a+b*arcsin(d*x^2-1))^3-48*b^3*(-d^2
*x^4+2*d*x^2)^(1/2)/d/x+6*b*(a+b*arcsin(d*x^2-1))^2*(-d^2*x^4+2*d*x^2)^(1/2
)/d/x
```

Rubi [A]
time = 0.04, antiderivative size = 115, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {4898, 4924, 12, 1602}

$$\frac{6b\sqrt{2dx^2-d^2x^4}\left(a-b\text{ArcSin}\left(1-dx^2\right)\right)^2}{dx}+x\left(a-b\text{ArcSin}\left(1-dx^2\right)\right)^3-24ab^2x+24b^3x\text{ArcSin}\left(1-dx^2\right)-\frac{48b^3\sqrt{2dx^2-d^2x^4}}{dx}$$

Antiderivative was successfully verified.

```
[In] Int[(a - b*ArcSin[1 - d*x^2])^3,x]
```

```
[Out] -24*a*b^2*x - (48*b^3*Sqrt[2*d*x^2 - d^2*x^4])/(d*x) + 24*b^3*x*ArcSin[1 -
d*x^2] + (6*b*Sqrt[2*d*x^2 - d^2*x^4]*(a - b*ArcSin[1 - d*x^2])^2)/(d*x) +
x*(a - b*ArcSin[1 - d*x^2])^3
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1602

```
Int[(Pp_)*(Qq_)^(m_.), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x
]}, Simp[Coeff[Pp, x, p]*x^(p - q + 1)*(Qq^(m + 1)/((p + m*q + 1)*Coeff[Qq,
 x, q])), x] /; NeQ[p + m*q + 1, 0] && EqQ[(p + m*q + 1)*Coeff[Qq, x, q]*Pp
, Coeff[Pp, x, p]*x^(p - q)*((p - q + 1)*Qq + (m + 1)*x*D[Qq, x])]] /; Free
Q[m, x] && PolyQ[Pp, x] && PolyQ[Qq, x] && NeQ[m, -1]
```

Rule 4898

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
a + b*ArcSin[c + d*x^2])^n, x] + (-Dist[4*b^2*n*(n - 1), Int[(a + b*ArcSin[
c + d*x^2])^(n - 2), x], x] + Simp[2*b*n*Sqrt[-2*c*d*x^2 - d^2*x^4]*((a + b
*ArcSin[c + d*x^2])^(n - 1)/(d*x)), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^
2, 1] && GtQ[n, 1]
```

Rule 4924

```
Int[ArcSin[u_], x_Symbol] :> Simp[x*ArcSin[u], x] - Int[SimplifyIntegrand[x
*(D[u, x]/Sqrt[1 - u^2]), x], x] /; InverseFunctionFreeQ[u, x] &&  !Functio
nOfExponentialQ[u, x]
```

Rubi steps

$$\int \left(a-b\sin^{-1}\left(1-dx^2\right)\right)^3\,dx=\frac{6b\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2}{dx}+x\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^3-(2$$

$$=-24ab^2x+\frac{6b\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2}{dx}+x\left(a-b\sin^{-1}\left(1-\right.\right.$$

$$=-24ab^2x+24b^3x\sin^{-1}\left(1-dx^2\right)+\frac{6b\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right.}{dx}$$

$$=-24ab^2x+24b^3x\sin^{-1}\left(1-dx^2\right)+\frac{6b\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right.}{dx}$$

$$=-24ab^2x-\frac{48b^3\sqrt{2dx^2-d^2x^4}}{dx}+24b^3x\sin^{-1}\left(1-dx^2\right)+\frac{6b\sqrt{2dx^2-d^2x^4}}{}$$

Mathematica [A]
time = 0.08, size = 166, normalized size = 1.44

$$\frac{a(a^2-24b^2)\,dx^2+6b(a^2-8b^2)\sqrt{dx^2\left(2-dx^2\right)}-3b\left(a^2dx^2-8b^2dx^2+4ab\sqrt{-dx^2\left(-2+dx^2\right)}\right)\mathrm{ArcSin}(1-dx^2)+3b^2\left(adx^2+2b\sqrt{-dx^2\left(-2+dx^2\right)}\right)\mathrm{ArcSin}(1-dx^2)^2-b^3dx^2\mathrm{ArcSin}(1-dx^2)^3}{dx}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a - b*ArcSin[1 - d*x^2])^3,x]
[Out] (a*(a^2 - 24*b^2)*d*x^2 + 6*b*(a^2 - 8*b^2)*Sqrt[d*x^2*(2 - d*x^2)] - 3*b*(
a^2*d*x^2 - 8*b^2*d*x^2 + 4*a*b*Sqrt[-(d*x^2*(-2 + d*x^2))])*ArcSin[1 - d*x
^2] + 3*b^2*(a*d*x^2 + 2*b*Sqrt[-(d*x^2*(-2 + d*x^2))])*ArcSin[1 - d*x^2]^2
 - b^3*d*x^2*ArcSin[1 - d*x^2]^3)/(d*x)
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \left(a+b\arcsin\left(d\,x^2-1\right)\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2-1))^3,x)
[Out] int((a+b*arcsin(d*x^2-1))^3,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^3,x, algorithm="maxima")
```

```
[Out] b^3*x*arctan2(d*x^2 - 1, sqrt(-d*x^2 + 2)*sqrt(d)*x)^3 + 3*(x*arcsin(d*x^2
- 1) - 2*(d^(3/2)*x^2 - 2*sqrt(d))/(sqrt(-d*x^2 + 2)*d))*a^2*b + a^3*x + in
tegrate(3*(2*sqrt(-d*x^2 + 2)*b^3*sqrt(d)*x*arctan2(d*x^2 - 1, sqrt(-d*x^2
+ 2)*sqrt(d)*x)^2 + (a*b^2*d*x^2 - 2*a*b^2)*arctan2(d*x^2 - 1, sqrt(-d*x^2
+ 2)*sqrt(d)*x)^2)/(d*x^2 - 2), x)
```

Fricas [A]
time = 2.30, size = 144, normalized size = 1.25

$$\frac{b^3dx^2\arcsin\left(dx^2-1\right)^3+3\,ab^2dx^2\arcsin\left(dx^2-1\right)^2+3\left(a^2b-8\,b^3\right)dx^2\arcsin\left(dx^2-1\right)+\left(a^3-24\,ab^2\right)dx^2+6\,\sqrt{-d^2x^4+2\,dx^2}\left(b^3\arcsin\left(dx^2-1\right)^2+2\,ab^2\arcsin\left(dx^2-1\right)+a^2b-8\,b^3\right)}{dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^3,x, algorithm="fricas")
```

```
[Out] (b^3*d*x^2*arcsin(d*x^2 - 1)^3 + 3*a*b^2*d*x^2*arcsin(d*x^2 - 1)^2 + 3*(a^2
*b - 8*b^3)*d*x^2*arcsin(d*x^2 - 1) + (a^3 - 24*a*b^2)*d*x^2 + 6*sqrt(-d^2*
x^4 + 2*d*x^2)*(b^3*arcsin(d*x^2 - 1)^2 + 2*a*b^2*arcsin(d*x^2 - 1) + a^2*b
 - 8*b^3))/(d*x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int\left(a+b\operatorname{asin}\left(dx^2-1\right)\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2-1))**3,x)
```

```
[Out] Integral((a + b*asin(d*x**2 - 1))**3, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^3,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^3, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int \left(a+b\,\mathrm{asin}\left(d\,x^2-1\right)\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(d*x^2 - 1))^3,x)
```

```
[Out] int((a + b*asin(d*x^2 - 1))^3, x)
```

3.410 $\int \left(a-b\text{ArcSin}\left(1-dx^2\right)\right)^2\,dx$

Optimal. Leaf size=67

$$-8b^2x+\frac{4b\sqrt{2dx^2-d^2x^4}\,(a-b\text{ArcSin}(1-dx^2))}{dx}+x\left(a-b\text{ArcSin}\left(1-dx^2\right)\right)^2$$

```
[Out] -8*b^2*x+x*(a+b*arcsin(d*x^2-1))^2+4*b*(a+b*arcsin(d*x^2-1))*(-d^2*x^4+2*d*
x^2)^(1/2)/d/x
```

Rubi [A]
time = 0.01, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {4898, 8}

$$\frac{4b\sqrt{2dx^2-d^2x^4}\,(a-b\text{ArcSin}(1-dx^2))}{dx}+x\left(a-b\text{ArcSin}\left(1-dx^2\right)\right)^2-8b^2x$$

Antiderivative was successfully verified.

```
[In] Int[(a - b*ArcSin[1 - d*x^2])^2,x]
```

```
[Out] -8*b^2*x + (4*b*Sqrt[2*d*x^2 - d^2*x^4]*(a - b*ArcSin[1 - d*x^2]))/(d*x) +
x*(a - b*ArcSin[1 - d*x^2])^2
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 4898

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
a + b*ArcSin[c + d*x^2])^n, x] + (-Dist[4*b^2*n*(n - 1), Int[(a + b*ArcSin[
c + d*x^2])^(n - 2), x], x] + Simp[2*b*n*Sqrt[-2*c*d*x^2 - d^2*x^4]*((a + b
*ArcSin[c + d*x^2])^(n - 1)/(d*x)), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^
2, 1] && GtQ[n, 1]
```

Rubi steps

$$\begin{aligned}\int \left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2\,dx &= \frac{4b\sqrt{2dx^2-d^2x^4}\,(a-b\sin^{-1}(1-dx^2))}{dx}+x\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2-(8\\ &= -8b^2x+\frac{4b\sqrt{2dx^2-d^2x^4}\,(a-b\sin^{-1}(1-dx^2))}{dx}+x\left(a-b\sin^{-1}\left(1-dx\right.\right.\end{aligned}$$

Mathematica [A]
time = 0.02, size = 67, normalized size = 1.00

$$-8b^2x+\frac{4b\sqrt{2dx^2-d^2x^4}\,(a-b\mathrm{ArcSin}(1-dx^2))}{dx}+x\big(a-b\mathrm{ArcSin}\big(1-dx^2\big)\big)^2$$

Antiderivative was successfully verified.

```
[In] Integrate[(a - b*ArcSin[1 - d*x^2])^2,x]
[Out] -8*b^2*x + (4*b*Sqrt[2*d*x^2 - d^2*x^4]*(a - b*ArcSin[1 - d*x^2]))/(d*x) +
x*(a - b*ArcSin[1 - d*x^2])^2
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \left(a+b\arcsin\left(d\,x^2-1\right)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2-1))^2,x)
[Out] int((a+b*arcsin(d*x^2-1))^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^2,x, algorithm="maxima")
[Out] 2*(x*arcsin(d*x^2 - 1) - 2*(d^(3/2)*x^2 - 2*sqrt(d))/(sqrt(-d*x^2 + 2)*d))*
a*b + (x*arctan2(d*x^2 - 1, sqrt(-d*x^2 + 2)*sqrt(d)*x)^2 + 4*sqrt(d)*integ
rate(sqrt(-d*x^2 + 2)*x*arctan2(d*x^2 - 1, sqrt(-d*x^2 + 2)*sqrt(d)*x)/(d*x
^2 - 2), x))*b^2 + a^2*x
```

Fricas [A]
time = 2.41, size = 91, normalized size = 1.36

$$\frac{b^2dx^2\arcsin\left(dx^2-1\right)^2+2\,abdx^2\arcsin\left(dx^2-1\right)+\left(a^2-8\,b^2\right)dx^2+4\,\sqrt{-d^2x^4+2\,dx^2}\,\left(b^2\arcsin\left(dx^2-1\right)+ab\right)}{dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^2,x, algorithm="fricas")
[Out] (b^2*d*x^2*arcsin(d*x^2 - 1)^2 + 2*a*b*d*x^2*arcsin(d*x^2 - 1) + (a^2 - 8*b
^2)*d*x^2 + 4*sqrt(-d^2*x^4 + 2*d*x^2)*(b^2*arcsin(d*x^2 - 1) + a*b))/(d*x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b \operatorname{asin}\left(dx^{2} - 1\right)\right)^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2-1))**2,x)
```

```
[Out] Integral((a + b*asin(d*x**2 - 1))**2, x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^2, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int {\left(a+b\,\mathrm{asin}\left(d\,x^2-1\right)\right)}^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(d*x^2 - 1))^2,x)
```

```
[Out] int((a + b*asin(d*x^2 - 1))^2, x)
```

3.411 $\int (a - b\mathbf{ArcSin}(1 - dx^2))\, dx$

Optimal. Leaf size=45

$$ax + \frac{2b\sqrt{2dx^2 - d^2x^4}}{dx} - bx\text{ArcSin}(1 - dx^2)$$

```
[Out] a*x+b*x*arcsin(d*x^2-1)+2*b*(-d^2*x^4+2*d*x^2)^(1/2)/d/x
```

Rubi [A]
time = 0.03, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.214$, Rules used = {4924, 12, 1602}

$$ax + b(-x)\text{ArcSin}(1 - dx^2) + \frac{2b\sqrt{2dx^2 - d^2x^4}}{dx}$$

Antiderivative was successfully verified.

```
[In] Int[a - b*ArcSin[1 - d*x^2],x]
```

```
[Out] a*x + (2*b*Sqrt[2*d*x^2 - d^2*x^4])/(d*x) - b*x*ArcSin[1 - d*x^2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1602

```
Int[(Pp_)*(Qq_)^(m_.), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x
]}, Simp[Coeff[Pp, x, p]*x^(p - q + 1)*(Qq^(m + 1)/((p + m*q + 1)*Coeff[Qq,
 x, q])), x] /; NeQ[p + m*q + 1, 0] && EqQ[(p + m*q + 1)*Coeff[Qq, x, q]*Pp
, Coeff[Pp, x, p]*x^(p - q)*((p - q + 1)*Qq + (m + 1)*x*D[Qq, x])]] /; Free
Q[m, x] && PolyQ[Pp, x] && PolyQ[Qq, x] && NeQ[m, -1]
```

Rule 4924

```
Int[ArcSin[u_], x_Symbol] :> Simp[x*ArcSin[u], x] - Int[SimplifyIntegrand[x
*(D[u, x]/Sqrt[1 - u^2]), x], x] /; InverseFunctionFreeQ[u, x] &&  !Functio
nOfExponentialQ[u, x]
```

Rubi steps

$$\int \left(a-b\sin^{-1}\left(1-dx^2\right)\right)\,dx = ax-b\int \sin^{-1}\left(1-dx^2\right)\,dx$$
$$= ax-bx\sin^{-1}\left(1-dx^2\right)+b\int -\frac{2dx^2}{\sqrt{2dx^2-d^2x^4}}\,dx$$
$$= ax-bx\sin^{-1}\left(1-dx^2\right)-(2bd)\int \frac{x^2}{\sqrt{2dx^2-d^2x^4}}\,dx$$
$$= ax+\frac{2b\sqrt{2dx^2-d^2x^4}}{dx}-bx\sin^{-1}\left(1-dx^2\right)$$

Mathematica [A]
time = 0.02, size = 43, normalized size = 0.96

$$ax+\frac{2b\sqrt{-dx^2\left(-2+dx^2\right)}}{dx}-bx\text{ArcSin}\left(1-dx^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[a - b*ArcSin[1 - d*x^2],x]
[Out] a*x + (2*b*Sqrt[-(d*x^2*(-2 + d*x^2))])/(d*x) - b*x*ArcSin[1 - d*x^2]
```

Maple [A]
time = 0.01, size = 45, normalized size = 1.00

method	result	size
default	$ax+b\left(x\arcsin\left(d\,x^2-1\right)-\frac{2x\left(d\,x^2-2\right)}{\sqrt{-d^2x^4+2d\,x^2}}\right)$	45

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a+b*arcsin(d*x^2-1),x,method=_RETURNVERBOSE)
[Out] a*x+b*(x*arcsin(d*x^2-1)-2/(-d^2*x^4+2*d*x^2)^(1/2)*x*(d*x^2-2))
```

Maxima [A]
time = 0.48, size = 45, normalized size = 1.00

$$\left(x\arcsin\left(dx^2-1\right)-\frac{2\left(d^{\frac{3}{2}}x^2-2\sqrt{d}\right)}{\sqrt{-dx^2+2}\,d}\right)b+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(d*x^2-1),x, algorithm="maxima")
```

```
[Out] (x*arcsin(d*x^2 - 1) - 2*(d^(3/2)*x^2 - 2*sqrt(d))/(sqrt(-d*x^2 + 2)*d))*b
+ a*x
```

Fricas [A]
time = 2.41, size = 48, normalized size = 1.07

$$\frac{bdx^2 \arcsin\left(dx^2-1\right)+adx^2+2\sqrt{-d^2x^4+2\,dx^2}\,b}{dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(d*x^2-1),x, algorithm="fricas")
[Out] (b*d*x^2*arcsin(d*x^2 - 1) + a*d*x^2 + 2*sqrt(-d^2*x^4 + 2*d*x^2)*b)/(d*x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a+b\operatorname{asin}\left(dx^2-1\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*asin(d*x**2-1),x)
[Out] Integral(a + b*asin(d*x**2 - 1), x)
```

Giac [A]
time = 0.41, size = 50, normalized size = 1.11

$$\left(x\arcsin\left(dx^2-1\right)-\frac{2\sqrt{2}\,\mathrm{sgn}(x)}{\sqrt{d}}+\frac{2\sqrt{-d^2x^2+2\,d}}{d\mathrm{sgn}\left(x\right)}\right)b+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*arcsin(d*x^2-1),x, algorithm="giac")
[Out] (x*arcsin(d*x^2 - 1) - 2*sqrt(2)*sgn(x)/sqrt(d) + 2*sqrt(-d^2*x^2 + 2*d)/(d
*sgn(x)))*b + a*x
```

Mupad [B]
time = 0.45, size = 39, normalized size = 0.87

$$a\,x+b\,x\,\mathrm{asin}\left(d\,x^2-1\right)+\frac{2\,b\,\sqrt{1-{\left(d\,x^2-1\right)}^2}}{d\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a + b*asin(d*x^2 - 1),x)
[Out] a*x + b*x*asin(d*x^2 - 1) + (2*b*(1 - (d*x^2 - 1)^2)^(1/2))/(d*x)
```

3.412 $\int \frac{1}{a-b\mathbf{ArcSin}(1-dx^2)}\,dx$

Optimal. Leaf size=168

$$\frac{x\text{CosIntegral}\left(-\frac{a-b\text{ArcSin}(1-dx^2)}{2b}\right)\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)}{2b\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)\right)}-\frac{x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{a}{2b}-\frac{1}{2}\text{ArcSin}(1-dx\right.}{2b\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-\right.\right.\right.}$$

```
[Out] -1/2*x*Si(1/2*a/b+1/2*arcsin(d*x^2-1))*(cos(1/2*a/b)-sin(1/2*a/b))/b/(cos(1
/2*arcsin(d*x^2-1))+sin(1/2*arcsin(d*x^2-1)))+1/2*x*Ci(1/2*(-a-b*arcsin(d*x
^2-1))/b)*(cos(1/2*a/b)+sin(1/2*a/b))/b/(cos(1/2*arcsin(d*x^2-1))+sin(1/2*a
rcsin(d*x^2-1)))
```

Rubi [A]
time = 0.02, antiderivative size = 168, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.062$, Rules used = {4900}

$$\frac{x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{CosIntegral}\left(-\frac{a-b\text{ArcSin}(1-dx^2)}{2b}\right)}{2b\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)\right)}-\frac{x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{a}{2b}-\frac{1}{2}\text{ArcSin}(1-dx^2)\right)}{2b\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a - b*ArcSin[1 - d*x^2])^(-1),x]
```

```
[Out] (x*CosIntegral[-1/2*(a - b*ArcSin[1 - d*x^2])/b]*(Cos[a/(2*b)] + Sin[a/(2*b
)]))/(2*b*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])) - (x*(Cos[
a/(2*b)] - Sin[a/(2*b)])*SinIntegral[a/(2*b) - ArcSin[1 - d*x^2]/2])/(2*b*(
Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2]))
```

Rule 4900

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(-1), x_Symbol] :> Simp[(-x
)*(c*Cos[a/(2*b)] - Sin[a/(2*b)])*(CosIntegral[(c/(2*b))*(a + b*ArcSin[c +
d*x^2])]/(2*b*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2]))), x]
 - Simp[x*(c*Cos[a/(2*b)] + Sin[a/(2*b)])*(SinIntegral[(c/(2*b))*(a + b*Arc
Sin[c + d*x^2])]/(2*b*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2
]))), x] /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \frac{1}{a-b\sin^{-1}\left(1-dx^2\right)}\,dx=\frac{x\text{Ci}\left(-\frac{a-b\sin^{-1}(1-dx^2)}{2b}\right)\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)}{2b\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)\right)}-\frac{x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\right.\right.}{2b\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-\right.\right.\right.}$$

Mathematica [A]
time = 0.14, size = 130, normalized size = 0.77

$$\frac{\left(\cos\left(\frac{1}{2}\text{ArcSin}(1-dx^2)\right)-\sin\left(\frac{1}{2}\text{ArcSin}(1-dx^2)\right)\right)\left(\text{CosIntegral}\left(\frac{1}{2}\left(-\frac{a}{b}+\text{ArcSin}(1-dx^2)\right)\right)\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)+\left(-\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{a-b\text{ArcSin}(1-dx^2)}{2b}\right)\right)}{2bdx}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a - b*ArcSin[1 - d*x^2])^(-1),x]
[Out] ((Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])*(CosIntegral[(-(a/b)
 + ArcSin[1 - d*x^2])/2]*(Cos[a/(2*b)] + Sin[a/(2*b)]) + (-Cos[a/(2*b)] + S
in[a/(2*b)])*SinIntegral[(a - b*ArcSin[1 - d*x^2])/(2*b)]))/(2*b*d*x)
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{1}{a+b\arcsin\left(d\,x^2-1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2-1)),x)
[Out] int(1/(a+b*arcsin(d*x^2-1)),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1)),x, algorithm="maxima")
[Out] integrate(1/(b*arcsin(d*x^2 - 1) + a), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1)),x, algorithm="fricas")
[Out] integral(1/(b*arcsin(d*x^2 - 1) + a), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{a+b\,\text{asin}\left(dx^2-1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2-1)),x)
```

```
[Out] Integral(1/(a + b*asin(d*x**2 - 1)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1)),x, algorithm="giac")
```

```
[Out] integrate(1/(b*arcsin(d*x^2 - 1) + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{a+b\,\mathrm{asin}\left(d\,x^2-1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(d*x^2 - 1)),x)
```

```
[Out] int(1/(a + b*asin(d*x^2 - 1)), x)
```

3.413 $\int \frac{1}{\left(a-b\mathbf{ArcSin}(1-dx^2)\right)^2}\,dx$

Optimal. Leaf size=216

$$-\frac{\sqrt{2dx^2-d^2x^4}}{2bdx\left(a-b\text{ArcSin}\left(1-dx^2\right)\right)}-\frac{x\text{CosIntegral}\left(-\frac{a-b\text{ArcSin}(1-dx^2)}{2b}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)}{4b^2\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)\right)}-\frac{x\left(\cos\left(\frac{a}{2b}\right)+\right.}{4b^2\left(\cos\left(\frac{1}{2}\text{ArcSi}\right.\right.}$$

```
[Out] -1/4*x*Ci(1/2*(-a-b*arcsin(d*x^2-1))/b)*(cos(1/2*a/b)-sin(1/2*a/b))/b^2/(co
s(1/2*arcsin(d*x^2-1))+sin(1/2*arcsin(d*x^2-1)))-1/4*x*Si(1/2*a/b+1/2*arcsi
n(d*x^2-1))*(cos(1/2*a/b)+sin(1/2*a/b))/b^2/(cos(1/2*arcsin(d*x^2-1))+sin(1
/2*arcsin(d*x^2-1)))-1/2*(-d^2*x^4+2*d*x^2)^(1/2)/b/d/x/(a+b*arcsin(d*x^2-1
))
```

Rubi [A]
time = 0.02, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.062$, Rules used = {4909}

$$-\frac{x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{CosIntegral}\left(-\frac{a-b\text{ArcSin}(1-dx^2)}{2b}\right)}{4b^2\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)\right)}-\frac{x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{a}{2b}-\frac{1}{2}\text{ArcSin}(1-dx^2)\right)}{4b^2\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)\right)}-\frac{\sqrt{2dx^2-d^2x^4}}{2bdx\left(a-b\text{ArcSin}\left(1-dx^2\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a - b*ArcSin[1 - d*x^2])^(-2),x]
```

```
[Out] -1/2*Sqrt[2*d*x^2 - d^2*x^4]/(b*d*x*(a - b*ArcSin[1 - d*x^2])) - (x*CosInte
gral[-1/2*(a - b*ArcSin[1 - d*x^2])/b]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(4*b^
2*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])) - (x*(Cos[a/(2*b)]
 + Sin[a/(2*b)])*SinIntegral[a/(2*b) - ArcSin[1 - d*x^2]/2])/(4*b^2*(Cos[Ar
cSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2]))
```

Rule 4909

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(-2), x_Symbol] :> Simp[-Sq
rt[-2*c*d*x^2 - d^2*x^4]/(2*b*d*x*(a + b*ArcSin[c + d*x^2])), x] + (-Simp[x
*(Cos[a/(2*b)] + c*Sin[a/(2*b)])*(CosIntegral[(c/(2*b))*(a + b*ArcSin[c + d
*x^2])]/(4*b^2*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2]))), x
] + Simp[x*(Cos[a/(2*b)] - c*Sin[a/(2*b)])*(SinIntegral[(c/(2*b))*(a + b*Ar
cSin[c + d*x^2])]/(4*b^2*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2
]/2]))), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \frac{1}{\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2}\,dx=-\frac{\sqrt{2dx^2-d^2x^4}}{2bdx\left(a-b\sin^{-1}\left(1-dx^2\right)\right)}-\frac{x\text{Ci}\left(-\frac{a-b\sin^{-1}(1-dx^2)}{2b}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\right.}{4b^2\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\left(\right.\right.\right.}$$

Mathematica [A]
time = 0.26, size = 183, normalized size = 0.85

$$\frac{2b\sqrt{dx^2(2-dx^2)}+(a-b\text{ArcSin}(1-dx^2))\left(\cos\left(\frac{1}{2}\text{ArcSin}(1-dx^2)\right)-\sin\left(\frac{1}{2}\text{ArcSin}(1-dx^2)\right)\right)\left(\text{CosIntegral}\left(\frac{1}{2}\left(-\frac{a}{b}+\text{ArcSin}(1-dx^2)\right)\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)+\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{a-b\text{ArcSin}(1-dx^2)}{2b}\right)\right)}{4b^2dx\left(-a+b\text{ArcSin}\left(1-dx^2\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a - b*ArcSin[1 - d*x^2])^(-2),x]
```

```
[Out] (2*b*Sqrt[d*x^2*(2 - d*x^2)] + (a - b*ArcSin[1 - d*x^2])*(Cos[ArcSin[1 - d*
x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])*(CosIntegral[(-(a/b) + ArcSin[1 - d*x^2
])/2]*(Cos[a/(2*b)] - Sin[a/(2*b)]) + (Cos[a/(2*b)] + Sin[a/(2*b)])*SinInte
gral[(a - b*ArcSin[1 - d*x^2])/(2*b)]))/(4*b^2*d*x*(-a + b*ArcSin[1 - d*x^2
]))
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\arcsin\left(d\,x^{2}-1\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2-1))^2,x)
```

```
[Out] int(1/(a+b*arcsin(d*x^2-1))^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^2,x, algorithm="maxima")
```

```
[Out] 1/2*(2*(b^2*d*arctan2(d*x^2 - 1, sqrt(-d*x^2 + 2)*sqrt(d)*x) + a*b*d)*sqrt(
d)*integrate(1/2*sqrt(-d*x^2 + 2)*x/(a*b*d*x^2 - 2*a*b + (b^2*d*x^2 - 2*b^2
)*arctan2(d*x^2 - 1, sqrt(-d*x^2 + 2)*sqrt(d)*x)), x) - sqrt(-d*x^2 + 2)*sq
rt(d))/(b^2*d*arctan2(d*x^2 - 1, sqrt(-d*x^2 + 2)*sqrt(d)*x) + a*b*d)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(b^2*arcsin(d*x^2 - 1)^2 + 2*a*b*arcsin(d*x^2 - 1) + a^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a + b\operatorname{asin}(dx^2 - 1))^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2-1))**2,x)
[Out] Integral((a + b*asin(d*x**2 - 1))**(-2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^2,x, algorithm="giac")
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^(-2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{1}{(a + b\operatorname{asin}(d\,x^2 - 1))^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(d*x^2 - 1))^2,x)
[Out] int(1/(a + b*asin(d*x^2 - 1))^2, x)
```

3.414 $\int \frac{1}{\left(a-b\text{ArcSin}(1-dx^2)\right)^3}\,dx$

Optimal. Leaf size=240

$$-\frac{\sqrt{2dx^2-d^2x^4}}{4bdx\left(a-b\text{ArcSin}\left(1-dx^2\right)\right)^2}+\frac{x}{8b^2\left(a-b\text{ArcSin}\left(1-dx^2\right)\right)}-\frac{x\text{CosIntegral}\left(-\frac{a-b\text{ArcSin}(1-dx^2)}{2b}\right)\left(\cos\left(\frac{a}{2}\right.\right.}{16b^3\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcS}\right.\right.}$$

```
[Out] 1/8*x/b^2/(a+b*arcsin(d*x^2-1))+1/16*x*Si(1/2*a/b+1/2*arcsin(d*x^2-1))*(cos
(1/2*a/b)-sin(1/2*a/b))/b^3/(cos(1/2*arcsin(d*x^2-1))+sin(1/2*arcsin(d*x^2-
1)))-1/16*x*Ci(1/2*(-a-b*arcsin(d*x^2-1))/b)*(cos(1/2*a/b)+sin(1/2*a/b))/b^
3/(cos(1/2*arcsin(d*x^2-1))+sin(1/2*arcsin(d*x^2-1)))-1/4*(-d^2*x^4+2*d*x^2
)^(1/2)/b/d/x/(a+b*arcsin(d*x^2-1))^2
```

Rubi [A]
time = 0.03, antiderivative size = 240, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = {4912, 4900}

$$-\frac{x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{CosIntegral}\left(-\frac{a-b\text{ArcSin}(1-dx^2)}{2b}\right)}{16b^3\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)\right)}+\frac{x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{a}{2b}-\frac{1}{2}\text{ArcSin}(1-dx^2)\right)}{16b^3\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)\right)}+\frac{x}{8b^2\left(a-b\text{ArcSin}\left(1-dx^2\right)\right)}-\frac{\sqrt{2dx^2-d^2x^4}}{4bdx\left(a-b\text{ArcSin}\left(1-dx^2\right)\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a - b*ArcSin[1 - d*x^2])^(-3),x]
```

```
[Out] -1/4*Sqrt[2*d*x^2 - d^2*x^4]/(b*d*x*(a - b*ArcSin[1 - d*x^2])^2) + x/(8*b^2
*(a - b*ArcSin[1 - d*x^2])) - (x*CosIntegral[-1/2*(a - b*ArcSin[1 - d*x^2])
/b]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(16*b^3*(Cos[ArcSin[1 - d*x^2]/2] - Sin[
ArcSin[1 - d*x^2]/2])) + (x*(Cos[a/(2*b)] - Sin[a/(2*b)])*SinIntegral[a/(2*
b) - ArcSin[1 - d*x^2]/2])/(16*b^3*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1
 - d*x^2]/2]))
```

Rule 4900

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(-1), x_Symbol] :> Simp[(-x
)*(c*Cos[a/(2*b)] - Sin[a/(2*b)])*(CosIntegral[(c/(2*b))*(a + b*ArcSin[c +
d*x^2])]/(2*b*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2]))), x]
 - Simp[x*(c*Cos[a/(2*b)] + Sin[a/(2*b)])*(SinIntegral[(c/(2*b))*(a + b*Arc
Sin[c + d*x^2])]/(2*b*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2
]))), x] /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rule 4912

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
(a + b*ArcSin[c + d*x^2])^(n + 2)/(4*b^2*(n + 1)*(n + 2))), x] + (-Dist[1/(
4*b^2*(n + 1)*(n + 2)), Int[(a + b*ArcSin[c + d*x^2])^(n + 2), x], x] + Sim
```

```
p[Sqrt[-2*c*d*x^2 - d^2*x^4]*((a + b*ArcSin[c + d*x^2])^(n + 1)/(2*b*d*(n +
 1)*x)), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1] && LtQ[n, -1] && NeQ[
n, -2]
```

Rubi steps

$$\int \frac{1}{\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^3}\,dx = -\frac{\sqrt{2dx^2-d^2x^4}}{4bdx\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2}+\frac{x}{8b^2\left(a-b\sin^{-1}\left(1-dx^2\right)\right)}-\frac{\int \frac{1}{a-b\sin^{-1}(1-}}{8b^2}$$

$$= -\frac{\sqrt{2dx^2-d^2x^4}}{4bdx\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^2}+\frac{x}{8b^2\left(a-b\sin^{-1}\left(1-dx^2\right)\right)}-\frac{x\mathrm{Ci}\left(-\right.}{16b^3\left(\cos\left(\frac{1}{2}\right.\right.}$$

Mathematica [A]
time = 0.36, size = 195, normalized size = 0.81

$$-\frac{\frac{4b^2\sqrt{-dx^2\left(-2+dx^2\right)}}{d\left(a-b\text{ArcSin}\left(1-dx^2\right)\right)^2}-\frac{2bx^2}{a-b\text{ArcSin}\left(1-dx^2\right)}+\frac{\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)\right)\left(\text{CosIntegral}\left(\frac{1}{2}\left(-\frac{a}{b}+\text{ArcSin}\left(1-dx^2\right)\right)\right)\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)+\left(-\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)\text{Si}\left(\frac{a-b\text{ArcSin}\left(1-dx^2\right)}{2b}\right)\right)}{d}}{16b^3x}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a - b*ArcSin[1 - d*x^2])^(-3),x]
```

```
[Out] -1/16*((4*b^2*Sqrt[-(d*x^2*(-2 + d*x^2))])/(d*(a - b*ArcSin[1 - d*x^2])^2)
- (2*b*x^2)/(a - b*ArcSin[1 - d*x^2]) + ((Cos[ArcSin[1 - d*x^2]/2] - Sin[Ar
cSin[1 - d*x^2]/2])*(CosIntegral[(-(a/b) + ArcSin[1 - d*x^2])/2]*(Cos[a/(2*
b)] + Sin[a/(2*b)]) + (-Cos[a/(2*b)] + Sin[a/(2*b)])*SinIntegral[(a - b*Arc
Sin[1 - d*x^2])/(2*b)]))/d)/(b^3*x)
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\arcsin\left(d\,x^2-1\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2-1))^3,x)
```

```
[Out] int(1/(a+b*arcsin(d*x^2-1))^3,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^3,x, algorithm="maxima")
```

```
[Out] 1/8*(b*d*x*arctan2(d*x^2 - 1, sqrt(-d*x^2 + 2)*sqrt(d)*x) + a*d*x - 2*sqrt(
-d*x^2 + 2)*b*sqrt(d) - 8*(b^4*d*arctan2(d*x^2 - 1, sqrt(-d*x^2 + 2)*sqrt(d
)*x)^2 + 2*a*b^3*d*arctan2(d*x^2 - 1, sqrt(-d*x^2 + 2)*sqrt(d)*x) + a^2*b^2
*d)*integrate(1/8/(b^3*arctan2(d*x^2 - 1, sqrt(-d*x^2 + 2)*sqrt(d)*x) + a*b
^2), x))/(b^4*d*arctan2(d*x^2 - 1, sqrt(-d*x^2 + 2)*sqrt(d)*x)^2 + 2*a*b^3*
d*arctan2(d*x^2 - 1, sqrt(-d*x^2 + 2)*sqrt(d)*x) + a^2*b^2*d)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^3,x, algorithm="fricas")
```

```
[Out] integral(1/(b^3*arcsin(d*x^2 - 1)^3 + 3*a*b^2*arcsin(d*x^2 - 1)^2 + 3*a^2*b
*arcsin(d*x^2 - 1) + a^3), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b \operatorname{asin}\left(dx^{2} - 1\right)\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2-1))**3,x)
```

```
[Out] Integral((a + b*asin(d*x**2 - 1))**(-3), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^3,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^(-3), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{1}{{\left(a+b\,\mathrm{asin}\left(d\,x^2-1\right)\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(d*x^2 - 1))^3,x)
```

```
[Out] int(1/(a + b*asin(d*x^2 - 1))^3, x)
```

3.415 $\int \textbf{ArcSin}(1+x^2)^2\,dx$

Optimal. Leaf size=40

$$-8x+\frac{4\sqrt{-2x^2-x^4}\,\text{ArcSin}(1+x^2)}{x}+x\text{ArcSin}(1+x^2)^2$$

```
[Out] -8*x+x*arcsin(x^2+1)^2+4*arcsin(x^2+1)*(-x^4-2*x^2)^(1/2)/x
```

Rubi [A]
time = 0.00, antiderivative size = 40, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {4898, 8}

$$x\text{ArcSin}\left(x^2+1\right)^2+\frac{4\sqrt{-x^4-2x^2}\,\text{ArcSin}(x^2+1)}{x}-8x$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[1 + x^2]^2,x]
```

```
[Out] -8*x + (4*Sqrt[-2*x^2 - x^4]*ArcSin[1 + x^2])/x + x*ArcSin[1 + x^2]^2
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 4898

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
a + b*ArcSin[c + d*x^2])^n, x] + (-Dist[4*b^2*n*(n - 1), Int[(a + b*ArcSin[
c + d*x^2])^(n - 2), x], x] + Simp[2*b*n*Sqrt[-2*c*d*x^2 - d^2*x^4]*((a + b
*ArcSin[c + d*x^2])^(n - 1)/(d*x)), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^
2, 1] && GtQ[n, 1]
```

Rubi steps

$$\begin{aligned}\int \sin^{-1}\left(1+x^2\right)^2\,dx &= \frac{4\sqrt{-2x^2-x^4}\,\sin^{-1}\left(1+x^2\right)}{x}+x\sin^{-1}\left(1+x^2\right)^2-8\int 1\,dx\\ &= -8x+\frac{4\sqrt{-2x^2-x^4}\,\sin^{-1}\left(1+x^2\right)}{x}+x\sin^{-1}\left(1+x^2\right)^2\end{aligned}$$

Mathematica [A]
time = 0.01, size = 40, normalized size = 1.00

$$-8x+\frac{4\sqrt{-2x^2-x^4}\,\text{ArcSin}(1+x^2)}{x}+x\text{ArcSin}(1+x^2)^2$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[1 + x^2]^2,x]
```

```
[Out] -8*x + (4*Sqrt[-2*x^2 - x^4]*ArcSin[1 + x^2])/x + x*ArcSin[1 + x^2]^2
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \arcsin\left(x^2+1\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(x^2+1)^2,x)
```

```
[Out] int(arcsin(x^2+1)^2,x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^2+1)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 sign: argument cannot be imaginary; found sqrt((-_SAGE_VAR_x^2)-2)
```

Fricas [A]
time = 3.18, size = 39, normalized size = 0.98

$$x\arctan\left(\frac{\sqrt{-x^4-2\,x^2}\,(x^2+1)}{x^4+2\,x^2}\right)^2-8\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^2+1)^2,x, algorithm="fricas")
```

```
[Out] x*arctan(sqrt(-x^4 - 2*x^2)*(x^2 + 1)/(x^4 + 2*x^2))^2 - 8*x
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \operatorname{asin}^2\left(x^2+1\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(x**2+1)**2,x)
```

```
[Out] Integral(asin(x**2 + 1)**2, x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^2+1)^2,x, algorithm="giac")
[Out] integrate(arcsin(x^2 + 1)^2, x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.02

$$\int \operatorname{asin}\left(x^2+1\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(x^2 + 1)^2,x)
[Out] int(asin(x^2 + 1)^2, x)
```

3.416 $\int \text{ArcSin}(1-x^2)^2 \, dx$

Optimal. Leaf size=44

$$-8x-\frac{4\sqrt{2x^2-x^4}\,\text{ArcSin}(1-x^2)}{x}+x\text{ArcSin}\left(1-x^2\right)^2$$

```
[Out] -8*x+x*arcsin(x^2-1)^2+4*arcsin(x^2-1)*(-x^4+2*x^2)^(1/2)/x
```

Rubi [A]
time = 0.01, antiderivative size = 44, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {4898, 8}

$$x\text{ArcSin}\left(1-x^2\right)^2-\frac{4\sqrt{2x^2-x^4}\,\text{ArcSin}(1-x^2)}{x}-8x$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[1 - x^2]^2,x]
```

```
[Out] -8*x - (4*Sqrt[2*x^2 - x^4]*ArcSin[1 - x^2])/x + x*ArcSin[1 - x^2]^2
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 4898

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
a + b*ArcSin[c + d*x^2])^n, x] + (-Dist[4*b^2*n*(n - 1), Int[(a + b*ArcSin[
c + d*x^2])^(n - 2), x], x] + Simp[2*b*n*Sqrt[-2*c*d*x^2 - d^2*x^4]*((a + b
*ArcSin[c + d*x^2])^(n - 1)/(d*x)), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^
2, 1] && GtQ[n, 1]
```

Rubi steps

$$\begin{aligned}\int \sin^{-1}\left(1-x^2\right)^2\,dx&=-\frac{4\sqrt{2x^2-x^4}\,\sin^{-1}\left(1-x^2\right)}{x}+x\sin^{-1}\left(1-x^2\right)^2-8\int 1\,dx\\&=-8x-\frac{4\sqrt{2x^2-x^4}\,\sin^{-1}\left(1-x^2\right)}{x}+x\sin^{-1}\left(1-x^2\right)^2\end{aligned}$$

Mathematica [A]
time = 0.01, size = 44, normalized size = 1.00

$$-8x-\frac{4\sqrt{2x^2-x^4}\,\text{ArcSin}(1-x^2)}{x}+x\text{ArcSin}\left(1-x^2\right)^2$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[1 - x^2]^2,x]
```

```
[Out] -8*x - (4*Sqrt[2*x^2 - x^4]*ArcSin[1 - x^2])/x + x*ArcSin[1 - x^2]^2
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \arcsin\left(x^{2}-1\right)^{2}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(x^2-1)^2,x)
```

```
[Out] int(arcsin(x^2-1)^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^2-1)^2,x, algorithm="maxima")
```

```
[Out] x*arctan2(x^2 - 1, sqrt(-x^2 + 2)*x)^2 + 4*integrate(sqrt(-x^2 + 2)*x*arcta
n2(x^2 - 1, sqrt(-x^2 + 2)*x)/(x^2 - 2), x)
```

Fricas [A]
time = 3.25, size = 43, normalized size = 0.98

$$\frac{x^{2}\arcsin\left(x^{2}-1\right)^{2}-8\,x^{2}+4\,\sqrt{-x^{4}+2\,x^{2}}\,\arcsin\left(x^{2}-1\right)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^2-1)^2,x, algorithm="fricas")
```

```
[Out] (x^2*arcsin(x^2 - 1)^2 - 8*x^2 + 4*sqrt(-x^4 + 2*x^2)*arcsin(x^2 - 1))/x
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \operatorname{asin}^{2}\left(x^{2}-1\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(x**2-1)**2,x)
```

```
[Out] Integral(asin(x**2 - 1)**2, x)
```

Giac [A]
time = 0.41, size = 58, normalized size = 1.32

$$x\arcsin\left(x^2-1\right)^2+2\left(\sqrt{2}\,\pi-4\sqrt{2}\right)\mathrm{sgn}(x)+\frac{4\left(\sqrt{-x^2+2}\,\arcsin\left(x^2-1\right)+2\sqrt{2}-2\,|x|\right)}{\mathrm{sgn}\left(x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x^2-1)^2,x, algorithm="giac")
```

```
[Out] x*arcsin(x^2 - 1)^2 + 2*(sqrt(2)*pi - 4*sqrt(2))*sgn(x) + 4*(sqrt(-x^2 + 2)
*arcsin(x^2 - 1) + 2*sqrt(2) - 2*abs(x))/sgn(x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \mathrm{asin}\left(x^2-1\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(x^2 - 1)^2,x)
```

```
[Out] int(asin(x^2 - 1)^2, x)
```

3.417 $\int \left(a+b\text{ArcSin}(1+dx^2)\right)^{5/2} \, dx$

Optimal. Leaf size=277

$$-15b^2x\sqrt{a+b\text{ArcSin}\left(1+dx^2\right)}+\frac{5b\sqrt{-2dx^2-d^2x^4}\left(a+b\text{ArcSin}(1+dx^2)\right)^{3/2}}{dx}+x\left(a+b\text{ArcSin}\left(1+dx^2\right)\right)^5$$

```
[Out] x*(a+b*arcsin(d*x^2+1))^(5/2)-15*x*FresnelS((1/b)^(1/2)*(a+b*arcsin(d*x^2+1
))^(1/2)/Pi^(1/2))*(cos(1/2*a/b)-sin(1/2*a/b))*Pi^(1/2)/(1/b)^(5/2)/(cos(1/
2*arcsin(d*x^2+1))-sin(1/2*arcsin(d*x^2+1)))+15*x*FresnelC((1/b)^(1/2)*(a+b
*arcsin(d*x^2+1))^(1/2)/Pi^(1/2))*(cos(1/2*a/b)+sin(1/2*a/b))*Pi^(1/2)/(1/b
)^(5/2)/(cos(1/2*arcsin(d*x^2+1))-sin(1/2*arcsin(d*x^2+1)))+5*b*(a+b*arcsin
(d*x^2+1))^(3/2)*(-d^2*x^4-2*d*x^2)^(1/2)/d/x-15*b^2*x*(a+b*arcsin(d*x^2+1)
)^(1/2)
```

Rubi [A]
time = 0.07, antiderivative size = 277, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = {4898, 4895}

$$-15b^2x\sqrt{a+b\text{ArcSin}\left(dx^2+1\right)}+\frac{5b\sqrt{-d^2x^4-2dx^2}\left(a+b\text{ArcSin}(dx^2+1)\right)^{3/2}}{dx}+\frac{15\sqrt{\pi}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}\left(dx^2+1\right)}}{\sqrt{\pi}}\right)}{\left(\frac{1}{b}\right)^{5/2}\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)\right)}-\frac{15\sqrt{\pi}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}\left(dx^2+1\right)}}{\sqrt{\pi}}\right)}{\left(\frac{1}{b}\right)^{5/2}\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)\right)}+x\left(a+b\text{ArcSin}\left(dx^2+1\right)\right)^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[1 + d*x^2])^(5/2),x]
```

```
[Out] -15*b^2*x*Sqrt[a + b*ArcSin[1 + d*x^2]] + (5*b*Sqrt[-2*d*x^2 - d^2*x^4]*(a
+ b*ArcSin[1 + d*x^2])^(3/2))/(d*x) + x*(a + b*ArcSin[1 + d*x^2])^(5/2) - (
15*Sqrt[Pi]*x*FresnelS[(Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi
]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/((b^(-1))^(5/2)*(Cos[ArcSin[1 + d*x^2]/2]
 - Sin[ArcSin[1 + d*x^2]/2])) + (15*Sqrt[Pi]*x*FresnelC[(Sqrt[b^(-1)]*Sqrt[
a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/((b^(-1)
)^(5/2)*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]))
```

Rule 4895

```
Int[Sqrt[(a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.)], x_Symbol] :> Simp[x*Sq
rt[a + b*ArcSin[c + d*x^2]], x] + (-Simp[Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[a
/(2*b)])*(FresnelC[Sqrt[c/(Pi*b)]*Sqrt[a + b*ArcSin[c + d*x^2]]]/(Sqrt[c/b]
*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2]))), x] + Simp[Sqrt[
Pi]*x*(Cos[a/(2*b)] - c*Sin[a/(2*b)])*(FresnelS[Sqrt[c/(Pi*b)]*Sqrt[a + b*A
rcSin[c + d*x^2]]]/(Sqrt[c/b]*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c +
```

```
d*x^2]/2]))), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rule 4898

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
a + b*ArcSin[c + d*x^2])^n, x] + (-Dist[4*b^2*n*(n - 1), Int[(a + b*ArcSin[
c + d*x^2])^(n - 2), x], x] + Simp[2*b*n*Sqrt[-2*c*d*x^2 - d^2*x^4]*((a + b
*ArcSin[c + d*x^2])^(n - 1)/(d*x)), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^
2, 1] && GtQ[n, 1]
```

Rubi steps

$$\int \left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{5/2}\,dx=\frac{5b\sqrt{-2dx^2-d^2x^4}\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{3/2}}{dx}+x\big(a+b\sin^{-1}\left(1+dx^2\right)\big)$$

$$=-15b^2x\sqrt{a+b\sin^{-1}\left(1+dx^2\right)}+\frac{5b\sqrt{-2dx^2-d^2x^4}\left(a+b\sin^{-1}\left(1+d\right.\right.}{dx}$$

Mathematica [**A**]
time = 0.19, size = 269, normalized size = 0.97

$$\frac{5b\sqrt{-dx^2\left(2+dx^2\right)}\left(a+b\text{ArcSin}(1+dx^2)\right)^{3/2}}{dx}+x\big(a+b\text{ArcSin}\big(1+dx^2\big)\big)^{5/2}-\frac{15x\left(\sqrt{\pi}\,S\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}\left(1+dx^2\right)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)-\sqrt{\pi}\,\text{FresnelC}\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}\left(1+dx^2\right)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)+\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}\left(1+dx^2\right)}\left(\cos\left(\frac{1}{2}\text{ArcSin}(1+dx^2)\right)-\sin\left(\frac{1}{2}\text{ArcSin}(1+dx^2)\right)\right)\right)}{\left(\frac{1}{b}\right)^{5/2}\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[1 + d*x^2])^(5/2),x]
```

```
[Out] (5*b*Sqrt[-(d*x^2*(2 + d*x^2))]*(a + b*ArcSin[1 + d*x^2])^(3/2))/(d*x) + x*
(a + b*ArcSin[1 + d*x^2])^(5/2) - (15*x*(Sqrt[Pi]*FresnelS[(Sqrt[b^(-1)]*Sq
rt[a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)]) - Sqrt
[Pi]*FresnelC[(Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a
/(2*b)] + Sin[a/(2*b)]) + Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[1 + d*x^2]]*(Cos[A
rcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])))/((b^(-1))^(5/2)*(Cos[ArcS
in[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]))
```

Maple [**F**]
time = 0.06, size = 0, normalized size = 0.00

$$\int \left(a+b\arcsin\left(d\,x^2+1\right)\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+1))^(5/2),x)
```

```
[Out] int((a+b*arcsin(d*x^2+1))^(5/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 sign: argument cannot be imaginary; found sqrt((-_SAGE_VAR_d*_SAGE_VAR_x^2
)-2)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b \operatorname{asin}\left(dx^2 + 1\right)\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+1))**(5/2),x)
```

```
[Out] Integral((a + b*asin(d*x**2 + 1))**(5/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + 1) + a)^(5/2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a+b\,\mathrm{asin}\left(d\,x^2+1\right)\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(d*x^2 + 1))^(5/2),x)
[Out] int((a + b*asin(d*x^2 + 1))^(5/2), x)
```

3.418 $\int \left(a+b\text{ArcSin}\left(1+dx^2\right)\right)^{3/2}\,dx$

Optimal. Leaf size=247

$$\frac{3b\sqrt{-2dx^2-d^2x^4}\,\sqrt{a+b\text{ArcSin}\left(1+dx^2\right)}}{dx}+x\left(a+b\text{ArcSin}\left(1+dx^2\right)\right)^{3/2}+\frac{3b^{3/2}\sqrt{\pi}\,x\text{FresnelC}\left(\frac{\sqrt{a+b\text{Ar}}}{\sqrt{}}\right.}{\cos\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right.\right.}$$

```
[Out] x*(a+b*arcsin(d*x^2+1))^(3/2)+3*b^(3/2)*x*FresnelC((a+b*arcsin(d*x^2+1))^(1
/2)/b^(1/2)/Pi^(1/2))*(cos(1/2*a/b)-sin(1/2*a/b))*Pi^(1/2)/(cos(1/2*arcsin(
d*x^2+1))-sin(1/2*arcsin(d*x^2+1)))+3*b^(3/2)*x*FresnelS((a+b*arcsin(d*x^2+
1))^(1/2)/b^(1/2)/Pi^(1/2))*(cos(1/2*a/b)+sin(1/2*a/b))*Pi^(1/2)/(cos(1/2*a
rcsin(d*x^2+1))-sin(1/2*arcsin(d*x^2+1)))+3*b*(-d^2*x^4-2*d*x^2)^(1/2)*(a+b
*arcsin(d*x^2+1))^(1/2)/d/x
```

Rubi [A]
time = 0.04, antiderivative size = 247, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = {4898, 4903}

$$\frac{3\sqrt{\pi}\,b^{3/2}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{a+b\text{ArcSin}\left(dx^2+1\right)}}{\sqrt{\pi}\sqrt{b}}\right)}{\cos\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)}+\frac{3\sqrt{\pi}\,b^{3/2}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{a+b\text{ArcSin}\left(dx^2+1\right)}}{\sqrt{b}\sqrt{\pi}}\right)}{\cos\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)}+\frac{3b\sqrt{-d^2x^4-2dx^2}\,\sqrt{a+b\text{ArcSin}\left(dx^2+1\right)}}{dx}+x\left(a+b\text{ArcSin}\left(dx^2+1\right)\right)^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[1 + d*x^2])^(3/2),x]
```

```
[Out] (3*b*Sqrt[-2*d*x^2 - d^2*x^4]*Sqrt[a + b*ArcSin[1 + d*x^2]])/(d*x) + x*(a +
 b*ArcSin[1 + d*x^2])^(3/2) + (3*b^(3/2)*Sqrt[Pi]*x*FresnelC[Sqrt[a + b*Arc
Sin[1 + d*x^2]]/(Sqrt[b]*Sqrt[Pi])]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Cos[Arc
Sin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]) + (3*b^(3/2)*Sqrt[Pi]*x*Fresn
elS[Sqrt[a + b*ArcSin[1 + d*x^2]]/(Sqrt[b]*Sqrt[Pi])]*(Cos[a/(2*b)] + Sin[a
/(2*b)]))/(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])
```

Rule 4898

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
a + b*ArcSin[c + d*x^2])^n, x] + (-Dist[4*b^2*n*(n - 1), Int[(a + b*ArcSin[
c + d*x^2])^(n - 2), x], x] + Simp[2*b*n*Sqrt[-2*c*d*x^2 - d^2*x^4]*((a + b
*ArcSin[c + d*x^2])^(n - 1)/(d*x)), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^
2, 1] && GtQ[n, 1]
```

Rule 4903

```
Int[1/Sqrt[(a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.)], x_Symbol] :> Simp[(-
Sqrt[Pi])*x*(Cos[a/(2*b)] - c*Sin[a/(2*b)])*(FresnelC[(1/(Sqrt[b*c]*Sqrt[Pi
]))*Sqrt[a + b*ArcSin[c + d*x^2]]]/(Sqrt[b*c]*(Cos[ArcSin[c + d*x^2]/2] - c
```

```
*Sin[ArcSin[c + d*x^2]/2]))), x] - Simp[Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[a/
(2*b)])*(FresnelS[(1/(Sqrt[b*c]*Sqrt[Pi]))*Sqrt[a + b*ArcSin[c + d*x^2]]]/(
Sqrt[b*c]*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2]))), x] /;
FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{3/2}\,dx=\frac{3b\sqrt{-2dx^2-d^2x^4}\,\sqrt{a+b\sin^{-1}\left(1+dx^2\right)}}{dx}+x\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{3/}$$

$$=\frac{3b\sqrt{-2dx^2-d^2x^4}\,\sqrt{a+b\sin^{-1}\left(1+dx^2\right)}}{dx}+x\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{3/}$$

Mathematica [A]
time = 0.27, size = 249, normalized size = 1.01

$$\frac{\sqrt{a+b\text{ArcSin}\left(1+dx^2\right)}\left(adx^2+3b\sqrt{-dx^2\left(2+dx^2\right)}+bdx^2\text{ArcSin}(1+dx^2)\right)}{dx}+\frac{3b^{3/2}\sqrt{\pi}\,x\text{FresnelC}\left(\frac{\sqrt{a+b\text{ArcSin}\left(1+dx^2\right)}}{\sqrt{b}\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)}{\cos\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)}+\frac{3b^{3/2}\sqrt{\pi}\,xS\left(\frac{\sqrt{a+b\text{ArcSin}\left(1+dx^2\right)}}{\sqrt{b}\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)}{\cos\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[1 + d*x^2])^(3/2),x]
[Out] (Sqrt[a + b*ArcSin[1 + d*x^2]]*(a*d*x^2 + 3*b*Sqrt[-(d*x^2*(2 + d*x^2))] +
b*d*x^2*ArcSin[1 + d*x^2]))/(d*x) + (3*b^(3/2)*Sqrt[Pi]*x*FresnelC[Sqrt[a +
 b*ArcSin[1 + d*x^2]]/(Sqrt[b]*Sqrt[Pi])]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(C
os[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]) + (3*b^(3/2)*Sqrt[Pi]*x
*FresnelS[Sqrt[a + b*ArcSin[1 + d*x^2]]/(Sqrt[b]*Sqrt[Pi])]*(Cos[a/(2*b)] +
 Sin[a/(2*b)]))/(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \left(a+b\arcsin\left(d\,x^2+1\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+1))^(3/2),x)
[Out] int((a+b*arcsin(d*x^2+1))^(3/2),x)
```

Maxima [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 sign: argument cannot be imaginary; found sqrt((-_SAGE_VAR_d*_SAGE_VAR_x^2
)-2)
```

Fricas [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b \operatorname{asin}{\left(d x^{2} + 1 \right)}\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+1))**(3/2),x)
```

```
[Out] Integral((a + b*asin(d*x**2 + 1))**(3/2), x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + 1) + a)^(3/2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(a+b\,\mathrm{asin}\left(d\,x^2+1\right)\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(d*x^2 + 1))^(3/2),x)
```

```
[Out] int((a + b*asin(d*x^2 + 1))^(3/2), x)
```

3.419 $\int \sqrt{a+b\text{ArcSin}\left(1+dx^2\right)}\, dx$

Optimal. Leaf size=210

$$x\sqrt{a+b\text{ArcSin}\left(1+dx^2\right)}+\frac{\sqrt{\pi}\, xS\left(\frac{\sqrt{\frac{1}{b}}\,\sqrt{a+b\text{ArcSin}\left(1+dx^2\right)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)}{\sqrt{\frac{1}{b}}\,\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)\right)}-\frac{\sqrt{\pi}\, x\text{FresnelC}}{\sqrt{\frac{1}{b}}\,(\text{co}}$$

```
[Out] x*FresnelS((1/b)^(1/2)*(a+b*arcsin(d*x^2+1))^(1/2)/Pi^(1/2))*(cos(1/2*a/b)-
sin(1/2*a/b))*Pi^(1/2)/(cos(1/2*arcsin(d*x^2+1))-sin(1/2*arcsin(d*x^2+1)))/
(1/b)^(1/2)-x*FresnelC((1/b)^(1/2)*(a+b*arcsin(d*x^2+1))^(1/2)/Pi^(1/2))*(c
os(1/2*a/b)+sin(1/2*a/b))*Pi^(1/2)/(cos(1/2*arcsin(d*x^2+1))-sin(1/2*arcsin
(d*x^2+1)))/(1/b)^(1/2)+x*(a+b*arcsin(d*x^2+1))^(1/2)
```

Rubi [A]
time = 0.02, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.062$, Rules used = {4895}

$$-\frac{\sqrt{\pi}\, x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{\frac{1}{b}}\,\sqrt{a+b\text{ArcSin}\left(dx^2+1\right)}}{\sqrt{\pi}}\right)}{\sqrt{\frac{1}{b}}\,\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)\right)}+\frac{\sqrt{\pi}\, x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{\frac{1}{b}}\,\sqrt{a+b\text{ArcSin}\left(dx^2+1\right)}}{\sqrt{\pi}}\right)}{\sqrt{\frac{1}{b}}\,\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)\right)}+x\sqrt{a+b\text{ArcSin}\left(dx^2+1\right)}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*ArcSin[1 + d*x^2]],x]
```

```
[Out] x*Sqrt[a + b*ArcSin[1 + d*x^2]] + (Sqrt[Pi]*x*FresnelS[(Sqrt[b^(-1)]*Sqrt[a
 + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Sqrt[b^(
-1)]*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])) - (Sqrt[Pi]*x*F
resnelC[(Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)
] + Sin[a/(2*b)]))/(Sqrt[b^(-1)]*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 +
 d*x^2]/2]))
```

Rule 4895

```
Int[Sqrt[(a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.)], x_Symbol] :> Simp[x*Sq
rt[a + b*ArcSin[c + d*x^2]], x] + (-Simp[Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[a
/(2*b)])*(FresnelC[Sqrt[c/(Pi*b)]*Sqrt[a + b*ArcSin[c + d*x^2]]]/(Sqrt[c/b]
*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2]))), x] + Simp[Sqrt[
Pi]*x*(Cos[a/(2*b)] - c*Sin[a/(2*b)])*(FresnelS[Sqrt[c/(Pi*b)]*Sqrt[a + b*A
rcSin[c + d*x^2]]]/(Sqrt[c/b]*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c +
d*x^2]/2]))), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \sqrt{a+b\sin^{-1}\left(1+dx^2\right)}\,dx = x\sqrt{a+b\sin^{-1}\left(1+dx^2\right)} + \frac{\sqrt{\pi}\,xS\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}\left(1+dx^2\right)}}{\sqrt{\pi}}\right)\left(\cos\right.}{\sqrt{\frac{1}{b}}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\sin^{-1}\right.\right.}$$

Mathematica [A]
time = 0.04, size = 207, normalized size = 0.99

$$\frac{x\left(\sqrt{\pi}\,S\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}\left(1+dx^2\right)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)-\sqrt{\pi}\,\text{FresnelC}\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}\left(1+dx^2\right)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)+\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}\left(1+dx^2\right)}\left(\cos\left(\frac{1}{2}\text{ArcSin}(1+dx^2)\right)-\sin\left(\frac{1}{2}\text{ArcSin}(1+dx^2)\right)\right)\right)}{\sqrt{\frac{1}{b}}\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + b*ArcSin[1 + d*x^2]],x]
```

```
[Out] (x*(Sqrt[Pi]*FresnelS[(Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]
]*(Cos[a/(2*b)] - Sin[a/(2*b)]) - Sqrt[Pi]*FresnelC[(Sqrt[b^(-1)]*Sqrt[a +
b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]) + Sqrt[b^(-1)
]*Sqrt[a + b*ArcSin[1 + d*x^2]]*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 +
d*x^2]/2])))/(Sqrt[b^(-1)]*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2
]/2]))
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \sqrt{a+b\arcsin\left(d\,x^2+1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2+1))^(1/2),x)
```

```
[Out] int((a+b*arcsin(d*x^2+1))^(1/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 sign: argument cannot be imaginary; found sqrt((-_SAGE_VAR_d*_SAGE_VAR_x^2
)-2)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{a + b \operatorname{asin}{\left(dx^{2} + 1 \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2+1))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*asin(d*x**2 + 1)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2+1))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*arcsin(d*x^2 + 1) + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \sqrt{a+b\,\mathrm{asin}\left(d\,x^2+1\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(d*x^2 + 1))^(1/2),x)
```

```
[Out] int((a + b*asin(d*x^2 + 1))^(1/2), x)
```

3.420 $\int \frac{1}{\sqrt{a+b\mathbf{ArcSin}(1+dx^2)}}\,dx$

Optimal. Leaf size=185

$$-\frac{\sqrt{\pi}\,x\text{FresnelC}\left(\frac{\sqrt{a+b\text{ArcSin}(1+dx^2)}}{\sqrt{b}\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)}{\sqrt{b}\left(\cos\left(\frac{1}{2}\text{ArcSin}(1+dx^2)\right)-\sin\left(\frac{1}{2}\text{ArcSin}(1+dx^2)\right)\right)}-\frac{\sqrt{\pi}\,xS\left(\frac{\sqrt{a+b\text{ArcSin}(1+dx^2)}}{\sqrt{b}\sqrt{\pi}}\right)\left(\right.}{\sqrt{b}\left(\cos\left(\frac{1}{2}\text{ArcSin}(1+dx^2)\right)-\sin\left(\frac{1}{2}\right.\right.}$$

```
[Out] -x*FresnelC((a+b*arcsin(d*x^2+1))^(1/2)/b^(1/2)/Pi^(1/2))*(cos(1/2*a/b)-sin
(1/2*a/b))*Pi^(1/2)/(cos(1/2*arcsin(d*x^2+1))-sin(1/2*arcsin(d*x^2+1)))/b^(
1/2)-x*FresnelS((a+b*arcsin(d*x^2+1))^(1/2)/b^(1/2)/Pi^(1/2))*(cos(1/2*a/b)
+sin(1/2*a/b))*Pi^(1/2)/(cos(1/2*arcsin(d*x^2+1))-sin(1/2*arcsin(d*x^2+1)))
/b^(1/2)
```

Rubi [A]
time = 0.02, antiderivative size = 185, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.062$, Rules used = {4903}

$$-\frac{\sqrt{\pi}\,x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{a+b\text{ArcSin}(dx^2+1)}}{\sqrt{\pi}\sqrt{b}}\right)}{\sqrt{b}\left(\cos\left(\frac{1}{2}\text{ArcSin}(dx^2+1)\right)-\sin\left(\frac{1}{2}\text{ArcSin}(dx^2+1)\right)\right)}-\frac{\sqrt{\pi}\,x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{a+b\text{ArcSin}(dx^2+1)}}{\sqrt{b}\sqrt{\pi}}\right)}{\sqrt{b}\left(\cos\left(\frac{1}{2}\text{ArcSin}(dx^2+1)\right)-\sin\left(\frac{1}{2}\text{ArcSin}(dx^2+1)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[a + b*ArcSin[1 + d*x^2]],x]
```

```
[Out] -((Sqrt[Pi]*x*FresnelC[Sqrt[a + b*ArcSin[1 + d*x^2]]/(Sqrt[b]*Sqrt[Pi])]*(C
os[a/(2*b)] - Sin[a/(2*b)]))/(Sqrt[b]*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSi
n[1 + d*x^2]/2]))) - (Sqrt[Pi]*x*FresnelS[Sqrt[a + b*ArcSin[1 + d*x^2]]/(Sq
rt[b]*Sqrt[Pi])]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(Sqrt[b]*(Cos[ArcSin[1 + d*
x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]))
```

Rule 4903

```
Int[1/Sqrt[(a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.)], x_Symbol] :> Simp[(-
Sqrt[Pi])*x*(Cos[a/(2*b)] - c*Sin[a/(2*b)])*(FresnelC[(1/(Sqrt[b*c]*Sqrt[Pi
]))*Sqrt[a + b*ArcSin[c + d*x^2]]]/(Sqrt[b*c]*(Cos[ArcSin[c + d*x^2]/2] - c
*Sin[ArcSin[c + d*x^2]/2]))), x] - Simp[Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[a/
(2*b)])*(FresnelS[(1/(Sqrt[b*c]*Sqrt[Pi]))*Sqrt[a + b*ArcSin[c + d*x^2]]]/(
Sqrt[b*c]*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2]))), x] /;
FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \frac{1}{\sqrt{a+b\sin^{-1}(1+dx^2)}}\,dx = -\frac{\sqrt{\pi}\,xC\left(\frac{\sqrt{a+b\sin^{-1}(1+dx^2)}}{\sqrt{b}\,\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)}{\sqrt{b}\,\left(\cos\left(\frac{1}{2}\sin^{-1}(1+dx^2)\right)-\sin\left(\frac{1}{2}\sin^{-1}(1+dx^2)\right)\right)} - \frac{\sqrt{\pi}\,xS\left(\frac{\sqrt{c}}{}\right.}{\sqrt{b}\,\left(\cos\left(\frac{1}{2}\right.\right.}$$

Mathematica [A]
time = 0.03, size = 143, normalized size = 0.77

$$-\frac{\sqrt{\pi}\,x\left(\text{FresnelC}\left(\frac{\sqrt{a+b\text{ArcSin}(1+dx^2)}}{\sqrt{b}\,\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)+S\left(\frac{\sqrt{a+b\text{ArcSin}(1+dx^2)}}{\sqrt{b}\,\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)\right)}{\sqrt{b}\,\left(\cos\left(\frac{1}{2}\text{ArcSin}(1+dx^2)\right)-\sin\left(\frac{1}{2}\text{ArcSin}(1+dx^2)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[a + b*ArcSin[1 + d*x^2]],x]
```

```
[Out] -((Sqrt[Pi]*x*(FresnelC[Sqrt[a + b*ArcSin[1 + d*x^2]]/(Sqrt[b]*Sqrt[Pi])]*(
Cos[a/(2*b)] - Sin[a/(2*b)]) + FresnelS[Sqrt[a + b*ArcSin[1 + d*x^2]]/(Sqrt
[b]*Sqrt[Pi])]*(Cos[a/(2*b)] + Sin[a/(2*b)])))/(Sqrt[b]*(Cos[ArcSin[1 + d*x
^2]/2] - Sin[ArcSin[1 + d*x^2]/2])))
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a+b\arcsin\left(d\,x^2+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2+1))^(1/2),x)
```

```
[Out] int(1/(a+b*arcsin(d*x^2+1))^(1/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 sign: argument cannot be imaginary; found sqrt((-_SAGE_VAR_d*_SAGE_VAR_x^2
)-2)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^(1/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a + b \operatorname{asin}\left(dx^{2} + 1\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2+1))**(1/2),x)
[Out] Integral(1/sqrt(a + b*asin(d*x**2 + 1)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^(1/2),x, algorithm="giac")
[Out] integrate(1/sqrt(b*arcsin(d*x^2 + 1) + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\sqrt{a+b\,\mathrm{asin}\left(d\,x^2+1\right)}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(d*x^2 + 1))^(1/2),x)
[Out] int(1/(a + b*asin(d*x^2 + 1))^(1/2), x)
```

3.421 $\int \frac{1}{\left(a+b\mathbf{ArcSin}(1+dx^2)\right)^{3/2}}\,dx$

Optimal. Leaf size=238

$$-\frac{\sqrt{-2dx^2-d^2x^4}}{bdx\sqrt{a+b\text{ArcSin}\left(1+dx^2\right)}}+\frac{\left(\frac{1}{b}\right)^{3/2}\sqrt{\pi}\,xS\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}\left(1+dx^2\right)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)}{\cos\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)}-\frac{\left(\frac{1}{b}\right)\cdots}{\cdots}$$

```
[Out] (1/b)^(3/2)*x*FresnelS((1/b)^(1/2)*(a+b*arcsin(d*x^2+1))^(1/2)/Pi^(1/2))*(c
os(1/2*a/b)-sin(1/2*a/b))*Pi^(1/2)/(cos(1/2*arcsin(d*x^2+1))-sin(1/2*arcsin
(d*x^2+1)))-(1/b)^(3/2)*x*FresnelC((1/b)^(1/2)*(a+b*arcsin(d*x^2+1))^(1/2)/
Pi^(1/2))*(cos(1/2*a/b)+sin(1/2*a/b))*Pi^(1/2)/(cos(1/2*arcsin(d*x^2+1))-si
n(1/2*arcsin(d*x^2+1)))-(-d^2*x^4-2*d*x^2)^(1/2)/b/d/x/(a+b*arcsin(d*x^2+1)
)^(1/2)
```

Rubi [A]
time = 0.03, antiderivative size = 238, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.062$, Rules used = {4906}

$$-\frac{\sqrt{-d^2x^4-2dx^2}}{bdx\sqrt{a+b\text{ArcSin}\left(dx^2+1\right)}}-\frac{\sqrt{\pi}\left(\frac{1}{b}\right)^{3/2}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}\left(dx^2+1\right)}}{\sqrt{\pi}}\right)}{\cos\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)}+\frac{\sqrt{\pi}\left(\frac{1}{b}\right)^{3/2}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}\left(dx^2+1\right)}}{\sqrt{\pi}}\right)}{\cos\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[1 + d*x^2])^(-3/2),x]
```

```
[Out] -(Sqrt[-2*d*x^2 - d^2*x^4]/(b*d*x*Sqrt[a + b*ArcSin[1 + d*x^2]])) + ((b^(-1
))^(3/2)*Sqrt[Pi]*x*FresnelS[(Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[1 + d*x^2]])/S
qrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Cos[ArcSin[1 + d*x^2]/2] - Sin[Arc
Sin[1 + d*x^2]/2]) - ((b^(-1))^(3/2)*Sqrt[Pi]*x*FresnelC[(Sqrt[b^(-1)]*Sqrt
[a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(Cos[Ar
cSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])
```

Rule 4906

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(-3/2), x_Symbol] :> Simp[-
Sqrt[-2*c*d*x^2 - d^2*x^4]/(b*d*x*Sqrt[a + b*ArcSin[c + d*x^2]]), x] + (-Si
mp[(c/b)^(3/2)*Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[a/(2*b)])*(FresnelC[Sqrt[c/
(Pi*b)]*Sqrt[a + b*ArcSin[c + d*x^2]]]/(Cos[(1/2)*ArcSin[c + d*x^2]] - c*Si
n[ArcSin[c + d*x^2]/2])), x] + Simp[(c/b)^(3/2)*Sqrt[Pi]*x*(Cos[a/(2*b)] -
c*Sin[a/(2*b)])*(FresnelS[Sqrt[c/(Pi*b)]*Sqrt[a + b*ArcSin[c + d*x^2]]]/(Co
s[(1/2)*ArcSin[c + d*x^2]] - c*Sin[ArcSin[c + d*x^2]/2])), x]) /; FreeQ[{a,
```

```
b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{3/2}}\,dx=-\frac{\sqrt{-2dx^2-d^2x^4}}{bdx\sqrt{a+b\sin^{-1}\left(1+dx^2\right)}}+\frac{\left(\frac{1}{b}\right)^{3/2}\sqrt{\pi}\,xS\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}\left(1+\right.}}{\sqrt{\pi}}\right.}{\cos\left(\frac{1}{2}\sin^{-1}\left(1+dx^2\right)\right)-\sin\left(\right.}$$

Mathematica [A]
time = 0.42, size = 238, normalized size = 1.00

$$-\frac{\sqrt{-2dx^2-d^2x^4}}{bdx\sqrt{a+b\text{ArcSin}\left(1+dx^2\right)}}+\frac{\left(\frac{1}{b}\right)^{3/2}\sqrt{\pi}\,xS\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}\left(1+dx^2\right)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)}{\cos\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)}-\frac{\left(\frac{1}{b}\right)^{3/2}\sqrt{\pi}\,x\text{FresnelC}\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}\left(1+dx^2\right)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)}{\cos\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[1 + d*x^2])^(-3/2),x]
[Out] -(Sqrt[-2*d*x^2 - d^2*x^4]/(b*d*x*Sqrt[a + b*ArcSin[1 + d*x^2]])) + ((b^(-1
))^(3/2)*Sqrt[Pi]*x*FresnelS[(Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[1 + d*x^2]])/S
qrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Cos[ArcSin[1 + d*x^2]/2] - Sin[Arc
Sin[1 + d*x^2]/2]) - ((b^(-1))^(3/2)*Sqrt[Pi]*x*FresnelC[(Sqrt[b^(-1)]*Sqrt
[a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(Cos[Ar
cSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\arcsin\left(d\,x^2+1\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2+1))^(3/2),x)
[Out] int(1/(a+b*arcsin(d*x^2+1))^(3/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 sign: argument cannot be imaginary; found sqrt((-_SAGE_VAR_d*_SAGE_VAR_x^2
)-2)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a + b\operatorname{asin}(dx^2 + 1))^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2+1))**(3/2),x)
```

```
[Out] Integral((a + b*asin(d*x**2 + 1))**(-3/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + 1) + a)^(-3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{1}{(a + b\operatorname{asin}(d\,x^2 + 1))^{3/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(d*x^2 + 1))^(3/2),x)
```

```
[Out] int(1/(a + b*asin(d*x^2 + 1))^(3/2), x)
```

3.422 $\int \frac{1}{\left(a+b\mathbf{ArcSin}\left(1+dx^2\right)\right)^{5/2}}\,dx$

Optimal. Leaf size=261

$$-\frac{\sqrt{-2dx^2-d^2x^4}}{3bdx\left(a+b\text{ArcSin}\left(1+dx^2\right)\right)^{3/2}}+\frac{x}{3b^2\sqrt{a+b\text{ArcSin}\left(1+dx^2\right)}}+\frac{\sqrt{\pi}\,x\text{FresnelC}\left(\frac{\sqrt{a+b\text{ArcSin}\left(1+dx^2\right.}}{\sqrt{b}\sqrt{\pi}}\right.}{3b^{5/2}\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)-\sin\right.}$$

```
[Out] 1/3*x*FresnelC((a+b*arcsin(d*x^2+1))^(1/2)/b^(1/2)/Pi^(1/2))*(cos(1/2*a/b)-
sin(1/2*a/b))*Pi^(1/2)/b^(5/2)/(cos(1/2*arcsin(d*x^2+1))-sin(1/2*arcsin(d*x
^2+1)))+1/3*x*FresnelS((a+b*arcsin(d*x^2+1))^(1/2)/b^(1/2)/Pi^(1/2))*(cos(1
/2*a/b)+sin(1/2*a/b))*Pi^(1/2)/b^(5/2)/(cos(1/2*arcsin(d*x^2+1))-sin(1/2*ar
csin(d*x^2+1)))-1/3*(-d^2*x^4-2*d*x^2)^(1/2)/b/d/x/(a+b*arcsin(d*x^2+1))^(3
/2)+1/3*x/b^2/(a+b*arcsin(d*x^2+1))^(1/2)
```

Rubi [A]
time = 0.04, antiderivative size = 261, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = {4912, 4903}

$$\frac{\sqrt{\pi}\,x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{a+b\text{ArcSin}\left(dx^2+1\right)}}{\sqrt{\pi}\sqrt{b}}\right)}{3b^{5/2}\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)\right)}+\frac{\sqrt{\pi}\,x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{a+b\text{ArcSin}\left(dx^2+1\right)}}{\sqrt{b}\sqrt{\pi}}\right)}{3b^{5/2}\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)\right)}+\frac{x}{3b^2\sqrt{a+b\text{ArcSin}\left(dx^2+1\right)}}-\frac{\sqrt{-d^2x^4-2dx^2}}{3bdx\left(a+b\text{ArcSin}\left(dx^2+1\right)\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[1 + d*x^2])^(-5/2),x]
```

```
[Out] -1/3*Sqrt[-2*d*x^2 - d^2*x^4]/(b*d*x*(a + b*ArcSin[1 + d*x^2])^(3/2)) + x/(
3*b^2*Sqrt[a + b*ArcSin[1 + d*x^2]]) + (Sqrt[Pi]*x*FresnelC[Sqrt[a + b*ArcS
in[1 + d*x^2]]/(Sqrt[b]*Sqrt[Pi])]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(3*b^(5/2
)*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])) + (Sqrt[Pi]*x*Fres
nelS[Sqrt[a + b*ArcSin[1 + d*x^2]]/(Sqrt[b]*Sqrt[Pi])]*(Cos[a/(2*b)] + Sin[
a/(2*b)]))/(3*b^(5/2)*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])
)
```

Rule 4903

```
Int[1/Sqrt[(a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.)], x_Symbol] :> Simp[(-
Sqrt[Pi])*x*(Cos[a/(2*b)] - c*Sin[a/(2*b)])*(FresnelC[(1/(Sqrt[b*c]*Sqrt[Pi
]))*Sqrt[a + b*ArcSin[c + d*x^2]]]/(Sqrt[b*c]*(Cos[ArcSin[c + d*x^2]/2] - c
*Sin[ArcSin[c + d*x^2]/2]))), x] - Simp[Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[a/
(2*b)])*(FresnelS[(1/(Sqrt[b*c]*Sqrt[Pi]))*Sqrt[a + b*ArcSin[c + d*x^2]]]/(
Sqrt[b*c]*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2]))), x] /;
FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rule 4912

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
(a + b*ArcSin[c + d*x^2])^(n + 2)/(4*b^2*(n + 1)*(n + 2))), x] + (-Dist[1/(
4*b^2*(n + 1)*(n + 2)), Int[(a + b*ArcSin[c + d*x^2])^(n + 2), x], x] + Sim
p[Sqrt[-2*c*d*x^2 - d^2*x^4]*((a + b*ArcSin[c + d*x^2])^(n + 1)/(2*b*d*(n +
 1)*x)), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1] && LtQ[n, -1] && NeQ[
n, -2]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{5/2}}\,dx=-\frac{\sqrt{-2dx^2-d^2x^4}}{3bdx\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{3/2}}+\frac{x}{3b^2\sqrt{a+b\sin^{-1}\left(1+dx^2\right)}}-\frac{\int \frac{}{\sqrt{a+}}}{}$$

$$=-\frac{\sqrt{-2dx^2-d^2x^4}}{3bdx\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{3/2}}+\frac{x}{3b^2\sqrt{a+b\sin^{-1}\left(1+dx^2\right)}}+\frac{\sqrt{\pi}\,xC}{3b^{5/2}\,(\mathrm{c}}$$

Mathematica [A]
time = 0.37, size = 247, normalized size = 0.95

$$\frac{x\left(\frac{b\left(2+dx^2\right)}{\sqrt{-dx^2\left(2+dx^2\right)}\left(a+b\mathrm{ArcSin}\left(1+dx^2\right)\right)^{3/2}}+\frac{1}{\sqrt{a+b\mathrm{ArcSin}\left(1+dx^2\right)}}+\frac{\sqrt{\pi}\,\mathrm{FresnelC}\left(\frac{\sqrt{a+b\mathrm{ArcSin}\left(1+dx^2\right)}}{\sqrt{b}\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)}{\sqrt{b}\left(\cos\left(\frac{1}{2}\mathrm{ArcSin}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\mathrm{ArcSin}\left(1+dx^2\right)\right)\right)}+\frac{\sqrt{\pi}\,S\left(\frac{\sqrt{a+b\mathrm{ArcSin}\left(1+dx^2\right)}}{\sqrt{b}\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)}{\sqrt{b}\left(\cos\left(\frac{1}{2}\mathrm{ArcSin}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\mathrm{ArcSin}\left(1+dx^2\right)\right)\right)}\right)}{3b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[1 + d*x^2])^(-5/2),x]
```

```
[Out] (x*((b*(2 + d*x^2))/(Sqrt[-(d*x^2*(2 + d*x^2))]*(a + b*ArcSin[1 + d*x^2])^(
3/2)) + 1/Sqrt[a + b*ArcSin[1 + d*x^2]] + (Sqrt[Pi]*FresnelC[Sqrt[a + b*Arc
Sin[1 + d*x^2]]/(Sqrt[b]*Sqrt[Pi])]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Sqrt[b]
*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])) + (Sqrt[Pi]*Fresnel
S[Sqrt[a + b*ArcSin[1 + d*x^2]]/(Sqrt[b]*Sqrt[Pi])]*(Cos[a/(2*b)] + Sin[a/(
2*b)]))/(Sqrt[b]*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]))))/(
3*b^2)
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\arcsin\left(d\,x^{2}+1\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2+1))^(5/2),x)
```

```
[Out] int(1/(a+b*arcsin(d*x^2+1))^(5/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 sign: argument cannot be imaginary; found sqrt((-_SAGE_VAR_d*_SAGE_VAR_x^2
)-2)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b \operatorname{asin}\left(dx^2 + 1\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2+1))**(5/2),x)
```

```
[Out] Integral((a + b*asin(d*x**2 + 1))**(-5/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + 1) + a)^(-5/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{1}{\left(a+b\,\mathrm{asin}\left(d\,x^2+1\right)\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(d*x^2 + 1))^(5/2),x)
```

```
[Out] int(1/(a + b*asin(d*x^2 + 1))^(5/2), x)
```

3.423 $\int \frac{1}{\left(a+b\mathbf{ArcSin}\left(1+dx^2\right)\right)^{7/2}}\,dx$

Optimal. Leaf size=317

$$-\frac{\sqrt{-2dx^2-d^2x^4}}{5bdx\left(a+b\text{ArcSin}\left(1+dx^2\right)\right)^{5/2}}+\frac{x}{15b^2\left(a+b\text{ArcSin}\left(1+dx^2\right)\right)^{3/2}}+\frac{\sqrt{-2dx^2-d^2x^4}}{15b^3dx\sqrt{a+b\text{ArcSin}\left(1+dx^2\right)}}-\cdots\left(\frac{1}{b}\right)$$

[Out] 1/15*x/b^2/(a+b*arcsin(d*x^2+1))^(3/2)-1/15*(1/b)^(7/2)*x*FresnelS((1/b)^(1/2)*(a+b*arcsin(d*x^2+1))^(1/2)/Pi^(1/2))*(cos(1/2*a/b)-sin(1/2*a/b))*Pi^(1/2)/(cos(1/2*arcsin(d*x^2+1))-sin(1/2*arcsin(d*x^2+1)))+1/15*(1/b)^(7/2)*x*FresnelC((1/b)^(1/2)*(a+b*arcsin(d*x^2+1))^(1/2)/Pi^(1/2))*(cos(1/2*a/b)+sin(1/2*a/b))*Pi^(1/2)/(cos(1/2*arcsin(d*x^2+1))-sin(1/2*arcsin(d*x^2+1)))-1/5*(-d^2*x^4-2*d*x^2)^(1/2)/b/d/x/(a+b*arcsin(d*x^2+1))^(5/2)+1/15*(-d^2*x^4-2*d*x^2)^(1/2)/b^3/d/x/(a+b*arcsin(d*x^2+1))^(1/2)

Rubi [A]
time = 0.05, antiderivative size = 317, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = {4912, 4906}

$$\frac{\sqrt{-d^2x^4-2dx^2}}{15b^3dx\sqrt{a+b\text{ArcSin}\left(dx^2+1\right)}}+\frac{x}{15b^2\left(a+b\text{ArcSin}\left(dx^2+1\right)\right)^{3/2}}-\frac{\sqrt{-d^2x^4-2dx^2}}{5bdx\left(a+b\text{ArcSin}\left(dx^2+1\right)\right)^{5/2}}+\frac{\sqrt{\pi}\left(\frac{1}{b}\right)^{7/2}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}\left(dx^2+1\right)}}{\sqrt{\pi}}\right)}{15\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)\right)}-\frac{\sqrt{\pi}\left(\frac{1}{b}\right)^{7/2}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}\left(dx^2+1\right)}}{\sqrt{\pi}}\right)}{15\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(dx^2+1\right)\right)\right)}$$

Antiderivative was successfully verified.

[In] Int[(a + b*ArcSin[1 + d*x^2])^(-7/2),x]

[Out] -1/5*Sqrt[-2*d*x^2 - d^2*x^4]/(b*d*x*(a + b*ArcSin[1 + d*x^2])^(5/2)) + x/(15*b^2*(a + b*ArcSin[1 + d*x^2])^(3/2)) + Sqrt[-2*d*x^2 - d^2*x^4]/(15*b^3*d*x*Sqrt[a + b*ArcSin[1 + d*x^2]]) - ((b^(-1))^(7/2)*Sqrt[Pi]*x*FresnelS[(Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(15*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2])) + ((b^(-1))^(7/2)*Sqrt[Pi]*x*FresnelC[(Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(15*(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]))

Rule 4906

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(-3/2), x_Symbol] :> Simp[-Sqrt[-2*c*d*x^2 - d^2*x^4]/(b*d*x*Sqrt[a + b*ArcSin[c + d*x^2]]), x] + (-Simp[(c/b)^(3/2)*Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[a/(2*b)])*(FresnelC[Sqrt[c/(Pi*b)]*Sqrt[a + b*ArcSin[c + d*x^2]]]/(Cos[(1/2)*ArcSin[c + d*x^2]] - c*Sin[ArcSin[c + d*x^2]/2])), x] + Simp[(c/b)^(3/2)*Sqrt[Pi]*x*(Cos[a/(2*b)] -
```

```
c*Sin[a/(2*b)])*(FresnelS[Sqrt[c/(Pi*b)]*Sqrt[a + b*ArcSin[c + d*x^2]]]/(Co
s[(1/2)*ArcSin[c + d*x^2]] - c*Sin[ArcSin[c + d*x^2]/2])), x]) /; FreeQ[{a,
 b, c, d}, x] && EqQ[c^2, 1]
```

Rule 4912

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
(a + b*ArcSin[c + d*x^2])^(n + 2)/(4*b^2*(n + 1)*(n + 2))), x] + (-Dist[1/(
4*b^2*(n + 1)*(n + 2)), Int[(a + b*ArcSin[c + d*x^2])^(n + 2), x], x] + Sim
p[Sqrt[-2*c*d*x^2 - d^2*x^4]*((a + b*ArcSin[c + d*x^2])^(n + 1)/(2*b*d*(n +
 1)*x)), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1] && LtQ[n, -1] && NeQ[
n, -2]
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{7/2}}\,dx = -\frac{\sqrt{-2dx^2-d^2x^4}}{5bdx\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{5/2}}+\frac{x}{15b^2\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{3/2}}-\frac{\int \frac{}{(a+}}{}$$

$$= -\frac{\sqrt{-2dx^2-d^2x^4}}{5bdx\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{5/2}}+\frac{x}{15b^2\left(a+b\sin^{-1}\left(1+dx^2\right)\right)^{3/2}}+\frac{}{15b^3d}$$

Mathematica [A]
time = 0.59, size = 297, normalized size = 0.94

$$\frac{\frac{-\frac{3b\sqrt{-dx^2\left(2+dx^2\right)}}{d}+x^2\left(a+b\text{ArcSin}\left(1+dx^2\right)\right)+\frac{\sqrt{-dx^2\left(2+dx^2\right)}\left(a+b\text{ArcSin}\left(1+dx^2\right)\right)^2}{bd}}{x\left(a+b\text{ArcSin}\left(1+dx^2\right)\right)^{5/2}}-\frac{\left(\frac{1}{b}\right)^{3/2}\sqrt{\pi}\,xS\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}\left(1+dx^2\right)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)}{\cos\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)}+\frac{\left(\frac{1}{b}\right)^{3/2}\sqrt{\pi}\,x\text{FresnelC}\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\text{ArcSin}\left(1+dx^2\right)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)}{\cos\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1+dx^2\right)\right)}}{15b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[1 + d*x^2])^(-7/2),x]
```

```
[Out] (((-3*b*Sqrt[-(d*x^2*(2 + d*x^2))])/d + x^2*(a + b*ArcSin[1 + d*x^2]) + (Sq
rt[-(d*x^2*(2 + d*x^2))]*(a + b*ArcSin[1 + d*x^2])^2)/(b*d))/(x*(a + b*ArcS
in[1 + d*x^2])^(5/2)) - ((b^(-1))^(3/2)*Sqrt[Pi]*x*FresnelS[(Sqrt[b^(-1)]*S
qrt[a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Cos
[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2]) + ((b^(-1))^(3/2)*Sqrt[Pi
]*x*FresnelC[(Sqrt[b^(-1)]*Sqrt[a + b*ArcSin[1 + d*x^2]])/Sqrt[Pi]]*(Cos[a/
(2*b)] + Sin[a/(2*b)]))/(Cos[ArcSin[1 + d*x^2]/2] - Sin[ArcSin[1 + d*x^2]/2
]))/(15*b^2)
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\arcsin\left(d\,x^{2}+1\right)\right)^{\frac{7}{2}}}d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2+1))^(7/2),x)
```

```
[Out] int(1/(a+b*arcsin(d*x^2+1))^(7/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 sign: argument cannot be imaginary; found sqrt((-_SAGE_VAR_d*_SAGE_VAR_x^2
)-2)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\operatorname{asin}\left(dx^{2}+1\right)\right)^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2+1))**(7/2),x)
```

```
[Out] Integral((a + b*asin(d*x**2 + 1))**(-7/2), x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2+1))^(7/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 + 1) + a)^(-7/2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{1}{\left(a+b\,\mathrm{asin}\left(d\,x^2+1\right)\right)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(d*x^2 + 1))^(7/2),x)
```

```
[Out] int(1/(a + b*asin(d*x^2 + 1))^(7/2), x)
```

3.424 $\int (a - b\textbf{ArcSin}(1 - dx^2))^{5/2}\, dx$

Optimal. Leaf size=299

$$-15b^2x\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}+\frac{5b\sqrt{2dx^2-d^2x^4}\left(a-b\text{ArcSin}(1-dx^2)\right)^{3/2}}{dx}+x\left(a-b\text{ArcSin}\left(1-dx^2\right)\right)^{5/}$$

```
[Out] x*(a+b*arcsin(d*x^2-1))^(5/2)+15*x*FresnelC((-1/b)^(1/2)*(a+b*arcsin(d*x^2-
1))^(1/2)/Pi^(1/2))*(cos(1/2*a/b)-sin(1/2*a/b))*Pi^(1/2)/(-1/b)^(5/2)/(cos(
1/2*arcsin(d*x^2-1))+sin(1/2*arcsin(d*x^2-1)))-15*x*FresnelS((-1/b)^(1/2)*(
a+b*arcsin(d*x^2-1))^(1/2)/Pi^(1/2))*(cos(1/2*a/b)+sin(1/2*a/b))*Pi^(1/2)/(
-1/b)^(5/2)/(cos(1/2*arcsin(d*x^2-1))+sin(1/2*arcsin(d*x^2-1)))+5*b*(a+b*ar
csin(d*x^2-1))^(3/2)*(-d^2*x^4+2*d*x^2)^(1/2)/d/x-15*b^2*x*(a+b*arcsin(d*x^
2-1))^(1/2)
```

Rubi [A]
time = 0.11, antiderivative size = 299, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$, Rules used = {4898, 4895}

$$-15b^2x\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}+\frac{5b\sqrt{2dx^2-d^2x^4}\left(a-b\text{ArcSin}(1-dx^2)\right)^{3/2}}{dx}+\frac{15\sqrt{\pi}\,x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)}{\left(-\frac{1}{b}\right)^{5/2}\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)\right)}-\frac{15\sqrt{\pi}\,x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)}{\left(-\frac{1}{b}\right)^{5/2}\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)\right)}+x\left(a-b\text{ArcSin}\left(1-dx^2\right)\right)^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[(a - b*ArcSin[1 - d*x^2])^(5/2),x]
```

```
[Out] -15*b^2*x*Sqrt[a - b*ArcSin[1 - d*x^2]] + (5*b*Sqrt[2*d*x^2 - d^2*x^4]*(a -
 b*ArcSin[1 - d*x^2])^(3/2))/(d*x) + x*(a - b*ArcSin[1 - d*x^2])^(5/2) + (1
5*Sqrt[Pi]*x*FresnelC[(Sqrt[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi
]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/((-b^(-1))^(5/2)*(Cos[ArcSin[1 - d*x^2]/2
] - Sin[ArcSin[1 - d*x^2]/2])) - (15*Sqrt[Pi]*x*FresnelS[(Sqrt[-b^(-1)]*Sqr
t[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/((-b^(
-1))^(5/2)*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2]))
```

Rule 4895

```
Int[Sqrt[(a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.)], x_Symbol] :> Simp[x*Sq
rt[a + b*ArcSin[c + d*x^2]], x] + (-Simp[Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[a
/(2*b)])*(FresnelC[Sqrt[c/(Pi*b)]*Sqrt[a + b*ArcSin[c + d*x^2]]]/(Sqrt[c/b]
*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2]))), x] + Simp[Sqrt[
Pi]*x*(Cos[a/(2*b)] - c*Sin[a/(2*b)])*(FresnelS[Sqrt[c/(Pi*b)]*Sqrt[a + b*A
rcSin[c + d*x^2]]]/(Sqrt[c/b]*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c +
```

```
d*x^2]/2]))), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rule 4898

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
a + b*ArcSin[c + d*x^2])^n, x] + (-Dist[4*b^2*n*(n - 1), Int[(a + b*ArcSin[
c + d*x^2])^(n - 2), x], x] + Simp[2*b*n*Sqrt[-2*c*d*x^2 - d^2*x^4]*((a + b
*ArcSin[c + d*x^2])^(n - 1)/(d*x)), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^
2, 1] && GtQ[n, 1]
```

Rubi steps

$$\int \left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{5/2}\,dx=\frac{5b\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}}{dx}+x\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{5/2}$$

$$=-15b^2x\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}+\frac{5b\sqrt{2dx^2-d^2x^4}\left(a-b\sin^{-1}\left(1-dx^2\right)\right.}{dx}$$

Mathematica [A]
time = 0.22, size = 292, normalized size = 0.98

$$\frac{5b\sqrt{-dx^2(-2+dx^2)}\,(a-b\text{ArcSin}(1-dx^2))^{3/2}}{dx}+x(a-b\text{ArcSin}(1-dx^2))^{5/2}+\frac{15bx\left(-\sqrt{\pi}\,\text{FresnelC}\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\text{ArcSin}(1-dx^2)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)+\sqrt{\pi}\,S\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\text{ArcSin}(1-dx^2)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)+\sqrt{-\frac{1}{b}}\sqrt{a-b\text{ArcSin}(1-dx^2)}\left(\cos\left(\frac{1}{2}\text{ArcSin}(1-dx^2)\right)-\sin\left(\frac{1}{2}\text{ArcSin}(1-dx^2)\right)\right)\right)}{\left(-\frac{1}{b}\right)^{3/2}\left(\cos\left(\frac{1}{2}\text{ArcSin}(1-dx^2)\right)-\sin\left(\frac{1}{2}\text{ArcSin}(1-dx^2)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a - b*ArcSin[1 - d*x^2])^(5/2),x]
```

```
[Out] (5*b*Sqrt[-(d*x^2*(-2 + d*x^2))]*(a - b*ArcSin[1 - d*x^2])^(3/2))/(d*x) + x
*(a - b*ArcSin[1 - d*x^2])^(5/2) + (15*b*x*(-(Sqrt[Pi]*FresnelC[(Sqrt[-b^(-
1)]*Sqrt[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))
 + Sqrt[Pi]*FresnelS[(Sqrt[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]
]*(Cos[a/(2*b)] + Sin[a/(2*b)]) + Sqrt[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2
]]*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])))/((-b^(-1))^(3/2)
*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2]))
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \left(a+b\arcsin\left(d\,x^{2}-1\right)\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2-1))^(5/2),x)
```

```
[Out] int((a+b*arcsin(d*x^2-1))^(5/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^(5/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b \operatorname{asin}\left(dx^{2} - 1\right)\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2-1))**(5/2),x)
```

```
[Out] Integral((a + b*asin(d*x**2 - 1))**(5/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^(5/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a+b\,\mathrm{asin}\left(d\,x^2-1\right)\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(d*x^2 - 1))^(5/2),x)
```

```
[Out] int((a + b*asin(d*x^2 - 1))^(5/2), x)
```

3.425 $\int \left(a-b\text{ArcSin}(1-dx^2)\right)^{3/2}\,dx$

Optimal. Leaf size=267

$$\frac{3b\sqrt{2dx^2-d^2x^4}\,\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}{dx}+x\left(a-b\text{ArcSin}\left(1-dx^2\right)\right)^{3/2}+\frac{3(-b)^{3/2}\sqrt{\pi}\,xS\left(\frac{\sqrt{a-b\text{ArcSi}}}{\sqrt{-b}}\right.}{\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)}$$

```
[Out] x*(a+b*arcsin(d*x^2-1))^(3/2)+3*(-b)^(3/2)*x*FresnelS((a+b*arcsin(d*x^2-1))
^(1/2)/(-b)^(1/2)/Pi^(1/2))*(cos(1/2*a/b)-sin(1/2*a/b))*Pi^(1/2)/(cos(1/2*a
rcsin(d*x^2-1))+sin(1/2*arcsin(d*x^2-1)))+3*(-b)^(3/2)*x*FresnelC((a+b*arcs
in(d*x^2-1))^(1/2)/(-b)^(1/2)/Pi^(1/2))*(cos(1/2*a/b)+sin(1/2*a/b))*Pi^(1/2
)/(cos(1/2*arcsin(d*x^2-1))+sin(1/2*arcsin(d*x^2-1)))+3*b*(-d^2*x^4+2*d*x^2
)^(1/2)*(a+b*arcsin(d*x^2-1))^(1/2)/d/x
```

Rubi [A]

time = 0.07, antiderivative size = 267, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$, Rules used = {4898, 4903}

$$\frac{3b\sqrt{2dx^2-d^2x^4}\,\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}{dx}+\frac{3\sqrt{\pi}\,(-b)^{3/2}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}{\sqrt{\pi}\,\sqrt{-b}}\right)}{\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)}+\frac{3\sqrt{\pi}\,(-b)^{3/2}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}{\sqrt{-b}\,\sqrt{\pi}}\right)}{\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)}+x\left(a-b\text{ArcSin}\left(1-dx^2\right)\right)^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[(a - b*ArcSin[1 - d*x^2])^(3/2),x]
```

```
[Out] (3*b*Sqrt[2*d*x^2 - d^2*x^4]*Sqrt[a - b*ArcSin[1 - d*x^2]])/(d*x) + x*(a -
b*ArcSin[1 - d*x^2])^(3/2) + (3*(-b)^(3/2)*Sqrt[Pi]*x*FresnelS[Sqrt[a - b*A
rcSin[1 - d*x^2]]/(Sqrt[-b]*Sqrt[Pi])]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Cos[
ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2]) + (3*(-b)^(3/2)*Sqrt[Pi]*x
*FresnelC[Sqrt[a - b*ArcSin[1 - d*x^2]]/(Sqrt[-b]*Sqrt[Pi])]*(Cos[a/(2*b)]
+ Sin[a/(2*b)]))/(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])
```

Rule 4898

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
a + b*ArcSin[c + d*x^2])^n, x] + (-Dist[4*b^2*n*(n - 1), Int[(a + b*ArcSin[
c + d*x^2])^(n - 2), x], x] + Simp[2*b*n*Sqrt[-2*c*d*x^2 - d^2*x^4]*((a + b
*ArcSin[c + d*x^2])^(n - 1)/(d*x)), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^
2, 1] && GtQ[n, 1]
```

Rule 4903

```
Int[1/Sqrt[(a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.)], x_Symbol] :> Simp[(-
Sqrt[Pi])*x*(Cos[a/(2*b)] - c*Sin[a/(2*b)])*(FresnelC[(1/(Sqrt[b*c]*Sqrt[Pi
]))*Sqrt[a + b*ArcSin[c + d*x^2]]]/(Sqrt[b*c]*(Cos[ArcSin[c + d*x^2]/2] - c
```

```
*Sin[ArcSin[c + d*x^2]/2]))), x] - Simp[Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[a/
(2*b)])*(FresnelS[(1/(Sqrt[b*c]*Sqrt[Pi]))*Sqrt[a + b*ArcSin[c + d*x^2]]]/(
Sqrt[b*c]*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2]))), x] /;
FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}\,dx=\frac{3b\sqrt{2dx^2-d^2x^4}\,\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{dx}+x\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}-$$

$$=\frac{3b\sqrt{2dx^2-d^2x^4}\,\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{dx}+x\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}+$$

Mathematica [A]
time = 0.28, size = 265, normalized size = 0.99

$$\frac{3b\sqrt{-dx^2\left(-2+dx^2\right)}\,\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}{dx}+x\left(a-b\text{ArcSin}\left(1-dx^2\right)\right)^{3/2}+\frac{3(-b)^{3/2}\sqrt{\pi}\,xS\left(\frac{\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}{\sqrt{-b}\,\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)}{\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)}+\frac{3(-b)^{3/2}\sqrt{\pi}\,x\text{FresnelC}\left(\frac{\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}{\sqrt{-b}\,\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)}{\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a - b*ArcSin[1 - d*x^2])^(3/2),x]
```

```
[Out] (3*b*Sqrt[-(d*x^2*(-2 + d*x^2))]*Sqrt[a - b*ArcSin[1 - d*x^2]])/(d*x) + x*(
a - b*ArcSin[1 - d*x^2])^(3/2) + (3*(-b)^(3/2)*Sqrt[Pi]*x*FresnelS[Sqrt[a -
 b*ArcSin[1 - d*x^2]]/(Sqrt[-b]*Sqrt[Pi])]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(
Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2]) + (3*(-b)^(3/2)*Sqrt[P
i]*x*FresnelC[Sqrt[a - b*ArcSin[1 - d*x^2]]/(Sqrt[-b]*Sqrt[Pi])]*(Cos[a/(2*
b)] + Sin[a/(2*b)]))/(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \left(a+b\arcsin\left(d\,x^2-1\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2-1))^(3/2),x)
```

```
[Out] int((a+b*arcsin(d*x^2-1))^(3/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^(3/2),x, algorithm="maxima")
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^(3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^(3/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b \operatorname{asin}{\left(d x^{2} - 1 \right)}\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2-1))**(3/2),x)
[Out] Integral((a + b*asin(d*x**2 - 1))**(3/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^(3/2),x, algorithm="giac")
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^(3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(a+b\,\mathrm{asin}\left(d\,x^2-1\right)\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(d*x^2 - 1))^(3/2),x)
[Out] int((a + b*asin(d*x^2 - 1))^(3/2), x)
```

3.426 $\int \sqrt{a-b\mathbf{ArcSin}\left(1-dx^2\right)}\,dx$

Optimal. Leaf size=228

$$x\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}-\frac{\sqrt{\pi}\,x\text{FresnelC}\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)}{\sqrt{-\frac{1}{b}}\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)\right)}+\frac{\sqrt{\pi}\,x\ldots}{\sqrt{\ldots}}$$

```
[Out] -x*FresnelC((-1/b)^(1/2)*(a+b*arcsin(d*x^2-1))^(1/2)/Pi^(1/2))*(cos(1/2*a/b
)-sin(1/2*a/b))*Pi^(1/2)/(cos(1/2*arcsin(d*x^2-1))+sin(1/2*arcsin(d*x^2-1))
)/(-1/b)^(1/2)+x*FresnelS((-1/b)^(1/2)*(a+b*arcsin(d*x^2-1))^(1/2)/Pi^(1/2)
)*(cos(1/2*a/b)+sin(1/2*a/b))*Pi^(1/2)/(cos(1/2*arcsin(d*x^2-1))+sin(1/2*ar
csin(d*x^2-1)))/(-1/b)^(1/2)+x*(a+b*arcsin(d*x^2-1))^(1/2)
```

Rubi [A]
time = 0.03, antiderivative size = 228, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.056$, Rules used = {4895}

$$-\frac{\sqrt{\pi}\,x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)}{\sqrt{-\frac{1}{b}}\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)\right)}+\frac{\sqrt{\pi}\,x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)}{\sqrt{-\frac{1}{b}}\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)\right)}+x\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a - b*ArcSin[1 - d*x^2]],x]
```

```
[Out] x*Sqrt[a - b*ArcSin[1 - d*x^2]] - (Sqrt[Pi]*x*FresnelC[(Sqrt[-b^(-1)]*Sqrt[
a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Sqrt[-b
^(-1)]*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])) + (Sqrt[Pi]*x
*FresnelS[(Sqrt[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]]*(Cos[a/(2
*b)] + Sin[a/(2*b)]))/(Sqrt[-b^(-1)]*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin
[1 - d*x^2]/2]))
```

Rule 4895

```
Int[Sqrt[(a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.)], x_Symbol] :> Simp[x*Sq
rt[a + b*ArcSin[c + d*x^2]], x] + (-Simp[Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[a
/(2*b)])*(FresnelC[Sqrt[c/(Pi*b)]*Sqrt[a + b*ArcSin[c + d*x^2]]]/(Sqrt[c/b]
*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2]))), x] + Simp[Sqrt[
Pi]*x*(Cos[a/(2*b)] - c*Sin[a/(2*b)])*(FresnelS[Sqrt[c/(Pi*b)]*Sqrt[a + b*A
rcSin[c + d*x^2]]]/(Sqrt[c/b]*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c +
d*x^2]/2]))), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \sqrt{a-b\sin^{-1}\left(1-dx^2\right)}\,dx = x\sqrt{a-b\sin^{-1}\left(1-dx^2\right)} - \frac{\sqrt{\pi}\,xC\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)(\mathrm{c}}{\sqrt{-\frac{1}{b}}\left(\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\sin\right.\right.}$$

Mathematica [A]
time = 0.04, size = 225, normalized size = 0.99

$$\frac{x\left(-\sqrt{\pi}\,\mathrm{FresnelC}\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\mathrm{ArcSin}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)+\sqrt{\pi}\,S\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\mathrm{ArcSin}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)+\sqrt{-\frac{1}{b}}\sqrt{a-b\mathrm{ArcSin}\left(1-dx^2\right)}\left(\cos\left(\frac{1}{2}\mathrm{ArcSin}(1-dx^2)\right)-\sin\left(\frac{1}{2}\mathrm{ArcSin}(1-dx^2)\right)\right)\right)}{\sqrt{-\frac{1}{b}}\left(\cos\left(\frac{1}{2}\mathrm{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\mathrm{ArcSin}\left(1-dx^2\right)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a - b*ArcSin[1 - d*x^2]],x]
```

```
[Out] (x*(-(Sqrt[Pi]*FresnelC[(Sqrt[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]])/Sqrt[
Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)])) + Sqrt[Pi]*FresnelS[(Sqrt[-b^(-1)]*Sqrt
[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]) + Sqrt[-
b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]]*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSi
n[1 - d*x^2]/2])))/(Sqrt[-b^(-1)]*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1
- d*x^2]/2]))
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int \sqrt{a+b\arcsin\left(d\,x^2-1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(d*x^2-1))^(1/2),x)
```

```
[Out] int((a+b*arcsin(d*x^2-1))^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*arcsin(d*x^2 - 1) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{a + b \operatorname{asin}{\left(dx^{2} - 1 \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(d*x**2-1))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*asin(d*x**2 - 1)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(d*x^2-1))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*arcsin(d*x^2 - 1) + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \sqrt{a+b\,\mathrm{asin}\left(d\,x^2-1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(d*x^2 - 1))^(1/2),x)
```

```
[Out] int((a + b*asin(d*x^2 - 1))^(1/2), x)
```

3.427 $\int \frac{1}{\sqrt{a-b\mathbf{ArcSin}(1-dx^2)}}\,dx$

Optimal. Leaf size=201

$$-\frac{\sqrt{\pi}\,xS\left(\frac{\sqrt{a-b\text{ArcSin}(1-dx^2)}}{\sqrt{-b}\,\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)}{\sqrt{-b}\,\left(\cos\left(\frac{1}{2}\text{ArcSin}(1-dx^2)\right)-\sin\left(\frac{1}{2}\text{ArcSin}(1-dx^2)\right)\right)}-\frac{\sqrt{\pi}\,x\text{FresnelC}\left(\frac{\sqrt{a-b\text{ArcSin}(1-dx^2)}}{\sqrt{-b}\,\sqrt{\pi}}\right)}{\sqrt{-b}\,\left(\cos\left(\frac{1}{2}\text{ArcSin}(1-dx^2)\right)-\sin\left(\frac{1}{2}\text{A}\right.\right.}$$

```
[Out] -x*FresnelS((a+b*arcsin(d*x^2-1))^(1/2)/(-b)^(1/2)/Pi^(1/2))*(cos(1/2*a/b)-
sin(1/2*a/b))*Pi^(1/2)/(cos(1/2*arcsin(d*x^2-1))+sin(1/2*arcsin(d*x^2-1)))/
(-b)^(1/2)-x*FresnelC((a+b*arcsin(d*x^2-1))^(1/2)/(-b)^(1/2)/Pi^(1/2))*(cos
(1/2*a/b)+sin(1/2*a/b))*Pi^(1/2)/(cos(1/2*arcsin(d*x^2-1))+sin(1/2*arcsin(d
*x^2-1)))/(-b)^(1/2)
```

Rubi [A]

time = 0.02, antiderivative size = 201, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {4903}

$$-\frac{\sqrt{\pi}\,x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{a-b\text{ArcSin}(1-dx^2)}}{\sqrt{\pi}\,\sqrt{-b}}\right)}{\sqrt{-b}\,\left(\cos\left(\frac{1}{2}\text{ArcSin}(1-dx^2)\right)-\sin\left(\frac{1}{2}\text{ArcSin}(1-dx^2)\right)\right)}-\frac{\sqrt{\pi}\,x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{a-b\text{ArcSin}(1-dx^2)}}{\sqrt{-b}\,\sqrt{\pi}}\right)}{\sqrt{-b}\,\left(\cos\left(\frac{1}{2}\text{ArcSin}(1-dx^2)\right)-\sin\left(\frac{1}{2}\text{ArcSin}(1-dx^2)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[a - b*ArcSin[1 - d*x^2]],x]
```

```
[Out] -((Sqrt[Pi]*x*FresnelS[Sqrt[a - b*ArcSin[1 - d*x^2]]/(Sqrt[-b]*Sqrt[Pi])]*(
Cos[a/(2*b)] - Sin[a/(2*b)]))/(Sqrt[-b]*(Cos[ArcSin[1 - d*x^2]/2] - Sin[Arc
Sin[1 - d*x^2]/2]))) - (Sqrt[Pi]*x*FresnelC[Sqrt[a - b*ArcSin[1 - d*x^2]]/(
Sqrt[-b]*Sqrt[Pi])]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(Sqrt[-b]*(Cos[ArcSin[1
- d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2]))
```

Rule 4903

```
Int[1/Sqrt[(a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.)], x_Symbol] :> Simp[(-
Sqrt[Pi])*x*(Cos[a/(2*b)] - c*Sin[a/(2*b)])*(FresnelC[(1/(Sqrt[b*c]*Sqrt[Pi
]))*Sqrt[a + b*ArcSin[c + d*x^2]]]/(Sqrt[b*c]*(Cos[ArcSin[c + d*x^2]/2] - c
*Sin[ArcSin[c + d*x^2]/2]))), x] - Simp[Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[a/
(2*b)])*(FresnelS[(1/(Sqrt[b*c]*Sqrt[Pi]))*Sqrt[a + b*ArcSin[c + d*x^2]]]/(
Sqrt[b*c]*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2]))), x] /;
FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rubi steps

$$\int \frac{1}{\sqrt{a-b\sin^{-1}(1-dx^2)}}\,dx = -\frac{\sqrt{\pi}\,xS\left(\frac{\sqrt{a-b\sin^{-1}(1-dx^2)}}{\sqrt{-b}\,\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)}{\sqrt{-b}\,\left(\cos\left(\frac{1}{2}\sin^{-1}(1-dx^2)\right)-\sin\left(\frac{1}{2}\sin^{-1}(1-dx^2)\right)\right)} - \frac{\sqrt{\pi}\,xC\left(\sqrt{\cdots}\right.}{\sqrt{-b}\,(\cos(\cdots}$$

Mathematica [A]
time = 0.04, size = 155, normalized size = 0.77

$$\frac{b\sqrt{\pi}\,x\left(S\left(\frac{\sqrt{a-b\text{ArcSin}(1-dx^2)}}{\sqrt{-b}\,\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)+\text{FresnelC}\left(\frac{\sqrt{a-b\text{ArcSin}(1-dx^2)}}{\sqrt{-b}\,\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)\right)}{(-b)^{3/2}\left(\cos\left(\frac{1}{2}\text{ArcSin}(1-dx^2)\right)-\sin\left(\frac{1}{2}\text{ArcSin}(1-dx^2)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[a - b*ArcSin[1 - d*x^2]],x]
[Out] (b*Sqrt[Pi]*x*(FresnelS[Sqrt[a - b*ArcSin[1 - d*x^2]]/(Sqrt[-b]*Sqrt[Pi])]*
(Cos[a/(2*b)] - Sin[a/(2*b)]) + FresnelC[Sqrt[a - b*ArcSin[1 - d*x^2]]/(Sqr
t[-b]*Sqrt[Pi])]*(Cos[a/(2*b)] + Sin[a/(2*b)])))/((-b)^(3/2)*(Cos[ArcSin[1
- d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2]))
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a+b\arcsin\left(d\,x^2-1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2-1))^(1/2),x)
[Out] int(1/(a+b*arcsin(d*x^2-1))^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^(1/2),x, algorithm="maxima")
[Out] integrate(1/sqrt(b*arcsin(d*x^2 - 1) + a), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a + b \operatorname{asin}\left(dx^2 - 1\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2-1))**(1/2),x)
```

```
[Out] Integral(1/sqrt(a + b*asin(d*x**2 - 1)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/sqrt(b*arcsin(d*x^2 - 1) + a), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{1}{\sqrt{a + b \operatorname{asin}\left(d\,x^2 - 1\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(d*x^2 - 1))^(1/2),x)
```

```
[Out] int(1/(a + b*asin(d*x^2 - 1))^(1/2), x)
```

3.428 $\int \frac{1}{\left(a-b\,\mathbf{ArcSin}(1-dx^2)\right)^{3/2}}\,dx$

Optimal. Leaf size=256

$$-\frac{\sqrt{2dx^2-d^2x^4}}{bdx\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}-\frac{\left(-\frac{1}{b}\right)^{3/2}\sqrt{\pi}\,x\text{FresnelC}\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\right.}{\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)}$$

```
[Out] -(-1/b)^(3/2)*x*FresnelC((-1/b)^(1/2)*(a+b*arcsin(d*x^2-1))^(1/2)/Pi^(1/2))
*(cos(1/2*a/b)-sin(1/2*a/b))*Pi^(1/2)/(cos(1/2*arcsin(d*x^2-1))+sin(1/2*arc
sin(d*x^2-1)))+(-1/b)^(3/2)*x*FresnelS((-1/b)^(1/2)*(a+b*arcsin(d*x^2-1))^(
1/2)/Pi^(1/2))*(cos(1/2*a/b)+sin(1/2*a/b))*Pi^(1/2)/(cos(1/2*arcsin(d*x^2-1
))+sin(1/2*arcsin(d*x^2-1)))-(-d^2*x^4+2*d*x^2)^(1/2)/b/d/x/(a+b*arcsin(d*x
^2-1))^(1/2)
```

Rubi [A]
time = 0.04, antiderivative size = 256, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.056$, Rules used = {4906}

$$-\frac{\sqrt{2dx^2-d^2x^4}}{bdx\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}-\frac{\sqrt{\pi}\left(-\frac{1}{b}\right)^{3/2}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)}{\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)}+\frac{\sqrt{\pi}\left(-\frac{1}{b}\right)^{3/2}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)}{\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a - b*ArcSin[1 - d*x^2])^(-3/2),x]
```

```
[Out] -(Sqrt[2*d*x^2 - d^2*x^4]/(b*d*x*Sqrt[a - b*ArcSin[1 - d*x^2]])) - ((-b^(-1
))^(3/2)*Sqrt[Pi]*x*FresnelC[(Sqrt[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]])/
Sqrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Cos[ArcSin[1 - d*x^2]/2] - Sin[Ar
cSin[1 - d*x^2]/2]) + ((-b^(-1))^(3/2)*Sqrt[Pi]*x*FresnelS[(Sqrt[-b^(-1)]*S
qrt[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(Cos
[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])
```

Rule 4906

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(-3/2), x_Symbol] :> Simp[-
Sqrt[-2*c*d*x^2 - d^2*x^4]/(b*d*x*Sqrt[a + b*ArcSin[c + d*x^2]]), x] + (-Si
mp[(c/b)^(3/2)*Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[a/(2*b)])*(FresnelC[Sqrt[c/
(Pi*b)]*Sqrt[a + b*ArcSin[c + d*x^2]]]/(Cos[(1/2)*ArcSin[c + d*x^2]] - c*Si
n[ArcSin[c + d*x^2]/2])), x] + Simp[(c/b)^(3/2)*Sqrt[Pi]*x*(Cos[a/(2*b)] -
c*Sin[a/(2*b)])*(FresnelS[Sqrt[c/(Pi*b)]*Sqrt[a + b*ArcSin[c + d*x^2]]]/(Co
s[(1/2)*ArcSin[c + d*x^2]] - c*Sin[ArcSin[c + d*x^2]/2])), x]) /; FreeQ[{a,
```

b, c, d}, x] && EqQ[c^2, 1]

Rubi steps

$$\int \frac{1}{\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}}\,dx = -\frac{\sqrt{2dx^2-d^2x^4}}{bdx\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}} - \frac{\left(-\frac{1}{b}\right)^{3/2}\sqrt{\pi}\,xC\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\sin^{-1}(\cdots}}{\sqrt{\pi}}\right.}{\cos\left(\frac{1}{2}\sin^{-1}\left(1-dx^2\right)\right)-\sin\cdots}$$

Mathematica [A]
time = 0.32, size = 256, normalized size = 1.00

$$-\frac{\sqrt{2dx^2-d^2x^4}}{bdx\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}} - \frac{\left(-\frac{1}{b}\right)^{3/2}\sqrt{\pi}\,x\,\text{FresnelC}\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)}{\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)} + \frac{\left(-\frac{1}{b}\right)^{3/2}\sqrt{\pi}\,xS\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)}{\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a - b*ArcSin[1 - d*x^2])^(-3/2),x]
```

```
[Out] -(Sqrt[2*d*x^2 - d^2*x^4]/(b*d*x*Sqrt[a - b*ArcSin[1 - d*x^2]])) - ((-b^(-1
))^(3/2)*Sqrt[Pi]*x*FresnelC[(Sqrt[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]])/
Sqrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Cos[ArcSin[1 - d*x^2]/2] - Sin[Ar
cSin[1 - d*x^2]/2]) + ((-b^(-1))^(3/2)*Sqrt[Pi]*x*FresnelS[(Sqrt[-b^(-1)]*S
qrt[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(Cos
[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\arcsin\left(d\,x^2-1\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2-1))^(3/2),x)
```

```
[Out] int(1/(a+b*arcsin(d*x^2-1))^(3/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^(-3/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b \operatorname{asin}\left(dx^{2} - 1\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2-1))**(3/2),x)
```

```
[Out] Integral((a + b*asin(d*x**2 - 1))**(-3/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^(-3/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{1}{{\left(a+b\,\mathrm{asin}\left(d\,x^2-1\right)\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(d*x^2 - 1))^(3/2),x)
```

```
[Out] int(1/(a + b*asin(d*x^2 - 1))^(3/2), x)
```

3.429 $\int \frac{1}{\left(a-b\mathbf{ArcSin}(1-dx^2)\right)^{5/2}}\,dx$

Optimal. Leaf size=281

$$-\frac{\sqrt{2dx^2-d^2x^4}}{3bdx\left(a-b\text{ArcSin}\left(1-dx^2\right)\right)^{3/2}}+\frac{x}{3b^2\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}+\frac{\sqrt{\pi}\,xS\left(\frac{\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}{\sqrt{-b}\,\sqrt{\pi}}\right)\left(\right.}{3(-b)^{5/2}\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\right.}$$

```
[Out] 1/3*x*FresnelS((a+b*arcsin(d*x^2-1))^(1/2)/(-b)^(1/2)/Pi^(1/2))*(cos(1/2*a/
b)-sin(1/2*a/b))*Pi^(1/2)/(-b)^(5/2)/(cos(1/2*arcsin(d*x^2-1))+sin(1/2*arcs
in(d*x^2-1)))+1/3*x*FresnelC((a+b*arcsin(d*x^2-1))^(1/2)/(-b)^(1/2)/Pi^(1/2
))*(cos(1/2*a/b)+sin(1/2*a/b))*Pi^(1/2)/(-b)^(5/2)/(cos(1/2*arcsin(d*x^2-1)
)+sin(1/2*arcsin(d*x^2-1)))-1/3*(-d^2*x^4+2*d*x^2)^(1/2)/b/d/x/(a+b*arcsin(
d*x^2-1))^(3/2)+1/3*x/b^2/(a+b*arcsin(d*x^2-1))^(1/2)
```

Rubi [A]
time = 0.05, antiderivative size = 281, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$, Rules used = {4912, 4903}

$$\frac{x}{3b^2\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}-\frac{\sqrt{2dx^2-d^2x^4}}{3bdx\left(a-b\text{ArcSin}\left(1-dx^2\right)\right)^{3/2}}+\frac{\sqrt{\pi}\,x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}{\sqrt{\pi}\,\sqrt{-b}}\right)}{3(-b)^{5/2}\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)\right)}+\frac{\sqrt{\pi}\,x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}{\sqrt{-b}\,\sqrt{\pi}}\right)}{3(-b)^{5/2}\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a - b*ArcSin[1 - d*x^2])^(-5/2),x]
```

```
[Out] -1/3*Sqrt[2*d*x^2 - d^2*x^4]/(b*d*x*(a - b*ArcSin[1 - d*x^2])^(3/2)) + x/(3
*b^2*Sqrt[a - b*ArcSin[1 - d*x^2]]) + (Sqrt[Pi]*x*FresnelS[Sqrt[a - b*ArcSi
n[1 - d*x^2]]/(Sqrt[-b]*Sqrt[Pi])]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(3*(-b)^(
5/2)*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])) + (Sqrt[Pi]*x*F
resnelC[Sqrt[a - b*ArcSin[1 - d*x^2]]/(Sqrt[-b]*Sqrt[Pi])]*(Cos[a/(2*b)] +
Sin[a/(2*b)]))/(3*(-b)^(5/2)*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x
^2]/2]))
```

Rule 4903

```
Int[1/Sqrt[(a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.)], x_Symbol] :> Simp[(-
Sqrt[Pi])*x*(Cos[a/(2*b)] - c*Sin[a/(2*b)])*(FresnelC[(1/(Sqrt[b*c]*Sqrt[Pi
]))*Sqrt[a + b*ArcSin[c + d*x^2]]]/(Sqrt[b*c]*(Cos[ArcSin[c + d*x^2]/2] - c
*Sin[ArcSin[c + d*x^2]/2]))), x] - Simp[Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[a/
(2*b)])*(FresnelS[(1/(Sqrt[b*c]*Sqrt[Pi]))*Sqrt[a + b*ArcSin[c + d*x^2]]]/(
Sqrt[b*c]*(Cos[ArcSin[c + d*x^2]/2] - c*Sin[ArcSin[c + d*x^2]/2]))), x] /;
FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1]
```

Rule 4912

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
(a + b*ArcSin[c + d*x^2])^(n + 2)/(4*b^2*(n + 1)*(n + 2))), x] + (-Dist[1/(
4*b^2*(n + 1)*(n + 2)), Int[(a + b*ArcSin[c + d*x^2])^(n + 2), x], x] + Sim
p[Sqrt[-2*c*d*x^2 - d^2*x^4]*((a + b*ArcSin[c + d*x^2])^(n + 1)/(2*b*d*(n +
 1)*x)), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1] && LtQ[n, -1] && NeQ[
n, -2]
```

Rubi steps

$$\int \frac{1}{\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{5/2}}\,dx = -\frac{\sqrt{2dx^2-d^2x^4}}{3bdx\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}}+\frac{x}{3b^2\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}-\frac{\int \frac{}{\sqrt{a-}}}{}$$

$$= -\frac{\sqrt{2dx^2-d^2x^4}}{3bdx\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}}+\frac{x}{3b^2\sqrt{a-b\sin^{-1}\left(1-dx^2\right)}}+\frac{\sqrt{\pi}\,xS}{3(-b)^{5/2}}$$

Mathematica [A]
time = 0.57, size = 270, normalized size = 0.96

$$\frac{\frac{-\frac{b\sqrt{-dx^2\left(-2+dx^2\right)}}{d}+x^2\left(a-b\text{ArcSin}\left(1-dx^2\right)\right)}{x\left(a-b\text{ArcSin}\left(1-dx^2\right)\right)^{3/2}}+\frac{\sqrt{\pi}\,xS\left(\frac{\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}{\sqrt{-b}\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)}{\sqrt{-b}\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)\right)}+\frac{\sqrt{\pi}\,x\text{FresnelC}\left(\frac{\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}{\sqrt{-b}\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)}{\sqrt{-b}\left(\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)\right)}}{3b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a - b*ArcSin[1 - d*x^2])^(-5/2),x]
```

```
[Out] ((-((b*Sqrt[-(d*x^2*(-2 + d*x^2))])/d) + x^2*(a - b*ArcSin[1 - d*x^2]))/(x*
(a - b*ArcSin[1 - d*x^2])^(3/2)) + (Sqrt[Pi]*x*FresnelS[Sqrt[a - b*ArcSin[1
 - d*x^2]]/(Sqrt[-b]*Sqrt[Pi])]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Sqrt[-b]*(C
os[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])) + (Sqrt[Pi]*x*FresnelC
[Sqrt[a - b*ArcSin[1 - d*x^2]]/(Sqrt[-b]*Sqrt[Pi])]*(Cos[a/(2*b)] + Sin[a/(
2*b)]))/(Sqrt[-b]*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])))/(
3*b^2)
```

Maple [F]
time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\arcsin\left(d\,x^2-1\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2-1))^(5/2),x)
[Out] int(1/(a+b*arcsin(d*x^2-1))^(5/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^(5/2),x, algorithm="maxima")
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^(-5/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^(5/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b \operatorname{asin}{\left(d x^{2} - 1 \right)}\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2-1))**(5/2),x)
[Out] Integral((a + b*asin(d*x**2 - 1))**(-5/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^(5/2),x, algorithm="giac")
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^(-5/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{1}{\left(a+b\,\mathrm{asin}\left(d\,x^2-1\right)\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(d*x^2 - 1))^(5/2),x)
[Out] int(1/(a + b*asin(d*x^2 - 1))^(5/2), x)
```

3.430 $\int \frac{1}{\left(a-b\text{ArcSin}\left(1-dx^2\right)\right)^{7/2}}\,dx$

Optimal. Leaf size=339

$$(-$$

$$-\frac{\sqrt{2dx^2-d^2x^4}}{5bdx\,(a-b\text{ArcSin}\,(1-dx^2))^{5/2}}+\frac{x}{15b^2\,(a-b\text{ArcSin}\,(1-dx^2))^{3/2}}+\frac{\sqrt{2dx^2-d^2x^4}}{15b^3dx\,\sqrt{a-b\text{ArcSin}\,(1-dx^2)}}+-$$

```
[Out] 1/15*x/b^2/(a+b*arcsin(d*x^2-1))^(3/2)+1/15*(-1/b)^(7/2)*x*FresnelC((-1/b)^
(1/2)*(a+b*arcsin(d*x^2-1))^(1/2)/Pi^(1/2))*(cos(1/2*a/b)-sin(1/2*a/b))*Pi^
(1/2)/(cos(1/2*arcsin(d*x^2-1))+sin(1/2*arcsin(d*x^2-1)))-1/15*(-1/b)^(7/2)
*x*FresnelS((-1/b)^(1/2)*(a+b*arcsin(d*x^2-1))^(1/2)/Pi^(1/2))*(cos(1/2*a/b
)+sin(1/2*a/b))*Pi^(1/2)/(cos(1/2*arcsin(d*x^2-1))+sin(1/2*arcsin(d*x^2-1))
)-1/5*(-d^2*x^4+2*d*x^2)^(1/2)/b/d/x/(a+b*arcsin(d*x^2-1))^(5/2)+1/15*(-d^2
*x^4+2*d*x^2)^(1/2)/b^3/d/x/(a+b*arcsin(d*x^2-1))^(1/2)
```

Rubi [A]
time = 0.07, antiderivative size = 339, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$, Rules used = $\{4912, 4906\}$

$$\frac{\sqrt{2dx^2-d^2x^4}}{15b^3dx\sqrt{a-b\text{ArcSin}\,(1-dx^2)}}+\frac{x}{15b^2\,(a-b\text{ArcSin}\,(1-dx^2))^{3/2}}-\frac{\sqrt{2dx^2-d^2x^4}}{5bdx\,(a-b\text{ArcSin}\,(1-dx^2))^{5/2}}+\frac{\sqrt{\pi}\left(-\frac{1}{b}\right)^{7/2}x\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\text{FresnelC}\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\text{ArcSin}\,(1-dx^2)}}{\sqrt{\pi}}\right)}{15\left(\cos\left(\frac{1}{2}\text{ArcSin}\,(1-dx^2)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\,(1-dx^2)\right)\right)}-\frac{\sqrt{\pi}\left(-\frac{1}{b}\right)^{7/2}x\left(\sin\left(\frac{a}{2b}\right)+\cos\left(\frac{a}{2b}\right)\right)S\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\text{ArcSin}\,(1-dx^2)}}{\sqrt{\pi}}\right)}{15\left(\cos\left(\frac{1}{2}\text{ArcSin}\,(1-dx^2)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\,(1-dx^2)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a - b*ArcSin[1 - d*x^2])^(-7/2),x]
```

```
[Out] -1/5*Sqrt[2*d*x^2 - d^2*x^4]/(b*d*x*(a - b*ArcSin[1 - d*x^2])^(5/2)) + x/(1
5*b^2*(a - b*ArcSin[1 - d*x^2])^(3/2)) + Sqrt[2*d*x^2 - d^2*x^4]/(15*b^3*d*
x*Sqrt[a - b*ArcSin[1 - d*x^2]]) + ((-b^(-1))^(7/2)*Sqrt[Pi]*x*FresnelC[(Sq
rt[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] - Sin[a/
(2*b)]))/(15*(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2])) - ((-b^
(-1))^(7/2)*Sqrt[Pi]*x*FresnelS[(Sqrt[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]
])/Sqrt[Pi]]*(Cos[a/(2*b)] + Sin[a/(2*b)]))/(15*(Cos[ArcSin[1 - d*x^2]/2] -
 Sin[ArcSin[1 - d*x^2]/2]))
```

Rule 4906

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(-3/2), x_Symbol] :> Simp[-
Sqrt[-2*c*d*x^2 - d^2*x^4]/(b*d*x*Sqrt[a + b*ArcSin[c + d*x^2]]), x] + (-Si
mp[(c/b)^(3/2)*Sqrt[Pi]*x*(Cos[a/(2*b)] + c*Sin[a/(2*b)])*(FresnelC[Sqrt[c/
(Pi*b)]*Sqrt[a + b*ArcSin[c + d*x^2]]]/(Cos[(1/2)*ArcSin[c + d*x^2]] - c*Si
n[ArcSin[c + d*x^2]/2])), x] + Simp[(c/b)^(3/2)*Sqrt[Pi]*x*(Cos[a/(2*b)] -
```

```
c*Sin[a/(2*b)])*(FresnelS[Sqrt[c/(Pi*b)]*Sqrt[a + b*ArcSin[c + d*x^2]]]/(Co
s[(1/2)*ArcSin[c + d*x^2]] - c*Sin[ArcSin[c + d*x^2]/2])), x]) /; FreeQ[{a,
 b, c, d}, x] && EqQ[c^2, 1]
```

Rule 4912

```
Int[((a_.) + ArcSin[(c_) + (d_.)*(x_)^2]*(b_.))^(n_), x_Symbol] :> Simp[x*(
(a + b*ArcSin[c + d*x^2])^(n + 2)/(4*b^2*(n + 1)*(n + 2))), x] + (-Dist[1/(
4*b^2*(n + 1)*(n + 2)), Int[(a + b*ArcSin[c + d*x^2])^(n + 2), x], x] + Sim
p[Sqrt[-2*c*d*x^2 - d^2*x^4]*((a + b*ArcSin[c + d*x^2])^(n + 1)/(2*b*d*(n +
 1)*x)), x]) /; FreeQ[{a, b, c, d}, x] && EqQ[c^2, 1] && LtQ[n, -1] && NeQ[
n, -2]
```

Rubi steps

$$\int \frac{1}{\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{7/2}}\,dx=-\frac{\sqrt{2dx^2-d^2x^4}}{5bdx\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{5/2}}+\frac{x}{15b^2\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}}-\frac{\int \overline{(a-}}{}$$

$$=-\frac{\sqrt{2dx^2-d^2x^4}}{5bdx\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{5/2}}+\frac{x}{15b^2\left(a-b\sin^{-1}\left(1-dx^2\right)\right)^{3/2}}+\frac{}{15b^3a}$$

Mathematica [A]
time = 0.65, size = 319, normalized size = 0.94

$$\frac{\frac{-\frac{3b\sqrt{dx^2\left(2-dx^2\right)}}{d}+x^2\left(a-b\text{ArcSin}\left(1-dx^2\right)\right)+\frac{\sqrt{dx^2\left(2-dx^2\right)}\left(a-b\text{ArcSin}\left(1-dx^2\right)\right)^2}{bd}}{x\left(a-b\text{ArcSin}\left(1-dx^2\right)\right)^{5/2}}+\frac{\left(-\frac{1}{b}\right)^{3/2}\sqrt{\pi}\,x\text{FresnelC}\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)}{\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)}+\frac{\left(-\frac{1}{b}\right)^{5/2}b\sqrt{\pi}\,xS\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a-b\text{ArcSin}\left(1-dx^2\right)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)}{\cos\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)-\sin\left(\frac{1}{2}\text{ArcSin}\left(1-dx^2\right)\right)}}{15b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a - b*ArcSin[1 - d*x^2])^(-7/2),x]
```

```
[Out] (((-3*b*Sqrt[d*x^2*(2 - d*x^2)])/d + x^2*(a - b*ArcSin[1 - d*x^2]) + (Sqrt[
d*x^2*(2 - d*x^2)]*(a - b*ArcSin[1 - d*x^2])^2)/(b*d))/(x*(a - b*ArcSin[1 -
 d*x^2])^(5/2)) + ((-b^(-1))^(3/2)*Sqrt[Pi]*x*FresnelC[(Sqrt[-b^(-1)]*Sqrt[
a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]]*(Cos[a/(2*b)] - Sin[a/(2*b)]))/(Cos[Arc
Sin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2]) + ((-b^(-1))^(5/2)*b*Sqrt[Pi]
*x*FresnelS[(Sqrt[-b^(-1)]*Sqrt[a - b*ArcSin[1 - d*x^2]])/Sqrt[Pi]]*(Cos[a/
(2*b)] + Sin[a/(2*b)]))/(Cos[ArcSin[1 - d*x^2]/2] - Sin[ArcSin[1 - d*x^2]/2
]))/(15*b^2)
```

Maple [F]
time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b \arcsin \left(d\,x^{2}-1\right)\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(d*x^2-1))^(7/2),x)
[Out] int(1/(a+b*arcsin(d*x^2-1))^(7/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^(7/2),x, algorithm="maxima")
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^(-7/2), x)
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^(7/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b \operatorname{asin}\left(dx^{2}-1\right)\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(d*x**2-1))**(7/2),x)
[Out] Integral((a + b*asin(d*x**2 - 1))**(-7/2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(d*x^2-1))^(7/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(d*x^2 - 1) + a)^(-7/2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{1}{\left(a+b\,\mathrm{asin}\left(d\,x^2-1\right)\right)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(d*x^2 - 1))^(7/2),x)
```

```
[Out] int(1/(a + b*asin(d*x^2 - 1))^(7/2), x)
```

3.431 $\int \frac{\left(a+b\mathbf{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^n}{1-c^2x^2}\,dx$

Optimal. Leaf size=43

$$\mathrm{Int}\left(\frac{\left(a+b\mathrm{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^n}{1-c^2x^2},x\right)$$

```
[Out] Unintegrable((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^n/(-c^2*x^2+1),x)
```

Rubi [A]
time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{\left(a+b\mathrm{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^n}{1-c^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^n/(1 - c^2*x^2),x]
[Out] Defer[Int][(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^n/(1 - c^2*x^2), x]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^n}{1-c^2x^2}\,dx = \int \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^n}{1-c^2x^2}\,dx$$

Mathematica [A]
time = 0.07, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\mathrm{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^n}{1-c^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^n/(1 - c^2*x^2),x]
```

```
[Out] Integrate[(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^n/(1 - c^2*x^2), x]
```

Maple [A]
time = 0.93, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\arcsin\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)\right)^{n}}{-c^{2}x^{2}+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^n/(-c^2*x^2+1),x)
```

```
[Out] int((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^n/(-c^2*x^2+1),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^n/(-c^2*x^2+1),x, algo
rithm="maxima")
```

```
[Out] -integrate((b*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)^n/(c^2*x^2 - 1), x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^n/(-c^2*x^2+1),x, algo
rithm="fricas")
```

```
[Out] integral(-(b*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)^n/(c^2*x^2 - 1), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin((-c*x+1)**(1/2)/(c*x+1)**(1/2)))**n/(-c**2*x**2+1),x)
```

```
[Out] Timed out
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^n/(-c^2*x^2+1),x, algo
rithm="giac")
```

```
[Out] integrate(-(b*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)^n/(c^2*x^2 - 1), x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.02

$$-\int \frac{\left(a+b\,\mathrm{asin}\left(\frac{\sqrt{1-c\,x}}{\sqrt{c\,x+1}}\right)\right)^n}{c^2\,x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(a + b*asin((1 - c*x)^(1/2)/(c*x + 1)^(1/2)))^n/(c^2*x^2 - 1),x)
```

```
[Out] -int((a + b*asin((1 - c*x)^(1/2)/(c*x + 1)^(1/2)))^n/(c^2*x^2 - 1), x)
```

3.432 $\int \frac{\left(a+b\mathbf{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3}{1-c^2x^2}\,dx$

Optimal. Leaf size=275

$$\frac{i\left(a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^4}{4bc}-\frac{\left(a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3\log\left(1-e^{2i\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}\right)}{c}+\frac{3ib\left(a+b\text{ArcS}\right.}{}$$

```
[Out] 1/4*I*(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^4/b/c-(a+b*arcsin((-c*x+1)
^(1/2)/(c*x+1)^(1/2)))^3*ln(1-(I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(
c*x+1))^(1/2))^2)/c+3/2*I*b*(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2*po
lylog(2,(I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(c*x+1))^(1/2))^2)/c-3/
2*b^2*(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))*polylog(3,(I*(-c*x+1)^(1/2
)/(c*x+1)^(1/2)+(1-(-c*x+1)/(c*x+1))^(1/2))^2)/c-3/4*I*b^3*polylog(4,(I*(-c
*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(c*x+1))^(1/2))^2)/c
```

Rubi [A]
time = 0.16, antiderivative size = 275, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {6813, 4721, 3798, 2221, 2611, 6744, 2320, 6724}

$$-\frac{3b^2\text{Li}_3\left(e^{2i\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)}\right)\left(a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)}{2c}+\frac{3ib\text{Li}_2\left(e^{2i\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)}\right)\left(a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)^2}{2c}+\frac{i\left(a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)^4}{4bc}-\frac{\log\left(1-e^{2i\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)}\right)\left(a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)^3}{c}-\frac{3ib^3\text{Li}_4\left(e^{2i\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)}\right)}{4c}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^3/(1 - c^2*x^2),x]
```

```
[Out] ((I/4)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^4)/(b*c) - ((a + b*ArcSi
n[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^3*Log[1 - E^((2*I)*ArcSin[Sqrt[1 - c*x]/Sqr
t[1 + c*x]])])/c + (((3*I)/2)*b*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])
^2*PolyLog[2, E^((2*I)*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])])/c - (3*b^2*(a
 + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])*PolyLog[3, E^((2*I)*ArcSin[Sqrt[1
 - c*x]/Sqrt[1 + c*x]])])/(2*c) - (((3*I)/4)*b^3*PolyLog[4, E^((2*I)*ArcSin
[Sqrt[1 - c*x]/Sqrt[1 + c*x]])])/c
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 3798

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[I*((c + d*x)^(m + 1)/(d*(m + 1))), x] - Dist[2*I, Int[(c + d*x)^m
*E^(2*I*k*Pi)*(E^(2*I*(e + f*x))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x)))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n*Cot[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6744

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[(e + f*x)^m*(PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p]/(b*c*p*Log[F])), x] - Dist[f*(m/(b*c*p*Log[F])), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 6813

```
Int[((a_.) + (b_.)*(F_)[((c_.)*Sqrt[(d_.) + (e_.)*(x_)])/Sqrt[(f_.) + (g_.)
*(x_)]])^(n_.)/((A_.) + (C_.)*(x_)^2), x_Symbol] :> Dist[2*e*(g/(C*(e*f - d
*g))), Subst[Int[(a + b*F[c*x])^n/x, x], x, Sqrt[d + e*x]/Sqrt[f + g*x]], x
] /; FreeQ[{a, b, c, d, e, f, g, A, C, F}, x] && EqQ[C*d*f - A*e*g, 0] && E
```

```
qQ[e*f + d*g, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3}{1-c^2x^2}\,dx = -\frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^3}{x}\,dx, x, \frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}{c}$$

$$= -\frac{\text{Subst}\left(\int (a+bx)^3\cot(x)\,dx, x, \sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)}{c}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^4}{4bc} + \frac{(2i)\text{Subst}\left(\int \frac{e^{2ix}(a+bx)^3}{1-e^{2ix}}\,dx, x, \sin^{-1}\left(\right.\right.}{c}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^4}{4bc} - \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3\log\left(1\right.}{c}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^4}{4bc} - \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3\log\left(1\right.}{c}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^4}{4bc} - \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3\log\left(1\right.}{c}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^4}{4bc} - \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3\log\left(1\right.}{c}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^4}{4bc} - \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3\log\left(1\right.}{c}$$

Mathematica [F]
time = 0.21, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3}{1-c^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^3/(1 - c^2*x^2),x]
```

```
[Out] Integrate[(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^3/(1 - c^2*x^2), x]
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 1231 vs. 2(300) = 600.
time = 0.89, size = 1232, normalized size = 4.48

method	result
default	$-\frac{a^3 \ln(cx-1)}{2c}+\frac{a^3 \ln(cx+1)}{2c}-\frac{6ib^3 \operatorname{polylog}\left(4, \frac{i\sqrt{-cx+1}}{\sqrt{cx+1}}+\sqrt{1-\frac{-cx+1}{cx+1}}\right)}{c}-\frac{b^3 \arcsin\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)^3 \ln\left(1-\right.}{}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^3/(-c^2*x^2+1),x,method=_RET
URNVERBOSE)
```

```
[Out] -1/2*a^3/c*ln(c*x-1)+1/2*a^3/c*ln(c*x+1)+6*I*a*b^2/c*arcsin((-c*x+1)^(1/2)/
(c*x+1)^(1/2))*polylog(2,I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(c*x+1)
)^(1/2))-b^3/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))^3*ln(1-I*(-c*x+1)^(1/2)
/(c*x+1)^(1/2)-(1-(-c*x+1)/(c*x+1))^(1/2))+1/4*I*b^3/c*arcsin((-c*x+1)^(1/2
)/(c*x+1)^(1/2))^4-6*b^3/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))*polylog(3,I
*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(c*x+1))^(1/2))+3*I*b^3/c*arcsin(
(-c*x+1)^(1/2)/(c*x+1)^(1/2))^2*polylog(2,-I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)-(
1-(-c*x+1)/(c*x+1))^(1/2))-b^3/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))^3*ln(
I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(c*x+1))^(1/2)+1)-6*I*b^3/c*poly
log(4,-I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)-(1-(-c*x+1)/(c*x+1))^(1/2))-6*b^3/c*a
rcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))*polylog(3,-I*(-c*x+1)^(1/2)/(c*x+1)^(1/
2)-(1-(-c*x+1)/(c*x+1))^(1/2))+I*a*b^2/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2
))^3+6*I*a*b^2/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))*polylog(2,-I*(-c*x+1)
^(1/2)/(c*x+1)^(1/2)-(1-(-c*x+1)/(c*x+1))^(1/2))-3*a*b^2/c*arcsin((-c*x+1)^
(1/2)/(c*x+1)^(1/2))^2*ln(1-I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)-(1-(-c*x+1)/(c*x
+1))^(1/2))+3/2*I*a^2*b/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))^2-6*a*b^2/c*
polylog(3,I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(c*x+1))^(1/2))-3*a*b^
2/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))^2*ln(I*(-c*x+1)^(1/2)/(c*x+1)^(1/2
)+(1-(-c*x+1)/(c*x+1))^(1/2)+1)+3*I*a^2*b/c*polylog(2,-I*(-c*x+1)^(1/2)/(c*
x+1)^(1/2)-(1-(-c*x+1)/(c*x+1))^(1/2))-6*a*b^2/c*polylog(3,-I*(-c*x+1)^(1/2
)/(c*x+1)^(1/2)-(1-(-c*x+1)/(c*x+1))^(1/2))-6*I*b^3/c*polylog(4,I*(-c*x+1)^
(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(c*x+1))^(1/2))-3*a^2*b/c*arcsin((-c*x+1)^(
1/2)/(c*x+1)^(1/2))*ln(I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(c*x+1))^
(1/2)+1)+3*I*b^3/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))^2*polylog(2,I*(-c*x
+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(c*x+1))^(1/2))-3*a^2*b/c*arcsin((-c*x+
1)^(1/2)/(c*x+1)^(1/2))*ln(1-I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)-(1-(-c*x+1)/(c*
x+1))^(1/2))+3*I*a^2*b/c*polylog(2,I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+
1)/(c*x+1))^(1/2))
```

Maxima [F]

time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^3/(-c^2*x^2+1),x, algo
rithm="maxima")
```

```
[Out] 1/2*a^3*(log(c*x + 1)/c - log(c*x - 1)/c) - integrate((b^3*arctan2(sqrt(-c*
x + 1), sqrt(2)*sqrt(c)*sqrt(x))^3 + 3*a*b^2*arctan2(sqrt(-c*x + 1), sqrt(2
)*sqrt(c)*sqrt(x))^2 + 3*a^2*b*arctan2(sqrt(-c*x + 1), sqrt(2)*sqrt(c)*sqrt
(x)))/(c^2*x^2 - 1), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^3/(-c^2*x^2+1),x, algo
rithm="fricas")
```

```
[Out] integral(-(b^3*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1))^3 + 3*a*b^2*arcsin(sqrt
(-c*x + 1)/sqrt(c*x + 1))^2 + 3*a^2*b*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1))
+ a^3)/(c^2*x^2 - 1), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin((-c*x+1)**(1/2)/(c*x+1)**(1/2)))**3/(-c**2*x**2+1),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^3/(-c^2*x^2+1),x, algo
rithm="giac")
```

```
[Out] integrate(-(b*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)^3/(c^2*x^2 - 1), x)
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.00

$$\int -\frac{\left(a+b\,\mathrm{asin}\left(\frac{\sqrt{1-c\,x}}{\sqrt{c\,x+1}}\right)\right)^3}{c^2\,x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(a + b*asin((1 - c*x)^(1/2)/(c*x + 1)^(1/2)))^3/(c^2*x^2 - 1),x)
[Out] int(-(a + b*asin((1 - c*x)^(1/2)/(c*x + 1)^(1/2)))^3/(c^2*x^2 - 1), x)
```

3.433 $\int \frac{\left(a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}{1-c^2x^2}\,dx$

Optimal. Leaf size=205

$$\frac{i\left(a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3}{3bc}-\frac{\left(a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2\log\left(1-e^{2i\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}\right)}{c}+\frac{ib\left(a+b\text{ArcSi}\right.}{}$$

```
[Out] 1/3*I*(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^3/b/c-(a+b*arcsin((-c*x+1)
^(1/2)/(c*x+1)^(1/2)))^2*ln(1-(I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(
c*x+1))^(1/2))^2)/c+I*b*(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))*polylog(
2,(I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(c*x+1))^(1/2))^2)/c-1/2*b^2*
polylog(3,(I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(c*x+1))^(1/2))^2)/c
```

Rubi [A]
time = 0.13, antiderivative size = 205, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.175$, Rules used = {6813, 4721, 3798, 2221, 2611, 2320, 6724}

$$\frac{ib\text{Li}_2\left(e^{2i\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)}\right)\left(a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)}{c}+\frac{i\left(a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)^3}{3bc}-\frac{\log\left(1-e^{2i\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)}\right)\left(a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)^2}{c}-\frac{b^2\text{Li}_3\left(e^{2i\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)}\right)}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2/(1 - c^2*x^2),x]
```

```
[Out] ((I/3)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^3)/(b*c) - ((a + b*ArcSi
n[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2*Log[1 - E^((2*I)*ArcSin[Sqrt[1 - c*x]/Sqr
t[1 + c*x]])])/c + (I*b*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])*PolyLog
[2, E^((2*I)*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])])/c - (b^2*PolyLog[3, E^(
(2*I)*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])])/(2*c)
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
```

```
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2611

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> Simp[(-(f + g*x)^m)*(PolyLog[2, (-e)*(F^(c*(a +
b*x)))^n]/(b*c*n*Log[F])), x] + Dist[g*(m/(b*c*n*Log[F])), Int[(f + g*x)^(m
 - 1)*PolyLog[2, (-e)*(F^(c*(a + b*x)))^n], x], x] /; FreeQ[{F, a, b, c, e,
 f, g, n}, x] && GtQ[m, 0]
```

Rule 3798

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[I*((c + d*x)^(m + 1)/(d*(m + 1))), x] - Dist[2*I, Int[(c + d*x)^m
*E^(2*I*k*Pi)*(E^(2*I*(e + f*x))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x)))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n*Cot[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 6724

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6813

```
Int[((a_.) + (b_.)*(F_)[((c_.)*Sqrt[(d_.) + (e_.)*(x_)])/Sqrt[(f_.) + (g_.)
*(x_)]])^(n_.)/((A_.) + (C_.)*(x_)^2), x_Symbol] :> Dist[2*e*(g/(C*(e*f - d
*g))), Subst[Int[(a + b*F[c*x])^n/x, x], x, Sqrt[d + e*x]/Sqrt[f + g*x]], x
] /; FreeQ[{a, b, c, d, e, f, g, A, C, F}, x] && EqQ[C*d*f - A*e*g, 0] && E
qQ[e*f + d*g, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}{1-c^2x^2}\,dx = -\frac{\text{Subst}\left(\int \frac{(a+b\sin^{-1}(x))^2}{x}\,dx, x, \frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}{c}$$

$$= -\frac{\text{Subst}\left(\int (a+bx)^2\cot(x)\,dx, x, \sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)}{c}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3}{3bc} + \frac{(2i)\text{Subst}\left(\int \frac{e^{2ix}(a+bx)^2}{1-e^{2ix}}\,dx, x, \sin^{-1}\left(\right.\right.}{c}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3}{3bc} - \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2\log\left(1\right.}{c}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3}{3bc} - \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2\log\left(1\right.}{c}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3}{3bc} - \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2\log\left(1\right.}{c}$$

$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3}{3bc} - \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2\log\left(1\right.}{c}$$

Mathematica [F]
time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}{1-c^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2/(1 - c^2*x^2),x]
[Out] Integrate[(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2/(1 - c^2*x^2), x]
```

Maple [B] Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal. 680 vs. 2(226) = 452.
time = 0.15, size = 681, normalized size = 3.32

method	result
default	$-\frac{a^{2}\ln(cx-1)}{2c}+\frac{a^{2}\ln(cx+1)}{2c}+\frac{ib^{2}\arcsin\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)^{3}}{3c}-\frac{b^{2}\arcsin\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)^{2}\ln\left(1-\frac{i\sqrt{-cx+1}}{\sqrt{cx+1}}-\sqrt{1\right.}}{c}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2/(-c^2*x^2+1),x,method=_RET
URNVERBOSE)
```

```
[Out] -1/2*a^2/c*ln(c*x-1)+1/2*a^2/c*ln(c*x+1)+1/3*I*b^2/c*arcsin((-c*x+1)^(1/2)/
(c*x+1)^(1/2))^3-b^2/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))^2*ln(1-I*(-c*x+
1)^(1/2)/(c*x+1)^(1/2)-(1-(-c*x+1)/(c*x+1))^(1/2))+2*I*b^2/c*arcsin((-c*x+1
)^(1/2)/(c*x+1)^(1/2))*polylog(2,I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)
/(c*x+1))^(1/2))-2*b^2/c*polylog(3,I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+
1)/(c*x+1))^(1/2))-b^2/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))^2*ln(I*(-c*x+
1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(c*x+1))^(1/2)+1)+2*I*b^2/c*arcsin((-c*x
+1)^(1/2)/(c*x+1)^(1/2))*polylog(2,-I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)-(1-(-c*x
+1)/(c*x+1))^(1/2))-2*b^2/c*polylog(3,-I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)-(1-(-
c*x+1)/(c*x+1))^(1/2))+I*a*b/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))^2-2*a*b
/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))*ln(I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(
1-(-c*x+1)/(c*x+1))^(1/2)+1)+2*I*a*b/c*polylog(2,-I*(-c*x+1)^(1/2)/(c*x+1)^
(1/2)-(1-(-c*x+1)/(c*x+1))^(1/2))-2*a*b/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/
2))*ln(1-I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)-(1-(-c*x+1)/(c*x+1))^(1/2))+2*I*a*b
/c*polylog(2,I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(c*x+1))^(1/2))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2/(-c^2*x^2+1),x, algo
rithm="maxima")
```

```
[Out] 1/2*a^2*(log(c*x + 1)/c - log(c*x - 1)/c) - integrate((b^2*arctan2(sqrt(-c*
x + 1), sqrt(2)*sqrt(c)*sqrt(x))^2 + 2*a*b*arctan2(sqrt(-c*x + 1), sqrt(2)*
sqrt(c)*sqrt(x)))/(c^2*x^2 - 1), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2/(-c^2*x^2+1),x, algo
rithm="fricas")
```

```
[Out] integral(-(b^2*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1))^2 + 2*a*b*arcsin(sqrt(-
c*x + 1)/sqrt(c*x + 1)) + a^2)/(c^2*x^2 - 1), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin((-c*x+1)**(1/2)/(c*x+1)**(1/2)))**2/(-c**2*x**2+1),x)
```

```
[Out] Timed out
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2/(-c^2*x^2+1),x, algo
rithm="giac")
```

```
[Out] integrate(-(b*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)^2/(c^2*x^2 - 1), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.00

$$\int -\frac{\left(a+b\,\mathrm{asin}\left(\frac{\sqrt{1-c\,x}}{\sqrt{c\,x+1}}\right)\right)^2}{c^2\,x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(a + b*asin((1 - c*x)^(1/2)/(c*x + 1)^(1/2)))^2/(c^2*x^2 - 1),x)
```

```
[Out] int(-(a + b*asin((1 - c*x)^(1/2)/(c*x + 1)^(1/2)))^2/(c^2*x^2 - 1), x)
```

3.434 $\int \frac{a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}{1-c^2x^2}\,dx$

Optimal. Leaf size=141

$$\frac{i\left(a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}{2bc}-\frac{\left(a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)\log\left(1-e^{2i\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}\right)}{c}+\frac{ib\text{PolyLog}\left(2,\right.}{}$$

```
[Out] 1/2*I*(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2/b/c-(a+b*arcsin((-c*x+1)
^(1/2)/(c*x+1)^(1/2)))*ln(1-(I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(c*
x+1))^(1/2))^2)/c+1/2*I*b*polylog(2,(I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*
x+1)/(c*x+1))^(1/2))^2)/c
```

Rubi [A]
time = 0.08, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 7, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}} = 0.184$, Rules used = {212, 6813, 4721, 3798, 2221, 2317, 2438}

$$\frac{i\left(a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)^2}{2bc}-\frac{\log\left(1-e^{2i\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)}\right)\left(a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)}{c}+\frac{ib\text{Li}_2\left(e^{2i\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)}\right)}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])/(1 - c^2*x^2),x]
```

```
[Out] ((I/2)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2)/(b*c) - ((a + b*ArcSi
n[Sqrt[1 - c*x]/Sqrt[1 + c*x]])*Log[1 - E^((2*I)*ArcSin[Sqrt[1 - c*x]/Sqrt[
1 + c*x]])])/c + ((I/2)*b*PolyLog[2, E^((2*I)*ArcSin[Sqrt[1 - c*x]/Sqrt[1 +
 c*x]])])/c
```

Rule 212

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1/(Rt[a, 2]*Rt[-b, 2]))*
ArcTanh[Rt[-b, 2]*(x/Rt[a, 2])], x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3798

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[I*((c + d*x)^(m + 1)/(d*(m + 1))), x] - Dist[2*I, Int[(c + d*x)^m
*E^(2*I*k*Pi)*(E^(2*I*(e + f*x))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x)))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n*Cot[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 6813

```
Int[((a_.) + (b_.)*(F_)[((c_.)*Sqrt[(d_.) + (e_.)*(x_)])/Sqrt[(f_.) + (g_.)
*(x_)]])^(n_.)/((A_.) + (C_.)*(x_)^2), x_Symbol] :> Dist[2*e*(g/(C*(e*f - d
*g))), Subst[Int[(a + b*F[c*x])^n/x, x], x, Sqrt[d + e*x]/Sqrt[f + g*x]], x
] /; FreeQ[{a, b, c, d, e, f, g, A, C, F}, x] && EqQ[C*d*f - A*e*g, 0] && E
qQ[e*f + d*g, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}{1-c^2x^2}\,dx = -\frac{\text{Subst}\left(\int \frac{a+b\sin^{-1}(x)}{x}\,dx, x, \frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}{c}$$
$$= -\frac{\text{Subst}\left(\int (a+bx)\cot(x)\,dx, x, \sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)}{c}$$
$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}{2bc} + \frac{(2i)\text{Subst}\left(\int \frac{e^{2ix}(a+bx)}{1-e^{2ix}}\,dx, x, \sin^{-1}\left(\frac{\sqrt{1}}{\sqrt{1}}\right.\right.}{c}$$
$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}{2bc} - \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)\log\left(1-e^{2}\right.}{c}$$
$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}{2bc} - \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)\log\left(1-e^{2}\right.}{c}$$
$$= \frac{i\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}{2bc} - \frac{\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)\log\left(1-e^{2}\right.}{c}$$

Mathematica [F]
time = 0.79, size = 0, normalized size = 0.00

$$\int \frac{a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}{1-c^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])/(1 - c^2*x^2),x]
[Out] Integrate[(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])/(1 - c^2*x^2), x]
```

Maple [A]
time = 0.15, size = 276, normalized size = 1.96

method	result
default	$-\frac{a\ln(cx-1)}{2c} + \frac{a\ln(cx+1)}{2c} + \frac{ib\arcsin\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)^2}{2c} - \frac{b\arcsin\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)\ln\left(\frac{i\sqrt{-cx+1}}{\sqrt{cx+1}} + \sqrt{1-\frac{-cx}{cx+}}\right.}{c}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))/(-c^2*x^2+1),x,method=_RETUR
NVERBOSE)
```

```
[Out] -1/2*a/c*ln(c*x-1)+1/2*a/c*ln(c*x+1)+1/2*I*b/c*arcsin((-c*x+1)^(1/2)/(c*x+1
)^(1/2))^2-b/c*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))*ln(I*(-c*x+1)^(1/2)/(c*
x+1)^(1/2)+(1-(-c*x+1)/(c*x+1))^(1/2)+1)+I*b/c*polylog(2,-I*(-c*x+1)^(1/2)/
(c*x+1)^(1/2)-(1-(-c*x+1)/(c*x+1))^(1/2))-b/c*arcsin((-c*x+1)^(1/2)/(c*x+1)
^(1/2))*ln(1-I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)-(1-(-c*x+1)/(c*x+1))^(1/2))+I*b
/c*polylog(2,I*(-c*x+1)^(1/2)/(c*x+1)^(1/2)+(1-(-c*x+1)/(c*x+1))^(1/2))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))/(-c^2*x^2+1),x, algori
thm="maxima")
```

```
[Out] 1/2*a*(log(c*x + 1)/c - log(c*x - 1)/c) - b*integrate(arctan2(sqrt(-c*x + 1
), sqrt(2)*sqrt(c)*sqrt(x))/(c^2*x^2 - 1), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))/(-c^2*x^2+1),x, algori
thm="fricas")
```

```
[Out] integral(-(b*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)/(c^2*x^2 - 1), x)
```

Sympy [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin((-c*x+1)**(1/2)/(c*x+1)**(1/2)))/(-c**2*x**2+1),x)
```

```
[Out] Timed out
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))/(-c^2*x^2+1),x, algori
thm="giac")
```

```
[Out] integrate(-(b*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)/(c^2*x^2 - 1), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int -\frac{a+b\,\mathrm{asin}\left(\frac{\sqrt{1-c\,x}}{\sqrt{c\,x+1}}\right)}{c^2\,x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(a + b*asin((1 - c*x)^(1/2)/(c*x + 1)^(1/2)))/(c^2*x^2 - 1),x)
```

```
[Out] int(-(a + b*asin((1 - c*x)^(1/2)/(c*x + 1)^(1/2)))/(c^2*x^2 - 1), x)
```

3.435 $\int \frac{1}{(1-c^2x^2)\left(a+b\mathbf{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)}\,dx$

Optimal. Leaf size=43

$$\text{Int}\left(\frac{1}{(1-c^2x^2)\left(a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)},x\right)$$

[Out] Unintegrable(1/(-c^2*x^2+1)/(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))),x)

Rubi [A]
time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(1-c^2x^2)\left(a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)}\,dx$$

Verification is not applicable to the result.

[In] Int[1/((1 - c^2*x^2)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])),x]

[Out] Defer[Int][1/((1 - c^2*x^2)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])), x
]

Rubi steps

$$\int \frac{1}{(1-c^2x^2)\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)}\,dx = \int \frac{1}{(1-c^2x^2)\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)}\,dx$$

Mathematica [A]
time = 0.07, size = 0, normalized size = 0.00

$$\int \frac{1}{(1-c^2x^2)\left(a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)}\,dx$$

Verification is not applicable to the result.

[In] Integrate[1/((1 - c^2*x^2)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])),x]

```
[Out] Integrate[1/((1 - c^2*x^2)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])), x]
```

Maple [A]
time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-c^{2} x^{2}+1\right) \left(a +b \arcsin \left(\frac{\sqrt{-c x +1}}{\sqrt{c x +1}}\right)\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-c^2*x^2+1)/(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))),x)
```

```
[Out] int(1/(-c^2*x^2+1)/(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))),x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)/(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))),x, algo
rithm="maxima")
```

```
[Out] -integrate(1/((c^2*x^2 - 1)*(b*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)),
x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)/(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))),x, algo
rithm="fricas")
```

```
[Out] integral(-1/(a*c^2*x^2 + (b*c^2*x^2 - b)*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1
)) - a), x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{1}{ac^{2}x^{2} - a + bc^{2}x^{2}\operatorname{asin}{\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}} \right)} - b\operatorname{asin}{\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}} \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c**2*x**2+1)/(a+b*asin((-c*x+1)**(1/2)/(c*x+1)**(1/2))),x)
```

```
[Out] -Integral(1/(a*c**2*x**2 - a + b*c**2*x**2*asin(sqrt(-c*x + 1)/sqrt(c*x + 1
)) - b*asin(sqrt(-c*x + 1)/sqrt(c*x + 1))), x)
```

Giac [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)/(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2))),x, algo
rithm="giac")
```

```
[Out] integrate(-1/((c^2*x^2 - 1)*(b*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)),
x)
```

Mupad [**A**]
time = 0.00, size = -1, normalized size = -0.02

$$-\int \frac{1}{\left(a+b\,\mathrm{asin}\left(\frac{\sqrt{1-c\,x}}{\sqrt{c\,x+1}}\right)\right)\,\left(c^2\,x^2-1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-1/((a + b*asin((1 - c*x)^(1/2)/(c*x + 1)^(1/2)))*(c^2*x^2 - 1)),x)
```

```
[Out] -int(1/((a + b*asin((1 - c*x)^(1/2)/(c*x + 1)^(1/2)))*(c^2*x^2 - 1)), x)
```

3.436 $\int \frac{1}{(1-c^2x^2)\left(a+b\textbf{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}\,dx$

Optimal. Leaf size=43

$$\text{Int}\left(\frac{1}{(1-c^2x^2)\left(a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2},x\right)$$

```
[Out] Unintegrable(1/(-c^2*x^2+1)/(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2,x)
```

Rubi [A]
time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(1-c^2x^2)\left(a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[1/((1 - c^2*x^2)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2),x]
```

```
[Out] Defer[Int][1/((1 - c^2*x^2)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2),
 x]
```

Rubi steps

$$\int \frac{1}{(1-c^2x^2)\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}\,dx = \int \frac{1}{(1-c^2x^2)\left(a+b\sin^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}\,dx$$

Mathematica [A]
time = 1.18, size = 0, normalized size = 0.00

$$\int \frac{1}{(1-c^2x^2)\left(a+b\text{ArcSin}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[1/((1 - c^2*x^2)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2),x
]
```

```
[Out] Integrate[1/((1 - c^2*x^2)*(a + b*ArcSin[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2),
x]
```

Maple [A]
time = 0.50, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-c^{2} x^{2}+1\right) \left(a +b \arcsin \left(\frac{\sqrt{-c x +1}}{\sqrt{c x +1}}\right)\right)^{2}}d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-c^2*x^2+1)/(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2,x)
```

```
[Out] int(1/(-c^2*x^2+1)/(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)/(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2,x, al
gorithm="maxima")
```

```
[Out] -((sqrt(2)*a*b*c^2*x - sqrt(2)*a*b*c + (sqrt(2)*b^2*c^2*x - sqrt(2)*b^2*c)*
arctan2(sqrt(-c*x + 1), sqrt(2)*sqrt(c)*sqrt(x)))*sqrt(c)*integrate(1/2*sqr
t(-c*x + 1)*sqrt(x)/(a*b*c^3*x^3 - 2*a*b*c^2*x^2 + a*b*c*x + (b^2*c^3*x^3 -
 2*b^2*c^2*x^2 + b^2*c*x)*arctan2(sqrt(-c*x + 1), sqrt(2)*sqrt(c)*sqrt(x)))
, x) + sqrt(2)*sqrt(-c*x + 1)*sqrt(c)*sqrt(x))/(a*b*c^2*x - a*b*c + (b^2*c^
2*x - b^2*c)*arctan2(sqrt(-c*x + 1), sqrt(2)*sqrt(c)*sqrt(x)))
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)/(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2,x, al
gorithm="fricas")
```

```
[Out] integral(-1/(a^2*c^2*x^2 + (b^2*c^2*x^2 - b^2)*arcsin(sqrt(-c*x + 1)/sqrt(c
*x + 1))^2 - a^2 + 2*(a*b*c^2*x^2 - a*b)*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1
))), x)
```

Sympy [**F(-1)**] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c**2*x**2+1)/(a+b*asin((-c*x+1)**(1/2)/(c*x+1)**(1/2)))**2,x)
[Out] Timed out
```

Giac [**A**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)/(a+b*arcsin((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2,x, al
gorithm="giac")
[Out] integrate(-1/((c^2*x^2 - 1)*(b*arcsin(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)^2)
, x)
```

Mupad [**A**]
time = 0.00, size = -1, normalized size = -0.02

$$-\int \frac{1}{\left(a+b\,\mathrm{asin}\left(\frac{\sqrt{1-c\,x}}{\sqrt{c\,x+1}}\right)\right)^2\,\left(c^2\,x^2-1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-1/((a + b*asin((1 - c*x)^(1/2)/(c*x + 1)^(1/2)))^2*(c^2*x^2 - 1)),x)
[Out] -int(1/((a + b*asin((1 - c*x)^(1/2)/(c*x + 1)^(1/2)))^2*(c^2*x^2 - 1)), x)
```

3.437 $\int e^x \mathbf{ArcSin}(e^x)\,dx$

Optimal. Leaf size=22

$$\sqrt{1-e^{2x}}+e^x \text{ArcSin}(e^x)$$

[Out] exp(x)*arcsin(exp(x))+(1-exp(2*x))^(1/2)

Rubi [A]
time = 0.02, antiderivative size = 22, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 4, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {2225, 4928, 2278, 32}

$$e^x \text{ArcSin}(e^x)+\sqrt{1-e^{2x}}$$

Antiderivative was successfully verified.

[In] Int[E^x*ArcSin[E^x],x]

[Out] Sqrt[1 - E^(2*x)] + E^x*ArcSin[E^x]

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2225

```
Int[((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.), x_Symbol] :> Simp[(F^(c*(a +
 b*x)))^n/(b*c*n*Log[F]), x] /; FreeQ[{F, a, b, c, n}, x]
```

Rule 2278

```
Int[((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)*((a_) + (b_.)*((F_)^((e_.)*((
c_.) + (d_.)*(x_))))^(n_.))^(p_.), x_Symbol] :> Dist[1/(d*e*n*Log[F]), Subs
t[Int[(a + b*x)^p, x], x, (F^(e*(c + d*x)))^n], x] /; FreeQ[{F, a, b, c, d,
 e, n, p}, x]
```

Rule 4928

```
Int[((a_.) + ArcSin[u_]*(b_.))*(v_), x_Symbol] :> With[{w = IntHide[v, x]},
 Dist[a + b*ArcSin[u], w, x] - Dist[b, Int[SimplifyIntegrand[w*(D[u, x]/Sqr
t[1 - u^2]), x], x], x] /; InverseFunctionFreeQ[w, x]] /; FreeQ[{a, b}, x]
&& InverseFunctionFreeQ[u, x] &&  !MatchQ[v, ((c_.) + (d_.)*x)^(m_.) /; Fre
eQ[{c, d, m}, x]]
```

Rubi steps

$$\begin{aligned}\int e^x \sin^{-1}(e^x)\,dx &= e^x \sin^{-1}(e^x) - \int \frac{e^{2x}}{\sqrt{1-e^{2x}}}\,dx\\ &= e^x \sin^{-1}(e^x) - \frac{1}{2}\text{Subst}\left(\int \frac{1}{\sqrt{1-x}}\,dx, x, e^{2x}\right)\\ &= \sqrt{1-e^{2x}} + e^x \sin^{-1}(e^x)\end{aligned}$$

Mathematica [A]
time = 0.01, size = 22, normalized size = 1.00

$$\sqrt{1-e^{2x}} + e^x \text{ArcSin}(e^x)$$

Antiderivative was successfully verified.

```
[In] Integrate[E^x*ArcSin[E^x],x]
```

```
[Out] Sqrt[1 - E^(2*x)] + E^x*ArcSin[E^x]
```

Maple [A]
time = 0.02, size = 18, normalized size = 0.82

method	result	size
derivativedivides	$\mathrm{e}^{x} \arcsin(\mathrm{e}^{x}) + \sqrt{1-\mathrm{e}^{2x}}$	18
default	$\mathrm{e}^{x} \arcsin(\mathrm{e}^{x}) + \sqrt{1-\mathrm{e}^{2x}}$	18

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(x)*arcsin(exp(x)),x,method=_RETURNVERBOSE)
```

```
[Out] exp(x)*arcsin(exp(x))+(-exp(x)^2+1)^(1/2)
```

Maxima [A]
time = 0.48, size = 17, normalized size = 0.77

$$\arcsin(e^x)\,e^x + \sqrt{-e^{(2x)}+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(x)*arcsin(exp(x)),x, algorithm="maxima")
```

```
[Out] arcsin(e^x)*e^x + sqrt(-e^(2*x) + 1)
```

Fricas [A]
time = 2.74, size = 17, normalized size = 0.77

$$\arcsin(e^x)\,e^x + \sqrt{-e^{(2x)}+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(x)*arcsin(exp(x)),x, algorithm="fricas")
```

```
[Out] arcsin(e^x)*e^x + sqrt(-e^(2*x) + 1)
```

Sympy [A]
time = 0.21, size = 17, normalized size = 0.77

$$\sqrt{1-e^{2x}}+e^{x}\operatorname{asin}\left(e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(x)*asin(exp(x)),x)
```

```
[Out] sqrt(1 - exp(2*x)) + exp(x)*asin(exp(x))
```

Giac [A]
time = 0.39, size = 17, normalized size = 0.77

$$\arcsin\left(e^{x}\right)e^{x}+\sqrt{-e^{(2\,x)}+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(x)*arcsin(exp(x)),x, algorithm="giac")
```

```
[Out] arcsin(e^x)*e^x + sqrt(-e^(2*x) + 1)
```

Mupad [B]
time = 0.34, size = 17, normalized size = 0.77

$$\sqrt{1-\mathrm{e}^{2\,x}}+\mathrm{asin}\left(\mathrm{e}^{x}\right)\,\mathrm{e}^{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(exp(x))*exp(x),x)
```

```
[Out] (1 - exp(2*x))^(1/2) + asin(exp(x))*exp(x)
```

3.438 $\int \text{ArcSin}\left(ce^{a+bx}\right) dx$

Optimal. Leaf size=84

$$-\frac{i\text{ArcSin}\left(ce^{a+bx}\right)^2}{2b}+\frac{\text{ArcSin}\left(ce^{a+bx}\right)\log\left(1-e^{2i\text{ArcSin}\left(ce^{a+bx}\right)}\right)}{b}-\frac{i\text{PolyLog}\left(2,e^{2i\text{ArcSin}\left(ce^{a+bx}\right)}\right)}{2b}$$

```
[Out] -1/2*I*arcsin(c*exp(b*x+a))^2/b+arcsin(c*exp(b*x+a))*ln(1-(I*c*exp(b*x+a)+(
1-c^2*exp(b*x+a)^2)^(1/2))^2)/b-1/2*I*polylog(2,(I*c*exp(b*x+a)+(1-c^2*exp(
b*x+a)^2)^(1/2))^2)/b
```

Rubi [A]
time = 0.05, antiderivative size = 84, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.600$, Rules used = {2320, 4721, 3798, 2221, 2317, 2438}

$$-\frac{i\text{Li}_2\left(e^{2i\text{ArcSin}\left(ce^{a+bx}\right)}\right)}{2b}-\frac{i\text{ArcSin}\left(ce^{a+bx}\right)^2}{2b}+\frac{\text{ArcSin}\left(ce^{a+bx}\right)\log\left(1-e^{2i\text{ArcSin}\left(ce^{a+bx}\right)}\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[c*E^(a + b*x)],x]
```

```
[Out] ((-1/2*I)*ArcSin[c*E^(a + b*x)]^2)/b + (ArcSin[c*E^(a + b*x)]*Log[1 - E^((2
*I)*ArcSin[c*E^(a + b*x)])])/b - ((I/2)*PolyLog[2, E^((2*I)*ArcSin[c*E^(a +
 b*x)])])/b
```

Rule 2221

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m/(b*f*g*n*Log[F]))*Log[1 + b*((F^(g*(e + f*x)))^n/a)], x] - Di
st[d*(m/(b*f*g*n*Log[F])), Int[(c + d*x)^(m - 1)*Log[1 + b*((F^(g*(e + f*x)
))^n/a)], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2317

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2320

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
```

```
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2438

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> Simp[-PolyLog[2
, (-c)*e*x^n]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3798

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[I*((c + d*x)^(m + 1)/(d*(m + 1))), x] - Dist[2*I, Int[(c + d*x)^m
*E^(2*I*k*Pi)*(E^(2*I*(e + f*x))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x)))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n*Cot[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rubi steps

$$
\begin{aligned}
\int \sin^{-1}\left(ce^{a+bx}\right)\,dx &= \frac{\text{Subst}\left(\int \frac{\sin^{-1}(cx)}{x}\,dx, x, e^{a+bx}\right)}{b} \\
&= \frac{\text{Subst}\left(\int x\cot(x)\,dx, x, \sin^{-1}\left(ce^{a+bx}\right)\right)}{b} \\
&= -\frac{i\sin^{-1}\left(ce^{a+bx}\right)^2}{2b} - \frac{(2i)\text{Subst}\left(\int \frac{e^{2ix}x}{1-e^{2ix}}\,dx, x, \sin^{-1}\left(ce^{a+bx}\right)\right)}{b} \\
&= -\frac{i\sin^{-1}\left(ce^{a+bx}\right)^2}{2b} + \frac{\sin^{-1}\left(ce^{a+bx}\right)\log\left(1-e^{2i\sin^{-1}\left(ce^{a+bx}\right)}\right)}{b} - \frac{\text{Subst}\left(\int \log\left(1-e^{2ix}\right)\right.}{b} \\
&= -\frac{i\sin^{-1}\left(ce^{a+bx}\right)^2}{2b} + \frac{\sin^{-1}\left(ce^{a+bx}\right)\log\left(1-e^{2i\sin^{-1}\left(ce^{a+bx}\right)}\right)}{b} + \frac{i\text{Subst}\left(\int \frac{\log(1-x)}{x}\,dx, x\right.}{2b} \\
&= -\frac{i\sin^{-1}\left(ce^{a+bx}\right)^2}{2b} + \frac{\sin^{-1}\left(ce^{a+bx}\right)\log\left(1-e^{2i\sin^{-1}\left(ce^{a+bx}\right)}\right)}{b} - \frac{i\text{Li}_2\left(e^{2i\sin^{-1}\left(ce^{a+bx}\right)}\right)}{2b}
\end{aligned}
$$

Mathematica [F]
time = 0.98, size = 0, normalized size = 0.00

$$\int \text{ArcSin}\left(ce^{a+bx}\right)\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[ArcSin[c*E^(a + b*x)],x]
[Out] Integrate[ArcSin[c*E^(a + b*x)], x]
```

Maple [A]
time = 0.43, size = 170, normalized size = 2.02

method	result
derivativedivides	$\frac{-\frac{i \arcsin\left(c\,\mathrm{e}^{bx+a}\right)^{2}}{2}+\arcsin\left(c\,\mathrm{e}^{bx+a}\right)\ln\left(1+ic\,\mathrm{e}^{bx+a}+\sqrt{1-c^{2}\mathrm{e}^{2bx+2a}}\right)+\arcsin\left(c\,\mathrm{e}^{bx+a}\right)\ln\left(1-ic\,\mathrm{e}^{bx+a}-\sqrt{1-\right.}{b}$
default	$\frac{-\frac{i \arcsin\left(c\,\mathrm{e}^{bx+a}\right)^{2}}{2}+\arcsin\left(c\,\mathrm{e}^{bx+a}\right)\ln\left(1+ic\,\mathrm{e}^{bx+a}+\sqrt{1-c^{2}\mathrm{e}^{2bx+2a}}\right)+\arcsin\left(c\,\mathrm{e}^{bx+a}\right)\ln\left(1-ic\,\mathrm{e}^{bx+a}-\sqrt{1-\right.}{b}$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(c*exp(b*x+a)),x,method=_RETURNVERBOSE)
[Out] 1/b*(-1/2*I*arcsin(c*exp(b*x+a))^2+arcsin(c*exp(b*x+a))*ln(1+I*c*exp(b*x+a)
+(1-c^2*exp(b*x+a)^2)^(1/2))+arcsin(c*exp(b*x+a))*ln(1-I*c*exp(b*x+a)-(1-c^
2*exp(b*x+a)^2)^(1/2))-I*polylog(2,I*c*exp(b*x+a)+(1-c^2*exp(b*x+a)^2)^(1/2
))-I*polylog(2,-I*c*exp(b*x+a)-(1-c^2*exp(b*x+a)^2)^(1/2)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(c*exp(b*x+a)),x, algorithm="maxima")
[Out] 1/2*(-2*I*b^2*c^2*integrate(x*e^(2*b*x + 2*a)/(c^4*e^(4*b*x + 4*a) - c^2*e^
(2*b*x + 2*a) + (c^2*e^(2*b*x + 2*a) - 1)*e^(log(c*e^(b*x + a) + 1) + log(-
c*e^(b*x + a) + 1))), x) + 2*b^2*c*integrate(x*e^(b*x + a + 1/2*log(c*e^(b*
x + a) + 1) + 1/2*log(-c*e^(b*x + a) + 1))/(c^4*e^(4*b*x + 4*a) - c^2*e^(2*
b*x + 2*a) + (c^2*e^(2*b*x + 2*a) - 1)*e^(log(c*e^(b*x + a) + 1) + log(-c*e
^(b*x + a) + 1))), x) + 2*b*x*arctan2(c*e^(b*x + a), sqrt(c*e^(b*x + a) + 1
)*sqrt(-c*e^(b*x + a) + 1)) + I*b*x*log(c*e^(b*x + a) + 1) + I*b*x*log(-c*e
^(b*x + a) + 1) + I*dilog(c*e^(b*x + a)) + I*dilog(-c*e^(b*x + a)))/b
```

Fricas [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(c*exp(b*x+a)),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \operatorname{asin}\left(ce^{a+bx}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(c*exp(b*x+a)),x)
```

```
[Out] Integral(asin(c*exp(a + b*x)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(c*exp(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(arcsin(c*e^(b*x + a)), x)
```

Mupad [B]
time = 0.74, size = 70, normalized size = 0.83

$$-\frac{\operatorname{asin}\left(c\,\mathrm{e}^{a+b\,x}\right)^2\,1{}\mathrm{i}}{2\,b}-\frac{\mathrm{polylog}\left(2,\mathrm{e}^{\operatorname{asin}\left(c\,\mathrm{e}^{a+b\,x}\right)\,2{}\mathrm{i}}\right)\,1{}\mathrm{i}}{2\,b}+\frac{\ln\left(1-\mathrm{e}^{\operatorname{asin}\left(c\,\mathrm{e}^{a+b\,x}\right)\,2{}\mathrm{i}}\right)\,\operatorname{asin}\left(c\,\mathrm{e}^{a+b\,x}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(c*exp(a + b*x)),x)
```

```
[Out] (log(1 - exp(asin(c*exp(a + b*x))*2i))*asin(c*exp(a + b*x)))/b - (polylog(2
, exp(asin(c*exp(a + b*x))*2i))*1i)/(2*b) - (asin(c*exp(a + b*x))^2*1i)/(2*
b)
```

3.439 $\int e^{\text{ArcSin}(ax)}x^3\,dx$

Optimal. Leaf size=81

$$-\frac{e^{\text{ArcSin}(ax)}\cos(2\text{ArcSin}(ax))}{10a^4}+\frac{e^{\text{ArcSin}(ax)}\cos(4\text{ArcSin}(ax))}{34a^4}+\frac{e^{\text{ArcSin}(ax)}\sin(2\text{ArcSin}(ax))}{20a^4}-\frac{e^{\text{ArcSin}(ax)}\sin(4\text{A}}{136a^4}$$

```
[Out] -1/10*exp(arcsin(a*x))*cos(2*arcsin(a*x))/a^4+1/34*exp(arcsin(a*x))*cos(4*a
rcsin(a*x))/a^4+1/20*exp(arcsin(a*x))*sin(2*arcsin(a*x))/a^4-1/136*exp(arcs
in(a*x))*sin(4*arcsin(a*x))/a^4
```

Rubi [A]
time = 0.05, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$, Rules used = {4920, 12, 4557, 4517}

$$\frac{e^{\text{ArcSin}(ax)}\sin(2\text{ArcSin}(ax))}{20a^4}-\frac{e^{\text{ArcSin}(ax)}\sin(4\text{ArcSin}(ax))}{136a^4}-\frac{e^{\text{ArcSin}(ax)}\cos(2\text{ArcSin}(ax))}{10a^4}+\frac{e^{\text{ArcSin}(ax)}\cos(4\text{ArcSin}(ax))}{34a^4}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]*x^3,x]
```

```
[Out] -1/10*(E^ArcSin[a*x]*Cos[2*ArcSin[a*x]])/a^4 + (E^ArcSin[a*x]*Cos[4*ArcSin[
a*x]])/(34*a^4) + (E^ArcSin[a*x]*Sin[2*ArcSin[a*x]])/(20*a^4) - (E^ArcSin[a
*x]*Sin[4*ArcSin[a*x]])/(136*a^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4517

```
Int[(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sin[(d_.) + (e_.)*(x_)], x_Symbol] :>
 Simp[b*c*Log[F]*F^(c*(a + b*x))*(Sin[d + e*x]/(e^2 + b^2*c^2*Log[F]^2)), x
] - Simp[e*F^(c*(a + b*x))*(Cos[d + e*x]/(e^2 + b^2*c^2*Log[F]^2)), x] /; F
reeQ[{F, a, b, c, d, e}, x] && NeQ[e^2 + b^2*c^2*Log[F]^2, 0]
```

Rule 4557

```
Int[Cos[(f_.) + (g_.)*(x_)]^(n_.)*(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sin[(d_
.) + (e_.)*(x_)]^(m_.), x_Symbol] :> Int[ExpandTrigReduce[F^(c*(a + b*x)),
Sin[d + e*x]^m*Cos[f + g*x]^n, x], x] /; FreeQ[{F, a, b, c, d, e, f, g}, x]
 && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 4920

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -a/b + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSin[
a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int e^{\sin^{-1}(ax)}x^3\,dx = \frac{\text{Subst}\left(\int \frac{e^x\cos(x)\sin^3(x)}{a^3}\,dx, x, \sin^{-1}(ax)\right)}{a}$$
$$= \frac{\text{Subst}\left(\int e^x\cos(x)\sin^3(x)\,dx, x, \sin^{-1}(ax)\right)}{a^4}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{1}{4}e^x\sin(2x) - \frac{1}{8}e^x\sin(4x)\right)\,dx, x, \sin^{-1}(ax)\right)}{a^4}$$
$$= -\frac{\text{Subst}\left(\int e^x\sin(4x)\,dx, x, \sin^{-1}(ax)\right)}{8a^4} + \frac{\text{Subst}\left(\int e^x\sin(2x)\,dx, x, \sin^{-1}(ax)\right)}{4a^4}$$
$$= -\frac{e^{\sin^{-1}(ax)}\cos\left(2\sin^{-1}(ax)\right)}{10a^4} + \frac{e^{\sin^{-1}(ax)}\cos\left(4\sin^{-1}(ax)\right)}{34a^4} + \frac{e^{\sin^{-1}(ax)}\sin\left(2\sin^{-1}(ax)\right)}{20a^4} - \ldots$$

Mathematica [A]
time = 0.09, size = 50, normalized size = 0.62

$$\frac{e^{\text{ArcSin}(ax)}(-68\cos(2\text{ArcSin}(ax)) + 20\cos(4\text{ArcSin}(ax)) + 34\sin(2\text{ArcSin}(ax)) - 5\sin(4\text{ArcSin}(ax)))}{680a^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]*x^3,x]
[Out] (E^ArcSin[a*x]*(-68*Cos[2*ArcSin[a*x]] + 20*Cos[4*ArcSin[a*x]] + 34*Sin[2*A
rcSin[a*x]] - 5*Sin[4*ArcSin[a*x]]))/(680*a^4)
```

Maple [F]
time = 0.01, size = 0, normalized size = 0.00

$$\int e^{\arcsin(ax)}x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x))*x^3,x)
[Out] int(exp(arcsin(a*x))*x^3,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*x^3,x, algorithm="maxima")
```

```
[Out] integrate(x^3*e^(arcsin(a*x)), x)
```

Fricas [A]
time = 2.86, size = 54, normalized size = 0.67

$$\frac{\left(20\,a^4x^4-3\,a^2x^2+(5\,a^3x^3+6\,ax)\sqrt{-a^2x^2+1}-6\right)e^{(\arcsin(ax))}}{85\,a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*x^3,x, algorithm="fricas")
```

```
[Out] 1/85*(20*a^4*x^4 - 3*a^2*x^2 + (5*a^3*x^3 + 6*a*x)*sqrt(-a^2*x^2 + 1) - 6)*
e^(arcsin(a*x))/a^4
```

Sympy [A]
time = 0.54, size = 100, normalized size = 1.23

$$\begin{cases} \frac{4x^4e^{\operatorname{asin}(ax)}}{17}+\frac{x^3\sqrt{-a^2x^2+1}\,e^{\operatorname{asin}(ax)}}{17a}-\frac{3x^2e^{\operatorname{asin}(ax)}}{85a^2}+\frac{6x\sqrt{-a^2x^2+1}\,e^{\operatorname{asin}(ax)}}{85a^3}-\frac{6e^{\operatorname{asin}(ax)}}{85a^4} & \text{for}\ a\neq 0 \\ \frac{x^4}{4} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x))*x**3,x)
```

```
[Out] Piecewise((4*x**4*exp(asin(a*x))/17 + x**3*sqrt(-a**2*x**2 + 1)*exp(asin(a*
x))/(17*a) - 3*x**2*exp(asin(a*x))/(85*a**2) + 6*x*sqrt(-a**2*x**2 + 1)*exp
(asin(a*x))/(85*a**3) - 6*exp(asin(a*x))/(85*a**4), Ne(a, 0)), (x**4/4, Tru
e))
```

Giac [A]
time = 0.40, size = 97, normalized size = 1.20

$$-\frac{(-a^2x^2+1)^{\frac{3}{2}}xe^{(\arcsin(ax))}}{17\,a^3}+\frac{11\,\sqrt{-a^2x^2+1}\,xe^{(\arcsin(ax))}}{85\,a^3}+\frac{4\,(a^2x^2-1)^2e^{(\arcsin(ax))}}{17\,a^4}+\frac{37\,(a^2x^2-1)e^{(\arcsin(ax))}}{85\,a^4}+\frac{11\,e^{(\arcsin(ax))}}{85\,a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*x^3,x, algorithm="giac")
```

```
[Out] -1/17*(-a^2*x^2 + 1)^(3/2)*x*e^(arcsin(a*x))/a^3 + 11/85*sqrt(-a^2*x^2 + 1)
*x*e^(arcsin(a*x))/a^3 + 4/17*(a^2*x^2 - 1)^2*e^(arcsin(a*x))/a^4 + 37/85*(
a^2*x^2 - 1)*e^(arcsin(a*x))/a^4 + 11/85*e^(arcsin(a*x))/a^4
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int x^3 \,\mathrm{e}^{\mathrm{asin}(a\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*exp(asin(a*x)),x)
```

```
[Out] int(x^3*exp(asin(a*x)), x)
```

3.440 $\int e^{\text{ArcSin}(ax)} x^2 \, dx$

Optimal. Leaf size=82

$$\frac{e^{\text{ArcSin}(ax)}x}{8a^2}+\frac{e^{\text{ArcSin}(ax)}\sqrt{1-a^2x^2}}{8a^3}-\frac{e^{\text{ArcSin}(ax)}\cos(3\text{ArcSin}(ax))}{40a^3}-\frac{3e^{\text{ArcSin}(ax)}\sin(3\text{ArcSin}(ax))}{40a^3}$$

```
[Out] 1/8*exp(arcsin(a*x))*x/a^2-1/40*exp(arcsin(a*x))*cos(3*arcsin(a*x))/a^3-3/4
0*exp(arcsin(a*x))*sin(3*arcsin(a*x))/a^3+1/8*exp(arcsin(a*x))*(-a^2*x^2+1)
^(1/2)/a^3
```

Rubi [A]
time = 0.05, antiderivative size = 82, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$, Rules used = {4920, 12, 4557, 4518}

$$-\frac{3e^{\text{ArcSin}(ax)}\sin(3\text{ArcSin}(ax))}{40a^3}-\frac{e^{\text{ArcSin}(ax)}\cos(3\text{ArcSin}(ax))}{40a^3}+\frac{xe^{\text{ArcSin}(ax)}}{8a^2}+\frac{\sqrt{1-a^2x^2}\,e^{\text{ArcSin}(ax)}}{8a^3}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]*x^2,x]
```

```
[Out] (E^ArcSin[a*x]*x)/(8*a^2) + (E^ArcSin[a*x]*Sqrt[1 - a^2*x^2])/(8*a^3) - (E^
ArcSin[a*x]*Cos[3*ArcSin[a*x]])/(40*a^3) - (3*E^ArcSin[a*x]*Sin[3*ArcSin[a*
x]])/(40*a^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4518

```
Int[Cos[(d_.) + (e_.)*(x_)]*(F_)^((c_.)*((a_.) + (b_.)*(x_))), x_Symbol] :>
 Simp[b*c*Log[F]*F^(c*(a + b*x))*(Cos[d + e*x]/(e^2 + b^2*c^2*Log[F]^2)), x
] + Simp[e*F^(c*(a + b*x))*(Sin[d + e*x]/(e^2 + b^2*c^2*Log[F]^2)), x] /; F
reeQ[{F, a, b, c, d, e}, x] && NeQ[e^2 + b^2*c^2*Log[F]^2, 0]
```

Rule 4557

```
Int[Cos[(f_.) + (g_.)*(x_)]^(n_.)*(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sin[(d_
.) + (e_.)*(x_)]^(m_.), x_Symbol] :> Int[ExpandTrigReduce[F^(c*(a + b*x)),
Sin[d + e*x]^m*Cos[f + g*x]^n, x], x] /; FreeQ[{F, a, b, c, d, e, f, g}, x]
 && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 4920

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -a/b + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSin[
a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}\int e^{\sin^{-1}(ax)}x^2\,dx &= \frac{\mathrm{Subst}\left(\int \frac{e^x\cos(x)\sin^2(x)}{a^2}\,dx, x, \sin^{-1}(ax)\right)}{a}\\ &= \frac{\mathrm{Subst}\left(\int e^x\cos(x)\sin^2(x)\,dx, x, \sin^{-1}(ax)\right)}{a^3}\\ &= \frac{\mathrm{Subst}\left(\int \left(\frac{1}{4}e^x\cos(x)-\frac{1}{4}e^x\cos(3x)\right)\,dx, x, \sin^{-1}(ax)\right)}{a^3}\\ &= \frac{\mathrm{Subst}\left(\int e^x\cos(x)\,dx, x, \sin^{-1}(ax)\right)}{4a^3}-\frac{\mathrm{Subst}\left(\int e^x\cos(3x)\,dx, x, \sin^{-1}(ax)\right)}{4a^3}\\ &= \frac{e^{\sin^{-1}(ax)}x}{8a^2}+\frac{e^{\sin^{-1}(ax)}\sqrt{1-a^2x^2}}{8a^3}-\frac{e^{\sin^{-1}(ax)}\cos\left(3\sin^{-1}(ax)\right)}{40a^3}-\frac{3e^{\sin^{-1}(ax)}\sin\left(3\sin^{-1}(a\right.}{40a^3}\end{aligned}$$

Mathematica [**A**]
time = 0.09, size = 50, normalized size = 0.61

$$-\frac{e^{\mathrm{ArcSin}(ax)}\left(-5ax-5\sqrt{1-a^2x^2}+\cos(3\mathrm{ArcSin}(ax))+3\sin(3\mathrm{ArcSin}(ax))\right)}{40a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]*x^2,x]
[Out] -1/40*(E^ArcSin[a*x]*(-5*a*x - 5*Sqrt[1 - a^2*x^2] + Cos[3*ArcSin[a*x]] + 3
*Sin[3*ArcSin[a*x]]))/a^3
```

Maple [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \mathrm{e}^{\arcsin(ax)}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x))*x^2,x)
[Out] int(exp(arcsin(a*x))*x^2,x)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*x^2,x, algorithm="maxima")
```

```
[Out] integrate(x^2*e^(arcsin(a*x)), x)
```

Fricas [A]
time = 3.46, size = 45, normalized size = 0.55

$$\frac{\left(3\,a^{3}x^{3}-ax+\left(a^{2}x^{2}+1\right)\sqrt{-a^{2}x^{2}+1}\right)e^{\left(\arcsin\left(ax\right)\right)}}{10\,a^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*x^2,x, algorithm="fricas")
```

```
[Out] 1/10*(3*a^3*x^3 - a*x + (a^2*x^2 + 1)*sqrt(-a^2*x^2 + 1))*e^(arcsin(a*x))/a
^3
```

Sympy [A]
time = 0.27, size = 80, normalized size = 0.98

$$\begin{cases} \frac{3x^{3}e^{\operatorname{asin}{\left(ax \right)}}}{10}+\frac{x^{2}\sqrt{-a^{2}x^{2}+1}\,e^{\operatorname{asin}{\left(ax \right)}}}{10a}-\frac{xe^{\operatorname{asin}{\left(ax \right)}}}{10a^{2}}+\frac{\sqrt{-a^{2}x^{2}+1}\,e^{\operatorname{asin}{\left(ax \right)}}}{10a^{3}} & \text{for}\: a \neq 0 \\ \frac{x^{3}}{3} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x))*x**2,x)
```

```
[Out] Piecewise((3*x**3*exp(asin(a*x))/10 + x**2*sqrt(-a**2*x**2 + 1)*exp(asin(a*
x))/(10*a) - x*exp(asin(a*x))/(10*a**2) + sqrt(-a**2*x**2 + 1)*exp(asin(a*x
))/(10*a**3), Ne(a, 0)), (x**3/3, True))
```

Giac [A]
time = 0.41, size = 76, normalized size = 0.93

$$\frac{3\,\left(a^{2}x^{2}-1\right)xe^{\left(\arcsin\left(ax\right)\right)}}{10\,a^{2}}+\frac{xe^{\left(\arcsin\left(ax\right)\right)}}{5\,a^{2}}-\frac{\left(-a^{2}x^{2}+1\right)^{\frac{3}{2}}e^{\left(\arcsin\left(ax\right)\right)}}{10\,a^{3}}+\frac{\sqrt{-a^{2}x^{2}+1}\,e^{\left(\arcsin\left(ax\right)\right)}}{5\,a^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*x^2,x, algorithm="giac")
```

```
[Out] 3/10*(a^2*x^2 - 1)*x*e^(arcsin(a*x))/a^2 + 1/5*x*e^(arcsin(a*x))/a^2 - 1/10
*(-a^2*x^2 + 1)^(3/2)*e^(arcsin(a*x))/a^3 + 1/5*sqrt(-a^2*x^2 + 1)*e^(arcsi
n(a*x))/a^3
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int x^2\,e^{\mathrm{asin}(a\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*exp(asin(a*x)),x)
```

```
[Out] int(x^2*exp(asin(a*x)), x)
```

3.441 $\int e^{\text{ArcSin}(ax)} x \, dx$

Optimal. Leaf size=41

$$-\frac{e^{\text{ArcSin}(ax)} \cos(2\text{ArcSin}(ax))}{5a^2} + \frac{e^{\text{ArcSin}(ax)} \sin(2\text{ArcSin}(ax))}{10a^2}$$

```
[Out] -1/5*exp(arcsin(a*x))*cos(2*arcsin(a*x))/a^2+1/10*exp(arcsin(a*x))*sin(2*ar
csin(a*x))/a^2
```

Rubi [A]
time = 0.03, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {4920, 12, 4557, 4517}

$$\frac{e^{\text{ArcSin}(ax)} \sin(2\text{ArcSin}(ax))}{10a^2} - \frac{e^{\text{ArcSin}(ax)} \cos(2\text{ArcSin}(ax))}{5a^2}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]*x,x]
```

```
[Out] -1/5*(E^ArcSin[a*x]*Cos[2*ArcSin[a*x]])/a^2 + (E^ArcSin[a*x]*Sin[2*ArcSin[a
*x]])/(10*a^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4517

```
Int[(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sin[(d_.) + (e_.)*(x_)], x_Symbol] :>
 Simp[b*c*Log[F]*F^(c*(a + b*x))*(Sin[d + e*x]/(e^2 + b^2*c^2*Log[F]^2)), x
] - Simp[e*F^(c*(a + b*x))*(Cos[d + e*x]/(e^2 + b^2*c^2*Log[F]^2)), x] /; F
reeQ[{F, a, b, c, d, e}, x] && NeQ[e^2 + b^2*c^2*Log[F]^2, 0]
```

Rule 4557

```
Int[Cos[(f_.) + (g_.)*(x_)]^(n_.)*(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sin[(d_
.) + (e_.)*(x_)]^(m_.), x_Symbol] :> Int[ExpandTrigReduce[F^(c*(a + b*x)),
Sin[d + e*x]^m*Cos[f + g*x]^n, x], x] /; FreeQ[{F, a, b, c, d, e, f, g}, x]
 && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 4920

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -a/b + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSin[
```

```
a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int e^{\sin^{-1}(ax)}x\,dx = \frac{\text{Subst}\left(\int \frac{e^x\cos(x)\sin(x)}{a}\,dx, x, \sin^{-1}(ax)\right)}{a}$$
$$= \frac{\text{Subst}\left(\int e^x\cos(x)\sin(x)\,dx, x, \sin^{-1}(ax)\right)}{a^2}$$
$$= \frac{\text{Subst}\left(\int \frac{1}{2}e^x\sin(2x)\,dx, x, \sin^{-1}(ax)\right)}{a^2}$$
$$= \frac{\text{Subst}\left(\int e^x\sin(2x)\,dx, x, \sin^{-1}(ax)\right)}{2a^2}$$
$$= -\frac{e^{\sin^{-1}(ax)}\cos\left(2\sin^{-1}(ax)\right)}{5a^2} + \frac{e^{\sin^{-1}(ax)}\sin\left(2\sin^{-1}(ax)\right)}{10a^2}$$

Mathematica [**A**]
time = 0.03, size = 30, normalized size = 0.73

$$\frac{e^{\text{ArcSin}(ax)}(-2\cos(2\text{ArcSin}(ax)) + \sin(2\text{ArcSin}(ax)))}{10a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]*x,x]
[Out] (E^ArcSin[a*x]*(-2*Cos[2*ArcSin[a*x]] + Sin[2*ArcSin[a*x]]))/(10*a^2)
```

Maple [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \mathrm{e}^{\arcsin(ax)}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x))*x,x)
[Out] int(exp(arcsin(a*x))*x,x)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*x,x, algorithm="maxima")
[Out] integrate(x*e^(arcsin(a*x)), x)
```

Fricas [A]
time = 2.69, size = 35, normalized size = 0.85

$$\frac{\left(2\,a^2x^2+\sqrt{-a^2x^2+1}\,ax-1\right)e^{\left(\arcsin\left(ax\right)\right)}}{5\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*x,x, algorithm="fricas")
[Out] 1/5*(2*a^2*x^2 + sqrt(-a^2*x^2 + 1)*a*x - 1)*e^(arcsin(a*x))/a^2
```

Sympy [A]
time = 0.14, size = 53, normalized size = 1.29

$$\begin{cases} \frac{2x^2e^{\operatorname{asin}\,(ax)}}{5}+\frac{x\sqrt{-a^2x^2+1}\,e^{\operatorname{asin}\,(ax)}}{5a}-\frac{e^{\operatorname{asin}\,(ax)}}{5a^2} & \text{for}\ a\neq 0\\ \frac{x^2}{2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x))*x,x)
[Out] Piecewise((2*x**2*exp(asin(a*x))/5 + x*sqrt(-a**2*x**2 + 1)*exp(asin(a*x))/
(5*a) - exp(asin(a*x))/(5*a**2), Ne(a, 0)), (x**2/2, True))
```

Giac [A]
time = 0.39, size = 53, normalized size = 1.29

$$\frac{\sqrt{-a^2x^2+1}\,xe^{\left(\arcsin\left(ax\right)\right)}}{5\,a}+\frac{2\,(a^2x^2-1)e^{\left(\arcsin\left(ax\right)\right)}}{5\,a^2}+\frac{e^{\left(\arcsin\left(ax\right)\right)}}{5\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*x,x, algorithm="giac")
[Out] 1/5*sqrt(-a^2*x^2 + 1)*x*e^(arcsin(a*x))/a + 2/5*(a^2*x^2 - 1)*e^(arcsin(a*
x))/a^2 + 1/5*e^(arcsin(a*x))/a^2
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int x\,\mathrm{e}^{\mathrm{asin}\left(a\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*exp(asin(a*x)),x)
[Out] int(x*exp(asin(a*x)), x)
```

3.442 $\int e^{\text{ArcSin}(ax)}\,dx$

Optimal. Leaf size=39

$$\frac{1}{2}e^{\text{ArcSin}(ax)}x+\frac{e^{\text{ArcSin}(ax)}\sqrt{1-a^2x^2}}{2a}$$

```
[Out] 1/2*exp(arcsin(a*x))*x+1/2*exp(arcsin(a*x))*(-a^2*x^2+1)^(1/2)/a
```

Rubi [A]
time = 0.01, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 6, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4920, 4518}

$$\frac{\sqrt{1-a^2x^2}\,e^{\text{ArcSin}(ax)}}{2a}+\frac{1}{2}xe^{\text{ArcSin}(ax)}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x],x]
```

```
[Out] (E^ArcSin[a*x]*x)/2 + (E^ArcSin[a*x]*Sqrt[1 - a^2*x^2])/(2*a)
```

Rule 4518

```
Int[Cos[(d_.) + (e_.)*(x_)]*(F_)^((c_.)*((a_.) + (b_.)*(x_))), x_Symbol] :>
 Simp[b*c*Log[F]*F^(c*(a + b*x))*(Cos[d + e*x]/(e^2 + b^2*c^2*Log[F]^2)), x
] + Simp[e*F^(c*(a + b*x))*(Sin[d + e*x]/(e^2 + b^2*c^2*Log[F]^2)), x] /; F
reeQ[{F, a, b, c, d, e}, x] && NeQ[e^2 + b^2*c^2*Log[F]^2, 0]
```

Rule 4920

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -a/b + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSin[
a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}\int e^{\sin^{-1}(ax)}\,dx&=\frac{\text{Subst}\left(\int e^x\cos(x)\,dx,x,\sin^{-1}(ax)\right)}{a}\\&=\frac{1}{2}e^{\sin^{-1}(ax)}x+\frac{e^{\sin^{-1}(ax)}\sqrt{1-a^2x^2}}{2a}\end{aligned}$$

Mathematica [A]
time = 0.02, size = 31, normalized size = 0.79

$$\frac{e^{\text{ArcSin}(ax)}\left(ax+\sqrt{1-a^2x^2}\right)}{2a}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x],x]
[Out] (E^ArcSin[a*x]*(a*x + Sqrt[1 - a^2*x^2]))/(2*a)
```

Maple [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int e^{\arcsin(ax)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x)),x)
[Out] int(exp(arcsin(a*x)),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)),x, algorithm="maxima")
[Out] integrate(e^(arcsin(a*x)), x)
```

Fricas [A]
time = 1.72, size = 26, normalized size = 0.67

$$\frac{\left(ax+\sqrt{-a^2x^2+1}\right)e^{(\arcsin(ax))}}{2\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)),x, algorithm="fricas")
[Out] 1/2*(a*x + sqrt(-a^2*x^2 + 1))*e^(arcsin(a*x))/a
```

Sympy [A]
time = 0.08, size = 32, normalized size = 0.82

$$\begin{cases} \frac{xe^{\operatorname{asin}(ax)}}{2}+\frac{\sqrt{-a^2x^2+1}\,e^{\operatorname{asin}(ax)}}{2a} & \text{for } a\neq 0 \\ x & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x)),x)
```

```
[Out] Piecewise((x*exp(asin(a*x))/2 + sqrt(-a**2*x**2 + 1)*exp(asin(a*x))/(2*a),
Ne(a, 0)), (x, True))
```

Giac [A]
time = 0.38, size = 31, normalized size = 0.79

$$\frac{1}{2}\,xe^{(\arcsin(ax))} + \frac{\sqrt{-a^2x^2+1}\,e^{(\arcsin(ax))}}{2\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)),x, algorithm="giac")
```

```
[Out] 1/2*x*e^(arcsin(a*x)) + 1/2*sqrt(-a^2*x^2 + 1)*e^(arcsin(a*x))/a
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.03

$$\int \mathrm{e}^{\mathrm{asin}(a\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(asin(a*x)),x)
```

```
[Out] int(exp(asin(a*x)), x)
```

3.443 $\int \frac{e^{\mathbf{ArcSin}(ax)}}{x}\,dx$

Optimal. Leaf size=43

$$ie^{\text{ArcSin}(ax)} - 2ie^{\text{ArcSin}(ax)}\,{}_2F_1\left(-\frac{i}{2},1;1-\frac{i}{2};e^{2i\text{ArcSin}(ax)}\right)$$

```
[Out] I*exp(arcsin(a*x))-2*I*exp(arcsin(a*x))*hypergeom([1, -1/2*I],[1-1/2*I],(I*
a*x+(-a^2*x^2+1)^(1/2))^2)
```

Rubi [A]
time = 0.04, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {4920, 12, 4528, 2225, 2283}

$$ie^{\text{ArcSin}(ax)} - 2ie^{\text{ArcSin}(ax)}\,{}_2F_1\left(-\frac{i}{2},1;1-\frac{i}{2};e^{2i\text{ArcSin}(ax)}\right)$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]/x,x]
```

```
[Out] I*E^ArcSin[a*x] - (2*I)*E^ArcSin[a*x]*Hypergeometric2F1[-1/2*I, 1, 1 - I/2,
 E^((2*I)*ArcSin[a*x])]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2225

```
Int[((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.), x_Symbol] :> Simp[(F^(c*(a +
 b*x)))^n/(b*c*n*Log[F]), x] /; FreeQ[{F, a, b, c, n}, x]
```

Rule 2283

```
Int[((a_) + (b_.)*(F_)^((e_.)*((c_.) + (d_.)*(x_))))^(p_)*(G_)^((h_.)*((f_.
) + (g_.)*(x_))), x_Symbol] :> Simp[a^p*(G^(h*(f + g*x))/(g*h*Log[G]))*Hype
rgeometric2F1[-p, g*h*(Log[G]/(d*e*Log[F])), g*h*(Log[G]/(d*e*Log[F])) + 1,
 Simplify[(-b/a)*F^(e*(c + d*x))]], x] /; FreeQ[{F, G, a, b, c, d, e, f, g,
 h, p}, x] && (ILtQ[p, 0] || GtQ[a, 0])
```

Rule 4528

```
Int[Cot[(d_.) + (e_.)*(x_)]^(n_.)*(F_)^((c_.)*((a_.) + (b_.)*(x_))), x_Symb
ol] :> Dist[(-I)^n, Int[ExpandIntegrand[F^(c*(a + b*x))*((1 + E^(2*I*(d + e
```

```
*x)))^n/(1 - E^(2*I*(d + e*x)))^n), x], x], x] /; FreeQ[{F, a, b, c, d, e},
 x] && IntegerQ[n]
```

Rule 4920

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -a/b + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSin[
a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{e^{\sin^{-1}(ax)}}{x}\,dx &= \frac{\text{Subst}\left(\int ae^x\cot(x)\,dx, x, \sin^{-1}(ax)\right)}{a}\\
&= \text{Subst}\left(\int e^x\cot(x)\,dx, x, \sin^{-1}(ax)\right)\\
&= -\left(i\text{Subst}\left(\int \left(-e^x - \frac{2e^x}{-1+e^{2ix}}\right)\,dx, x, \sin^{-1}(ax)\right)\right)\\
&= i\text{Subst}\left(\int e^x\,dx, x, \sin^{-1}(ax)\right) + 2i\text{Subst}\left(\int \frac{e^x}{-1+e^{2ix}}\,dx, x, \sin^{-1}(ax)\right)\\
&= ie^{\sin^{-1}(ax)} - 2ie^{\sin^{-1}(ax)}\,{}_2F_1\left(-\frac{i}{2}, 1; 1-\frac{i}{2}; e^{2i\sin^{-1}(ax)}\right)
\end{aligned}$$

Mathematica [A]
time = 0.04, size = 75, normalized size = 1.74

$$i\left(-e^{\text{ArcSin}(ax)}\,{}_2F_1\left(-\frac{i}{2}, 1; 1-\frac{i}{2}; e^{2i\text{ArcSin}(ax)}\right) - \left(\frac{1}{5}-\frac{2i}{5}\right)e^{(1+2i)\text{ArcSin}(ax)}\,{}_2F_1\left(1, 1-\frac{i}{2}; 2-\frac{i}{2}; e^{2i\text{ArcSin}(ax)}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]/x,x]
```

```
[Out] I*(-(E^ArcSin[a*x]*Hypergeometric2F1[-1/2*I, 1, 1 - I/2, E^((2*I)*ArcSin[a*
x])]) - (1/5 - (2*I)/5)*E^((1 + 2*I)*ArcSin[a*x])*Hypergeometric2F1[1, 1 -
I/2, 2 - I/2, E^((2*I)*ArcSin[a*x])])
```

Maple [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{e^{\arcsin(ax)}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x))/x,x)
```

```
[Out] int(exp(arcsin(a*x))/x,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/x,x, algorithm="maxima")
```

```
[Out] integrate(e^(arcsin(a*x))/x, x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/x,x, algorithm="fricas")
```

```
[Out] integral(e^(arcsin(a*x))/x, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{e^{\operatorname{asin}(ax)}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x))/x,x)
```

```
[Out] Integral(exp(asin(a*x))/x, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/x,x, algorithm="giac")
```

```
[Out] integrate(e^(arcsin(a*x))/x, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\mathrm{e}^{\mathrm{asin}(a\,x)}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(asin(a*x))/x,x)
[Out] int(exp(asin(a*x))/x, x)
```

3.444 $\int \frac{e^{\text{ArcSin}(ax)}}{x^2} dx$

Optimal. Leaf size=83

$$(1-i)ae^{(1+i)\text{ArcSin}(ax)}\,{}_2F_1\left(\frac{1}{2}-\frac{i}{2},1;\frac{3}{2}-\frac{i}{2};e^{2i\text{ArcSin}(ax)}\right)-(2-2i)ae^{(1+i)\text{ArcSin}(ax)}\,{}_2F_1\left(\frac{1}{2}-\frac{i}{2},2;\frac{3}{2}-\frac{i}{2};e^{2i\text{ArcS}}\right.$$

```
[Out] (1-I)*a*exp((1+I)*arcsin(a*x))*hypergeom([1, 1/2-1/2*I],[3/2-1/2*I],(I*a*x+
(-a^2*x^2+1)^(1/2))^2)+(-2+2*I)*a*exp((1+I)*arcsin(a*x))*hypergeom([2, 1/2-
1/2*I],[3/2-1/2*I],(I*a*x+(-a^2*x^2+1)^(1/2))^2)
```

Rubi [A]
time = 0.08, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$, Rules used = {4920, 12, 4559, 2283}

$$(1-i)ae^{(1+i)\text{ArcSin}(ax)}\,{}_2F_1\left(\frac{1}{2}-\frac{i}{2},1;\frac{3}{2}-\frac{i}{2};e^{2i\text{ArcSin}(ax)}\right)-(2-2i)ae^{(1+i)\text{ArcSin}(ax)}\,{}_2F_1\left(\frac{1}{2}-\frac{i}{2},2;\frac{3}{2}-\frac{i}{2};e^{2i\text{ArcSin}(ax)}\right)$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]/x^2,x]
```

```
[Out] (1 - I)*a*E^((1 + I)*ArcSin[a*x])*Hypergeometric2F1[1/2 - I/2, 1, 3/2 - I/2
, E^((2*I)*ArcSin[a*x])] - (2 - 2*I)*a*E^((1 + I)*ArcSin[a*x])*Hypergeometr
ic2F1[1/2 - I/2, 2, 3/2 - I/2, E^((2*I)*ArcSin[a*x])]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2283

```
Int[((a_) + (b_.)*(F_)^((e_.)*((c_.) + (d_.)*(x_))))^(p_)*(G_)^((h_.)*((f_.
) + (g_.)*(x_))), x_Symbol] :> Simp[a^p*(G^(h*(f + g*x))/(g*h*Log[G]))*Hype
rgeometric2F1[-p, g*h*(Log[G]/(d*e*Log[F])), g*h*(Log[G]/(d*e*Log[F])) + 1,
 Simplify[(-b/a)*F^(e*(c + d*x))]], x] /; FreeQ[{F, G, a, b, c, d, e, f, g,
 h, p}, x] && (ILtQ[p, 0] || GtQ[a, 0])
```

Rule 4559

```
Int[(F_)^((c_.)*((a_.) + (b_.)*(x_)))*(G_)[(d_.) + (e_.)*(x_)]^(m_.)*(H_)[(
d_.) + (e_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigToExp[F^(c*(a + b*x)),
 G[d + e*x]^m*H[d + e*x]^n, x], x] /; FreeQ[{F, a, b, c, d, e}, x] && IGtQ[
m, 0] && IGtQ[n, 0] && TrigQ[G] && TrigQ[H]
```

Rule 4920

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -a/b + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSin[
a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{e^{\sin^{-1}(ax)}}{x^2}\,dx &= \frac{\text{Subst}\left(\int a^2 e^x \cot(x)\csc(x)\,dx, x, \sin^{-1}(ax)\right)}{a} \\
&= a\text{Subst}\left(\int e^x \cot(x)\csc(x)\,dx, x, \sin^{-1}(ax)\right) \\
&= a\text{Subst}\left(\int \left(\frac{2e^{(1+i)x}}{1-e^{2ix}} - \frac{4e^{(1+i)x}}{(-1+e^{2ix})^2}\right)\,dx, x, \sin^{-1}(ax)\right) \\
&= (2a)\text{Subst}\left(\int \frac{e^{(1+i)x}}{1-e^{2ix}}\,dx, x, \sin^{-1}(ax)\right) - (4a)\text{Subst}\left(\int \frac{e^{(1+i)x}}{(-1+e^{2ix})^2}\,dx, x, \sin^{-1}(ax)\right) \\
&= (1-i)ae^{(1+i)\sin^{-1}(ax)}\,{}_2F_1\left(\frac{1}{2}-\frac{i}{2}, 1; \frac{3}{2}-\frac{i}{2}; e^{2i\sin^{-1}(ax)}\right) - (2-2i)ae^{(1+i)\sin^{-1}(ax)}\,{}_2F_1\left(\frac{1}{2}-\right.
\end{aligned}$$

Mathematica [A]
time = 0.07, size = 54, normalized size = 0.65

$$-\frac{e^{\text{ArcSin}(ax)} + (1+i)ae^{(1+i)\text{ArcSin}(ax)}x\,{}_2F_1\left(\frac{1}{2}-\frac{i}{2}, 1; \frac{3}{2}-\frac{i}{2}; e^{2i\text{ArcSin}(ax)}\right)}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]/x^2,x]
[Out] -((E^ArcSin[a*x] + (1 + I)*a*E^((1 + I)*ArcSin[a*x])*x*Hypergeometric2F1[1/
2 - I/2, 1, 3/2 - I/2, E^((2*I)*ArcSin[a*x])])/x)
```

Maple [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{e^{\arcsin(ax)}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x))/x^2,x)
[Out] int(exp(arcsin(a*x))/x^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/x^2,x, algorithm="maxima")
[Out] integrate(e^(arcsin(a*x))/x^2, x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/x^2,x, algorithm="fricas")
[Out] integral(e^(arcsin(a*x))/x^2, x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{e^{\operatorname{asin}(ax)}}{x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x))/x**2,x)
[Out] Integral(exp(asin(a*x))/x**2, x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/x^2,x, algorithm="giac")
[Out] integrate(e^(arcsin(a*x))/x^2, x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\mathrm{e}^{\mathrm{asin}(a\,x)}}{x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(asin(a*x))/x^2,x)
[Out] int(exp(asin(a*x))/x^2, x)
```

3.445 $\int e^{\text{ArcSin}(ax)^2} x^3 \, dx$

Optimal. Leaf size=101

$$\frac{e\sqrt{\pi}\,\text{Erf}(1-i\text{ArcSin}(ax))}{16a^4}-\frac{e^4\sqrt{\pi}\,\text{Erf}(2-i\text{ArcSin}(ax))}{32a^4}+\frac{e\sqrt{\pi}\,\text{Erf}(1+i\text{ArcSin}(ax))}{16a^4}-\frac{e^4\sqrt{\pi}\,\text{Erf}(2+i\text{ArcS}}{32a^4}$$

```
[Out] 1/16*I*exp(1)*erfi(-I+arcsin(a*x))*Pi^(1/2)/a^4-1/16*I*exp(1)*erfi(I+arcsin
(a*x))*Pi^(1/2)/a^4-1/32*I*exp(4)*erfi(-2*I+arcsin(a*x))*Pi^(1/2)/a^4+1/32*
I*exp(4)*erfi(2*I+arcsin(a*x))*Pi^(1/2)/a^4
```

Rubi [A]
time = 0.09, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.417$, Rules used = {4920, 12, 4562, 2266, 2235}

$$\frac{e\sqrt{\pi}\,\text{Erf}(1-i\text{ArcSin}(ax))}{16a^4}-\frac{e^4\sqrt{\pi}\,\text{Erf}(2-i\text{ArcSin}(ax))}{32a^4}+\frac{e\sqrt{\pi}\,\text{Erf}(1+i\text{ArcSin}(ax))}{16a^4}-\frac{e^4\sqrt{\pi}\,\text{Erf}(2+i\text{ArcSin}(ax))}{32a^4}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]^2*x^3,x]
```

```
[Out] (E*Sqrt[Pi]*Erf[1 - I*ArcSin[a*x]])/(16*a^4) - (E^4*Sqrt[Pi]*Erf[2 - I*ArcS
in[a*x]])/(32*a^4) + (E*Sqrt[Pi]*Erf[1 + I*ArcSin[a*x]])/(16*a^4) - (E^4*Sq
rt[Pi]*Erf[2 + I*ArcSin[a*x]])/(32*a^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2266

```
Int[(F_)^((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> Dist[F^(a - b^2/
(4*c)), Int[F^((b + 2*c*x)^2/(4*c)), x], x] /; FreeQ[{F, a, b, c}, x]
```

Rule 4562

```
Int[Cos[v_]^(n_.)*(F_)^(u_)*Sin[v_]^(m_.), x_Symbol] :> Int[ExpandTrigToExp
[F^u, Sin[v]^m*Cos[v]^n, x], x] /; FreeQ[F, x] && (LinearQ[u, x] || PolyQ[u
, x, 2]) && (LinearQ[v, x] || PolyQ[v, x, 2]) && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 4920

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -a/b + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSin[
a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int e^{\sin^{-1}(ax)^2}x^3\,dx &= \frac{\text{Subst}\left(\int \frac{e^{x^2}\cos(x)\sin^3(x)}{a^3}\,dx, x, \sin^{-1}(ax)\right)}{a} \\
&= \frac{\text{Subst}\left(\int e^{x^2}\cos(x)\sin^3(x)\,dx, x, \sin^{-1}(ax)\right)}{a^4} \\
&= \frac{\text{Subst}\left(\int \left(\frac{1}{8}ie^{-2ix+x^2}-\frac{1}{8}ie^{2ix+x^2}-\frac{1}{16}ie^{-4ix+x^2}+\frac{1}{16}ie^{4ix+x^2}\right)dx, x, \sin^{-1}(ax)\right)}{a^4} \\
&= -\frac{i\text{Subst}\left(\int e^{-4ix+x^2}\,dx, x, \sin^{-1}(ax)\right)}{16a^4}+\frac{i\text{Subst}\left(\int e^{4ix+x^2}\,dx, x, \sin^{-1}(ax)\right)}{16a^4}+\frac{i\text{Subst}\left(\right.}{} \\
&= \frac{(ie)\text{Subst}\left(\int e^{\frac{1}{4}(-2i+2x)^2}\,dx, x, \sin^{-1}(ax)\right)}{8a^4}-\frac{(ie)\text{Subst}\left(\int e^{\frac{1}{4}(2i+2x)^2}\,dx, x, \sin^{-1}(ax)\right)}{8a^4}- \\
&= \frac{e\sqrt{\pi}\,\text{erf}(1-i\sin^{-1}(ax))}{16a^4}-\frac{e^4\sqrt{\pi}\,\text{erf}(2-i\sin^{-1}(ax))}{32a^4}+\frac{e\sqrt{\pi}\,\text{erf}(1+i\sin^{-1}(ax))}{16a^4}-
\end{aligned}$$

Mathematica [A]
time = 0.06, size = 67, normalized size = 0.66

$$\frac{e\sqrt{\pi}\,(2(\text{Erf}(1-i\text{ArcSin}(ax))+\text{Erf}(1+i\text{ArcSin}(ax)))-e^3(\text{Erf}(2-i\text{ArcSin}(ax))+\text{Erf}(2+i\text{ArcSin}(ax))))}{32a^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]^2*x^3,x]
[Out] (E*Sqrt[Pi]*(2*(Erf[1 - I*ArcSin[a*x]] + Erf[1 + I*ArcSin[a*x]]) - E^3*(Erf
[2 - I*ArcSin[a*x]] + Erf[2 + I*ArcSin[a*x]])))/(32*a^4)
```

Maple [F]
time = 0.01, size = 0, normalized size = 0.00

$$\int e^{\arcsin(ax)^2}x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x)^2)*x^3,x)
```

```
[Out] int(exp(arcsin(a*x)^2)*x^3,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)*x^3,x, algorithm="maxima")
```

```
[Out] integrate(x^3*e^(arcsin(a*x)^2), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)*x^3,x, algorithm="fricas")
```

```
[Out] integral(x^3*e^(arcsin(a*x)^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int x^3 e^{\operatorname{asin}^2(ax)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x)**2)*x**3,x)
```

```
[Out] Integral(x**3*exp(asin(a*x)**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)*x^3,x, algorithm="giac")
```

```
[Out] integrate(x^3*e^(arcsin(a*x)^2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int x^3\, \mathrm{e}^{\operatorname{asin}(a\,x)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*exp(asin(a*x)^2),x)
```

```
[Out] int(x^3*exp(asin(a*x)^2), x)
```

3.446 $\int e^{\text{ArcSin}(ax)^2} x^2\,dx$

Optimal. Leaf size=129

$$\frac{\sqrt[4]{e}\,\sqrt{\pi}\,\text{Erfi}\left(\frac{1}{2}(-i+2\text{ArcSin}(ax))\right)}{16a^3}+\frac{\sqrt[4]{e}\,\sqrt{\pi}\,\text{Erfi}\left(\frac{1}{2}(i+2\text{ArcSin}(ax))\right)}{16a^3}-\frac{e^{9/4}\sqrt{\pi}\,\text{Erfi}\left(\frac{1}{2}(-3i+2\text{ArcSin}(ax\right.}{16a^3}$$

```
[Out] 1/16*exp(1/4)*erfi(-1/2*I+arcsin(a*x))*Pi^(1/2)/a^3+1/16*exp(1/4)*erfi(1/2*
I+arcsin(a*x))*Pi^(1/2)/a^3-1/16*exp(9/4)*erfi(-3/2*I+arcsin(a*x))*Pi^(1/2)
/a^3-1/16*exp(9/4)*erfi(3/2*I+arcsin(a*x))*Pi^(1/2)/a^3
```

Rubi [A]
time = 0.10, antiderivative size = 129, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.417$, Rules used = {4920, 12, 4562, 2266, 2235}

$$\frac{\sqrt[4]{e}\,\sqrt{\pi}\,\text{Erfi}\left(\frac{1}{2}(2\text{ArcSin}(ax)-i)\right)}{16a^3}+\frac{\sqrt[4]{e}\,\sqrt{\pi}\,\text{Erfi}\left(\frac{1}{2}(2\text{ArcSin}(ax)+i)\right)}{16a^3}-\frac{e^{9/4}\sqrt{\pi}\,\text{Erfi}\left(\frac{1}{2}(2\text{ArcSin}(ax)-3i)\right)}{16a^3}-\frac{e^{9/4}\sqrt{\pi}\,\text{Erfi}\left(\frac{1}{2}(2\text{ArcSin}(ax)+3i)\right)}{16a^3}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]^2*x^2,x]
```

```
[Out] (E^(1/4)*Sqrt[Pi]*Erfi[(-I + 2*ArcSin[a*x])/2])/(16*a^3) + (E^(1/4)*Sqrt[Pi
]*Erfi[(I + 2*ArcSin[a*x])/2])/(16*a^3) - (E^(9/4)*Sqrt[Pi]*Erfi[(-3*I + 2*
ArcSin[a*x])/2])/(16*a^3) - (E^(9/4)*Sqrt[Pi]*Erfi[(3*I + 2*ArcSin[a*x])/2]
)/(16*a^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2266

```
Int[(F_)^((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> Dist[F^(a - b^2/
(4*c)), Int[F^((b + 2*c*x)^2/(4*c)), x], x] /; FreeQ[{F, a, b, c}, x]
```

Rule 4562

```
Int[Cos[v_]^(n_.)*(F_)^(u_)*Sin[v_]^(m_.), x_Symbol] :> Int[ExpandTrigToExp
[F^u, Sin[v]^m*Cos[v]^n, x], x] /; FreeQ[F, x] && (LinearQ[u, x] || PolyQ[u
```

```
, x, 2]) && (LinearQ[v, x] || PolyQ[v, x, 2]) && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 4920

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -a/b + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSin[
a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int e^{\sin^{-1}(ax)^2} x^2\,dx &= \frac{\text{Subst}\left(\int \frac{e^{x^2}\cos(x)\sin^2(x)}{a^2}\,dx, x, \sin^{-1}(ax)\right)}{a} \\
&= \frac{\text{Subst}\left(\int e^{x^2}\cos(x)\sin^2(x)\,dx, x, \sin^{-1}(ax)\right)}{a^3} \\
&= \frac{\text{Subst}\left(\int \left(\frac{1}{8}e^{-ix+x^2}+\frac{1}{8}e^{ix+x^2}-\frac{1}{8}e^{-3ix+x^2}-\frac{1}{8}e^{3ix+x^2}\right)dx, x, \sin^{-1}(ax)\right)}{a^3} \\
&= \frac{\text{Subst}\left(\int e^{-ix+x^2}\,dx, x, \sin^{-1}(ax)\right)}{8a^3}+\frac{\text{Subst}\left(\int e^{ix+x^2}\,dx, x, \sin^{-1}(ax)\right)}{8a^3}-\frac{\text{Subst}\left(\int e^{-3i
\end{aligned}$$

$$= \frac{\sqrt[4]{e}\,\text{Subst}\left(\int e^{\frac{1}{4}(-i+2x)^2}\,dx, x, \sin^{-1}(ax)\right)}{8a^3}+\frac{\sqrt[4]{e}\,\text{Subst}\left(\int e^{\frac{1}{4}(i+2x)^2}\,dx, x, \sin^{-1}(ax)\right)}{8a^3}-$$

$$= \frac{\sqrt[4]{e}\sqrt{\pi}\,\text{erfi}\left(\frac{1}{2}(-i+2\sin^{-1}(ax))\right)}{16a^3}+\frac{\sqrt[4]{e}\sqrt{\pi}\,\text{erfi}\left(\frac{1}{2}(i+2\sin^{-1}(ax))\right)}{16a^3}-\frac{e^{9/4}\sqrt{\pi}\,\text{erfi}\left(\frac{1}{2}\right.}{}$$

Mathematica [A]
time = 0.07, size = 84, normalized size = 0.65

$$\frac{\sqrt[4]{e}\sqrt{\pi}\left(\text{Erfi}\left(\frac{1}{2}(-i+2\text{ArcSin}(ax))\right)+\text{Erfi}\left(\frac{1}{2}(i+2\text{ArcSin}(ax))\right)-e^2\left(\text{Erfi}\left(\frac{1}{2}(-3i+2\text{ArcSin}(ax))\right)+\text{Erfi}\left(\frac{1}{2}(3i+2\text{ArcSin}(ax))\right)\right)\right)}{16a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]^2*x^2,x]
```

```
[Out] (E^(1/4)*Sqrt[Pi]*(Erfi[(-I + 2*ArcSin[a*x])/2] + Erfi[(I + 2*ArcSin[a*x])/
2] - E^2*(Erfi[(-3*I + 2*ArcSin[a*x])/2] + Erfi[(3*I + 2*ArcSin[a*x])/2])))
/(16*a^3)
```

Maple [F]
time = 0.01, size = 0, normalized size = 0.00

$$\int e^{\arcsin(ax)^2} x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x)^2)*x^2,x)
```

```
[Out] int(exp(arcsin(a*x)^2)*x^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)*x^2,x, algorithm="maxima")
```

```
[Out] integrate(x^2*e^(arcsin(a*x)^2), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)*x^2,x, algorithm="fricas")
```

```
[Out] integral(x^2*e^(arcsin(a*x)^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int x^2 e^{\operatorname{asin}^2(ax)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x)**2)*x**2,x)
```

```
[Out] Integral(x**2*exp(asin(a*x)**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)*x^2,x, algorithm="giac")
```

```
[Out] integrate(x^2*e^(arcsin(a*x)^2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int x^2\,\mathrm{e}^{\operatorname{asin}(a\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*exp(asin(a*x)^2),x)
[Out] int(x^2*exp(asin(a*x)^2), x)
```

3.447 $\int e^{\text{ArcSin}(ax)^2} x\,dx$

Optimal. Leaf size=49

$$\frac{e\sqrt{\pi}\,\text{Erf}(1-i\text{ArcSin}(ax))}{8a^2}+\frac{e\sqrt{\pi}\,\text{Erf}(1+i\text{ArcSin}(ax))}{8a^2}$$

```
[Out] 1/8*I*exp(1)*erfi(-I+arcsin(a*x))*Pi^(1/2)/a^2-1/8*I*exp(1)*erfi(I+arcsin(a
*x))*Pi^(1/2)/a^2
```

Rubi [A]
time = 0.05, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {4920, 12, 4562, 2266, 2235}

$$\frac{e\sqrt{\pi}\,\text{Erf}(1-i\text{ArcSin}(ax))}{8a^2}+\frac{e\sqrt{\pi}\,\text{Erf}(1+i\text{ArcSin}(ax))}{8a^2}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]^2*x,x]
```

```
[Out] (E*Sqrt[Pi]*Erf[1 - I*ArcSin[a*x]])/(8*a^2) + (E*Sqrt[Pi]*Erf[1 + I*ArcSin[
a*x]])/(8*a^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2266

```
Int[(F_)^((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> Dist[F^(a - b^2/
(4*c)), Int[F^((b + 2*c*x)^2/(4*c)), x], x] /; FreeQ[{F, a, b, c}, x]
```

Rule 4562

```
Int[Cos[v_]^(n_.)*(F_)^(u_)*Sin[v_]^(m_.), x_Symbol] :> Int[ExpandTrigToExp
[F^u, Sin[v]^m*Cos[v]^n, x], x] /; FreeQ[F, x] && (LinearQ[u, x] || PolyQ[u
, x, 2]) && (LinearQ[v, x] || PolyQ[v, x, 2]) && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 4920

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -a/b + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSin[
a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int e^{\sin^{-1}(ax)^2} x\,dx &= \frac{\text{Subst}\left(\int \frac{e^{x^2}\cos(x)\sin(x)}{a}\,dx, x, \sin^{-1}(ax)\right)}{a} \\
&= \frac{\text{Subst}\left(\int e^{x^2}\cos(x)\sin(x)\,dx, x, \sin^{-1}(ax)\right)}{a^2} \\
&= \frac{\text{Subst}\left(\int \left(\frac{1}{4}ie^{-2ix+x^2} - \frac{1}{4}ie^{2ix+x^2}\right)\,dx, x, \sin^{-1}(ax)\right)}{a^2} \\
&= \frac{i\text{Subst}\left(\int e^{-2ix+x^2}\,dx, x, \sin^{-1}(ax)\right)}{4a^2} - \frac{i\text{Subst}\left(\int e^{2ix+x^2}\,dx, x, \sin^{-1}(ax)\right)}{4a^2} \\
&= \frac{(ie)\text{Subst}\left(\int e^{\frac{1}{4}(-2i+2x)^2}\,dx, x, \sin^{-1}(ax)\right)}{4a^2} - \frac{(ie)\text{Subst}\left(\int e^{\frac{1}{4}(2i+2x)^2}\,dx, x, \sin^{-1}(ax)\right)}{4a^2} \\
&= \frac{e\sqrt{\pi}\,\text{erf}(1 - i\sin^{-1}(ax))}{8a^2} + \frac{e\sqrt{\pi}\,\text{erf}(1 + i\sin^{-1}(ax))}{8a^2}
\end{aligned}$$

Mathematica [**A**]
time = 0.02, size = 36, normalized size = 0.73

$$\frac{e\sqrt{\pi}\,(\text{Erf}(1 - i\text{ArcSin}(ax)) + \text{Erf}(1 + i\text{ArcSin}(ax)))}{8a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]^2*x,x]
[Out] (E*Sqrt[Pi]*(Erf[1 - I*ArcSin[a*x]] + Erf[1 + I*ArcSin[a*x]]))/(8*a^2)
```

Maple [**F**]
time = 0.01, size = 0, normalized size = 0.00

$$\int e^{\arcsin(ax)^2} x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x)^2)*x,x)
[Out] int(exp(arcsin(a*x)^2)*x,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)*x,x, algorithm="maxima")
[Out] integrate(x*e^(arcsin(a*x)^2), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)*x,x, algorithm="fricas")
[Out] integral(x*e^(arcsin(a*x)^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int xe^{\operatorname{asin}^2(ax)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x)**2)*x,x)
[Out] Integral(x*exp(asin(a*x)**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)*x,x, algorithm="giac")
[Out] integrate(x*e^(arcsin(a*x)^2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int x\,\mathrm{e}^{\mathrm{asin}(a\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*exp(asin(a*x)^2),x)
[Out] int(x*exp(asin(a*x)^2), x)
```

3.448 $\int e^{\text{ArcSin}(ax)^2} dx$

Optimal. Leaf size=65

$$\frac{\sqrt[4]{e}\sqrt{\pi}\,\text{Erfi}\left(\frac{1}{2}(-i+2\text{ArcSin}(ax))\right)}{4a}+\frac{\sqrt[4]{e}\sqrt{\pi}\,\text{Erfi}\left(\frac{1}{2}(i+2\text{ArcSin}(ax))\right)}{4a}$$

```
[Out] 1/4*exp(1/4)*erfi(-1/2*I+arcsin(a*x))*Pi^(1/2)/a+1/4*exp(1/4)*erfi(1/2*I+ar
csin(a*x))*Pi^(1/2)/a
```

Rubi [A]
time = 0.04, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {4920, 4561, 2266, 2235}

$$\frac{\sqrt[4]{e}\sqrt{\pi}\,\text{Erfi}\left(\frac{1}{2}(2\text{ArcSin}(ax)-i)\right)}{4a}+\frac{\sqrt[4]{e}\sqrt{\pi}\,\text{Erfi}\left(\frac{1}{2}(2\text{ArcSin}(ax)+i)\right)}{4a}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]^2,x]
```

```
[Out] (E^(1/4)*Sqrt[Pi]*Erfi[(-I + 2*ArcSin[a*x])/2])/(4*a) + (E^(1/4)*Sqrt[Pi]*E
rfi[(I + 2*ArcSin[a*x])/2])/(4*a)
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2266

```
Int[(F_)^((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> Dist[F^(a - b^2/
(4*c)), Int[F^((b + 2*c*x)^2/(4*c)), x], x] /; FreeQ[{F, a, b, c}, x]
```

Rule 4561

```
Int[Cos[v_]^(n_.)*(F_)^(u_), x_Symbol] :> Int[ExpandTrigToExp[F^u, Cos[v]^n
, x], x] /; FreeQ[F, x] && (LinearQ[u, x] || PolyQ[u, x, 2]) && (LinearQ[v,
 x] || PolyQ[v, x, 2]) && IGtQ[n, 0]
```

Rule 4920

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -a/b + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSin[
a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int e^{\sin^{-1}(ax)^2}\,dx &= \frac{\text{Subst}\left(\int e^{x^2}\cos(x)\,dx, x, \sin^{-1}(ax)\right)}{a}\\
&= \frac{\text{Subst}\left(\int \left(\frac{1}{2}e^{-ix+x^2}+\frac{1}{2}e^{ix+x^2}\right)\,dx, x, \sin^{-1}(ax)\right)}{a}\\
&= \frac{\text{Subst}\left(\int e^{-ix+x^2}\,dx, x, \sin^{-1}(ax)\right)}{2a}+\frac{\text{Subst}\left(\int e^{ix+x^2}\,dx, x, \sin^{-1}(ax)\right)}{2a}\\
&= \frac{\sqrt[4]{e}\,\text{Subst}\left(\int e^{\frac{1}{4}(-i+2x)^2}\,dx, x, \sin^{-1}(ax)\right)}{2a}+\frac{\sqrt[4]{e}\,\text{Subst}\left(\int e^{\frac{1}{4}(i+2x)^2}\,dx, x, \sin^{-1}(ax)\right)}{2a}\\
&= \frac{\sqrt[4]{e}\,\sqrt{\pi}\,\text{erfi}\left(\frac{1}{2}\left(-i+2\sin^{-1}(ax)\right)\right)}{4a}+\frac{\sqrt[4]{e}\,\sqrt{\pi}\,\text{erfi}\left(\frac{1}{2}\left(i+2\sin^{-1}(ax)\right)\right)}{4a}
\end{aligned}$$

Mathematica [**A**]
time = 0.03, size = 48, normalized size = 0.74

$$\frac{\sqrt[4]{e}\,\sqrt{\pi}\,\left(\text{Erfi}\left(\frac{1}{2}(-i+2\text{ArcSin}(ax))\right)+\text{Erfi}\left(\frac{1}{2}(i+2\text{ArcSin}(ax))\right)\right)}{4a}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]^2,x]
[Out] (E^(1/4)*Sqrt[Pi]*(Erfi[(-I + 2*ArcSin[a*x])/2] + Erfi[(I + 2*ArcSin[a*x])/
2]))/(4*a)
```

Maple [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int e^{\arcsin(ax)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x)^2),x)
[Out] int(exp(arcsin(a*x)^2),x)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2),x, algorithm="maxima")
[Out] integrate(e^(arcsin(a*x)^2), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2),x, algorithm="fricas")
[Out] integral(e^(arcsin(a*x)^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int e^{\operatorname{asin}^{2}(ax)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x)**2),x)
[Out] Integral(exp(asin(a*x)**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2),x, algorithm="giac")
[Out] integrate(e^(arcsin(a*x)^2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int \mathrm{e}^{\mathrm{asin}(a\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(asin(a*x)^2),x)
[Out] int(exp(asin(a*x)^2), x)
```

3.449 $\int \frac{e^{\mathbf{ArcSin}(ax)^2}}{x}\,dx$

Optimal. Leaf size=20

$$a\text{Int}\left(\frac{e^{\text{ArcSin}(ax)^2}}{ax},x\right)$$

```
[Out] a*CannotIntegrate(exp(arcsin(a*x)^2)/a/x,x)
```

Rubi [A]
time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{e^{\text{ArcSin}(ax)^2}}{x}\,dx$$

Verification is not applicable to the result.

```
[In] Int[E^ArcSin[a*x]^2/x,x]
[Out] Defer[Subst][Defer[Int][E^x^2*Cot[x], x], x, ArcSin[a*x]]
```

Rubi steps

$$\begin{aligned}\int \frac{e^{\sin^{-1}(ax)^2}}{x}\,dx &= \frac{\text{Subst}\left(\int ae^{x^2}\cot(x)\,dx,x,\sin^{-1}(ax)\right)}{a}\\ &= \text{Subst}\left(\int e^{x^2}\cot(x)\,dx,x,\sin^{-1}(ax)\right)\end{aligned}$$

Mathematica [A]
time = 0.14, size = 0, normalized size = 0.00

$$\int \frac{e^{\text{ArcSin}(ax)^2}}{x}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[E^ArcSin[a*x]^2/x,x]
[Out] Integrate[E^ArcSin[a*x]^2/x, x]
```

Maple [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{e^{\arcsin(ax)^2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x)^2)/x,x)
```

```
[Out] int(exp(arcsin(a*x)^2)/x,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)/x,x, algorithm="maxima")
```

```
[Out] integrate(e^(arcsin(a*x)^2)/x, x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)/x,x, algorithm="fricas")
```

```
[Out] integral(e^(arcsin(a*x)^2)/x, x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{e^{\operatorname{asin}^{2}(ax)}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x)**2)/x,x)
```

```
[Out] Integral(exp(asin(a*x)**2)/x, x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)/x,x, algorithm="giac")
```

```
[Out] integrate(e^(arcsin(a*x)^2)/x, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{\mathrm{e}^{\mathrm{asin}(a\,x)^2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(asin(a*x)^2)/x,x)
```

```
[Out] int(exp(asin(a*x)^2)/x, x)
```

3.450 $\int \frac{e^{\textbf{ArcSin}(ax)^2}}{x^2}\,dx$

Optimal. Leaf size=22

$$a^2\mathrm{Int}\left(\frac{e^{\mathrm{ArcSin}(ax)^2}}{a^2x^2},x\right)$$

```
[Out] a^2*CannotIntegrate(exp(arcsin(a*x)^2)/a^2/x^2,x)
```

Rubi [A]
time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{e^{\mathrm{ArcSin}(ax)^2}}{x^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[E^ArcSin[a*x]^2/x^2,x]
[Out] a*Defer[Subst][Defer[Int][E^x^2*Cot[x]*Csc[x], x], x, ArcSin[a*x]]
```

Rubi steps

$$\begin{aligned}\int \frac{e^{\sin^{-1}(ax)^2}}{x^2}\,dx &= \frac{\mathrm{Subst}\left(\int a^2e^{x^2}\cot(x)\csc(x)\,dx,x,\sin^{-1}(ax)\right)}{a}\\ &= a\mathrm{Subst}\left(\int e^{x^2}\cot(x)\csc(x)\,dx,x,\sin^{-1}(ax)\right)\end{aligned}$$

Mathematica [A]
time = 1.23, size = 0, normalized size = 0.00

$$\int \frac{e^{\mathrm{ArcSin}(ax)^2}}{x^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[E^ArcSin[a*x]^2/x^2,x]
[Out] Integrate[E^ArcSin[a*x]^2/x^2, x]
```

Maple [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\mathrm{e}^{\arcsin(ax)^2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x)^2)/x^2,x)
```

```
[Out] int(exp(arcsin(a*x)^2)/x^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)/x^2,x, algorithm="maxima")
```

```
[Out] integrate(e^(arcsin(a*x)^2)/x^2, x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)/x^2,x, algorithm="fricas")
```

```
[Out] integral(e^(arcsin(a*x)^2)/x^2, x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{e^{\operatorname{asin}^{2}{(ax)}}}{x^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x)**2)/x**2,x)
```

```
[Out] Integral(exp(asin(a*x)**2)/x**2, x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x)^2)/x^2,x, algorithm="giac")
```

```
[Out] integrate(e^(arcsin(a*x)^2)/x^2, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{e^{\mathrm{asin}(a\,x)^2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(asin(a*x)^2)/x^2,x)
```

```
[Out] int(exp(asin(a*x)^2)/x^2, x)
```

3.451 $\int e^{\text{ArcSin}(a+bx)}x^3\,dx$

Optimal. Leaf size=309

$$-\frac{3ae^{\text{ArcSin}(a+bx)}(a+bx)}{8b^4}-\frac{a^3e^{\text{ArcSin}(a+bx)}(a+bx)}{2b^4}-\frac{3ae^{\text{ArcSin}(a+bx)}\sqrt{1-(a+bx)^2}}{8b^4}-\frac{a^3e^{\text{ArcSin}(a+bx)}\sqrt{1-(a+}{2b^4}$$

```
[Out] -3/8*a*exp(arcsin(b*x+a))*(b*x+a)/b^4-1/2*a^3*exp(arcsin(b*x+a))*(b*x+a)/b^
4-1/10*exp(arcsin(b*x+a))*cos(2*arcsin(b*x+a))/b^4-3/5*a^2*exp(arcsin(b*x+a
))*cos(2*arcsin(b*x+a))/b^4+3/40*a*exp(arcsin(b*x+a))*cos(3*arcsin(b*x+a))/
b^4+1/34*exp(arcsin(b*x+a))*cos(4*arcsin(b*x+a))/b^4+1/20*exp(arcsin(b*x+a)
)*sin(2*arcsin(b*x+a))/b^4+3/10*a^2*exp(arcsin(b*x+a))*sin(2*arcsin(b*x+a))
/b^4+9/40*a*exp(arcsin(b*x+a))*sin(3*arcsin(b*x+a))/b^4-1/136*exp(arcsin(b*
x+a))*sin(4*arcsin(b*x+a))/b^4-3/8*a*exp(arcsin(b*x+a))*(1-(b*x+a)^2)^(1/2)
/b^4-1/2*a^3*exp(arcsin(b*x+a))*(1-(b*x+a)^2)^(1/2)/b^4
```

Rubi [A]
time = 0.38, antiderivative size = 309, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 7, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.583$, Rules used = {4920, 6873, 12, 6874, 4518, 4557, 4517}

$$-\frac{a^3(a+bx)e^{\text{ArcSin}(a+bx)}}{2b^4}-\frac{a^3\sqrt{1-(a+bx)^2}\,e^{\text{ArcSin}(a+bx)}}{2b^4}+\frac{3a^2e^{\text{ArcSin}(a+bx)}\sin(2\text{ArcSin}(a+bx))}{10b^4}-\frac{3a^2e^{\text{ArcSin}(a+bx)}\cos(2\text{ArcSin}(a+bx))}{5b^4}-\frac{3a(a+bx)e^{\text{ArcSin}(a+bx)}}{8b^4}-\frac{3a\sqrt{1-(a+bx)^2}\,e^{\text{ArcSin}(a+bx)}}{8b^4}+\frac{9ae^{\text{ArcSin}(a+bx)}\sin(3\text{ArcSin}(a+bx))}{40b^4}+\frac{e^{\text{ArcSin}(a+bx)}\sin(2\text{ArcSin}(a+bx))}{20b^4}-\frac{e^{\text{ArcSin}(a+bx)}\sin(4\text{ArcSin}(a+bx))}{136b^4}+\frac{3ae^{\text{ArcSin}(a+bx)}\cos(3\text{ArcSin}(a+bx))}{40b^4}-\frac{e^{\text{ArcSin}(a+bx)}\cos(2\text{ArcSin}(a+bx))}{10b^4}+\frac{e^{\text{ArcSin}(a+bx)}\cos(4\text{ArcSin}(a+bx))}{34b^4}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a + b*x]*x^3,x]
```

```
[Out] (-3*a*E^ArcSin[a + b*x]*(a + b*x))/(8*b^4) - (a^3*E^ArcSin[a + b*x]*(a + b*
x))/(2*b^4) - (3*a*E^ArcSin[a + b*x]*Sqrt[1 - (a + b*x)^2])/(8*b^4) - (a^3*
E^ArcSin[a + b*x]*Sqrt[1 - (a + b*x)^2])/(2*b^4) - (E^ArcSin[a + b*x]*Cos[2
*ArcSin[a + b*x]])/(10*b^4) - (3*a^2*E^ArcSin[a + b*x]*Cos[2*ArcSin[a + b*x
]])/(5*b^4) + (3*a*E^ArcSin[a + b*x]*Cos[3*ArcSin[a + b*x]])/(40*b^4) + (E^
ArcSin[a + b*x]*Cos[4*ArcSin[a + b*x]])/(34*b^4) + (E^ArcSin[a + b*x]*Sin[2
*ArcSin[a + b*x]])/(20*b^4) + (3*a^2*E^ArcSin[a + b*x]*Sin[2*ArcSin[a + b*x
]])/(10*b^4) + (9*a*E^ArcSin[a + b*x]*Sin[3*ArcSin[a + b*x]])/(40*b^4) - (E
^ArcSin[a + b*x]*Sin[4*ArcSin[a + b*x]])/(136*b^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4517

```
Int[(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sin[(d_.) + (e_.)*(x_)], x_Symbol] :>
 Simp[b*c*Log[F]*F^(c*(a + b*x))*(Sin[d + e*x]/(e^2 + b^2*c^2*Log[F]^2)), x
] - Simp[e*F^(c*(a + b*x))*(Cos[d + e*x]/(e^2 + b^2*c^2*Log[F]^2)), x] /; F
```

```
reeQ[{F, a, b, c, d, e}, x] && NeQ[e^2 + b^2*c^2*Log[F]^2, 0]
```

Rule 4518

```
Int[Cos[(d_.) + (e_.)*(x_)]*(F_)^((c_.)*((a_.) + (b_.)*(x_))), x_Symbol] :>
 Simp[b*c*Log[F]*F^(c*(a + b*x))*(Cos[d + e*x]/(e^2 + b^2*c^2*Log[F]^2)), x
] + Simp[e*F^(c*(a + b*x))*(Sin[d + e*x]/(e^2 + b^2*c^2*Log[F]^2)), x] /; F
reeQ[{F, a, b, c, d, e}, x] && NeQ[e^2 + b^2*c^2*Log[F]^2, 0]
```

Rule 4557

```
Int[Cos[(f_.) + (g_.)*(x_)]^(n_.)*(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sin[(d_
.) + (e_.)*(x_)]^(m_.), x_Symbol] :> Int[ExpandTrigReduce[F^(c*(a + b*x)),
Sin[d + e*x]^m*Cos[f + g*x]^n, x], x] /; FreeQ[{F, a, b, c, d, e, f, g}, x]
 && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 4920

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -a/b + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSin[
a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int e^{\sin^{-1}(a+bx)}x^3\,dx = \frac{\text{Subst}\left(\int e^x\cos(x)\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)^3dx,x,\sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \frac{e^x\cos(x)(-a+\sin(x))^3}{b^3}dx,x,\sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int e^x\cos(x)(-a+\sin(x))^3dx,x,\sin^{-1}(a+bx)\right)}{b^4}$$
$$= \frac{\text{Subst}\left(\int \left(-a^3e^x\cos(x)+3a^2e^x\cos(x)\sin(x)-3ae^x\cos(x)\sin^2(x)+e^x\cos(x)\sin^3(x)\right)\right.}{b^4}$$
$$= \frac{\text{Subst}\left(\int e^x\cos(x)\sin^3(x)\,dx,x,\sin^{-1}(a+bx)\right)}{b^4} - \frac{(3a)\text{Subst}\left(\int e^x\cos(x)\sin^2(x)\,dx,x,\text{si}\right.}{b^4}$$
$$= -\frac{a^3e^{\sin^{-1}(a+bx)}(a+bx)}{2b^4} - \frac{a^3e^{\sin^{-1}(a+bx)}\sqrt{1-(a+bx)^2}}{2b^4} + \frac{\text{Subst}\left(\int \left(\frac{1}{4}e^x\sin(2x)-\frac{1}{8}e^x\right.\right.}{}$$
$$= -\frac{a^3e^{\sin^{-1}(a+bx)}(a+bx)}{2b^4} - \frac{a^3e^{\sin^{-1}(a+bx)}\sqrt{1-(a+bx)^2}}{2b^4} - \frac{\text{Subst}\left(\int e^x\sin(4x)\,dx,x,\text{sin}\right.}{8b^4}$$
$$= -\frac{3ae^{\sin^{-1}(a+bx)}(a+bx)}{8b^4} - \frac{a^3e^{\sin^{-1}(a+bx)}(a+bx)}{2b^4} - \frac{3ae^{\sin^{-1}(a+bx)}\sqrt{1-(a+bx)^2}}{8b^4} - \frac{a^3}{}$$

Mathematica [A]
time = 0.29, size = 148, normalized size = 0.48

$$\frac{e^{\text{ArcSin}(a+bx)}\left(-255a(a+bx)-340a^3(a+bx)-85a(3+4a^2)\sqrt{1-(a+bx)^2}-68(1+6a^2)\cos(2\text{ArcSin}(a+bx))+51a\cos(3\text{ArcSin}(a+bx))+20\cos(4\text{ArcSin}(a+bx))+34\sin(2\text{ArcSin}(a+bx))+204a^2\sin(2\text{ArcSin}(a+bx))+153a\sin(3\text{ArcSin}(a+bx))-5\sin(4\text{ArcSin}(a+bx))\right)}{680b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a + b*x]*x^3,x]
```

```
[Out] (E^ArcSin[a + b*x]*(-255*a*(a + b*x) - 340*a^3*(a + b*x) - 85*a*(3 + 4*a^2)
*Sqrt[1 - (a + b*x)^2] - 68*(1 + 6*a^2)*Cos[2*ArcSin[a + b*x]] + 51*a*Cos[3
*ArcSin[a + b*x]] + 20*Cos[4*ArcSin[a + b*x]] + 34*Sin[2*ArcSin[a + b*x]] +
 204*a^2*Sin[2*ArcSin[a + b*x]] + 153*a*Sin[3*ArcSin[a + b*x]] - 5*Sin[4*Ar
cSin[a + b*x]]))/(680*b^4)
```

Maple [F]
time = 0.02, size = 0, normalized size = 0.00

$$\int e^{\arcsin(bx+a)}x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(b*x+a))*x^3,x)
```

```
[Out] int(exp(arcsin(b*x+a))*x^3,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))*x^3,x, algorithm="maxima")
[Out] integrate(x^3*e^(arcsin(b*x + a)), x)
```

Fricas [A]
time = 1.63, size = 129, normalized size = 0.42

$$\frac{\left(40\,b^{4}x^{4}+7\,ab^{3}x^{3}-3\,(5\,a^{2}+2)b^{2}x^{2}+6\,a^{4}+3\,(8\,a^{3}+13\,a)bx-57\,a^{2}+(10\,b^{3}x^{3}-21\,ab^{2}x^{2}-24\,a^{3}+6\,(5\,a^{2}+2)bx-39\,a)\sqrt{-b^{2}x^{2}-2\,abx-a^{2}+1}-12\right)e^{(\arcsin(bx+a))}}{170\,b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))*x^3,x, algorithm="fricas")
[Out] 1/170*(40*b^4*x^4 + 7*a*b^3*x^3 - 3*(5*a^2 + 2)*b^2*x^2 + 6*a^4 + 3*(8*a^3
+ 13*a)*b*x - 57*a^2 + (10*b^3*x^3 - 21*a*b^2*x^2 - 24*a^3 + 6*(5*a^2 + 2)*
b*x - 39*a)*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1) - 12)*e^(arcsin(b*x + a))/b^
4
```

Sympy [A]
time = 0.67, size = 416, normalized size = 1.35

$$\begin{cases} \frac{3a^{4}e^{\operatorname{asin}(a+bx)}}{85b^{4}}+\frac{12a^{3}xe^{\operatorname{asin}(a+bx)}}{85b^{3}}-\frac{12a^{3}\sqrt{-a^{2}-2abx-b^{2}x^{2}+1}\,e^{\operatorname{asin}(a+bx)}}{85b^{4}}-\frac{3a^{2}x^{2}e^{\operatorname{asin}(a+bx)}}{34b^{2}}+\frac{3a^{2}x\sqrt{-a^{2}-2abx-b^{2}x^{2}+1}\,e^{\operatorname{asin}(a+bx)}}{17b^{3}}-\frac{57a^{2}e^{\operatorname{asin}(a+bx)}}{170b^{4}}+\frac{7ax^{3}e^{\operatorname{asin}(a+bx)}}{170b}-\frac{21ax^{2}\sqrt{-a^{2}-2abx-b^{2}x^{2}+1}\,e^{\operatorname{asin}(a+bx)}}{170b^{2}}+\frac{39axe^{\operatorname{asin}(a+bx)}}{170b^{3}}-\frac{39a\sqrt{-a^{2}-2abx-b^{2}x^{2}+1}\,e^{\operatorname{asin}(a+bx)}}{170b^{4}}+\frac{4x^{4}e^{\operatorname{asin}(a+bx)}}{17}+\frac{x^{3}\sqrt{-a^{2}-2abx-b^{2}x^{2}+1}\,e^{\operatorname{asin}(a+bx)}}{17b}-\frac{3x^{2}e^{\operatorname{asin}(a+bx)}}{85b^{2}}+\frac{6x\sqrt{-a^{2}-2abx-b^{2}x^{2}+1}\,e^{\operatorname{asin}(a+bx)}}{85b^{3}}-\frac{6e^{\operatorname{asin}(a+bx)}}{85b^{4}} & \text{for}\: b \neq 0 \\ \frac{x^{4}e^{\operatorname{asin}(a)}}{4} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(b*x+a))*x**3,x)
[Out] Piecewise((3*a**4*exp(asin(a + b*x))/(85*b**4) + 12*a**3*x*exp(asin(a + b*x
))/(85*b**3) - 12*a**3*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*exp(asin(a + b
*x))/(85*b**4) - 3*a**2*x**2*exp(asin(a + b*x))/(34*b**2) + 3*a**2*x*sqrt(-
a**2 - 2*a*b*x - b**2*x**2 + 1)*exp(asin(a + b*x))/(17*b**3) - 57*a**2*exp(
asin(a + b*x))/(170*b**4) + 7*a*x**3*exp(asin(a + b*x))/(170*b) - 21*a*x**2
*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*exp(asin(a + b*x))/(170*b**2) + 39*a
*x*exp(asin(a + b*x))/(170*b**3) - 39*a*sqrt(-a**2 - 2*a*b*x - b**2*x**2 +
1)*exp(asin(a + b*x))/(170*b**4) + 4*x**4*exp(asin(a + b*x))/17 + x**3*sqrt
(-a**2 - 2*a*b*x - b**2*x**2 + 1)*exp(asin(a + b*x))/(17*b) - 3*x**2*exp(as
in(a + b*x))/(85*b**2) + 6*x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*exp(asin
(a + b*x))/(85*b**3) - 6*exp(asin(a + b*x))/(85*b**4), Ne(b, 0)), (x**4*exp
(asin(a))/4, True))
```

Giac [A]
time = 0.42, size = 334, normalized size = 1.08

$$-\frac{(bx+a)a^3e^{(\arcsin(bx+a))}}{2\,b^4}+\frac{3\,\sqrt{-(bx+a)^2+1}\,(bx+a)a^2e^{(\arcsin(bx+a))}}{5\,b^4}-\frac{\sqrt{-(bx+a)^2+1}\,a^3e^{(\arcsin(bx+a))}}{2\,b^4}-\frac{9\,\left((bx+a)^2-1\right)(bx+a)ae^{(\arcsin(bx+a))}}{10\,b^4}+\frac{6\,\left((bx+a)^2-1\right)a^2e^{(\arcsin(bx+a))}}{5\,b^4}-\frac{\left(-(bx+a)^2+1\right)^{\frac{3}{2}}(bx+a)e^{(\arcsin(bx+a))}}{17\,b^4}+\frac{3\,\left(-(bx+a)^2+1\right)^{\frac{3}{2}}ae^{(\arcsin(bx+a))}}{10\,b^4}+\frac{4\,\left((bx+a)^2-1\right)^2e^{(\arcsin(bx+a))}}{17\,b^4}-\frac{3\,(bx+a)ae^{(\arcsin(bx+a))}}{5\,b^4}+\frac{3\,a^2e^{(\arcsin(bx+a))}}{5\,b^4}+\frac{11\,\sqrt{-(bx+a)^2+1}\,(bx+a)e^{(\arcsin(bx+a))}}{85\,b^4}-\frac{3\,\sqrt{-(bx+a)^2+1}\,ae^{(\arcsin(bx+a))}}{5\,b^4}+\frac{37\,\left((bx+a)^2-1\right)e^{(\arcsin(bx+a))}}{85\,b^4}+\frac{11\,e^{(\arcsin(bx+a))}}{85\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))*x^3,x, algorithm="giac")
```

```
[Out] -1/2*(b*x + a)*a^3*e^(arcsin(b*x + a))/b^4 + 3/5*sqrt(-(b*x + a)^2 + 1)*(b*
x + a)*a^2*e^(arcsin(b*x + a))/b^4 - 1/2*sqrt(-(b*x + a)^2 + 1)*a^3*e^(arcs
in(b*x + a))/b^4 - 9/10*((b*x + a)^2 - 1)*(b*x + a)*a*e^(arcsin(b*x + a))/b
^4 + 6/5*((b*x + a)^2 - 1)*a^2*e^(arcsin(b*x + a))/b^4 - 1/17*(-(b*x + a)^2
 + 1)^(3/2)*(b*x + a)*e^(arcsin(b*x + a))/b^4 + 3/10*(-(b*x + a)^2 + 1)^(3/
2)*a*e^(arcsin(b*x + a))/b^4 + 4/17*((b*x + a)^2 - 1)^2*e^(arcsin(b*x + a))
/b^4 - 3/5*(b*x + a)*a*e^(arcsin(b*x + a))/b^4 + 3/5*a^2*e^(arcsin(b*x + a)
)/b^4 + 11/85*sqrt(-(b*x + a)^2 + 1)*(b*x + a)*e^(arcsin(b*x + a))/b^4 - 3/
5*sqrt(-(b*x + a)^2 + 1)*a*e^(arcsin(b*x + a))/b^4 + 37/85*((b*x + a)^2 - 1
)*e^(arcsin(b*x + a))/b^4 + 11/85*e^(arcsin(b*x + a))/b^4
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int x^3\,\mathrm{e}^{\mathrm{asin}(a+b\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*exp(asin(a + b*x)),x)
```

```
[Out] int(x^3*exp(asin(a + b*x)), x)
```

3.452 $\int e^{\textbf{ArcSin}(a+bx)} x^2 \, dx$

Optimal. Leaf size=205

$$\frac{e^{\text{ArcSin}(a+bx)}(a+bx)}{8b^3}+\frac{a^2e^{\text{ArcSin}(a+bx)}(a+bx)}{2b^3}+\frac{e^{\text{ArcSin}(a+bx)}\sqrt{1-(a+bx)^2}}{8b^3}+\frac{a^2e^{\text{ArcSin}(a+bx)}\sqrt{1-(a+bx)^2}}{2b^3}$$

```
[Out] 1/8*exp(arcsin(b*x+a))*(b*x+a)/b^3+1/2*a^2*exp(arcsin(b*x+a))*(b*x+a)/b^3+2
/5*a*exp(arcsin(b*x+a))*cos(2*arcsin(b*x+a))/b^3-1/40*exp(arcsin(b*x+a))*co
s(3*arcsin(b*x+a))/b^3-1/5*a*exp(arcsin(b*x+a))*sin(2*arcsin(b*x+a))/b^3-3/
40*exp(arcsin(b*x+a))*sin(3*arcsin(b*x+a))/b^3+1/8*exp(arcsin(b*x+a))*(1-(b
*x+a)^2)^(1/2)/b^3+1/2*a^2*exp(arcsin(b*x+a))*(1-(b*x+a)^2)^(1/2)/b^3
```

Rubi [A]
time = 0.26, antiderivative size = 205, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 7, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.583$, Rules used = {4920, 6873, 12, 6874, 4518, 4557, 4517}

$$\frac{a^2(a+bx)e^{\text{ArcSin}(a+bx)}}{2b^3}+\frac{a^2\sqrt{1-(a+bx)^2}\,e^{\text{ArcSin}(a+bx)}}{2b^3}+\frac{(a+bx)e^{\text{ArcSin}(a+bx)}}{8b^3}+\frac{\sqrt{1-(a+bx)^2}\,e^{\text{ArcSin}(a+bx)}}{8b^3}-\frac{ae^{\text{ArcSin}(a+bx)}\sin(2\text{ArcSin}(a+bx))}{5b^3}-\frac{3e^{\text{ArcSin}(a+bx)}\sin(3\text{ArcSin}(a+bx))}{40b^3}+\frac{2ae^{\text{ArcSin}(a+bx)}\cos(2\text{ArcSin}(a+bx))}{5b^3}-\frac{e^{\text{ArcSin}(a+bx)}\cos(3\text{ArcSin}(a+bx))}{40b^3}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a + b*x]*x^2,x]
```

```
[Out] (E^ArcSin[a + b*x]*(a + b*x))/(8*b^3) + (a^2*E^ArcSin[a + b*x]*(a + b*x))/(
2*b^3) + (E^ArcSin[a + b*x]*Sqrt[1 - (a + b*x)^2])/(8*b^3) + (a^2*E^ArcSin[
a + b*x]*Sqrt[1 - (a + b*x)^2])/(2*b^3) + (2*a*E^ArcSin[a + b*x]*Cos[2*ArcS
in[a + b*x]])/(5*b^3) - (E^ArcSin[a + b*x]*Cos[3*ArcSin[a + b*x]])/(40*b^3)
 - (a*E^ArcSin[a + b*x]*Sin[2*ArcSin[a + b*x]])/(5*b^3) - (3*E^ArcSin[a + b
*x]*Sin[3*ArcSin[a + b*x]])/(40*b^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4517

```
Int[(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sin[(d_.) + (e_.)*(x_)], x_Symbol] :>
 Simp[b*c*Log[F]*F^(c*(a + b*x))*(Sin[d + e*x]/(e^2 + b^2*c^2*Log[F]^2)), x
] - Simp[e*F^(c*(a + b*x))*(Cos[d + e*x]/(e^2 + b^2*c^2*Log[F]^2)), x] /; F
reeQ[{F, a, b, c, d, e}, x] && NeQ[e^2 + b^2*c^2*Log[F]^2, 0]
```

Rule 4518

```
Int[Cos[(d_.) + (e_.)*(x_)]*(F_)^((c_.)*((a_.) + (b_.)*(x_))), x_Symbol] :>
 Simp[b*c*Log[F]*F^(c*(a + b*x))*(Cos[d + e*x]/(e^2 + b^2*c^2*Log[F]^2)), x
```

```
] + Simp[e*F^(c*(a + b*x))*(Sin[d + e*x]/(e^2 + b^2*c^2*Log[F]^2)), x] /; F
reeQ[{F, a, b, c, d, e}, x] && NeQ[e^2 + b^2*c^2*Log[F]^2, 0]
```

Rule 4557

```
Int[Cos[(f_.) + (g_.)*(x_)]^(n_.)*(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sin[(d_
.) + (e_.)*(x_)]^(m_.), x_Symbol] :> Int[ExpandTrigReduce[F^(c*(a + b*x)),
Sin[d + e*x]^m*Cos[f + g*x]^n, x], x] /; FreeQ[{F, a, b, c, d, e, f, g}, x]
 && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 4920

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -a/b + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSin[
a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int e^{\sin^{-1}(a+bx)}x^2\,dx = \frac{\text{Subst}\left(\int e^x\cos(x)\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)^2 dx, x, \sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \frac{e^x\cos(x)(a-\sin(x))^2}{b^2}\,dx, x, \sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int e^x\cos(x)(a-\sin(x))^2\,dx, x, \sin^{-1}(a+bx)\right)}{b^3}$$
$$= \frac{\text{Subst}\left(\int \left(a^2e^x\cos(x)-2ae^x\cos(x)\sin(x)+e^x\cos(x)\sin^2(x)\right)\,dx, x, \sin^{-1}(a+bx)\right)}{b^3}$$
$$= \frac{\text{Subst}\left(\int e^x\cos(x)\sin^2(x)\,dx, x, \sin^{-1}(a+bx)\right)}{b^3} - \frac{(2a)\text{Subst}\left(\int e^x\cos(x)\sin(x)\,dx, x, \text{s}\right.}{b^3}$$
$$= \frac{a^2e^{\sin^{-1}(a+bx)}(a+bx)}{2b^3} + \frac{a^2e^{\sin^{-1}(a+bx)}\sqrt{1-(a+bx)^2}}{2b^3} + \frac{\text{Subst}\left(\int \left(\frac{1}{4}e^x\cos(x)-\frac{1}{4}e^x\,\text{c}\right.\right.}{b}$$
$$= \frac{a^2e^{\sin^{-1}(a+bx)}(a+bx)}{2b^3} + \frac{a^2e^{\sin^{-1}(a+bx)}\sqrt{1-(a+bx)^2}}{2b^3} + \frac{\text{Subst}\left(\int e^x\cos(x)\,dx, x, \sin^{-}\right.}{4b^3}$$
$$= \frac{e^{\sin^{-1}(a+bx)}(a+bx)}{8b^3} + \frac{a^2e^{\sin^{-1}(a+bx)}(a+bx)}{2b^3} + \frac{e^{\sin^{-1}(a+bx)}\sqrt{1-(a+bx)^2}}{8b^3} + \frac{a^2e^{\sin^{-1}(}}{}$$

Mathematica [A]
time = 0.15, size = 103, normalized size = 0.50

$$\frac{e^{\text{ArcSin}(a+bx)}\left(5(a+bx)+20a^2(a+bx)+5(1+4a^2)\sqrt{1-(a+bx)^2}+16a\cos(2\text{ArcSin}(a+bx))-\cos(3\text{ArcSin}(a+bx))-8a\sin(2\text{ArcSin}(a+bx))-3\sin(3\text{ArcSin}(a+bx))\right)}{40b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a + b*x]*x^2,x]
```

```
[Out] (E^ArcSin[a + b*x]*(5*(a + b*x) + 20*a^2*(a + b*x) + 5*(1 + 4*a^2)*Sqrt[1 -
 (a + b*x)^2] + 16*a*Cos[2*ArcSin[a + b*x]] - Cos[3*ArcSin[a + b*x]] - 8*a*
Sin[2*ArcSin[a + b*x]] - 3*Sin[3*ArcSin[a + b*x]]))/(40*b^3)
```

Maple [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int e^{\arcsin(bx+a)}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(b*x+a))*x^2,x)
```

```
[Out] int(exp(arcsin(b*x+a))*x^2,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))*x^2,x, algorithm="maxima")
```

```
[Out] integrate(x^2*e^(arcsin(b*x + a)), x)
```

Fricas [A]
time = 2.62, size = 85, normalized size = 0.41

$$\frac{\left(3\,b^{3}x^{3}+ab^{2}x^{2}-(2\,a^{2}+1)bx+(b^{2}x^{2}-2\,abx+2\,a^{2}+1)\sqrt{-b^{2}x^{2}-2\,abx-a^{2}+1}+3\,a\right)e^{(\arcsin(bx+a))}}{10\,b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))*x^2,x, algorithm="fricas")
```

```
[Out] 1/10*(3*b^3*x^3 + a*b^2*x^2 - (2*a^2 + 1)*b*x + (b^2*x^2 - 2*a*b*x + 2*a^2
+ 1)*sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1) + 3*a)*e^(arcsin(b*x + a))/b^3
```

Sympy [A]
time = 0.36, size = 243, normalized size = 1.19

$$\begin{cases} -\frac{a^{2}xe^{\operatorname{asin}(a+bx)}}{5b^{2}}+\frac{a^{2}\sqrt{-a^{2}-2abx-b^{2}x^{2}+1}\,e^{\operatorname{asin}(a+bx)}}{5b^{3}}+\frac{ax^{2}e^{\operatorname{asin}(a+bx)}}{10b}-\frac{ax\sqrt{-a^{2}-2abx-b^{2}x^{2}+1}\,e^{\operatorname{asin}(a+bx)}}{5b^{2}}+\frac{3ae^{\operatorname{asin}(a+bx)}}{10b^{3}}+\frac{3x^{3}e^{\operatorname{asin}(a+bx)}}{10}+\frac{x^{2}\sqrt{-a^{2}-2abx-b^{2}x^{2}+1}\,e^{\operatorname{asin}(a+bx)}}{10b}-\frac{xe^{\operatorname{asin}(a+bx)}}{10b^{2}}+\frac{\sqrt{-a^{2}-2abx-b^{2}x^{2}+1}\,e^{\operatorname{asin}(a+bx)}}{10b^{3}} & \text{for}\ b\neq 0 \\ \frac{x^{3}e^{\operatorname{asin}(a)}}{3} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(b*x+a))*x**2,x)
```

```
[Out] Piecewise((-a**2*x*exp(asin(a + b*x))/(5*b**2) + a**2*sqrt(-a**2 - 2*a*b*x
- b**2*x**2 + 1)*exp(asin(a + b*x))/(5*b**3) + a*x**2*exp(asin(a + b*x))/(1
0*b) - a*x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*exp(asin(a + b*x))/(5*b**2
) + 3*a*exp(asin(a + b*x))/(10*b**3) + 3*x**3*exp(asin(a + b*x))/10 + x**2*
sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*exp(asin(a + b*x))/(10*b) - x*exp(asi
n(a + b*x))/(10*b**2) + sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*exp(asin(a +
b*x))/(10*b**3), Ne(b, 0)), (x**3*exp(asin(a))/3, True))
```

Giac [A]
time = 0.44, size = 208, normalized size = 1.01

$$\frac{(bx+a)a^{2}e^{(\arcsin(bx+a))}}{2\,b^{3}}-\frac{2\,\sqrt{-(bx+a)^{2}+1}\,(bx+a)ae^{(\arcsin(bx+a))}}{5\,b^{3}}+\frac{\sqrt{-(bx+a)^{2}+1}\,a^{2}e^{(\arcsin(bx+a))}}{2\,b^{3}}+\frac{3\,((bx+a)^{2}-1)(bx+a)e^{(\arcsin(bx+a))}}{10\,b^{3}}-\frac{4\,((bx+a)^{2}-1)ae^{(\arcsin(bx+a))}}{5\,b^{3}}-\frac{(-(bx+a)^{2}+1)^{\frac{3}{2}}e^{(\arcsin(bx+a))}}{10\,b^{3}}+\frac{(bx+a)e^{(\arcsin(bx+a))}}{5\,b^{3}}-\frac{2\,ae^{(\arcsin(bx+a))}}{5\,b^{3}}+\frac{\sqrt{-(bx+a)^{2}+1}\,e^{(\arcsin(bx+a))}}{5\,b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))*x^2,x, algorithm="giac")
```

```
[Out] 1/2*(b*x + a)*a^2*e^(arcsin(b*x + a))/b^3 - 2/5*sqrt(-(b*x + a)^2 + 1)*(b*x
 + a)*a*e^(arcsin(b*x + a))/b^3 + 1/2*sqrt(-(b*x + a)^2 + 1)*a^2*e^(arcsin(
b*x + a))/b^3 + 3/10*((b*x + a)^2 - 1)*(b*x + a)*e^(arcsin(b*x + a))/b^3 -
4/5*((b*x + a)^2 - 1)*a*e^(arcsin(b*x + a))/b^3 - 1/10*(-(b*x + a)^2 + 1)^(
3/2)*e^(arcsin(b*x + a))/b^3 + 1/5*(b*x + a)*e^(arcsin(b*x + a))/b^3 - 2/5*
a*e^(arcsin(b*x + a))/b^3 + 1/5*sqrt(-(b*x + a)^2 + 1)*e^(arcsin(b*x + a))/
b^3
```

Mupad [**F**]

time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,\mathrm{e}^{\mathrm{asin}(a+b\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*exp(asin(a + b*x)),x)
```

```
[Out] int(x^2*exp(asin(a + b*x)), x)
```

3.453 $\int e^{\text{ArcSin}(a+bx)} x \, dx$

Optimal. Leaf size=101

$$-\frac{ae^{\text{ArcSin}(a+bx)}(a+bx)}{2b^2}-\frac{ae^{\text{ArcSin}(a+bx)}\sqrt{1-(a+bx)^2}}{2b^2}-\frac{e^{\text{ArcSin}(a+bx)}\cos(2\text{ArcSin}(a+bx))}{5b^2}+\frac{e^{\text{ArcSin}(a+bx)}\sin(\ldots}{1\ldots}$$

```
[Out] -1/2*a*exp(arcsin(b*x+a))*(b*x+a)/b^2-1/5*exp(arcsin(b*x+a))*cos(2*arcsin(b
*x+a))/b^2+1/10*exp(arcsin(b*x+a))*sin(2*arcsin(b*x+a))/b^2-1/2*a*exp(arcsi
n(b*x+a))*(1-(b*x+a)^2)^(1/2)/b^2
```

Rubi [A]
time = 0.14, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.700$, Rules used = {4920, 6873, 12, 6874, 4518, 4557, 4517}

$$-\frac{a(a+bx)e^{\text{ArcSin}(a+bx)}}{2b^2}-\frac{a\sqrt{1-(a+bx)^2}\,e^{\text{ArcSin}(a+bx)}}{2b^2}+\frac{e^{\text{ArcSin}(a+bx)}\sin(2\text{ArcSin}(a+bx))}{10b^2}-\frac{e^{\text{ArcSin}(a+bx)}\cos(2\text{ArcSin}(a+bx))}{5b^2}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a + b*x]*x,x]
```

```
[Out] -1/2*(a*E^ArcSin[a + b*x]*(a + b*x))/b^2 - (a*E^ArcSin[a + b*x]*Sqrt[1 - (a
 + b*x)^2])/(2*b^2) - (E^ArcSin[a + b*x]*Cos[2*ArcSin[a + b*x]])/(5*b^2) +
(E^ArcSin[a + b*x]*Sin[2*ArcSin[a + b*x]])/(10*b^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4517

```
Int[(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sin[(d_.) + (e_.)*(x_)], x_Symbol] :>
 Simp[b*c*Log[F]*F^(c*(a + b*x))*(Sin[d + e*x]/(e^2 + b^2*c^2*Log[F]^2)), x
] - Simp[e*F^(c*(a + b*x))*(Cos[d + e*x]/(e^2 + b^2*c^2*Log[F]^2)), x] /; F
reeQ[{F, a, b, c, d, e}, x] && NeQ[e^2 + b^2*c^2*Log[F]^2, 0]
```

Rule 4518

```
Int[Cos[(d_.) + (e_.)*(x_)]*(F_)^((c_.)*((a_.) + (b_.)*(x_))), x_Symbol] :>
 Simp[b*c*Log[F]*F^(c*(a + b*x))*(Cos[d + e*x]/(e^2 + b^2*c^2*Log[F]^2)), x
] + Simp[e*F^(c*(a + b*x))*(Sin[d + e*x]/(e^2 + b^2*c^2*Log[F]^2)), x] /; F
reeQ[{F, a, b, c, d, e}, x] && NeQ[e^2 + b^2*c^2*Log[F]^2, 0]
```

Rule 4557

```
Int[Cos[(f_.) + (g_.)*(x_)]^(n_.)*(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sin[(d_
.) + (e_.)*(x_)]^(m_.), x_Symbol] :> Int[ExpandTrigReduce[F^(c*(a + b*x)),
Sin[d + e*x]^m*Cos[f + g*x]^n, x], x] /; FreeQ[{F, a, b, c, d, e, f, g}, x]
 && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 4920

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -a/b + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSin[
a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\begin{aligned}
\int e^{\sin^{-1}(a+bx)}x\,dx &= \frac{\text{Subst}\left(\int e^x\cos(x)\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)\,dx,x,\sin^{-1}(a+bx)\right)}{b}\\
&= \frac{\text{Subst}\left(\int \frac{e^x\cos(x)(-a+\sin(x))}{b}\,dx,x,\sin^{-1}(a+bx)\right)}{b}\\
&= \frac{\text{Subst}\left(\int e^x\cos(x)(-a+\sin(x))\,dx,x,\sin^{-1}(a+bx)\right)}{b^2}\\
&= \frac{\text{Subst}\left(\int \left(-ae^x\cos(x)+e^x\cos(x)\sin(x)\right)\,dx,x,\sin^{-1}(a+bx)\right)}{b^2}\\
&= \frac{\text{Subst}\left(\int e^x\cos(x)\sin(x)\,dx,x,\sin^{-1}(a+bx)\right)}{b^2}-\frac{a\text{Subst}\left(\int e^x\cos(x)\,dx,x,\sin^{-1}(a+bx\right.}{b^2}\\
&= -\frac{ae^{\sin^{-1}(a+bx)}(a+bx)}{2b^2}-\frac{ae^{\sin^{-1}(a+bx)}\sqrt{1-(a+bx)^2}}{2b^2}+\frac{\text{Subst}\left(\int \frac{1}{2}e^x\sin(2x)\,dx,x,\sin\right.}{b^2}\\
&= -\frac{ae^{\sin^{-1}(a+bx)}(a+bx)}{2b^2}-\frac{ae^{\sin^{-1}(a+bx)}\sqrt{1-(a+bx)^2}}{2b^2}+\frac{\text{Subst}\left(\int e^x\sin(2x)\,dx,x,\sin^{-}\right.}{2b^2}\\
&= -\frac{ae^{\sin^{-1}(a+bx)}(a+bx)}{2b^2}-\frac{ae^{\sin^{-1}(a+bx)}\sqrt{1-(a+bx)^2}}{2b^2}-\frac{e^{\sin^{-1}(a+bx)}\cos\left(2\sin^{-1}(a+b\right.}{5b^2}
\end{aligned}$$

Mathematica [A]
time = 0.10, size = 59, normalized size = 0.58

$$-\frac{e^{\text{ArcSin}(a+bx)}\left(5a(a+bx)+(3a-2bx)\sqrt{1-(a+bx)^2}+2\cos(2\text{ArcSin}(a+bx))\right)}{10b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a + b*x]*x,x]
[Out] -1/10*(E^ArcSin[a + b*x]*(5*a*(a + b*x) + (3*a - 2*b*x)*Sqrt[1 - (a + b*x)^
2] + 2*Cos[2*ArcSin[a + b*x]]))/b^2
```

Maple [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int e^{\arcsin(bx+a)}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(b*x+a))*x,x)
[Out] int(exp(arcsin(b*x+a))*x,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))*x,x, algorithm="maxima")
[Out] integrate(x*e^(arcsin(b*x + a)), x)
```

Fricas [A]
time = 3.35, size = 63, normalized size = 0.62

$$\frac{\left(4\,b^2x^2+3\,abx-a^2+\sqrt{-b^2x^2-2\,abx-a^2+1}\,(2\,bx-3\,a)-2\right)e^{(\arcsin(bx+a))}}{10\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))*x,x, algorithm="fricas")
[Out] 1/10*(4*b^2*x^2 + 3*a*b*x - a^2 + sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1)*(2*b*x
 - 3*a) - 2)*e^(arcsin(b*x + a))/b^2
```

Sympy [A]
time = 0.18, size = 146, normalized size = 1.45

$$\begin{cases} -\frac{a^2 e^{\operatorname{asin}(a+bx)}}{10b^2} + \frac{3axe^{\operatorname{asin}(a+bx)}}{10b} - \frac{3a\sqrt{-a^2-2abx-b^2x^2+1}\, e^{\operatorname{asin}(a+bx)}}{10b^2} + \frac{2x^2e^{\operatorname{asin}(a+bx)}}{5} + \frac{x\sqrt{-a^2-2abx-b^2x^2+1}\, e^{\operatorname{asin}(a+bx)}}{5b} - \frac{e^{\operatorname{asin}(a+bx)}}{5b^2} & \text{for } b \neq 0 \\ \frac{x^2e^{\operatorname{asin}(a)}}{2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(b*x+a))*x,x)
```

```
[Out] Piecewise((-a**2*exp(asin(a + b*x))/(10*b**2) + 3*a*x*exp(asin(a + b*x))/(1
0*b) - 3*a*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*exp(asin(a + b*x))/(10*b**
2) + 2*x**2*exp(asin(a + b*x))/5 + x*sqrt(-a**2 - 2*a*b*x - b**2*x**2 + 1)*
exp(asin(a + b*x))/(5*b) - exp(asin(a + b*x))/(5*b**2), Ne(b, 0)), (x**2*ex
p(asin(a))/2, True))
```

Giac [A]
time = 0.43, size = 108, normalized size = 1.07

$$-\frac{(bx+a)ae^{(\arcsin(bx+a))}}{2\,b^2} + \frac{\sqrt{-(bx+a)^2+1}\,(bx+a)e^{(\arcsin(bx+a))}}{5\,b^2} - \frac{\sqrt{-(bx+a)^2+1}\,ae^{(\arcsin(bx+a))}}{2\,b^2} + \frac{2\left((bx+a)^2-1\right)e^{(\arcsin(bx+a))}}{5\,b^2} + \frac{e^{(\arcsin(bx+a))}}{5\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))*x,x, algorithm="giac")
```

```
[Out] -1/2*(b*x + a)*a*e^(arcsin(b*x + a))/b^2 + 1/5*sqrt(-(b*x + a)^2 + 1)*(b*x
+ a)*e^(arcsin(b*x + a))/b^2 - 1/2*sqrt(-(b*x + a)^2 + 1)*a*e^(arcsin(b*x +
 a))/b^2 + 2/5*((b*x + a)^2 - 1)*e^(arcsin(b*x + a))/b^2 + 1/5*e^(arcsin(b*
x + a))/b^2
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int x\,\mathrm{e}^{\operatorname{asin}(a+b\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*exp(asin(a + b*x)),x)
```

```
[Out] int(x*exp(asin(a + b*x)), x)
```

3.454 $\int e^{\text{ArcSin}(a+bx)}\,dx$

Optimal. Leaf size=51

$$\frac{e^{\text{ArcSin}(a+bx)}(a+bx)}{2b}+\frac{e^{\text{ArcSin}(a+bx)}\sqrt{1-(a+bx)^2}}{2b}$$

```
[Out] 1/2*exp(arcsin(b*x+a))*(b*x+a)/b+1/2*exp(arcsin(b*x+a))*(1-(b*x+a)^2)^(1/2)
/b
```

Rubi [A]
time = 0.01, antiderivative size = 51, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}=0.250$, Rules used = {4920, 4518}

$$\frac{(a+bx)e^{\text{ArcSin}(a+bx)}}{2b}+\frac{\sqrt{1-(a+bx)^2}\,e^{\text{ArcSin}(a+bx)}}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a + b*x],x]
```

```
[Out] (E^ArcSin[a + b*x]*(a + b*x))/(2*b) + (E^ArcSin[a + b*x]*Sqrt[1 - (a + b*x)
^2])/(2*b)
```

Rule 4518

```
Int[Cos[(d_.) + (e_.)*(x_)]*(F_)^((c_.)*((a_.) + (b_.)*(x_))), x_Symbol] :>
 Simp[b*c*Log[F]*F^(c*(a + b*x))*(Cos[d + e*x]/(e^2 + b^2*c^2*Log[F]^2)), x
] + Simp[e*F^(c*(a + b*x))*(Sin[d + e*x]/(e^2 + b^2*c^2*Log[F]^2)), x] /; F
reeQ[{F, a, b, c, d, e}, x] && NeQ[e^2 + b^2*c^2*Log[F]^2, 0]
```

Rule 4920

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -a/b + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSin[
a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}\int e^{\sin^{-1}(a+bx)}\,dx&=\frac{\text{Subst}\left(\int e^x\cos(x)\,dx,x,\sin^{-1}(a+bx)\right)}{b}\\&=\frac{e^{\sin^{-1}(a+bx)}(a+bx)}{2b}+\frac{e^{\sin^{-1}(a+bx)}\sqrt{1-(a+bx)^2}}{2b}\end{aligned}$$

Mathematica [A]
time = 0.01, size = 35, normalized size = 0.69

$$\frac{e^{\text{ArcSin}(a+bx)}\left(a+bx+\sqrt{1-(a+bx)^2}\right)}{2b}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a + b*x],x]
[Out] (E^ArcSin[a + b*x]*(a + b*x + Sqrt[1 - (a + b*x)^2]))/(2*b)
```

Maple [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int e^{\arcsin(bx+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(b*x+a)),x)
[Out] int(exp(arcsin(b*x+a)),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)),x, algorithm="maxima")
[Out] integrate(e^(arcsin(b*x + a)), x)
```

Fricas [A]
time = 2.50, size = 39, normalized size = 0.76

$$\frac{\left(bx+a+\sqrt{-b^2x^2-2\,abx-a^2+1}\right)e^{(\arcsin(bx+a))}}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)),x, algorithm="fricas")
[Out] 1/2*(b*x + a + sqrt(-b^2*x^2 - 2*a*b*x - a^2 + 1))*e^(arcsin(b*x + a))/b
```

Sympy [A]
time = 0.11, size = 65, normalized size = 1.27

$$\begin{cases} \frac{ae^{\operatorname{asin}(a+bx)}}{2b}+\frac{xe^{\operatorname{asin}(a+bx)}}{2}+\frac{\sqrt{-a^2-2abx-b^2x^2+1}\,e^{\operatorname{asin}(a+bx)}}{2b} & \text{for } b\neq 0 \\ xe^{\operatorname{asin}(a)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(b*x+a)),x)
```

```
[Out] Piecewise((a*exp(asin(a + b*x))/(2*b) + x*exp(asin(a + b*x))/2 + sqrt(-a**2
 - 2*a*b*x - b**2*x**2 + 1)*exp(asin(a + b*x))/(2*b), Ne(b, 0)), (x*exp(asi
n(a)), True))
```

Giac [A]
time = 0.40, size = 43, normalized size = 0.84

$$\frac{(bx+a)e^{(\arcsin(bx+a))}}{2b}+\frac{\sqrt{-(bx+a)^2+1}\,e^{(\arcsin(bx+a))}}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)),x, algorithm="giac")
```

```
[Out] 1/2*(b*x + a)*e^(arcsin(b*x + a))/b + 1/2*sqrt(-(b*x + a)^2 + 1)*e^(arcsin(
b*x + a))/b
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.02

$$\int e^{\mathrm{asin}(a+b\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(asin(a + b*x)),x)
```

```
[Out] int(exp(asin(a + b*x)), x)
```

3.455 $\int \frac{e^{\textbf{ArcSin}(a+bx)}}{x} \, dx$

Optimal. Leaf size=20

$$b\text{Int}\left(\frac{e^{\text{ArcSin}(a+bx)}}{bx}, x\right)$$

```
[Out] b*CannotIntegrate(exp(arcsin(b*x+a))/b/x,x)
```

Rubi [A]
time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{e^{\text{ArcSin}(a+bx)}}{x} \, dx$$

Verification is not applicable to the result.

```
[In] Int[E^ArcSin[a + b*x]/x,x]
[Out] Defer[Subst][Defer[Int][(E^x*Cos[x])/(-a + Sin[x]), x], x, ArcSin[a + b*x]]
```

Rubi steps

$$\begin{aligned}
\int \frac{e^{\sin^{-1}(a+bx)}}{x} \, dx &= \frac{\text{Subst}\left(\int \frac{e^x \cos(x)}{-\frac{a}{b}+\frac{\sin(x)}{b}} \, dx, x, \sin^{-1}(a+bx)\right)}{b} \\
&= \frac{\text{Subst}\left(\int \frac{be^x \cos(x)}{-a+\sin(x)} \, dx, x, \sin^{-1}(a+bx)\right)}{b} \\
&= \text{Subst}\left(\int \frac{e^x \cos(x)}{-a+\sin(x)} \, dx, x, \sin^{-1}(a+bx)\right)
\end{aligned}$$

Mathematica [A]
time = 0.09, size = 0, normalized size = 0.00

$$\int \frac{e^{\text{ArcSin}(a+bx)}}{x} \, dx$$

Verification is not applicable to the result.

```
[In] Integrate[E^ArcSin[a + b*x]/x,x]
[Out] Integrate[E^ArcSin[a + b*x]/x, x]
```

Maple [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\mathrm{e}^{\arcsin(bx+a)}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(b*x+a))/x,x)
```

```
[Out] int(exp(arcsin(b*x+a))/x,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))/x,x, algorithm="maxima")
```

```
[Out] integrate(e^(arcsin(b*x + a))/x, x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))/x,x, algorithm="fricas")
```

```
[Out] integral(e^(arcsin(b*x + a))/x, x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{e^{\operatorname{asin}{(a+bx)}}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(b*x+a))/x,x)
```

```
[Out] Integral(exp(asin(a + b*x))/x, x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))/x,x, algorithm="giac")
```

```
[Out] integrate(e^(arcsin(b*x + a))/x, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{\mathrm{e}^{\mathrm{asin}(a+b\,x)}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(asin(a + b*x))/x,x)
```

```
[Out] int(exp(asin(a + b*x))/x, x)
```

3.456 $\int \frac{e^{\textbf{ArcSin}(a+bx)}}{x^2}\,dx$

Optimal. Leaf size=22

$$b^2\text{Int}\left(\frac{e^{\text{ArcSin}(a+bx)}}{b^2x^2},x\right)$$

```
[Out] b^2*CannotIntegrate(exp(arcsin(b*x+a))/b^2/x^2,x)
```

Rubi [A]
time = 0.20, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{e^{\text{ArcSin}(a+bx)}}{x^2}\,dx$$

Verification is not applicable to the result.

```
[In] Int[E^ArcSin[a + b*x]/x^2,x]
```

```
[Out] b*Defer[Subst][Defer[Int][(E^x*Cos[x])/(a - Sin[x])^2, x], x, ArcSin[a + b*
x]]
```

Rubi steps

$$\begin{aligned}\int \frac{e^{\sin^{-1}(a+bx)}}{x^2}\,dx &= \frac{\text{Subst}\left(\int \frac{e^x\cos(x)}{\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)^2}\,dx,x,\sin^{-1}(a+bx)\right)}{b}\\ &= \frac{\text{Subst}\left(\int \frac{b^2e^x\cos(x)}{(a-\sin(x))^2}\,dx,x,\sin^{-1}(a+bx)\right)}{b}\\ &= b\text{Subst}\left(\int \frac{e^x\cos(x)}{(a-\sin(x))^2}\,dx,x,\sin^{-1}(a+bx)\right)\end{aligned}$$

Mathematica [A]
time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{e^{\text{ArcSin}(a+bx)}}{x^2}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[E^ArcSin[a + b*x]/x^2,x]
```

```
[Out] Integrate[E^ArcSin[a + b*x]/x^2, x]
```

Maple [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\mathrm{e}^{\arcsin(bx+a)}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(b*x+a))/x^2,x)
[Out] int(exp(arcsin(b*x+a))/x^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))/x^2,x, algorithm="maxima")
[Out] integrate(e^(arcsin(b*x + a))/x^2, x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))/x^2,x, algorithm="fricas")
[Out] integral(e^(arcsin(b*x + a))/x^2, x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{e^{\operatorname{asin}(a+bx)}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(b*x+a))/x**2,x)
[Out] Integral(exp(asin(a + b*x))/x**2, x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a))/x^2,x, algorithm="giac")
```

```
[Out] integrate(e^(arcsin(b*x + a))/x^2, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{e^{\mathrm{asin}(a+b\,x)}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(asin(a + b*x))/x^2,x)
```

```
[Out] int(exp(asin(a + b*x))/x^2, x)
```

3.457 $\int e^{\mathbf{ArcSin}(a+bx)^2} x^3 \, dx$

Optimal. Leaf size=381

$$\frac{e\sqrt{\pi}\,\mathrm{Erf}(1-i\mathrm{ArcSin}(a+bx))}{16b^4}+\frac{3a^2e\sqrt{\pi}\,\mathrm{Erf}(1-i\mathrm{ArcSin}(a+bx))}{8b^4}-\frac{e^4\sqrt{\pi}\,\mathrm{Erf}(2-i\mathrm{ArcSin}(a+bx))}{32b^4}+\frac{e\sqrt{}}{}$$

```
[Out] 1/16*I*exp(1)*erfi(-I+arcsin(b*x+a))*Pi^(1/2)/b^4+3/8*I*a^2*exp(1)*erfi(-I+
arcsin(b*x+a))*Pi^(1/2)/b^4-1/16*I*exp(1)*erfi(I+arcsin(b*x+a))*Pi^(1/2)/b^
4-3/8*I*a^2*exp(1)*erfi(I+arcsin(b*x+a))*Pi^(1/2)/b^4-1/32*I*exp(4)*erfi(-2
*I+arcsin(b*x+a))*Pi^(1/2)/b^4+1/32*I*exp(4)*erfi(2*I+arcsin(b*x+a))*Pi^(1/
2)/b^4-3/16*a*exp(1/4)*erfi(-1/2*I+arcsin(b*x+a))*Pi^(1/2)/b^4-1/4*a^3*exp(
1/4)*erfi(-1/2*I+arcsin(b*x+a))*Pi^(1/2)/b^4-3/16*a*exp(1/4)*erfi(1/2*I+arc
sin(b*x+a))*Pi^(1/2)/b^4-1/4*a^3*exp(1/4)*erfi(1/2*I+arcsin(b*x+a))*Pi^(1/2
)/b^4+3/16*a*exp(9/4)*erfi(-3/2*I+arcsin(b*x+a))*Pi^(1/2)/b^4+3/16*a*exp(9/
4)*erfi(3/2*I+arcsin(b*x+a))*Pi^(1/2)/b^4
```

Rubi [A]
time = 0.49, antiderivative size = 381, normalized size of antiderivative = 1.00, number of steps used = 37, number of rules used = 8, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.571$, Rules used = {4920, 6873, 12, 6874, 4561, 2266, 2235, 4562}

$$-\frac{\sqrt[4]{e}\,\sqrt{\pi}\,a^3\mathrm{Erfi}\left(\frac{1}{2}(2\mathrm{ArcSin}(a+bx)-i)\right)}{4b^4}-\frac{\sqrt[4]{e}\,\sqrt{\pi}\,a^3\mathrm{Erfi}\left(\frac{1}{2}(2\mathrm{ArcSin}(a+bx)+i)\right)}{4b^4}+\frac{3e\sqrt{\pi}\,a^2\mathrm{Erf}(1-i\mathrm{ArcSin}(a+bx))}{8b^4}+\frac{3e\sqrt{\pi}\,a^2\mathrm{Erf}(1+i\mathrm{ArcSin}(a+bx))}{8b^4}+\frac{e\sqrt{\pi}\,\mathrm{Erf}(1-i\mathrm{ArcSin}(a+bx))}{16b^4}-\frac{e^4\sqrt{\pi}\,\mathrm{Erf}(2-i\mathrm{ArcSin}(a+bx))}{32b^4}+\frac{e\sqrt{\pi}\,\mathrm{Erf}(1+i\mathrm{ArcSin}(a+bx))}{16b^4}-\frac{e^4\sqrt{\pi}\,\mathrm{Erf}(2+i\mathrm{ArcSin}(a+bx))}{32b^4}-\frac{3\sqrt[4]{e}\,\sqrt{\pi}\,a\mathrm{Erfi}\left(\frac{1}{2}(2\mathrm{ArcSin}(a+bx)-i)\right)}{16b^4}-\frac{3\sqrt[4]{e}\,\sqrt{\pi}\,a\mathrm{Erfi}\left(\frac{1}{2}(2\mathrm{ArcSin}(a+bx)+i)\right)}{16b^4}+\frac{3e^{9/4}\sqrt{\pi}\,a\mathrm{Erfi}\left(\frac{1}{2}(2\mathrm{ArcSin}(a+bx)-3i)\right)}{16b^4}+\frac{3e^{9/4}\sqrt{\pi}\,a\mathrm{Erfi}\left(\frac{1}{2}(2\mathrm{ArcSin}(a+bx)+3i)\right)}{16b^4}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a + b*x]^2*x^3,x]
```

```
[Out] (E*Sqrt[Pi]*Erf[1 - I*ArcSin[a + b*x]])/(16*b^4) + (3*a^2*E*Sqrt[Pi]*Erf[1
 - I*ArcSin[a + b*x]])/(8*b^4) - (E^4*Sqrt[Pi]*Erf[2 - I*ArcSin[a + b*x]])/(
32*b^4) + (E*Sqrt[Pi]*Erf[1 + I*ArcSin[a + b*x]])/(16*b^4) + (3*a^2*E*Sqrt[
Pi]*Erf[1 + I*ArcSin[a + b*x]])/(8*b^4) - (E^4*Sqrt[Pi]*Erf[2 + I*ArcSin[a
 + b*x]])/(32*b^4) - (3*a*E^(1/4)*Sqrt[Pi]*Erfi[(-I + 2*ArcSin[a + b*x])/2])
/(16*b^4) - (a^3*E^(1/4)*Sqrt[Pi]*Erfi[(-I + 2*ArcSin[a + b*x])/2])/(4*b^4)
 - (3*a*E^(1/4)*Sqrt[Pi]*Erfi[(I + 2*ArcSin[a + b*x])/2])/(16*b^4) - (a^3*E
^(1/4)*Sqrt[Pi]*Erfi[(I + 2*ArcSin[a + b*x])/2])/(4*b^4) + (3*a*E^(9/4)*Sqr
t[Pi]*Erfi[(-3*I + 2*ArcSin[a + b*x])/2])/(16*b^4) + (3*a*E^(9/4)*Sqrt[Pi]*
Erfi[(3*I + 2*ArcSin[a + b*x])/2])/(16*b^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
```

```
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2266

```
Int[(F_)^((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> Dist[F^(a - b^2/
(4*c)), Int[F^((b + 2*c*x)^2/(4*c)), x], x] /; FreeQ[{F, a, b, c}, x]
```

Rule 4561

```
Int[Cos[v_]^(n_.)*(F_)^(u_), x_Symbol] :> Int[ExpandTrigToExp[F^u, Cos[v]^n
, x], x] /; FreeQ[F, x] && (LinearQ[u, x] || PolyQ[u, x, 2]) && (LinearQ[v,
 x] || PolyQ[v, x, 2]) && IGtQ[n, 0]
```

Rule 4562

```
Int[Cos[v_]^(n_.)*(F_)^(u_)*Sin[v_]^(m_.), x_Symbol] :> Int[ExpandTrigToExp
[F^u, Sin[v]^m*Cos[v]^n, x], x] /; FreeQ[F, x] && (LinearQ[u, x] || PolyQ[u
, x, 2]) && (LinearQ[v, x] || PolyQ[v, x, 2]) && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 4920

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -a/b + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSin[
a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int e^{\sin^{-1}(a+bx)^2}x^3\,dx = \frac{\text{Subst}\left(\int e^{x^2}\cos(x)\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)^3\,dx,x,\sin^{-1}(a+bx)\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \frac{e^{x^2}\cos(x)(-a+\sin(x))^3}{b^3}\,dx,x,\sin^{-1}(a+bx)\right)}{b}$$

$$= \frac{\text{Subst}\left(\int e^{x^2}\cos(x)(-a+\sin(x))^3\,dx,x,\sin^{-1}(a+bx)\right)}{b^4}$$

$$= \frac{\text{Subst}\left(\int \left(-a^3e^{x^2}\cos(x)+3a^2e^{x^2}\cos(x)\sin(x)-3ae^{x^2}\cos(x)\sin^2(x)+e^{x^2}\cos(x)\sin\right.\right.}{b^4}$$

$$= \frac{\text{Subst}\left(\int e^{x^2}\cos(x)\sin^3(x)\,dx,x,\sin^{-1}(a+bx)\right)}{b^4} - \frac{(3a)\text{Subst}\left(\int e^{x^2}\cos(x)\sin^2(x)\,dx\right.}{b^4}$$

$$= \frac{\text{Subst}\left(\int \left(\frac{1}{8}ie^{-2ix+x^2}-\frac{1}{8}ie^{2ix+x^2}-\frac{1}{16}ie^{-4ix+x^2}+\frac{1}{16}ie^{4ix+x^2}\right)\,dx,x,\sin^{-1}(a+bx)\right)}{b^4} -$$

$$= -\frac{i\text{Subst}\left(\int e^{-4ix+x^2}\,dx,x,\sin^{-1}(a+bx)\right)}{16b^4} + \frac{i\text{Subst}\left(\int e^{4ix+x^2}\,dx,x,\sin^{-1}(a+bx)\right)}{16b^4} +$$

$$= -\frac{\left(3a\sqrt[4]{e}\right)\text{Subst}\left(\int e^{\frac{1}{4}(-i+2x)^2}\,dx,x,\sin^{-1}(a+bx)\right)}{8b^4} - \frac{\left(3a\sqrt[4]{e}\right)\text{Subst}\left(\int e^{\frac{1}{4}(i+2x)^2}\,dx,\right.}{8b^4}$$

$$= \frac{e\sqrt{\pi}\,\text{erf}(1-i\sin^{-1}(a+bx))}{16b^4} + \frac{3a^2e\sqrt{\pi}\,\text{erf}(1-i\sin^{-1}(a+bx))}{8b^4} - \frac{e^4\sqrt{\pi}\,\text{erf}(2-i\sin}{32b^4}$$

Mathematica [A]
time = 0.22, size = 221, normalized size = 0.58

$$-\frac{\sqrt{\pi}\left(-2(e+6a^2e)\,\text{Erf}(1-i\text{ArcSin}(a+bx))+e^4\text{Erf}(2-i\text{ArcSin}(a+bx))+\sqrt[4]{e}\left(-2ia(3+4a^2)\,\text{Erf}\left(\frac{1}{2}+i\text{ArcSin}(a+bx)\right)-2(1+6a^2)\,e^{3/4}\text{Erf}(1+i\text{ArcSin}(a+bx))+6iae^2\text{Erf}\left(\frac{3}{2}+i\text{ArcSin}(a+bx)\right)+e^{15/4}\text{Erf}(2+i\text{ArcSin}(a+bx))+6a\text{Erfi}\left(\frac{1}{2}(i+2\text{ArcSin}(a+bx))\right)+8a^3\text{Erfi}\left(\frac{1}{2}(i+2\text{ArcSin}(a+bx))\right)-6ae^2\text{Erfi}\left(\frac{1}{2}(3i+2\text{ArcSin}(a+bx))\right)\right)\right)}{32b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a + b*x]^2*x^3,x]
```

```
[Out] -1/32*(Sqrt[Pi]*(-2*(E + 6*a^2*E)*Erf[1 - I*ArcSin[a + b*x]] + E^4*Erf[2 -
I*ArcSin[a + b*x]] + E^(1/4)*((-2*I)*a*(3 + 4*a^2)*Erf[1/2 + I*ArcSin[a + b
*x]] - 2*(1 + 6*a^2)*E^(3/4)*Erf[1 + I*ArcSin[a + b*x]] + (6*I)*a*E^2*Erf[3
/2 + I*ArcSin[a + b*x]] + E^(15/4)*Erf[2 + I*ArcSin[a + b*x]] + 6*a*Erfi[(I
 + 2*ArcSin[a + b*x])/2] + 8*a^3*Erfi[(I + 2*ArcSin[a + b*x])/2] - 6*a*E^2*
Erfi[(3*I + 2*ArcSin[a + b*x])/2])))/b^4
```

Maple [F]
time = 0.01, size = 0, normalized size = 0.00

$$\int \mathrm{e}^{\arcsin(bx+a)^2}x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(b*x+a)^2)*x^3,x)
```

```
[Out] int(exp(arcsin(b*x+a)^2)*x^3,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)*x^3,x, algorithm="maxima")
```

```
[Out] integrate(x^3*e^(arcsin(b*x + a)^2), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)*x^3,x, algorithm="fricas")
```

```
[Out] integral(x^3*e^(arcsin(b*x + a)^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int x^3 e^{\operatorname{asin}^2(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(b*x+a)**2)*x**3,x)
```

```
[Out] Integral(x**3*exp(asin(a + b*x)**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)*x^3,x, algorithm="giac")
```

```
[Out] integrate(x^3*e^(arcsin(b*x + a)^2), x)
```

Mupad [F]

time = 0.00, size = -1, normalized size = -0.00

$$\int x^3\,\mathrm{e}^{\mathrm{asin}(a+b\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*exp(asin(a + b*x)^2),x)
```

```
[Out] int(x^3*exp(asin(a + b*x)^2), x)
```

3.458 $\int e^{\text{ArcSin}(a+bx)^2} x^2 \, dx$

Optimal. Leaf size=265

$$-\frac{ae\sqrt{\pi}\,\text{Erf}(1-i\text{ArcSin}(a+bx))}{4b^3}-\frac{ae\sqrt{\pi}\,\text{Erf}(1+i\text{ArcSin}(a+bx))}{4b^3}+\frac{\sqrt[4]{e}\,\sqrt{\pi}\,\text{Erfi}\left(\frac{1}{2}(-i+2\text{ArcSin}(a+bx)\right.}{16b^3}$$

```
[Out] -1/4*I*a*exp(1)*erfi(-I+arcsin(b*x+a))*Pi^(1/2)/b^3+1/4*I*a*exp(1)*erfi(I+a
rcsin(b*x+a))*Pi^(1/2)/b^3+1/16*exp(1/4)*erfi(-1/2*I+arcsin(b*x+a))*Pi^(1/2
)/b^3+1/4*a^2*exp(1/4)*erfi(-1/2*I+arcsin(b*x+a))*Pi^(1/2)/b^3+1/16*exp(1/4
)*erfi(1/2*I+arcsin(b*x+a))*Pi^(1/2)/b^3+1/4*a^2*exp(1/4)*erfi(1/2*I+arcsin
(b*x+a))*Pi^(1/2)/b^3-1/16*exp(9/4)*erfi(-3/2*I+arcsin(b*x+a))*Pi^(1/2)/b^3
-1/16*exp(9/4)*erfi(3/2*I+arcsin(b*x+a))*Pi^(1/2)/b^3
```

Rubi [A]
time = 0.36, antiderivative size = 265, normalized size of antiderivative = 1.00, number of steps used = 27, number of rules used = 8, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.571$, Rules used = {4920, 6873, 12, 6874, 4561, 2266, 2235, 4562}

$$\frac{\sqrt[4]{e}\,\sqrt{\pi}\,a^2\text{Erfi}\left(\frac{1}{2}(2\text{ArcSin}(a+bx)-i)\right)}{4b^3}+\frac{\sqrt[4]{e}\,\sqrt{\pi}\,a^2\text{Erfi}\left(\frac{1}{2}(2\text{ArcSin}(a+bx)+i)\right)}{4b^3}-\frac{e\sqrt{\pi}\,a\text{Erf}(1-i\text{ArcSin}(a+bx))}{4b^3}-\frac{e\sqrt{\pi}\,a\text{Erf}(1+i\text{ArcSin}(a+bx))}{4b^3}+\frac{\sqrt[4]{e}\,\sqrt{\pi}\,\text{Erfi}\left(\frac{1}{2}(2\text{ArcSin}(a+bx)-i)\right)}{16b^3}+\frac{\sqrt[4]{e}\,\sqrt{\pi}\,\text{Erfi}\left(\frac{1}{2}(2\text{ArcSin}(a+bx)+i)\right)}{16b^3}-\frac{e^{9/4}\sqrt{\pi}\,\text{Erfi}\left(\frac{1}{2}(2\text{ArcSin}(a+bx)-3i)\right)}{16b^3}-\frac{e^{9/4}\sqrt{\pi}\,\text{Erfi}\left(\frac{1}{2}(2\text{ArcSin}(a+bx)+3i)\right)}{16b^3}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a + b*x]^2*x^2,x]
```

```
[Out] -1/4*(a*E*Sqrt[Pi]*Erf[1 - I*ArcSin[a + b*x]])/b^3 - (a*E*Sqrt[Pi]*Erf[1 +
I*ArcSin[a + b*x]])/(4*b^3) + (E^(1/4)*Sqrt[Pi]*Erfi[(-I + 2*ArcSin[a + b*x
])/2])/(16*b^3) + (a^2*E^(1/4)*Sqrt[Pi]*Erfi[(-I + 2*ArcSin[a + b*x]])/2])/(
4*b^3) + (E^(1/4)*Sqrt[Pi]*Erfi[(I + 2*ArcSin[a + b*x]])/2])/(16*b^3) + (a^2
*E^(1/4)*Sqrt[Pi]*Erfi[(I + 2*ArcSin[a + b*x]])/2])/(4*b^3) - (E^(9/4)*Sqrt[
Pi]*Erfi[(-3*I + 2*ArcSin[a + b*x]])/2])/(16*b^3) - (E^(9/4)*Sqrt[Pi]*Erfi[(
3*I + 2*ArcSin[a + b*x]])/2])/(16*b^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2266

```
Int[(F_)^((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> Dist[F^(a - b^2/
(4*c)), Int[F^((b + 2*c*x)^2/(4*c)), x], x] /; FreeQ[{F, a, b, c}, x]
```

Rule 4561

```
Int[Cos[v_]^(n_.)*(F_)^(u_), x_Symbol] :> Int[ExpandTrigToExp[F^u, Cos[v]^n
, x], x] /; FreeQ[F, x] && (LinearQ[u, x] || PolyQ[u, x, 2]) && (LinearQ[v,
 x] || PolyQ[v, x, 2]) && IGtQ[n, 0]
```

Rule 4562

```
Int[Cos[v_]^(n_.)*(F_)^(u_)*Sin[v_]^(m_.), x_Symbol] :> Int[ExpandTrigToExp
[F^u, Sin[v]^m*Cos[v]^n, x], x] /; FreeQ[F, x] && (LinearQ[u, x] || PolyQ[u
, x, 2]) && (LinearQ[v, x] || PolyQ[v, x, 2]) && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 4920

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -a/b + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSin[
a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int e^{\sin^{-1}(a+bx)^2}x^2\,dx = \frac{\text{Subst}\left(\int e^{x^2}\cos(x)\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)^2\,dx,x,\sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \frac{e^{x^2}\cos(x)(a-\sin(x))^2}{b^2}\,dx,x,\sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int e^{x^2}\cos(x)(a-\sin(x))^2\,dx,x,\sin^{-1}(a+bx)\right)}{b^3}$$
$$= \frac{\text{Subst}\left(\int \left(a^2e^{x^2}\cos(x)-2ae^{x^2}\cos(x)\sin(x)+e^{x^2}\cos(x)\sin^2(x)\right)\,dx,x,\sin^{-1}(a+bx)}{b^3}$$
$$= \frac{\text{Subst}\left(\int e^{x^2}\cos(x)\sin^2(x)\,dx,x,\sin^{-1}(a+bx)\right)}{b^3} - \frac{(2a)\text{Subst}\left(\int e^{x^2}\cos(x)\sin(x)\,dx,x}{b^3}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{1}{8}e^{-ix+x^2}+\frac{1}{8}e^{ix+x^2}-\frac{1}{8}e^{-3ix+x^2}-\frac{1}{8}e^{3ix+x^2}\right)\,dx,x,\sin^{-1}(a+bx)\right)}{b^3} - \frac{(2a)\text{Su}}{}$$
$$= \frac{\text{Subst}\left(\int e^{-ix+x^2}\,dx,x,\sin^{-1}(a+bx)\right)}{8b^3} + \frac{\text{Subst}\left(\int e^{ix+x^2}\,dx,x,\sin^{-1}(a+bx)\right)}{8b^3} - \frac{\text{Subs}}{}$$
$$= \frac{\sqrt[4]{e}\,\text{Subst}\left(\int e^{\frac{1}{4}(-i+2x)^2}\,dx,x,\sin^{-1}(a+bx)\right)}{8b^3} + \frac{\sqrt[4]{e}\,\text{Subst}\left(\int e^{\frac{1}{4}(i+2x)^2}\,dx,x,\sin^{-1}(a+}{8b^3}$$
$$= -\frac{ae\sqrt{\pi}\,\text{erf}(1-i\sin^{-1}(a+bx))}{4b^3} - \frac{ae\sqrt{\pi}\,\text{erf}(1+i\sin^{-1}(a+bx))}{4b^3} + \frac{\sqrt[4]{e}\,\sqrt{\pi}\,\text{erfi}\left(\frac{1}{2}(-\right.}{}$$

Mathematica [A]
time = 0.14, size = 161, normalized size = 0.61

$$-\frac{\sqrt{\pi}\left(4ae\text{Erf}(1-i\text{ArcSin}(a+bx))+i\sqrt[4]{e}\left(-\left((1+4a^2)\,\text{Erf}\left(\frac{1}{2}-i\text{ArcSin}(a+bx)\right)\right)+e^2\text{Erf}\left(\frac{3}{2}-i\text{ArcSin}(a+bx)\right)+\text{Erf}\left(\frac{1}{2}+i\text{ArcSin}(a+bx)\right)+4a^2\text{Erf}\left(\frac{1}{2}+i\text{ArcSin}(a+bx)\right)-4iae^{3/4}\text{Erf}(1+i\text{ArcSin}(a+bx))-e^2\text{Erf}\left(\frac{3}{2}+i\text{ArcSin}(a+bx)\right)\right)\right)}{16b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a + b*x]^2*x^2,x]
```

```
[Out] -1/16*(Sqrt[Pi]*(4*a*E*Erf[1 - I*ArcSin[a + b*x]] + I*E^(1/4)*(-((1 + 4*a^2
)*Erf[1/2 - I*ArcSin[a + b*x]]) + E^2*Erf[3/2 - I*ArcSin[a + b*x]] + Erf[1/
2 + I*ArcSin[a + b*x]] + 4*a^2*Erf[1/2 + I*ArcSin[a + b*x]] - (4*I)*a*E^(3/
4)*Erf[1 + I*ArcSin[a + b*x]] - E^2*Erf[3/2 + I*ArcSin[a + b*x]])))/b^3
```

Maple [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \mathrm{e}^{\arcsin(bx+a)^2}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(b*x+a)^2)*x^2,x)
```

```
[Out] int(exp(arcsin(b*x+a)^2)*x^2,x)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)*x^2,x, algorithm="maxima")
```

```
[Out] integrate(x^2*e^(arcsin(b*x + a)^2), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)*x^2,x, algorithm="fricas")
```

```
[Out] integral(x^2*e^(arcsin(b*x + a)^2), x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int x^2 e^{\operatorname{asin}^2 (a+bx)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(b*x+a)**2)*x**2,x)
```

```
[Out] Integral(x**2*exp(asin(a + b*x)**2), x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)*x^2,x, algorithm="giac")
```

```
[Out] integrate(x^2*e^(arcsin(b*x + a)^2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,e^{\operatorname{asin}(a+b\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*exp(asin(a + b*x)^2),x)
[Out] int(x^2*exp(asin(a + b*x)^2), x)
```

3.459 $\int e^{\text{ArcSin}(a+bx)^2} x\,dx$

Optimal. Leaf size=123

$$\frac{e\sqrt{\pi}\,\text{Erf}(1-i\text{ArcSin}(a+bx))}{8b^2}+\frac{e\sqrt{\pi}\,\text{Erf}(1+i\text{ArcSin}(a+bx))}{8b^2}-\frac{a\sqrt[4]{e}\,\sqrt{\pi}\,\text{Erfi}\left(\frac{1}{2}(-i+2\text{ArcSin}(a+bx))\right)}{4b^2}$$

```
[Out] 1/8*I*exp(1)*erfi(-I+arcsin(b*x+a))*Pi^(1/2)/b^2-1/8*I*exp(1)*erfi(I+arcsin
(b*x+a))*Pi^(1/2)/b^2-1/4*a*exp(1/4)*erfi(-1/2*I+arcsin(b*x+a))*Pi^(1/2)/b^
2-1/4*a*exp(1/4)*erfi(1/2*I+arcsin(b*x+a))*Pi^(1/2)/b^2
```

Rubi [A]
time = 0.20, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 8, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.667$, Rules used = {4920, 6873, 12, 6874, 4561, 2266, 2235, 4562}

$$\frac{e\sqrt{\pi}\,\text{Erf}(1-i\text{ArcSin}(a+bx))}{8b^2}+\frac{e\sqrt{\pi}\,\text{Erf}(1+i\text{ArcSin}(a+bx))}{8b^2}-\frac{\sqrt[4]{e}\,\sqrt{\pi}\,a\text{Erfi}\left(\frac{1}{2}(2\text{ArcSin}(a+bx)-i)\right)}{4b^2}-\frac{\sqrt[4]{e}\,\sqrt{\pi}\,a\text{Erfi}\left(\frac{1}{2}(2\text{ArcSin}(a+bx)+i)\right)}{4b^2}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a + b*x]^2*x,x]
```

```
[Out] (E*Sqrt[Pi]*Erf[1 - I*ArcSin[a + b*x]])/(8*b^2) + (E*Sqrt[Pi]*Erf[1 + I*Arc
Sin[a + b*x]])/(8*b^2) - (a*E^(1/4)*Sqrt[Pi]*Erfi[(-I + 2*ArcSin[a + b*x])/
2])/(4*b^2) - (a*E^(1/4)*Sqrt[Pi]*Erfi[(I + 2*ArcSin[a + b*x])/2])/(4*b^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2266

```
Int[(F_)^((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> Dist[F^(a - b^2/
(4*c)), Int[F^((b + 2*c*x)^2/(4*c)), x], x] /; FreeQ[{F, a, b, c}, x]
```

Rule 4561

```
Int[Cos[v_]^(n_.)*(F_)^(u_), x_Symbol] :> Int[ExpandTrigToExp[F^u, Cos[v]^n
, x], x] /; FreeQ[F, x] && (LinearQ[u, x] || PolyQ[u, x, 2]) && (LinearQ[v,
 x] || PolyQ[v, x, 2]) && IGtQ[n, 0]
```

Rule 4562

```
Int[Cos[v_]^(n_.)*(F_)^(u_)*Sin[v_]^(m_.), x_Symbol] :> Int[ExpandTrigToExp
[F^u, Sin[v]^m*Cos[v]^n, x], x] /; FreeQ[F, x] && (LinearQ[u, x] || PolyQ[u
, x, 2]) && (LinearQ[v, x] || PolyQ[v, x, 2]) && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 4920

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -a/b + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSin[
a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 6873

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6874

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int e^{\sin^{-1}(a+bx)^2}x\,dx = \frac{\text{Subst}\left(\int e^{x^2}\cos(x)\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)\,dx,x,\sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \frac{e^{x^2}\cos(x)(-a+\sin(x))}{b}\,dx,x,\sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int e^{x^2}\cos(x)(-a+\sin(x))\,dx,x,\sin^{-1}(a+bx)\right)}{b^2}$$
$$= \frac{\text{Subst}\left(\int \left(-ae^{x^2}\cos(x)+e^{x^2}\cos(x)\sin(x)\right)\,dx,x,\sin^{-1}(a+bx)\right)}{b^2}$$
$$= \frac{\text{Subst}\left(\int e^{x^2}\cos(x)\sin(x)\,dx,x,\sin^{-1}(a+bx)\right)}{b^2} - \frac{a\text{Subst}\left(\int e^{x^2}\cos(x)\,dx,x,\sin^{-1}(a\right.}{b^2}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{1}{4}ie^{-2ix+x^2}-\frac{1}{4}ie^{2ix+x^2}\right)\,dx,x,\sin^{-1}(a+bx)\right)}{b^2} - \frac{a\text{Subst}\left(\int \left(\frac{1}{2}e^{-ix+x^2}+\frac{1}{2}e^{i}\right.\right.}{}$$
$$= \frac{i\text{Subst}\left(\int e^{-2ix+x^2}\,dx,x,\sin^{-1}(a+bx)\right)}{4b^2} - \frac{i\text{Subst}\left(\int e^{2ix+x^2}\,dx,x,\sin^{-1}(a+bx)\right)}{4b^2} - \frac{a}{}$$
$$= -\frac{\left(a\sqrt[4]{e}\right)\text{Subst}\left(\int e^{\frac{1}{4}(-i+2x)^2}\,dx,x,\sin^{-1}(a+bx)\right)}{2b^2} - \frac{\left(a\sqrt[4]{e}\right)\text{Subst}\left(\int e^{\frac{1}{4}(i+2x)^2}\,dx,x,\right.}{2b^2}$$
$$= \frac{e\sqrt{\pi}\,\text{erf}(1-i\sin^{-1}(a+bx))}{8b^2} + \frac{e\sqrt{\pi}\,\text{erf}(1+i\sin^{-1}(a+bx))}{8b^2} - \frac{a\sqrt[4]{e}\,\sqrt{\pi}\,\text{erfi}\left(\frac{1}{2}(-i+\right.}{4b^2}$$

Mathematica [A]
time = 0.08, size = 93, normalized size = 0.76

$$\frac{\sqrt{\pi}\left(e\text{Erf}(1-i\text{ArcSin}(a+bx))+e\text{Erf}(1+i\text{ArcSin}(a+bx))-2a\sqrt[4]{e}\,\text{Erfi}\left(\frac{1}{2}(-i+2\text{ArcSin}(a+bx))\right)-2a\sqrt[4]{e}\,\text{Erfi}\left(\frac{1}{2}(i+2\text{ArcSin}(a+bx))\right)\right)}{8b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a + b*x]^2*x,x]
```

```
[Out] (Sqrt[Pi]*(E*Erf[1 - I*ArcSin[a + b*x]] + E*Erf[1 + I*ArcSin[a + b*x]] - 2*
a*E^(1/4)*Erfi[(-I + 2*ArcSin[a + b*x])/2] - 2*a*E^(1/4)*Erfi[(I + 2*ArcSin
[a + b*x])/2]))/(8*b^2)
```

Maple [F]
time = 0.01, size = 0, normalized size = 0.00

$$\int e^{\arcsin(bx+a)^2}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(b*x+a)^2)*x,x)
```

```
[Out] int(exp(arcsin(b*x+a)^2)*x,x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)*x,x, algorithm="maxima")
```

```
[Out] integrate(x*e^(arcsin(b*x + a)^2), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)*x,x, algorithm="fricas")
```

```
[Out] integral(x*e^(arcsin(b*x + a)^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int xe^{\operatorname{asin}^2(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(b*x+a)**2)*x,x)
```

```
[Out] Integral(x*exp(asin(a + b*x)**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)*x,x, algorithm="giac")
```

```
[Out] integrate(x*e^(arcsin(b*x + a)^2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int x\,\mathrm{e}^{\operatorname{asin}(a+b\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*exp(asin(a + b*x)^2),x)
```

```
[Out] int(x*exp(asin(a + b*x)^2), x)
```

3.460 $\int e^{\mathbf{ArcSin}(a+bx)^2}\,dx$

Optimal. Leaf size=69

$$\frac{\sqrt[4]{e}\,\sqrt{\pi}\,\mathrm{Erfi}\left(\frac{1}{2}(-i+2\mathrm{ArcSin}(a+bx))\right)}{4b}+\frac{\sqrt[4]{e}\,\sqrt{\pi}\,\mathrm{Erfi}\left(\frac{1}{2}(i+2\mathrm{ArcSin}(a+bx))\right)}{4b}$$

```
[Out] 1/4*exp(1/4)*erfi(-1/2*I+arcsin(b*x+a))*Pi^(1/2)/b+1/4*exp(1/4)*erfi(1/2*I+
arcsin(b*x+a))*Pi^(1/2)/b
```

Rubi [A]
time = 0.04, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {4920, 4561, 2266, 2235}

$$\frac{\sqrt[4]{e}\,\sqrt{\pi}\,\mathrm{Erfi}\left(\frac{1}{2}(2\mathrm{ArcSin}(a+bx)-i)\right)}{4b}+\frac{\sqrt[4]{e}\,\sqrt{\pi}\,\mathrm{Erfi}\left(\frac{1}{2}(2\mathrm{ArcSin}(a+bx)+i)\right)}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a + b*x]^2,x]
```

```
[Out] (E^(1/4)*Sqrt[Pi]*Erfi[(-I + 2*ArcSin[a + b*x])/2])/(4*b) + (E^(1/4)*Sqrt[P
i]*Erfi[(I + 2*ArcSin[a + b*x])/2])/(4*b)
```

Rule 2235

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[F^a*Sqrt
[Pi]*(Erfi[(c + d*x)*Rt[b*Log[F], 2]]/(2*d*Rt[b*Log[F], 2])), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2266

```
Int[(F_)^((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> Dist[F^(a - b^2/
(4*c)), Int[F^((b + 2*c*x)^2/(4*c)), x], x] /; FreeQ[{F, a, b, c}, x]
```

Rule 4561

```
Int[Cos[v_]^(n_.)*(F_)^(u_), x_Symbol] :> Int[ExpandTrigToExp[F^u, Cos[v]^n
, x], x] /; FreeQ[F, x] && (LinearQ[u, x] || PolyQ[u, x, 2]) && (LinearQ[v,
 x] || PolyQ[v, x, 2]) && IGtQ[n, 0]
```

Rule 4920

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -a/b + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSin[
a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int e^{\sin^{-1}(a+bx)^2}\,dx = \frac{\text{Subst}\left(\int e^{x^2}\cos(x)\,dx,x,\sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{1}{2}e^{-ix+x^2}+\frac{1}{2}e^{ix+x^2}\right)\,dx,x,\sin^{-1}(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int e^{-ix+x^2}\,dx,x,\sin^{-1}(a+bx)\right)}{2b}+\frac{\text{Subst}\left(\int e^{ix+x^2}\,dx,x,\sin^{-1}(a+bx)\right)}{2b}$$
$$= \frac{\sqrt[4]{e}\,\text{Subst}\left(\int e^{\frac{1}{4}(-i+2x)^2}\,dx,x,\sin^{-1}(a+bx)\right)}{2b}+\frac{\sqrt[4]{e}\,\text{Subst}\left(\int e^{\frac{1}{4}(i+2x)^2}\,dx,x,\sin^{-1}(a+b$$
$$= \frac{\sqrt[4]{e}\,\sqrt{\pi}\,\text{erfi}\left(\frac{1}{2}(-i+2\sin^{-1}(a+bx))\right)}{4b}+\frac{\sqrt[4]{e}\,\sqrt{\pi}\,\text{erfi}\left(\frac{1}{2}(i+2\sin^{-1}(a+bx))\right)}{4b}$$

Mathematica [**A**]
time = 0.03, size = 52, normalized size = 0.75

$$\frac{\sqrt[4]{e}\,\sqrt{\pi}\,\left(\text{Erfi}\left(\frac{1}{2}(-i+2\text{ArcSin}(a+bx))\right)+\text{Erfi}\left(\frac{1}{2}(i+2\text{ArcSin}(a+bx))\right)\right)}{4b}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a + b*x]^2,x]
```

```
[Out] (E^(1/4)*Sqrt[Pi]*(Erfi[(-I + 2*ArcSin[a + b*x])/2] + Erfi[(I + 2*ArcSin[a
+ b*x])/2]))/(4*b)
```

Maple [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int e^{\arcsin(bx+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(b*x+a)^2),x)
```

```
[Out] int(exp(arcsin(b*x+a)^2),x)
```

Maxima [**F**]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2),x, algorithm="maxima")
[Out] integrate(e^(arcsin(b*x + a)^2), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2),x, algorithm="fricas")
[Out] integral(e^(arcsin(b*x + a)^2), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int e^{\operatorname{asin}^{2}{\left(a+bx \right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(b*x+a)**2),x)
[Out] Integral(exp(asin(a + b*x)**2), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2),x, algorithm="giac")
[Out] integrate(e^(arcsin(b*x + a)^2), x)
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.01

$$\int \mathrm{e}^{{\mathrm{asin}\left(a+b\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(asin(a + b*x)^2),x)
[Out] int(exp(asin(a + b*x)^2), x)
```

3.461 $\int \frac{e^{\mathbf{ArcSin}(a+bx)^2}}{x}\,dx$

Optimal. Leaf size=22

$$b\text{Int}\left(\frac{e^{\text{ArcSin}(a+bx)^2}}{bx},x\right)$$

```
[Out] b*CannotIntegrate(exp(arcsin(b*x+a)^2)/b/x,x)
```

Rubi [A]

time = 0.15, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{e^{\text{ArcSin}(a+bx)^2}}{x}\,dx$$

Verification is not applicable to the result.

```
[In] Int[E^ArcSin[a + b*x]^2/x,x]
```

```
[Out] Defer[Subst][Defer[Int][(E^x^2*Cos[x])/(-a + Sin[x]), x], x, ArcSin[a + b*x
]]
```

Rubi steps

$$\begin{aligned}\int \frac{e^{\sin^{-1}(a+bx)^2}}{x}\,dx &= \frac{\text{Subst}\left(\int \frac{e^{x^2}\cos(x)}{-\frac{a}{b}+\frac{\sin(x)}{b}}\,dx,x,\sin^{-1}(a+bx)\right)}{b}\\ &= \frac{\text{Subst}\left(\int \frac{be^{x^2}\cos(x)}{-a+\sin(x)}\,dx,x,\sin^{-1}(a+bx)\right)}{b}\\ &= \text{Subst}\left(\int \frac{e^{x^2}\cos(x)}{-a+\sin(x)}\,dx,x,\sin^{-1}(a+bx)\right)\end{aligned}$$

Mathematica [A]

time = 0.10, size = 0, normalized size = 0.00

$$\int \frac{e^{\text{ArcSin}(a+bx)^2}}{x}\,dx$$

Verification is not applicable to the result.

```
[In] Integrate[E^ArcSin[a + b*x]^2/x,x]
```

```
[Out] Integrate[E^ArcSin[a + b*x]^2/x, x]
```

Maple [A]
time = 0.01, size = 0, normalized size = 0.00

$$\int \frac{\mathrm{e}^{\arcsin(bx+a)^2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(b*x+a)^2)/x,x)
[Out] int(exp(arcsin(b*x+a)^2)/x,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)/x,x, algorithm="maxima")
[Out] integrate(e^(arcsin(b*x + a)^2)/x, x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)/x,x, algorithm="fricas")
[Out] integral(e^(arcsin(b*x + a)^2)/x, x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{e^{\operatorname{asin}^2(a+bx)}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(b*x+a)**2)/x,x)
[Out] Integral(exp(asin(a + b*x)**2)/x, x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)/x,x, algorithm="giac")
```

```
[Out] integrate(e^(arcsin(b*x + a)^2)/x, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{e^{\mathrm{asin}(a+b\,x)^2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(asin(a + b*x)^2)/x,x)
```

```
[Out] int(exp(asin(a + b*x)^2)/x, x)
```

3.462 $\int \frac{e^{\text{ArcSin}(a+bx)^2}}{x^2}\,dx$

Optimal. Leaf size=24

$$b^2\text{Int}\left(\frac{e^{\text{ArcSin}(a+bx)^2}}{b^2x^2},x\right)$$

[Out] b^2*CannotIntegrate(exp(arcsin(b*x+a)^2)/b^2/x^2,x)

Rubi [A]
time = 0.21, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{e^{\text{ArcSin}(a+bx)^2}}{x^2}\,dx$$

Verification is not applicable to the result.

[In] Int[E^ArcSin[a + b*x]^2/x^2,x]

[Out] b*Defer[Subst][Defer[Int][(E^x^2*Cos[x])/(a - Sin[x])^2, x], x, ArcSin[a + b*x]]

Rubi steps

$$\begin{aligned}
\int \frac{e^{\sin^{-1}(a+bx)^2}}{x^2}\,dx &= \frac{\text{Subst}\left(\int \frac{e^{x^2}\cos(x)}{\left(-\frac{a}{b}+\frac{\sin(x)}{b}\right)^2}\,dx,x,\sin^{-1}(a+bx)\right)}{b}\\
&= \frac{\text{Subst}\left(\int \frac{b^2e^{x^2}\cos(x)}{(a-\sin(x))^2}\,dx,x,\sin^{-1}(a+bx)\right)}{b}\\
&= b\text{Subst}\left(\int \frac{e^{x^2}\cos(x)}{(a-\sin(x))^2}\,dx,x,\sin^{-1}(a+bx)\right)
\end{aligned}$$

Mathematica [A]
time = 0.38, size = 0, normalized size = 0.00

$$\int \frac{e^{\text{ArcSin}(a+bx)^2}}{x^2}\,dx$$

Verification is not applicable to the result.

[In] Integrate[E^ArcSin[a + b*x]^2/x^2,x]

```
[Out] Integrate[E^ArcSin[a + b*x]^2/x^2, x]
```

Maple [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{e^{\arcsin(bx+a)^2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(b*x+a)^2)/x^2,x)
[Out] int(exp(arcsin(b*x+a)^2)/x^2,x)
```

Maxima [A]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)/x^2,x, algorithm="maxima")
[Out] integrate(e^(arcsin(b*x + a)^2)/x^2, x)
```

Fricas [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)/x^2,x, algorithm="fricas")
[Out] integral(e^(arcsin(b*x + a)^2)/x^2, x)
```

Sympy [A]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{e^{\operatorname{asin}^{2}{\left(a + b x \right)}}}{x^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(b*x+a)**2)/x**2,x)
[Out] Integral(exp(asin(a + b*x)**2)/x**2, x)
```

Giac [A]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(b*x+a)^2)/x^2,x, algorithm="giac")
```

```
[Out] integrate(e^(arcsin(b*x + a)^2)/x^2, x)
```

Mupad [A]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\mathrm{e}^{\mathrm{asin}(a+b\,x)^2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(asin(a + b*x)^2)/x^2,x)
```

```
[Out] int(exp(asin(a + b*x)^2)/x^2, x)
```

3.463 $\int e^{\mathbf{ArcSin}(ax)}\left(1-a^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=162

$$\frac{144e^{\text{ArcSin}(ax)}}{629a}+\frac{144}{629}e^{\text{ArcSin}(ax)}x\sqrt{1-a^2x^2}+\frac{72e^{\text{ArcSin}(ax)}\left(1-a^2x^2\right)}{629a}+\frac{120}{629}e^{\text{ArcSin}(ax)}x\left(1-a^2x^2\right)^{3/2}+\frac{30e^{\text{ArcSin}(}}{}$$

```
[Out] 144/629*exp(arcsin(a*x))/a+72/629*exp(arcsin(a*x))*(-a^2*x^2+1)/a+120/629*e
xp(arcsin(a*x))*x*(-a^2*x^2+1)^(3/2)+30/629*exp(arcsin(a*x))*(-a^2*x^2+1)^2
/a+6/37*exp(arcsin(a*x))*x*(-a^2*x^2+1)^(5/2)+1/37*exp(arcsin(a*x))*(-a^2*x
^2+1)^3/a+144/629*exp(arcsin(a*x))*x*(-a^2*x^2+1)^(1/2)
```

Rubi [A]
time = 0.30, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.238$, Rules used = {4920, 6820, 6852, 4520, 2225}

$$\frac{\left(1-a^2x^2\right)^3e^{\text{ArcSin}(ax)}}{37a}+\frac{6}{37}x\left(1-a^2x^2\right)^{5/2}e^{\text{ArcSin}(ax)}+\frac{30\left(1-a^2x^2\right)^2e^{\text{ArcSin}(ax)}}{629a}+\frac{120}{629}x\left(1-a^2x^2\right)^{3/2}e^{\text{ArcSin}(ax)}+\frac{72\left(1-a^2x^2\right)e^{\text{ArcSin}(ax)}}{629a}+\frac{144}{629}x\sqrt{1-a^2x^2}\,e^{\text{ArcSin}(ax)}+\frac{144e^{\text{ArcSin}(ax)}}{629a}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]*(1 - a^2*x^2)^(5/2),x]
```

```
[Out] (144*E^ArcSin[a*x])/(629*a) + (144*E^ArcSin[a*x]*x*Sqrt[1 - a^2*x^2])/629 +
 (72*E^ArcSin[a*x]*(1 - a^2*x^2))/(629*a) + (120*E^ArcSin[a*x]*x*(1 - a^2*x
^2)^(3/2))/629 + (30*E^ArcSin[a*x]*(1 - a^2*x^2)^2)/(629*a) + (6*E^ArcSin[a
*x]*x*(1 - a^2*x^2)^(5/2))/37 + (E^ArcSin[a*x]*(1 - a^2*x^2)^3)/(37*a)
```

Rule 2225

```
Int[((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.), x_Symbol] :> Simp[(F^(c*(a +
 b*x)))^n/(b*c*n*Log[F]), x] /; FreeQ[{F, a, b, c, n}, x]
```

Rule 4520

```
Int[Cos[(d_.) + (e_.)*(x_)]^(m_)*(F_)^((c_.)*((a_.) + (b_.)*(x_))), x_Symbo
l] :> Simp[b*c*Log[F]*F^(c*(a + b*x))*(Cos[d + e*x]^m/(e^2*m^2 + b^2*c^2*Lo
g[F]^2)), x] + (Dist[(m*(m - 1)*e^2)/(e^2*m^2 + b^2*c^2*Log[F]^2), Int[F^(c
*(a + b*x))*Cos[d + e*x]^(m - 2), x], x] + Simp[e*m*F^(c*(a + b*x))*Sin[d +
 e*x]*(Cos[d + e*x]^(m - 1)/(e^2*m^2 + b^2*c^2*Log[F]^2)), x]) /; FreeQ[{F,
 a, b, c, d, e}, x] && NeQ[e^2*m^2 + b^2*c^2*Log[F]^2, 0] && GtQ[m, 1]
```

Rule 4920

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -a/b + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSin[
a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 6820

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6852

```
Int[(u_.)*((a_.)*(v_)^(m_.))^(p_), x_Symbol] :> Dist[a^IntPart[p]*((a*v^m)^
FracPart[p]/v^(m*FracPart[p])), Int[u*v^(m*p), x], x] /; FreeQ[{a, m, p}, x
] && !IntegerQ[p] && !FreeQ[v, x] && !(EqQ[a, 1] && EqQ[m, 1]) && !(EqQ
[v, x] && EqQ[m, 1])
```

Rubi steps

$$\int e^{\sin^{-1}(ax)}\left(1-a^2x^2\right)^{5/2}\,dx = \frac{\text{Subst}\left(\int e^x\cos(x)\left(1-\sin^2(x)\right)^{5/2}\,dx, x, \sin^{-1}(ax)\right)}{a}$$
$$= \frac{\text{Subst}\left(\int e^x\cos(x)\cos^2(x)^{5/2}\,dx, x, \sin^{-1}(ax)\right)}{a}$$
$$= \frac{\text{Subst}\left(\int e^x\cos^6(x)\,dx, x, \sin^{-1}(ax)\right)}{a}$$
$$= \frac{6}{37}e^{\sin^{-1}(ax)}x\left(1-a^2x^2\right)^{5/2} + \frac{e^{\sin^{-1}(ax)}\left(1-a^2x^2\right)^3}{37a} + \frac{30\text{Subst}\left(\int e^x\cos^4(x)\,dx,\right.}{37a}$$
$$= \frac{120}{629}e^{\sin^{-1}(ax)}x\left(1-a^2x^2\right)^{3/2} + \frac{30e^{\sin^{-1}(ax)}\left(1-a^2x^2\right)^2}{629a} + \frac{6}{37}e^{\sin^{-1}(ax)}x\left(1-a^2x\right.$$
$$= \frac{144}{629}e^{\sin^{-1}(ax)}x\sqrt{1-a^2x^2} + \frac{72e^{\sin^{-1}(ax)}\left(1-a^2x^2\right)}{629a} + \frac{120}{629}e^{\sin^{-1}(ax)}x\left(1-a^2x^2\right)$$
$$= \frac{144e^{\sin^{-1}(ax)}}{629a} + \frac{144}{629}e^{\sin^{-1}(ax)}x\sqrt{1-a^2x^2} + \frac{72e^{\sin^{-1}(ax)}\left(1-a^2x^2\right)}{629a} + \frac{120}{629}e^{\sin^{-1}}$$

Mathematica [A]
time = 0.26, size = 69, normalized size = 0.43

$$\frac{e^{\text{ArcSin}(ax)}(6290+1887\cos(2\text{ArcSin}(ax))+222\cos(4\text{ArcSin}(ax))+17\cos(6\text{ArcSin}(ax))+3774\sin(2\text{ArcSin}(ax))+888\sin(4\text{ArcSin}(ax))+102\sin(6\text{ArcSin}(ax)))}{20128a}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]*(1 - a^2*x^2)^(5/2),x]
```

```
[Out] (E^ArcSin[a*x]*(6290 + 1887*Cos[2*ArcSin[a*x]] + 222*Cos[4*ArcSin[a*x]] + 1
7*Cos[6*ArcSin[a*x]] + 3774*Sin[2*ArcSin[a*x]] + 888*Sin[4*ArcSin[a*x]] + 1
02*Sin[6*ArcSin[a*x]]))/(20128*a)
```

Maple [F]
time = 0.08, size = 0, normalized size = 0.00

$$\int e^{\arcsin(ax)} \left(-a^2x^2+1\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x))*(-a^2*x^2+1)^(5/2),x)
[Out] int(exp(arcsin(a*x))*(-a^2*x^2+1)^(5/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*(-a^2*x^2+1)^(5/2),x, algorithm="maxima")
[Out] integrate((-a^2*x^2 + 1)^(5/2)*e^(arcsin(a*x)), x)
```

Fricas [A]
time = 2.09, size = 71, normalized size = 0.44

$$-\frac{\left(17\,a^6x^6-81\,a^4x^4+183\,a^2x^2-6\left(17\,a^5x^5-54\,a^3x^3+61\,ax\right)\sqrt{-a^2x^2+1}-263\right)e^{(\arcsin(ax))}}{629\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*(-a^2*x^2+1)^(5/2),x, algorithm="fricas")
[Out] -1/629*(17*a^6*x^6 - 81*a^4*x^4 + 183*a^2*x^2 - 6*(17*a^5*x^5 - 54*a^3*x^3
+ 61*a*x)*sqrt(-a^2*x^2 + 1) - 263)*e^(arcsin(a*x))/a
```

Sympy [A]
time = 17.88, size = 141, normalized size = 0.87

$$\begin{cases} -\frac{a^5x^6e^{\operatorname{asin}(ax)}}{37}+\frac{6a^4x^5\sqrt{-a^2x^2+1}\,e^{\operatorname{asin}(ax)}}{37}+\frac{81a^3x^4e^{\operatorname{asin}(ax)}}{629}-\frac{324a^2x^3\sqrt{-a^2x^2+1}\,e^{\operatorname{asin}(ax)}}{629}-\frac{183ax^2e^{\operatorname{asin}(ax)}}{629}+\frac{366x\sqrt{-a^2x^2+1}\,e^{\operatorname{asin}(ax)}}{629}+\frac{263e^{\operatorname{asin}(ax)}}{629a} & \text{for}\ a\neq 0 \\ x & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x))*(-a**2*x**2+1)**(5/2),x)
[Out] Piecewise((-a**5*x**6*exp(asin(a*x))/37 + 6*a**4*x**5*sqrt(-a**2*x**2 + 1)*
exp(asin(a*x))/37 + 81*a**3*x**4*exp(asin(a*x))/629 - 324*a**2*x**3*sqrt(-a
**2*x**2 + 1)*exp(asin(a*x))/629 - 183*a*x**2*exp(asin(a*x))/629 + 366*x*sq
rt(-a**2*x**2 + 1)*exp(asin(a*x))/629 + 263*exp(asin(a*x))/(629*a), Ne(a, 0
)), (x, True))
```

Giac [**F(-2)**]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*(-a^2*x^2+1)^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,sageVARx):;OUTPUT:sym2poly/r2sym(const gen & e,const in
dex_m & i,const vecteur & l) Error: Bad Argument Value
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int e^{\mathrm{asin}(a\,x)}\,{\left(1-a^2\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(asin(a*x))*(1 - a^2*x^2)^(5/2),x)
```

```
[Out] int(exp(asin(a*x))*(1 - a^2*x^2)^(5/2), x)
```

3.464 $\int e^{\text{ArcSin}(ax)}\left(1-a^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=112

$$\frac{24e^{\text{ArcSin}(ax)}}{85a}+\frac{24}{85}e^{\text{ArcSin}(ax)}x\sqrt{1-a^2x^2}+\frac{12e^{\text{ArcSin}(ax)}\left(1-a^2x^2\right)}{85a}+\frac{4}{17}e^{\text{ArcSin}(ax)}x\left(1-a^2x^2\right)^{3/2}+\frac{e^{\text{ArcSin}(ax)}(1-}{17a}$$

[Out] 24/85*exp(arcsin(a*x))/a+12/85*exp(arcsin(a*x))*(-a^2*x^2+1)/a+4/17*exp(arc sin(a*x))*x*(-a^2*x^2+1)^(3/2)+1/17*exp(arcsin(a*x))*(-a^2*x^2+1)^2/a+24/85 *exp(arcsin(a*x))*x*(-a^2*x^2+1)^(1/2)

Rubi [A]

time = 0.21, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}=0.238$, Rules used = {4920, 6820, 6852, 4520, 2225}

$$\frac{\left(1-a^2x^2\right)^2e^{\text{ArcSin}(ax)}}{17a}+\frac{4}{17}x\left(1-a^2x^2\right)^{3/2}e^{\text{ArcSin}(ax)}+\frac{12\left(1-a^2x^2\right)e^{\text{ArcSin}(ax)}}{85a}+\frac{24}{85}x\sqrt{1-a^2x^2}\,e^{\text{ArcSin}(ax)}+\frac{24e^{\text{ArcSin}(ax)}}{85a}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]*(1 - a^2*x^2)^(3/2),x]
```

```
[Out] (24*E^ArcSin[a*x])/(85*a) + (24*E^ArcSin[a*x]*x*Sqrt[1 - a^2*x^2])/85 + (12
*E^ArcSin[a*x]*(1 - a^2*x^2))/(85*a) + (4*E^ArcSin[a*x]*x*(1 - a^2*x^2)^(3/
2))/17 + (E^ArcSin[a*x]*(1 - a^2*x^2)^2)/(17*a)
```

Rule 2225

```
Int[((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.), x_Symbol] :> Simp[(F^(c*(a +
 b*x)))^n/(b*c*n*Log[F]), x] /; FreeQ[{F, a, b, c, n}, x]
```

Rule 4520

```
Int[Cos[(d_.) + (e_.)*(x_)]^(m_)*(F_)^((c_.)*((a_.) + (b_.)*(x_))), x_Symbo
l] :> Simp[b*c*Log[F]*F^(c*(a + b*x))*(Cos[d + e*x]^m/(e^2*m^2 + b^2*c^2*Lo
g[F]^2)), x] + (Dist[(m*(m - 1)*e^2)/(e^2*m^2 + b^2*c^2*Log[F]^2), Int[F^(c
*(a + b*x))*Cos[d + e*x]^(m - 2), x], x] + Simp[e*m*F^(c*(a + b*x))*Sin[d +
 e*x]*(Cos[d + e*x]^(m - 1)/(e^2*m^2 + b^2*c^2*Log[F]^2)), x]) /; FreeQ[{F,
 a, b, c, d, e}, x] && NeQ[e^2*m^2 + b^2*c^2*Log[F]^2, 0] && GtQ[m, 1]
```

Rule 4920

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -a/b + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSin[
a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 6820

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6852

```
Int[(u_.)*((a_.)*(v_)^(m_.))^(p_), x_Symbol] :> Dist[a^IntPart[p]*((a*v^m)^
FracPart[p]/v^(m*FracPart[p])), Int[u*v^(m*p), x], x] /; FreeQ[{a, m, p}, x
] && !IntegerQ[p] && !FreeQ[v, x] && !(EqQ[a, 1] && EqQ[m, 1]) && !(EqQ
[v, x] && EqQ[m, 1])
```

Rubi steps

$$\int e^{\sin^{-1}(ax)}\left(1-a^2x^2\right)^{3/2}\,dx = \frac{\text{Subst}\left(\int e^x\cos(x)\left(1-\sin^2(x)\right)^{3/2}\,dx, x, \sin^{-1}(ax)\right)}{a}$$
$$= \frac{\text{Subst}\left(\int e^x\cos(x)\cos^2(x)^{3/2}\,dx, x, \sin^{-1}(ax)\right)}{a}$$
$$= \frac{\text{Subst}\left(\int e^x\cos^4(x)\,dx, x, \sin^{-1}(ax)\right)}{a}$$
$$= \frac{4}{17}e^{\sin^{-1}(ax)}x\left(1-a^2x^2\right)^{3/2} + \frac{e^{\sin^{-1}(ax)}\left(1-a^2x^2\right)^2}{17a} + \frac{12\text{Subst}\left(\int e^x\cos^2(x)\,dx,\right.}{17a}$$
$$= \frac{24}{85}e^{\sin^{-1}(ax)}x\sqrt{1-a^2x^2} + \frac{12e^{\sin^{-1}(ax)}\left(1-a^2x^2\right)}{85a} + \frac{4}{17}e^{\sin^{-1}(ax)}x\left(1-a^2x^2\right)^{3/2}$$
$$= \frac{24e^{\sin^{-1}(ax)}}{85a} + \frac{24}{85}e^{\sin^{-1}(ax)}x\sqrt{1-a^2x^2} + \frac{12e^{\sin^{-1}(ax)}\left(1-a^2x^2\right)}{85a} + \frac{4}{17}e^{\sin^{-1}(ax)}$$

Mathematica [A]
time = 0.12, size = 51, normalized size = 0.46

$$\frac{e^{\text{ArcSin}(ax)}(255+68\cos(2\text{ArcSin}(ax))+5\cos(4\text{ArcSin}(ax))+136\sin(2\text{ArcSin}(ax))+20\sin(4\text{ArcSin}(ax)))}{680a}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]*(1 - a^2*x^2)^(3/2),x]
```

```
[Out] (E^ArcSin[a*x]*(255 + 68*Cos[2*ArcSin[a*x]] + 5*Cos[4*ArcSin[a*x]] + 136*Si
n[2*ArcSin[a*x]] + 20*Sin[4*ArcSin[a*x]]))/(680*a)
```

Maple [F]
time = 0.08, size = 0, normalized size = 0.00

$$\int e^{\arcsin(ax)}\left(-a^2x^2+1\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x))*(-a^2*x^2+1)^(3/2),x)
```

```
[Out] int(exp(arcsin(a*x))*(-a^2*x^2+1)^(3/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*(-a^2*x^2+1)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((-a^2*x^2 + 1)^(3/2)*e^(arcsin(a*x)), x)
```

Fricas [A]
time = 2.25, size = 55, normalized size = 0.49

$$\frac{\left(5\,a^4x^4 - 22\,a^2x^2 - 4\,(5\,a^3x^3 - 11\,ax)\sqrt{-a^2x^2+1} + 41\right)e^{(\arcsin(ax))}}{85\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*(-a^2*x^2+1)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/85*(5*a^4*x^4 - 22*a^2*x^2 - 4*(5*a^3*x^3 - 11*a*x)*sqrt(-a^2*x^2 + 1) +
41)*e^(arcsin(a*x))/a
```

Sympy [A]
time = 1.74, size = 95, normalized size = 0.85

$$\begin{cases} \frac{a^3x^4e^{\operatorname{asin}(ax)}}{17} - \frac{4a^2x^3\sqrt{-a^2x^2+1}\,e^{\operatorname{asin}(ax)}}{17} - \frac{22ax^2e^{\operatorname{asin}(ax)}}{85} + \frac{44x\sqrt{-a^2x^2+1}\,e^{\operatorname{asin}(ax)}}{85} + \frac{41e^{\operatorname{asin}(ax)}}{85a} & \text{for } a \neq 0 \\ x & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x))*(-a**2*x**2+1)**(3/2),x)
```

```
[Out] Piecewise((a**3*x**4*exp(asin(a*x))/17 - 4*a**2*x**3*sqrt(-a**2*x**2 + 1)*e
xp(asin(a*x))/17 - 22*a*x**2*exp(asin(a*x))/85 + 44*x*sqrt(-a**2*x**2 + 1)*
exp(asin(a*x))/85 + 41*exp(asin(a*x))/(85*a), Ne(a, 0)), (x, True))
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*(-a^2*x^2+1)^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,sageVARx):;OUTPUT:sym2poly/r2sym(const gen & e,const in
dex_m & i,const vecteur & l) Error: Bad Argument Value
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int e^{\operatorname{asin}(a\,x)}\,{\left(1-a^2\,x^2\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(asin(a*x))*(1 - a^2*x^2)^(3/2),x)
```

```
[Out] int(exp(asin(a*x))*(1 - a^2*x^2)^(3/2), x)
```

3.465 $\int e^{\mathbf{ArcSin}(ax)}\sqrt{1-a^2x^2}\,dx$

Optimal. Leaf size=62

$$\frac{2e^{\operatorname{ArcSin}(ax)}}{5a}+\frac{2}{5}e^{\operatorname{ArcSin}(ax)}x\sqrt{1-a^2x^2}+\frac{e^{\operatorname{ArcSin}(ax)}(1-a^2x^2)}{5a}$$

```
[Out] 2/5*exp(arcsin(a*x))/a+1/5*exp(arcsin(a*x))*(-a^2*x^2+1)/a+2/5*exp(arcsin(a
*x))*x*(-a^2*x^2+1)^(1/2)
```

Rubi [A]
time = 0.14, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}=0.238$, Rules used = {4920, 6820, 6852, 4520, 2225}

$$\frac{2}{5}x\sqrt{1-a^2x^2}\,e^{\operatorname{ArcSin}(ax)}+\frac{(1-a^2x^2)\,e^{\operatorname{ArcSin}(ax)}}{5a}+\frac{2e^{\operatorname{ArcSin}(ax)}}{5a}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]*Sqrt[1 - a^2*x^2],x]
```

```
[Out] (2*E^ArcSin[a*x])/(5*a) + (2*E^ArcSin[a*x]*x*Sqrt[1 - a^2*x^2])/5 + (E^ArcS
in[a*x]*(1 - a^2*x^2))/(5*a)
```

Rule 2225

```
Int[((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.), x_Symbol] :> Simp[(F^(c*(a +
 b*x)))^n/(b*c*n*Log[F]), x] /; FreeQ[{F, a, b, c, n}, x]
```

Rule 4520

```
Int[Cos[(d_.) + (e_.)*(x_)]^(m_)*(F_)^((c_.)*((a_.) + (b_.)*(x_))), x_Symbo
l] :> Simp[b*c*Log[F]*F^(c*(a + b*x))*(Cos[d + e*x]^m/(e^2*m^2 + b^2*c^2*Lo
g[F]^2)), x] + (Dist[(m*(m - 1)*e^2)/(e^2*m^2 + b^2*c^2*Log[F]^2), Int[F^(c
*(a + b*x))*Cos[d + e*x]^(m - 2), x], x] + Simp[e*m*F^(c*(a + b*x))*Sin[d +
 e*x]*(Cos[d + e*x]^(m - 1)/(e^2*m^2 + b^2*c^2*Log[F]^2)), x]) /; FreeQ[{F,
 a, b, c, d, e}, x] && NeQ[e^2*m^2 + b^2*c^2*Log[F]^2, 0] && GtQ[m, 1]
```

Rule 4920

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -a/b + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSin[
a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 6820

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6852

```
Int[(u_.)*((a_.)*(v_)^(m_.))^(p_), x_Symbol] :> Dist[a^IntPart[p]*((a*v^m)^
FracPart[p]/v^(m*FracPart[p])), Int[u*v^(m*p), x], x] /; FreeQ[{a, m, p}, x
] && !IntegerQ[p] && !FreeQ[v, x] && !(EqQ[a, 1] && EqQ[m, 1]) && !(EqQ
[v, x] && EqQ[m, 1])
```

Rubi steps

$$\begin{aligned}\int e^{\sin^{-1}(ax)}\sqrt{1-a^2x^2}\,dx &= \frac{\text{Subst}\left(\int e^x\cos(x)\sqrt{1-\sin^2(x)}\,dx, x, \sin^{-1}(ax)\right)}{a}\\ &= \frac{\text{Subst}\left(\int e^x\cos(x)\sqrt{\cos^2(x)}\,dx, x, \sin^{-1}(ax)\right)}{a}\\ &= \frac{\text{Subst}\left(\int e^x\cos^2(x)\,dx, x, \sin^{-1}(ax)\right)}{a}\\ &= \frac{2}{5}e^{\sin^{-1}(ax)}x\sqrt{1-a^2x^2}+\frac{e^{\sin^{-1}(ax)}(1-a^2x^2)}{5a}+\frac{2\text{Subst}\left(\int e^x\,dx, x, \sin^{-1}(ax)\right)}{5a}\\ &= \frac{2e^{\sin^{-1}(ax)}}{5a}+\frac{2}{5}e^{\sin^{-1}(ax)}x\sqrt{1-a^2x^2}+\frac{e^{\sin^{-1}(ax)}(1-a^2x^2)}{5a}\end{aligned}$$

Mathematica [A]
time = 0.06, size = 31, normalized size = 0.50

$$\frac{e^{\text{ArcSin}(ax)}(5+\cos(2\text{ArcSin}(ax))+2\sin(2\text{ArcSin}(ax)))}{10a}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]*Sqrt[1 - a^2*x^2],x]
[Out] (E^ArcSin[a*x]*(5 + Cos[2*ArcSin[a*x]] + 2*Sin[2*ArcSin[a*x]]))/(10*a)
```

Maple [F]
time = 0.07, size = 0, normalized size = 0.00

$$\int e^{\arcsin(ax)}\sqrt{-a^2x^2+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x))*(-a^2*x^2+1)^(1/2),x)
```

```
[Out] int(exp(arcsin(a*x))*(-a^2*x^2+1)^(1/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(-a^2*x^2 + 1)*e^(arcsin(a*x)), x)
```

Fricas [A]
time = 1.87, size = 35, normalized size = 0.56

$$-\frac{\left(a^{2} x^{2}-2 \sqrt{-a^{2} x^{2}+1}\, a x-3\right) e^{(\arcsin(a x))}}{5 a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/5*(a^2*x^2 - 2*sqrt(-a^2*x^2 + 1)*a*x - 3)*e^(arcsin(a*x))/a
```

Sympy [A]
time = 0.13, size = 49, normalized size = 0.79

$$\begin{cases} -\frac{a x^{2} e^{\operatorname{asin}{(a x)}}}{5}+\frac{2 x \sqrt{-a^{2} x^{2}+1}\, e^{\operatorname{asin}{(a x)}}}{5}+\frac{3 e^{\operatorname{asin}{(a x)}}}{5 a} & \text{for}\: a \neq 0 \\ x & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x))*(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Piecewise((-a*x**2*exp(asin(a*x))/5 + 2*x*sqrt(-a**2*x**2 + 1)*exp(asin(a*x
))/5 + 3*exp(asin(a*x))/(5*a), Ne(a, 0)), (x, True))
```

Giac [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))*(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,sageVARx):;OUTPUT:sym2poly/r2sym(const gen & e,const in
dex_m & i,const vecteur & l) Error: Bad Argument Value
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.02

$$\int e^{\operatorname{asin}(a\,x)}\,\sqrt{1-a^2\,x^2}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(asin(a*x))*(1 - a^2*x^2)^(1/2),x)
```

```
[Out] int(exp(asin(a*x))*(1 - a^2*x^2)^(1/2), x)
```

3.466 $\int \frac{e^{\text{ArcSin}(ax)}}{\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=10

$$\frac{e^{\text{ArcSin}(ax)}}{a}$$

```
[Out] exp(arcsin(a*x))/a
```

Rubi [A]
time = 0.15, antiderivative size = 10, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.190$, Rules used = {4920, 6820, 6852, 2225}

$$\frac{e^{\text{ArcSin}(ax)}}{a}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]/Sqrt[1 - a^2*x^2],x]
```

```
[Out] E^ArcSin[a*x]/a
```

Rule 2225

```
Int[((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.), x_Symbol] :> Simp[(F^(c*(a +
 b*x)))^n/(b*c*n*Log[F]), x] /; FreeQ[{F, a, b, c, n}, x]
```

Rule 4920

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -a/b + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSin[
a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 6820

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6852

```
Int[(u_.)*((a_.)*(v_)^(m_.))^(p_), x_Symbol] :> Dist[a^IntPart[p]*((a*v^m)^
FracPart[p]/v^(m*FracPart[p])), Int[u*v^(m*p), x], x] /; FreeQ[{a, m, p}, x
] && !IntegerQ[p] && !FreeQ[v, x] && !(EqQ[a, 1] && EqQ[m, 1]) && !(EqQ
[v, x] && EqQ[m, 1])
```

Rubi steps

$$\int \frac{e^{\sin^{-1}(ax)}}{\sqrt{1-a^2x^2}}\,dx = \frac{\text{Subst}\left(\int \frac{e^x\cos(x)}{\sqrt{1-\sin^2(x)}}\,dx, x, \sin^{-1}(ax)\right)}{a}$$
$$= \frac{\text{Subst}\left(\int e^x\sqrt{\cos^2(x)}\,\sec(x)\,dx, x, \sin^{-1}(ax)\right)}{a}$$
$$= \frac{\text{Subst}\left(\int e^x\,dx, x, \sin^{-1}(ax)\right)}{a}$$
$$= \frac{e^{\sin^{-1}(ax)}}{a}$$

<u>**Mathematica**</u> [A]
time = 0.02, size = 10, normalized size = 1.00

$$\frac{e^{\text{ArcSin}(ax)}}{a}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]/Sqrt[1 - a^2*x^2],x]
[Out] E^ArcSin[a*x]/a
```

<u>**Maple**</u> [A]
time = 0.13, size = 10, normalized size = 1.00

method	result	size
derivativedivides	$\frac{e^{\arcsin(ax)}}{a}$	10
default	$\frac{e^{\arcsin(ax)}}{a}$	10

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x))/(-a^2*x^2+1)^(1/2),x,method=_RETURNVERBOSE)
[Out] exp(arcsin(a*x))/a
```

<u>**Maxima**</u> [A]
time = 0.47, size = 9, normalized size = 0.90

$$\frac{e^{(\arcsin(ax))}}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] e^(arcsin(a*x))/a
```

Fricas [A]
time = 1.17, size = 9, normalized size = 0.90

$$\frac{e^{(\arcsin(ax))}}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] e^(arcsin(a*x))/a
```

Sympy [A]
time = 0.21, size = 8, normalized size = 0.80

$$\begin{cases} \frac{e^{\operatorname{asin}(ax)}}{a} & \text{for } a \neq 0 \\ x & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x))/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Piecewise((exp(asin(a*x))/a, Ne(a, 0)), (x, True))
```

Giac [A]
time = 0.40, size = 9, normalized size = 0.90

$$\frac{e^{(\arcsin(ax))}}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] e^(arcsin(a*x))/a
```

Mupad [B]
time = 0.25, size = 9, normalized size = 0.90

$$\frac{\mathrm{e}^{\operatorname{asin}(a\,x)}}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(asin(a*x))/(1 - a^2*x^2)^(1/2),x)
```

```
[Out] exp(asin(a*x))/a
```

3.467 $\int \frac{e^{\mathbf{ArcSin}(ax)}}{(1-a^2x^2)^{3/2}}\,dx$

Optimal. Leaf size=45

$$\frac{\left(\frac{4}{5}-\frac{8i}{5}\right)e^{(1+2i)\text{ArcSin}(ax)}\,{}_2F_1\left(1-\frac{i}{2},2;2-\frac{i}{2};-e^{2i\text{ArcSin}(ax)}\right)}{a}$$

```
[Out] (4/5-8/5*I)*exp((1+2*I)*arcsin(a*x))*hypergeom([2, 1-1/2*I],[2-1/2*I],-(I*a
*x+(-a^2*x^2+1)^(1/2))^2)/a
```

Rubi [A]
time = 0.18, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.190$, Rules used = {4920, 6820, 6852, 4536}

$$\frac{\left(\frac{4}{5}-\frac{8i}{5}\right)e^{(1+2i)\text{ArcSin}(ax)}\,{}_2F_1\left(1-\frac{i}{2},2;2-\frac{i}{2};-e^{2i\text{ArcSin}(ax)}\right)}{a}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]/(1 - a^2*x^2)^(3/2),x]
```

```
[Out] ((4/5 - (8*I)/5)*E^((1 + 2*I)*ArcSin[a*x])*Hypergeometric2F1[1 - I/2, 2, 2
- I/2, -E^((2*I)*ArcSin[a*x])])/a
```

Rule 4536

```
Int[(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sec[(d_.) + (e_.)*(x_)]^(n_.), x_Symb
ol] :> Simp[2^n*E^(I*n*(d + e*x))*(F^(c*(a + b*x))/(I*e*n + b*c*Log[F]))*Hy
pergeometric2F1[n, n/2 - I*b*c*(Log[F]/(2*e)), 1 + n/2 - I*b*c*(Log[F]/(2*e
)), -E^(2*I*(d + e*x))], x] /; FreeQ[{F, a, b, c, d, e}, x] && IntegerQ[n]
```

Rule 4920

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -a/b + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSin[
a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 6820

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6852

```
Int[(u_.)*((a_.)*(v_)^(m_.))^(p_), x_Symbol] :> Dist[a^IntPart[p]*((a*v^m)^
FracPart[p]/v^(m*FracPart[p])), Int[u*v^(m*p), x], x] /; FreeQ[{a, m, p}, x
```

```
] && !IntegerQ[p] && !FreeQ[v, x] && !(EqQ[a, 1] && EqQ[m, 1]) && !(EqQ
[v, x] && EqQ[m, 1])
```

Rubi steps

$$
\begin{aligned}
\int \frac{e^{\sin^{-1}(ax)}}{(1-a^2x^2)^{3/2}}\,dx &= \frac{\operatorname{Subst}\left(\int \frac{e^x\cos(x)}{(1-\sin^2(x))^{3/2}}\,dx, x, \sin^{-1}(ax)\right)}{a}\\
&= \frac{\operatorname{Subst}\left(\int \frac{e^x\cos(x)}{\cos^2(x)^{3/2}}\,dx, x, \sin^{-1}(ax)\right)}{a}\\
&= \frac{\operatorname{Subst}\left(\int e^x\sec^2(x)\,dx, x, \sin^{-1}(ax)\right)}{a}\\
&= \frac{\left(\frac{4}{5}-\frac{8i}{5}\right)e^{(1+2i)\sin^{-1}(ax)}\,{}_2F_1\left(1-\frac{i}{2},2;2-\frac{i}{2};-e^{2i\sin^{-1}(ax)}\right)}{a}
\end{aligned}
$$

Mathematica [A]
time = 0.05, size = 45, normalized size = 1.00

$$\frac{\left(\frac{4}{5}-\frac{8i}{5}\right)e^{(1+2i)\mathrm{ArcSin}(ax)}\,{}_2F_1\left(1-\frac{i}{2},2;2-\frac{i}{2};-e^{2i\mathrm{ArcSin}(ax)}\right)}{a}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]/(1 - a^2*x^2)^(3/2),x]
```

```
[Out] ((4/5 - (8*I)/5)*E^((1 + 2*I)*ArcSin[a*x])*Hypergeometric2F1[1 - I/2, 2, 2
- I/2, -E^((2*I)*ArcSin[a*x])])/a
```

Maple [F]
time = 0.08, size = 0, normalized size = 0.00

$$\int \frac{e^{\arcsin(ax)}}{(-a^2x^2+1)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x))/(-a^2*x^2+1)^(3/2),x)
```

```
[Out] int(exp(arcsin(a*x))/(-a^2*x^2+1)^(3/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/(-a^2*x^2+1)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(e^(arcsin(a*x))/(-a^2*x^2 + 1)^(3/2), x)
```

Fricas [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/(-a^2*x^2+1)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-a^2*x^2 + 1)*e^(arcsin(a*x))/(a^4*x^4 - 2*a^2*x^2 + 1), x)
```

Sympy [**F**]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{e^{\operatorname{asin}(ax)}}{\left(-\left(ax-1\right)\left(ax+1\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x))/(-a**2*x**2+1)**(3/2),x)
```

```
[Out] Integral(exp(asin(a*x))/(-(a*x - 1)*(a*x + 1))**(3/2), x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/(-a^2*x^2+1)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(e^(arcsin(a*x))/(-a^2*x^2 + 1)^(3/2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\mathrm{e}^{\mathrm{asin}(a\,x)}}{{\left(1-a^2\,x^2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(asin(a*x))/(1 - a^2*x^2)^(3/2),x)
```

```
[Out] int(exp(asin(a*x))/(1 - a^2*x^2)^(3/2), x)
```

3.468 $\int \frac{e^{\mathbf{ArcSin}(ax)}}{(1-a^2x^2)^{5/2}}\,dx$

Optimal. Leaf size=96

$$\frac{e^{\mathrm{ArcSin}(ax)}x}{3\left(1-a^2x^2\right)^{3/2}}-\frac{e^{\mathrm{ArcSin}(ax)}}{6a\left(1-a^2x^2\right)}+\frac{\left(\frac{2}{3}-\frac{4i}{3}\right)e^{(1+2i)\mathrm{ArcSin}(ax)}\,{}_2F_1\left(1-\frac{i}{2},2;2-\frac{i}{2};-e^{2i\mathrm{ArcSin}(ax)}\right)}{a}$$

```
[Out] 1/3*exp(arcsin(a*x))*x/(-a^2*x^2+1)^(3/2)-1/6*exp(arcsin(a*x))/a/(-a^2*x^2+
1)+(2/3-4/3*I)*exp((1+2*I)*arcsin(a*x))*hypergeom([2, 1-1/2*I],[2-1/2*I],-(
I*a*x+(-a^2*x^2+1)^(1/2))^2)/a
```

Rubi [A]

time = 0.20, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.238$, Rules used = {4920, 6820, 6852, 4533, 4536}

$$\frac{xe^{\mathrm{ArcSin}(ax)}}{3\left(1-a^2x^2\right)^{3/2}}-\frac{e^{\mathrm{ArcSin}(ax)}}{6a\left(1-a^2x^2\right)}+\frac{\left(\frac{2}{3}-\frac{4i}{3}\right)e^{(1+2i)\mathrm{ArcSin}(ax)}\,{}_2F_1\left(1-\frac{i}{2},2;2-\frac{i}{2};-e^{2i\mathrm{ArcSin}(ax)}\right)}{a}$$

Antiderivative was successfully verified.

```
[In] Int[E^ArcSin[a*x]/(1 - a^2*x^2)^(5/2),x]
```

```
[Out] (E^ArcSin[a*x]*x)/(3*(1 - a^2*x^2)^(3/2)) - E^ArcSin[a*x]/(6*a*(1 - a^2*x^2
)) + ((2/3 - (4*I)/3)*E^((1 + 2*I)*ArcSin[a*x])*Hypergeometric2F1[1 - I/2,
2, 2 - I/2, -E^((2*I)*ArcSin[a*x])])/a
```

Rule 4533

```
Int[(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sec[(d_.) + (e_.)*(x_)]^(n_), x_Symbo
l] :> Simp[(-b)*c*Log[F]*F^(c*(a + b*x))*(Sec[d + e*x]^(n - 2)/(e^2*(n - 1)
*(n - 2))), x] + (Dist[(e^2*(n - 2)^2 + b^2*c^2*Log[F]^2)/(e^2*(n - 1)*(n -
 2)), Int[F^(c*(a + b*x))*Sec[d + e*x]^(n - 2), x], x] + Simp[F^(c*(a + b*x
))*Sec[d + e*x]^(n - 1)*(Sin[d + e*x]/(e*(n - 1))), x]) /; FreeQ[{F, a, b,
c, d, e}, x] && NeQ[b^2*c^2*Log[F]^2 + e^2*(n - 2)^2, 0] && GtQ[n, 1] && Ne
Q[n, 2]
```

Rule 4536

```
Int[(F_)^((c_.)*((a_.) + (b_.)*(x_)))*Sec[(d_.) + (e_.)*(x_)]^(n_.), x_Symb
ol] :> Simp[2^n*E^(I*n*(d + e*x))*(F^(c*(a + b*x))/(I*e*n + b*c*Log[F]))*Hy
pergeometric2F1[n, n/2 - I*b*c*(Log[F]/(2*e)), 1 + n/2 - I*b*c*(Log[F]/(2*e
)), -E^(2*I*(d + e*x))], x] /; FreeQ[{F, a, b, c, d, e}, x] && IntegerQ[n]
```

Rule 4920

```
Int[(u_.)*(f_)^(ArcSin[(a_.) + (b_.)*(x_)]^(n_.)*(c_.)), x_Symbol] :> Dist[
1/b, Subst[Int[(u /. x -> -a/b + Sin[x]/b)*f^(c*x^n)*Cos[x], x], x, ArcSin[
a + b*x]], x] /; FreeQ[{a, b, c, f}, x] && IGtQ[n, 0]
```

Rule 6820

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6852

```
Int[(u_.)*((a_.)*(v_)^(m_.))^(p_), x_Symbol] :> Dist[a^IntPart[p]*((a*v^m)^
FracPart[p]/v^(m*FracPart[p])), Int[u*v^(m*p), x], x] /; FreeQ[{a, m, p}, x
] && !IntegerQ[p] && !FreeQ[v, x] && !(EqQ[a, 1] && EqQ[m, 1]) && !(EqQ
[v, x] && EqQ[m, 1])
```

Rubi steps

$$\begin{aligned}
\int \frac{e^{\sin^{-1}(ax)}}{(1-a^2x^2)^{5/2}}\,dx &= \frac{\text{Subst}\left(\int \frac{e^x\cos(x)}{(1-\sin^2(x))^{5/2}}\,dx, x, \sin^{-1}(ax)\right)}{a}\\
&= \frac{\text{Subst}\left(\int \frac{e^x\cos(x)}{\cos^2(x)^{5/2}}\,dx, x, \sin^{-1}(ax)\right)}{a}\\
&= \frac{\text{Subst}\left(\int e^x\sec^4(x)\,dx, x, \sin^{-1}(ax)\right)}{a}\\
&= \frac{e^{\sin^{-1}(ax)}x}{3(1-a^2x^2)^{3/2}} - \frac{e^{\sin^{-1}(ax)}}{6a(1-a^2x^2)} + \frac{5\text{Subst}\left(\int e^x\sec^2(x)\,dx, x, \sin^{-1}(ax)\right)}{6a}\\
&= \frac{e^{\sin^{-1}(ax)}x}{3(1-a^2x^2)^{3/2}} - \frac{e^{\sin^{-1}(ax)}}{6a(1-a^2x^2)} + \frac{\left(\frac{2}{3}-\frac{4i}{3}\right)e^{(1+2i)\sin^{-1}(ax)}\,{}_2F_1\left(1-\frac{i}{2},2;2-\frac{i}{2};-e^{2i\sin^{-1}}\right.}{a}
\end{aligned}$$

Mathematica [A]
time = 0.12, size = 84, normalized size = 0.88

$$\frac{e^{\text{ArcSin}(ax)}\left(-1+\frac{2ax}{\sqrt{1-a^2x^2}}+(1-2i)\left(1+e^{2i\text{ArcSin}(ax)}\right)^2\,{}_2F_1\left(1-\frac{i}{2},2;2-\frac{i}{2};-e^{2i\text{ArcSin}(ax)}\right)\right)}{6(a-a^3x^2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^ArcSin[a*x]/(1 - a^2*x^2)^(5/2),x]
```

```
[Out] (E^ArcSin[a*x]*(-1 + (2*a*x)/Sqrt[1 - a^2*x^2] + (1 - 2*I)*(1 + E^((2*I)*Ar
cSin[a*x]))^2*Hypergeometric2F1[1 - I/2, 2, 2 - I/2, -E^((2*I)*ArcSin[a*x])
]))/(6*(a - a^3*x^2))
```

Maple [F]
time = 0.07, size = 0, normalized size = 0.00

$$\int \frac{\mathrm{e}^{\arcsin(ax)}}{(-a^2x^2+1)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(arcsin(a*x))/(-a^2*x^2+1)^(5/2),x)
[Out] int(exp(arcsin(a*x))/(-a^2*x^2+1)^(5/2),x)
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/(-a^2*x^2+1)^(5/2),x, algorithm="maxima")
[Out] integrate(e^(arcsin(a*x))/(-a^2*x^2 + 1)^(5/2), x)
```

Fricas [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/(-a^2*x^2+1)^(5/2),x, algorithm="fricas")
[Out] integral(-sqrt(-a^2*x^2 + 1)*e^(arcsin(a*x))/(a^6*x^6 - 3*a^4*x^4 + 3*a^2*x
^2 - 1), x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{e^{\operatorname{asin}(ax)}}{(-(ax-1)(ax+1))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(asin(a*x))/(-a**2*x**2+1)**(5/2),x)
[Out] Integral(exp(asin(a*x))/(-(a*x - 1)*(a*x + 1))**(5/2), x)
```

Giac [**F**]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(arcsin(a*x))/(-a^2*x^2+1)^(5/2),x, algorithm="giac")
[Out] integrate(e^(arcsin(a*x))/(-a^2*x^2 + 1)^(5/2), x)
```

Mupad [**F**]
time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\mathrm{e}^{\mathrm{asin}(a\,x)}}{{\left(1-a^2\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(asin(a*x))/(1 - a^2*x^2)^(5/2),x)
[Out] int(exp(asin(a*x))/(1 - a^2*x^2)^(5/2), x)
```

3.469 $\int \text{ArcSin}\left(\frac{c}{a+bx}\right) dx$

Optimal. Leaf size=47

$$\frac{(a+bx)\csc^{-1}\left(\frac{a}{c}+\frac{bx}{c}\right)}{b}+\frac{c\tanh^{-1}\left(\sqrt{1-\frac{c^2}{(a+bx)^2}}\right)}{b}$$

```
[Out] (b*x+a)*arccsc(a/c+b*x/c)/b+c*arctanh((1-c^2/(b*x+a)^2)^(1/2))/b
```

Rubi [A]
time = 0.02, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.600$, Rules used = {4916, 5359, 379, 272, 65, 212}

$$\frac{c\tanh^{-1}\left(\sqrt{1-\frac{c^2}{(a+bx)^2}}\right)}{b}+\frac{(a+bx)\csc^{-1}\left(\frac{a}{c}+\frac{bx}{c}\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[c/(a + b*x)],x]
```

```
[Out] ((a + b*x)*ArcCsc[a/c + (b*x)/c])/b + (c*ArcTanh[Sqrt[1 - c^2/(a + b*x)^2]]
)/b
```

Rule 65

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - a*(d/b) +
d*(x^p/b))^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 212

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1/(Rt[a, 2]*Rt[-b, 2]))*
ArcTanh[Rt[-b, 2]*(x/Rt[a, 2])], x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 272

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 379

```
Int[(u_)^(m_.)*((a_) + (b_.)*(v_)^(n_))^(p_.), x_Symbol] :> Dist[u^m/(Coeff
icient[v, x, 1]*v^m), Subst[Int[x^m*(a + b*x^n)^p, x], x, v], x] /; FreeQ[{
a, b, m, n, p}, x] && LinearPairQ[u, v, x]
```

Rule 4916

```
Int[ArcSin[(c_.)/((a_.) + (b_.)*(x_)^(n_.))]^(m_.)*(u_.), x_Symbol] :> Int[
u*ArcCsc[a/c + b*(x^n/c)]^m, x] /; FreeQ[{a, b, c, n, m}, x]
```

Rule 5359

```
Int[ArcCsc[(c_) + (d_.)*(x_)], x_Symbol] :> Simp[(c + d*x)*(ArcCsc[c + d*x]
/d), x] + Int[1/((c + d*x)*Sqrt[1 - 1/(c + d*x)^2]), x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$
\begin{aligned}
\int \sin^{-1}\left(\frac{c}{a+bx}\right)dx &= \int \csc^{-1}\left(\frac{a}{c}+\frac{bx}{c}\right)dx\\
&= \frac{(a+bx)\csc^{-1}\left(\frac{a}{c}+\frac{bx}{c}\right)}{b}+\int \frac{1}{\left(\frac{a}{c}+\frac{bx}{c}\right)\sqrt{1-\frac{1}{\left(\frac{a}{c}+\frac{bx}{c}\right)^2}}}dx\\
&= \frac{(a+bx)\csc^{-1}\left(\frac{a}{c}+\frac{bx}{c}\right)}{b}+\frac{c\text{Subst}\left(\int \frac{1}{\sqrt{1-\frac{1}{x^2}}\,x}dx,x,\frac{a}{c}+\frac{bx}{c}\right)}{b}\\
&= \frac{(a+bx)\csc^{-1}\left(\frac{a}{c}+\frac{bx}{c}\right)}{b}-\frac{c\text{Subst}\left(\int \frac{1}{\sqrt{1-x}\,x}dx,x,\frac{1}{\left(\frac{a}{c}+\frac{bx}{c}\right)^2}\right)}{2b}\\
&= \frac{(a+bx)\csc^{-1}\left(\frac{a}{c}+\frac{bx}{c}\right)}{b}+\frac{c\text{Subst}\left(\int \frac{1}{1-x^2}dx,x,\sqrt{1-\frac{c^2}{(a+bx)^2}}\right)}{b}\\
&= \frac{(a+bx)\csc^{-1}\left(\frac{a}{c}+\frac{bx}{c}\right)}{b}+\frac{c\tanh^{-1}\left(\sqrt{1-\frac{c^2}{(a+bx)^2}}\right)}{b}
\end{aligned}
$$

Mathematica [B] Leaf count is larger than twice the leaf count of optimal. 345 vs. 2(47) = 94.

time = 0.64, size = 345, normalized size = 7.34

$$x\text{ArcSin}\left(\frac{c}{a+bx}\right)+\frac{(a+bx)\sqrt{\frac{a^2-c^2+2abx+b^2x^2}{(a+bx)^2}}\left(2a\left(b+\sqrt{b^2}\right)\text{ArcTan}\left(\frac{a+\sqrt{b^2}\,x-\sqrt{a^2-c^2+2abx+b^2x^2}}{c}\right)+2a\left(-b+\sqrt{b^2}\right)\text{ArcTan}\left(\frac{a-\sqrt{b^2}\,x+\sqrt{a^2-c^2+2abx+b^2x^2}}{c}\right)-c\left(\sqrt{b^2}\log\left(-a-\sqrt{b^2}\,x+\sqrt{a^2-c^2+2abx+b^2x^2}\right)+\left(-b+\sqrt{b^2}\right)\log\left(a-\sqrt{b^2}\,x+\sqrt{a^2-c^2+2abx+b^2x^2}\right)+b\log\left(ab^2+\left(b^2\right)^{3/2}x-b^2\sqrt{a^2-c^2+2abx+b^2x^2}\right)\right)\right)}{2b^2\sqrt{a^2-c^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[c/(a + b*x)],x]
```

```
[Out] x*ArcSin[c/(a + b*x)] + ((a + b*x)*Sqrt[(a^2 - c^2 + 2*a*b*x + b^2*x^2)/(a
+ b*x)^2]*(2*a*(b + Sqrt[b^2])*ArcTan[(a + Sqrt[b^2]*x - Sqrt[a^2 - c^2 + 2
*a*b*x + b^2*x^2])/c] + 2*a*(-b + Sqrt[b^2])*ArcTan[(a - Sqrt[b^2]*x + Sqrt
[a^2 - c^2 + 2*a*b*x + b^2*x^2])/c] - c*(Sqrt[b^2]*Log[-a - Sqrt[b^2]*x + S
qrt[a^2 - c^2 + 2*a*b*x + b^2*x^2]] + (-b + Sqrt[b^2])*Log[a - Sqrt[b^2]*x
+ Sqrt[a^2 - c^2 + 2*a*b*x + b^2*x^2]] + b*Log[a*b^2 + (b^2)^(3/2)*x - b^2*
Sqrt[a^2 - c^2 + 2*a*b*x + b^2*x^2]])))/(2*b^2*Sqrt[a^2 - c^2 + 2*a*b*x + b
^2*x^2])
```

Maple [A]
time = 0.23, size = 47, normalized size = 1.00

method	result	size
derivativedivides	$-\frac{c\left(-\frac{(bx+a)\arcsin\left(\frac{c}{bx+a}\right)}{c}-\operatorname{arctanh}\left(\frac{1}{\sqrt{1-\frac{c^2}{(bx+a)^2}}}\right)\right)}{b}$	47
default	$-\frac{c\left(-\frac{(bx+a)\arcsin\left(\frac{c}{bx+a}\right)}{c}-\operatorname{arctanh}\left(\frac{1}{\sqrt{1-\frac{c^2}{(bx+a)^2}}}\right)\right)}{b}$	47

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(c/(b*x+a)),x,method=_RETURNVERBOSE)
```

```
[Out] -1/b*c*(-1/c*(b*x+a)*arcsin(c/(b*x+a))-arctanh(1/(1-c^2/(b*x+a)^2)^(1/2)))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(c/(b*x+a)),x, algorithm="maxima")
```

```
[Out] x*arctan2(c, sqrt(b*x + a + c)*sqrt(b*x + a - c)) + integrate((b^2*c*x^2 +
a*b*c*x)*e^(1/2*log(b*x + a + c) + 1/2*log(b*x + a - c))/(b^2*c^2*x^2 + 2*a
*b*c^2*x + a^2*c^2 - c^4 + (b^2*x^2 + 2*a*b*x + a^2 - c^2)*e^(log(b*x + a +
 c) + log(b*x + a - c))), x)
```

Fricas [B] Leaf count of result is larger than twice the leaf count of optimal. 141 vs. $2(45) = 90$.
time = 1.03, size = 141, normalized size = 3.00

$$\frac{bx \arcsin\left(\frac{c}{bx+a}\right) - 2\,a \arctan\left(-\frac{bx-(bx+a)\sqrt{\frac{b^2x^2+2\,abx+a^2-c^2}{b^2x^2+2\,abx+a^2}}+a}{c}\right) - c\log\left(-bx+(bx+a)\sqrt{\frac{b^2x^2+2\,abx+a^2-c^2}{b^2x^2+2\,abx+a^2}}-a\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(c/(b*x+a)),x, algorithm="fricas")
```

```
[Out] (b*x*arcsin(c/(b*x + a)) - 2*a*arctan(-(b*x - (b*x + a)*sqrt((b^2*x^2 + 2*a
*b*x + a^2 - c^2)/(b^2*x^2 + 2*a*b*x + a^2)) + a)/c) - c*log(-b*x + (b*x +
a)*sqrt((b^2*x^2 + 2*a*b*x + a^2 - c^2)/(b^2*x^2 + 2*a*b*x + a^2)) - a))/b
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \operatorname{asin}\left(\frac{c}{a+bx}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(c/(b*x+a)),x)
```

```
[Out] Integral(asin(c/(a + b*x)), x)
```

Giac [B] Leaf count of result is larger than twice the leaf count of optimal. 95 vs. $2(45) = 90$.
time = 0.43, size = 95, normalized size = 2.02

$$\frac{b\left(\frac{c^2\left(\log\left(\sqrt{-\frac{c^2}{(bx+a)^2}+1}+1\right)-\log\left(-\sqrt{-\frac{c^2}{(bx+a)^2}+1}+1\right)\right)}{b^2}+\frac{2\,(bx+a)c\arcsin\left(-\frac{c}{(bx+a)\left(\frac{a}{bx+a}-1\right)-a}\right)}{b^2}\right)}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(c/(b*x+a)),x, algorithm="giac")
```

```
[Out] 1/2*b*(c^2*(log(sqrt(-c^2/(b*x + a)^2 + 1) + 1) - log(-sqrt(-c^2/(b*x + a)^
2 + 1) + 1))/b^2 + 2*(b*x + a)*c*arcsin(-c/((b*x + a)*(a/(b*x + a) - 1) - a
))/b^2)/c
```

Mupad [B]
time = 0.67, size = 42, normalized size = 0.89

$$\frac{c\,\mathrm{atanh}\left(\frac{1}{\sqrt{1-\frac{c^2}{(a+b\,x)^2}}}\right)}{b}+\frac{\mathrm{asin}\left(\frac{c}{a+b\,x}\right)\,(a+b\,x)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(c/(a + b*x)),x)
```

```
[Out] (c*atanh(1/(1 - c^2/(a + b*x)^2)^(1/2)))/b + (asin(c/(a + b*x))*(a + b*x))/
b
```

3.470 $\int \frac{x}{\text{ArcSin}(\sin(x))} dx$

Optimal. Leaf size=27

$$\text{ArcSin}(\sin(x)) + \log(\text{ArcSin}(\sin(x)))\left(-\text{ArcSin}(\sin(x)) + x\sqrt{\cos^2(x)}\sec(x)\right)$$

```
[Out] arcsin(sin(x))+ln(arcsin(sin(x)))*(-arcsin(sin(x))+x*sec(x)*(cos(x)^2)^(1/2
))
```

Rubi [F]
time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{x}{\text{ArcSin}(\sin(x))} dx$$

Verification is not applicable to the result.

```
[In] Int[x/ArcSin[Sin[x]],x]
```

```
[Out] Defer[Int][x/ArcSin[Sin[x]], x]
```

Rubi steps

$$\int \frac{x}{\sin^{-1}(\sin(x))} dx = \int \frac{x}{\sin^{-1}(\sin(x))} dx$$

Mathematica [A]
time = 0.36, size = 28, normalized size = 1.04

$$-\text{ArcSin}(\sin(x))(-1 + \log(\text{ArcSin}(\sin(x)))) + x\sqrt{\cos^2(x)}\log(\text{ArcSin}(\sin(x)))\sec(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[x/ArcSin[Sin[x]],x]
```

```
[Out] -(ArcSin[Sin[x]]*(-1 + Log[ArcSin[Sin[x]]])) + x*Sqrt[Cos[x]^2]*Log[ArcSin[
Sin[x]]]*Sec[x]
```

Maple [F]
time = 0.10, size = 0, normalized size = 0.00

$$\int \frac{x}{\arcsin(\sin(x))} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/arcsin(sin(x)),x)
```

```
[Out] int(x/arcsin(sin(x)),x)
```

Maxima [A]
time = 0.48, size = 1, normalized size = 0.04

$$x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(sin(x)),x, algorithm="maxima")
```

```
[Out] x
```

Fricas [A]
time = 3.30, size = 3, normalized size = 0.11

$$-x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(sin(x)),x, algorithm="fricas")
```

```
[Out] -x
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\operatorname{asin}\left(\sin\left(x\right)\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/asin(sin(x)),x)
```

```
[Out] Integral(x/asin(sin(x)), x)
```

Giac [F]
time = 0.00, size = 0, normalized size = 0.00

could not integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(sin(x)),x, algorithm="giac")
```

```
[Out] sage0*x
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{x}{\operatorname{asin}\left(\sin\left(x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/asin(sin(x)),x)
```

```
[Out] int(x/asin(sin(x)), x)
```

3.471 $\int \frac{\text{ArcSin}\left(\sqrt{1+bx^2}\right)^n}{\sqrt{1+bx^2}} \, dx$

Optimal. Leaf size=38

$$\frac{\sqrt{-bx^2}\,\text{ArcSin}\left(\sqrt{1+bx^2}\right)^{1+n}}{b(1+n)x}$$

```
[Out] arcsin((b*x^2+1)^(1/2))^(1+n)*(-b*x^2)^(1/2)/b/(1+n)/x
```

Rubi [A]
time = 0.05, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$, Rules used = {4918, 4737}

$$\frac{\sqrt{-bx^2}\,\text{ArcSin}\left(\sqrt{bx^2+1}\right)^{n+1}}{b(n+1)x}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[Sqrt[1 + b*x^2]]^n/Sqrt[1 + b*x^2],x]
```

```
[Out] (Sqrt[-(b*x^2)]*ArcSin[Sqrt[1 + b*x^2]]^(1 + n))/(b*(1 + n)*x)
```

Rule 4737

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(1/(b*c*(n + 1)))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*(a
 + b*ArcSin[c*x])^(n + 1), x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d
+ e, 0] && NeQ[n, -1]
```

Rule 4918

```
Int[ArcSin[Sqrt[1 + (b_.)*(x_)^2]]^(n_.)/Sqrt[1 + (b_.)*(x_)^2], x_Symbol]
:> Dist[Sqrt[(-b)*x^2]/(b*x), Subst[Int[ArcSin[x]^n/Sqrt[1 - x^2], x], x, S
qrt[1 + b*x^2]], x] /; FreeQ[{b, n}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sin^{-1}\left(\sqrt{1+bx^2}\right)^n}{\sqrt{1+bx^2}} \, dx &= \frac{\sqrt{-bx^2}\,\text{Subst}\left(\int \frac{\sin^{-1}(x)^n}{\sqrt{1-x^2}} \, dx, x, \sqrt{1+bx^2}\right)}{bx} \\
&= \frac{\sqrt{-bx^2}\,\sin^{-1}\left(\sqrt{1+bx^2}\right)^{1+n}}{b(1+n)x}
\end{aligned}$$

Mathematica [A]
time = 0.03, size = 38, normalized size = 1.00

$$\frac{\sqrt{-bx^2}\,\text{ArcSin}\left(\sqrt{1+bx^2}\right)^{1+n}}{b(1+n)x}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[Sqrt[1 + b*x^2]]^n/Sqrt[1 + b*x^2],x]
```

```
[Out] (Sqrt[-(b*x^2)]*ArcSin[Sqrt[1 + b*x^2]]^(1 + n))/(b*(1 + n)*x)
```

Maple [F]
time = 0.23, size = 0, normalized size = 0.00

$$\int \frac{\arcsin\left(\sqrt{b\,x^2+1}\right)^n}{\sqrt{b\,x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin((b*x^2+1)^(1/2))^n/(b*x^2+1)^(1/2),x)
```

```
[Out] int(arcsin((b*x^2+1)^(1/2))^n/(b*x^2+1)^(1/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin((b*x^2+1)^(1/2))^n/(b*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 sign: argument cannot be imaginary; found sqrt(-_SAGE_VAR_b)
```

Fricas [A]
time = 3.02, size = 41, normalized size = 1.08

$$\frac{\sqrt{-bx^2}\arcsin\left(\sqrt{bx^2+1}\right)^n\arcsin\left(\sqrt{bx^2+1}\right)}{(bn+b)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin((b*x^2+1)^(1/2))^n/(b*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] sqrt(-b*x^2)*arcsin(sqrt(b*x^2 + 1))^n*arcsin(sqrt(b*x^2 + 1))/((b*n + b)*x
)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\begin{cases} \frac{2x}{\pi} & \text{for } b = 0 \wedge n = -1 \\ x\left(\frac{\pi}{2}\right)^n & \text{for } b = 0 \\ \int \frac{1}{\sqrt{bx^2+1}\operatorname{asin}\left(\sqrt{bx^2+1}\right)}\, dx & \text{for } n = -1 \\ \frac{\sqrt{-bx^2}\operatorname{asin}\left(\sqrt{bx^2+1}\right)\operatorname{asin}^n\left(\sqrt{bx^2+1}\right)}{bnx+bx} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin((b*x**2+1)**(1/2))**n/(b*x**2+1)**(1/2),x)
```

```
[Out] Piecewise((2*x/pi, Eq(b, 0) & Eq(n, -1)), (x*(pi/2)**n, Eq(b, 0)), (Integra
l(1/(sqrt(b*x**2 + 1)*asin(sqrt(b*x**2 + 1))), x), Eq(n, -1)), (sqrt(-b*x**
2)*asin(sqrt(b*x**2 + 1))*asin(sqrt(b*x**2 + 1))**n/(b*n*x + b*x), True))
```

Giac [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin((b*x^2+1)^(1/2))^n/(b*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] Timed out
```

Mupad [F]
time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\operatorname{asin}\left(\sqrt{b\,x^2+1}\right)^n}{\sqrt{b\,x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin((b*x^2 + 1)^(1/2))^n/(b*x^2 + 1)^(1/2),x)
```

```
[Out] int(asin((b*x^2 + 1)^(1/2))^n/(b*x^2 + 1)^(1/2), x)
```

3.472 $\int \frac{1}{\sqrt{1+bx^2}\,\mathbf{ArcSin}\left(\sqrt{1+bx^2}\right)}\,dx$

Optimal. Leaf size=30

$$\frac{\sqrt{-bx^2}\,\log\left(\text{ArcSin}\left(\sqrt{1+bx^2}\right)\right)}{bx}$$

```
[Out] ln(arcsin((b*x^2+1)^(1/2)))*(-b*x^2)^(1/2)/b/x
```

Rubi [A]
time = 0.04, antiderivative size = 30, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$, Rules used = {4918, 4735}

$$\frac{\sqrt{-bx^2}\,\log\left(\text{ArcSin}\left(\sqrt{bx^2+1}\right)\right)}{bx}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[1 + b*x^2]*ArcSin[Sqrt[1 + b*x^2]]),x]
```

```
[Out] (Sqrt[-(b*x^2)]*Log[ArcSin[Sqrt[1 + b*x^2]]])/(b*x)
```

Rule 4735

```
Int[1/(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*Sqrt[(d_) + (e_.)*(x_)^2]), x_Sym
bol] :> Simp[(1/(b*c))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*Log[a + b*Ar
cSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
```

Rule 4918

```
Int[ArcSin[Sqrt[1 + (b_.)*(x_)^2]]^(n_.)/Sqrt[1 + (b_.)*(x_)^2], x_Symbol]
:> Dist[Sqrt[(-b)*x^2]/(b*x), Subst[Int[ArcSin[x]^n/Sqrt[1 - x^2], x], x, S
qrt[1 + b*x^2]], x] /; FreeQ[{b, n}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{1}{\sqrt{1+bx^2}\,\sin^{-1}\left(\sqrt{1+bx^2}\right)}\,dx &= \frac{\sqrt{-bx^2}\,\text{Subst}\left(\int \frac{1}{\sqrt{1-x^2}\,\sin^{-1}(x)}\,dx, x, \sqrt{1+bx^2}\right)}{bx}\\
&= \frac{\sqrt{-bx^2}\,\log\left(\sin^{-1}\left(\sqrt{1+bx^2}\right)\right)}{bx}
\end{aligned}$$

Mathematica [A]
time = 0.02, size = 26, normalized size = 0.87

$$-\frac{x\log\left(\text{ArcSin}\left(\sqrt{1+bx^2}\right)\right)}{\sqrt{-bx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[1 + b*x^2]*ArcSin[Sqrt[1 + b*x^2]]),x]
[Out] -((x*Log[ArcSin[Sqrt[1 + b*x^2]]])/Sqrt[-(b*x^2)])
```

Maple [F]
time = 0.24, size = 0, normalized size = 0.00

$$\int \frac{1}{\arcsin\left(\sqrt{b\,x^2+1}\right)\sqrt{b\,x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/arcsin((b*x^2+1)^(1/2))/(b*x^2+1)^(1/2),x)
[Out] int(1/arcsin((b*x^2+1)^(1/2))/(b*x^2+1)^(1/2),x)
```

Maxima [F(-2)]
time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin((b*x^2+1)^(1/2))/(b*x^2+1)^(1/2),x, algorithm="maxima")
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 sign: argument cannot be imaginary; found sqrt(-_SAGE_VAR_b)
```

Fricas [A]
time = 2.05, size = 28, normalized size = 0.93

$$\frac{\sqrt{-bx^2}\,\log\left(-\arcsin\left(\sqrt{bx^2+1}\right)\right)}{bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin((b*x^2+1)^(1/2))/(b*x^2+1)^(1/2),x, algorithm="fricas")
[Out] sqrt(-b*x^2)*log(-arcsin(sqrt(b*x^2 + 1)))/(b*x)
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{bx^2+1}\ \mathrm{asin}\left(\sqrt{bx^2+1}\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/asin((b*x**2+1)**(1/2))/(b*x**2+1)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(b*x**2 + 1)*asin(sqrt(b*x**2 + 1))), x)
```

Giac [F(-1)] Timed out
time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin((b*x^2+1)^(1/2))/(b*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] Timed out
```

Mupad [B]
time = 0.34, size = 26, normalized size = 0.87

$$-\frac{\ln\left(\mathrm{asin}\left(\sqrt{b\,x^2+1}\right)\right)\ \sqrt{x^2}}{\sqrt{-b}\ x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(asin((b*x^2 + 1)^(1/2))*(b*x^2 + 1)^(1/2)),x)
```

```
[Out] -(log(asin((b*x^2 + 1)^(1/2)))*(x^2)^(1/2))/((-b)^(1/2)*x)
```

3.473 $\int \left(\frac{x}{1-x^2}+\frac{1}{\sqrt{1-x^2}\,\mathbf{ArcSin}(x)}\right)\,dx$

Optimal. Leaf size=16

$$-\frac{1}{2}\log\left(1-x^2\right)+\log(\text{ArcSin}(x))$$

```
[Out] -1/2*ln(-x^2+1)+ln(arcsin(x))
```

Rubi [A]
time = 0.02, antiderivative size = 16, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.071, Rules used = {266, 4735}

$$\log(\text{ArcSin}(x))-\frac{1}{2}\log\left(1-x^2\right)$$

Antiderivative was successfully verified.

```
[In] Int[x/(1 - x^2) + 1/(Sqrt[1 - x^2]*ArcSin[x]),x]
```

```
[Out] -1/2*Log[1 - x^2] + Log[ArcSin[x]]
```

Rule 266

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 4735

```
Int[1/(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*Sqrt[(d_) + (e_.)*(x_)^2]), x_Sym
bol] :> Simp[(1/(b*c))*Simp[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2]]*Log[a + b*Ar
cSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
```

Rubi steps

$$\begin{aligned}\int \left(\frac{x}{1-x^2}+\frac{1}{\sqrt{1-x^2}\,\sin^{-1}(x)}\right)\,dx &= \int \frac{x}{1-x^2}\,dx+\int \frac{1}{\sqrt{1-x^2}\,\sin^{-1}(x)}\,dx\\ &= -\frac{1}{2}\log\left(1-x^2\right)+\log\left(\sin^{-1}(x)\right)\end{aligned}$$

Mathematica [A]
time = 0.02, size = 16, normalized size = 1.00

$$-\frac{1}{2}\log\left(1-x^2\right)+\log(\text{ArcSin}(x))$$

Antiderivative was successfully verified.

```
[In] Integrate[x/(1 - x^2) + 1/(Sqrt[1 - x^2]*ArcSin[x]),x]
[Out] -1/2*Log[1 - x^2] + Log[ArcSin[x]]
```

Maple [A]
time = 0.21, size = 17, normalized size = 1.06

method	result	size
default	$-\frac{\ln(x-1)}{2}-\frac{\ln(x+1)}{2}+\ln\left(\arcsin\left(x\right)\right)$	17

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(-x^2+1)+1/arcsin(x)/(-x^2+1)^(1/2),x,method=_RETURNVERBOSE)
[Out] -1/2*ln(x-1)-1/2*ln(x+1)+ln(arcsin(x))
```

Maxima [A]
time = 0.48, size = 12, normalized size = 0.75

$$-\frac{1}{2}\log\left(x^{2}-1\right)+\log\left(\arcsin\left(x\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-x^2+1)+1/arcsin(x)/(-x^2+1)^(1/2),x, algorithm="maxima")
[Out] -1/2*log(x^2 - 1) + log(arcsin(x))
```

Fricas [A]
time = 2.05, size = 14, normalized size = 0.88

$$-\frac{1}{2}\log\left(x^{2}-1\right)+\log\left(-\arcsin\left(x\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-x^2+1)+1/arcsin(x)/(-x^2+1)^(1/2),x, algorithm="fricas")
[Out] -1/2*log(x^2 - 1) + log(-arcsin(x))
```

Sympy [A]
time = 0.08, size = 12, normalized size = 0.75

$$-\frac{\log\left(x^{2}-1\right)}{2}+\log\left(\operatorname{asin}\left(x\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-x**2+1)+1/asin(x)/(-x**2+1)**(1/2),x)
```

```
[Out] -log(x**2 - 1)/2 + log(asin(x))
```

Giac [A]
time = 0.54, size = 14, normalized size = 0.88

$$-\frac{1}{2}\log\left(\left|x^2-1\right|\right)+\log\left(\left|\arcsin\left(x\right)\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-x^2+1)+1/arcsin(x)/(-x^2+1)^(1/2),x, algorithm="giac")
[Out] -1/2*log(abs(x^2 - 1)) + log(abs(arcsin(x)))
```

Mupad [B]
time = 0.31, size = 12, normalized size = 0.75

$$\ln\left(\mathrm{asin}(x)\right)-\frac{\ln\left(x^2-1\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(asin(x)*(1 - x^2)^(1/2)) - x/(x^2 - 1),x)
[Out] log(asin(x)) - log(x^2 - 1)/2
```

3.474 $\int \frac{\sqrt{1-x^2}+x\mathbf{ArcSin}(x)}{\mathbf{ArcSin}(x)-x^2\mathbf{ArcSin}(x)}\,dx$

Optimal. Leaf size=16

$$-\frac{1}{2}\log\left(1-x^2\right)+\log(\text{ArcSin}(x))$$

```
[Out] -1/2*ln(-x^2+1)+ln(arcsin(x))
```

Rubi [F]

time = 0.10, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{\sqrt{1-x^2}+x\text{ArcSin}(x)}{\text{ArcSin}(x)-x^2\text{ArcSin}(x)}\,dx$$

Verification is not applicable to the result.

```
[In] Int[(Sqrt[1 - x^2] + x*ArcSin[x])/(ArcSin[x] - x^2*ArcSin[x]),x]
[Out] Defer[Int][(Sqrt[1 - x^2] + x*ArcSin[x])/((1 - x^2)*ArcSin[x]), x]
```

Rubi steps

$$\int \frac{\sqrt{1-x^2}+x\sin^{-1}(x)}{\sin^{-1}(x)-x^2\sin^{-1}(x)}\,dx=\int \frac{\sqrt{1-x^2}+x\sin^{-1}(x)}{(1-x^2)\sin^{-1}(x)}\,dx$$

Mathematica [A]

time = 0.07, size = 16, normalized size = 1.00

$$-\frac{1}{2}\log\left(1-x^2\right)+\log(\text{ArcSin}(x))$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[1 - x^2] + x*ArcSin[x])/(ArcSin[x] - x^2*ArcSin[x]),x]
[Out] -1/2*Log[1 - x^2] + Log[ArcSin[x]]
```

Maple [A]

time = 0.14, size = 17, normalized size = 1.06

method	result	size
default	$-\frac{\ln(x-1)}{2}-\frac{\ln(x+1)}{2}+\ln\left(\arcsin\left(x\right)\right)$	17

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*arcsin(x)+(-x^2+1)^(1/2))/(arcsin(x)-x^2*arcsin(x)),x,method=_RETURN
VERBOSE)
```

```
[Out] -1/2*ln(x-1)-1/2*ln(x+1)+ln(arcsin(x))
```

Maxima [F]
time = 0.00, size = 0, normalized size = 0.00

Failed to integrate

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((x*arcsin(x)+(-x^2+1)^(1/2))/(arcsin(x)-x^2*arcsin(x)),x, algorit
hm="maxima")
```

```
[Out] -integrate(sqrt(x + 1)*sqrt(-x + 1)/((x^2 - 1)*arctan2(x, sqrt(x + 1)*sqrt(
-x + 1))), x) - 1/2*log(x + 1) - 1/2*log(x - 1)
```

Fricas [A]
time = 0.96, size = 14, normalized size = 0.88

$$-\frac{1}{2}\log\left(x^2-1\right)+\log\left(-\arcsin\left(x\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((x*arcsin(x)+(-x^2+1)^(1/2))/(arcsin(x)-x^2*arcsin(x)),x, algorit
hm="fricas")
```

```
[Out] -1/2*log(x^2 - 1) + log(-arcsin(x))
```

Sympy [F]
time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{\sqrt{1-x^2}}{x^2\operatorname{asin}\left(x\right)-\operatorname{asin}\left(x\right)}\,dx-\int\frac{x\operatorname{asin}\left(x\right)}{x^2\operatorname{asin}\left(x\right)-\operatorname{asin}\left(x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((x*asin(x)+(-x**2+1)**(1/2))/(asin(x)-x**2*asin(x)),x)
```

```
[Out] -Integral(sqrt(1 - x**2)/(x**2*asin(x) - asin(x)), x) - Integral(x*asin(x)/
(x**2*asin(x) - asin(x)), x)
```

Giac [A]
time = 0.48, size = 20, normalized size = 1.25

$$-\log\left(2\right)-\frac{1}{2}\log\left(\left|-x^2+1\right|\right)+\log\left(\left|\arcsin\left(x\right)\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((x*arcsin(x)+(-x^2+1)^(1/2))/(arcsin(x)-x^2*arcsin(x)),x, algorit
hm="giac")
```

```
[Out] -log(2) - 1/2*log(abs(-x^2 + 1)) + log(abs(arcsin(x)))
```

Mupad [B]
time = 0.29, size = 12, normalized size = 0.75

$$\ln(\mathrm{asin}(x)) - \frac{\ln(x^2 - 1)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*asin(x) + (1 - x^2)^(1/2))/(asin(x) - x^2*asin(x)),x)
```

```
[Out] log(asin(x)) - log(x^2 - 1)/2
```

Chapter 4

Appendix

Local contents

4.1 Download section

The following zip files contain the raw integrals used in this test.

Mathematica format Mathematica_syntax.zip

Maple and Mupad format Maple_syntax.zip

Sympy format SYMPY_syntax.zip

Sage math format SAGE_syntax.zip

4.2 Listing of Grading functions

The following are the current version of the grading functions used for grading the quality of the antiderivative with reference to the optimal antiderivative included in the test suite.

There is a version for Maple and for Mathematica/Rubi. There is a version for grading Sympy and version for use with Sagemath.

The following are links to the current source code.

The following are the listings of source code of the grading functions.

4.2.1 Mathematica and Rubi grading function

```
(* Original version thanks to Albert Rich emailed on 03/21/2017 *)
(* ::Package:: *)

(* Nasser: April 7,2022. add second output which gives reason for the grade *)
(*                       Small rewrite of logic in main function to make it*)
(*                       match Maple's logic. No change in functionality otherwise*)

(* ::Subsection:: *)
(*GradeAntiderivative[result,optimal]*)


(* ::Text:: *)
(*If result and optimal are mathematical expressions, *)
(*          GradeAntiderivative[result,optimal] returns*)
(*  "F" if the result fails to integrate an expression that*)
(*      is integrable*)
(*  "C" if result involves higher level functions than necessary*)
(*  "B" if result is more than twice the size of the optimal*)
(*      antiderivative*)
(*  "A" if result can be considered optimal*)
```

```
GradeAntiderivative[result_,optimal_] := Module[{expnResult,expnOptimal,leafCountResult,leafC
    expnResult  = ExpnType[result];
    expnOptimal = ExpnType[optimal];
    leafCountResult = LeafCount[result];
    leafCountOptimal = LeafCount[optimal];

    (*Print["expnResult=",expnResult," expnOptimal=",expnOptimal];*)
    If[expnResult<=expnOptimal,
        If[Not[FreeQ[result,Complex]], (*result contains complex*)
            If[Not[FreeQ[optimal,Complex]], (*optimal contains complex*)
                If[leafCountResult<=2*leafCountOptimal,
                    finalresult={"A","none"}
                    ,(*ELSE*)
                    finalresult={"B","Both result and optimal contain complex but leaf count
                  ]
            ,(*ELSE*)
                finalresult={"C","Result contains complex when optimal does not."}
            ]
        ,(*ELSE*)(*result does not contains complex*)
            If[leafCountResult<=2*leafCountOptimal,
               finalresult={"A","none"}
            ,(*ELSE*)
               finalresult={"B","Leaf count is larger than twice the leaf count of optimal. $
              ]
        ]
    ,(*ELSE*) (*expnResult>expnOptimal*)
        If[FreeQ[result,Integrate] && FreeQ[result,Int],
            finalresult={"C","Result contains higher order function than in optimal. Order "<
            ,
            finalresult={"F","Contains unresolved integral."}
        ]
    ];

    finalresult
]

(* ::Text:: *)
(*The following summarizes the type number assigned an *)
(*expression based on the functions it involves*)
(*1 = rational function*)
(*2 = algebraic function*)
(*3 = elementary function*)
(*4 = special function*)
(*5 = hyperpergeometric function*)
(*6 = appell function*)
(*7 = rootsum function*)
(*8 = integrate function*)
```

```
(*9 = unknown function*)


ExpnType[expn_] :=
  If[AtomQ[expn],
    1,
  If[ListQ[expn],
    Max[Map[ExpnType,expn]],
  If[Head[expn]===Power,
    If[IntegerQ[expn[[2]]],
      ExpnType[expn[[1]]],
    If[Head[expn[[2]]]===Rational,
      If[IntegerQ[expn[[1]]] || Head[expn[[1]]]===Rational,
        1,
      Max[ExpnType[expn[[1]]],2]],
    Max[ExpnType[expn[[1]]],ExpnType[expn[[2]]],3]]],
  If[Head[expn]===Plus || Head[expn]===Times,
    Max[ExpnType[First[expn]],ExpnType[Rest[expn]]],
  If[ElementaryFunctionQ[Head[expn]],
    Max[3,ExpnType[expn[[1]]]],
  If[SpecialFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],4]],
  If[HypergeometricFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],5]],
  If[AppellFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],6]],
  If[Head[expn]===RootSum,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],7]],
  If[Head[expn]===Integrate || Head[expn]===Int,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],8]],
  9]]]]]]]]]]]


ElementaryFunctionQ[func_] :=
  MemberQ[{
  Exp,Log,
  Sin,Cos,Tan,Cot,Sec,Csc,
  ArcSin,ArcCos,ArcTan,ArcCot,ArcSec,ArcCsc,
  Sinh,Cosh,Tanh,Coth,Sech,Csch,
  ArcSinh,ArcCosh,ArcTanh,ArcCoth,ArcSech,ArcCsch
},func]


SpecialFunctionQ[func_] :=
  MemberQ[{
  Erf, Erfc, Erfi,
  FresnelS, FresnelC,
```

```
  ExpIntegralE, ExpIntegralEi, LogIntegral,
  SinIntegral, CosIntegral, SinhIntegral, CoshIntegral,
  Gamma, LogGamma, PolyGamma,
  Zeta, PolyLog, ProductLog,
  EllipticF, EllipticE, EllipticPi
},func]


HypergeometricFunctionQ[func_] :=
  MemberQ[{Hypergeometric1F1,Hypergeometric2F1,HypergeometricPFQ},func]


AppellFunctionQ[func_] :=
  MemberQ[{AppellF1},func]
```

4.2.2 Maple grading function

```
# File: GradeAntiderivative.mpl
# Original version thanks to Albert Rich emailed on 03/21/2017

#Nasser 03/22/2017  Use Maple leaf count instead since buildin
#Nasser 03/23/2017  missing 'ln' for ElementaryFunctionQ added
#Nasser 03/24/2017  corrected the check for complex result
#Nasser 10/27/2017  check for leafsize and do not call ExpnType()
#                   if leaf size is "too large". Set at 500,000
#Nasser 12/22/2019  Added debug flag, added 'dilog' to special functions
#                   see problem 156, file Apostol_Problems
#Nasser 4/07/2022   add second output which gives reason for the grade

GradeAntiderivative := proc(result,optimal)
local leaf_count_result,
        leaf_count_optimal,
        ExpnType_result,
        ExpnType_optimal,
        debug:=false;

        leaf_count_result:=leafcount(result);
        #do NOT call ExpnType() if leaf size is too large. Recursion problem
        if leaf_count_result > 500000 then
            return "B","result has leaf size over 500,000. Avoiding possible recursion issues
        fi;

        leaf_count_optimal := leafcount(optimal);
        ExpnType_result  := ExpnType(result);
        ExpnType_optimal := ExpnType(optimal);
```

```
        if debug then
            print("ExpnType_result",ExpnType_result," ExpnType_optimal=",ExpnType_optimal);
        fi;

# If result and optimal are mathematical expressions,
#  GradeAntiderivative[result,optimal] returns
#   "F" if the result fails to integrate an expression that
#       is integrable
#   "C" if result involves higher level functions than necessary
#   "B" if result is more than twice the size of the optimal
#       antiderivative
#   "A" if result can be considered optimal

    #This check below actually is not needed, since I only
    #call this grading only for passed integrals. i.e. I check
    #for "F" before calling this. But no harm of keeping it here.
    #just in case.


    if not type(result,freeof('int')) then
        return "F","Result contains unresolved integral";
    fi;


    if ExpnType_result<=ExpnType_optimal then
        if debug then
             print("ExpnType_result<=ExpnType_optimal");
        fi;
        if is_contains_complex(result) then
            if is_contains_complex(optimal) then
                if debug then
                        print("both result and optimal complex");
                fi;
                if leaf_count_result<=2*leaf_count_optimal then
                    return "A","";
                else
                   return "B",cat("Both result and optimal contain complex but leaf count of re
                                convert(leaf_count_result,string)," vs. $2 (",
                                convert(leaf_count_optimal,string)," ) = ",convert(2*leaf_co
                end if
            else #result contains complex but optimal is not
                if debug then
                        print("result contains complex but optimal is not");
                fi;
                return "C","Result contains complex when optimal does not.";
            fi;
        else # result do not contain complex
```

```
             # this assumes optimal do not as well. No check is needed here.
            if debug then
                   print("result do not contain complex, this assumes optimal do not as well"
            fi;
            if leaf_count_result<=2*leaf_count_optimal then
                if debug then
                    print("leaf_count_result<=2*leaf_count_optimal");
                fi;
                return "A","";
            else
                if debug then
                    print("leaf_count_result>2*leaf_count_optimal");
                fi;
                return "B",cat("Leaf count of result is larger than twice the leaf count of o
                               convert(leaf_count_result,string),"$ vs. $2(",
                               convert(leaf_count_optimal,string),")=",convert(2*leaf_cou
            fi;
        fi;
    else #ExpnType(result) > ExpnType(optimal)
        if debug then
            print("ExpnType(result) > ExpnType(optimal)");
        fi;
        return "C",cat("Result contains higher order function than in optimal. Order ",
                       convert(ExpnType_result,string)," vs. order ",
                       convert(ExpnType_optimal,string),".");
    fi;

end proc:

#
# is_contains_complex(result)
# takes expressions and returns true if it contains "I" else false
#
#Nasser 032417
is_contains_complex:= proc(expression)
  return (has(expression,I));
end proc:

# The following summarizes the type number assigned an expression
# based on the functions it involves
# 1 = rational function
# 2 = algebraic function
# 3 = elementary function
# 4 = special function
# 5 = hyperpergeometric function
# 6 = appell function
# 7 = rootsum function
```

```
# 8 = integrate function
# 9 = unknown function

ExpnType := proc(expn)
  if type(expn,'atomic') then
    1
  elif type(expn,'list') then
    apply(max,map(ExpnType,expn))
  elif type(expn,'sqrt') then
    if type(op(1,expn),'rational') then
       1
    else
       max(2,ExpnType(op(1,expn)))
    end if
  elif type(expn,'`^`') then
    if type(op(2,expn),'integer') then
      ExpnType(op(1,expn))
    elif type(op(2,expn),'rational') then
      if type(op(1,expn),'rational') then
         1
      else
         max(2,ExpnType(op(1,expn)))
      end if
    else
         max(3,ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    end if
  elif type(expn,'`+`') or type(expn,'`*`') then
    max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
  elif ElementaryFunctionQ(op(0,expn)) then
    max(3,ExpnType(op(1,expn)))
  elif SpecialFunctionQ(op(0,expn)) then
    max(4,apply(max,map(ExpnType,[op(expn)])))
  elif HypergeometricFunctionQ(op(0,expn)) then
    max(5,apply(max,map(ExpnType,[op(expn)])))
  elif AppellFunctionQ(op(0,expn)) then
    max(6,apply(max,map(ExpnType,[op(expn)])))
  elif op(0,expn)='int' then
    max(8,apply(max,map(ExpnType,[op(expn)]))) else
  9
  end if
end proc:


ElementaryFunctionQ := proc(func)
  member(func,[
        exp,log,ln,
        sin,cos,tan,cot,sec,csc,
```

```
        arcsin,arccos,arctan,arccot,arcsec,arccsc,
        sinh,cosh,tanh,coth,sech,csch,
        arcsinh,arccosh,arctanh,arccoth,arcsech,arccsch])
end proc:

SpecialFunctionQ := proc(func)
  member(func,[
        erf,erfc,erfi,
        FresnelS,FresnelC,
        Ei,Ei,Li,Si,Ci,Shi,Chi,
        GAMMA,lnGAMMA,Psi,Zeta,polylog,dilog,LambertW,
        EllipticF,EllipticE,EllipticPi])
end proc:

HypergeometricFunctionQ := proc(func)
  member(func,[Hypergeometric1F1,hypergeom,HypergeometricPFQ])
end proc:

AppellFunctionQ := proc(func)
  member(func,[AppellF1])
end proc:

# u is a sum or product.  rest(u) returns all but the
# first term or factor of u.
rest := proc(u) local v;
  if nops(u)=2 then
     op(2,u)
  else
     apply(op(0,u),op(2..nops(u),u))
  end if
end proc:

#leafcount(u) returns the number of nodes in u.
#Nasser 3/23/17  Replaced by build-in leafCount from package in Maple
leafcount := proc(u)
   MmaTranslator[Mma][LeafCount](u);
end proc:
```

4.2.3 Sympy grading function

```
#Dec 24, 2019. Nasser M. Abbasi:
#             Port of original Maple grading function by
#             Albert Rich to use with Sympy/Python
#Dec 27, 2019  Nasser. Added `RootSum`. See problem 177, Timofeev file
#             added 'exp_polar'
from sympy import *

def leaf_count(expr):
   #sympy do not have leaf count function. This is approximation
   return round(1.7*count_ops(expr))

def is_sqrt(expr):
   if isinstance(expr,Pow):
      if expr.args[1] == Rational(1,2):
         return True
      else:
         return False
   else:
      return False

def is_elementary_function(func):
   return func in [exp,log,ln,sin,cos,tan,cot,sec,csc,
         asin,acos,atan,acot,asec,acsc,sinh,cosh,tanh,coth,sech,csch,
         asinh,acosh,atanh,acoth,asech,acsch
      ]

def is_special_function(func):
   return func in [ erf,erfc,erfi,
          fresnels,fresnelc,Ei,Ei,Li,Si,Ci,Shi,Chi,
          gamma,loggamma,digamma,zeta,polylog,LambertW,
          elliptic_f,elliptic_e,elliptic_pi,exp_polar
       ]

def is_hypergeometric_function(func):
   return func in [hyper]

def is_appell_function(func):
   return func in [appellf1]

def is_atom(expn):
   try:
      if expn.isAtom or isinstance(expn,int) or isinstance(expn,float):
        return True
      else:
        return False
```

```
    except AttributeError as error:
        return False

def expnType(expn):
    debug=False
    if debug:
        print("expn=",expn,"type(expn)=",type(expn))

    if is_atom(expn):
       return 1
    elif isinstance(expn,list):
        return max(map(expnType, expn))    #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
            return 1
        else:
            return max(2,expnType(expn.args[0]))   #max(2,ExpnType(op(1,expn)))
    elif isinstance(expn,Pow):    #type(expn,'`^`')
        if isinstance(expn.args[1],Integer):   #type(op(2,expn),'integer')
            return expnType(expn.args[0])    #ExpnType(op(1,expn))
        elif isinstance(expn.args[1],Rational):   #type(op(2,expn),'rational')
            if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
                return 1
            else:
                return max(2,expnType(expn.args[0]))   #max(2,ExpnType(op(1,expn)))
        else:
            return max(3,expnType(expn.args[0]),expnType(expn.args[1])) #max(3,ExpnType(op(1,expn)),ExpnT
    elif isinstance(expn,Add) or isinstance(expn,Mul): #type(expn,'`+`') or type(expn,'`*`')
        m1 = expnType(expn.args[0])
        m2 = expnType(list(expn.args[1:]))
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.func):  #ElementaryFunctionQ(op(0,expn))
        return max(3,expnType(expn.args[0]))  #max(3,ExpnType(op(1,expn)))
    elif is_special_function(expn.func): #SpecialFunctionQ(op(0,expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(4,m1)    #max(4,apply(max,map(ExpnType,[op(expn)])))
    elif is_hypergeometric_function(expn.func): #HypergeometricFunctionQ(op(0,expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(5,m1)    #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif is_appell_function(expn.func):
        m1 = max(map(expnType, list(expn.args)))
        return max(6,m1)    #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif isinstance(expn,RootSum):
        m1 = max(map(expnType, list(expn.args))) #Apply[Max,Append[Map[ExpnType,Apply[List,expn]],7]],
        return max(7,m1)
    elif str(expn).find("Integral") != -1:
```

```
        m1 = max(map(expnType, list(expn.args)))
        return max(8,m1)    #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9

#main function
def grade_antiderivative(result,optimal):

    #print ("Enter grade_antiderivative for sagemath")
    #print("Enter grade_antiderivative, result=",result," optimal=",optimal)

    leaf_count_result  = leaf_count(result)
    leaf_count_optimal = leaf_count(optimal)

    #print("leaf_count_result=",leaf_count_result)
    #print("leaf_count_optimal=",leaf_count_optimal)

    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if str(result).find("Integral") != -1:
        grade = "F"
        grade_annotation =""
    else:
        if expnType_result <= expnType_optimal:
            if result.has(I):
                if optimal.has(I): #both result and optimal complex
                    if leaf_count_result <= 2*leaf_count_optimal:
                        grade = "A"
                        grade_annotation =""
                    else:
                        grade = "B"
                        grade_annotation ="Both result and optimal contain complex but leaf count of result is larger
                else: #result contains complex but optimal is not
                    grade = "C"
                    grade_annotation ="Result contains complex when optimal does not."
            else: # result do not contain complex, this assumes optimal do not as well
                if leaf_count_result <= 2*leaf_count_optimal:
                    grade = "A"
                    grade_annotation =""
                else:
                    grade = "B"
                    grade_annotation ="Leaf count of result is larger than twice the leaf count of optimal. "+str(lea
        else:
            grade = "C"
            grade_annotation ="Result contains higher order function than in optimal. Order "+str(ExpnType_re
```

```
    #print("Before returning. grade=",grade, " grade_annotation=",grade_annotation)

    return grade, grade_annotation
```

4.2.4 SageMath grading function

```
#Dec 24, 2019. Nasser: Ported original Maple grading function by
#             Albert Rich to use with Sagemath. This is used to
#             grade Fricas, Giac and Maxima results.
#Dec 24, 2019. Nasser: Added 'exp_integral_e' and 'sng', 'sin_integral'
#             'arctan2','floor','abs','log_integral'
#June 4, 2022  Made default grade_annotation "none" instead of "" due
#             issue later when reading the file.
#July 14, 2022. Added ellipticF. This is until they fix sagemath, then remove it.

from sage.all import *
from sage.symbolic.operators import add_vararg, mul_vararg

debug=False;

def tree_size(expr):
    r"""
    Return the tree size of this expression.
    """
    #print("Enter tree_size, expr is ",expr)

    if expr not in SR:
        # deal with lists, tuples, vectors
        return 1 + sum(tree_size(a) for a in expr)
    expr = SR(expr)
    x, aa = expr.operator(), expr.operands()
    if x is None:
        return 1
    else:
        return 1 + sum(tree_size(a) for a in aa)

def is_sqrt(expr):
    if expr.operator() == operator.pow:   #isinstance(expr,Pow):
        if expr.operands()[1]==1/2: #expr.args[1] == Rational(1,2):
            if debug: print ("expr is sqrt")
            return True
        else:
            return False
    else:
        return False
```

```
def is_elementary_function(func):
    #debug=False
    m = func.name() in ['exp','log','ln',
            'sin','cos','tan','cot','sec','csc',
            'arcsin','arccos','arctan','arccot','arcsec','arccsc',
            'sinh','cosh','tanh','coth','sech','csch',
            'arcsinh','arccosh','arctanh','arccoth','arcsech','arccsch','sgn',
        'arctan2','floor','abs'
        ]
    if debug:
        if m:
            print ("func ", func , " is elementary_function")
        else:
            print ("func ", func , " is NOT elementary_function")


    return m

def is_special_function(func):
    #debug=False
    if debug:
        print ("type(func)=", type(func))

    m= func.name() in ['erf','erfc','erfi','fresnel_sin','fresnel_cos','Ei',
            'Ei','Li','Si','sin_integral','Ci','cos_integral','Shi','sinh_integral'
            'Chi','cosh_integral','gamma','log_gamma','psi,zeta',
            'polylog','lambert_w','elliptic_f','elliptic_e','ellipticF',
            'elliptic_pi','exp_integral_e','log_integral']

    if debug:
        print ("m=",m)
        if m:
            print ("func ", func ," is special_function")
        else:
            print ("func ", func ," is NOT special_function")


    return m


def is_hypergeometric_function(func):
    return func.name() in ['hypergeometric','hypergeometric_M','hypergeometric_U']

def is_appell_function(func):
    return func.name() in ['hypergeometric']   #[appellf1] can't find this in sagemath
```

```
def is_atom(expn):

   #debug=False
   if debug:
       print ("Enter is_atom, expn=",expn)

   if not hasattr(expn, 'parent'):
      return False


   #thanks to answer at https://ask.sagemath.org/question/49179/what-is-sagemath-equivalent-to-atomic-
   try:
      if expn.parent() is SR:
         return expn.operator() is None
      if expn.parent() in (ZZ, QQ, AA, QQbar):
         return expn in expn.parent() # Should always return True
      if hasattr(expn.parent(),"base_ring") and hasattr(expn.parent(),"gens"):
         return expn in expn.parent().base_ring() or expn in expn.parent().gens()

      return False

   except AttributeError as error:
      print("Exception,AttributeError in  is_atom")
      print ("cought exception" , type(error).__name__ )
      return False


def expnType(expn):

   if debug:
      print (">>>>>Enter expnType, expn=", expn)
      print (">>>>>is_atom(expn)=", is_atom(expn))

   if is_atom(expn):
      return 1
   elif type(expn)==list:   #isinstance(expn,list):
      return max(map(expnType, expn))    #apply(max,map(ExpnType,expn))
   elif  is_sqrt(expn):
      if  type(expn.operands()[0])==Rational:  #type(isinstance(expn.args[0],Rational):
         return 1
      else:
         return max(2,expnType(expn.operands()[0]))   #max(2,expnType(expn.args[0]))
   elif expn.operator() == operator.pow:    #isinstance(expn,Pow)
      if type(expn.operands()[1])==Integer:   #isinstance(expn.args[1],Integer)
         return expnType(expn.operands()[0])    #expnType(expn.args[0])
      elif type(expn.operands()[1])==Rational:   #isinstance(expn.args[1],Rational)
         if type(expn.operands()[0])==Rational:  #isinstance(expn.args[0],Rational)
```

```
            return 1
        else:
            return max(2,expnType(expn.operands()[0]))  #max(2,expnType(expn.args[0]))
    else:
        return max(3,expnType(expn.operands()[0]),expnType(expn.operands()[1])) #max(3,expnType(expn.op
elif expn.operator() == add_vararg or expn.operator() == mul_vararg: #isinstance(expn,Add) or isinstan
    m1 = expnType(expn.operands()[0]) #expnType(expn.args[0])
    m2 = expnType(expn.operands()[1:]) #expnType(list(expn.args[1:]))
    return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
elif is_elementary_function(expn.operator()):  #is_elementary_function(expn.func)
    return max(3,expnType(expn.operands()[0]))
elif is_special_function(expn.operator()): #is_special_function(expn.func)
    m1 = max(map(expnType, expn.operands()))      #max(map(expnType, list(expn.args)))
    return max(4,m1)   #max(4,m1)
elif is_hypergeometric_function(expn.operator()): #is_hypergeometric_function(expn.func)
    m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(expn.args)))
    return max(5,m1)   #max(5,m1)
elif is_appell_function(expn.operator()):
    m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(expn.args)))
    return max(6,m1)   #max(6,m1)
elif str(expn).find("Integral") != -1: #this will never happen, since it
        #is checked before calling the grading function that is passed.
        #but kept it here.
    m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(expn.args)))
    return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
else:
    return 9

#main function
def grade_antiderivative(result,optimal):


    if debug:
        print ("Enter grade_antiderivative for sagemath")
        print("Enter grade_antiderivative, result=",result)
        print("Enter grade_antiderivative, optimal=",optimal)
        print("type(anti)=",type(result))
        print("type(optimal)=",type(optimal))

    leaf_count_result  = tree_size(result) #leaf_count(result)
    leaf_count_optimal = tree_size(optimal) #leaf_count(optimal)

    #if debug: print ("leaf_count_result=", leaf_count_result, "leaf_count_optimal=",leaf_count_optimal)


    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)
```

```
if debug: print ("expnType_result=", expnType_result, "expnType_optimal=",expnType_optimal)

if expnType_result <= expnType_optimal:
    if result.has(I):
        if optimal.has(I): #both result and optimal complex
            if leaf_count_result <= 2*leaf_count_optimal:
                grade = "A"
                grade_annotation ="none"
            else:
                grade = "B"
                grade_annotation ="Both result and optimal contain complex but leaf count of result is larger t
        else: #result contains complex but optimal is not
            grade = "C"
            grade_annotation ="Result contains complex when optimal does not."
    else: # result do not contain complex, this assumes optimal do not as well
        if leaf_count_result <= 2*leaf_count_optimal:
            grade = "A"
            grade_annotation ="none"
        else:
            grade = "B"
            grade_annotation ="Leaf count of result is larger than twice the leaf count of optimal. "+str(leaf_
else:
    grade = "C"
    grade_annotation ="Result contains higher order function than in optimal. Order "+str(expnType_resu


print("Before returning. grade=",grade, " grade_annotation=",grade_annotation)

return grade, grade_annotation
```